

Owners' Reports: DODGE, OLDSMOBILE

# POPULAR MECHANICS

MAR. 1965  
35 CENTS

Quick-Build PM's  
**\$25 SPEEDBOAT** →

Choosing the Perfect Prop

**NEW** Outboard Fuel Cuts Cost 60%  
Bottom Finish Speeds Getaway

Preventing Outboard Conk-Outs

Why Car Wheels Fall Off  
And How to Prevent It

Fresh Ideas for  
Relaxed Home  
Owning

Short Cuts  
To Easy  
Dovetailing

Fast-Growing Tabletop Gardens





# Miller High Life

*The Champagne of Bottle Beer*

Sparkling...  
flavorful...  
distinctive!



Brewed only in Milwaukee  
for 110 years

Here's the hearty goodness and special lightness you and your friends enjoy! Pour a crystal clear bottle of distinctive Miller High Life for refreshment that's unequalled, unquestioned . . . unchanging!



© 1965 MILLER BREWING CO.





**A howitzer with windshield wipers.  
The new Buick Skylark Gran Sport.  
400 cu. in./325 bhp.**

There is mounting evidence that our engineers have turned into a bunch of performance enthusiasts.

First they stuff the Wildcat full of engine. Then the Riviera Gran Sport. And now this, the Skylark GS, which is almost like having your own, personal-type nuclear deterrent. We've just turned it loose on our dealers. (See the Buick dealers run.)

Aside from all those cubic inches and horses and 445 lb-ft of torque, just what is this thing that our engineers have unleashed?

It's a pretty sophisticated suspension package, for one thing: Heavy-duty springs and shocks, plus a stabilizer bar that's about twice as stiff as the normal Skylark's. Axle wind-up is snubbed by heavy-duty upper control arm bushings.

It's also a floor-shift 3-speed, with all forward gears synchronized. Dual exhausts. A reinforced convertible frame to handle all that extra torque. 7.75x14 tires. All standard equipment.

Want to go the 4-speed route? There's a close-ratio unit available. Axle ratios? They read like this—2.78, 3.08, 3.23, 3.36, 3.55, and 3.73:1.

Well, there's some of the evidence. Performance enthusiasts, that's what they are. More power to them.

**The Buick Skylark  
Gran Sport**



# Ronson introduces the

(Complete with large-

## Burns for hours on butane gas. Adjusts from pinpoint to



STARTS LOG FIRES.



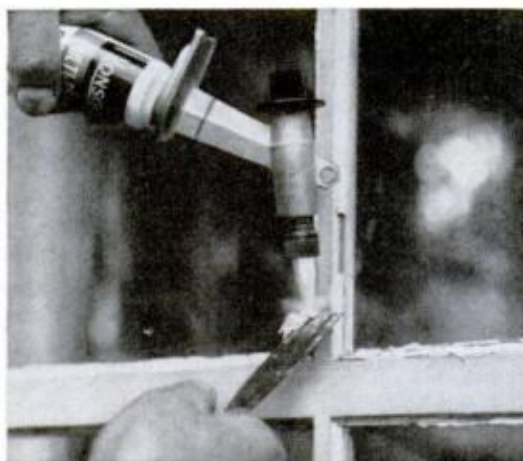
MELTS ICE.



STARTS CHARCOAL FIRES.



REMOVES PAINT.



SOFTENS PUTTY.



FOR HARD-SOLDERING METALS SUCH AS THIS METAL CHAIR.

O.K. You own a hammer, a chisel, a screwdriver—a lot of good, hardworking tools.

So when something at your house needs fixing, you're ready, willing and able to go to work.

Or are you?

Ever try to thaw a frozen water pipe with that hammer? Or unstick a cracked floor tile with that screwdriver?

Or chip ice off the front steps with that chisel?

Humiliating, isn't it?

(Not having the right tool at the right time can make you feel about as self-sufficient as an old-maid schoolteacher fixing her first flat tire.)

But now Ronson has a new torch that can do all those

things. And more.

You don't have to be a handyman to put it to work. It starts charcoal and log fires quickly. It burns leaves and caterpillar nests. You can even use it to put a nice brown meringue on Baked Alaska!

It weighs less than 13 ounces. Much smaller than other leading torches, it takes very little storage space. It's as compact and easy to handle as a flashlight.

A blast from this torch can spot-kill a weed faster than you can yell "Crabgrass!"

A broken wire fence needs mending?

This torch can do a perfect soft-solder job in less than a minute.

It can hard-solder a 1/2" copper tube to a brass elbow in just a few minutes.

It can help remove old paint.

Soften old putty.

Fix a kid's toy.

Help refinish furniture.

Sweat copper tubing.

(Whew!)

Loosen rusted pipe fittings and connectors. (Just try to get in and around pipes and fittings with a larger torch.)

Free frozen nuts and bolts.

And even stand up like a laboratory burner.

(This comes in handy when you need both hands free.)

How did Ronson put this new torch together?

We used butane gas, and the



# Varaflame Torch. \$4.95.\*

(size butane Multi-Fill.)

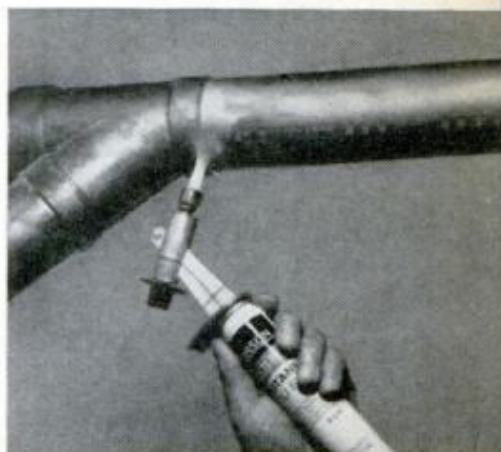
blow torch flame. Lightweight. Compact. Easiest to handle.



BURNS OUT WEEDS AND CATERPILLAR TENTS.



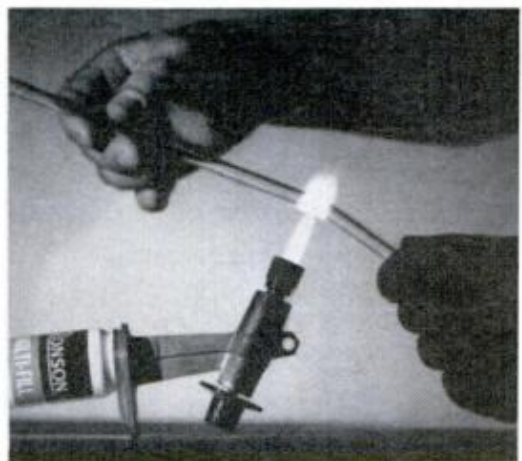
FOR LAYING OR PICKING UP ASPHALT FLOOR TILES.



SWEATS AND THAWS PIPES.



SOFT-SOLDERS BROKEN TOYS.



FOR BENDING GLASS TUBING AND OTHER LABORATORY USES.



COMES APART EASILY FOR STORAGE.

same Ronson Multi-Fill® injector that fuels our gas lighters.

(The Multi-Fill injector lasts for hours, but when it runs dry, you can buy a new one almost anywhere in town.)

And we developed an entirely new kind of torch head.

It snaps onto the Multi-Fill injector. You don't have to be a professional plumber to use it.

A fingertip knob controls the flame precisely. You get the bluest flame possible. The steadiest pinpoint flame. (The steadier and bluer the flame, the more intense the heat, the faster the job gets done.)

And you won't have to take this torch apart to clean it between jobs. It's completely self-

cleaning. It just won't clog.

Now.

Where can you get your hands on the new Ronson Varaflame Torch?

Anywhere hardware is sold. The price, complete with large-size, 76 gram Ronson butane Multi-Fill injector, just \$4.95.\*

Isn't that a small price for this amazing torch?



This One



854D-PDN-PN3R

## RONSON Varaflame Butane Torch



# POPULAR MECHANICS®

MARCH 1965  
VOL. 123 NO. 3

575 LEXINGTON AVE.  
NEW YORK, N.Y. 10022

INTERNATIONAL EDITIONS • AUSTRALIAN • SPANISH • CARIBBEAN • FRENCH • DUTCH

## Features of Special Interest



Ski-Jumpers  
on Rollers  
page 114

Wonderful World of Irradiated Miracles . . . . .	85
The 1965 Dodges: How Owners Rate Them . . . . .	90
Owners Report on Their 1965 Oldsmobile . . . . .	95
The New Look in Keyless Locks . . . . .	102
Fresh Ideas for Easier Homeowning . . . . .	105
Tips on Becoming a More Compleat Angler . . . . .	111
Splashy Ending to Roller-Ski Jumping . . . . .	114
Magnetic Forming Speeds Shop Production . . . . .	118
How Big-City Cabbies Get You There on Time . . . . .	124

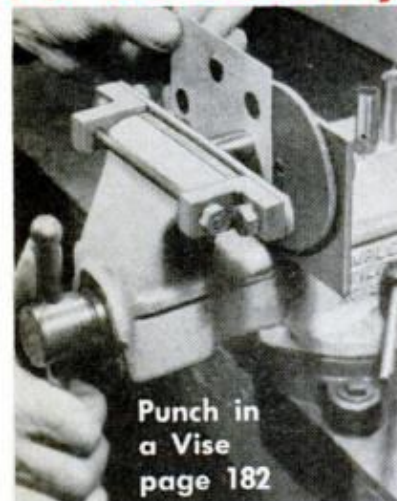
## Boats Carnival



Pick a  
Perfect Prop  
page 133

What's New in Boating for 1965 . . . . .	127
Bottom Finish Speeds Your Getaway . . . . .	130
Choosing the Perfect Prop . . . . .	133
New Fuel for Modern Outboards . . . . .	137
How to Prevent Outboard Conk-Outs . . . . .	140
\$25 Saucy Shingle Hydroplane . . . . .	144
Take-Along Depth Finder . . . . .	150

## For the Workshop Craftsman



Punch in  
a Vise  
page 182

Pipe Rack . . . . .	153
Shelves That Grow with Your Library . . . . .	154
Caulking That Lasts the Life of Your House . . . . .	158
The Forgotten Square Edge . . . . .	166
Adjustable Light Stand Speeds Plant Growth . . . . .	169
How to Keep Car Wheels from Falling Off . . . . .	174
Roller Guide for Hand Filing . . . . .	181
Put Punch in Your Vise . . . . .	182
Router Jags for Easy Dovetailing . . . . .	184
Workshop Doodle Pad . . . . .	190
Big Reels for Little Tape Recorders . . . . .	192
Fun with an Electric Jumping Jack . . . . .	194

## Regular Departments

Over the Editor's Desk . . . . .	8	Detroit Listening Post . . . . .	40
Science Worldwide . . . . .	12	Noteworthy New Inventions . . . . .	42
News from the Services . . . . .	20	Items from All Outdoors . . . . .	44
Spotlight on New 425-hp Corvette . . . . .	24	Worth Writing For . . . . .	52
New on the Market . . . . .	32	What's New for Your Home . . . . .	120
Sidelights on Aviation . . . . .	34	Solving Home Problems . . . . .	156
Clinic for Homeowners . . . . .	36	New for Camera Buffs . . . . .	164
Shopping for Tools . . . . .	38	Auto Clinic . . . . .	180



**NEXT MONTH: Build a Patio Garage** plus eight additional home-brightening projects from complete plans in a special issue emphasizing your house. Also in April PM: steam cars stage a comeback, how scientists are fighting tornadoes, what owners say about their new Falcons. To top it off, you can learn how to flycast in 60 minutes

PORTUGUESE • DANISH • SWEDISH

**DON DINWIDDIE**  
Editor

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

**JOSEPH F. KERN**  
Publisher

**RICHARD F. DEMPEWOLFF**  
Executive Editor

**JOHN A. LINKLETTER**  
Managing Editor

Published by Hearst Corp., **RICHARD E. BERLIN**, Pres.

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

**CLIFFORD B. HICKS** . . . Midwest Editor

520 N. Michigan Ave., Chicago, Ill. 60611

**THOMAS E. STIMSON** . . . Western Editor

3460 Wilshire Blvd., Los Angeles, Calif. 90005

**HENRY NEHRBASS** . . . Art Director

**KEVIN V. BROWN** . . . Aviation Editor

**ED NELSON** . . . Automotive Editor

**LARRY STECKLER** . . . Electronics Editor

**ALFRED W. LEES** . . . Home Workshop Editor

**ARTHUR MIKESSELL** . . . Boating Editor

**JOHN F. PEARSON** . . . Science Editor

**STUART JAMES** . . . Outdoors Editor

**ALEX MARKOVICH** . . . Associate Auto Editor

**FRANK X. SMITH** . . . Production Editor

**ART MAHER, ROBERT BERGER** . . . Associate Editors

**MURRAY COOPER** . . . Art Editor

**LEO WEEKS** . . . Assistant Art Director

**FRANK P. FRITZ** . . . Chief Photographer

**GARRY WINTER** . . . Book Editor

ADDRESS COMMUNICATIONS TO: 575 Lexington Ave., New York, N.Y. 10022. For additional sources of information on the articles in this issue, or the name and address of the manufacturer of a particular product, 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., DRospect 1-0456; Los Angeles: 3460 Wilshire Blvd., DUmkirk 2-8458; San Francisco: 1101 Hearst Bldg., YUkon 2-0823.

SUBSCRIPTION SERVICE: Mail all subscription orders, changes of address, correspondence concerning subscriptions, and Postmaster notices of undeliverable copies to *Popular Mechanics*, 250 West 55th St., 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; G. Harry Chamberlaine, V-Pres. for Research and Marketing; William S. Campbell, V-Pres. and Director of Circulation; Joseph F. Kern, V-Pres. for *Popular Mechanics*; Frank Massi, Treasurer R. F. McCauley, Sec'y. 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. ©1964 by The Hearst Corporation. All rights reserved. Printed in U.S.A.

# THE UNCOMMON MOTOR OIL



## 100% PURE PENNSYLVANIA

Tri-ex Refined three extra steps for

Maximum performance,  
Maximum protection,  
Maximum economy

Scientifically fortified  
to clean as you drive

It pays to be particular about  
your oil—use WOLF'S HEAD.

**WOLF'S HEAD OIL REFINING CO.**  
OIL CITY, PA.



# “You need cooler plugs for hotter performance”

*says Rodger Ward, two-time Indianapolis 500 winner*

I don't know of any scientific way to pick the right heat range spark plugs that beats the old cut-and-try method. Engines vary. So do driving conditions. Plugs that work fine in one engine just won't hack it in another one that came off the same line!

We start with the heat range recommended by the manufacturer. We run for a while and yank the plugs. When you're running hard, you're apt to need cooler-than-normal plugs—especially with a modified engine. Fused deposits, fast electrode wear and cracking at the insulator nose indicate plugs that are too “hot” for the engine and driving conditions.

If you run across this, try plugs one step colder . . . they have insulators with shorter noses and are assembled deeper in the plug shell. They run cooler because they throw heat off to the cooling system faster. Generally, the coolest plugs you can run without fouling give you top performance.

Heavy oily deposits mean you need plugs with longer noses that run hotter to burn off those deposits. No matter what kind of plugs you run, don't just stick 'em in and forget 'em! They should be cleaned and gapped every 3,000 to 5,000 miles—and replaced at about 10,000.

And when you buy spark plugs, get Autolites. I use 'em racing and in my family car and plane. Autolite makes its passenger-car plugs with the same copper and glass seals used in racing plugs. It costs a bit more, so some companies don't bother. Autolite thinks the extra efficiency you get is worth it. So do I.

**AUTOLITE SPARK PLUGS**

PRODUCTS OF  MOTOR COMPANY



HERE IS A PARTIAL LIST OF RODGER WARD'S RACING ACCOMPLISHMENTS: Indianapolis 500—Winner, 1962, 1959; 2nd, 1964, 1960; 3rd, 1961; 4th, 1963. USAC National Champion, 1962, 1959. Winner of 25 USAC National Championship events, including 1963 Hoosier 100, Milwaukee 100, Sacramento 100; 1962 Trenton 150, Milwaukee 200, Syracuse 100, and many others.





**NEW BOOM AHEAD  
IN REAL ESTATE**

New home construction has soared to one-and-a-half million units a year in the United States. Industrial and commercial construction is reaching new highs. And now economic forecasters predict a new rise in real estate sales in the years just ahead. **The biggest opportunities are still to come in the booming real estate field.** Send today for the informative booklet "Opportunities in Real Estate".

# Now is the time for you to **GET INTO THE REAL ESTATE PROFESSION**

Qualified men and women are urgently needed for high-pay positions in the booming Real Estate field. Hours are flexible . . . earnings are high . . . opportunity is unlimited. Your age and previous background don't matter. LaSalle can train you at home without interfering with your present job.

**W**HATEVER your present occupation, you can start now to prepare for a rewarding career in the booming Real Estate profession — simply by using spare time that ordinarily might go to waste.

Real Estate activity continues to increase at an extraordinary rate, year after year. Each new transfer of property normally requires the services of a Real Estate agent — services required by buyer and seller alike, and always highly rewarded. With the greatest number of homes currently selling in the \$10,000 to \$20,000 range, a few sales a month can earn you a living. Just a sale a week can put you in the five-figure bracket.

**LaSalle training provides everything you need to know**

The only requisites for success in the Real Estate profession are a knowledge of fundamentals and a willingness to apply yourself. LaSalle home study training gives you the necessary knowledge easily and conveniently by mail. As a LaSalle student, you learn at your own speed in your own home. Your LaSalle instructor starts you right at the beginning — then supervises your work all the way — *including all the preparation you need to qualify for your state license examination for Real Estate salesman or broker.*

Since its founding in 1908, LaSalle has been a world leader in business education. More than one million ambitious men and women have used LaSalle home study to prepare for better-paying jobs and more satisfying careers in a variety of fields.

**Send for free booklet: "Opportunities in Real Estate"**

A career in Real Estate offers unique advantages. You can earn an excellent living using just part of your time. You can go into business for yourself, if you wish, with very little capital — quickly enjoy real independence. Mail the inquiry coupon below to receive the informative new booklet "Opportunities in Real Estate." It shows you how to prepare for a fascinating career in the rapidly expanding Real Estate profession.

## LA SALLE EXTENSION UNIVERSITY

*A Correspondence Institution*

417 South Dearborn, Dept. 39-031, Chicago, Illinois 60605

Please send me, free of cost or obligation, your illustrated booklet "Opportunities in Real Estate."

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

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

City.....  
Zone or  
Zip No.....State.....

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



451



# Over the Editor's Desk

## Hydro Dynamic

I spent the spring and summer of 1963 building *Hydro Dynamic* (page 144, March 1963 PM) and got it into the water in 1964.

The entire hull is fibreglassed. I used



half-inch plywood on the bottom instead of  $\frac{3}{8}$ -inch and  $\frac{3}{4}$ -inch in the transom instead of  $\frac{1}{2}$ -inch.

With my 40-horsepower motor, it will go 28 m.p.h. with four persons aboard. It performs like a champ in every way.

Hamilton, Ohio

LOUIS T. RIES

## Now Hear This

In the article, *We Don't Have to Go Deaf on the Job* (page 123, November PM), the statement that only Missouri, New York and Wisconsin recognize hearing loss as a compensable occupational disease is extremely misleading. Hearing loss is compensable in California, and awards have been issued for at least ten years to my personal knowledge.

We do congratulate you, however, on this lucid article in a poorly understood area of occupational health.

WILLIAM W. STEFFAN  
Senior Health Physicist

Dept. of Industrial Relations  
Employment Relations Agency  
State of California

Congratulations on your fine article. But why, oh why did the author say that we do not have a law in California covering this problem?

West Covina, Calif. ROBERT M. HURDLE

Yes, there is a law in California. It took "about a year of detailed committee work" by major industries, unions and state officials to prepare it, Reader Steffan informed PM in a telephone interview. Unfortunately, PM's article was researched before the

California law was finally put into effect.

Along with each of the above letters came a copy of Article 55 (Standards for Noise Control) of California's Noise Control Safety Orders. And, indeed, the law is quite specific in stating that "the wearing of hearing protectors is mandatory" when the employee is exposed to noise of a given frequency and decibel rating for a given length of time.

An example: An employee must wear hearing protectors when exposed for five hours per day to noise with a frequency of 20 to 75 cycles per second at a decibel level of 110. The Safety Order goes on to cover variations in time of exposure, and frequency and decibel level of the sound.

Thank you, Californians, for correcting us. We heard you loud and clear.

## Appropriate Controls

Your article *Controlling Your Car's Control Center* (page 158, December PM) is one of the best and most appropriate to appear in a long time. With winter there come some starting problems, and the article is a real help to understanding this part of the automobile.

Cincinnati, Ohio.

G. THOMPSON

## Birthday Classic

I built a *Sidewalk Classic* (page 146, November 1963 PM) and presented it to our grandchildren on their birthdays.

They do five miles an hour, and the battery runs the car two hours per charging.



This car is not used on sidewalks, but on country roads. The owners are Chuck and Larry Buttke of Twin Brooks, S.D. Nevis, Minn.

GORDON L. OLSON

(Please turn to page 10)



**Mail This Certificate NOW...**



**GET THIS VALUABLE 28-PAGE BOOK**

**ABSOLUTELY FREE!**

**It Tells How To Get Ready for Top Pay... THOUSANDS of Good Jobs Open RIGHT NOW!**

**YOU CAN LEARN AIR CONDITIONING, REFRIGERATION and HEATING**

- At Home in Your SPARE TIME
- By Building a COMPLETE REFRIGERATION SYSTEM — 25 Kits Sent



**IF YOU REALLY WANT TO GET AHEAD —**

If you want to earn big money in a booming field—it will pay you to get the facts about fast-growing Air Conditioning, Refrigeration and Heating. This industry is demanding more men than we can possibly train. More than 20,000 mechanics must be trained every year.

Because of the rapid growth, the pay is high and the work is steady. All the facts about this big opportunity field are spelled out in our free book, "Be a Success in Air Conditioning, Refrigeration and Heating." Easy to read, illustrated... yours absolutely FREE. All you do is mail the Free Book Certificate at the top of this ad.

**YOU CAN DO IT**

No matter what kind of work you happen to be doing right now, ask yourself, "Am I getting ahead—really getting ahead?" "Am I doing what I want to do?" "Am I so challenged and excited by my work I can't help but do a good job?" "Am I making enough money?" If for any reason you're not satisfied, you may secretly be itching for a business of your own or a better job—or exciting and profitable part-time work. That's where CTI comes in. You can learn refrigeration and air conditioning step by step, by DOING. You build a complete refrigeration system right in your home and probably MAKE MONEY WHILE YOU'RE LEARNING. All you have to do is give this easy-to-follow course an honest try. Start now. You're missing valuable income if you delay. Mail the Certificate and all the facts will be in your hands within just a few days. No obligation.

**FREE BOOK CERTIFICATE**

**COMMERCIAL TRADES INSTITUTE**  
1400 Greenleaf Avenue • Chicago, Illinois 60626 • Dept. R-374

**CHECK ONE**

Please rush me your FREE 28 page illustrated opportunity book, "Be a Success in Air Conditioning, Refrigeration and Heating."

Free Auto Mechanics Book       Free Industrial Electronics Book

Free Television Servicing Book       Free Building Construction Book

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

ADDRESS \_\_\_\_\_

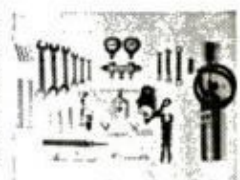
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

**SPARE TIME OR FULL TIME**

You can learn in your spare time. Many students start with a "part-time" business and quickly find themselves with a bustling and booming lifetime career on their hands! As you read "Be a Success in Air Conditioning, Refrigeration and Heating," you'll see how, with just a few minutes a day, the whole course of your life can be changed. By your own effort, and helped by skilled instructors, you move up the ladder toward success, security, money, and the warm satisfaction that comes to you when you know you're doing a good job in a field you really like. Don't wait. Start right now by mailing the Certificate and getting this important book.

**YOU GET MECHANIC'S TOOLS**

You get all parts necessary to build a commercial type refrigeration unit (above). You also get mechanic's tools and gauges (right). After your unit is assembled, you can build an air conditioner, freezer, refrigerator or milk cooler. Mail the certificate above. Your free copy of "Success in Air Conditioning and Refrigeration" will be mailed at once.



**AND STILL MORE OPPORTUNITIES IN . . .**

<p><b>AUTO MECHANICS!</b> Free 32-page book, "Make Big Money in Auto Mechanics." Easy to read.</p>	<p><b>TELEVISION SERVICING!</b> Free 20-page book, "You and Your Future in Television and Electronics."</p>	<p><b>BUILDING CONSTRUCTION!</b> Free 30-page book, "Your Future in Building Construction."</p>	<p><b>INDUSTRIAL ELECTRONICS!</b> Free 20-page book tells you how to get started, how to keep going.</p>
<p><b>THESE BOOKS ARE FREE</b> ... USE CERTIFICATE ABOVE!</p>			

IF COUPON HAS BEEN REMOVED, WRITE TO:

**COMMERCIAL TRADES INSTITUTE**  
CHICAGO, ILLINOIS 60626  
Accredited Member National Home Study Council



## Here's how to refurbish your boat in 8 hours with

**NAUTOLEX**  
SUPPORTED VINYL MARINE FABRICS



1. Eleven year old hull still sound, but deck needs refinishing. Nautolex eliminates days of hard work, restores beauty at low cost.



2. Wood deck has been faired, sanded. Nautolex vinyl decking cut to fit. Mastic bonds Nautolex to wood.



3. Ready! Looks like fine wood, yet Nautolex is scuff-proof, resists oils, gas, alcohol, weather. Wipes clean with soap and water. Available in 17 patterns and colors. At marine stores.

To: THE GENERAL TIRE & RUBBER COMPANY,  
TOLEDO, OHIO  
DEPT. PM-1

Send FREE SAMPLE OF  
NAUTOLEX and literature  
without obligation.



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

## Over the Editor's Desk

(Continued from page 8)

### Cabin Cat

The construction of the cabin of my *Pop-Cat* (page 162, March 1961 *PM*) is a



variation on your alternate set of plans.

I'd like to correspond with other *Pop-Cat* builders to exchange information.  
Carteret, N.J. GEORGE F. SHERIDAN

And we'll pass along any letters that *Pop-Catters* send you in care of *PM*.

### Instant Skiing

As a skier of 20 years, I'd like to say that *You Can Ski Parallel in Seven Days* (page 100, December *PM*) puts more into six pages than ski publications and ski writers have been able to put into the writings of the last six years.

You have condensed the basic principles of the parallel technique into your admirable article, and with any concentration a conscientious skier should be able to come up with a recognizable Christie into the hill within the seven-day limit.  
Edmonton, Alberta A. WEBER

The article on skiing was most enjoyable, but we disagree with the author's statement that falls "jar the bones." There is nothing softer than snow—and nothing worse for a beginner than fear of falling.

The caption for the top photo on page 103 is definitely wrong. "The Coma Position" is what you assume after you've hit a tree! The author meant "comma position."  
New York, N.Y. LUCIEN R. GREIF

"Snow is soft," we said to *Outdoors* Editor Stu James (the author), and he said, "Ha!"

A skier of 15 years' experience, he admitted that in learning the new technique, he fell more often than he usually does—and came out with a number of black-and-blue spots as mementos of the course.

As for the "coma" position, the day that caption went through must have been punctuated by periods of coma on the part of several staff members.

*The Editors*

POPULAR MECHANICS

Материал, защищенный авторским правом



GET READY FOR THE SPACE and SCIENCE ERA! SEE SATELLITES, MOON ROCKETS CLOSE-UP

# AMAZING SCIENCE BUYS

for FUN, STUDY or PROFIT



## NEW! SCIENCE FAIR PROJECT KITS

Edmund Kits are carefully planned to give any boy or girl the fun and excitement of discovering science facts. Such carefully planned projects can lead the student to awards or scholarships. Adults too will find them an excellent introduction to the various fields of science. Write for Free Bulletin 47-H "Your Science Project" covering all phases of Science Fair projects.



## CRYSTAL GROWING KIT

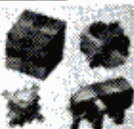
Do a Crystallography project illustrated with large beautiful crystals. You grow yourself. Kit includes the book "Crystals and Crystal Growing" and a generous supply of the chemicals you need to grow large display crystals of potassium aluminum sulfate (clear), potassium chromium sulfate (purple), potassium sodium tartrate (clear), nickel sulfate hexahydrate (blue green) or heptahydrate (green) potassium ferricyanide (red), and copper acetate (blue green).

Stock No. 70,336-H ..... \$9.50 Postpaid

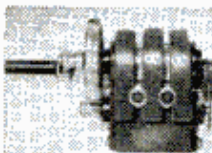
## WOODEN SOLID PUZZLES

12 different puzzles that will stimulate your ability to think and reason. Puzzles, animals and geometric forms to take apart and reassemble, give a chance for all the family, young or old, to test skill, patience.

Stock No. 70,205-H ..... \$3.00 Postpaid



## WAR SURPLUS ELECTRIC GENERATOR



Brand new Signal Corps Electric Generator for scientific experiments, electrical uses, demonstrations. Generates up to 90 volts by turning crank. Use in high impedance relay. Charge ground and bring up night crawlers for bait or study. 2 Alnico Magnets alone worth original price. Wt. 2 lbs. Cost to Govt. \$15. Stock No. 50,225-H. \$6.95 Postpd. Same type generator, mounted, with light, as electricity demonstrator.

Stock No. 50,365-H ..... \$11.95 Postpaid

## SCIENCE TREASURE CHESTS

For Boys—Girls—Adults!

Science Treasure Chest—Extra-powerful magnets, polarizing filters, compass, one-way-mirror film, prism, diffraction grating, and lots of other items for hundreds of thrilling experiments, plus a Ten-Lens Kit for making telescopes, microscopes, etc. Full instructions included.

Stock No. 70,342-H ..... \$5.00 Postpaid

Science Treasure Chest DeLux—Everything in Chest above plus exciting additional items for more advanced experiments.

Stock No. 70,343-H ..... \$10.00 Postpaid

"\$7 a Year for Fuel Heats House, Pool!"  
see Feat. Art. Feb. Popular Mechanics

## Build Actual Working Model NEW SOLAR HOUSE KIT



Exact Replica of F.H.A. Approved Home

Heat your house for \$7 a year? The day may come. Four houses now heated by patented Solar Heat unit which harnesses the sun's rays. Investigate this new money-saving vital-energy principle and have fun for the whole family at the same time. All you need to harness the sun is this kit and a small supply of lumber, stone and insulating material. Complete house 19" x 16" x 15". Kit incl. 2 thermometers, step-down transformer, fan, miniature motor, screen for heat collecting bin, plastic sheets, copper pipe, plastic tubing, electric water pump, water storage tank, pipe connections, metal reflector roof, assorted parts. Book, "Solar House Models" written by the inventor gives complete details.

Stock No. 70,705-H ..... \$24.50 Postpaid

## NOW! EXPERIMENT WITH THE NEW FANTASTIC TOOL OF TOMORROW

Measure . . . Solve . . . Study . . . Create with

## MOIRÉ PATTERNS KIT

A NEW, TIME-SAVING SHORT CUT TO ACCURATE ANSWERS IN DOZENS OF APPLICATIONS

Here's your introduction to a whole new world of technology. Unlimited experiments. Vivid demonstrations. Fun for lab and home experimenters, hobbyists. Inexpensively measure one part in billion. Measure diffraction pattern produced by lasers. Measure diffusion of molecules in solution or heatwaves. Study liquid flow, stress lines, distortion of metals. Reproduce math concepts visually. Photographers can harness this fascinating optical principle and achieve fantastic visual effects. Technically, moiré patterns are predictable patterns created by superpositioning of one pattern over another. Using elements which include equal-spaced linear, logarithmic and circular rulings, Dr. Gerald Oster, Brooklyn Polytechnic Inst., has developed a complete new basic scientific tool. Kit contains 8 basic patterns on both clear acetate lantern slide size 3 1/4" x 4" (.005 thick) and .010" thick white Kromekote paper 3 1/4" x 4 1/2" (coated one side): (1) Coarse grating, (2) 65-line grating, (3) Logarithmic scale grating, (4) Radial lines, 5-degrees, (5) Equi-spaced circles, (6) Fresnel zone plate, (7) Sphere projection, (8) Cylinder projection; one piece 3 1/4" x 4" 130-dot screen on film; copy Dr. Oster's 32 page book "The Science of Moiré Patterns," an authoritative introduction to the fascinating world of moiré.

Stock No. 70,718-H ..... \$6.00 Postpaid

Stock No. 60,462-H Same as above without book ..... \$4.00 Postpaid

MOIRÉ PATTERN ACCESSORY KIT. For additional experiments. Contains balloon, calcite, two kinds of diffraction gratings, one-way mirror foil, polarizing materials, Ronchi rulings, assortments of lenses.

Stock No. 60,487-H ..... \$8.00 Postpaid

ORDER BY STOCK NUMBER. SEND CHECK OR MONEY ORDER. SATISFACTION GUARANTEED.  
EDMUND SCIENTIFIC CO., BARRINGTON, N. J.

## Bargain! 3" Astronomical Telescope



See the stars, moon, phases of Venus, planets close up! 60 to 180 power—famous Mt. Palomar Reflecting type. Unusual Buy! Equipped with Equatorial mount; finder telescope; hardwood tripod. Included FREE: "STAR CHART"; 272-page "HANDBOOK OF HEAVENS"; "HOW TO USE YOUR TELESCOPE" book.

Stock No. 85,050-H ..... \$29.95 postpd.  
4 1/4" Reflecting Telescope—up to 255 Power, All-metal pedestal mount. Stock No. 85,105-H...\$79.50 F.O.B.

## MINIATURE WATER PUMP



Wonderful for experiments, miniature waterfalls, fountains, HO gauge railroad backdrops, etc. Tiny (2 1/2" x 1 3/4") electric motor and pump ideal for hobbyists, labs, schools. Pumps continuous flow of water at rate of one pint per minute at a 12" head. With 2 D Batteries in series will pump to 24" high. Runs 48 hrs. on battery. Works in either direction. Self-priming. Stock No. 50,345-H.....\$2.25 Postpaid

## WAR SURPLUS AMERICAN-MADE 7x50 BINOCULARS

Big savings! Brand new! Crystal clear viewing—7 power. Every optical element is coated. An excellent night glass—the size recommended for satellite viewing. Individual eye focus. Exit pupil 7mm. Approx. field at 1,000 yds. is 376 ft. Carrying case included. American 7 x 50's normally cost \$274.50. Our war surplus price saves you real money.

Stock No. 1544-H...Only \$74.80 Ppd. (tax incl.)

6 x 30 Binoculars—similar to above.

Stock No. 963-H...\$33.00 Postpaid (tax incl.)

7 x 35 American Made Binoculars.

Stock No. 964-H...\$60.50 Ppd. (tax incl.)



## SOLVE PROBLEMS! TELL FORTUNES! PLAY GAMES!

## NEW WORKING MODEL DIGITAL COMPUTER

ACTUAL MINIATURE VERSION OF  
GIANT ELECTRONIC BRAINS

Fascinating new see-through model computer actually solves problems, teaches computer fundamentals. Adds, subtracts, multiplies, shifts, complements, carries, memorizes, counts, compares, sequences. Attractively colored, rigid plastic parts easily assembled. 12" x 3 1/2" x 4 1/4". Incl. step-by-step assembly diagrams, 32-page instruction book covering operation, computer language (binary system), programming, problems and 15 experiments.

Stock No. 70,683-H ..... \$5.00 Ppd.

## OPAQUE PROJECTOR

Projects illustrations up to 3" x 3 1/2" and enlarges them to 35" x 50" if screen is 6 1/2 ft. from projector; larger pictures if screen is further away. No film or negatives needed. Projects charts, diagrams, pictures, photos, lettering in full color or black-and-white. Operates on 115 volt, 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. W. 1 lb., 2 oz. Plastic case.

Stock No. 70,199-H ..... \$7.95 Postpaid

## FASCINATING NEW KALEIDOSCOPE INSERT

Same set as above, but provides endless additional projects with ever-changing kaleidoscope patterns.

Stock No. 70,714-H ..... \$10.00 Ppd.

## 'FISH' WITH A WAR SURPLUS MAGNET

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. Trawl 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 125 lbs. on land—much greater weights under water. Order now and try this new sport.

Stock No. 70,571-H. 5 lb. Magnet ..... \$12.50 Postpaid

Stock No. 70,570-H. 3 1/2 lb. Lifts 40 lbs. .... \$ 8.75 Postpaid

Giant 15 lb. Magnet Feat. Oct. POP. MECH

"3RD HAND FOR SHOP CHORES"

STOCK NO. 85,152-H . . . (lifts over 250 lbs).....\$33.60 F.O.B.

## For P.M.'s PROJECT-A-PLAN . . . \$7 SLIDE PROJECTOR WITH KALEIDOSCOPE ATTACH.

Stock No. 70,676-H Optics Kit ..... \$4.00 ppd.

Stock No. 70,677-H Kaleidoscope Kit ..... \$6.50 ppd.

Order by Stock No.—Send Check or M.O.—Money-Back Guarantee

EDMUND SCIENTIFIC CO., Barrington, New Jersey

## MAIL COUPON FOR FREE CATALOG "H"

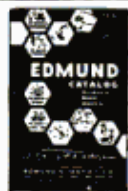
Completely new 1965 Edition, 148 pages.  
Nearly 4000 Bargains.

EDMUND SCIENTIFIC CO., Barrington, N. J.  
Please rush Free Giant Catalog "H".

Name.....

Address.....

City.....Zone.....State.....







**Smog** is not only hard on your breathing, but it also may be eating away your roof. Scientists at the National Bureau of Standards say that ozone, a particularly aggressive form of oxygen, is commonly found in smog. And ozone speeds up the chemical breakdown of asphalt, which accounts for 80 percent of roofing materials used in the U.S.

**What kind of gear** will our astronauts take with them on space jaunts of some duration? That's a problem that concerns scientists at General Dynamics who are engaged in designing the interior of a manned orbiting laboratory. One of their goals is to make the best possible use of available storage space.

According to these experts, here are some of the items that will be needed in space: special pressure suits and spares, bio-packs (life support packs to be worn while outside the spacecraft), disposable underwear, padded helmet, cleansing pads for bathing, vacuum shaving equipment, toothbrush (with toothpaste that can be swallowed) and nail clipper (used in plastic bag to contain clippings).

**Human scent** coming from a fingerprint on a glass plate remains detectable by a dog for over a month. That's if the plate remains indoors. If it's left outside, weather removes all trace of scent within two weeks, according to researchers at Duke University.

**Whale hunters** may soon be using an old South American Indian trick—a touch of curare on the missile. Russian whaling ships, which kill 5000 or more whales in a season, have found that the explosive harpoons sometimes work badly—dead whales sink and are lost before the ship can take them in tow. Curare just knocks the whale out. Anesthetized, he floats until the ship comes along to pick him up.

**Beekeeper's aid.** An English company has come up with a kind of stethoscope to

be used in listening in on beehives. Noise levels inside can indicate up to a month ahead when the bees will swarm. This is important to the keepers, who must be ready to put the swarms into new hives.

Keepers can open the hive every 10 days and judge (from the amount of activity around the queen) when swarming will occur. But this bothers the bees and interrupts honey-making.

The listening device selects noises in the 240-280 frequency range (middle C on your piano) that accompany the build-up of excitement foretelling a swarm.

**A flying TV camera** for spying behind enemy lines is getting a try-out in Canada. It has a small helicopter rotor to keep it aloft and is tethered to its base by a coaxial cable, along which it sends back its pictures.

**A cool way** to fight fires is being tried out by the Tokyo Fire Department. Firemen place a type of water gun close to the blaze, then move back out of the worst of the heat and out of range of falling debris, and direct the hose by remote control.

**The world's flattest floor** is in California. Engineers for a San Diego aerospace firm used a fine diamond-chip grinding wheel to put the finishing touches on a lab floor that is level to within 1000th of an inch in 10 feet.

The precision was made necessary by space-flight trainer equipment to be used in the laboratory. The various pieces of equipment will float on cushions of air, and the slightest unevenness would cause them to drift to the lowest part of the floor.

**Greatest uplift of land** ever recorded was caused by last year's Good Friday earthquake, reports the Coast and Geodetic Survey. The floor of the Gulf of Alaska rose more than 50 feet in places.

**A glass-breaking machine** has been developed by a British brewery to take care of unwanted old bottles. Feed the bottles in by hand, 600 an hour, and two busy hammers reduce them to bits less than half an inch in diameter that take up about one-tenth the space the bottles did.

**Thanks to good weather** when the comet Ikeya recently came "close" to the earth, astronomers got a good look at it through the 200-inch Hale telescope in California. Light from the comet was examined by spectroscope. One finding: Ikeya has about

(Please turn to page 14)



# ELECTRO \* STUDY! A NEW WAY TO HIGH PAY IN ELECTRONICS/ELECTRICITY



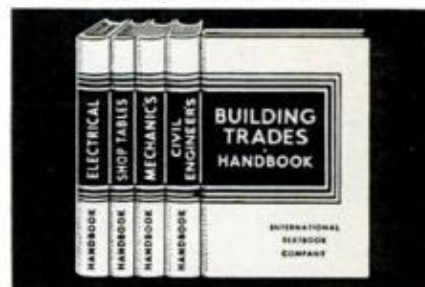
You now can master basic electronics/electricity at home, in your spare time, and at a price you can afford. ELECTRO \* STUDY, a new programed 16-unit self-study method, completely covers the 16 vital areas of knowledge (electricity in the first 8 units; electronics in the last 8). Each unit is a detailed study of its subject, consisting of textbook and—programed Study Guide, with hundreds of questions and answers on the text, for quick, easy learning.

Order one unit—or all 16. But do it NOW! Special introductory price \$4.95 each (\$65 cash for all 16). Bonus with early orders: handsome vinyl case for each Study Guide!

- E1 ELECTRONS AT WORK: Nature of electrons. Currents. Electromotive force. Resistance. Measurement. Resistors & color coding.
- E2 ELECTRIC CIRCUITS & OHM'S LAW: Complete study of circuits & how to use Ohm's Law. Calculating electric power, work.
- E3 MAGNETISM, ELECTROMAGNETISM—WIRING, SOLDERING: Nature, laws & measurement of magnetism. Magnetic fields. Electromagnets. EMF. Wiring & soldering.
- E4 THEORY OF ALTERNATING CURRENTS: Currents. AC circuits. Sine wave. Voltage & current values. Phase relations. Complex waveforms.

- E5 DIRECT-CURRENT NETWORKS: Series & parallel circuits. Battery resistance. Switches. Measuring circuits & instruments.
- E6 INDUCTANCE & CAPACITANCE: Theory & effects of induction & capacity. Circuits & testing of inductors & capacitors.
- E7 TRANSFORMERS IN RADIO & ELECTRONICS: Theory. Types of transformers. Color codes & symbols. Transformer frequencies. Transformer troubles.
- E8 MOTORS & GENERATORS IN ELECTRONICS: Law of mechanics. DC motors & generators. AC motors & generators. Universal motors.
- E9 RESONANT CIRCUITS: Effects of inductance & capacitance on AC & DC circuits. Series & parallel resonant circuits. Tuned circuits.
- E10 RADIO COMMUNICATIONS FUNDAMENTALS: Wave theory. Radiation & reception. RF spectrum. Modulation systems. How to obtain licenses.
- E11 VACUUM TUBE FUNDAMENTALS: Diode & triode properties & applications. Tetrodes & pentodes. Special-purpose tubes & semiconductor diodes.
- E12 BATTERIES & ELECTRONIC POWER SUPPLIES: Dry cell batteries. Other power supplies. Converters & inverters. TV-set power supplies. Recent battery developments.
- E13 AUDIO FREQUENCY AMPLIFIERS: Principles & basic systems. Distortion. Decible & reference levels. Using handbooks. Amplifier circuits & problems. Transistor, magnetic & dielectric amplifiers.
- E14 R-F CIRCUITS: Broadcast signals. Tuned R-F circuits. R-F amplifiers.

- Detector & AVC. Study of a radio receiver. Related R-F circuits.
- E15 TRANSISTORS & THEIR APPLICATIONS: Semiconductor theory. Crystal structure & diodes. PNP & NPN transistors. Transistor characteristics & circuits. Special semiconductor devices.
- E16 SUPERHETERODYNE RECEIVERS: Frequency conversion. Vacuum tube oscillators. Detectors. Mixers & converters. IF amplifier. Typical AC-DC receivers. Line & battery-operated receivers.



## FAMOUS "LITTLE GIANT" TECHNICAL HANDBOOKS

These five encyclopedias of practical facts are hard-bound, pocket-sized, fully indexed and loaded with diagrams, tables and text useful to hobbyist and professional alike. Used by thousands. Priced at an unbelievable \$2 each (all five—\$9).

- G1 ELECTRICAL HANDBOOK: 384 pp on electronics/electricity. Perfect companion to ELECTRO \* STUDY.
- G2 BUILDING TRADES, 371 pp: building design, materials & methods.
- G3 MECHANIC'S, 383 pp: basic shop materials, formulas, methods.
- G4 CIVIL ENGINEER'S, 368 pp: surveying, earthwork, concrete, sewerage, highways, others.
- G5 SHOP TABLES: more than 60 tables vital in shopwork.

CLIP COUPON HERE FOR ELECTRO \* STUDY AND "LITTLE GIANTS"



### INTERNATIONAL EDUCATIONAL SERVICES, INC.

Box 830, Scranton, Penna. 18515

Send me, postpaid, the ELECTRO \* STUDY units circled, at \$4.95 each (all 16—\$65 cash).

- |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| E1  | E2  | E3  | E4  | E5  | E6  |
| E7  | E8  | E9  | E10 | E11 | E12 |
| E13 | E14 | E15 | E16 |     |     |

Send me, postpaid, the "Little Giant" handbooks I have circled, at \$2 each (all five for \$9).

- |    |    |    |    |    |
|----|----|----|----|----|
| G1 | G2 | G3 | G4 | G5 |
|----|----|----|----|----|

I enclose check (money order) for \_\_\_\_\_ to cover full amount of items indicated.

Send indicated items C.O.D. I will pay postage.

Name \_\_\_\_\_ Age \_\_\_\_\_  
(Indicate Mr. Mrs. Miss.)

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

Occupation \_\_\_\_\_

15-day money-back guarantee if not satisfied



# ARROW®

## All-Purpose **STAPLE GUN TACKERS**

**HEAVY  
DUTY**



Model T-50  
ONLY  
**\$12.50**  
OTHER MODELS  
FROM \$4.95

TAKES 6 STAPLE  
SIZES: 1/4", 5/16",  
3/8", 1/2", 9/16"  
and CEILTILE

# SHOOT

## A STAPLE WHEREVER YOU'D DRIVE A NAIL!

### FASTER! CHEAPER! BETTER!

for 1001 Home Improvement Fastening Jobs:  
Ceiling Tile, Insulating, Upholstering, Screening, etc.



UPHOLSTERING



CEILING TILE



INSULATING

Available at hardware, lumber, building supply,  
stationery and other retail outlets.

**ARROW FASTENER CO., INC.**

One Junius Street • Brooklyn 12, N. Y.

## Science Worldwide

(Continued from page 12)

the same proportion of carbon 13 as the earth. That led astronomers to conclude that this and other comets were formed within the solar system and are composed of matter left over from the formation of the planets. (An older theory held that comets wandered in from outer space.)

✓ ✓ ✓  
**New weapon for forestry men.** It's a small, three-pound hatchet that's used to chemically thin out undesirable species of trees. The hatchet, according to an official of a tree growers' association, automatically meters and injects a specific amount of chemical when struck into the tree marked for removal. The tree dies within two to three weeks.

It's estimated that one man with the new hatchet can thin out around 2000 trees a day, which is four times better than the best of older methods.

✓ ✓ ✓  
**Bed can be bad for you**—that is, if you lie in it for six weeks without once getting to your feet. Your muscles become flabby and your heart and circulation show marked debilitation.

It's thought that long periods of weightlessness will have a similar physical effect on astronauts. But now, researchers at a California aircraft company say they've found a way to keep the horizontal human body toned up: whirl it in a centrifuge for 30 minutes four times a day.

Sounds as if the cure is almost as bad as the disease.

✓ ✓ ✓  
**Sensitive detectors** set up by the U.S. in Australia as part of a worldwide chain to check underground nuclear explosions behind the Iron Curtain have proved a help to Australian geologists. The devices have detected minor earth movements about which nothing had previously been known. Also, the center of Australia has been found to be so stable that it would be an ideal site for a special station to detect earth tremors.

✓ ✓ ✓  
**Pressures of 60,000 pounds per square inch**, greater than those found in ocean deeps, are created within a magnet recently built at the Massachusetts Institute of Technology. So much electrical current is driven through the copper coils that they would writhe and twist like snakes but for being confined by heavy steel. The magnet was designed for use in atomic research.

✓ ✓ ✓  
**Youngsters with acne wash their faces**  
(Please turn to page 16)

**POPULAR MECHANICS**

Материал, защищенный авторским правом



**FOR EXTRA INCOME,  
A JOB SKILL  
IN DEMAND,  
A BUSINESS OF YOUR  
OWN — OR TO SAVE  
MONEY ON YOUR OWN  
APPLIANCE REPAIRS**

**SEND FOR FREE BOOKS**

Appliance Division, Dept. 600-035, National Radio Institute  
3939 Wisconsin Avenue NW, Washington, D.C. 20016

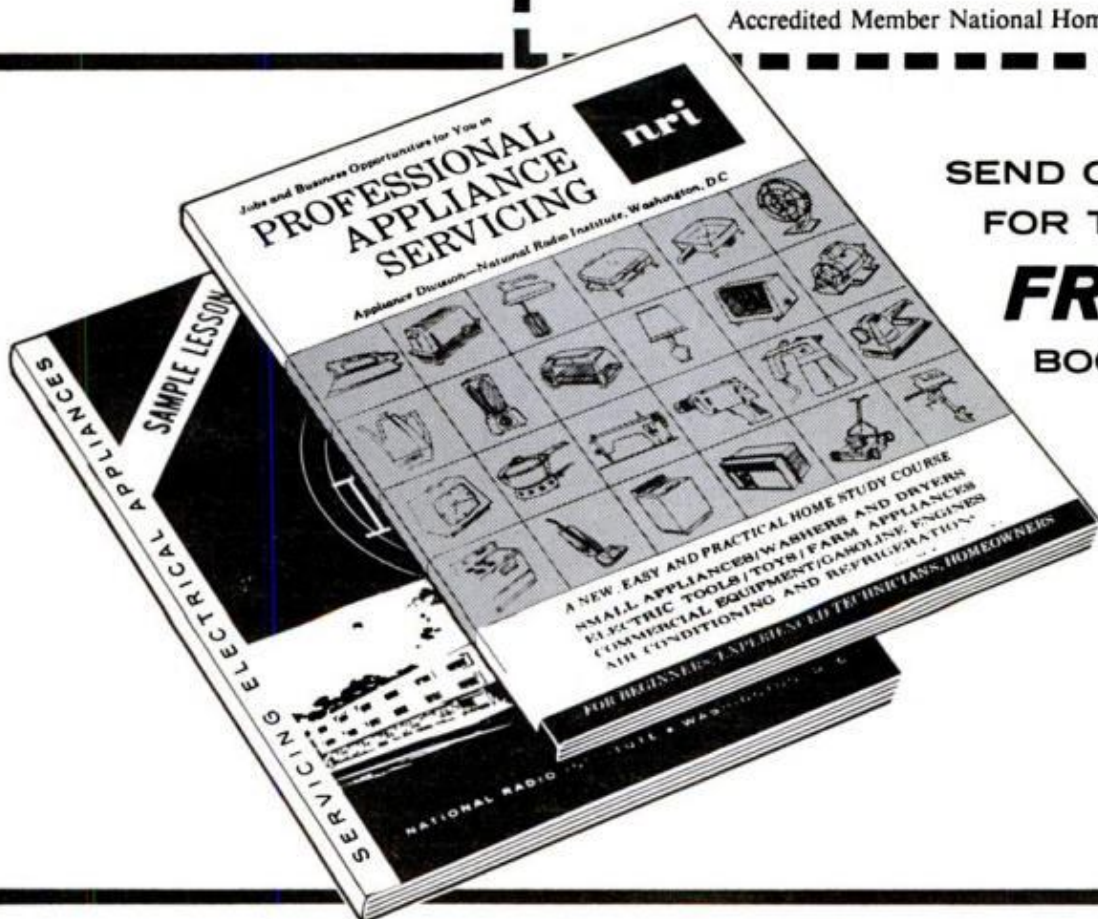
Send me the illustrated free book that tells about opportunities in Professional Appliance Servicing and details of NRI's new course—plus a sample lesson. I understand there is no obligation and no salesman will call.

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

Address \_\_\_\_\_

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

Accredited Member National Home Study Council



**SEND COUPON  
FOR THESE  
FREE  
BOOKS**

## **A new, short, easy course trains you at home**

Now you can prepare quickly to do professional appliance servicing at home in your spare time.

You are ready to start servicing appliances after only a few lessons. The entire course can be finished in months.

This is the *fastest* way to a new job skill or extra income or a business of your own. Wherever you live or want to live, you'll find a demand for top-notch appliance servicemen.

There are probably thousands of broken appliances right in your neighborhood. These can mean cash profits for you.

This new, low cost course covers—

- Small and large home appliances
- Farm and commercial equipment
- Portable electric tools
- Small gasoline engines

—there is even a special course arrangement to prepare you for the field of air conditioning and refrigeration.

Special equipment is included in your course at no extra cost.

Send coupon or write to Dept. 600-035



**APPLIANCE DIVISION, NATIONAL RADIO INSTITUTE**  
3939 Wisconsin Avenue NW, Washington, D.C. 20016





## The safest, toughest finishing sander made!

**NEW from Porter-Cable—these tools are:**

—Constructed of non-conductive CYCOLAC  
—double insulated against electrical shock to conform with all Electrical Safety Codes.

—New CYCOLAC housing guaranteed against breakage, forever!

—High-temperature insulated motor will not burn out from overload.

**Sander Model 65/2.3 Amp (.22 HP) Motor/4500 OPM**  
Also available— $\frac{1}{4}$ " Drill,  $\frac{3}{8}$ " Drill, Jig Saw and Kits

### THE NEW TOOLS ARE ROCKWELL-BUILT

Rockwell Manufacturing Company, Power Tool Div.  
502C N. Lexington Avenue, Pittsburgh, Pa. 15208

Send me  literature  dealer's name

Name \_\_\_\_\_

Address \_\_\_\_\_

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



**Rockwell**  
MANUFACTURING COMPANY

## Science Worldwide

(Continued from page 14)

too much, says the chief of dermatology at the University of Pennsylvania School of Medicine. It's bacteria, not dirt, that causes acne, the doctor points out, and all that washing may only serve to spread the bacteria.

✓ ✓ ✓  
**The Roughometer** is a device developed by engineers at Pennsylvania State University to determine if roads need repairing. A wheel trails behind an instrument-laden truck traveling at about 20 m.p.h. The wheel's bounces are transmitted to instruments that can measure the road's roughness.

✓ ✓ ✓  
**Ten new X-ray sources** in space were detected last year by specially equipped rockets, according to Dr. Herbert Friedman of the Naval Research Laboratory, Washington, D.C. At least two of the sources are thought to be neutron stars—the most "solid" objects discovered to date.

Neutron stars are thought to weigh many billions of tons per cubic inch. They are what's left over after a tremendous stellar explosion (supernova).

✓ ✓ ✓  
**If your boy or girl** reads "saw" as "was" or tries to read from right to left, then be suspicious of a language disability called dyslexia. So warns a Maryland psychologist who explains that the condition occurs in many children of normal and above-average intelligence.

There is no agreement on what gives rise to the condition. Many researchers believe it to be hereditary. Dyslexic children can be helped, says the psychologist, if the problem is recognized early enough.

✓ ✓ ✓  
**Human hair** may prove a good indicator of strontium 90 intake in the diet. That's the thinking of Public Health Service scientists as a result of analysis of hair samples taken from adults and children in Boston, New Orleans and Phoenix as part of a preliminary study.

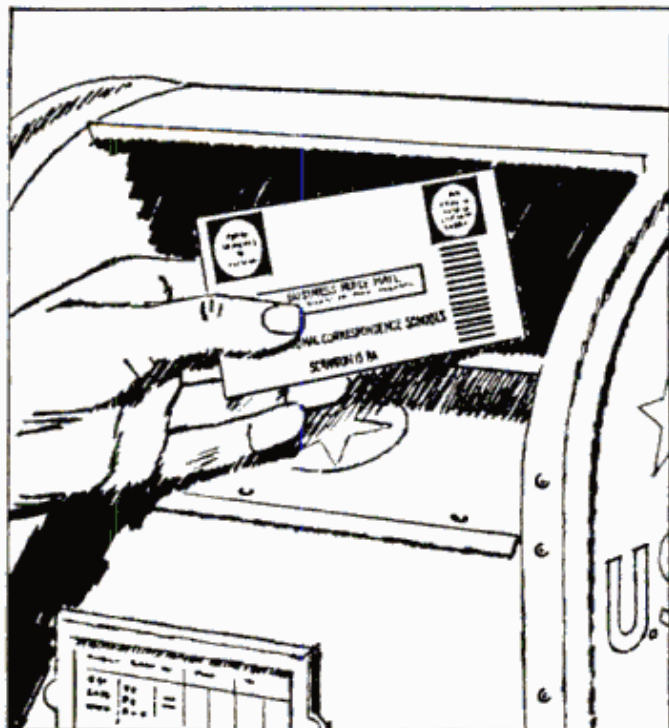
When taken into the body, strontium acts similarly to calcium, part of it being deposited in bones, teeth, nails and hair. In getting samples of women's hair, investigators chose only the "natural" variety—bleaches and dyes, they decided, could have an effect on chemical content.

*John F. Pearson*  
Science Editor

POPULAR MECHANICS

Материал, защищенный авторским правом





**Easy** If you're after the "good life" for yourself and your family, you'll never find an easier—or better—first step than filling in our card or coupon and sending for the free I.C.S. Success Kit.



**Tough** To be sure, you must be willing to devote some of your leisure time to mastering skills that will give you the power to demand more money and prestige in the business world.



**Worth it!** But we have testimonials from thousands of successful graduates with new jobs, higher salaries, happier families who are living proof that it's worth it!

INTERNATIONAL CORRESPONDENCE SCHOOLS



SCRANTON 15, PENNSYLVANIA

Accredited Member Home Study Council

Mark and mail our postcard or coupon today!

INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 458, Scranton, Pa. 18515  
 (In Canada: I. C. S. Canadian, Ltd., Montreal.  
 In Hawaii: P. O. Box 418, Honolulu)

Please rush me my FREE Success Kit containing 3 valuable booklets.

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

Street \_\_\_\_\_

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

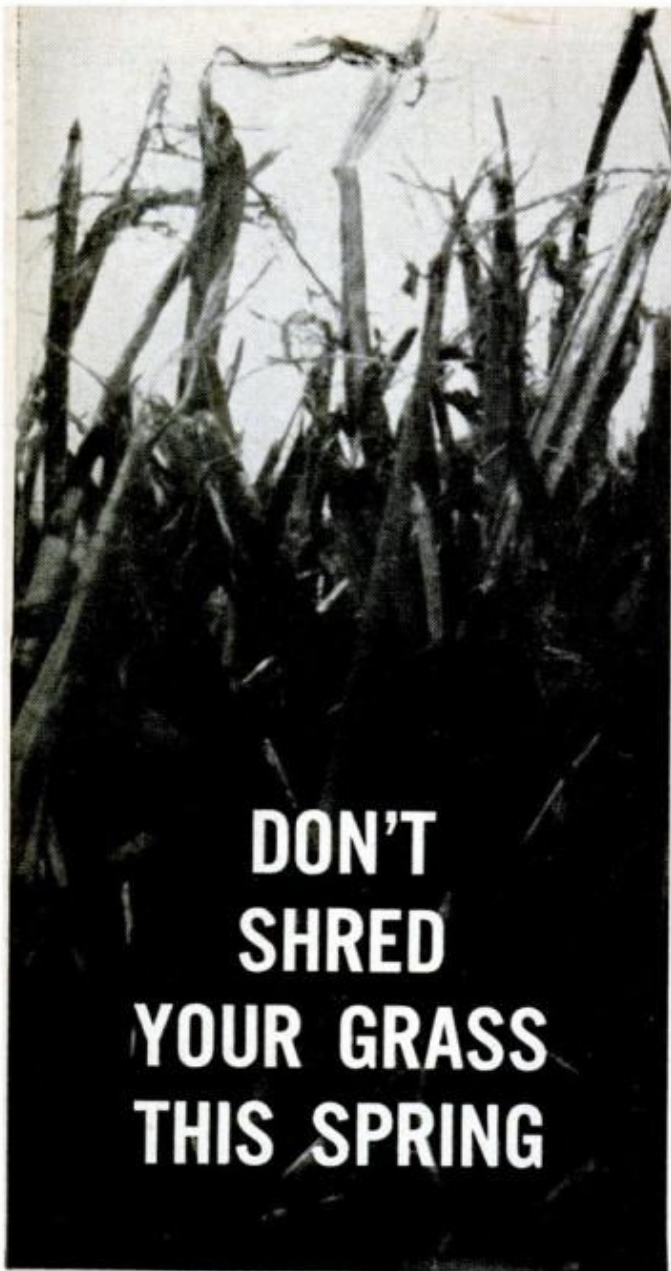
Field of interest \_\_\_\_\_

Employed by \_\_\_\_\_

Working hours \_\_\_\_\_ A.M. to \_\_\_\_\_ P.M.

Special low rates to members of U. S. Armed Forces!





**DON'T  
SHRED  
YOUR GRASS  
THIS SPRING**

**USE THIS NOW !**

Dull mower blades tear and shred your grass. But just 5 minutes with a Nicholson or Black Diamond Rotary Mower file now gets your blade ready to cut clean the first time out.

Sharpening your own blade takes far less time and effort than carting the mower to a shop. You're sure of a first-class job if you do it yourself. And the file saves its own cost the very first time you use it. Get one soon at your local hardware store.

Nicholson File Company, Providence, Rhode Island  
Files • Rotary Burs • Hacksaw and Band Saw Blades  
Hole Saws • Ground Flat Stock • Industrial Hammers



**NICHOLSON**



## Sidelights from the **SERVICES**

By William R. Kreh

An atomic gas gauge to tell how much fuel is left in an airplane's tanks is being tested by the Navy. The gauge, which uses atomic radiation, consists of a gamma-ray source and a detector mounted outside the tank. The amount of the low-strength gamma radiation passing through the fuel is measured by the detector. A compact electronics package converts this information to an electrical signal which is sent to a dial on the instrument panel.

The reading is not affected by sloshing of fuel caused by the maneuvering of the aircraft, as is the case with present gauges. The atomic gauge measures mass rather than level, and a recent test showed an average reading variation of only three percent, regardless of the plane's pitch, roll or acceleration.



A new electronic system which allows scientists to "fly" a complete antisubmarine warfare mission in a make-believe 250,000-square-mile ocean area has been installed at the Naval Air Development Center, Johnsville, Pa. The equipment includes a console and two display boards which allow the operator to monitor an entire ASW problem. One display board depicts an entire target area and the other gives an enlargement of a specific target. A submarine control station which can be tied in with the ASW system allows a second operator to make offensive and defensive maneuvers by one or more "submarines."



Future servicemen will have cat eyes when it comes to being able to see in the dark.

The Army is working on a variety of gadgets that intensify sky glow, starlight, or any other dim light, or use infrared rays. The Navy is going to test such equipment to improve night landings aboard aircraft carriers; the Marines will use it for combat much the same as the Army, and the Coast Guard is interested in it for improved night surveillance of coastal areas and harbors.

So far, the Army has come up with test models of an advanced sniperscope, infrared binoculars that mount on helmets, "black light" searchlights and other gadgets.

The new sniperscope, called the infra-

[\(Please turn to page 22\)](#)

POPULAR MECHANICS



**Hurricanes to order** are produced in this giant wind tunnel. Ford Motor Company engineers test cars under roughest conditions to help design top quality in every part.



**Ford Motor Company builds quality in—  
Quality Car Care keeps it in**



**Factory-trained mechanics** using special equipment like this oscilloscope engine analyzer and genuine parts make Quality Car Care at Ford and Lincoln-Mercury Dealers best for Ford-built cars.



**Your Ford-built car needs so little care**, be sure to give it the best. That means Quality Car Care, offered only by Ford and Lincoln-Mercury Dealers. They're the experts!

**Only at FORD and  
LINCOLN-MERCURY DEALERS**





## FEATURE FOR FEATURE



### ATLAS LATHES LEAD THE LOW-PRICE FIELD

For experimental, tool room, production or hobby work, Atlas precision lathes give you more important features that increase accuracy, speed production and cut costs than any other lathe in the low-price field.

#### Atlas 12" LATHE

A big-capacity lathe with these important features standard equipment: Timken tapered roller bearings, 16 speeds, reversible power cross and longitudinal feeds, wide thread cutting range, V-belt drive. Available in bench models, and in underneath drive models with pedestal base. Investigate before you buy any lathe.

PRICES START AT \$485 F.O.B. FACTORY



#### Atlas 6" LATHE

For a small investment you can own a back-geared, screw-cutting lathe that, within its capacity, will do everything a high-priced lathe will do . . . and do it fast, efficiently and accurately. It is Timken bearing equipped for precision jobs. Has precision ground bed, 16 spindle speeds, complete V-belt drive, power longitudinal feeds. An exceptional value.

PRICES START AT \$197.50  
F.O.B. FACTORY  
Write for CATALOG

Atlas PRESS CO.

3-24 NORTH PITCHER ST., KALAMAZOO, MICH.



## Sidelights from the Services

(Continued from page 20)

red weapon sight, can be mounted on anything from a carbine to an M-60 machine-gun or 106-mm recoilless rifle. The old sniper scope, now in use, is limited to mounting on carbines. Helmet-mounted infrared binoculars now being developed will free a soldier's hands for driving at night, construction work, etc. Another new system, called the image-intensifier device, gathers natural light reflected from the target and intensifies it 80,000 times to present a visible image. Range is about 1000 yards. It will eventually be furnished to troops in the form of eyeglasses.



Giant robots may be nearer reality. A current Air Force project is aimed at determining if one such monster—weighing 11½ tons, with two 19-foot-long arms and "eyes"—can satisfactorily perform recovery and salvage work in radiation-contaminated areas that are unsafe for humans.

The robot is a vehicle that can be radio-controlled from a remote van. Four transistorized television cameras serve as the eyes. When fully extended to 19 feet, the arms, which are designed to simulate the movements of human arms, can lift 600 pounds each. The hands have a grip force of 3000 pounds—enough to crush a diamond—yet are dexterous enough to turn bolts and operate a cutting torch and a variety of power tools.

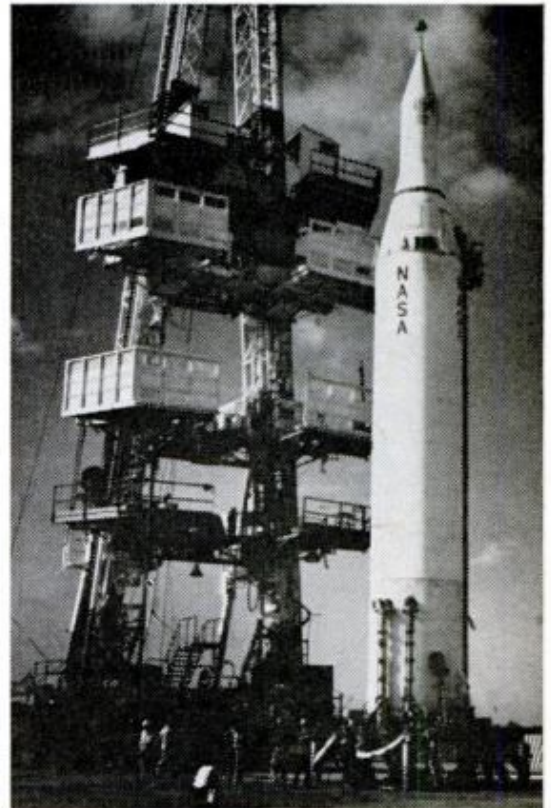
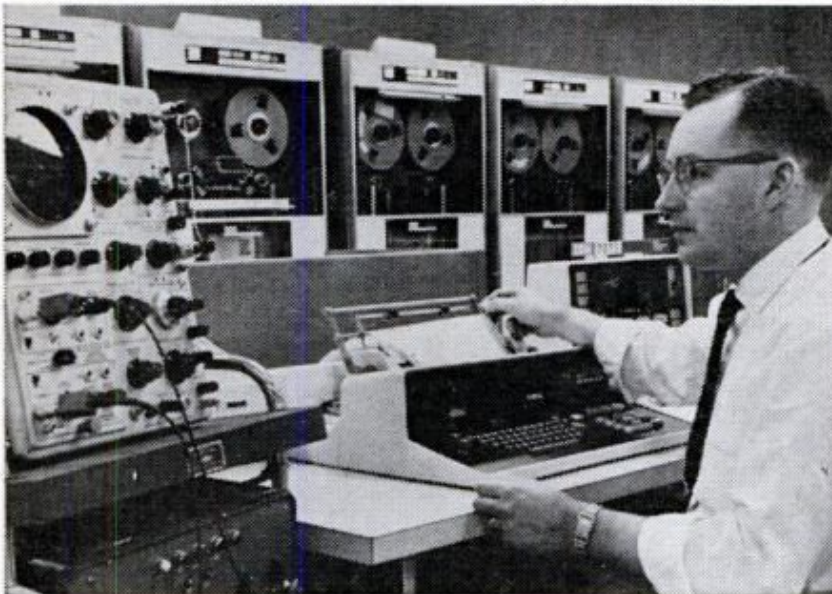
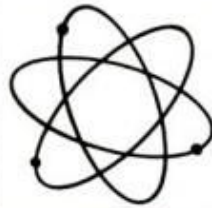
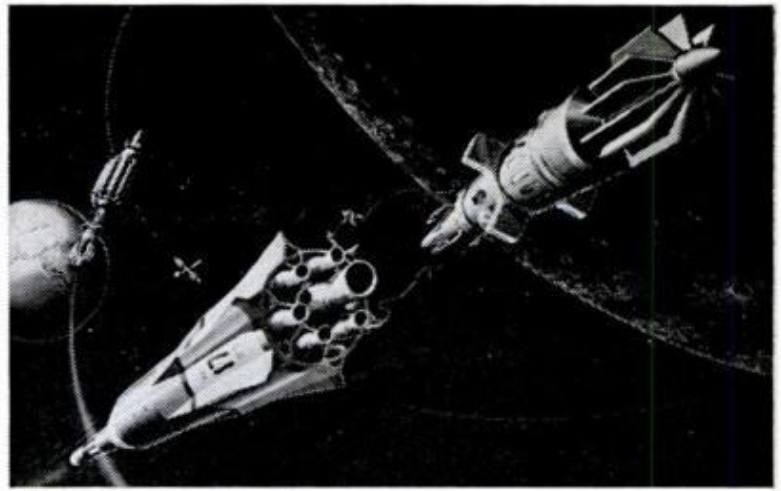
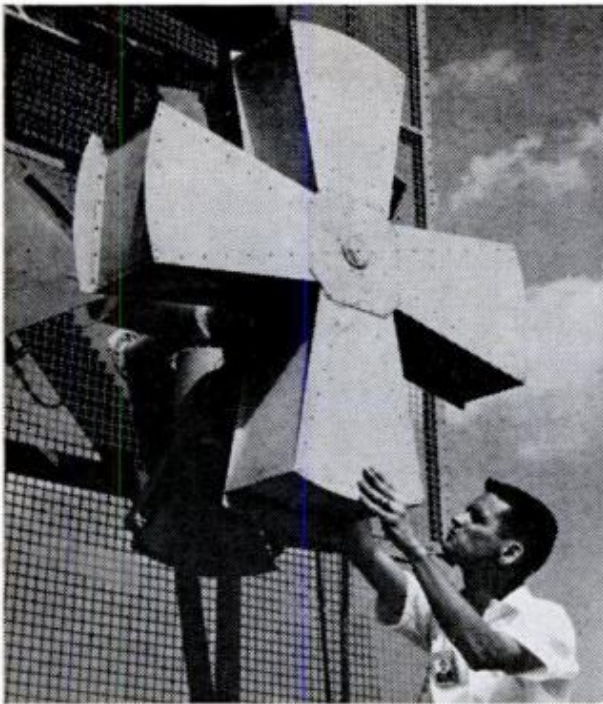
The operator moves the arms by manipulating control sticks which transmit radio signals to the vehicle. He can extend, retract, twist and turn the arms and operate the hands. He can also start, stop, turn and reverse the vehicle. Movements are so perfected, and depth perception is so good, that the operator—located in his van a mile away—can make the robot pick up a pencil.



Junk in the heavens is getting so common nowadays that the Air Force has organized a system to keep track of it and take note of its fall, or "burn in" as it is called. "Junk" means spent satellites and, often, parts of the rockets that drove them into orbit. Frequently the Air Force tracking service can predict where and when the burn-in will occur and alert one of the lookouts in its world-wide net to watch for it.

More than 260 artificial satellites have been launched. More than 100 are still up. From 30 to 60 more go up each year, most of them practically unnoticed. How soon we cease to marvel at the miraculous!





**High pay...exciting, steady work...the great feeling of doing something important. It's all yours with a job in electronics.**

Look around. There's never been anything to match the career opportunities you'll find in electronics. In government, in industry . . . thousands of good, high-paying jobs —just waiting for the right men to fill them. AND YOU CAN HAVE ONE OF THESE JOBS. Regardless of what you're doing today . . . a Cleveland Institute Training Program will give you the necessary electronics skills and knowledge. You'll learn all about Transistors, Communications, Aerospace Electronics. What's more, you'll learn quickly and economically . . . at home, in your spare time. Why wait? There will never be a better time to get started. Send the coupon for complete details.

There's no cost . . . no obligation. Do it now.

**Cleveland Institute of Electronics**

1776 E. 17th St., Dept. PM-4B, Cleveland, Ohio 44114



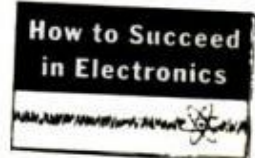
Accredited Member

**Mail Coupon TODAY For FREE Catalog**

**Cleveland Institute of Electronics**

1776 E. 17th St., Dept. PM-4B  
Cleveland, Ohio 44114

Please send me your FREE catalog, "How to Succeed in Electronics". I am over 17 years of age and interested in (check one):



- |   |  |
|---|--|
| <input type="checkbox"/> Electronics Technology | <input type="checkbox"/> First Class FCC License   |
| <input type="checkbox"/> Industrial Electronics | <input type="checkbox"/> Electronic Communications |
| <input type="checkbox"/> Broadcast Engineering  | <input type="checkbox"/> Advanced Engineering      |

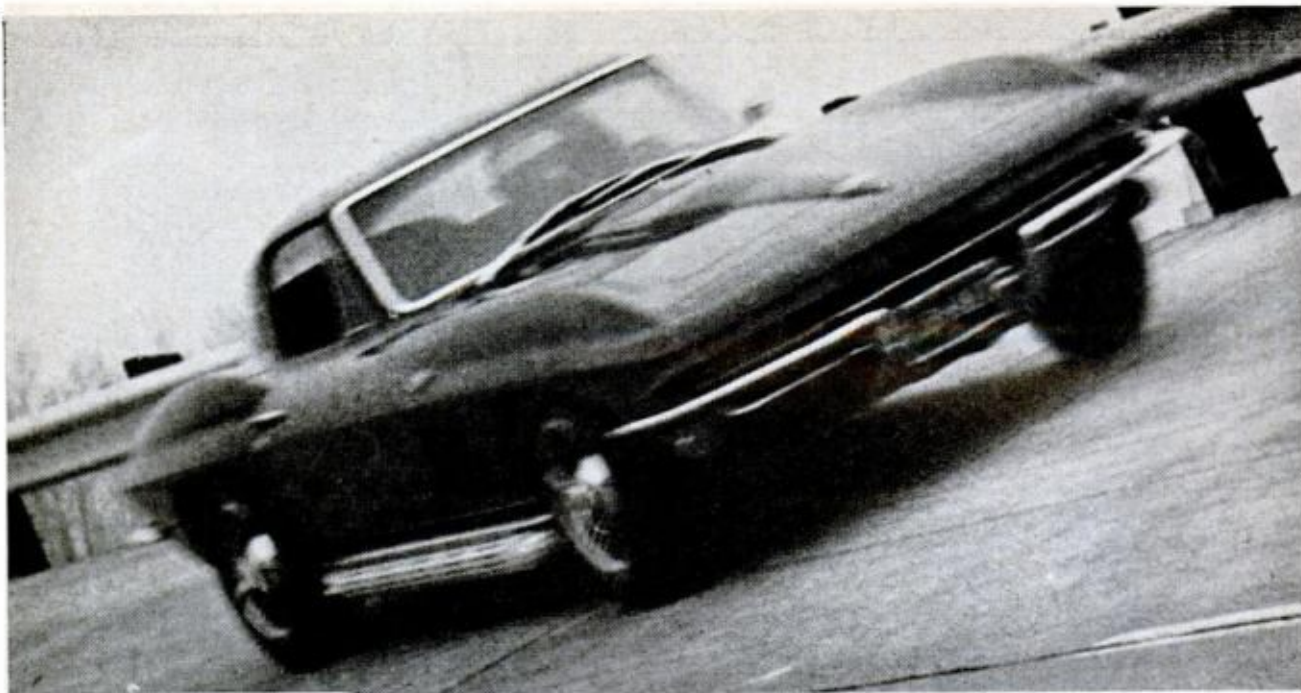
Your present occupation \_\_\_\_\_

Name \_\_\_\_\_ Age \_\_\_\_\_  
(please print)

Address \_\_\_\_\_ County \_\_\_\_\_

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





**NIMBLE HANDLING** belies this heavyweight's curb poundage—about 3250. It hardly leans on corners, and independent suspension sticks to rough roads

## *Spotlight on the New* **425-HP Corvette**

*A quick tromp on the loud pedal whisks you over any legal speed limit before you know it*

**By Alex Markovich**

**T**HE SPEEDOMETER NEEDLE was hovering at 140 when Zora Arkus-Duntov took his hands off the wheel. The Corvette stayed straight on course. "You see?" Duntov said. "Perfectly stable."

We were approaching a tight banked turn on the GM test track. Duntov rubbed off some speed with the brakes, then smoothly double-clutched into third and then second. Coming out of the corner, he punched the throttle. The exhaust blared

like a jackhammer as the speedo needle swept past the century mark again.

"This optional side exhaust is much louder than the standard type," Duntov said. "It's not too bad under steady throttle, but very loud when you accelerate. You might say it's for feather-footed extroverts."

This was my first introduction to the "1965½" Corvette with the new 396-inch,

[\(Please turn to page 26\)](#)

**EVEN WITH SLIPPING** clutch, wheel spin was most limiting factor in standing-start runs. Playful owners should prepare for frequent replacement of rear tires





SWORN STATEMENT FROM CHAS. LEMMING:

"After starting my own business I've averaged



—most of it clear profit!"

Here's your chance to start a money-making year 'round business of your own and make the success you've dreamed about

**I**N CITY of less than 50,000, Mr. Lemming started his own business after filling in coupon like one below. He averaged \$100 a day during first year, some days \$200. F. E. Doran grossed \$1050 in single month. Geo. Held grossed \$300 in one week.

How much you earn depends largely on you. No special skill, no large investment required for our electric upholstery cleaning machine. Start spare time until full time justified. Hire helpers as needed.

**NO SHOP NECESSARY** • You clean upholstered furniture on customers' premises — homes, hotels, motels, etc. Auto upholstery, too. No hauling; operate from your home. Watch business grow as satisfied customers tell friends. Supplies cost little, profits high. We will help you to start and work with you for your success.

**OURS IS NOT A LEASE ARRANGEMENT**

You are free to operate in an independent manner. You sign no contract. You own the detergent outright and are always *your own boss*...and every dollar you take in is yours to keep. You pay no fees, or dues, or royalties to anyone, and enough supplies come with it

SEND COUPON TODAY

**VON SCHRADER MFG. CO.**



to return far more than your investment. Many earn the cost of the detergent in a week or two. It costs nothing to get details...write **TODAY.**

**READ WHAT OUR ASSOCIATES SAY...**

**W. R. FULLER, a Michigan Associate** — "The main reason I decided on your offer was because I could purchase your equipment outright without any strings attached. That way I own my own business and work for myself, and I don't have to send you any part of my earnings. And I still would receive all of your advertising materials and promotional ideas for getting business. These have been of tremendous help in making me successful so quickly."

**BILL ROCKETT, a Florida Associate** — "Your Upholstery Deterger does a better job than any other method on the market. I recently got contracts from two large motels that had been cleaned in the past by one of my competitors with a different type method."  
**Mr. C. F. POTTS, a Texas Associate** — "We live in a town of less than 20,000, but our upholstery cleaning business is going along fine. Our best month was \$1,329.49—done with 5 lbs. of your detergent."

**VON SCHRADER MFG. CO. 310 "D" PL., Racine, Wisconsin**

Send at once (no obligation) your **FREE** booklet containing information about your **ELECTRIC UPHOLSTERY DETERGER** and how I can start *my own* permanent, profitable business.

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



# FREE!



## Trial lesson in **DRAFTING & DESIGN**

### LEARN AT HOME IN SPARE TIME

Check the want ads in any newspaper—SEE the big-pay opportunities open to you as a draftsman. What's more, you can learn this well-paid, prestige profession at home—quickly, easily! No special talent needed! Get complete, step-by-step Chicago Tech lessons in the mail, spend a few pleasant hours studying each week. In a short time you'll be a well-trained draftsman, ready to take your pick of many good jobs. Act now!

### FREE INFORMATION—MAIL COUPON TODAY!

Get FREE TRIAL LESSON plus information about C.T.C.'s practical training. Learn what successful Chicago Tech graduates say about high pay and opportunities in drafting. No charge, or obligation.

Est. 1904 Accredited National Home Study Council

## CHICAGO TECHNICAL COLLEGE

C-203 Tech Bldg., 2000 So. Michigan Ave.  
Chicago 16, Illinois

Mail me FREE Lesson with information about big opportunities in DRAFTING.

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

Address.....

City..... Zone..... State.....

## 1964 U.S. MINT SET

with the John F. Kennedy Half Dollar in attractive, sparkling Lucite Display Holder. Makes a DIFFERENT and VALUABLE gift for birthdays, graduation, confirmations, anniversaries, and for special occasions.

**\$295**

Ppd.

10 Sets \$27.50  
25 Sets 65.00  
50 Sets 122.50  
100 Sets 235.00



Brilliant uncirculated 1964-P Mint Set of coins displayed and contained in permanent, lifetime holder. Value has been increasing steadily. Start investing now. Sold with money back guarantee.

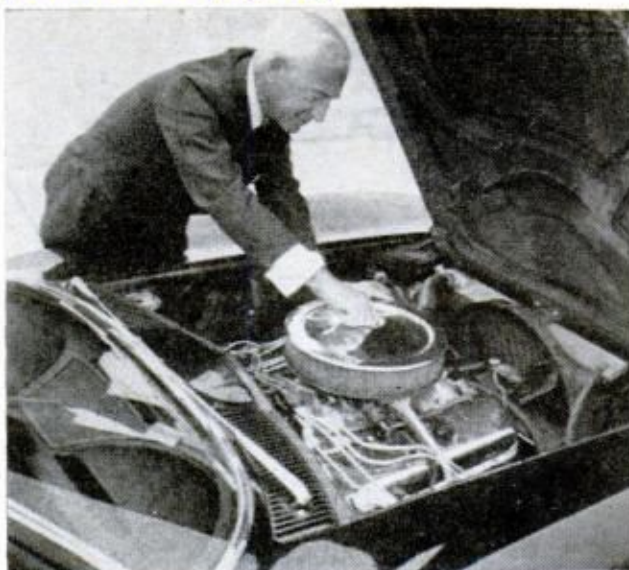
Send check or money order

1963 mint set.....\$4.00 1962 mint set.....\$4.50  
1961 mint set.....\$5.25 1960 mint set.....\$5.85  
1959 mint set.....\$6.25 1958 mint set.....\$9.00  
1957 mint set.....\$10.50

**SUPERIOR COIN CO. (Dept. PM-1)**  
34 E. 12th St., New York 3, N. Y. GR 7-5780

## Spotlight on the New Corvette

(Continued from page 24)



**NEW ENGINE IS CHECKED OUT** by Duntov. Components are accessible except for battery, hidden by body braces. The big radiator leans backward sharply

425-hp engine. Duntov, a charming, urbane man born in Belgium of Russian parents, can best be described as "Mr. Corvette." He has contributed more to the design of Corvettes over the past dozen years than any other engineer.

After a few fast laps, Duntov turned the car over to me. The Chevrolet people were understandably reluctant to let me do formal acceleration and mileage tests with a fifth wheel and flow meter. The car was a prototype, with a few problems still to be worked out before production (which should be starting by the time you read this). For example, just before I arrived, a new, more gradual clutch had been installed experimentally.

After Duntov's demonstration, the clutch was slipping badly and trailing smoke. Within a few minutes it recovered partially, but still wasn't right. In spite of this, I was able to crank out 0-60 (on the uncorrected speedometer) in 5.8 seconds, while 40-60 took 2.0 seconds and 50-70 just 2.2. I made all runs in first gear only—in which 7000 rpm, the tach red line, corresponds to an indicated 70 mph.

The big limiting factor in the 0-60 time was wheel spin. Also, the rear end was running streetable 3.36 gears. With big, slick tires and lower gearing, it should be possible to do 0-60 in four seconds. Just for fun, I tried 40-60 in fourth gear; surprisingly, it took only 4.6 seconds.

Squeezing 425 horses from 396 inches—without fuel injection or supercharging—takes sophisticated engine design. Bore and stroke are 4.094 and 3.76 inches.

(Please turn to page 28)



# 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 6½"**  
**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-398, 911 Faile St., Bronx, N.Y. 10474

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.



# Big Profits in UPHOLSTERY

## Get Your Share... FAST!

**EARN BIG MONEY** **3** **NEW EASY WAYS**

1. Be your own boss, make up to 85% profit on every job.
2. Start earning right away while learning at home in sparetime — keep furniture you build, or sell for hundreds of dollars.
3. Today's home and office upholstery, re-upholstery, slipcover boom make it easy to say "goodbye" to layoffs and take your pick of steady big-pay jobs.

### LEARNING EASY AS A B C

Your own two hands are all you need. UTS experts and simple instructions do the rest. You get all tools, new wooden frames, materials, fabrics, business tips, wholesale privileges, decorating magic at no extra charge whatsoever! LEARN FAST, EARN FAST. Thousands we've trained now doing it. Find out how — FREE.

MAIL COUPON TODAY

**FREE**  
Deluxe Illustrated Book and **FREE**

Sample Lesson Pages Give Proof — Show How



Tools-Equip. To Keep or SELL

UPHOLSTERY TRADES SCHOOL, Dept. 510-035  
(Division of Technical Home Study Schools)  
Little Falls, New Jersey  
Please send me FREE book, "Your New Way to a Successful Career," and FREE sample lesson pages. No obligation — no salesman will call.

Established 1939

Name .....

(Please Print Plainly)

Address .....

City ..... Zone ..... State .....

## Get Your "LITTLE GIANT" Handbooks



These five encyclopedias of practical facts are hard-bound, pocket-sized, fully indexed and loaded with diagrams, tables and "how-to" text useful to hobbyist and

professional. Send check or money order NOW! (C.O.D. orders also accepted.) **Electrical Handbook**, 384 pp—\$2. **Building Trades**, 371 pp—\$2. **Mechanic's**, 383 pp—\$2. **Civil Engineer's**, 368 pp—\$2. **Shop Tables**, over 60 tables—\$2. 15-day money-back guarantee if not satisfied.



INTERNATIONAL EDUCATIONAL SERVICES

Box 818, Scranton, Penna. 18515

## Start Your Own Profitable Rug Cleaning Service



Here's ideal way to start in business for yourself without a big investment. You don't even need a shop or office. Work out of your own home, use your present car. You clean rugs new professional way in homes and offices. Start in sparetime — and graduate to full time.

### FREE Booklet Tells How

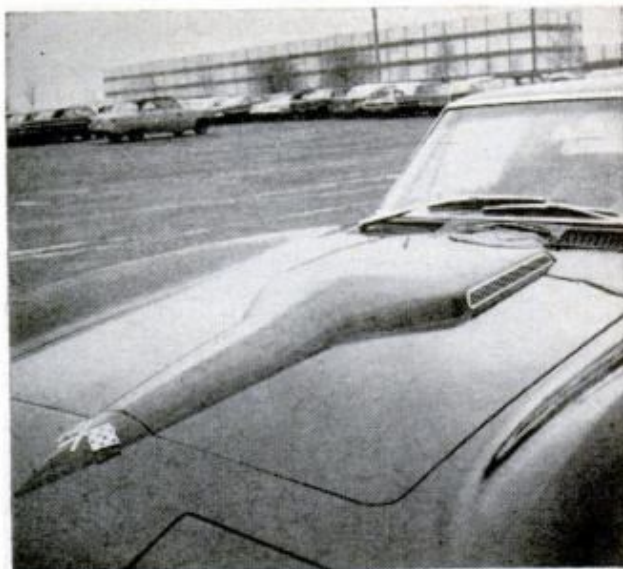
Send for free "Business of Your Own" booklet! It tells the complete story about this profitable service business—lets you decide for yourself. Write today! No salesman will call.

**Foley Care**, Dept. 302-5

3333 Fifth St. N.E., Minneapolis, Minn. 55418

## Spotlight on the New Corvette

(Continued from page 26)



"IT'S A TONGUE-IN-CHEEK SCOOP," says Duntov. Louvers are real, but baffled to keep ignition dry. Hood sprouted phallic bulge to clear air cleaner

Though about the same weight as the now-defunct Chev 409 incher, the new engine most resembles the Chev 427 "mystery engine" that appeared in a handful of stock-car races some months ago and then vanished. The intake valves are angled toward the ports, which provides straight, unrestricted passages. And unlike the 409, the 396's wedge-shaped combustion chambers are in the heads, not in the block. A huge four-barrel carb provides the mixture.

The five-main-bearing bottom end is unusually beefy—which leads to speculation that the 396 may soon acquire additional cubes. Duntov admitted that the 425-hp. version could be bored to 427 inches; there's also a 325-hp. version of the 396, available along with the 425-hp. engine in full-size Chevrolets, but it has a different block that won't take as large an overbore.

Dropping over 100 extra pounds under the hood required changes in suspension. Roll stiffness was increased with a bigger front stabilizer and an additional rear stabilizer. This successfully eliminates a nose-heavy feel. Though the Corvette understeers slightly, those gobs of power make it easy to break loose the rear end by blipping the throttle. I tried yanking the wheel in either direction and letting go while doing about 70; the car straightened itself every time.

For durability, heavy-duty yokes, trunnions, driveshaft and wheel spindles are used. "People who want to drop the new engine in an earlier Corvette should be

(Please turn to page 30)



**NOW!**



**YOU CAN CASH IN ON A VIRTUALLY  
UNTAPPED MARKET...WITH THESE  
ALMOST UNIVERSALLY NEEDED**

**"LIFETIME" CONCRETE INCINERATORS**

**NO PREVIOUS  
EXPERIENCE  
NECESSARY**

**MAKE IT YOURSELF WITH 88¢ WORTH  
OF SAND AND CEMENT**

**SELL IT FOR  
\$20<sup>00</sup>**



**A VAST EVER-GROWING MARKET**

Nearly 80% of all homes have inadequate, unsatisfactory or unsafe incineration facilities. Experience shows that even steel incinerators are prone to rusting out and burning out. This is your market . . . a huge one that keeps growing year after year as the population explodes . . . and more and more new homes continue to mushroom in all directions.

**A SUPERIOR "LIFETIME" INCINERATOR—VOLUME PRICED**

Imagine . . . for only 88¢ worth of sand and cement, you can manufacture "LIFETIME" CONCRETE INCINERATORS that are rust-proof, fireproof, weatherproof, frost-resistant . . . almost indestructible . . . AND SELL THEM FOR \$20.00 each . . . and more . . . by far the best value of its kind.

**SELL THRU RETAIL STORES, TOO**

TOR franchisees are manufacturing "LIFETIME" concrete incinerators in large quantities for large department stores, hardware stores, mail order houses and garden supply stores, with tremendous success.

**NO SPECIAL EXPERIENCE OR PLANT**

Just follow the simple instructions . . . all needed equipment, welded steel, heavy duty lifetime molds, literature and other selling aids supplied. Set up shop in your own basement, backyard or garage.

**FILL IN AND MAIL  
COUPON AT ONCE  
...NO OBLIGATION!**

**SPARE OR FULL TIME MONEY-MAKING**

Start small in your spare time to supplement your present income . . . build it up into a full time business that can earn you greater financial security than you ever dared hope for.

**ACT NOW FOR EXCLUSIVE  
PROTECTED FRANCHISE**

No competition . . . many choice exclusive territories still available. Write immediately for full details. Help yourself to a greater measure of financial independence.

**FULL INFORMATION WILL BE RUSHED TO YOU.**

Dept. 34-1  
T. C. TOR  
318 Rancocas Avenue  
Delanco, New Jersey

Gentlemen:

Please rush full information about your Concrete Incinerator Protected Franchise Offer . . .

Name \_\_\_\_\_

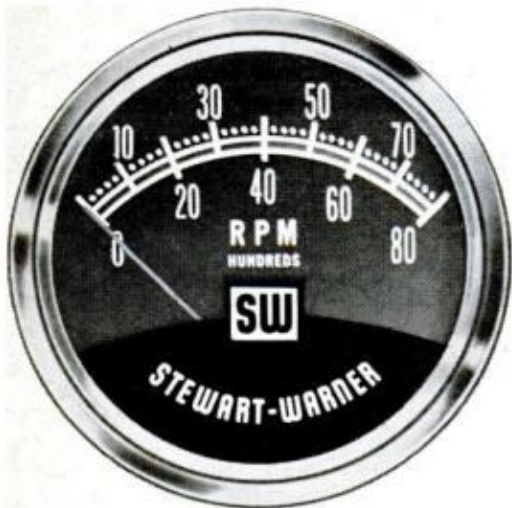
Address \_\_\_\_\_

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



**You've cleaned your carburetor, adjusted your spark gap and checked your timing.**

**Now let's get serious about instrumentation.**



Your engine comes out of the shop in top tune—but how can you keep it that way?

Your answer is Stewart-Warner instruments, the fast, accurate way to keep tab on engine efficiency. Stewart-Warner has electric and mechanical tachometers; speedometers; pressure, temperature and vacuum gauges; ammeters; voltmeters. Whatever your instrument need, Stewart-Warner can supply it. And you can choose from handsome S-W face dial designs like the ones below.

See your Stewart-Warner dealer. He's serious about instrumentation. No wonder. He has the most complete line in America.



**STEWART-WARNER**   
**INSTRUMENT** DIVISION

Dept. C-35, 1840 Diversey Pkwy., Chicago, Illinois 60614

## Spotlight on the New Corvette

(Continued from page 28)

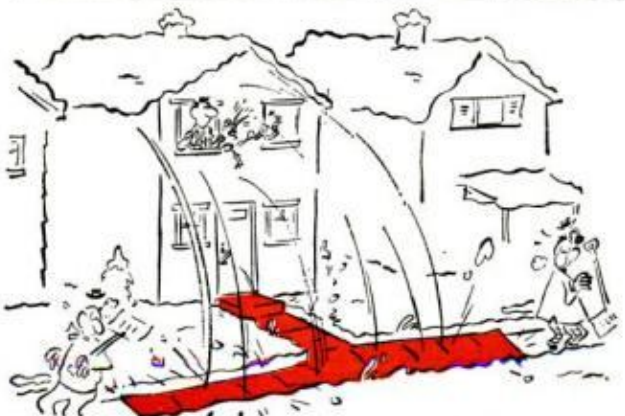
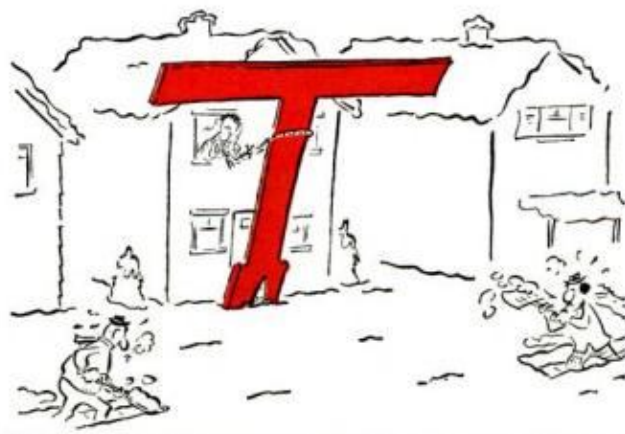
sure also to install these heavy-duty parts," Duntov warned. "The 396 bolts right into a 1965 Corvette, but earlier models have a different crossmember, which makes the conversion much harder."

The car is as civilized and comfortable as it is exciting. Ride is soft for a sports car, and the relatively long wheel-base eliminates pitching. The doors cut into the roof, making exit and entry easier. The steering column adjusts telescopically. Seats are comfortable, but offer hardly any lateral support—a curious omission in a car of this type.

Instrumentation is among the best I've seen. The tach and speedo are large and round, and there's a full set of secondary gages. Legroom is adequate, but rear visibility is bad. Wonder why Chevrolet doesn't reshape that rear window?

The four-wheel disc brakes are powerful. My test car didn't have power assist, but very little pedal pressure was needed; in fact, it was all too easy to lock the wheels. The close-ratio four-speed gearbox is one of the best. Synchronization is crunchproof, and the gate short and precise.

The old 327-inch, 375-hp Corvette was one of the fastest production cars in the world. The new one is even faster, and far more tractable. ★★★

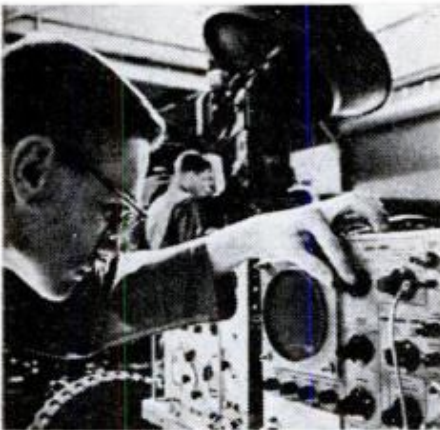




# Share great moments with other great guys

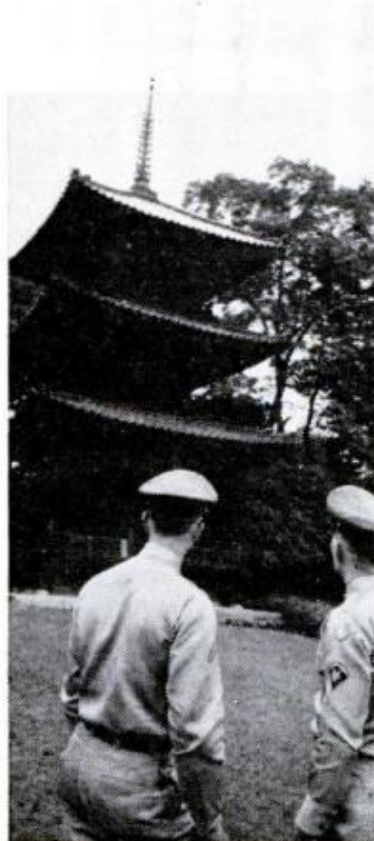


**Get a new set of wheels in the Army.** Ten feet across or scooter size, there are more wheels in the Army than in any other organization in the Free World. Some are an adventure to drive, others take you to adventure—and, if you want, you can learn what makes each one roll.



**Experts are made, not born.** And the Army makes the best. Army schools teach hundreds of different specialties. If you qualify, you can sign up for the one you want before you enlist.

**It's different from your home town.** And who wouldn't expect it to be? After all, one of the reasons you join the Army is to see the world of differences.



**You're not alone in today's action Army.** Every experience you have is shared with other great guys. Regular guys who are learning, earning, growing, going, serving our Country, developing themselves. Just as you are.

But the wonder of these experiences is yours alone. No one can tell you how great it feels to master a difficult specialty like computer programming, missile repair, electronics, or construction. No one can live the excitement of landing in a foreign country for you. No one can know what *your* great moments in the Army will be. But you can be sure your life in today's Army will be full of great moments. Enough to add up to a great life.

Talk to your local Army recruiter. Let him tell you what the Army can do for you... and what you can do for the Army. Let him help you to that great moment, the moment you realize that...if you're good enough to get in, a proud future can be yours in today's action

# Army

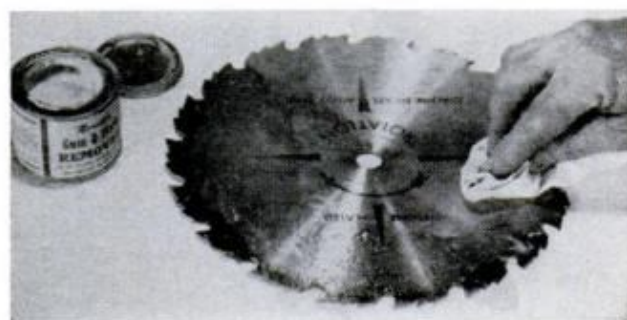
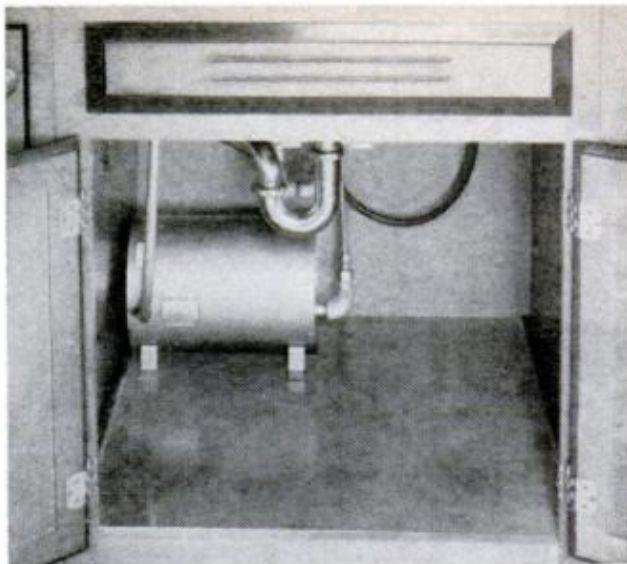


## New on the Market

**Instant Hot Water:** With the electric Tap Temp connected to a hot-water faucet, there's no waiting for cold water to drain from the line. It heats and stores 1 gal. of hot water, delivers it when you turn on the faucet. House water heater then takes over. Also used as primary water heater in cabins, boats, apartments. Sells for under \$25. Manufactured by Hoosier Ind., Inc., 1209 Washington St., LaPorte, Ind.

**Stop Gumming Up the Works:** A newly marketed paste-like compound is said to remove gum and pitch from power saw blades, sanding discs, abrasive belts. To use it on saw blades, you apply the compound, rub in with a cloth, then wipe clean. On sanding discs and belts you work the compound in with a stiff brush. Retail price is \$1.25 for a 4-oz. can. From L. D. Newell, Box 455, Desert Center, Calif.

**Masonry Cleaner,** called Sonokleen, comes in powder form. Mix it with water and apply to any brick surface with a bristle brush and, according to the manufacturer, off come any accumulated dust, dirt or salt deposits. Retail for \$1 per 12-oz. box. From Sonneborn Building Prods., 1700 South Mt. Prospect Rd., Des Plaines, Ill.



**New Panel Adhesive,** which the manufacturer claims is 50 percent faster than nailing, gives you plenty of time to align panels. With a panel in place and nailed at top, you insert a block at the base to let the adhesive set partially. After 8 to 10 minutes you push panel back into place. \$1.89 U.S. Plywood, 777 3rd Ave., N.Y., N.Y.





**--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 MILLION 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. No obligation. No salesman will call.



**Mail Now for FREE BOOK**

M. O. Wilson, Dept. PM-3

Universal Schools,  
6801 Hillcrest, Dallas 5, Texas

Please rush me your FREE BOOK on Big Money in The Booming Accident Investigation Field. I will not be under the slightest obligation — and no salesman will call upon me.

Name .....

Address .....

City .....

Zone .....

State .....



## WANT A PART-TIME BUSINESS OF YOUR OWN?

Our Grav-O-Gram will start you on your way to your own part-time or full time business.

It is possible to average \$100 per day with our new Grav-O-Gram by engraving nameplates for institutions, schools, markets, bazaars, conventions, fairs, etc.

If you need extra cash, or want to start your own business but don't feel you can afford to give up your job until you have "proved" your endeavor, one small investment of **\$84.95** is all you need to start a lifetime of profit.

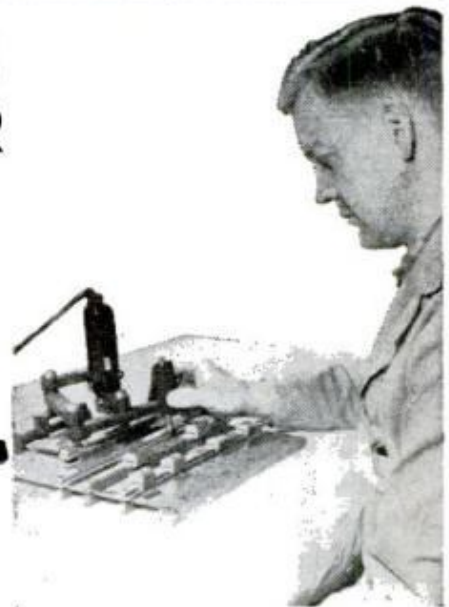


Powered by the famous Dremel MOTO-TOOL.

For a bright future with a good income from your own business, mail the attached coupon for further information, or enclose check or money order and machine and supplies will be shipped promptly.



215 PROSPECT AVENUE, P.O. BOX 217,  
WALTON, NEW YORK 13856



Grav-O-Gram comes equipped with all components needed to start in business immediately. In one day you should be able to reap the return of your investment, plus a profit, at conventions and/or fairs. Complete and simple operating instructions included with your purchase.

SCOTT MACHINE DEVELOPMENT COMPANY

P.O. Box 217, Walton, New York 13856

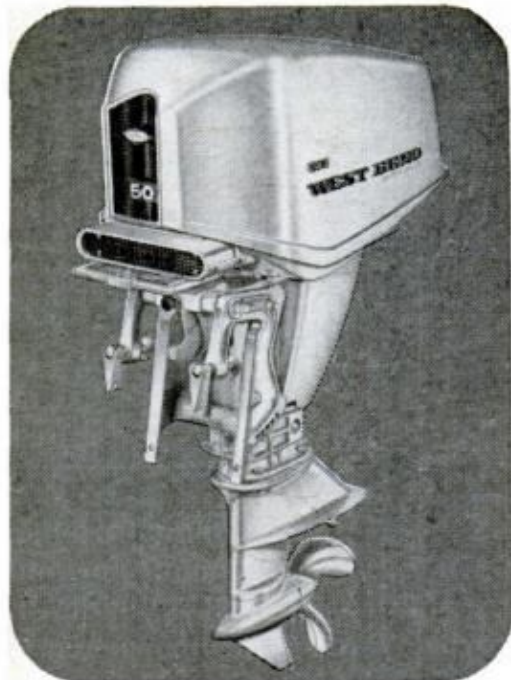
Without obligation on my part, please send

Further information.

Enclosed is check or money order in amount of \$84.95 for the Grav-O-Gram.



# WHAT HAS 50 HORSES AND HUMS?



## THE WEST BEND "500" SUPER SILENT OUTBOARD

You won't believe your ears! The "500" gives you all the brute strength of 50 horses with just a murmur of engine sound. (West Bend's Acoustical Leg Chamber turns the volume down.) Yet you get robust power for water skiing, pleasure boating, or fishing with a boatload of companions. Amaze yourself — see your dealer (listed in the Yellow Pages) or write for color brochure showing all West Bends, 3½ to 80 h.p.—it's free.

Total Quality



DEPT. 1443, ENGINE DIVISION  
THE WEST BEND COMPANY  
Hartford, Wisconsin

Sidelights on

AVIATION

The *PM* glider still stirs the imagination. The original story, with plans, appeared in the April, 1909, issue. In January we reported that a replica had been added to the collection of the Smithsonian Institution, creating a flood of mail.

More than a half century after it first appeared, men still want to build it and ask us to reprint the story. It's unlikely that we will, since the design—while great in its day, and wildly popular—is quite primitive, with none of the advantages of modern techniques.

However, we have been sending copies of the original article to those who write, with three bits of advice:

The design is crude and, since takeoffs and landings are made on the pilot's own legs, injuries are possible.

There were no regulations governing the building and flying of aircraft in 1909. There are today, and it's the responsibility of the builder to contact the Federal Aviation Agency when building aircraft. FAA inspectors will advise on proper construction methods and assign test-flight areas.

Finally, there is an excellent government booklet, *Basic Glider Criteria*, which tells you just about all you need to know for building gliders. It is available (for 75 cents) from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

Automatic landings, which are being tested by several airlines (*Is Aviation Going Automatic?*, page 110, Feb. *PM*) may also be introduced into the business fleet. Lear Jet, which is producing a twin-jet executive plane, says it will install automatic-landing equipment on all production models once the system is approved by the FAA.

Unnoticed in the publicity surrounding our two newest jets, the B-70 and F-111, is the fact that none of the crew in either plane will wear a parachute. Each aircraft is equipped with "escape capsules," which can be blasted free of the fuselage.

Each capsule is airtight, with self-contained oxygen, and watertight so it will float if it lands in water. Huge parachutes float the capsules down to earth safely.

Kevin V. Brown  
Aviation Editor

POPULAR MECHANICS





# Introducing the latex wall paint with the built-in second coat

**...new formula  
Dutch Boy Nalplex.  
So high in hiding,  
so smooth in leveling,  
one coat looks like two.**

Now, with new Dutch Boy Nalplex, you can roll on new beauty in a single coat. It covers so well, one coat looks like two.

New Nalplex is especially made for rollers. So there are practically no roller marks or spatter. No unpleasant paint odor, either.

And cleaning up rollers or brushes? Simple. Only a matter of soap and water.

Your Dutch Boy dealer is listed in the Yellow Pages. Ask to see his demonstration of new formula Nalplex: the paint with the built-in second coat.

DUTCH BOY AND NALPLEX ARE REGISTERED TRADEMARKS OF NATIONAL LEAD COMPANY

**Dutch Boy Paints: more years to the gallon.**





**NEW!**

**Independent front suspension with big-truck durability!**

You've never ridden in any pickup as comfortable—yet as rugged—as the '65 Ford. Secret is an exclusive new independent front suspension

that uses forged I-beam front axles borrowed from big-truck design. Result: untrucklike riding smoothness—lower maintenance costs.



**NEW!**

**Two big new Sixes, powerful new V-8!**

Choose from a completely new lineup of big, powerful engines when you pick out your '65 Ford pickup. A new seven-main-bearing 240 cubic inch Six is standard. The

impressive new 300 cubic inch Big Six is the biggest Ford Six ever built. Or prefer V-8 power? Check over the brawny new 352 cubic inch Ford V-8. See your Ford Dealer!



**NEW FORD**



**PICKUPS**

PRODUCTS OF  MOTOR COMPANY

**BUILT TO LAST LONGER**



# Get the last word on finishes.

Send for this new wood finishing guide—  
free from Weldwood, the people who know wood best.

## The right Weldwood wood finish for each job

WELWOOD FINISH	APPLICATION										GENERAL INFORMATION		
	Decorative Interior Finishing			Sealer	Undercoat	Exterior Finishing				Coverage per gallon	Interior or Exterior	Type of Finish	Colors
	Hand-applied finish	Wipe-on finish	Hand-rubbed finish			Trim and molding	Floors	Sill, fence posts, brackets, stairs, etc.	Galv. furniture				
Color Tones™		•		•						400 to 500 sq. ft.	Interior	Clear finish with colorant	138 shades
Deep Finish Firzite™			•		•					100 to 200 sq. ft.	Interior	Natural hand-rubbed	Clear
P. A. R.®							•		•	300 to 400 sq. ft.	Exterior	Water-repellent stain	Interior colors (see color chip)
Patiolife®							•	•		400 to 500 sq. ft.	Exterior	Water-repellent	Interior
Satinlac®	•	•		•						300 to 400 sq. ft.	Interior	Clear natural, low gloss	Clear
Firzite™	•								•	400 to 500 sq. ft.	Exterior	Hand-rubbed finish with colorant	Clear



Weldwood Deep Finish Firzite® gives furniture a rich "hand-rubbed" oil finish—without the hand rubbing. Protects, beautifies floors.

Weldwood Satinlac® for greater gloss than Firzite without a heavy "built-up" look. Contains ultraviolet absorber to inhibit yellowing.

Weldwood P.A.R.® penetrating exterior water repellent stain finish for sidings, fences. Guards against checking, can't blister. 5 colors.

Weldwood Patiolife® water repellent stain finish for outdoor furniture, decks. Its satin redwood color limits rub off.

Weldwood Woodlife®, the original water repellent wood preservative. Stops rot, fungus; retards warping, checking; kills termites.

Weldwood Color Tones™, a precision stain system for matching trim and molding to wood paneling. Color chips of 138 shades simplify color-matching.

### **WELWOOD®** Wood Finishes

Write for free wood finishes guide:  
United States Plywood,  
Dept. PM 3-65, Protection Products Division,  
2305 Superior Avenue, Kalamazoo, Michigan

Come see us at the 1965 World's Fair—Better Living Building.



# CLINIC FOR HOMEOWNERS



MODEL W9316 SHOWN

## A LUFKIN TAPE IS WHITE TO BE READ

For any kind of measuring job — against any color or texture—you'll find no tape that's easier to read than a Lufkin White Clad. Add the advantage of pin-point accuracy and it's easy to understand why Lufkin's the brand professionals demand. Choose from the wide assortment available at your hardware store.

YOU'RE  
RIGHT  
WITH

LUFKIN

THE LUFKIN RULE COMPANY/Saginaw, Michigan

**Q** I have acquired an old pie safe. The wood is still in good condition but the perforated tin panels in the doors are badly rusted. Where can I buy new tin panels and how should I refinish the wood?—M.K., Pa.

**A** We wouldn't refinish the wood, if, as you say, it is still in good condition. Refinishing will reduce the value of the piece as an antique. What we would do is wash the wood with a mild soap solution, taking care not to get the surfaces and particularly the joints, unduly wetted. You may have to use fine steel wool very lightly to remove some of the more stubborn accumulations of the greasy grime which usually coats parts of such pieces. But be careful not to cut through the original finish. You can't buy tin panels readymade; in fact the originals usually were made by hand, using a nail to make the perforations to a pattern layout. Lay out the new patterns on new sheet metal using the old panels as patterns or any other pattern which is desirable and in keeping with the original. Then select a ten-penny nail with a good point, tape the sheet, cut to size, to a soft-pine board and make the perforations by tapping the nail lightly, until the point breaks through the metal. Be especially careful to keep the perforations uniform and to follow the pattern closely so that all perforations will be in line. When finished, coat the bright panels with lacquer to prevent rusting.

**Q** One wall of a rec room in my basement is paneled in pecky cypress. Recently, the basement flooded to a depth of about one foot, leaving a water mark on the boards. The wall was finished at the time of installation and the boards do not seem to be damaged by the water, but how can I remove the mark?—H.W., Ind.

**A** It is true, as you say, that cypress is not ordinarily damaged by water, that is, the wood itself is not warped or discolored to any appreciable extent. Success in removing the water mark may depend on the finish originally used. First, try removing several of the boards and



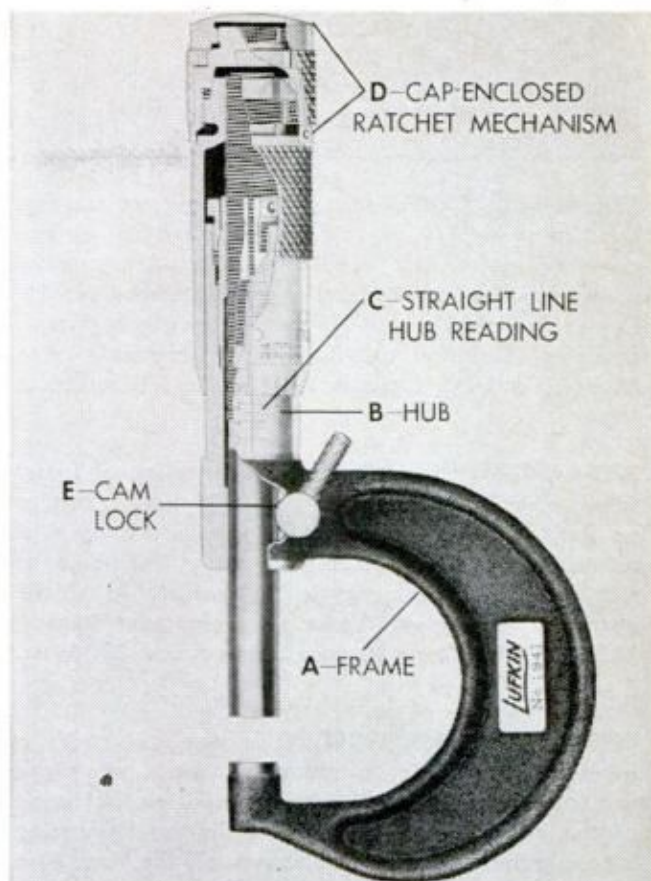
washing with a mild soap solution, working the water mark with a fine steel wool. Allow to dry and note the result. If it's satisfactory, then give all the boards the same treatment. If not, it may be necessary to remove the old finish. After removal of the finish (with a suitable chemical remover) a light sanding usually takes out the discoloration. Then refinish such boards, using, if possible, the same finish that was used originally.

**Q** How can I move an old style piano from a bare floor onto a rug? I tried it and it seems anything but simple. But there must be some way for a person to do it alone. Don't tell me to lift the piano. I can't.—D.E., Miss.

**A** No need to lift it. Lay two small pieces of plywood in line with the casters in the direction you wish to move the piano, one end of each piece of plywood on the rug, the other on the bare floor. Tilt the piano slightly with a suitable lever and slide the ends of the plywood pieces under the casters on one side, front or back as the case may be. Roll the instrument up the "ramps," tilt it again and remove the plywood pieces.

**Q** I installed new combination storm windows last year, replacing the old storms. Now I would like to salvage the glass in the old sashes and discard the frames. But the putty seems almost as hard as stone and I have broken several panes trying to remove them. Isn't there some simple way this can be done?—T.H., Minn.

**A** There are, of course, ways of removing the glass panes, but these can hardly be called simple. However, if you feel the glass is worth the trouble and time necessary to salvage it then perhaps the best procedure is to soften the putty with application of heat, either from a gasoline blowtorch or a propane torch. In this you will have to keep the fire hazard in mind and do the work at a safe distance from any flammable materials. One slow pass of the flame should soften the putty sufficiently to permit fairly easy removal with a putty knife, but one must watch the flame closely to avoid scorching the wood frames. It is likely you would find the propane torch best for the job as the flame is more easily controlled. Care must be taken not to heat the glass unduly as otherwise it is almost certain to crack. Once the putty has been removed, pull out all the glazier's points before attempting to lift the pane from the sash frame.



## A LUFKIN MIKE IS MADE RIGHT TO STAY RIGHT

Frame and hub are a single forging for added strength. Straight lines on hub assure accurate reading. Exclusive cap-enclosed ratchet permits one-hand operation. Cam lock holds firmly with less tension, less spindle distortion. Make your next mike a Lufkin. See them at leading tool stores and industrial distributors.

YOU'RE  
RIGHT  
WITH

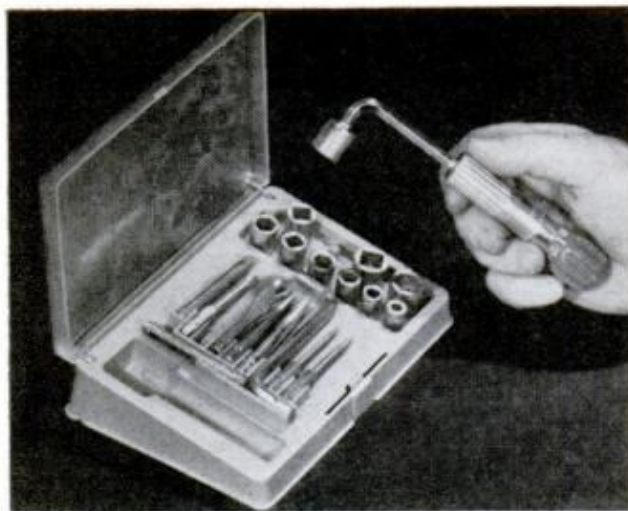
LUFKIN

THE LUFKIN RULE COMPANY / Saginaw, Michigan



# Shopping for Tools

**VERSATILE TOOL KIT** consists of a universal ratchet head, plus straight and offset hex adapters, square and hex sockets, standard and Phillips-head screwdriver bits, awl points and a tack lifter—all for \$5. Comes in a plastic case. All parts attractively plated. Socketool Multi-Purpose Tool Kit is available from Shelton Products, Incorporated, Shelton, Connecticut

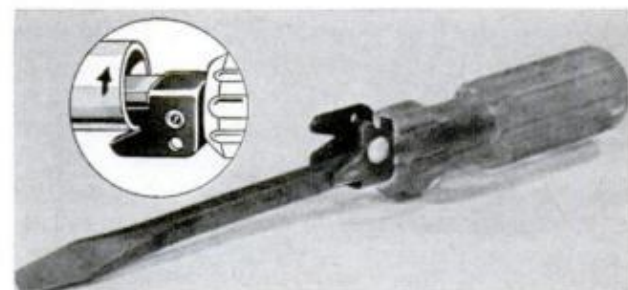


**SELF-INSULATING TOOL**, for safe handling of fuses, wires, electrical fences, spark-plug terminals, testing equipment and other hazardous objects, are made of nylon. According to the manufacturer, Safe-T-Tongs shield the user from up to 250 volts. Cost \$1.98 postpaid. From New Products Development Service, 10506 West Villard Avenue, Milwaukee 18, Wisc.

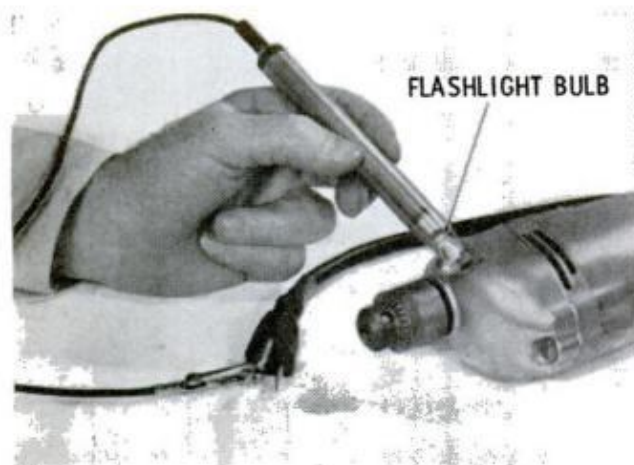


**ELECTRICIAN'S SCREWDRIVER** is equipped with a reamer for de-burring conduit. To operate, you place the screwdriver shank into the conduit so that edge of the conduit engages a notch in the de-burring blade. Turning conduit then shaves off the burr. Also serves as wire stripper and bending tool for loop eyes. \$2.25 Piggyback Level & Tool, Jutland, N.J.

**CONVERT YOUR DRILL PRESS** to a grinder with the Microm Grinding & Honing Attachment. This device, which sells for \$14.95, bolts to the drill press table. It's belt driven by means of a pulley which clamps in the chuck. Comes with belt, pulley, grinding wheel and all necessary bolts and washers. Microm Co., 2822-A South Halladay Street, Santa Ana, Calif.



**DUAL PURPOSE POCKET TOOL** can be used as a flashlight or a continuity tester. Has a removable cord that connects to one end of the circuit being tested. Touching the flashlight tip to other end of the circuit causes the flashlight bulb to glow if the circuit is continuous. Sells for \$2.98. From Marfree, Inc., 17620 James Couzens Highway, Detroit, Mich.





Shown below—the neatest squelch of all, the Chevelle Malibu SS Coupe



## The perfect squelch: 350-hp CHEVELLE by Chevrolet

That's a potent squelch to all those others who keep talking about lions, tigers and such.

A 350-hp squelch goes into any '65 Chevelle you specify. It's that big blue-jowled 327-cubic-inch V8 of song and story, fortified with an 11.0:1 compression ratio, big 4-bbl. carb, dual exhausts and 360 ft.-lbs. of torque at 3600 rpm. With *hydraulic lifters*.

Then, too, you can order a 4-speed fully synchronized transmission. A beefier special

front and rear suspension package. Sintered-metallic brakes. Positraction with 3.31:1 axle ratio. And an electric tach.

All this performance would go great in a heavyweight. Just run your imagination over what it does for the welterweight Chevelle. Not to mention the silencing effect on all those tigers and tamers.

But why rub it in? That's your privilege. Many happy squelchings.



Chevrolet Division of General Motors, Detroit, Mich.





By Ed Nelson



## Dodge's Charger II Will Not Appear This Year, But Look for the Bigger Beetle This Summer

"TRICKY" IS THE WORD for the new telescoping steering column **Saginaw Steering Gear** is producing for **Corvair**, **Corvette**, and **Cadillac**. Loosen the wheel hub and you get up to three inches of extra stomach-relaxing space. And spinning the wheel fast—to work your way out of a skid, for example—is lots easier with such extra maneuvering room. You can avoid getting tangled up in an excess of elbows.

Nobody plans to get into a skid situation, however, so there may be few buyers at GM's prices: \$43.05 to \$91.40. **Standard-Triumph** has had, for years, a standard-equipment system you set for the life of the car. It collapses away from you in case of a crash. (**Corvair** owners can add to their elbow room with a less fancy wheel. It's dished less, leaving the rim a little farther away.)

Disregard the rumors—in print or otherwise—about **Dodge** producing its fastback **Charger II**. It isn't going to happen. Wary observers weren't taken in by this one, even at the start. The **Charger II** styling is far too extreme: it's bound to excite some car nuts, but offend others. Any extreme step gets a similar reaction, and Detroit isn't about to risk making enemies. (Even so mild a step as the lump in the sheet metal above the '65 **Chevy's** rear wheels irritates some owners.) **Dodge's** dream car is that and nothing more. Such a blue-sky design does, of course, get extra attention for **Dodge**. That's one of its main purposes. And some features of it might reach production.

**DR. MERRILL ALLEN**, the Indiana U. optometrist with all the ideas about car visibility, has another: More than 80 percent of the drivers have eye defects causing red lights to seem farther away than they are, he says. So normal taillights should be green, according to Dr. Allen (indicating it's safe to follow them). He'd keep stop lights and turn signals red.

**Chevrolet's** long-rumored three-speed automatic and high-powered engine are here; for our report, see *PM* Feb. P. 94.

**Ford** owners with leaky power steering systems might peek under the hood to see

that hose lines aren't being burned—or cooked beyond endurance—by the exhaust manifold. In the second month of production, **Ford** service engineering inspectors found some '65s had had power steering hoses mis-routed over the manifold. Engineering subsequently designed a clamp that makes the assembly error impossible, but some early ones got by.

**IF YOU'RE TEMPTED** by the **VW 1500**, hold off a little longer. A few of the cars are in the States, brought by returning tourists or GIs who got them in Europe. Most, however, come in through bootleg dealers without the equipment for proper service, nor the staff, nor the interest. But so many of the bigger Beetles are coming in that, starting in August or September, **Volkswagen of America** will import them. New parts, stocks and mechanics' training programs were necessary to get ready for the 1500, but by summer's end you should be able to buy one with good backup service.

In our January comparison of the **Plymouth Barracuda**, hot **Mustang**, and **Corvair Corsa**, the **Barracuda** bucked a heavy disadvantage. Our rush request for the hottest car caught **Plymouth** by surprise. They produced one quickly and it had the power, but not the equipment to handle it. Now I've had a couple of days in a properly equipped **Barracuda Formula S**—long enough to be impressed. Control was fine; ride was firm without being uncomfortable; steering was quick and exact without being nervous.

Al Markovich, *PM's* associate auto editor, as part of his continuing research with New York cabbies (see p. 124), found a student of humanity. This driver saves empty payroll envelopes and fills them with dollar-bill-size scraps of newspaper. He leaves these in the back of the cab and waits for his fares' reaction. He told Al he once had a run of seven in a row, who, thinking the envelopes were full of cash, returned them.

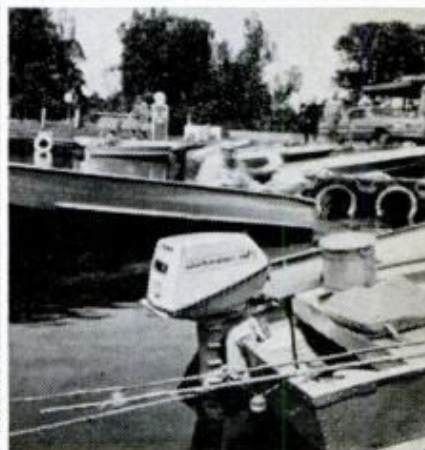
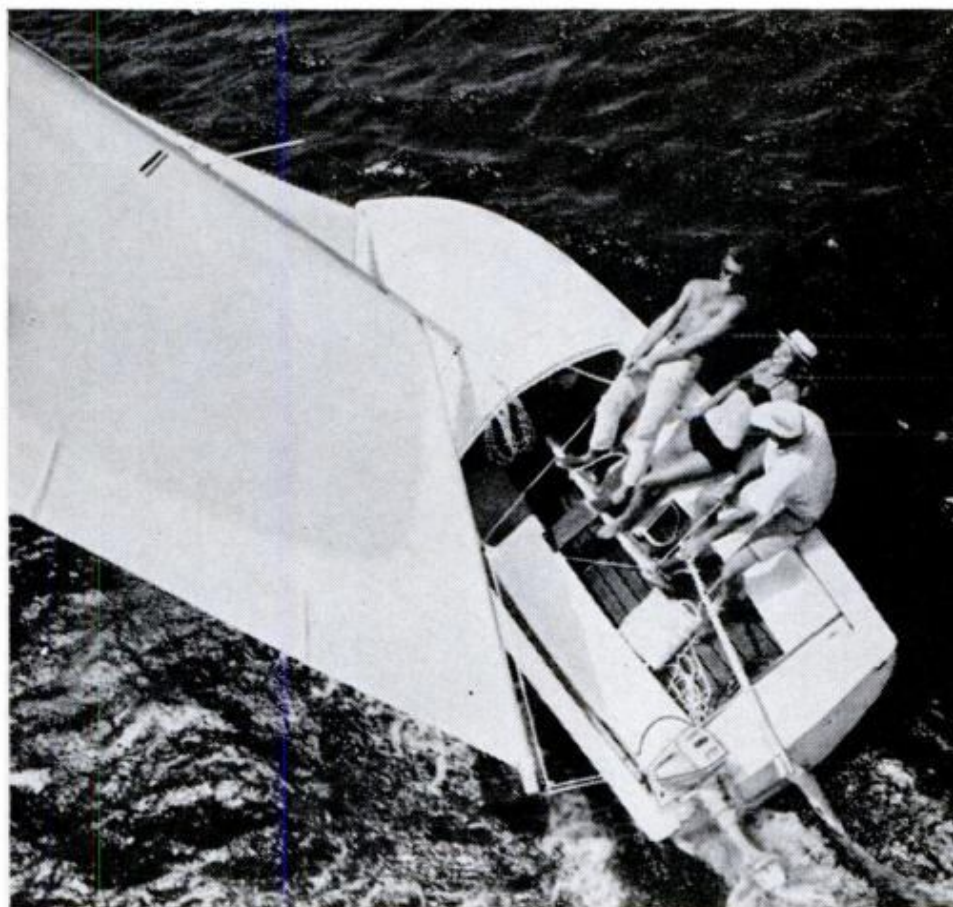
And for the not-so-honest, there's an appropriately symbolic reward. Included in each packet are two cents.



**Hunting for an outboard that packs almost twice the punch of a 3 hp engine, weighs only 9 lbs. more, and is priced so right it almost seems wrong?**

**Presto!**

**The carefree, new 5 (a Sea-Horse, of course!)**



The Sea-Horse 5 represents a new idea for Johnson: an economy engine that's as simple and light and low-priced as can be made and still be all Sea-Horse. This new 5 is ideal for small, rental resort boats and for use as an auxiliary. And because its new low-compression cylinder head all but eliminates vibration, it's a truly magnificent troller.

**Weighs only 43 pounds . . .** so you know it's a cinch to carry—and a clean starboard side lets it stow flat as a guide's biscuits. Full-pivot 360° steering lets you reverse without a gear-shift.

**No need to buy special marine fuels.** From 3 to 90 hp, all

17 new Johnson models (including the nickel-nursing 5) use regular grade gas and oil. What's more, a new 50 to 1 gas-oil mix halves oil costs!

Only Johnson has sold over 2½ million outboards. You can be sure we know how to keep the Corrosion and Noise out. You'll like our 2-year warranty\*. For the right engine to fit your needs see your Johnson dealer. He's in the Yellow Pages. Johnson Motors, 1940 Pershing Rd., Waukegan, Illinois. Div. Outboard Marine Corp. In Canada: Johnson Motors, Peterborough, Ontario.

\*For 24 months after purchase, Johnson Motors will replace, without cost to the original purchaser, any part of its manufacture which upon inspection proves to have failed in normal use due to faulty material or workmanship.

**Another carefree *Johnson* . . . first in dependability** 



## 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, 105J Field Bldg., Kansas City 11, Mo.  
Send FREE book, "Keys To Your Future!"  
No obligation. No salesman.

Name.....

Address.....

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



## AUDEL GUIDES

No. 8	Carpenters & Builders Guide. 4 Vols. 1900 pages...	\$10.50
No. 1	Auto Mechanics Guide. 1132 pages	6.00
No. 15A	Electric Library. 10 Vols. 5558 pages	25.00
No. 2	Home Appliance Service Guide. 232 pages	6.95
No. 14	Refrigeration & Air Conditioning Guide. 1090 pages	6.00
No. 26	Masons & Builders Guide. 4 Vols. 1440 pages	10.50
No. 6	Plumbers & Steamfitters Guide. 4 Vols. 1833 pages	10.50
No. 3	Radio-TV Library. 2 Vols. 960 pages	9.50
No. 12	Machinists & Toolmakers Handy Book. 1256 pages	6.95
No. 10	Welders Guide. 606 pages	4.95
No. 49	Outboard Motor & Boating Guide. 414 pages	4.00
No. 4	Handy Book of Practical Electricity. 1052 pages	5.95
No. 25	Blueprint Reading for Mechanics & Bldrs. 430 pgs.	3.95
No. 27	Electric Motor Guide. 1036 pages	5.95
No. 11	Mathematics & Calculations for Mechanics. 672 pages	4.95
No. 53	Foreign Auto Repair Manual. 592 pages	5.00
No. 5	Truck and Tractor Guide. 908 pages	5.95
No. 7	Painting & Decorating Manual. 592 pages	4.95
No. 48	Gas Engine Manual. 468 pages	4.00
No. 28	Oil Burner Guide. 420 pages	3.95
No. 9	Diesel Engine Manual. 544 pages	6.00
No. 29	Sheet Metal Pattern Layouts. 1152 pages	7.50
No. 54	Programmed Basic Electricity Course. 272 pages	4.00

10 DAY FREE EXAMINATION. SEND NO MONEY. We'll send you any Audel Guides for FREE trial. If you decide to keep the books you pay only \$3 per month under our easy-pay plan. Simply circle the books you want below and we'll send them at once. If you're not completely satisfied, return them to us.

THEODORE AUDEL & CO. - Since 1879 P-35  
4300 W. 62nd St., Indianapolis, Indiana 46206

Please mail me for 10 days FREE EXAMINATION the books circled below. I agree to mail \$3 in 10 days for each book or set ordered, and to mail \$3 a month for each book or set, until I've paid the purchase price, plus shipping costs. If I'm not completely satisfied with my Audel Guides I may return them.

Name.....

Address.....

Employed by.....

1 2 3 4 5 6 7 8 9  
10 11 12 14 15A 25 26  
27 28 29 48 49 53 54

SAVE SHIPPING COSTS. Check here if you enclose complete payment (plus sales tax, if any). We pay postage.  
 I've bought Audel books before.

MAIL  
COUPON  
TODAY!

## Items from All Outdoors

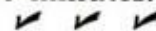
UCLA zoologist Dr. Vladimir Walters has proven that the wahoo, a species of mackerel, really lives up to its name. During a six-month experiment to determine the swimming speeds of various fish, Dr. Walters timed the wahoo at 48 miles per hour. It was previously believed that the top speed of any fish was 27 mph. The yellowfin tuna finished close behind the wahoo with a recorded speed of 45 mph.



Taking apart an expensive split bamboo fly rod is a delicate operation that can often be a costly disaster when the ferrules (the sleeves and metal caps that bind the sections) are bent because of pres-



sure. This is easily eliminated by holding the rod behind the legs, gripping the sections tightly close to the ferrule, the forearms snug against the nape of the knee. In this position you simply squat, a movement that spreads the knees with equal pressure. The arms are forced out and the ferrule is pulled apart smoothly with no angular pressure to damage it. This tip was demonstrated by Lawton Carver, a maestro of fly casting, and in next month's PM he outlines a unique teaching method that can turn a novice into a skilled fly caster in just 60 minutes.



With African wild animal herds being obliterated, a friend suggests we remember Will Cuppy's famous admonition: "No Gnus is Good News."

STUART JAMES

Outdoors Editor

POPULAR MECHANICS

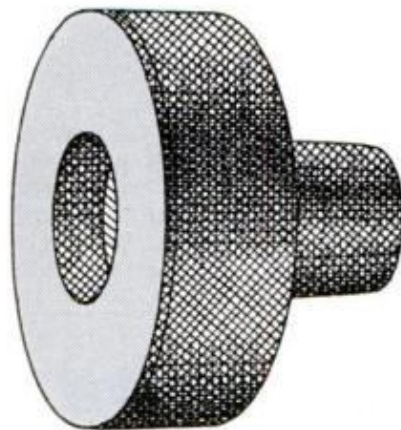
Материал, защищенный авторским правом



# What does it take to come up with a Ford that rides quieter than a Rolls-Royce?

*(In tests certified by the U.S. Auto Club, results showed that a 1965 Ford Galaxie 500 LTD, with the 289-cu. in. V-8 engine and Cruise-O-Matic transmission, rode quieter than a new Rolls-Royce!)*

Let's start with something basic—like this 1965 Ford body-to-chassis mount. It doesn't look very different from those used on other cars. The big difference is where these mounts have been positioned by Ford engineers. Through exhaustive testing, Ford engineers have precisely determined the nodal points on the frame of the new 1965 Ford. Nodal points are those places on the frame where vibrations are at a minimum. That's where the body-to-chassis mounts are in the 1965 Ford: where they'll do the most good in reducing road shock, vibration, noise and fatigue.



FORD BODY/CHASSIS  
"PUCK"

What else? There's an all-new torque-box frame. A body that is the strongest ever built by Ford. All-new coil spring rear suspension. A new, refined version of Ford's

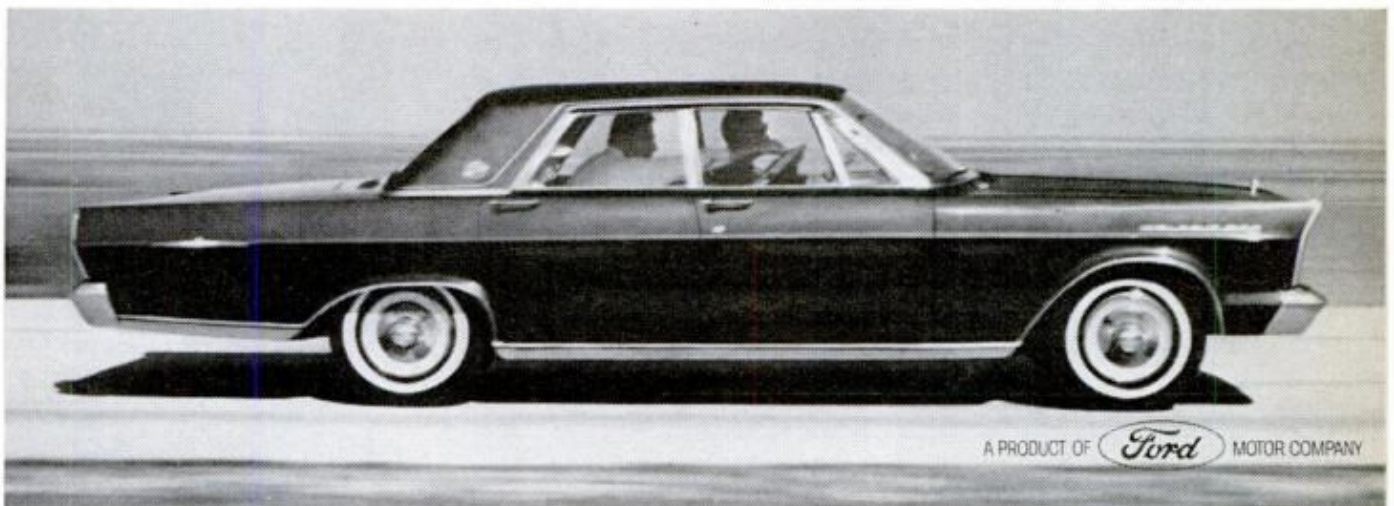
famous recessive wheel front suspension that reduces bumps by flexing backward, as well as up and down. And hundreds of other changes, that are improvements, make the 1965 Ford stronger, quieter and better riding. That's why we say that 1965 is the best year yet to go Ford.

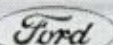
See your Ford Dealer. Take a test drive. Try Total Performance '65!

*Best year yet to go Ford!  
Test Drive Total Performance '65*

# FORD

MUSTANG • FALCON • FAIRLANE  
FORD • THUNDERBIRD

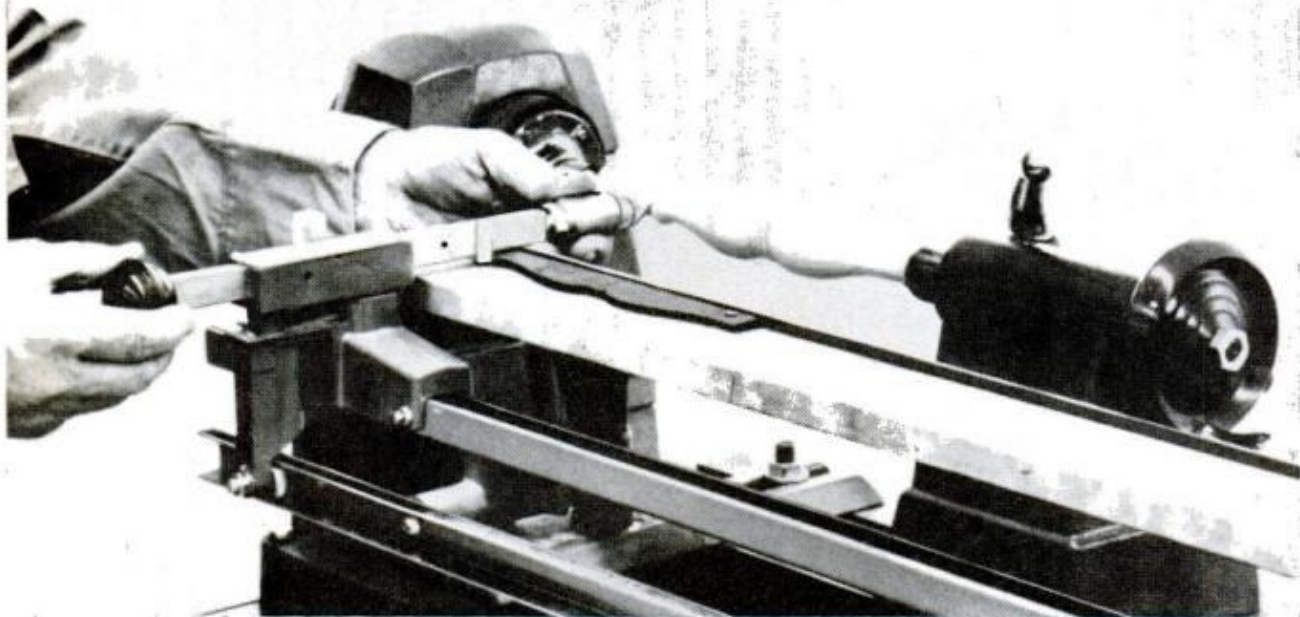


A PRODUCT OF  MOTOR COMPANY

THE TOTAL PERFORMANCE FORD GALAXIE 500 LTD 4-DOOR HARDTOP



# Duplicator Mass-Produces Spindle Turnings



A NEW LATHE ATTACHMENT, designed to speed accurate duplication of such items as gavels, chair and table legs, lamps and balusters, has been introduced. It employs a stylus and tool bit in place of the usual chisels and gouges. The stylus rides on a template as the tool bit makes the cut. Handles work up to 4 in. in diameter and 28½ in. long. According to the manufacturer, Rockwell Manufacturing Co., the attachment can be fastened to almost any 11- or 12-in. lathe. Designed primarily for commercial shops, the duplicator sells for \$79.50. The manufacturer is located at The Rockwell Building, Pittsburgh, Pa. 15208

## Draw the Lumberjack

*Awarded Monthly: \$595.00 Scholarship in Commercial Art*

Draw the lumberjack in pencil—but make your drawing a different size from the picture at the right.

If you win the scholarship prize, you get the complete course in commercial art taught by America's largest 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 the April contest must be in before April 30, 1965. None can be returned. Our students and professional artists are not eligible. Clip the coupon below and mail it right away!



### ART INSTRUCTION SCHOOLS

Studio 3135 • 500 So. 4th St., Minneapolis, Minn. 55415

*Please enter my drawing in your draw-a-head contest.*

(PLEASE PRINT)

Name \_\_\_\_\_

Occupation \_\_\_\_\_ Age \_\_\_\_\_

Address \_\_\_\_\_ Apt. \_\_\_\_\_

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

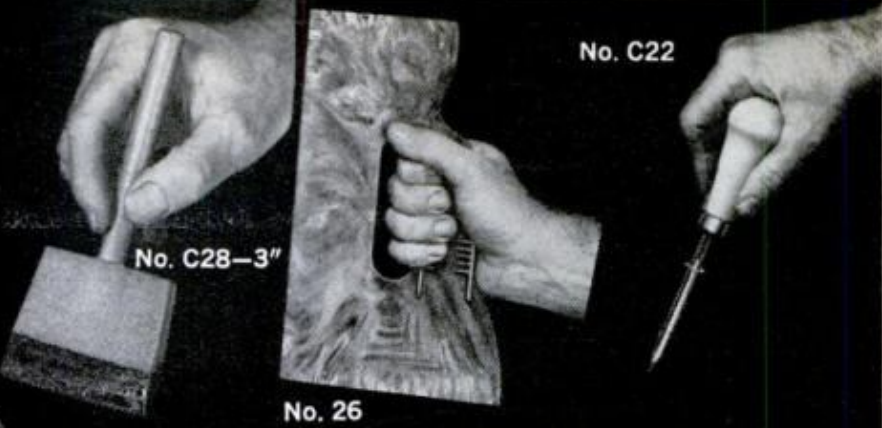
County \_\_\_\_\_ Zip Code \_\_\_\_\_



Accredited by the Accrediting Commission  
of the National Home Study Council.



# HYDE TOOLS FOR THE MAN WITH THE BUSY HANDS!



Touch-EE, the paint brush without bristles, made of polyurethane, for smooth finish. No messy hairs. No. C27-2" 29¢, No. C28-3" 39¢, No. C34-4" 69¢, No. C35-5" 79¢.  
Five Way Styrene plaster patcher and joint knife. No. 26 \$1.19 ea.  
Magnetic Brad Driver to drive in brads 1" and smaller 16 to 18 gage. No. C22 \$2.69 each.

Popular best quality Hyde fix-up paint-up tools are sold in leading hardware, paint, building supply and lumberyard stores. Tools not available will be sent postpaid upon receipt of check or money order.  
**WRITE FOR FREE CATALOG**

## HYDE TOOLS SOUTHBRIDGE, MASS., U.S.A.

Double Header 2-in-1 Putty Knife Tool Removes old putty and special "V" blade applies smooth strip of putty. No. C94 \$1.19 ea.



# YOU'LL LIKE THE POWER OF THE NEW TIGER CUB



### A full-power lightweight! 4-cycle OHV 200 c.c. engine.

What's so new about Triumph's *New Tiger Cub*? It's a lightweight, under 220 lbs., yet it has big-cycle hillpower, acceleration and flat-out stamina. The New Tiger Cub incorporates the proven features of the record-holding models, yet it boasts more POWER. When this New Tiger Cub starts to move you'll know it. Test-ride one at your nearest Triumph dealer's now. Ask him for details and easy terms.

For Free full-color catalog showing complete Triumph line mail this coupon now!

<b>Johnson Motors, Inc.</b> WEST... P. O. Box 457, Pasadena, Calif. 91102	<b>THE TRIUMPH</b> Corporation EAST... Baltimore, Maryland 21204
---	---

- AMAL full-power carburetor • oil tight • engine in unit construction with gearbox • separate oil tank • chrome-plated downswept exhaust pipe with muted muffler • alternator with battery lighting • streamlined nacelle • swinging arm rear suspension • adjustable hydraulic shock absorbers • telescopic hydraulic front forks • anti-vibration speedometer • twin seat with folding pillion footrests • two-tone Flamboyant Scarlet and Silver finish.

Name..... Age.....  
 PLEASE PRINT  
 Street.....  
 City..... State.....  
 Telephone Number ..... Dept. P.



# NEW from Du Pont

## for every car with an automatic transmission



DOES TWO JOBS . . . All transmission fluids contain certain additives which wear out with use. Du Pont "T-Seal" is formulated to replace those worn-out additives and to revitalize the transmission fluid.

IT'S A SEALER . . . Du Pont "T-Seal" stops automatic transmission leaks by chemically reconditioning the hardened, leaking seals. Prevents leaks from occurring by keeping seals soft and pliable. Saves costly transmission overhauls.

IT'S A TUNE-UP . . . Du Pont "T-Seal" renews the efficiency of the transmission fluid itself. Prevents formation of harmful sludge and varnish which could damage precision-built transmission parts. Helps stop slippage and assure quiet, smooth shifting. Prolongs the life of the transmission.

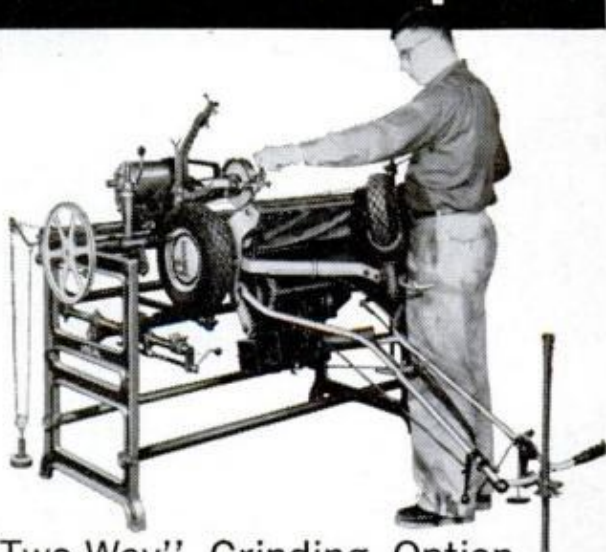
Prevent automatic transmission problems before they start. Get Du Pont "T-Seal" now at service stations and auto supply stores everywhere.

Better Things for Better Living . . . through Chemistry 



**EXCLUSIVE OFFER**—Save up to \$3.00 on a set of Classic 7 Cars "Matchbox" Series—Models of Yesteryear. See the Du Pont display and money-saving coupon where No. "7" products are sold.

# IDEAL 900 Lawnmower Sharpener



"Two-Way" Grinding Option means bigger profits for you!

The Ideal sharpens *any* reel-type mower by either "Hook" or "Straight-Line" methods. No limitations, every job perfect with no hand filing. Ruggedly built, screw adjustments can't slip, 1/2 hp. motor. Write for Full Details.

The Fate-Root-Heath Co., Dept. PM-3, Plymouth, Ohio

FAMOUS



## TEENUT® FASTENERS



Can't slip, flush-mounted, strong. ONLY nut that gives steel threads in wood!

- Now available in bright NEW finish!
- NEW red and yellow, skin-pack cards!
- Look for colorful NEW display carton, too!
- Handymen need TEENUTS!
- Sold at hardware stores.

**COLUMBIA  
FASTENER**

TEENUTS is a registered trademark of United-Carr

SUBSIDIARY OF UNITED-CARR  
3229 South Ashland Avenue  
Chicago, Illinois 60608

## HOW TO FINISH WOOD



Get this 32-page full color book written by experts. Tells how to obtain professional finish on interior and exterior natural wood. Floors, wall paneling, antiques, boats, many more. Only 25 cents p.p. Send coin today.

**McCLOSKEY VARNISH COMPANY**  
DEPT. PM3, 7600 STATE RD., PHILADELPHIA 36, PA.



**FLASH  
NEWS!**

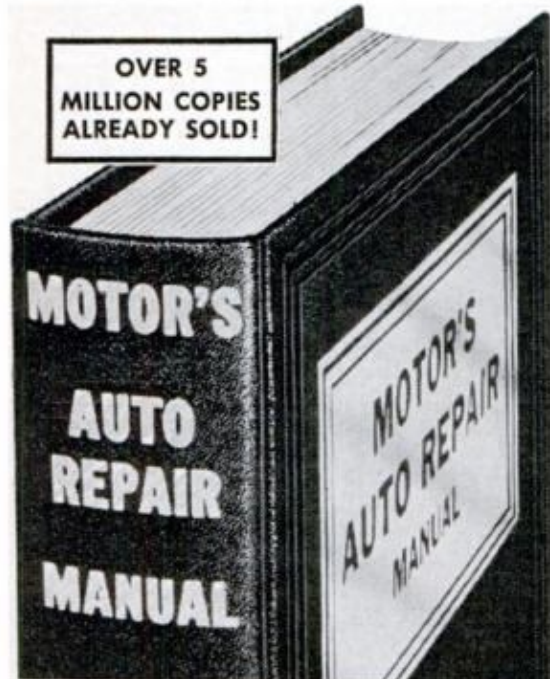
# AUTO REPAIR Bulletin

**EXTRA!  
★★★★★**

Published by the Automotive Experts of MOTOR's Manual

## AMAZING FREE OFFER PROVES YOU CAN FIX 2,341 CAR MODELS!

OVER 5  
MILLION COPIES  
ALREADY SOLD!



**MOTOR's Manual Shows Green Beginner and Skilled Mechanic  
Alike How To Do Just About ANY Job Quick, Easy, Right the First Time!**

USE FAMOUS MOTOR's Manual for ten days at our expense. See how its giant "Trouble-Shooter" section pinpoints 2,300 car troubles right away. Then see how it shows you where to start, what tools to use, how to use them.

If MOTOR's Manual doesn't make even the toughest jobs A-B-C Easy - if it doesn't pay for itself the first 2 times you use it - simply return it and pay absolutely nothing. That's how confident we are that THIS Manual really works! Beginners turn into skilled mechanics,

experts get many valuable time- and money-saving tips. Crystal-clear directions and 3,800 big photos, diagrams, charts, etc. You CAN'T go wrong!

### The "Meat" of 300 Official Shop Manuals

You get a wealth of "Know-How" from 300 Official Shop Manuals and hundreds of Factory Bulletins, boiled down into one giant easy-to-use book. No more guesswork. You use same procedures as "pros" to do every job quick, easy, right the first time.

### Look At All

### You Get:

Over TWELVE HUNDRED giant pages. 3,800 "This-Is-How" pictures. 457 Quick-Check charts. 55,000 Essential repair specs. Over 225,000 service and repair facts. PLUS adjustment tables, measurements and clearances, overhauling and replacement facts, tune-up data, much more! Covers every one of 2,341 popular make models built since 1958 - including the new 1965 models!

### DO JUST ABOUT ANY REPAIR JOB...



### QUICK, EASY, RIGHT the first time!

Everything from tune-ups to transmission overhauls

Using new, revised MOTOR's Manual is like having factory experts themselves standing right beside you, guiding your hands through every job. You get big illustrated sections covering every one of 37 car makes - plus detailed chapters on transmis-

sions, rear ends, alternators, generators and regulators, fuel pumps, ignition systems, overdrives, automatic transmissions, engines, brakes, valves, rings, water pumps, distributors, dash gauges, power steering, power brakes, starting motors, etc.

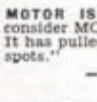
### "Inquiring Photographer"

Q. What Do You Like About  
MOTOR's Manual?



HELPS HIM MAKE FOREMAN. "Your Manual helped me make foreman. And I find it helps the boys working for me. We are always referring to the Motor Manual."

-J. A. Bowerman, California  
Trucking Shop Foreman



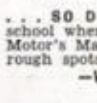
MOTOR IS HIS "BIBLE". "We consider MOTOR here as our Bible. It has pulled us out of many rough spots."

-E. A. Kneer, New York  
Service Station Owner



EXPERT PROFITS... "I've done mechanic work for over 25 years. Motor has saved many hours... worth its weight in gold."

-R. Carter, N. Carolina  
Auto Mechanic



... SO DOES STUDENT. "In school where I learned the trade, Motor's Manual pulled me out of rough spots."

-W. Bekemerer, Missouri  
Student Mechanic

Used by  
U.S. Army & Navy  
and Thousands of  
Service Stations  
and Repair  
Shops

USE MANUAL FREE  
FOR 10 DAYS

FIX THESE CARS FAST - 1958 thru 1965  
- PLUS NEW SECTION ON VOLKSWAGEN!

American  
Barracuda  
Buick  
Buick Special  
Cadillac  
Chevelle  
Chevrolet  
Chevy II  
Chrysler  
Comet  
Continental  
Corvair

Corvette  
Dart  
De Soto  
Dodge  
Edsel  
Fairlane  
Falcon  
Ford  
Imperial  
Jeep  
Lancer  
Lincoln

Mercury  
Meteor  
Mustang  
Oldsmobile  
Olds F-85  
Plymouth  
Pontiac  
Rambler  
Studebaker  
Tempest  
Thunderbird  
Valiant

### FREE 10-DAY TRIAL OFFER

Just mail the coupon below. We'll rush Manual to your home or shop. Use it FREE for ten days! See if it doesn't help you whiz through even the toughest jobs. If Manual doesn't pay for itself in the first ten days, return it and pay nothing, owe nothing. So mail the No-Risk coupon AT ONCE to: MOTOR Book Dept., 250 West 55th Street, New York, New York 10019. (SCHOOLS, BOOKSTORES: Write for discounts.)

### MAIL COUPON NOW FOR 10-DAY FREE TRIAL (Attach to Postcard for Fast Action)

MOTOR BOOK DEPT., Desk 513  
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 charge 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.....Zone.....

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 delivery charge by enclosing WITH coupon in envelope payment of \$9.95 for Auto Repair Manual (or \$11 for Truck Repair Manual) plus sales tax, if any. Same return-for-refund privilege.

### Same FREE Offer on MOTOR's New TRUCK REPAIR MANUAL

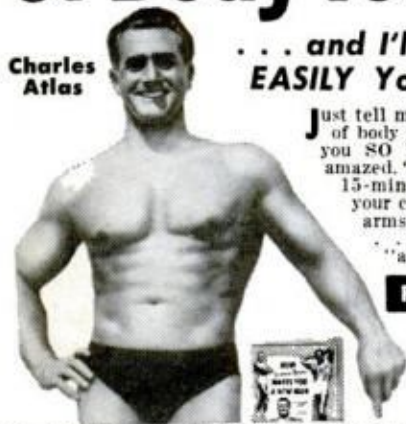


Covers 98% of all trucks, 1955-1965, including all new economy models. Over 2,000 illustrations; 300,000 facts. Easy to use. Covers all gasoline engines, plus Cummins, Mack, Ford, GM, Int'l. Perkins diesels. Over 1,000 pages! For 10-day FREE Trial, check proper box in coupon.



# Check the Kind of Body You Want

Charles Atlas



... and I'll Show You How EASILY You Can Have It!

Just tell me, in coupon below, the kind of body you want—and I'll give it to you SO FAST your friends will be amazed. "Dynamic Tension," my easy, 15-minute-a-day method, will make your chest and shoulders bulge... arms and legs surge with power... your whole body feel "alive!"

**FREE BOOK** Learn how I became "World's Most Perfectly Developed Man"—Mail coupon! CHARLES ATLAS, Dept. 83, 115 East 23rd Street, New York City 10, N. Y.

CHARLES ATLAS, Dept. 83, 115 East 23rd St., New York 10, N. Y.

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, Grip |
| <input type="checkbox"/> More weight—Solid—in the Right Places | <input type="checkbox"/> Slimmer Waist, Hips       |
|  | <input type="checkbox"/> Better Sleep, More Energy |

Send me absolutely FREE a copy of your famous book showing how "Dynamic Tension" can make me a new man—32 pages, crammed with photographs, answers to vital questions, and valuable advice. No obligation.

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

ADDRESS.....

CITY..... ZONE..... STATE.....

In England send to: Charles Atlas, Chitty St., London, W. 1

## BUILD, FLY ONE-MAN COPTER



Fun to build, inexpensive, easy to fly. Factory kits available. Order 3-view drawings, specs, photo of Gyro-Copter \$2 or motorless Gyro-Glider \$1. Send coupon today.

BENSEN AIRCRAFT CORP., Dept. PM-35 Raleigh-Durham Airport, Raleigh, N. C.

NAME..... ADDRESS.....

## 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.



## ELECTROPLATING EQUIPMENT, SUPPLIES and INSTRUCTIONS for Home Workshop or Production Plant

Decorative Chrome, Hard Chrome, Precious Metals (Decorative & Electronics), Electro Polishing, Baby Shoe Metalizing and all other finishes. Also Portable Platers & Sample Plating Service. Send \$1 (refundable) for formulas, operating data and catalog.

HBS Equipment Division—Dept. 165 3445 Union Pacific Avenue, Los Angeles 23, Calif.

## MOTORIZE YOUR BIKE WITH A TIGER KIT



Factory **\$49.95** FOB Direct **\$59.95** Guaranteed SERVICED NATIONALLY Easy and fun to assemble. Fits all bikes. Safe 25 mph, rugged, powerful Ohlsson & Rice engine. Send \$1 for 5 photos & brochure includes bike motor, skate board & motor, Scooter. 25c for brochure only.

TIGER INDUSTRIES Box 413 PM2 Laguna Beach, Calif.

## NO JOB WORRIES

PLASTEX INDUSTRY needs manufacturers on small scale for big production of Lamps, Clock Stands, Art Goods, Novelties in Plastic Marble imitation. No experience necessary. The material makes regular 10¢ store sellers. Moulds furnished for fast production. Small investment brings good profit. Big wholesale orders now being placed. Ambitious men have chance for real prosperity and job security. Our NEW FREE booklet will interest and benefit you.

PLASTEX INDUSTRIES, Dept. A 3400 Third Ave. New York 56, N. Y.

Bet you didn't know there were 4157 Ajax cars registered in the United States during 1925. Or that there were 1336 Elcars registered the next year. Or 2750 Wolverines in 1927.

Famous WITCH Automatic Needle Threader



## 25c SAMPLE (\$1 Retail)

Make up to \$10 an hour in your spare time just showing this amazing little invention that threads a needle simply by pressing a button. Show it to women (men, too) and watch them grab it out of your hands for only \$1.00. No sales experience needed. Rush 25¢ for sample or \$3 for 1 doz. in 3-color store display carton, and money making facts, plus other self-selling moneymakers.

UNIQUE PRODUCTS, Dept. 1453T 216 W. Jackson Blvd., Chicago 6, Ill.

## BLASTS MOLESTERS...THUGS! Amazing TEAR GAS PENCIL

100% PROTECTION!

New, big demand. Safe, personal protection to instantly stop, stun and incapacitate the most vicious man or beast. Fits pocket or purse. No selling experience needed. Handle as profitable sideline, soon you'll sell it full time. Start now, send \$5.95 for demonstration kit of Automatic Tear Gas Pencil, 10 Demonstration Blanks and 3 Tear Gas Cartridges. NOT SOLD TO MINORS. State age with order.

Hagen Supply Corp., Dept. PM35, St. Paul 1, Minn.

BIG PROFITS. SELLS EASY TO GAS STATIONS, NIGHT WORKERS, MOTORISTS, NURSES, STORES, BANKS, HOMES



# 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 42 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-S Toledo 4, Ohio

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

**VACUUM MOLD AT HOME!!** WE SEND YOU AN ACTUAL FREE SAMPLE

Big Profit! Making gold, silver, bronze, all rainbow colors and clear 3-D molded plastic products at home. New instruction shows you how! Includes FREE materials and unique FREE single-cavity vacuum mold! You actually make beautifully detailed mold of anything in an evening. Start your own business in spare time. Grow big! There's a lot more—Find out! FREE Fact Pack. Write: Nationwide Plastics Box 23321-HL Los Angeles, Calif. 90023

**FREE OUTFIT STARTS YOU IN BIG MONEY SHOE BUSINESS!**

Run your own profitable 'shoe store' business from home in spare or full time. We give you—FREE—complete Starting Outfit that makes you \$217.00 EXTRA each month for just 2 easy orders a day. You feature 275 fast-selling dress, sport, work shoe styles for men and women. Air-cushion shoes, many other special features! Sizes 2½ to 16—widths AAAA to EEEE. Draw on 300,000 pair stock. Your own shoes FREE. Discounts to your family. Prizes, bonuses—even a new car—at no cost to you. Rush postcard for your FREE Starting Outfit today... Now! MASON SHOE, Dept. F-749, CHIPPEWA FALLS, WIS.

## New Catalog of 2900 Novelties

Send 10c for amazing catalog of novelties, live animals, scientific supplies, hobbies, funmakers, planes & boats, looms, magic tricks, joke articles, unusual seeds, gadget timesavers, cameras, optical goods, projectors, movies, lucky jewelry, religious novelties, disguises, musical instruments, stamps, coins, puzzles, fortune tellers, radios, auto & bike accessories, telescopes, magnifiers, compasses, banks, smokers' gadgets, artists' supplies, printing sets, engines, motors, shockers, knives, billfolds, guns, rifles, sports, books, games, plants etc. Send 10c. JOHNSON SMITH COMPANY Dept. 637 Detroit 7, Mich.

**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.

Homeowners waiting to buy!

They want bird baths, urns, patio stone, other ornamental items you can make of

**GARDENCRETE**

Earn profits of 200% - 300% — with low-investment Gardencrete operation. Sell easy-to-make masonry products to nurseries, florists, garden centers, or homes. Free "Gardencrete" Book. Write:

Make dozens of different lawn and garden items.

## DON'T QUIT SMOKING

... Before Giving My Pipe a 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 name today for my FREE complete trial offer. Write to: E. A. CAREY, 1920 Sunnyside Ave., Dept. 252-C, Chicago 40, Ill.

## AMAZING X-RAY VISION INSTANTLY!

A Hilarious Laughingly Funny Illusion!



\$1.00

See through fingers—through skin—see yolk of egg—see lead in pencil. Many, many, amazing, astounding, illusory X-ray views yours to see ALWAYS—when YOU wear Slimline X-ray Specs. Bring them to parties, for real FUN. GUARANTEED—They give you a 3 dimensional X-ray illusion—the instant you put them on. Full instructions of

How To Enjoy Them To The Fullest! Last For Years—Harmless—Requires No Electricity Or Batteries—Comes Complete—Permanently Focused—Nothing Else To Buy—Send \$1. plus 25¢ for postage and handling or send \$2. for Deluxe model—Money Back If Not 100% Satisfied.

**SLIMLINE CO., Dept. 117**  
285 Market St., P. O. Box 90, Newark, New J





# Popular Mechanics Shopping Guide

## Worth Writing For



### FREE "NOTE-FINDER"

**Guides Your Fingers to Right Key For Every Note — Play Real Tunes Your Very First Day**

**LEARN PIANO!** (Or Guitar, Accordion, Sax—Choice of 16 Instruments.) Mail ad today! We'll send you famous U.S. School of Music PIANO "Note-Finder" absolutely FREE. Then you can prove to yourself how you can play real music—properly, by note—even if you don't know a single note now.



#### Stop Denying Yourself These Joys!

Music can bring you new friends. Gay parties. Good times. A career. Extra Money. Help you relax, banish worries and frustrations. Satisfy your desire for self-expression, creative urge. Gain self-confidence!

**SEND FOR FREE "NOTE-FINDER" AND BOOK.** Illustrated book describes fascinating story of wonderful proven Course that has you playing delightful pieces right away—from your very first lesson.

Simple as A-B-C. Learn at home, only few cents a lesson. For FREE "Note-Finder" and Book, mail ad today to U.S. School of Music, Studio A303, Port Washington, L.I., N.Y. Est. 1898—Lic. by N.Y. State Education Dept.



Name ..... (Please print)  
Address .....  
City.....Zone...State.....

Flying enthusiasts: "First Flying Machine," "War Birds (WWI)," "Daredevils of the Air"—these are just three of many intriguing aviation movies now available on 8-mm film for home viewing. Other reels range from the art of free falling to the history of the airplane. Fifty-foot rolls

cost \$2; 200-foot rolls, \$5. For further facts, write Aviation Films, Dept. 2744-A, 862 N. Fairfax, Hollywood, Calif.

### AIR LIFT AIR SPRINGS



### HANDLE ANY OVERLOAD

✓ The only air-adjustable overload spring — fits any car or light truck.

✓ A safe, level ride for vacationers, sportsmen, businessmen, trailerites.

✓ Quickly installed — no parts removed from car.

FREE literature: Dept. PM  
OVER 1,000,000 SETS IN USE



In Canada: 18 Hook Avenue, Toronto 9, Ont

**Boat plans** for midget boats that you can build if you can plane a bevel are available for \$2-\$5. A six-foot "Peanut" design geared for a boy 7 to 11 years old runs at 15 m.p.h. with a 3-hp. motor. Plans are clear and come with full-size half rib drawings. Six other designs include an 11-footer for water skiing and a 16-footer with two bunks. Write to Hank Clark, 36 Highwood Dr., Dumont, N.J.

**Leaky faucets, clogged drains and frozen pipes** can be coped with if you have "Simple Plumbing Repairs for the Home and Farmstead," a useful 16-page booklet prepared by the Agricultural Engineering Research Division of the Department of Agriculture. A tool list, diagrams and clear text cover repair procedure.

(Please turn to page 54)

## 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 1 1/2 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-3 MARYSVILLE, KAN.



## 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-3, Kensington Station Detroit 24, Michigan

Money Back Guarantee

## HEAVY DUTY-ARC WELDER

Five Year Guarantee

The New 1965 Model Heavy Duty 110 Volt Arc Welder works on any 110 volt house line. You can not buy a better welder anywhere at this low price. No experience necessary. Now anyone can braze, solder, cut and weld any metal up to 1/4" thick. Generates heat up to 10,000 degrees for cutting through steel plate, etc. **NOTHING ELSE TO BUY.** Comes complete with 12 ft. of heavy duty power cable, 1 1/2" and 1" welding and brazing rods, rod holder, twin carbon torch, helmet, instruction book, etc. **MONEY BACK GUARANTEE.** Try it for 10 days. If you are not completely satisfied we will immediately refund your money without question. —FULLY GUARANTEED FOR FIVE YEARS. If inoperative, we will repair or replace it free of charge. **SEND ONLY \$2.00,** and when delivered, pay postman \$12.95 plus COD postage, or send \$14.95 and we will ship postpaid. Over 10,000 National Electric Welders are in use throughout the world.



**ONLY \$14.95**

Order Direct from factory; NATIONAL ELECTRIC, Dept. PM-3, DELRAY, FLORIDA

POPULAR MECHANICS

Материал, защищенный авторским правом



# FOLBOT

fits in every home or car

FACTORY BUILT  
\$136

CHOICE of CHAMPIONS

belongs to You



PREFAB  
from \$47

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

FACTORY BUILT  
12 FOOTER

ONLY \$77

YACHT-SMART  
large NYLON

Sail Rig  
\$85

©

NEW  
Fabulous  
16 foot

\$107

Factory BUILT

Folding from  
\$129 Factory finished

**FREE**  
ACTION CATALOG

Mail coupon or address

to: FOLBOT CORP. Dept. PM-365  
Charleston, S. C. -29405

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

for  
**YOUR SPORT & FAMILY FUN**



**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 Nat'l. Home Study Council; VA Approved.

**LOCKSMITHING INSTITUTE**

Division of Technical Home Study Schools  
Dept. 110-035, Little Falls, New Jersey

**LOCKSMITHING INSTITUTE, Dept. 110-035,  
Little Falls, New Jersey**

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

**FINDS  
3-WAY  
INCOME  
INSURANCE**

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

**306 Pieces of  
equipment  
LOCKS, PICKS  
and TOOLS  
supplied for  
use with course.**

**SEND FOR  
FREE BOOK**



**LOOK! A NEW ELECTRONICS SLIDE RULE  
WITH COMPLETE INSTRUCTION COURSE**

Professional 10" all-metal Electronics Slide Rule. Designed specifically for technicians, engineers, students, hobbyists. Has special scales not found on any other rule. Enables you to solve electronics problems quickly, accurately. Made to our rigid specs by Pickett, Inc. Slide Rule plus four lesson AUTO-PROGRAMMED Instruction Course with grading service, and top-grain leather carrying case all for \$14.95. Satisfaction warranted or your money back. Cleveland Institute of Electronics, Dept. PM-102, 1776 E. 17th St., Cleveland, Ohio 44114.

**SEND COUPON TODAY!**

**Cleveland Institute of Electronics**  
1776 E. 17th ST., DEPT. PM-102, CLEVELAND, OHIO 44114

Send Electronics Slide Rule with Instruction Course and leather case. I'm enclosing \$14.95.

Send descriptive brochure only . . . without obligation.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_ COUNTY \_\_\_\_\_

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






## THE PIPE TOBACCO THAT STAYS LIT

Bond Street keeps burning because of its old English cut—a combination of flakes for even burning, and cubes for slower burning. You'll like its aroma of fine domestic and imported tobaccos, too.



### *A word to novice pipe smokers*

 Don't overwork your new pipe. Fill it half full for the first few smokes. Then let your pipe cool off. If you try to take it apart when it's hot—it can easily break.



## 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

POPULAR MECHANICS

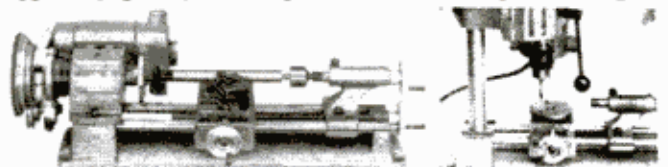


## Popular Mechanics

Also included are tips on how to check damage in major emergencies before the professional plumber arrives. Send 10 cents to the Superintendent of Documents, Washington, D. C. 20402.

**Dyeing** your own yarn, cloth or leather with natural dye plants is a fascinating hobby being revived by do-it-yourselfers. An authoritative handbook published by the Brooklyn Botanic Garden (Brooklyn 25, N.Y.), "Dye Plants and Dyeing," explains dye formulas, recipes, blending and color-fast techniques. Notes on plants currently used for dyeing and those of historic interest were gathered from 18 countries, including South Africa and Lapland. Of special interest: a feature on how our ancestors achieved the beautiful tones in heirloom tapestries and how to grow the same dye plants in the back yard. Color photographs show the vibrant work being done. Secure your 100-page handbook for \$1.25.

## What's so unusual about UNIMAT?



It's the only high precision metal-working lathe in the world that converts instantly into a sensitive drill press. 10,000 Unimat Owners also use their machines for milling and surface grinding. Attachments permit sawing wood, metal and plastics; polishing, tool sharpening and grinding. Price of complete basic machine is only \$139.50. Write for Free Catalog, or read the whole story in "Miniature Machining Techniques" manual—only \$1.00.

AMERICAN EDELSTALL INC., Dept. G-C5, 350 B'way, N.Y. 13, N.Y.

## "\$18,000 First 9 Months OPERATING AUTO RADIATOR SHOP"

—Harvey C. Jones  
Reseda, Calif. (Pop. 4,500)

Mr. Jones had no radiator experience—installed Inland Radiator Equipment—now services auto-truck-tractor cooling systems. This market is booming as radiators become smaller, capacities less, yet pressures higher. Many Inland shop owners make \$10-15-20,000 and up (names on request). Inland—world's largest mfr. of radiator servicing equip.—provides complete pkg.: **FREE FACTORY TRAINING**, supplies, etc. Proved merchandising assures volume. "Pay-As-You-Profit" purchase plan. Profitable dept. for established business. Write for free 32-page book—equip., prices, owner letters.

INLAND MFG. CO., Dept. PM-3 1108 Jackson St., Omaha 2, Nebr.



# Shopping Guide...

**Pest control** by air—from pesticide selection to equipment maintenance—is discussed in a concise pamphlet, "Apply Pesticides Safely by Aircraft." It's presented with community health in mind, and would be a good bit of information to pass on to those in your area who do the spraying. Write the Plant Pest Control Division, Agricultural Research Service, U.S. Dept. of Agriculture, Hyattsville, Maryland, for your free copy.

**Workshop ideas** such as where to set one up (basement, spare room or garage) and how to incorporate a tool board, workbench or supply cabinet are illustrated and briefed in a recent folder. There are no step-by-step directions, but you may be inspired to some original craftsmanship. "How to Build and Improve Your Home Workshop" is available for 10 cents from Millers Falls Co., Greenfield, Mass.

**Earn \$100 to \$150 A WEEK IN SPARE TIME!**



Sell cones, shakes, sundaes, hamburgers, hotdogs, french fries, coffee, soft drinks. No experience needed. All

supplies can be purchased locally. Complete including Chevrolet truck and all new, high-quality restaurant-type equipment. Only \$3,995. Will finance on approved credit. Here's a great opportunity to make big, extra money without giving up your present job. When writing, give phone number.

**FREEZ-KING**, 1200 N. Homan, Chicago, Ill. 60651 Dept. P35

**LAFAYETTE RADIO ELECTRONICS**

**FREE! 1965 CATALOG NO. 650**  
516 Pages from the

"World's Hi-Fi & Electronics Center"

Hi-Fi Stereo • Citizens Band • Ham Gear • Test Equipment • Cameras • Tools . . . just about Everything in Electronics for Home, Industry and Laboratory.

Mail the Coupon for Your Free Catalog!

Lafayette Radio Electronics

Dept. LC-5, P.O. Box 10 Syosset, L.I., N.Y. 11791

Send me the Free 1965 Lafayette Catalog 650.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_



## Lennox Kittytrack® World's Finest Crawler-Type Lawn and Garden Tractor

- Gentler to your lawn — positive traction in your garden
- Safer, surer on grades and sidehills
- More maneuverable . . . square corners
- Full line of lawn and garden tractor implements
- Front mounted lawn and snow equipment
- Three point, lift, rear hitch for garden attachments

Write, for free illustrated booklet.

Dept. PM

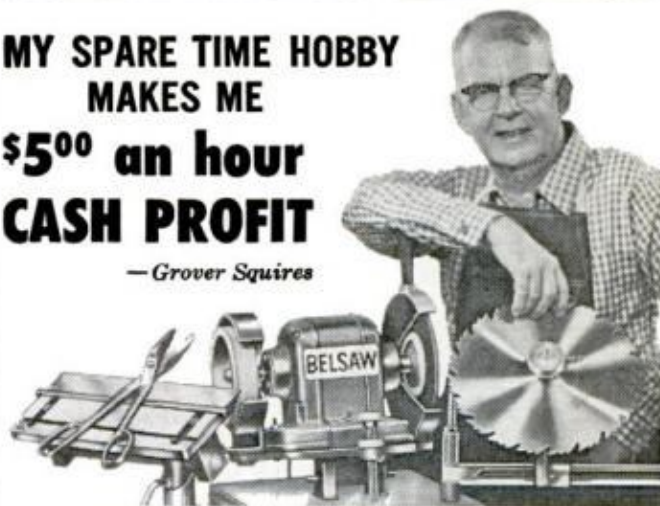
**LENNOX Industries Inc.**

P. O. Box 3092, East 14th St. Station  
DES MOINES 16, IOWA

**MY SPARE TIME HOBBY  
MAKES ME**

**\$5<sup>00</sup> an hour  
CASH PROFIT**

— Grover Squires



**START YOUR OWN SPARE TIME BUSINESS**

You can turn your spare time into Big Cash Profits with your own **COMPLETE SHARPENING SHOP . . .** Grind saws, knives, scissors, skates, lawn mower blades . . . all cutting edges. Your Own Cash Business with no inventory . . . right at home . . . no experience needed.

**FREE BOOK** tells how you can start your own spare time business while you are still working at your regular job. Low Cost — time payments only \$15.00 a month. Send coupon today.

**FREE BOOK**

**BELSAW SHARP-ALL CO.** 715J Field Bldg., Kansas City 11, Mo. Send Free Book "LIFETIME SECURITY". No obligation.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

MARCH 1965

55



## While Employed Earn \$9 an Hour in Your Own Business

It's true. Without giving up your regular job—without losing a single pay check—you now have an opportunity to double your income in your own business. A big 24-page book tells how other men do it—then expand to a full time operation. Gross hourly profit \$9.00—PLUS \$6.00 additional on each serviceman. Income unlimited.

Your service is Nationally Advertised, world-wide and endorsed by McCall's and Parents' Magazines. Carpet and upholstery cleaning. Also 5 other superior on location services. You need no experience. We show you how and finance you for all but a few hundred dollars. Easy to learn—easy to do—easy to build up to a good, steady volume because we show you 15 tested ways to get customers.

G. F. Monroe, after 12 months, sold his business for 10 times his cost. Leo Lubel sold his for \$7,116 more than he paid. L. Babbit writes, "I average \$2,600 monthly, part time." W. C. Smith earned \$650 in one week. Ed Kramsky said, "In two years I have two assistants, a home and security."

This may be the opportunity of your life. Find out today before someone else gets your location. Mail coupon now for details and 24-page illustrated free book. No obligation. No salesman will call. Mail coupon now before it's too late.

### DURACLEAN COMPANY

5-163 Duraclean Building, Deerfield, Illinois 60015

Please send me your 24-page illustrated book that tells how I can double my income in a business of my own. Everything you send me now is free and I am under no obligation. No salesman will call.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

ZIP CODE \_\_\_\_\_

## BIG INDUSTRY ... A. I. G.\*

Ask Major Companies and you will learn they find it best to have most of their metalizing done by small independent suppliers. General Motors assembles cars—it does not manufacture every part. The same principle applies in every part of American Industry. If you own a Warner Shop you will discover that you can be a supplier to major industry. Big companies do not wish to compete with you! They want you as a supplier. NOW! Be a part of the American Industry Growth\* picture.

LET YOUR MAILMAN BE YOUR BANKER!  
Write to: WARNER ELECTRIC COMPANY  
Dept. M-2-C, 1512 Jarvis Ave.,  
Chicago, Ill. 60626

It's sleek ... it's unsinkable ... it's a portable

# KLEPPER

Foldsaway

Fits  
Any  
Car

Since 1907—Famous for  
FOLDING BOAT QUALITY

Discover the remarkable advantages of a Klepper Foldsaway ... See how easy it is to carry, to assemble, to store. Airtubes guarantee safety. Perfect family boat. 4 international awards. Choice of many new models.

Write for FREE color catalog PM3



Sail  
Motor  
Paddle

HANS KLEPPER, 35 Union Sq. West, N.Y. 3, N.Y.

## Career in ELECTRONICS?



Train at home with RCA Institutes, one of America's leading Electronic Schools. Lab work with first lesson. No installment payments required. (Licensed by N. Y. State Education Dept.) Send for free 64-page book.

RCA Institutes, Inc.  
A Service of RCA  
Dept. PM-35  
350 W. 4th St., N.Y. 14, N.Y.

## 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. Free information. Write today!

LINCOLN TECHNICAL INSTITUTE  
SUITE 3E 472 MARKET STREET, NEWARK 5, N. J.

## 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. 53, Chicago 1, Illinois



## SEND FOR THIS FREE!

Make money. Know how to break and train horses or ponies. Write today for this book FREE, together with special offer of a course in Animal Breeding. If you are interested in Gaiting and Riding the saddle horse, check here ( ). Do it today—now.

BEERY SCHOOL OF HORSEMANSHIP  
Dept. 1103-D Pleasant Hill, Ohio

## DRILL GLASS!

WITH THE "Blue Borer"



Make handsome lamps from old bottles. Do custom lamp making. This is a professional tool. 7/16" in dia. Exact size for doing the job. Fits 1/4" drill chuck.

Blue Borer and instructions for drilling holes in glass. \$2.95 p.p. MAGUIRE'S STUDIO,  
207 Butler Ave., Dept. PM-3, Providence 6, R. I.

## be a TAX CONSULTANT

Income unlimited in ever growing profession. Our students are earning lucrative fees in dignified full or part time home-office business preparing income tax returns during busy tax season. Many operate profitable Business Tax Service with steady monthly fees of \$10-\$50. No bookkeeping experience necessary. We train you at home and help you start. Licensed by N.Y. Education Dept. No agent will call. Write for free literature.

National Tax Training School, Monsey, Y-20, N.Y.

## BUILD YOUR OWN CAMPER AND SAVE!

ALSO TRAILER OR PICKUP-COVER

Complete, easy to follow plans, instructions and materials list. \$3.95 ea.

EQUIPMENT CATALOG—\$1.00 (REFUNDABLE ON FIRST ORDER)



SEND CHECK OR M.O.—FOR DETAILS SEND DIME!  
VIKING CAMPER SUPPLY 94-B Glenwood Av.,  
Minneapolis 3, Minn.

POPULAR MECHANICS

Материал, защищенный авторским правом



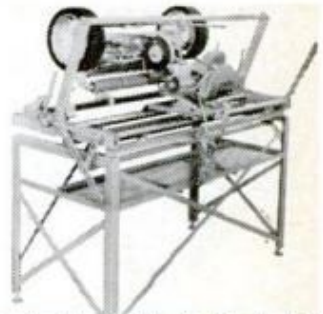
# For Sparetime or Full Time Income, There's Good Money In Sharpening



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.

### GET FREE BOOK NOW "MONEY MAKING FACTS"

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. 316-5 Foley Bldg., Minneapolis 18, Minn.

#200 Saw Filer information.  Modern Lawn Mower Sharpener information.  Money Making Facts booklet.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_



## GENUINE ALNICO MAGNETS

AMAZING. PERMANENT. NON-ELECTRIC. HIGHLY PRACTICAL. Conduct interesting experiments. Hundreds of uses. Retrieve valuable steel items such as guns, tackle from fresh or salt water, tools from tanks and drains. **GUARANTEED.** Try any magnet one week. Money back if you are not well pleased.

M-710 (Wt. 53 oz.) Has pull of 225 lbs. on steel block ..... \$18.50  
M-625 (Wt. 70 oz.) Has pull of 125 lbs. on steel block ..... \$10.50  
M-575 (Wt. 18 oz.) Has pull of 75 lbs. on steel block ..... \$ 7.50  
M-500 (Wt. 13 oz.) Has pull of 50 lbs. on steel block ..... \$ 5.50  
M- 90 (Wt. 5 oz.) Has pull of 15 lbs. on steel block ..... \$ 3.50  
M- 44 Rod Magnets for Electric Guitars, 1/4" DIA. x 1 1/4", 12 for \$ 4.00  
M-300 Kit of flat bars—5 pairs (10 magnets) ..... \$ 3.00  
M-47 Hot pad magnets, 10 for \$1.00 ..... \$ 4.87  
M-35 Science experimenter Kit of 8 magnets ..... \$ 2.00

SEND M.O. OR CHECK—WE PAY POSTAGE—SORRY NO C.O.D.'s  
MIAMI MAGNET COMPANY, 3240 N.W. 27th Ave., Miami, Fla. 33142

## IF YOU HAVE HERNIA

### Get this NEW FREE BOOK

Tells how Rupture can be treated by a mild Non-Surgical method that is backed by a Life Time Certificate of Assurance. This treatment method has a long history of use and is recognized by Authorities today. Men and Women from all over the country have taken the Non-Surgical Treatment and reported it is effective. Why put up with wearing a griping, chafing, unsanitary truss?

Write today for this FREE BOOK. Tells How, explain: Why more and more Rupture Sufferers are using Modern Non-Surgical Treatment Methods. Act Now. No Obligation.

EXCELSIOR MEDICAL CLINIC

Dept. E6129

Excelsior Springs, Mo.

## • MEN • Get a man's Job!!!

Earn up to \$200 per week in the Construction or Trucking Industries, on Jobs that Offer:

• SECURITY • TRAVEL • VARIETY • OUTSIDE WORK

### DRIVING



### TRACTOR-TRAILERS

• MACKS • WHITES • GMC'S • KENWORTH  
• INTERNATIONALS • PETERBILTS • DIAMOND T'S  
"THE BIG DIESEL RIGS"

OR

### OPERATING



• BULLDOZERS  
• SCRAPERS  
• GRADERS  
• BACK HOES  
• DRAG LINES  
• CLAM SHELLS

### HEAVY EQUIPMENT

Short practical training program will qualify you for one of the job openings in these rapidly expanding Industries. For complete information: Send Name, Address, Age, Phone Number and Working Hours to

ASSOCIATED HEAVY EQUIPMENT SCHOOLS, INC.  
1141 NE 79th STREET, MIAMI, FLORIDA 33138



# WANTED! TRAINEES!

At School  At Home

Send for **SAMPLE LESSON** and **FREE Aptitude Test** today. Study at School or at Home. You can **EARN** while you **LEARN!**

Allied Institute of Technology, Dept. PM-35  
1338 S. Michigan Ave., Chicago, Ill.

Please send me **FREE** information about the courses I have checked and Allied's Industrial Co-op Placement Service.

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

Address \_\_\_\_\_

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

Get into one of these important fields:

- MACHINIST TRADE
- TOOL-DIE MAKING
- DRAFTING
- TOOL DESIGNING
- INDUSTRIAL ENGINEERING
- AIR CONDITIONING REFRIGERATION
- AUTO MECHANICS

## TO YOUR OWN DOCTOR'S PRESCRIPTION



### EYEGLASSES BY MAIL AT GREAT SAVINGS!

Mail orders filled by licensed optician from **\$9.95**

(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-3 136 Liberty St., New York 6, N. Y.

### MAKE MONEY!

### 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 P M 3 and Free Bonus Offer

Hydraulic Jack Repair Manual Co.  
P. O. BOX 50 • BLOOMFIELD, N. J.



LEONG FU  
梁富

## DON'T BE BULLIED!

Learn direct from the Orient, **CHINESE KUNG-FU KARATO**, the secret Oriental Art of Self-Defense, so effective even a Judo-Karate expert respects it. Defeat aggressors within seconds. Size Doesn't Count! For Free Details by Air: rush your name and address also by Air to Asia's Greatest Karato Master:—**HONOURABLE MASTER LEONG FU**. (Dept. MI/7). 119, Anderson Road, IPOH, MALAYSIA.



# G E A R S

**In Stock — Immediate Delivery**

Gears, speed reducers, sprockets, thrust bearings, flexible couplings, pulleys, etc. A complete line is carried in our Chicago stock. Can also quote on special gears of any kind. Send in your blueprints and inquiries.

Send for **Complete Catalog No. 10 CHICAGO GEAR WORKS**  
440-50 N. Oakley Blvd., CHICAGO 12, ILL.

## deft CLEAR INTERIOR WOOD FINISH

The Complete Wood Finish in One Can!

**BRUSH IT! ROLL IT! SPRAY IT!**

Wherever quality paint products are sold.

Write for **FREE** folder to DEFT, Inc.

P. O. Box 2216-N4, Torrance, California

Would You Like to Make **\$1,000 A MONTH?**



That's what Stanley Hyman made selling the amazing new **Presto Fire Extinguisher!** Many others "cleaning up"—so can you! Amazing tiny new extinguisher ends fires fast as 2 seconds. **Guaranteed for 20 years!** Sells for only **\$4.95**. Write for Free sales kit.



Merlite Industries, Inc., Presto Div.,  
114 E. 32nd St., Dept. P-15G, New York 16, N. Y.

## TELLS HOW TO SELL YOUR INVENTION

If you have an invention that you believe has merit, write us at once for copy of copyrighted booklet "How to Go About Selling Your Invention." We work with manufacturers, and booklet reveals present markets, qualities of a saleable invention, current royalty rates being paid by manufacturers. Booklet is **FREE**, is offered to encourage new ideas we might submit to manufacturers. Just send name (no drawings, please) to **Kessler Sales Corporation, Dept. D-53, Fremont, Ohio**

## NEW Improved Accurate Scope-Shot

Price Complete with 50 **DISINTEGRATING PELLETS** \$1.95 P.P. They crack like a rifle when they hit—leave mark—puff of smoke!

Big Bag of 250 **EXTRA Pellets** 98¢ P.P.

World's Finest Precision **SLINGSHOT** Scope-type sight!

**ROOTS 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.

Order NOW from: **GENERAL SPORTS**  
4184-M3 Apple Street, Cincinnati 23, Ohio



**5 Day Home Trial**

# SAVE 1/2 ON "NEW SOUND" ELECTRONIC ACCORDIONS\*

**BIG DISCOUNTS!**  
Importer-to-you Prices

42 STANDARD AND ELECTRONIC MODELS for Students, Teachers and Professionals

**FREE GIFTS**

E-Z Lesson Course, Year's Music Supply, Music Stand, Straps, and Case... Many More!

**Rush Coupon**  
Free Color Catalog  
Discount Price List

Easy Terms • Low as **\$7.95 a Month**

★ Rush coupon for **proof** you save up to 50% off retail prices of comparable accordions! **BUY DIRECT**—Low Importer-to-You prices. World's largest accordion dealer. All famous makes. 42 New **Electronic** & Standard models, Amplifiers. Popular "Button type" accordions, too! Lifetime Performance Policy. Money Back Guarantee. Easy terms. Big Trade-In. Color Catalogs, Selection Guide and Discount Prices—**FREE!**

**ACCORDION CORP. OF AMERICA**  
Dept. R-35, 5535 W. Belmont Ave., Chicago, Ill. 60641

Accordion Corp. of America, Dept. R-35,  
5535 W. Belmont, Chicago, Ill. 60641  
Send **FREE** Catalog of Accordions, Amplifiers  
—Selection Guide, Color Chart, Discount Prices.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

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

Check here if you have a Trade-in.



# GROSSED \$1101<sup>35</sup> IN 4 WEEKS

Some make more — some less...

Many men have discovered how to be independent, to be free of layoffs and bosses. L. S. Mason grossed \$1101.35 in 4 weeks. T. N. Cochy averaged \$806 per month 12 months. H. Lemon says, "I netted \$133 in one 8-hour day." A father-son combination grossed \$44,000 their second year.

How much you earn depends largely on you, but we help you to start and work with you for your success. You need no special skill, no large investment. Start part time if you wish. Hire helpers as needed.

**NO SHOP NECESSARY** • Our PORTABLE ELECTRIC DETERGER shampoos rugs, carpets right on cus-

tomer's floor. Wonderful results bring you repeat business, large fees. So efficient and safe, it is used by largest hotels and railroads.

**OURS IS NOT A LEASE ARRANGEMENT**

• You are free to operate in an independent manner. You sign no contract. You own the detergent outright and are always your own boss...and every dollar you take in is yours to keep. You pay no fees, or dues, or royalties to anyone, and enough supplies come with it to return far more than your investment. Many earn the cost of the detergent in a week or two. It costs nothing to get the details...write TODAY.



## MAIL COUPON TODAY FOR FREE BOOK

VON SCHRADER MFG. CO., • 310 "R" Pl., Racine, Wis.

Without obligation send me FREE booklet about your RUG DETERGER and tell me how I can start my own permanent, profitable business.

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

## A BUSINESS of YOUR OWN • AMAZINGLY PROFITABLE



MAKE THIS!  
Your Cost 10¢  
SELL for \$10

*New*

MAKE THIS!  
Your Cost 15¢  
SELL for \$15



Build your own business—we show you how to manufacture popular sculpture reproductions. Small investment. Quick results. Big potential. We grew from 12x20 garage to \$30,000 factory in only four years. For FREE details:

BOB WADE ASSOC., Dept. D—P. O. Box 8645, Nashville, Tenn.

Antarctica, the world's highest continent, averages more than a mile above sea level. Its highest point is the 16,860-foot Vinson Massif, in the Ellsworth Mountains 600 miles from the South Pole.

## BUY CARS BELOW WHOLESALE COST!

64 FORD  
CUSTOM or  
64 DODGE 330

**\$899**



Maintained to pass state inspection. All cars kept in largest indoor warehouse in U.S. Formerly taxis. All markings removed. No different than regular passenger cars.

63 FORD CUSTOM 549 63 STUDEBAKER LARK 399  
 63 DODGE 330 549 62 PLYMOUTH, STD. 499

All cars 4 door, 6 cyl. auto., good tires, jack, heater  
**WRITTEN GUARANTEE • MOTOR • BODY**

Delivered anywhere in U.S. for \$50 a car plus gas & oil.  
**ONLY \$50 DEPOSIT RESERVES A CAR FOR YOU**

Call, wire, write: LEN PEARL for FREE Photo & Catalogue.

Phone: (212) SH 7-1365

**INTERNATIONAL FLEET CAR  
 WHOLESALERS INC.**

4733 Chestnut St., Philadelphia, Pa.  
 Member Better Business Bureau

MARCH 1965

59

## 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. 1353**  
 1920 Sunnyside Avenue, Chicago 40, Ill.

Rush Blue Book of Crime... FREE!

NAME \_\_\_\_\_ Age \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 TOWN \_\_\_\_\_ STATE \_\_\_\_\_

## NOW FOR THE FIRST TIME AT THIS RIDICULOUSLY LOW PRICE

**\$5.95**

Not sold to Calif. or N.Y. res.

22 Cal. Blank Cart. 6 Shot Revolver  
 No Permit Required Imported from Italy  
 —"BLACK VENDETTA". Send \$1.00 on C.O.D.'s. Latest model, not a toy. Gun is of solid steel construction. Lightweight and perfectly balanced. Fires 6 rounds in 2 seconds! Double or single action. Precision crafted, 5 1/2 inches long. Ideal for stage, sporting events, boating, protection. Revolver \$5.95, deluxe leather holster \$2.25. Send cash, check or M.O. and save C.O.D. charges. \$1.00 deposit with C.O.D. orders.



**BIG THREE ENT. INC. 1109 Sixth Ave., New York 36, N. Y. Dept. PM365**

## EXCLUSIVE DOUBLE-BEARING HEAVY DUTY PUMPS

IRRIGATE • DRAIN • CIRCULATE • SPRAY  
 Use 1/4 HP motor or larger... 1 HP for up to 5,200 GPH; 1,000 GPH 60" high; or 3,000 GPH from 25' well. 1 1/4" inlet; 1" outlet. Stainless shaft.

TYPE X—2 oil-less bronze bearings. **\$10.95**  
 Won't rust  
 TYPE XB—Ball bearing model. **\$12.95**  
 Best for belt drives...

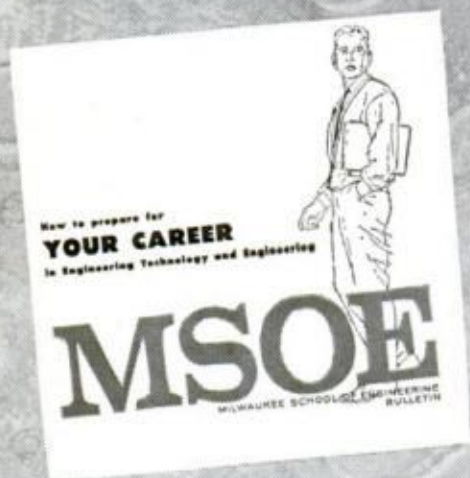


Postpaid if cash with order.  
 Don't delay—order for yours today!  
**MONEY BACK GUARANTEE**  
 Centrifugal and Gear Pumps in All Sizes  
**LABAWCO PUMPS, Belle Mead 2, N. J.**

Материал, защищенный авторским правом



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 engineering technician or engineer in such exciting, growing fields as avionics, missiles, reliability control, fluid mechanics, data processing, metallurgy, microelectronics, 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 financial aids, job placement and other student services, plus photographs of MSOE technical laboratories and student activities. For your copy, just mail the coupon — no obligation.

# MSOE

Milwaukee School of Engineering

Milwaukee School of Engineering  
Dept. PM365, 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-227

Don't put up with bad-tasting water!

SEND FOR FREE 16 PAGE BOOKLET

You can eliminate excess chlorine, sulphur, other bad tastes or odors from home drinking water. Simple. Inexpensive. Write: Cuno Engineering Corporation, Meriden, Conn.

**CUNO® AQUA-PURE® filters**



**make your own Gems 36<sup>50</sup>**  
F.O.S.

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.

### FREE LIVE SEAHORSES

Order LIVE MATED SEAHORSES sent Air Mail postpaid to your door. FREE food, catalog and simple instructions for raising these exotic little pets. Easy to keep in a jar, bowl or aquarium. The father seahorse gives birth to the young alive. Hardy, fascinating and easy to raise. **GUARANTEED LIVE DELIVERY. MATED PAIR \$2.25—3 PAIR SPEC (6) Order TWO PAIR \$4.48 and receive another PAIR FREE (One address)**  
F. F. Marine Life P.O. Box 626-PM-65 Dania, Fla.



**FREE**

**MUSCLE BUILDING INFORMATION**

Sensational New Isometrics  
Less Time—Less Effort—Better results  
**BODY-TONE**, Box 638, North Miami 61, Fla.

### DEATH ABSOLUTE CONTROL for HOME, FARM,

INDUSTRY, RECREATION. Mosquitoes, Gnats, Moths, Millers, Boll Worm, Corn Borer, Oak & Lygus Moth, Heart Worm, Green Gnats, Tent Caterpillar, Woolly Worm, Puss Caterpillar, No-See-Ums, Etc. Money Back & Lifetime Guarantee - 10c Month to operate - Write

**BLITZEN CORPORATION**

Box 67 — Ferndale, Michigan — Zone 48220

**FREE!**

Learn how you can buy engines \$15.00, wheels \$5.00, etc. with Confidential List!

**BUILD THIS MINI-BIKE!**

Complete frame for less than \$10!

**MOTORIZED YOUR BICYCLE!**

Convert your bicycle. No welding!



RUSH 25c for Brochure Describing Plans

PLANS, Box 478, Dept. PM3 Denver, Colo.

There were 326,200 automobile thefts reported in the U.S. during 1961. Ninety-two percent of the stolen cars were recovered.

## MONEY IN WORMS

Success for you! 5000 of our hybrid red wiggler fishworms produce 5,000,000 in one year using our successful method of worm raising. Read our success story in LIFE MAGAZINE, Dec. 28, 1959 issue. Let us teach you our secrets of success. Write today for FREE INFORMATION on how to raise and sell fishworms and crickets.

Special Today—Hybrid Red Wigglers—3000—\$5.95, 5000—\$8.95, 10,000—\$16.95. Postpaid.

**CARTER WORM RANCH, PLAINS, GEORGIA**

POPULAR MECHANICS

Материал, защищенный авторским правом



Two or four-wheel drive  
**JEEP or SCOUT**  
owners

**REPOWER**  
with V-8 or 6 Cyl. engines.  
H.D. ADAPTORS for  
TRUCK, CAR or COMPACT  
engines. Immediate del.  
Write, wire or phone TO-  
DAY. Free details.  
HOOSIER MACH. Prods. Co.  
312 SE 6th Pendleton,  
Ph. 276-3442 Oregon

**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.), or Doctor of Metaphysics (Ms. 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

*the going's great!*  
**WARN HUBS**  
ON YOUR 4-WHEEL DRIVE



**Stop front end drag, save gas, gears**  
These famous hubs save gas, gears, tires, engine, improve performance, reduce maintenance costs, increase vehicle life by disengaging the front drive in 2-w.d.—automatically, or with manual controls. To get the most from your 4-w.d. under all conditions, install Warn Hubs. That's what the majority of 4-w.d. owners do. Write, or see your dealer.

Warn Mfg. Co., 9050-A Empire Way S., Seattle, Wash. 98118



**LAN-LIN**  
HAND CLEANER

Cleans Hands With or Without Water  
Removes Grease, Grime, Stains,  
Paint, Ink . . . Safely!

**RUB ON—RINSE OR WIPE OFF**  
At Service Stations, Auto & Hardware Stores

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, CALIFORNIA**

**NOW, BUY 1964 CARS DIRECT— BELOW WHOLESALE**



only \$**999**  
POWER STEERING

**'64 CHEVY BISCAYNE** ONLY 160 UNITS.  
BUY NOW!

'64 FORD CUSTOM 300 .....	\$899
'64 STUDEBAKER LARK .....	\$699
PLUS 4 NEW FIRESTONE TIRES	
'63 CHEVY BISCAYNE .....	\$699
WITH POWER STEERING AT NO EXTRA COST	
'63 FORD CUSTOM 300 .....	\$599

All 4 door, 6 cyl., automatics—good tires, spare, heaters.  
**GUARANTEED IN PERFECT RUNNING CONDITION**  
Formerly taxies. All signs and markings removed.  
**NO DIFFERENT THAN REGULAR PASSENGER CARS.**  
\$100 Deposit Holds One For You. No sales tax, clear titles.  
CALL, WIRE, WRITE LARRY SHANDEL.  
201 HE 5-8400-1 N.Y.C. 212 CO 7-4440  
**FREE: WRITE FOR ACTUAL PHOTOS AND FACT BOOK**

**UNIVERSAL AUTO WHOLESALE INC. - Est. 1959**  
Dept. PM-3, 990 Newark Ave., on Route 1 & 9, Jersey City, N.J. 07307

Assemble the finest instrument your money can buy  
**NEW ALL-TRANSISTOR Schober®**  
**ELECTRONIC ORGAN**



meets AGO specifications

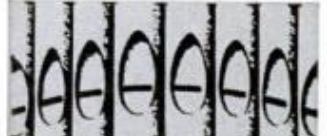
**New Recital Model**  
compares musically  
to instruments  
costing 4 times  
the price!



**PIPE ORGAN VOICING**—  
separate, distinct—32 in  
Recital Model. LIBRARY OF  
STOPS™ Kit feature adds  
extra plug-in voices



**ALL TRANSISTOR** Models  
give instant response,  
easier assembly, full 5 year  
guarantee



**PIPE ORGAN TONE**—all four  
families of pipe tone in all  
models



**REVERBATAPE®** Unit — adds  
"auditorium" depth and  
power

plus **FULL THEATRE AND CHURCH VOICING, PERCUSSION,**  
many other quality features!

How is it possible to acquire the skill needed to  
build a splendid organ—without any previous  
knowledge of electronics or music?

While the complete organ is a complex instrument,  
Schober Organ kits are specially designed for do-it-  
yourselves. Printed circuitry eliminates a lot of the  
work and makes errors almost impossible. Many  
parts come preassembled. You simply follow de-  
tailed illustrated instructions for easy assembly, then  
place in assembled and pre-finished cabinet.

You save costly factory assembly, retail store mark-  
up—put every penny into fine musical parts. You  
enjoy the finest instrument your money can buy.

Schober Organ kits cost as little as \$550 in kit form,  
and you may spread this cost by ordering in sections.

THE *Schober Organ* CORPORATION  
NEW YORK, N. Y. 10023

SEND FOR FREE CATALOG WITH FREE "SAMPLER" RECORD

The Schober Organ Corp., Dept. PM-15  
43 West 61st Street, New York, N. Y. 10023

- Please send me without cost or obligation FREE SCHOBER ORGAN Booklet describing models. FREE 7-inch "sampler" record included.
- Enclosed find \$2 for high-quality LP 10" SCHOBER RECORD DEMONSTRATING all three models with different music (\$2 refunded with purchase of first kit).

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP NO. \_\_\_\_\_



# ELECTRONICS

COYNE ELECTRONICS INSTITUTE

A quarter million dollars worth of equipment. Non-Profit Institute—Est. 1899. Courses: Electronics • Electricity • TV-Radio • F.C.C. • Electronics Engineering Technology. Mail coupon or write for FREE BOOK, "Your Opportunities in Electronics." No Salesman will call.

COYNE ELECTRONICS INSTITUTE Educ. Serv. Dept. 35-S  
1501 W. Congress Parkway, Chicago, Ill. 60607

NAME \_\_\_\_\_ PHONE \_\_\_\_\_  
ADDRESS \_\_\_\_\_ AGE \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

NEW CATALOG

## WOOD

Everything for the Craftsman  
Over 1,500 Items  
Finest Domestic and Imported Woods...  
Kits... Ornaments  
...Tools... Special Hardware... Tile.  
LOW MONEY-SAVING PRICES  
Stanley Power Tools  
—Big Discounts!



### Workshop Supplies, Equipment

Send for Craftsman's NEW 132-page catalog... get big discount prices on Stanley Power tools! Finest kiln-dried domestic and imported woods, wood and metal legs, ornaments. Over 1,500 items! Big values on tools, craftsman hardware, Mosaic Tile, upholstery supplies, lamp parts. Glue injector. Send 25c to help pay postage and handling. Craftsman Wood Service, Dept. A-3 2729 S. Mary St., Chicago 8, Ill.

CRAFTSMAN WOOD SERVICE CO., Dept. A-3  
2729 South Mary Street, Chicago 8, Illinois  
Enclose find 25c. Rush new CRAFTSMAN Wood Catalog.

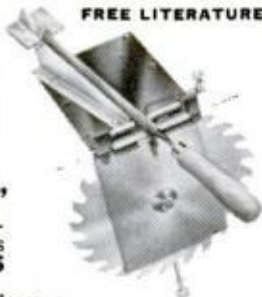
MAIL COUPON NOW!

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

### SAW SHARPENING IS EASY

Super Filer No. 11 joints and sharpens circular saws 6" to 10" with all teeth correct in height, depth, pitch, bevel. When file hits steel roller, teeth are finished. Saw runs true with no side pull. Includes 8" file. **\$9.95** PPD.

FREE LITERATURE



### "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, Dept. A-35

## HOT SHOT

Amazing New BENJAMIN  
30 30 CO2 GAS  
BB CARBINE REPEATER

—Packs a PUNCH that's so POWERFUL it will Drive STEEL BBs thru Both Sides of a 5 Gal. Steel Pail at close range!

(26 ga. .018")



You're in for a thrill you'll never forget the first time you shoot HOT SHOT! The Hardest Shooting CO2 Gun on the market—New Model 30 30 embodies features that also assure Flawless Performance: Permanent Alnico V Cast Magnet Shot Holder... a Positive, Jam-proof method of loading Ammo in firing position; Convenient, Positive Hammer Safety; 30-BB Mag.; 30 Shots per cartridge; Quality Built. Lightweight—Accurate—Field Tested—Lowest Shooting Costs—use Indoors/Outdoors.

**\$18.00** Ask Dealer for Demonstration.  
BENJAMIN AIR RIFLE COMPANY  
896 Marion St., St. Louis, Mo. 63104

FREE Catalog Benjamin Single Shot and Repeaters—Cal. BB or 177 or 22. Also Special Hunting Knife Offer. Write today!

You Can DEPEND on BENJAMIN

## Liquid WRENCH

LOOSENS RUSTED NUTS, BOLTS, PARTS IN SECONDS

at Service Stations, Auto and Hardware Stores



## BIG CATALOG! FREE DECAL

BIKES • KARTS • PLANS • PARTS

Save up to 50% on karts, scooters, mini-bikes! Plans, drawings, parts, engines, clutches, wheels, helmets, etc. plus ready-to-ride units... all at factory prices! Build it yourself at home! Order catalog now get free decal!

Go Kart SEND \$1.00 BOX 797P



Janesville, Wis

## FLORIDA

CAMPsites — deep in the heart of the great (440,000 acre) Ocala National Forest.

Electricity. Good fishing, hunting. Warranty deed. FREE maps and photos.

Howard Vernor, DeLand, Florida



## 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-B State St., Marshall, Mich.



### 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.

## NEW STROMBECKER®

### Hobby Knife

Surgical steel blades last longer, guaranteed not to loosen. Metal handle, with blade and blade guard, at hobby stores.



Only 49c

STROMBECKER CORP.

4646 W. Lake St./Chicago 60644

POPULAR MECHANICS



# HIGH WAGES for TRAINED "GROUND-BREAKERS"

LEARN HOW at the World's FIRST and LARGEST Heavy Equipment School

National School has graduated MORE heavy equipment operators than any other school in the world! You, too, can benefit from National's ten years experience in training men to earn as much as \$10,000 per year and up! Actual field training on school-owned huge diesel-engined machines—NOT a correspondence school. Full 220-hr. and 440-hr. contractor-recommended courses. Full-time Job Advisory Director. Associate Member AGC and ARBA. Budget payment plans available. VA approved. Decide NOW to earn HIGH WAGES as a heavy equipment operator.

Mail the coupon TODAY

## NATIONAL SCHOOL of HEAVY EQUIPMENT OPERATION

Dept. D-61, P.O. Drawer 1686, Charlotte, N.C.

Please send me FREE complete information without obligation about how I can become an operator.

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

Address \_\_\_\_\_

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

## AMAZING DuraSan AUTOMATIC Toilet Bowl Cleaner Pays \$9.80 per hour Spare Time!

Women are thrilled to learn how DuraSan AUTOMATIC Toilet Bowl Cleaner takes over their most hated chore. Just hang in flush tank; it cleans, deodorizes toilet bowl AUTOMATICALLY—for months. Sell for only \$1.98, make up to \$1.08 on every one—up to \$9.80 per hour and more. Write for FREE Sales Kit. Merlite Industries, Dept. G-15G, DuraSan Div., 114 E. 32nd St., New York 16, N. Y.



FREE CATALOG



MAKE YOUR OWN RODS AND LURES

Send for FREE Wholesale Catalog. The most complete and fully illustrated catalog of reels, rods, beads, spinners, jigs, lure bodies and parts, sinker molds, feathers, tools, hooks, rod blanks, rod parts, swivels, wire, etc.

FINNYSPO RTS

2065X SPORTS BUILDING TOLEDO, OHIO 43614

## 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) 10-Day Money-Back Guarantee.

ED SALE, Studio 153-F AVON BY THE SEA, N. J.

## BOAT KIT CATALOG FREE! Fiberglass or Plywood



Low Down Payment

EASY TERMS

Rush Coupon Free Color Catalog

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 coupon for 48 page catalog—FREE!

LUGER BOAT KITS, Dept. B-35 9200 Access Road, Minneapolis, Minn. 55431 Rush Full Color Boat Kit Catalog—FREE

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

## Save TIME-WORK-MONEY FIXING CARS

with MOTOR's Brand New AUTO

### "TROUBLE SHOOTER"

Spots ANY of Over 2,300 Car Troubles in a Flash!

Now you can put your finger instantly on cause of any car trouble! MOTOR'S new TROUBLE SHOOTER lists symptoms and causes of trouble in engines, ignitions, generators, starters, alternators, voltage regulators, clutches, transmissions (stick shift and automatic), rear axles, front suspensions, steering gears and brakes (mechanical and power), power tops, seats and windows, wipers. Gives reasons for vapor lock, carburetor icing, knocks, pinging — much more!

NO-RISK OFFER! Mail coupon with only \$2. Use TROUBLE SHOOTER for full week. If not delighted return it for full refund. Mail coupon to MOTOR Book Dept., 250 W. 55th St., New York 19, N. Y.

### How to Locate:

- 53 causes of misses
- 63 checkpoints for clutch failures
- 105 causes of starter troubles
- 56 points to check when engine stalls
- 2,110 causes for automatic trans. troubles

Much, Much More!

MOTOR BOOK DEPT., Desk 513X 250 West 55th St., New York, N. Y. 10019

Rush me MOTOR's new TROUBLE SHOOTER. I enclose \$2 (check or money order) as payment in full. If not 100% satisfied, I may return book for full refund.

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

Address \_\_\_\_\_

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

## 640 ACRES OF WILDLIFE - \$20

\$20 plus \$6.00 taxes yearly gets you a 640 acre wildlife domain near Canadian border. Untamed paradises! (Abandoned timber leaselands.) Extensive choice of these exclusive lakeland campsites, accessible by road, teeming with wildlife, including bear, moose, deer, muskie, northern pike, ducks, geese. Send \$1 (refundable) for maps, pictures, Gov't. regulations, official application blank to: Director, O.S.C.A., Room 592, 56 Church, Toronto 1, Canada. Add 50¢ for rush air mail.



**UP TO \$6.00 AN HOUR Paid for...**

# WATCH REPAIRING

Growing opportunities for part time, full time jobs or a successful watch repair and jewelry business of your own. Learn this profitable trade at home. Chicago School of Watchmaking (founded 1908) trains you to repair American and Swiss watches from your very first lesson. No previous experience needed. Age no barrier. Advanced education not required. Tuition only \$5 a month. Diploma awarded.

**FREE BOOKLET TELLS YOU HOW... GET IT NOW!**

Write today for free booklet and sample lesson. No obligation. No salesman will call.



**CHICAGO SCHOOL OF WATCHMAKING**  
Dept. 135, Fox River Grove, Illinois 60021

## FREE BOOK and SAMPLE LESSON

CHICAGO SCHOOL OF WATCHMAKING  
Dept. 135, Fox River Grove, Illinois 60021  
Please rush FREE BOOK and Sample Home Study Lesson.

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

# INSTANT MONEY

Plastics are the wave of the future—now you can become a part of this industry. Start in your spare time to build your own future. Imagine, you can turn 11¢ worth of raw material into a finished product that sells for \$2.50. You become a Warner distributor and reap the full benefits of its 43 years experience in know-how and help. Three exciting fields for immediate Profits... and any man, regardless of age, education or experience can learn. Warner methods guarantee your ability to succeed.

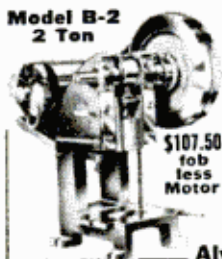
**LET YOUR MAILMAN BE YOUR BANKER!**

**Write to: WARNER ELECTRIC COMPANY**  
Dept. L-2-C, 1512 Jarvis Ave.,  
Chicago, Ill. 60626

# 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 29 mos. B.S. obtainable. G.I. approved. Start Sept., Feb. Dorms, campus. H.S. graduate or equivalent. Catalog.

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



## ALVA ALLEN *Swaine* Power Punch Presses 1 to 150 Ton Capacity

Complete line of Punch Presses in hundreds of different style and model combinations. Write for FREE literature on presses and complete line of punch Press accessories as—Feeds, Punch Units, Dies, etc.

Alva Allen Industries, Dept. PM, Clinton, Mo.

# PAGE FOR TILLING PLOWING MOWING

A FULL LINE — 6-9-12 HP  
with complete gear drive and reverse  
FREE CATALOG • LOW PRICES • EASY TERMS  
Over 40 years experience  
OVER 60 ATTACHMENTS AVAILABLE!

**PAGE** Richfield 4  
Wisconsin



DEALERS WANTED

20 COURSE HOME STUDY PROGRAM

# KARATE!

## JUDO BOXING! MUSCLEBUILDING! YOGA! STRONGMAN STUNTS! STRENGTH & ENDURANCE! HANDBALANCING! ETC.



YOU GET ALL THESE COURSES! \*20 Illustrated KARATE blows \*SAVATE foot fighting \*Secret NERVE CENTER and ANATOMY charts \*20 lethal JUDO throws \*20 terrific STRONGMAN STUNTS \*Complete MUSCLE-BUILDING course \*Ancient YOGA secrets \*HANDBALANCING stunts \*Complete BOXING course. Secrets of ENDURANCE \*WRESTLING holds \*WEIGHTLIFTING \*TENSION-FLEX COURSE \*HEALTH & FITNESS EXERCISES \*KEEP FIT PROGRAM \*K-MAN karate Dummy Chart. No C.O.D.'s. Canadian 75c. YOU GET THE LOT.

ONLY **50¢**

Free K-Man Practice Dummy showing attack points.

COMPLETE HOME GYM PLANS—Build gym equipment: vault horse, rowing machine, etc. Convert basement, garage to gym. ONLY 50¢ with courses. Total \$1.00 complete.

OXFORD STUDIO, 146 Blake (PM1) Mattapan, Mass.  
NAME (print).....**50¢ PROGRAM**  
Address.....  
City.....State.....**\$1.00 with GYM**

# \$130 → PROFIT

## RACE DAY

**DON'T SHOOT IN THE DARK  
GET RIGHT ON THE TARGET**

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. **BOOK CONTAINS:—**

THE WASHINGTON 'WONDER' SYSTEM—A PROVED FORTUNE SPINNER. Over 20 years were spent finding out exactly why horses lose, and exactly why horses win, and in even further perfecting and improving this wonderful professional backers method.

THE NEW YORK 'GOLDEN-DOLLAR' SYSTEM—A sparkling truly 'golden' and ingenious method with a really fantastic winning potential. Considered to be the 'zenith' of all systems. Invented after many years of the most scrupulous study and painstaking research.

THE IRISH 'GOLDEN-SHAMROCK' SYSTEM—A very fine money spinning system which has a terrific appeal because of its ingenious method of selection. The favorite system of the inventor—a professional backer in that country.

THE ENGLISH 'BRITISH-BULLDOG' SYSTEM—This is a veritable master plan, formerly used exclusively by the English highly successful backer who invented same. A truly wonderful piece of work.

THE GERMAN 'BERLIN-BEAUTY' SYSTEM—A very cleverly conceived and well tried method which the professional backer who invented same claims to be the best in the world.

THE ITALIAN 'TREASURE' SYSTEM—A highly ingenious method with an amazing potential of almost limitless winnings. Invented and perfected by the most clever professional backer in Italy.

THE CANADIAN 'EL DORADO' SYSTEM—Invented by a professional backer who has been acclaimed a racing genius, this system brings almost unbelievably wonderful results.

THE AFRICAN 'WONDER-DIAMOND' SYSTEM—Clever reasoning, countless years of investigation and research has made this system one of the very best in the world.

THE DUTCH 'HEAVENLY' SYSTEM—A method with a fantastic winning potential invented by Holland's top professional backer.

THE FRENCH 'MAGNIFICENT' SYSTEM—This one too is a real 'gold nugget' and truly 'magnificent'. The professional backer who invented same claims it to be unbeatable.

Genuine copyright book supplied only by publishers. Wins at all tracks, horses, harness, dogs. Send coupon for fascinating free brochure: Hitchings Box 5715 PM-A, Carmel, Calif.

HITCHINGS, Box 5715 PM-A, Carmel, Calif.  
(Please send Free Brochure)

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



# PEEL OFF PAINT with KLEAN-STRIP



Heavy-Bodied  
wash type

- Fast, clean, safe
- No afterwash needed
- Non-flammable
- Refinish immediately

Regular  
for furniture  
work



**THE KLEAN-STRIP CO., INC.**  
MEMPHIS 6, TENNESSEE • WINNIPEG, CANADA



## EARN \$1,000 A MONTH

### LEARN A TRADE YOU LIKE

Start as a mechanic in a good paying job; then advance to shop service manager. Many make \$1,000 a month and up. You learn fast in our shop because you learn with tools on real equipment. Some students earn part of their expenses while going to school.

### CHECK AND MAIL COUPON

- |   |  |
|---|--|
| <input type="checkbox"/> AUTO MECHANICS   | <input type="checkbox"/> AUTO BODY REPAIR        |
| <input type="checkbox"/> DIESEL MECHANICS | <input type="checkbox"/> AUTOMATIC TRANSMISSIONS |
| <input type="checkbox"/> GAS, ARC WELDING | <input type="checkbox"/> MOTOR TUNE-UP           |
| <input type="checkbox"/> HELIARC WELDING  |  |

Mail to: **AUTO-DIESEL COLLEGE**  
226 7th Ave., No., Dept. 86, Nashville, Tenn.

Please send without obligation free catalog

NAME \_\_\_\_\_  
(please print or write plainly)

ADDRESS \_\_\_\_\_

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

**Save Over 1/2**  
Off Finished Value on genuine leather bags, belts, bill-folds, moccasins in easy-to-make kits.

**FREE CATALOG**  
shows you how!  
1389 money-saving-making ideas

**TANDY LEATHER CO.** P. O. Box 791 JL  
Fort Worth, Texas

**PROTECT YOURSELF! TEAR GAS** NO PERMIT REQUIRED

**TEAR GAS GUN OUTFIT**  
This all-steel, .22 cal. TEAR GAS gun shoots 6 times as fast as you can pull the trigger. Also fires blanks for alarm, or dog training, and flares for emergencies. Complete with 6 tear gas shells and instructions. **\$9.98**

**TEAR GAS PENS**  
This handy size chrome pen shoots the new powerful .38 spec. MAGNUM cartridge. Will halt an attacker - in his tracks, renders him helpless while you summon aid! **\$9.98**  
Complete with 2 shells  
As above, two shot with 2 shells **\$11.98**  
.22 cal., single shot with 3 shells **\$4.98**

BLUE STEEL **\$9.98**  
CHROME **\$11.98**

Gun \$9.98  Gun \$11.98  Pen \$4.98  Pen \$9.98  Pen 2-Shot \$11.98  
 Holster \$2  .38 Shells Ea. .99c  .22 Shells 10-\$1.50  Flares 6-\$1.50  Blanks 100-\$1.50

**ORDER NOW! Mark Items You Want. Send Check or Money Order to:**  
**TEAR GAS DEVICES CO.** 136 Madison Ave., St. Louis, Mo. 63102  
Pre-Paid in U. P. S. areas. Others Express Collect (No C. O. D.)

**FURTHER INFORMATION** about the articles in this issue can be obtained from sources given in our free Where-to-Find-It list. Send stamped, self-addressed envelope to the

**READERS' SERVICE BUREAU**  
**POPULAR MECHANICS**  
575 Lexington Ave., New York 22, New York

## Bean's Free Spring Catalog

Just off  
the Press



Fully illustrated 100 pages of camping specialties, fishing tackle, clothing and footwear for men and women. Featuring practical outdoor items, many of our own manufacture.

**L. L. Bean, Inc.**  
260 Main St., Freeport, Maine 04032  
Hunting, Fishing and Camping Specialties



## A New FREE BOOK for

# MEN PAST 40

**Troubled With Getting Up Nights,  
Pains in Back, Hips, Legs,  
Nervousness, Tiredness.**

This new Free Book tells that if you are a victim of the above symptoms, the trouble may be traceable to Glandular Inflammation . . . a condition that very commonly occurs in men of middle age or past and is often accompanied by despondency, emotional upset and other mental and nervous reactions.

The book explains that, although many people mistakenly think surgery is the only answer to Glandular Inflammation, there is now a non-surgical treatment available.

## NON-SURGICAL TREATMENTS

This New Free Illustrated Book tells about the modern, mild, Non-Surgical treatment for Glandular Inflammation and that the treatment is backed by a Lifetime Certificate of Assurance. Many men from all over the country have taken the NON-SURGICAL treatment and have reported it has proven effective.

The Non-Surgical treatment described in this book requires no painful surgery, hospitalization, anesthesia or long period of convalescence. Treatment takes but a short time and the cost is reasonable.

### REDUCIBLE HERNIA | HEMORRHOIDS

Non-Surgical treatment for both Reducible Hernia and Hemorrhoids, the book explains, can usually be taken at the same time as treatment for Glandular Inflammation.

This new Free Book is fully illustrated and deals with diseases peculiar to men and women. It tells HOW and WHY New Modern NON-SURGICAL Methods are so successful today. Fill Out Coupon.



Excelsior Medical  
Clinic, Dept. M 6150  
Excelsior Springs, Mo.

Gentlemen: Kindly send me at once, your New FREE Book. I am interested in full information. (Please Check Box)

- Glandular Inflammation       Hernia  
 Hemorrhoids

Name.....

Address.....

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

## B.S. DEGREE IN 36 MONTHS

Small professionally-oriented college. Four-quarter year permits completion of degree in *Engineering* or *Business Administration* in three years. One year Drafting and Design Certificate program. Founded 1884. Rich heritage. Excellent faculty. Small classes. Well-equipped labs. New library. Residence halls. 300-acre campus. Graduate placement outstanding. Modest costs. Enter June, Sept., Jan., March. For Catalog And View Book, write Director of Admissions.



## TRI-STATE COLLEGE

435 College Avenue • Angola, Indiana



Only  
50¢

## VANISHING KEY!

Now you see it—now you don't! Hold it up and P-O-O-F — it's gone! Vanishes faster than a woman can change her mind. Clever and astonishing. Comes complete with easy directions for 4 amazing tricks! You can do it! Lots of fun! Mystify others! Be the Life of the Party! Send check, cash, money order.

**FREE** WITH EACH ORDER YOU GET OUR WORLD-FAMOUS CATALOG — 160 Pages of 1000 Exciting Tricks.

House of 1000 Mysteries • Dept. PM35 • 4018 N.E. Fifth Ave. Ft. Lauderdale, Florida

## 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!** Accredited Member National Home Study Council. (Established 1936)

**FREE BOOK TELLS HOW**

**WEAVER SCHOOL OF REAL ESTATE**  
3521-P Broadway Kansas City, Mo. 64111

## BUILD A LOW COST PONTON BOAT WITH THIS KIT



It's Fun, It's Easy Too! If you can use a saw, hammer and wrench you can build a rugged pontoon boat that will provide years of fun for your family at an amazingly low cost to you. Write for complete catalog, free.

**Pruma-D** DIVISION  
CENTRAL MACHINE WORKS COMPANY  
Established 1910

1235 Central Avenue  
Minneapolis 13, Minnesota

## TOILET FOR ANY BASEMENT

FLUSHES UP to OVERHEAD  
SEWER OR SEPTIC TANK.  
NO DIGGING UP FLOORS.



McPHERSON, INC. BOX 15133 TAMPA, FLA.

## BIGGER BETTER 7th EDITION SMALL ENGINES SERVICE MANUAL



It's ready . . . 7th edition Small Engines Service Manual. 328 pages authentic easy-to-follow information on the repair and upkeep of small engines. 1302 models of 30 popular domestic and foreign makes. Many new models. Practical information. Written by expert mechanics in down-to-earth language with helpful illustrations.

**MAKE \$\$\$**  
in Your Spare Time

327 pages . . . **EVERYTHING MECHANICS NEED!**

for minor tune-up to major overhaul . . . Read how, see how from 780 photos and drawings. Big field and big part-time and full-time profits repairing Mowers, Garden Tillers, Cycles, Scooters, etc. . . . Order yours NOW and start a busy business . . . only \$4.65 postpaid.

**4.65**  
post paid

Small Engines Service Manual, Dept. 265  
1014 Wyandotte, Kansas City, Mo. 64105

POPULAR MECHANICS



# CLASSIFIED ADVERTISEMENTS

Rate: \$1.40 per word payable in advance each insertion. 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 May. The closing date is March 15. Send remittance and order to C. A. Martin, Popular Mechanics, 575 Lexington Avenue, New York, New York 10022.

## POPULAR MECHANICS

## AUTOMOBILES, MIDGET CARS

**AUTOMOBILE** Literature, antique thru modern; catalogs, photos, manuals. Monthly bulletin. Free information. Enthusiasts, Box 451B, Mt. Clemens, Mich. 48044.

20,000,000 **AUTOMOBILE** accidents this year. Would you know what to do? What not to do? Would you remember the details months later? Book contains, all do's and don'ts, forms for on the scene information, state regulations, legal tips, personal rights. Knowing the facts will save time and money lost. Send \$1.00. Chance Information Service, Box G, Brookfield Center, Conn. 06805.

**BUILD** Midget racers, motorize bicycles, speedmobiles, etc. Complete illustrated book \$1.00. F. A. Kaleda, 3322 Bonair, Warren, Ohio.

## AUTO SUPPLIES AND EQUIPMENT

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

**JEEP** Parts! For military and civilian. At great savings. Largest inventory. Catalog for owners and dealers. Inquiries invited. American Auto Parts Co., 1830-PM Locust, Kansas City, Mo.

**BUILD** Yourself! 200 MPG carburetor, V-8, six, etc.! Complete patent drawings. Description, \$5.00. F. Schwab, Lakeville, Ind. 46536.

**RING**-Valve job while driving, \$6.00 postpaid. Guaranteed! Nothing like it! Many mechanics recommend! Motaloy, Grantham, Penna. 17027.

**JEEP** Owners—V8 conversions. Read Jeep Owners ad, page 63.

**AUTO** Welding repair training in world's largest non-profit welding school. Low tuition. Free booklet. Hobart Welding School, Box M-35, Troy, Ohio.

**MODEL** A Ford parts. New illustrated catalogue 50¢. Mark, Layton, New Jersey.

**REPACK** Sealed rear axle bearings, illustrated instructions \$1.00. Pat's Way, Box 2547, Odessa, Texas 79760.

**NEW**—Improved—patented—spark plug gauge and cap adjuster, \$1.00. Wrona Better Gauge, Box 5968, Chicago, Ill. 60680.

**LITE**-Buzzer automatically reminds you to turn off lights when parking car. Buzzes when ignition is turned off if lights are still on. About a minute to install on fuse panel clips. Lite-Buzzer clamps under dash. Compact. Works in any car. Complete instructions. Guaranteed. Only \$3.95 prepaid. No COD. Lyn Products, Inc., 44 Industrial Road, Crystal Lake, Illinois.

**LIQUID** Lifter, chucked into drill, becomes powerful pump, changing oil in in-board boat engines, autos, compressors, \$14.95. LU-RO Products, 9801 Enger-A, Bakersfield, Calif.

**WW II** Jeep Handbook, 380 pages, parts, illustrations, only \$4.50. Back Country Bookstore, Box 866E, Tarzana, California.

**MODEL "A"** Ford sheet metal replacement panels. Palmer's Reproductions, 700 West King, York, Pa.

**HYDRAULIC** Jack repair men—you need a Jak-Facts reference manual—write: Jak-Facts, P.O. Box 1104, Bloomfield, N.J.

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

**HIDDEN** Switch foils the car thief. Duplicate key or jumping methods won't work. \$3.00 complete. Details free. Nelson Security Systems, 344-PM Joliet Rd., Clarendon Hills, Ill. (Money-making opportunity for representatives and service stations.)

**BAK** Ease back rest lets you drive all day without tiring. Price \$7.95. S. L. Washington, 1506 Filbert, Oakland, Calif.

**ANTIQU**E Car pistons, gaskets, gears, valves, etc. Catalogue \$1.00. Antique Auto Parts, Milwaukee, Wisconsin 53204.

**NEW "Fury XII"** capacitive discharge SCR ignition systems kit. Save to 50% by assembling it yourself! Satisfaction Guaranteed. \$29.95 complete. Micro-Kits Co., Dept. PMC, Box 494, Paramount, California 90724.

**CRANKSHAFT** Grinder, hand operated. Makes bearings fit without taking engine apart, \$5.00. Literature. L. D. McGee, 719 Cascade, Wenatchee, Wash.

**COMBINATION** Frost scraper-windshield squeegee, magnetic, \$1.00, guaranteed. Strongs, 593 Colgan, Santa Rosa, Calif.

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

## AUTO TRAILERS

**PICKUP** Campers. Pre-cut kits. Blueprints. Supplies. Literature 10¢. Comstock Trailers, Parsons 4, Kansas.

**PICKUP** Camper, trailer or pickup-cover. Build yourself, save! Complete plans \$3.95 each. Equipment catalog \$1.00 (refundable). Details 10¢. Viking Camper Supply, 94-F Glenwood, Minneapolis, Minn. 55403.

**BUILD** Trailers and pickup campers from 6 detailed plans. 15 or 18 ft. travel trailers, 8 or 10 ft. slide-in campers, 10 ft. chassis mount, campers, and folding tent camper. Specify size: \$3.00 ea. Trail-R-Club of America, Box 1376PMM, Beverly Hills, California.

**CAMPING** Trailer kits, sleep 6, Basic Kit \$148.00, 16' boat trailer kit \$85.00. Utility trailers, Circulars 10¢ each. Stratford Trailers, Seymour St., Stratford, Conn.

**CAMPER** Units for compact busses—Volkswagen, Econoliner, Dodge—Inexpensive. Build yourself. Details. Dot Campers, P.O. Box 67, Saugus, California.

**PICKUP** Campers—prefab—freight prepaid. Details free. Barnes, Grove, Oklahoma 74344.

**TRAVEL** Trailers. Pickup campers, truck covers, working plans, materials available. Details 10¢. DuPage Coach—Box 86, Wood Dale, Illinois.

**BUILD** Aluminum pickup camper over-cab, hi-boy, lo-boy, blueprints, material, list, 3 models included, \$3.00. Bennett Custom Camper, 1104 W. Jefferson, Ft. Wayne, Indiana 46804.

## MOTORCYCLES, BICYCLES, MOTORSCOOTERS AND SUPPLIES

**RECONDITIONED** Motorcycle motors. Large stock Indian Cushman Vespa Mustang NSU parts. Indian Motorcycle Sales, Kansas City, Missouri. 64127.

**MOTORSCOOTERS** And motorcycles parts new-used for all makes, models. Big savings. Sam's RT-10, Box 131, San Antonio, Texas.

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

**BE** A BSA Motorcycle dealer! Some choice territories still open for ambitious men who want their own motorcycle business. Enjoy your favourite hobby, be independent in a business that gives you the financial rewards of your work and selling ability. Nominal investment required. (Offer open only in area where we do not now have a dealer.) Write: BSA Incorporated, Dept. PM, 639 Passaic Ave., Nutley, N.J.

**KART** \$7, Minibike \$6, less engines. Engines \$3.50 up. Cushman Eagle \$40, Minibike \$20, Kart \$25, Tractor \$10, with engines. (Mail order only). Send 25¢ (35¢ for First Class Mailing) for Directory-Catalogue Number 123 listing these and hundreds of other bargains, homebuilders parts, plans, etc. Midget Motors Directory, Athens, Ohio.

**JET**-Power your bicycle, plans \$1.00. S.R.G., 615 Scott Ave., Redwood City, Calif.

**HARLEY**-Davidsons — Used bargains. New, used parts, accessories, all models. Bulletin 25¢. Knuth's (Factory Dealer), 1753 Muskego, Milwaukee, Wis.

## AVIATION

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

**HELICOPTER** Aerodynamics for home builders. (Emigh) \$3.00. P.O. Box 6574, Long Beach, Calif. 90815.

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

**GYROCOPTER** Blades. Solid aircraft spruce. Vancraft, 7246 Mohawk, Portland, Oregon 97203.

**AIRBOAT**-Snowplane propellers, plans, kits, supplies. World's lowest prices on gauges, throttles, spark plugs, gas-oil hose, oil coolers, primers, tachometers, hubs, engine mounts, conversion parts, fittings. 125 H.P. Lycoming engines, gaskets, parts. Catalog 25¢. Banks-Maxwell, Box 3301E, Ft. Worth, Texas 76105.



## BATTERIES, GENERATORS

COMPLETE Rebuilding Manuals! Batteries \$3.00. Hydraulic jacks \$3.00. C.O.D. accepted. Bayer Publications, 938 Betty Avenue, Neenah, Wisconsin.

NEW! Best complete battery rebuilding manual, \$2.00. Also new-used tools, molds, supplies. Capitol Battery Equipment, 1216 Madison, Montgomery, Alabama.

BATTERY Reconditioning kit, includes molds, material, complete instructions. Battery Shop, 18182 Vierra, Salinas, California.

## ELECTRICAL SUPPLIES

LAMP Parts. Catalog, prices, wiring instructions. 50¢. Refunded first order. Gyro, 5208P N.W. 35 Ave., Miami 42, Fla.

ARMATURES Rewound! Your electric vacuum cleaner, mixer, drill, saw, etc. A.C. or D.C. armatures rewound at lowest prices. Deal direct and save! Send for free price list today. Armatures, Inc., 24356 Sherwood, Centerline, Michigan.

ELECTRICAL Supplies wholesale. Are you building a new home? Installing new flood lights—yard lights? Need time clocks? Buy all electrical supplies wholesale. 125 page catalog available. Send \$1.00, refundable on first order over \$5.00. Wholesale Electric Supply, P.O. Box 8481, San Francisco, California.

METERS—Surplus, new, used, panel and portable. Send for list. Hanchett, Box 1898, Riverside, Calif.

LAMP. Electrical parts, wholesale. Thousands of items for repairing, converting. Catalog 35¢. Brown Lamp, Box 305, Clayton 5, Missouri.

## WELDING, SOLDERING, PLATING

A.C. WELDERS. Oil protected, \$49.50. Morris, 1070 Inner, Schenectady, New York 12303.

Build Your own heavy duty A.C. welder, make from scrap iron and wire comparable to \$400. Welder guaranteed plans \$1.50. C. A. Chilton, 1704-C Street, Vancouver, Washington.

NEW Soldering iron. One hand operation. Automatic feeding. Free details. Jeret, Box 1357, Sarasota, Florida.

FREE Catalog. Welders, kits. Build 400-ampere aircraft generator welder. Plans 35¢. Dunbar, Chaska 17, Minnesota.

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, 3445 Union Pacific Avenue, Los Angeles 23, Calif.

## MACHINERY, TOOLS, SUPPLIES

SEND For free 28 page pocket size illustrated catalog on angle vises, drill press vises, milling attachments, and rotary tables. No shop complete without these tools Palmgren Steel Products, 8365 South Chicago Avenue, Chicago, Illinois 60617.

BARGAIN New cutting tools, free list. Kabaco Tools, Inc., 4106 East Eight Mile Road, Detroit, Michigan 48234.

CIRCULAR Saws—sanding discs—cleaned in minutes. Newells Pitch & Gum Remover, 4-oz. \$1.25. Newells Products, Desert Center, California 92239.

TWELVE Assorted, 6 inch long Abrasive Files and Hones. Sharpen tools. Smoothen rough edges. File glass, stone, ceramics. Can be shaped to file contours, threads, slots, holes including bottoms. Excellent value. \$3.00 postpaid. 50 states. You must be pleased or cheerful refund guaranteed. J. Reinherz Company, Maywood, Illinois.

STANLEY, Millers Falls, Skil. Disston. Wiss, Plumb, Channellock, Bonney, Herbrand, Ridgid, and hundreds of other nationally advertised brands at prices hard to beat. Send 25¢ for our big tool catalog today! Silvo Hardware, 107PM Walnut, Phila. 6, Penna.

TOOLMAKERS Magnetic parallels, 1x2x 3/4. \$6.00 pair. Roberts Mig., 131 Buttonball La., Glastonbury, Conn.

METALS—Aluminum, Brass, Stainless. Tools, Supplies. Free Catalog. Americraft, Box B, Mohawk, New York.

LATHE Toolholders patent pending info., 439 First St., Benicia, California 94510.

FOR Sale, U.S. patent =3,043,457 (power winch). Operates boat lifts, front end loaders etc. Will accept camper pickup. Russell Anderson, Clinton, Minnesota 56225.

10,000 DIRECT-Reading sheetmetal bend allowance—setback answers. Proven time saver for layout men, template makers, draftsmen, inspectors. \$1.00. J. J. & S., 9901 Southwick, St. Louis, Mo. 63128.

MACHINISTS, Toolmakers chests. Circular free. Cepuder, 4715 Spencer, Lisle, Ill.

MACHINIST. Small shop supplies. Campbell Tools, 1424 Barclay, Springfield, Ohio.

## ENGINES, MOTORS, DYNAMOS

REWIND Electric motors! Details free! Modern, Box 10025, Kansas City, Mo. 64111.

REWIND Motors yourself. Complete instructions. \$1.00. Lewis Manufacturing, Howell, Michigan.

WINDING Data. 275 motors, single and three phase \$1.10. Data Company, 512 Kensington, Kansas City 24, Mo.

## GOVERNMENT SURPLUS

GOVERNMENT Surplus. Complete sales directory \$1.00. Surplus Publications, Box 45781, Los Angeles 45, California.

JEEPS—\$62.50. Typewriters—\$4.15, cars—\$32.78, guns, walkie-talkies, binoculars, televisions used. Typical surplus prices. Exciting details free. Enterprises, Box 402-X14, Jamaica 30, New York.

JEEPS \$64.50. Airplanes \$75.20, boats \$6.18. Many others direct from U.S. Government. For complete "Directory" and catalog send \$1.00 to Quality Surplus, PM3, Box 22038, Indianapolis 22, Indiana.

GOVERNMENT Surplus, how to buy in your state at tremendous savings. "Directory" gives all details. "Catalog" with pictures, prices of over 400 surplus items included. Send \$1.00. Quality Surplus, 422-PM3, Washington Building, Washington, D. C.

GOV'T. Surplus. How and where to buy in your area. Send \$1.00. Surplus Information. Headquarters Building, P.M., Washington 6, D.C.

WAR Surplus bargain catalogue, illustrated; generators, blowers, pumps, gearboxes, hydraulics, winches, motors, etc. Send 50¢, refundable on first order. Surplus Trader, Box 8PM-1, Thomasville, Pa.

FREE Catalog—War, Government Surplus Bargains. New stocks received regularly. Save up to 80%. Clothing, boots, blankets, cots, tents, etc., for farm, home, outdoors. Send postcard today. Sioux Falls Surplus Store, Sioux Falls, South Dakota.

JEEPS low as \$62.50—Autos—Boats—Thousands Others. "as is" Direct from Government! "How to Buy in Your State and 1965 Directory," send \$1.00. Surplus Disposal, 2230-PC Wisconsin, Washington, D.C. 20007.

GOVERNMENT Surplus complete "how to" directory, plus . . . Continued bulletins mailed directly to you by the government . . . \$1.00. Surplus Clearing House, Box 118B, Brooklyn 35, N.Y.

FACTS Concerning Government surplus, (stamped envelope required). =770(B), Hoboken, New Jersey.

JEEPS \$64.50 . . . Boats \$6.18 . . . Typewriters \$4.15 . . . Airplanes. Sporting Equipment, 100,000 Bargains typically like these "as is" direct from government in your area. For complete directory and surplus catalog Send only \$1.00. Surplus Service, Box 820-A, Holland, Michigan.

## BOATS, OUTBOARD MOTORS

NEW. Used, rebuilt marine motors, Marine conversions, fittings. Free catalog. Stokes Marine Supply, Dept. 24, Coldwater, Michigan.

MARINE Conversions. Ford, Chevrolet, Jeep engines. Catalog 25¢. Lehman Manufacturing Company, 800 Elizabeth Avenue, Linden 4, N. J.

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.

BOAT Kits! Factory molded fiberglass or pre-assembled plywood. 50 models, 12' to 30'. Free catalog, Luger, Dept. BC-65, 9200 Access Road, Minneapolis 31, Minn.

BOAT Plans, frame kits, full size patterns all prepared specially for amateurs. Send 50¢ for new catalog illustrating 55 proven designs including sail, inboards and outboards from 7' to 28'. Glen Designs, 9152 Rosecrans, Bellflower, Calif.

KAYAKS—One-man \$16.50; two-man \$22.50; sail attachment \$16.50. Exciting Sitka Kayak kits known world wide for speed and safety. Assembled in one afternoon. Free pictorial literature. Box 78-P, Brecksville 41, Ohio.

INBOARD Engine kits for Chev., Pont., Buick, Ford, etc.—Free catalog. Star Marine, Berkeley 10, Calif.

FULL Size, cut-to-shape boat patterns, blueprints, 7 1/2-38 feet. Big new illustrated "Build a Boat" catalog of 64 designs, including catamarans, cruisers, runabouts, skiffs, outboard boats, sailing, racing, houseboats, 50¢. "How to Build a Boat" booklet, \$2.50. Cleveland Boat Blueprint Co., Box 18250, Cleveland, Ohio.

BOAT Bailer for small craft. Completely automatic. A check ball does it; and it won't forget! Only \$4.95. More info. Write; DePersia Automatic Bailer, Inc., Dept. PM, Grand Haven, Michigan 49417.

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. Free catalogue. Freight prepaid. Stiles Boat Supply, Box 11P, Linden Ave., Mantua Hts., N.J.

FIBERGLASS Canoes. Three exciting models. Easily assembled kits. \$29.95 up (factory direct). Free literature. Riverside Canoes, 5811B Victoria Ave., Riverside, California.

205 PLANS. Patterns, kits. Catalogs: Powerboat, large \$1.00, condensed 50¢, sailboat 40¢. Marinecraft, Box 161-M, Brighton 35, Mass.

FIBERGLASS Cloth, matt, polyester and epoxy resins. Lowest prices. Selfert's, Box 1206-M, Green Bay, Wis.

## SPORTING GOODS, GUNS, FISHING, SKIN DIVING, ARCHERY

BIG Money raising crickets and 12 inch African fishworms. Free literature. Carter Ranch, Plains, Georgia.

FREE . . . Wholesale catalog. Beads, Spinners. Lure parts. Sinker molds, Jigs, Reels, Finnysports (ME), Toledo, Ohio 43614.



**MOLDS** For casting your own fishing sinkers. Free illustrated booklet. Reading Instrument Co., Box PM78, Reading, Penna.

**ROTO-Hook** guarantees catch with every strike. 10 for \$1.00, postpaid, assorted. Box 1422, Greenville, S.C.

**FANTASTIC** Device that guarantees to improve your fishing catch. Free details. TR Enterprises, Box 472-GPO, Brooklyn, N.Y. 11202.

**ILLUSTRATED** Diving hints by Navy frogman with diving physics chart 19" x 25" printed glossy stock. Hangs on wall. Money back guarantee. Send 50 cents. Jim Cahill, P.O. Box 307, Beverly, Massachusetts.

**SKIN** Diving mail order catalog over 150 pages plus course on scuba and beautiful decal. Send \$1.00. New England Divers, Dept. R, 42 Water Street, Beverly, Massachusetts.

**SILENCERS!** Pistol, Rifle! Compact, efficient, attachment. Actual Copyrighted Plans, plus background information—No gypo mimeo sheets; Satisfaction or refund. \$1.50 Postpaid. Service Sales, Dept. PM, Box 889, Seattle, Wash., 98111.

**KNIVES!** 25 Exciting models. Fishing, hunting, camping. Grand 'H' Specialties, Boston 14, Mass.

**GOVERNMENT** Surplus Bargains, in guns, ammunition, edged weapons, hunting, camping, fishing items. Write for giant free catalog. P & S Sales, Box 155, Tulsa, Oklahoma.

**100 AMAZING** Lures \$2.00. Mirrorized Mylar minnows attract and produce like live bait. Introductory assortment—colors, shapes, sizes. TVL Products, 630BB Cedar, Uniondale, New York.

**JUDO, Karate** supplies, accessories, 20 page catalog 15¢. Nozawa Trading, 232 East Second Street, Los Angeles 12, Calif.

**GOVERNMENT** Surplus Bargains, in guns, ammunition, edged weapons, hunting, camping, fishing items. Write for giant free catalog. P & S Sales, Box 155, Tulsa, Oklahoma.

### ATHLETIC EQUIPMENT BODY BUILDING COURSES

**"GIANT Arms."** Dr. Young's, D.C. revolutionary discovery, \$2. Satisfaction or refund. Gaucho, Box 9309-S7, Chicago 90.

**DON'T** Be bullied! Learn direct from the Orient. Chinese Kung-Fu Karato, the secret Oriental Art of Instantaneous Disablement, so deadly even a Judo-Karate expert fears. Paralyzes aggressors within seconds. Size don't count! For free details by air, rush your name and address also by air to Asia's Greatest Karato Master: Leong Fu, (Dept. MI/5) 119 Anderson Road, Ipoh, Malaysia.

**BARBELLS,** Exercise equipment. Key to health, strength, physique, 25¢. Reading Barbell Co., West Reading, Pa.

### CAMPING EQUIPMENT AND TENTS

**FUN** Camping and travel book. Keeps children busy. Send \$1.00. Jeret, Box 1357, Sarasota, Florida.

**CAMPING** Equipment, unusual selection. Morsan's own quality tents (200 styles) finer fabrics; sleeping bags (80 styles); every camping convenience imaginable. Free giant catalogue-guide-handbook. Morsan, 810-R Route 17, Paramus, New Jersey.

**NEW** Canvas repair adhesive for tenting, clothing and equipment. No tools or sewing, fast, waterproof, pliable. Big 4-oz. squeeze bottle with applicator. Only \$1.29 prepaid. Send check or money order to SAF-T-Patch, 14 North Center St., Bensenville 60, Illinois.

**GIGANTIC** 1965 Catalog, 132 pages of tremendous values & variety of sleeping bags, imported & American tents, camping accessories, clothing and government surplus. Send 25¢ for catalog and save on all your needs. I. Goldberg, Dept. PMC, 429 Market Street, Philadelphia, Pa. 19106.

### BINOCULARS, TELESCOPES, MICROSCOPES, MAGNIFIERS

**SCIENCE** Bargains! Lenses, telescopes, binoculars, microscopes, kits, parts, war surplus. Send \$1.00 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.

**BUILD** Your own reflector telescopes: complete kits; mirrors, eyepieces, tripods. All other accessories. Request free illustrated literature. Criterion Manufacturing, Dept. KPM-24 Hartford, Connecticut.

**DYNASCOPE**—Amazing world-famous reflector telescope. Request free brochure. Criterion, Dept. DP-19, Hartford, Connecticut.

**BINOCULAR** Sale! Free Color Catalog 100 models \$9.95-\$250.00. Write United. 9043 So. Western, BCAT 5208, Chicago, Ill. 60620.

### PLANTS, NURSERY SUPPLIES

**WANT** Greatest cash crop working for you? Write Ginseng, Asheville 53, N. C.

**GINSENG** Bringing \$14 pound. Have seeds, plants, Goldenseal. Full information. K. Collins, Viola, Iowa 52350.

**EARTHMOLES** Exterminated easily. Inexpensive. Instructions \$1.00. Killquick, Rt. 3, Box 286, Arlington, Washington.

### EARTHWORMS, CRICKETS, FROGS

**MEN! Women!** Make money raising bait for us at home. Red Wigglers, Warsaw 45, Indiana.

**SUCCESS** For you! Raise fishworms and crickets. Write for free literature and our success story in Life Magazine. Let us teach you our secrets of success. Hybrid redworms 3000, \$5.95. Carter Redworms, Plains, Georgia.

**FROG** Raising. Young frogs and giant breeders. Stock your lakes, pond. Nu-Tex Frog Farm, Box 4029, Corpus Christi, Texas.

**EARN** Money raising fishworms for us! Exciting details free! Oakhaven—56, Cedar Hill, Texas.

**GEORGIA** Redworms. Large, 1000—\$4.00, 5000—\$16.00. Bedrun, 5000—\$7.50, 10,000—\$12.50, 20,000—\$22.50. Postpaid promptly. Hall Farm, Hilton, Georgia 31758.

**HYBRID** Redworms 1,000—\$3.00, 2,000—\$5.00, 5,000—\$8.00, 10,000—\$14.00. Bedrun 20,000—\$20.00. Postpaid with raising instructions. Brazos Bait Farms, Route 9, Waco, Tex.

### FARMS, FARM LANDS, REAL ESTATE

**\$1 ACRE**—Canadian border—hundreds campsites, islands, farmlands, directly from tax authorities. (Non-profit). Lists, photographs mailed. Register, Room 203, 92 King St., E., Toronto 1, Canada.

**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.

**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.

**CAROLINA** Coast. ¼ acre homesites as low as \$435.00, \$5.00 down, with 10 year, money back guarantee and free life insurance, in a 14,000 acre Paradise in the Pines. 50 fresh-water lakes, 4,000 acre hunting preserve, golf course, country club, shopping center, motel, already built. Only minutes to private ocean beach. For free details write Boiling Spring Lakes, Southport 1-C, North Carolina 28461.

**GOVERNMENT** Public land in 25 states for individuals as low as \$1.00 acre. 1965 report send \$1.00, Public Land, Box 22127-K3, Indianapolis, Indiana.

**CANADIAN** Lands, seized and sold for taxes. Our 48th 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 to-day for free twenty page booklet with full explanation. Tax Sale Service, Room 301-D, 85 Bloor St., E., Toronto 5, Canada.

**400,000,000 ACRES** Government public land in 25 states. Some low as \$1.00 acre, 1965 report. Send \$1.00 National Land, 422PM3, Washington Building, Washington, D. C.

**FREE** Spring catalog! Bargains galore! Low prices, easy down payments! Safe-Buy Real Estate Agency, 712-PM West Third, Little Rock, Ark.

**FREE!** Big illustrated Spring 1965 catalog. Top values coast to coast! Farms, ranches, homes, businesses, waterfront, recreation, retirement properties. United Farm Agency, 612 PM West 47th St., Kansas City, Mo. 64112. PLaza 3-4212.

**\$5 MONTHLY** Buys 5 acres. Near town, good building site, excellent fishing. Price \$125.00. Free list. Box 425-P Carthage, Missouri.

**BUILD** Vacation cabin—Less than \$1000.00 "A" frame or conventional 16'x24'; 20'x24' complete drawings; materials list; construction procedure & perspective \$2.25. Barnes & Co., P.O. Box 111, Pacific, Washington.

**GOVERNMENT** Land available in 25 states. Some low as \$1.00 Acre. Millions of Acres! "Your Government Land Opportunities" plus "Current Listings," send \$1.00. Land Disposal, 2230-PC Wisconsin, Washington, D.C. 20007.

**GOVERNMENT** Land low as \$1.00 Acre. 450,000,000 Acres. 25 States. Free Details. Land Division, Box 26034-PC, Indianapolis, Indiana 46226.

**TIMBERED!** Agricultural land, \$15.00 acre. Mineral area. Complete details. Explain wants. Address; Ozarks, Shook, Mo.

**FREE** Strout catalog, big spring edition listing thousands of carefully selected top values throughout 33 states. Hundreds pictured. Send for your free catalog today! Strout Realty, 7-CJ S. Dearborn, Chicago, Ill.; 521-WL E. Green St., Pasadena, Calif.; 311-QE Springfield Ave., Summit, N.J.

**FLORIDA** Campsites—deep in the heart of the great Ocala National Forest. Good hunting and fishing. Free maps and photos. Howard Vernor, DeLand, Florida. AD646369D

### PETS—DOGS, BIRDS, HAMSTERS, ETC.

**HAWKS,** Reptiles, raccoons, skunks, squirrels. Catalogue 25¢. Trails End Zoo, St. Stephen, S.C.

**MAKE** Money raising chinchillas, mink, rabbits, cavies for us. Free catalog. Keeney Brothers, New Freedom 2, Penna.

**FASCINATING** House pets. Like tiny maned giraffe. Affectionate. Very rare. Dollar brings details. Carney, Hotel America, Asuncion, Paraguay.

**RAREST** Ornamentals. 48 page catalog 35¢. Everything, you name it. 175 picture hobby brochure 25¢. Stromberg's Pets Unlimited, Fort Dodge 25, Iowa.

**PETS,** Hamsters, mice, rabbits, squirrels, chipmunks, guinea pigs, skunks, raccoons. Picture catalog twenty-five cents. Moore's Hamster Ranch, Shepherdstown 25, West Virginia.

### RABBITS—FUR BEARING ANIMALS

**RAISE** Rabbits on \$500 month plan. Free details. White's Rabbitry, Mt. Vernon, Ohio.



EARN \$10,000 Yearly raising Angora rabbit wool for us. Information 25¢ coin. American Angora Company, 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.

BOOKS 50¢ each: Rabbits, Chinchillas, Guinea Pigs, Hamsters, Chipmunks. 175 picture brochure 25¢. Stromberg's Pets Unlimited, Fort Dodge 25, Iowa.

MINK Raising information free. Lake Superior Mink Farm, Inc., Superior EE1, Wisconsin.

### BOOKS, PERIODICALS, PICTURES, POSTCARDS

BOOKS Successfully located! Atlantic Book Service, Cedar Street, Charlestown 29, Mass.

FREE Paperback catalogue. Great savings New York Paperback—Record Club, 4 N. West 43rd Street, New York City 10036.

BOOKS. Free general catalog. 100 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 1, Ohio.

FREE Catalog. Self-help books. Write Wilshire, 8721 Sunset, Los Angeles 69P.

SAVE To 84% on books. Free Catalogue. Discount Reader's Service, M-5435 Upland Way, Philadelphia 19131.

BOOKS Located free. Large stock all subjects. Send wants. Mrs. F. Myers, Orient, Illinois 62874.

WORLD'S Finest professional magic tricks. Joker's Novelties. Giant illustrated catalog 10¢. Top Hat, Evanston, Illinois.

FREE Book catalogue. Wolfe, P.O. Box 6625, Phila., Penna. 19149.

BOOKS: Self-Improvement, How To And Home Improvement, Civil Service, Reference, Hobbies, etc. Free literature. J. G. Norcini, 699 N. Wayne Ave., Wayne, Pa. 19087.

USED Correspondence courses and books sold and rented. Money back guarantee. Catalog free. (Courses Bought.) Rodney Mountain, Pisgah, Alabama.

FREE Catalog! Bargain books on self-help, careers, health, hobbies, etc. Write Aladdin, Box 5183, Oakland 5, Calif.

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.

PROPHET Elijah coming before Christ. Wonderful book free. E. Megiddo Mission, Rochester 19, New York.

40 PAPERBACKS \$5. Exchanged one for two. Books!, North Adams, Mass. 01248.

BOOK Bargains—free, illustrated listings. Bookways, Dept. 444-M, Fort Lee, N.J. 07024.

GOOD News books, circular free. Box 236, Glencoe, Minnesota 55336.

PUBLISH Your book! Join our successful authors: All subjects invited. Send for free appraisal and detailed booklet. Carlton Press, Dept. PMO, 84 Fifth Avenue, N.Y.C. 11.

BOOKFINDERS! All subjects. Send wants! Sydney Jaher, 175-45 88 Ave., Jamaica, N.Y. 11432.

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, 575 Lexington Ave., New York, N.Y. 10022.

### MAGIC TRICKS, PUZZLES, JOKER NOVELTIES

2700 NOVELTIES, Tricks, gadgets, jokes, hobbies. Catalog 10¢. Johnson-Smith, D-608, Detroit 48207.

VENTRILOQUISM For fun or money. New method. Easy. Also professional dummies. R. Marlette, 1570 Glen Ellyn Rd., Glen Ellyn, Illinois.

PROFESSIONAL Catalog. 175 pages, 25¢. Williams, 900 Plymouth, Ellwood City, Penna.

NEW Edition. 1965 catalog. 500 tricks, only 10¢. Fastest same-day service to magicians for 40 years. Send 10¢ today. Douglas Magicland, Dept. 21, Dallas, Tex.

MAGIC Catalog! World's finest. 3000 tricks (408 pages) \$2.50. Beginners amateurs, professionals. Kanter's, A-200 South 13th St., Philadelphia, Pa. 19107.

BE A Magician! Introductory catalog with free trick, only 35¢. Ireland Magic, 5082 Lincoln, Chicago, Illinois 60625.

FAMOUS Professional Magic you can do! Giant surprise catalog! Deluxe edition! 1000 new tricks, jokes, magic! Now only 10¢. Vick Lawton, Dept. PMC35, 4018 N.E. Fifth, Ft. Lauderdale, Florida.

COMPLETELY Illustrated catalog. 84 pages, 25¢. Manhattan Magic, Box 334-M, N.Y.C. 11.

### GAMES, TOYS, NOVELTIES

GAMES Inventors! We are interested in new and novel child and adult game ideas. Nationally-known game manufacturing and marketing firm. Send for details. Hagglund and Associates Research, Dept. A, 650 Ottawa Ave. N., Minneapolis 22, Minnesota.

FREE Wholesale catalog—tricks, jokes, Funny cards—50 samples 25¢. Dohn-5C-Marks, Broadview, Illinois.

### STAMP COLLECTING

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.

SELL Your surplus good grade stamps. Write, describing fully what you have. Vanroy Shirk, Lebanon, Pennsylvania.

60 DIFFERENT U.S. (30 commemoratives) 25¢. No approvals. Seidenberg, Salem 169, Oregon.

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.

FREE Monaco nudes. Approvals. Stamp Ranch, 902 Addison, Chicago 13, Ill.

U. S. approvals. Low prices. Eagle Stamps, Romine Ave., Pittsburgh 26, Penna.

INTRODUCING Our better United States approvals we offer 15 United States stamps including Columbian, Bi-Centennials, famous American, airs, others: only 10¢. Ocean Stamps, Box 64-PM, Brooklyn 29, New York.

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 22, Pa.

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.

THOUSANDS Of worldwide sets and singles on approval. Highest quality! Cole, Box 223A, Buffalo, N.Y. 14221.

PENNY! Approvals! Regardless catalogue! Kloster, 4164 52nd St., San Diego 5, Calif.

U.S. Bargain, 50 different 10¢, with beautiful worldwide approvals. Stamps, Kennebunk, Maine.

GERMAN Commemoratives. 10¢ with approvals. Schaefer, Box 1704, Washington 13, D.C.

FREE Stamp wallet with approvals. Wide selection collections by countries. Clark, Box 28-C, Wilmette, Illinois.

KENNEDY Memorial set. Mint. Colombian multicolored air mail. Pictures late President. Free! With approvals. Philatelics, 78-S, New Paltz, N.Y. 12561.

40,000 DIFFERENT. Amazing new plan builds your collection systematically, country by country. As low as 50¢ weekly. Ware, Monroe 75, Conn.

MILLION Foreign stamps! 2¢ each! Send for thrilling, giant approvals! ABC Stamps, Box 6000-MB, San Francisco 1, Calif.

FREE Surprise collection sent with approvals. Gould, 1784 Union, San Francisco 94123.

1500 FOREIGN \$1.00. 5000 \$3.00. 5000 USA—commemoratives, airs, high values, revenues, 19th Century, etc. \$3.00. No approvals. Meyers, 5321 Fleming, Richmond, California.

ATTRACTIVE Set free. U.S. Worldwide approvals. Gorliz, Drawer 388PS, Park Ridge, Illinois.

20 DIFFERENT U.S. Commemoratives 1893 up 10¢ approvals. K&B Stamp Co., Box 70, Bklyn., 23, N.Y.

105 DIFFERENT U.S. Stamps, 25¢, approvals included. Shelron, Box 187, Hempstead, N.Y.

BREATH-taking, 50 Mint Monaco pictorials, multicolors. \$1.00. Approvals. Stamp Exchange, Box 103, Fairfield, California.

FREE! Giant Bargain Catalog—New Edition listing thousands of bargains including U.S. and B.N.A. stamps, packets, mixtures, albums, accessories and supplies; sent with beautiful approvals. Jamestown Stamp, Dept. E-35PM, Jamestown, N.Y.

WOW! 110 All Different Germany 10¢! Zeppelins, Semi-Postals, Airmails, High values, etc. Giant Catalog, bargain lists included with beautiful approvals. Jamestown Stamp, Dept. A-35PM, Jamestown, N.Y.

50 YEARS Old, fifteen different United States, over fifty years old—10¢ with approvals. Jaxon, Box 145-P, Brooklyn, New York 11230.

PENNY Foreign stamps neatly mounted in jumbo books in Scott order. Bullot approval, 1454 Coney Is. Ave., Brooklyn 30, New York.

ABSOLUTELY Free 50 worldwide. Request inexpensive approvals. University Stamps, P.O. Box 326, Pompano Beach, Florida 33061.

"INVERTED Error," Dag Hammarskjold 5¢ with Approvals. Belmont Stamps, Washington, D. C. 20015.

OLD U.S. space-fillers. 1/2 Scott, Karl Swartz, Malden Bridge, New York.

200 DIFFERENT Stamps, 25¢. Smith, 508-A Brooks, College Station, Texas.

115 DIFFERENT Plus 17 new African Nations stamps. Many triangles, sets, topicals. Monaco "Chevy," British Colonies, others, 25¢ with approvals. Catalina Stamp, Orange, California.

PENNY Approvals, thousands, 1¢ each. Premiums with purchases. Penny Stamp, Orange, California.

U.S. \$\$ Stamps free! Columbus issue, Pony Express, Antarctic Territory, Beatles, Togo Kennedy, etc. Send 10¢ for mailing. Empire Stamp Corp., Dept. PM, Toronto, Canada.

WOW! 1000 Different worldwide—valued over \$20.00 only \$1.00 with quality approvals. Universal, Box 6, Kenosha 5, Wisconsin 53141.



U.S. Stamps. Giant bargain catalog—25¢. Raymax, 35-VZ Maiden Lane, NYC 38.

90,000 STAMPS sale! Generous bargain lot: fine sets, packets, pictorials \$1. only. Giant assortment \$5. High value packet \$3. Rare opportunity for adult collectors. Persile, 436 N.Y. Ave., Brooklyn 25, N.Y.

TERRIFIC Value, seven complete sets. 10¢ with approvals. Beatties, Box 16052, Tampa, Florida.

FREE 100 Worldwide with penny approvals. 10¢ handling. Skytop, Box 1022-PM, Binghamton, N.Y. 13902.

12,000 PENNY Approvals waiting for you. Many from exotic countries, pictorials airmails, new issues. Tilbury, Box 862, Newark 1, N.J.

FREE—Mammoth collection. \$10,000 airmail, world's smallest stamp, Scott's international, master global albums. Given approval buyers. Bargain Stamps, 1000E. Camille, Santa Ana, California.

STAMP Collecting outfit, includes packet worldwide stamps, nine triangles, two diamonds, new African Nations, topicals, package hinges, watermark detector, Millimeter-perfection gauge. Everything. 25¢ with approvals. Loraine Q. Brown, Marion, Michigan.

FREE! Gifts to adult collectors! Right now, without obligation, two marvelous Russian sets plus gift coupon with our sensational approval offer. Only 10¢ for handling. Trio Stamps, Box 1806-MM, Grand Central Sta., New York, N.Y. 10017.

BUILD Your collection to any size without duplicates. Club membership plan. Unusual stamps, lowest prices. Details free. Sjoquist, 1435 Cherrydale, San Jose, Calif. 95125.

GIANT Stamp collection including astronauts, satellites, moonrockets, boy scout issue. Complete U.N. set, many olympic & sport issues, etc., plus big stamp dictionary & approvals. Everything, 10¢! Stampex, Box 47-RM, White Plains, N.Y.

100 BRITISH Commonwealth 10¢. Accompanying approvals. Niagara Stamp Co., St. Catharines 501, Ont.

100 DIFFERENT Stupendous worldwide 10¢. Attractive approvals. Linstamps, St. Catharines 401, Ontario.

I PAY \$250 each for 1924 1¢ green Franklin stamps, rotary perforated eleven (\$2,500 unused). Send 20¢ for large illustrated folders showing amazing prices paid for old stamps, coins, collections. Superb approvals available. Vincent, 85PM, Bronx, New York 10458.

RUSSIAN Space set 10¢. Russian approvals. Snedco, Box 68-P, Waldwick, N.J.

KENNEDY Memorial 1st day cover. Valuable collectors' item! Official first day issue of the John Fitzgerald Kennedy Memorial postage stamp mounted on commemorative envelope bearing portrait of famous President. Postmarked with highly-prized first day cancellation! Also included, to introduce you to the world's most enjoyable hobby: (2) Complete set of 36 U.S. Presidents, (3) Big collector's catalog, (4) Exciting selection of stamps on approval, and (5) "How to Collect Stamps" book. Send only 25¢. Kenmore, Milford KP-780, New Hamp.

FREE Mint set! Approvals accompany. Stamps, Box 22092, Memphis, Tenn.

U. S. MINT Parks 740-749 \$2.00. Cooper, Box 3751M, Oak Park, Mich. 48237.

FREE! 50 Turkey, 10¢ handling. Approvals, Berchtold Stamps, Troy, Ohio.

FREE First issue from Bhutan, with mint approvals. Alpaughco, Highbridge, N.J.

BULGARIA Trains set (1964). 10¢ with approvals. Martell, Box 421, Westerly, Rhode Island.

BIG Bargain, 50 different Israel 25¢. Cornettam, Box 367, Olympia Heights Branch, Miami, Florida 33165.

FREE 25 Rockets to new approval applicants. Tiquet, Box 1496, Denver 1, Colorado.

50 DIFFERENT Old U.S. Revenue stamps 50¢. Winchester Stamps, 45 Winchester Rd., Mansfield, Ohio.

HISTORY In The Making issues! 65 different U.S. stamps, including airmails, special delivery, postage dues, high denominations, etc., some over 75 years old! Only 10¢ with approvals. Offer to adults only. Littleton Stamp Co., Littleton, B1, N.H.

FREE—Mint British Colonials from Antarctic Territory, Borneo, Brunei, St. Christopher, Nevis, Caymans, Trengganu, Pitcairns. Free with approvals. Viking, Great Neck 8, N.Y.

FREE! 222 Worldwide. 25¢ handling. Penny approvals. Jung, 1601 North Stanley, Los Angeles 90046.

STRAT Approval business—details 25¢! Stamps, 116-PB South Nevada, Colorado Springs, Colorado 80902.

FREE 20 different Stamps. Approvals. T.V., 609 Cranberry, Erie, Pennsylvania.

ADULTS! Mint Plate Block Approvals. Warren's, Box 7, Bridgeport, W.Va. 26330.

CLEARANCE. 200 Different stamps 25¢. No approvals, Norge, Ho-Ho-Kus, N.J.

DEALERS—Wholesale list. Postage 5¢. Frank, 5031 Queensberry, Baltimore 15, Maryland.

TURKEY 50 Different 5¢ Approvals. HIJOP, Box 505, Norristown, Pa.

121 DIFFERENT Flag stamps free. Approvals. W-B Stamps, Wilkes-Barre, Pa.

OLD Scarce U.S. seconds on approvals. Slight imperfections, lowest prices. Hernefield, Box 318, Irvington, N.J. 07111.

500 FINE Mixed U. S. 15¢. Wright, Box 753-M, Hagerstown, Maryland.

100 DIFFERENT World wide, 50 cents to applicants for profit sharing approvals. Arthur Oehley, Hopkinton, Mass.

FREE Congo, Rwanda, Monaco, Hungary, 50 Others. Approvals. Elkay Stamps, Dept. PM 1, 210 Jewett Ave., Jersey City, N.J. 07304.

307 WORLDWIDE Different 25¢. Sensational approvals. Niagara Stamps, St. Catharines 201, Ont.

100 BRITISH Commonwealth 10¢. Accompanying approvals. Niagara Stamp Co., St. Catharines 501, Ont.

100 DIFFERENT Stupendous worldwide 10¢. Attractive approvals. Linstamps, St. Catharines 401, Ontario.

25 LARGE American commemoratives 10¢. Accompanying approvals. Free perforation gauge. Linstamps, St. Catharines 101, Ontario.

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.

POLAND Cats, Monaco Olympics, 125 worldwide 10¢. Approvals. Phipps, 10968 1/2 Wellworth, Los Angeles 90024.

POSTAGE Paid both ways with desirable low priced approvals. Ernest Moulblow, 19 Cedarhill, East Northport, New York 11731.

MINT United States on approval. Western, Box 1689P, Salinas, California.

CHINA 25 Different. Only 10¢ to approval buyers. West Coast Stamps, Dept. H, 1609 S. Park, Santa Ana, California.

133 DIFFERENT Colorful stamps 10¢, approvals. Krehl, 1708 Nebraska, Orlando, Florida.

CANADIAN Approvals, Your want lists filled. Valley Stamps, Little Valley, New York 14755.

FREE! "Mystery" stamp packet. Approvals. Premiums, Dancer, 75-P57, Mansfield, Ohio.

TRADE Your duplicates! (Toward foreign approvals.) Complete information 10¢. VSS, Box 98-P, Newton Highlands, Mass. 02161.

FREE! Congo triangle set! Boy Scout beauty! 25 others, different. Approvals. Cambridge, Box 411, Cambridge, Ohio.

100 DIFFERENT Free! 1/4¢ Upwards British Commonwealth or world approvals. Bush, Newlyn Way, Poole, England.

\$21.00 Value collection only \$1.00 when you request trial selection of approvals. Wallace, Rt. 2, Box 670, North Bend, Oregon.

170 DIFFERENT U.S. commemoratives \$1.00. Carstamps, 739 Ordway, Freeport, Illinois.

COLLECTION 10¢! 204 different foreign. Approvals. Watson, 813 Sherbrook, Richardson, Texas.

FREE Mint set, approvals. Stamps Ltd., Box 3584, Modesto, Calif. 95352.

FREE 50 India. Approvals. Walter Kowalski, 19265 Eureka, Detroit 34, Mich.

\$2.00 VALUE Different mint Ecuador stamps for 50¢. Approvals. Ronald Williams, 4617 Southeast Hull Avenue, Milwaukie, Oregon 97222.

HONDURAS "John Fitzgerald Kennedy" plus 101 bonus sets free with approvals. William Deems, 226X Race, Ravenswood, West Virginia 26164.

300 DIFFERENT Given free with approvals. Particulars. Windsor Stamps, 1937 Fruitvale, Oakland, California.

LYNDON Johnson Inaugural cover from Washington Gravure. Engraved by Artcraft, 35¢, 3 for \$1.00. PM Inaugural offer, Box 66, Maplewood, New Jersey 07040.

ONE Pound Bermuda, plus 100 Worldwide 10¢, approvals. Stevens, Box 105A, Homecrest Sta., Brooklyn 29, N.Y.

VATICAN Commemoratives, ten different 10¢, approvals. Howard Davison, Suncook, New Hampshire 03275.

100 OLD United States between 1861 and 1935, \$1.00. Roush Stamps, 51 Chestnut, Mansfield, Ohio.

25 U.S. Free with approvals. Collier, Box 265, Chamber, Ga.

"OLD GLORY" in flaming colors! U.S.A. flag giant beauty from Honduras. Enormous United Nations Mexican stamps. Plus strange gorilla issue. Duke of Windsor, Morocco lovely Macao flowers, wild buffalo stamp and others. 10¢ with approvals. Sunny Stamp, Fruitport 2, Mich.

AMERICAN Historical collection!! Enormous airmail diamond! Pres. Kennedy & movie star Grace Kelly, 1st USA spaceman Shepard, plus midget soldier, Latin Orchild issue, old St. Pierre Fisherman, etc. 10¢ with approvals. Roseland Stamps, Spring Lake 2A, Mich.

FREE 400 Genuine postage stamps! Worth \$10.00 at catalogue prices. Africa, Europe, Asia, British Emp.—a fascinating valuable mixture from foreign convents, banks, etc. Who knows what you will find. Also free valuable booklet. Adults only. Approvals enclosed. Frasek Co., PM-3, White Plains, N.Y.

FREE Sample. Interesting, illustrated, informative National Stamp News, Anderson, South Carolina 29622.

MAILORDER Record Book, 30 pages. Records inquiries, orders, advertising expense, etc. Most complete. Just send dime for postage and handling. C. R. Martin, Popular Mechanics, 575 Lexington Ave., New York, N.Y. 10022.

## COINS, TOKENS, CURRENCY

10 DIFFERENT Indian cents \$2.25. Hutchinson's, Box T-6256, Philadelphia, Penna. 19136.

10 DIFFERENT Lincolns before 1921 \$1.00. 20 before 1931 \$1.50. Eugene Carlton, Chandler, Okla. 74834.



100 LINCOLNS 1909 up. \$4.50. No two alike. Earl Sprague, Kingstone Drive, Muskego, Wisconsin 53150.

HIGHEST Prices paid immediately for coins. Send 10¢ for 1965 Buying prices. Wilmot's, 1067 Bridge St., Grand Rapids 4, Mich.

25 BEAUTIFUL Coins from 25 countries. Mostly uncirculated. Terrific assortment. \$1.00. Hindley, Box 708, Aurora, Illinois.

UNCIRCULATED 1935 pony express silver commemorative medal \$1.00. Coin lists free. Sayers, 1000 Unaka, Johnson City, Tennessee.

RARE Silver Dollars, 1879, 80, 81 S mint \$3.00 ea. Uncirculated. New Catalogue, 50¢; Shultz, Salt Lake, Utah 84110.

10 DIFFERENT Indian cents, bargain lists, \$2.25. Hobby Sales, St. Paul 16, Minnesota.

BARGAINS—Coins, supplies. Large list, 10¢ (refundable). Ron Farley, Metamora, Illinois.

TWENTY Page 1965 retail price list of USA and Canadian coins 10¢. Our retail selling prices on thousands of coins and coin collectors supplies. Bryson Incorporated, 612A White, Toledo 5, Ohio.

LARGEST Coin magazine. 288 pages, 50¢. Scrapbook, 7320-J Milwaukee, Chicago 31.

40 PAGE Illustrated United States and Canadian coin list 10¢. Stoney, 260 Washington, Boston 8, Mass.

SCARCE Old United States Coins; 2¢ piece before 1868 \$1.75; 3¢ piece before 1870 \$1.75; Half Dime before 1860 \$1.75. Special All Three \$5.00. Rarcoa, 31 North Clark, Chicago 60602.

5—INDIAN Cents \$1.00. 5—Liberty nickels \$1.00. Doktor, 5028 W. Pico, Los Angeles, Calif. 90019.

COINS Magazine—world's largest seller! Latest coin prices. 25¢ for sample—1 year (12 big issues) \$5.00. Water Street, Iola, Wisconsin 54945.

COIN Collectors—"Numismatic News" tells what your coins are really worth. Send 25¢ for sample or \$4.00 for next 26 big issues. Water Street, Iola, Wisconsin 54945.

FREE Catalog shows 34 coin books and supplies. Write, Box 133, Glastonbury, Conn.

"S" MINT Lincolns! 25 Different—\$2.50. 250 mixed—\$6.25. Postpaid! Molzan, 3228 Fruitvale, Oakland, California 94602.

TWELVE Different Indianheads \$3.35; 2-cent copper \$1.75; seated half \$3.50; bust half \$4.35; 20¢ silver \$16.75. Free closeout list with order! Nelson, 346-C, Rye, N. Y.

FREE Coin supplies! Giant coin list 10¢ (refundable). Economy Sales, Mansfield, Massachusetts.

ROOSEVELTS 1946S-55S Fine \$5.50 Insured. Viola Rux, Davenport, Washington.

GIANT Illustrated coin newspaper, wooden nickel 10¢. Lawrences, Anamosa, Iowa.

24 page Illustrated coin accessory catalog plus, coin price list 20¢. Texas Coin Investments, P.O. Box 9063PM, Fort Worth, Texas.

LINCOLN Memorial set: 12 B.U. cents, 1959-'64; in Whitman folders \$1.50. Jack James, Box 1027, Brooklyn, N.Y. 11201.

100 FOREIGN Coins \$2.95. 100 foreign bills \$3.95. 2 Mexican Silver Dollars \$1.00. Union, Box 6350M, Phoenix 9, Arizona.

1964 PROOF Like Philadelphia, coin sets in special holder \$5.00. Adrian Thompson, Cherokee, Alabama.

URUGUAY—1961 10 Pesos Commemorative Uncirculated \$2.60; Jolie, Roslyn Heights, N.Y. 11577.

LARGE U.S. cents, 2 different \$4.95. Universal, Box 309, Richmond, Va. 23202.

LINCOLNS 25 Different D and S mints before 1940 \$3.75. Memorial set uncirculated no small dates 85¢. Mickey, Box 82, Brooklyn 11229.

MINT Sets, 1964 P or D uncirculated coins, including J.F.K. half, in lifetime holder, each \$2.25. Both only \$3.95. Wilk, 2120-A So. John Russell, Elkins Park 17, Penna.

COIN Date guaranteed. Restores dates on worn nickels, \$1.00 bottle. Box 276F, Mooreville, N.C.

"S" MINT Lincolns now seldom found circulating, rapidly increasing in value. We offer 22 different "S" including extremely rare 1955S, only \$1.60. 28 different Lincolns before 1940 plus fantastic 1960S small date, \$1.60. Harris, Box 1147P, Oceanside, California.

BRILLIANT Uncirculated \$1<sup>1</sup>/<sub>2</sub>—Daniel Boone, Oregon trail, each \$13.50, Pilgrim \$11.00, Stone Mountain \$7.50, Carver \$2.25. 1882-CC, 1883-CC dollars, each \$24.00. Bebee's Incorp., 4514 North 30th, Omaha, Nebraska 68111.

TOPS! Free illustrated booklet, "How to collect coins." Plus large illustrated catalog. Approvals, Littleton Coin Co., Littleton E1, N.H.

U.S. Coins wanted. Free buying list available. Bedrin, 250 Fulton, Hempstead, N.Y.

### ANTIQUES, RELICS, INDIAN GOODS, CURIOS

ARROWHEADS 10 for \$3.00. List free. Hyde's, Rosemar Rd., Parkersburg, W.Va.

SELLING 20,000 Ancient arrowheads, spearheads, etc. List free. Lear's, Glenwood, Arkansas.

TONS Of antique gun parts and supplies. All reproduction muzzle loading guns. Send 50¢ for thick illustrated 11th anniversary catalog. Dixie Gun Works, Union City 12, Tenn.

ANTIQUES, Coins, Antique Reproductions. List 20¢ (Refundable). Antiques, Box 10-PM, Ottumwa, Iowa.

ORIGINAL Antique telephones, illustrated catalogue 20¢. Telephone Company, Turtle Lake, Wisconsin.

SIX Arrowheads from six states, \$2.00. George Smith, 9825 Conway Drive, Indianapolis, Indiana 46236.

### HOBBIES AND COLLECTIONS

50 JUNGLE butterflies \$2.00. Giant nature hobbies catalog 25¢. Collectors Wonderland, Box 1170, New York 8.

TIME Consuming hobby: Construct mold, create artistic plastic wall panels for every room. Mold print, instructions, \$2.00. H. M. Hobrock, P.O. Box =8784, Pittsburgh, Pa., 15221.

FIVE Military emblems and illustrated catalog. 25¢; 30 different 50¢; Foreign medal 50¢; add 10¢ postage. Hobbies, Box 71-M Rockaway 94, New York.

EUROPEAN And Nazi uniforms and equipment, medals and badges, all authentic and reasonably priced. Catalog with 600 illustrations \$1. Der Alte Oberst, Box 1393, La Jolla, Calif.

### PRECIOUS STONES, MINERALS

EARTH Science. Rockhound's National Magazine. Subscription \$2.50. Sample 35¢. Box 1357-PM, Chicago 90, Ill.

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.

SEMI-Precious uncut gems. Ten different for \$1.00. Request list 30. Prospectors Shop, 201 San Francisco, Santa Fe, New Mexico.

### PHOTO FINISHING, CAMERAS, PHOTO SUPPLIES

FAST, Hi-quality finishing. Kodacolor rolls: eight jumbo prints \$1.98. Twelve \$2.49. Twenty \$3.49. Reprints 15¢. Also low B&W prices. Custom Quality Studio, Box 4838, Chicago 80.

AMAZING Values, film users write, Chai Photo Supply Co., 14-03 Berdan Ave., Fair Lawn, N.J.

COLOR Movie Fans! 8 MM expertly processed for just \$3.10 including fresh Kodachrome Film. All mailed back next day First Class. Craftsmanship guaranteed. Send exposed reel or request Free Mailers and Price List of complete services. Direct Mail Photo, Box 8352-PM, Pittsburgh, Pa. 15218

PHOTOGRAPHY For pleasure or profit. Learn at home. Practical basic training. Long established school. Free book. American School of Photography, 835 Diversey Parkway, Dept. 3452, Chicago, Illinois 60614.

FREE Illustrated photographic bargain book. Central Camera Co., Dept. 1-C, 230 So. Wabash, Chicago, Illinois.

FOUR 5X7 or two 8X10 enlargements \$1.00. 30 wallet photos \$1.25. Dick's Photo, Louisville, Ky. 40212.

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.

### MOTION PICTURES AND SOUND EQUIPMENT

MOVIE Film! Free catalog! ESO-R, 47th Holly, Kansas City 12, Missouri.

5,000 8-16 MM. Movie films. Free catalogues. International, Greenvale, N.Y.

16MM Sound films features and shorts. Bedner, 5300 So. Talman, Chicago.

8MM MOVIES. 2"x2" Color Slides—biggest selection anywhere! World's Fair, railroad, antique automobiles, circus, World War II, Hollywood classics, travel, wild life and many others. 16mm. new, used films also. Big Blackhawk catalog free. Blackhawk Films, 424 Eastin-Phelan Bldg., Davenport, Iowa 52805.

FREE Catalog! Save on 8' mm.-16mm. film and supplies. Superior, 448 N. Wells, Chicago 10.

CAPTURED Nazi film. Guaranteed authentic. Sample 50¢. Sanford, Fairview, Pennsylvania.

16MM sound-projectors, films, new, used for sale. Free catalog. National Cinema, 71 Dey Street, New York City, N.Y.

### COLOR SLIDES

NEW YORK World's Fair, 1964 exclusive set 100 35mm. 2"x2" color slides, \$14.99 plus 28¢ postage. Biggest selection high quality slides available anywhere. Catalog free. Blackhawk Films, 423 Eastin-Phelan Bldg., Davenport, Iowa 52805.

TRANSPARANCIES Wanted, up to \$500.00 each: Free report; Camera Arts Exchange, Box 101, Hollywood 28, California.

TRANSPARENCIES Wanted. Up to \$500.00 each. For information write American Color, P.O. Box 46372, Hollywood 46, Calif.

RELIGIOUS And travel slides. All shrines. Free catalogs. Argo, Box 714, Manhasset 1, N.Y.



## BUSINESS OPPORTUNITIES

**COPUBLISH "Mail Sale Advertiser."** leading mailorder paper. Copy and details 25¢. Vanroy Shirk, Lebanon, Pa. 17042.

**BIG Money raising fishworms and crickets.** Free literature. Carter Farms, Plains, Georgia.

**\$400.00 MONTHLY Raising giant fishworms.** Soilless method. Charlie Morgan, Bushnell, Florida.

**PLASTERCRAFT Molds,** liquid rubber, plasters, flocks, candle supplies. Catalog and manual free. Blue Rapids Supply, Blue Rapids, Kansas.

**WORLD'S Largest wholesale supply.** Buy from 679 American, European, Japanese wholesalers. Tailormade suits from Hongkong. 123 dropship catalogs. Rock-bottom prices. Free details. International Buyers, 216-MM Jackson, Chicago 6, Ill.

**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 26, Ill.

**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 2, Maryland.

**LIQUID Molding rubber,** free information. Chaney's, 5415-A San Jose Blvd., Jacksonville 7, Fla.

**SELL Champion, AC, Autolite spark plugs.** Reconditioned, electroplated, guaranteed 10,000 miles. 100% profit. Free sample. Lee Plugs, 1608-A Roberts, Houston 3, Texas.

**OPERATE Home mailorder business.** Vosack Printing, 4444A Ute, San Diego, 17, Calif.

**RAISE Rabbits on \$500 month plan.** Free details. White's Rabbitry, Mt. Vernon, Ohio.

**HUGE Profits! Mail order importing.** Free information. ITIS-PM-3, Box 454, Hollywood, Calif. 90028.

**DOLLS! Dolls! Dolls! We teach you to make, repair, dress and sell.** Study at home. Earn while learning. Free booklet. Doll Hospital School, Studio MC-35, 11826 San Vicente Blvd., Los Angeles 49, Calif.

**LEARN Landscaping and the growing of plants.** Start a profitable business part or full time. Free information without obligation. Lifetime Career Schools, Dept. MC-35, 11826 San Vicente Blvd., Los Angeles, Calif. 90049.

**AMAZING Manufacturing opportunity.** Free list of manufacturing formulas. Presler Oil Company, Fostoria 16, Ohio.

**SPARE Time earnings.** With your table-saw, bandsaw or jigsaw. Write: Workshop, A3800 Harney, Vancouver, Washington 98660.

**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-365, 7530 S. Greenwood, Chicago 19, Ill.

**IMMEDIATE Profits with no capital or experience.** Take orders for all magazine subscriptions. Friends and neighbors are your prospects. Write now for complete, free kit. McGregor Magazine Agency, Dept. CB5, Mount Morris, Illinois.

**FREE Book "990 Successful, Little-Known Businesses."** Work home! Plymouth 872W, Brooklyn 4, New York.

**OPERATE Home mailorder business.** L&D Printing, 106 Cumberland, Lawrence, N.Y.

**SIMPLE, Pleasant, mailorder can net \$12,000 year.** Write Rutward, 2610 Bryant, Columbia Station, Ohio.

**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.

**SELL Books by mail.** 400% profit. Royal, Box 450-X, Cleveland 27, Ohio.

**FREE Booklet! Profitable, spare-time business** bronzing, Pearikoting baby shoes! Complete set-up on credit. Kiktavi, Box 34861-B, Los Angeles, California.

**TO \$100.00 weekly! Mailing catalogs!** Sample, instructions, 25¢. Costar, GPO Box 972-PM, New York 10001.

**BAKE New greaseless doughnuts in kitchen.** Stores buy output. Start spare time. Profit 29¢ dozen. Small appliance. Free recipes. Montgomery, 3605 South 15th, Minneapolis 7, Minnesota.

**VENDING Machines** can make you an excellent spare time income. Small investment gets you started. Write for our free catalogue. Vendall Distributing Co., 1820 E. 38th St., Minneapolis 7, Minn.

**STOP Throwing away boxtops!** They're worth money! Some, 25¢! Inquire: "Box-tops-MB", Cedar Hill, Texas.

**INVESTIGATE Fires,** storm damage, accidents for Insurance Companies. Pays up to \$1,000 a month, part or full time. No college necessary. Car furnished; expense paid. We train you at home in spare time. Keep present job until ready to switch. Pick your location. Men badly needed now. Full information free. Write Liberty School, Dept. C-511, 1139 W. Park, Libertyville, Illinois.

**PROFITABLE Mail order business.** Be independent. Details free. Ideal, Box 357-DX, Valley Stream, N.Y.

**DIRECT Rock bottom wholesale sources!** Buy for pennies! Sell for dollars! Free Details, Joric, Dept. 503, Box 6751, Portland, Oregon 97266.

**76 MILLION Prospects! Immediate profits!** Selling Champion, AC, Autolite spark plugs. Precision reconditioned, silvery-plated, guarantee 10,000 miles. Up to 308% profit. Free samples, details. Indy 500 Spark Plug Co., 4620 Braeswood, Houston, Texas 77035.

**CONCRETE Facts: Cement Artists** make big money. Home Shop—Simple Equipment—Copyrighted Methods and Formulas. Make, Color and Marble Glaze beautiful Cement Pottery without molds. Wishing Wells, Bird Baths, Waterfall, Rustic Garden and Patio items. For free illustrated Brochure, write Hollywood Cementcraft, 602 E. Athens St., Altadena, California 91001.

**ESTABLISH Your own home operated, profitable business!** Particulars free! MacMillan, 2020-C Marlowe, Lakewood, Ohio 44107.

**NEWSPAPERS.** Sawdust, Tin-cans, 200 uses. Instructions \$1.00. Charles Company, 42-GPE, Norwood, Ohio.

**FREE "Franchise Profit Letter"** tells how unique NFR service is helping thousands seeking profitable businesses. Write today. National Franchise Reports, W-528, 333 North Michigan, Chicago 1.

**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 Mallico, 1554 Sepulveda, Dept. P-703, Los Angeles 25.

**PACKAGE At home for profit!** We supply everything. No "selling." Free home business details. HPC, 807HPI Sunset, Los Angeles 12.

**REPAIR Hydraulic jacks.** Details free. Write: Hydraulic Parts Supply, Box 3645, El Paso, Texas.

**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.

**"MAILORDER — Stop looking!"** Get your own catalog! Methods, 1807-FD, Lafayette Hill, Pennsylvania, 19444.

**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. C-U-PPM, Freeport, Ill.

**\$70.00 WEEKLY—home, spare time.** Simplified mail bookkeeping. Immediate income, easy. Auditax, 34741a, Los Angeles 34.

**MAKE \$46 From square foot plywood;** jigsaw necessary. Free details. Woodart, Bridgewater, Mass.

**YOU Can undersell all catalog houses in America!** Free details! Cam Company, 436-13 Bloomfield Ave., Verona, N.J.

**EARN Money raising fishworms for us!** Write: Oakhaven-38, Cedar Hill, Texas.

**HAWAIIAN Jewelry** sells fast because it is new and exciting. Details free. Chandlers, Wailuku, Hawaii, Dept. 31.

**MAKE \$50.00 Daily!** Sell air operated vacuum cleaners to service stations for \$19.50. Your cost \$9.50 postpaid. Free details. Inka Industries, 2401 Crocker, Houston 6, Texas.

**I MADE \$40,000.00 year by mailorder!** Helped others make money! Start with \$10.00—Free proof. Torrey, Box 3566-Y, Oklahoma City 6, Oklahoma.

**INSTALL Burglar alarm systems.** Big profit home business. Beginners start spare time, without mechanical experience or costly equipment. Free starter plan. Nasco, Dept. P703, 11071 Massachusetts, Los Angeles 90025.

**MAILORDER Laws. \$2.00.** Calvin Kahn, Attorney, 4504 Pine, Philadelphia, Pa.

**\$200 POSSIBLE Weekly** operating Ad Market. Free details. Ad Market, Harlingen 1, Texas.

**SIMPLE Guide to better living for Senior Citizens.** Free details. Webb, 5431-C, Goodman Road, Merriam, Kansas 66202.

**BUILD Custom cases at home for profit.** Get orders by mail. We supply materials, instructions, everything. Free home business details. Customcase, 805CPI Sunset, Los Angeles 12.

**IMPORT-Export business made easy.** Complete setup service; not just instructions. Hermes, 152 West 42, New York City 10036.

**IMPORT-Export opportunity, profitable** world-wide, mailorder business from home, without capital; or travel abroad. We ship proven plan, for no risk examination. Experience unnecessary. Free details. Melinger, PE703, Los Angeles 90025.

**SAVE Up to 90% on brand new books,** interesting titles. Free catalog. Embassy, Box 67-A, East Elmhurst, N.Y. 11369.

**MAIL Baby catalogs to new mothers for big profits!** Details, catalog 25¢. Volz-PM, Ypsilanti, Michigan.

**HIGH Weekly Earnings.** Address-mail letters featuring real merchandise. Receive \$10 with every order—keep \$8 profit. Supplies furnished. Free particulars. Modern Merchandising, Box 357, Oceanside, New York.

**BIG Money—Operate your own fix-it shop.** Service all household appliances: irons, fans, refrigerators, automatic washer-dryers, etc. Know how they work, what goes wrong, and how to fix them. Learn how to do house wiring, commercial wiring, rewind motors of all sizes, sharpen mowers, skates, saws. How to get business, buy spare parts wholesale. What to charge for your work. Free Book, Christy Trades School Inc., Dept. A7003, 3214 W. Lawrence Ave., Chicago, Ill. 60625.



**SHARPEN** And serrate steak knives, scissors, pinking shears, etc., for profit. One low cost machine. Free details. Beaver Machine, Box 121, Gardena, California 90247.

**RETIRE** Without money. Live happy carefree life. Details free. Facts, 1100-B East Pike, Shinnston, West Virginia.

**\$50 PER 1000** possible. Addressing 1000 envelopes. Longhand-typewriter home-spare time. Free particulars. General Enterprises, Box 303, Island Park, New York.

**SELL** Greeting cards, make extra money, all occasion assortments, Easter stationery, gifts, wrapping, toys jewelry. Experience unnecessary. Salable samples on approval. Free Catalog, bonus plan. Write Hedenkamp, 361 Broadway, Dept. CD-1, New York.

**OPERATE** A home collection agency. Budget, Box 501B, Monterey Park, California.

**JUST 3** Servicemen bring you \$18 hourly profit. Duraclean dealers gross \$6.00 hourly each serviceman . . . \$9.00 hourly on own service, using national price guide. Quickly learned, easy to do. We show you step by step. Few hundred dollars builds your own nationally advertised business while continuing present job. Operate from home. Start small, grow big in booming business. Investigate immediately . . . before your territory is taken. Free illustrated booklet explains everything. Send for it, then decide. Duraclean, C5-162 Duraclean Building, Deerfield, Illinois.

**MAKE \$32** From 49¢ piece vinyl. PMA-1834 Edgeland, Louisville, Ky. 40204.

**CHECK** Protector. Complete bank kit. Write: Goodall, 68-M Joost, San Francisco 94131.

**BIG** Money selling books, folios, tapes by mail. Daoust Business Research, 3138 Wilson Drive, Chicago, Illinois 60625.

**WORK** Home, sparetime. Money-making literature, instructions, \$1.00. Satisfaction guaranteed! Interstate, 37 Besch, Albany 9, New York.

**PROFITABLE** Catalog mailorder business! Sample, instructions, 25¢. (Refundable) Vikari's, 468-PM, Third Avenue, Salt Lake City, Utah 84103.

**LEARN** Bonsai! Duplicate exactly \$500 imported Oriental Tiny Trees in few hours! Grow living miniatures too; and tiny forests in bowls. Profitable home business! Request free fact pack, free sample seeds! Minitree, Box 23023-RX, Los Angeles 90023.

**FABULOUS** Profits! Operate successful mail order business. Receive \$25 with every order—keep \$20 profit. Orders filled Free. Write for details. Home Industries, Box C-13, Atlantic Beach, New York.

**PIANO** Tuning learned quickly at home. Tremendous field! Musical knowledge unnecessary. Information free. Empire School of Piano Tuning, Box 327, Shennadoah Station, Miami, Florida 33145. (Founded 1935).

**"MAILORDER** Beginners Bookkeeping System", \$1.00. Dealers wanted. Wonderful "drop-ship" proposition. Neil H. Tasker, Shamokin, Pennsylvania.

**SECRET** Of achievement turns your desires into realities. Details free. Enterprise, Box 2246, Long Beach, California.

**400,000** BARGAINS below wholesale! Many free. Liquidations, job lots, single samples. Free details. Bargainhunters Opportunities, Box 730-A, Holland, Michigan.

**HOME** Manufacturing opportunities. Formula catalog 10¢ Ideal, 179-P, Park Ridge, Illinois.

**NEWEST** Products, ideas, opportunities. Monthly availability reports give "inside track." Details! Garen Company, 40-A Surf, Huron, Ohio.

**START** Your own mailorder business with "Trial Plan." Campbell, Box 5295, Phoenix, Arizona 85010.

**WATCH** Repairing. Learn to repair American and Swiss watches in spare time at home. Tuition only \$5 monthly. Diploma awarded. Free sample lesson. No obligation. Chicago School, Dept. YPA, Fox River Grove, Illinois.

**DELIVER** Individual servings Maxwell House coffee, soups, hot chocolate to shops, offices, using our special equipment. Part-time, full-time. Tremendous profits. Free catalogue. Coffee-Bar Manufacturing Company, 801 Sherman, Richardson, Texas.

**SKIN** Diving dealers wanted for the fast growing scuba diving industry. Part time. No investment and big return. Thousands of items. Send \$1.00 for 150 page dealer catalog. New England Divers, Dept. D, 42 Water Street, Beverly, Massachusetts.

**FREE** Book: "202 Successful Mailorder Businesses." Work home. Mailorder Research Publishers, 6380 Wilshire, Los Angeles 48M, Calif.

**INVENTIONS**, New product ideas for manufacturers. Write us product types of interest to you. Kessler Sales, Dept. C-53-IB, Invention Brokers, Fremont, Ohio.

**NEW** Plastic laminating process makes big home profits easy. Free details. Craft-Olam, Box 8302, Minneapolis, Minnesota 55426.

**NET \$250.00** week. Pleasant mailorder. Write Crestmore, 409 West Liberty Street, Rome, N.Y. 13440.

**MAIL** Order 75% profit. Write Ridley's, Box 125, Elliot Lake, Ontario.

**"PROFITS** In Mail-Order" literature free! Chespa Sales, Barrington, New Jersey.

**MADE \$10,000.00** Typing at home. Guaranteed profit. Amazing information, 15¢. Lenore Feigen, 30 Washington, Oak Park, Ill. Dept. OPM.

**MAKE** Money from old tires. Operators clearing \$400 weekly. Equipment costs \$800. Get facts. S & S Patents, Inc., 3511 N. Lincoln, Chicago 13.

**HOW** And where to raise capital. Details free. Financial, Box 785-PM, Springfield, Missouri 65801.

**AMAZING** Mail order profits using proven methods. Research, 3207-PM Southern Hills, Springfield, Missouri 65804.

**PROFITABLE**, Pleasant, Easy, Home Mailorder! Hickman, Box 4711-A, Memphis, Tennessee 38104.

**RAISE** Capital money fast—easy proven sources—free particulars. Advisor, Box 48337-PM-1, Los Angeles 90048.

**AMAZING** Information on starting your own business. Details free. Snyder, Wyatt 4, Ind. 46595.

**MAILORDER** Beginners "Bookkeeping System." \$1.00. Dealers wanted. Convenient "Drop-Ship" arrangement. Neil H. Tasker, Shamokin, Pennsylvania.

**COMPLETE** Business propositions available quarterly. Mail, local, agents. Gordon Products, 2508-B So. Salina, Syracuse, New York 13205.

**PROFITABLE** Pleasant home mailorder business. Dickerman, 551 Fifth Avenue, New York City 10017.

**MAILORDER** Classified advertising—Make your fortune. Write; Franklin, Box 304P, Salem, Ohio.

**HOME** "Importing" business, free details. Livingston's, Box 5332, North Charleston 1, South Carolina 29406.

**MAILORDER** Guidance service. 20 complete setup services; not just instructions. Hermes Company, 152 West 42, New York City 10036.

**HOW** To direct fund-raising campaigns. Famed Arbogast course. Free details. Wm. Arbogast, Box 331, Harlingen 1, Texas.

**OPERATE** Profitable mail order business. Free details without obligation. Omega, Box 164, North Hollywood, California, 91603.

**REPAIR** Automatic washers. Whirlpool, Kenmore, G.E., Westinghouse, Norge, Frigidaire, Hotpoint, Kelvinator. Manuals \$3.00 each. Parts wholesale. Benson, Dept. P, Box 3880, Cleveland, Ohio 44110.

**HOW** To get finance capital, loans, grants, cash to start a business. Free details. National Counselor, Box 331, Harlingen 17, Texas.

**DYNAMIC** Successful business of your own. Details free. Tisserand Company, Box 77-AB, Chappaqua, N.Y. 10514.

**BIG** Money in your own business. Details free. Seeger, 55 Lakeview Dr. S.E., Grand Rapids, Michigan 49506.

**VACUUM** Mold at home! Hundreds full 3-D plastic products. Big profit, new machineryless method. Free facts, samples. Nationwide Plastics, Box 23321-HK, Los Angeles 90023.

**MAKE** Your fortune in mailorder. Free details. Mailway, Box 1221, Los Gatos, Calif.

**YOUR** Own mailorder business now. Free details. Kelley Enterprises, 189 River Bend Blvd., St. Albans, W. Va. 25177.

**BIG** Profits with new home oil portrait business. Write today: Art, Box 63831, Oklahoma City, Oklahoma.

**FREE**, 692 Business opportunities. Hurry. 25¢. Norman, Box 2-R1, Brooklyn 11212.

**REALLY** Different moneymaking ideas from—Private Enterprise Reports, Box 16127C, San Francisco, California.

**FREE** Advertising! 1965 Advertisers' handbook tells where and how to get free advertising in 100 well known magazines. Also: regulations governing mail order selling, sources of free mailing lists, and other valuable aids. A fact-filled reference book for mail order professionals and beginners. Order today, only \$3.00. Palmer Publications, Box 6013F, Denver, Colorado. Refund if not satisfied!

**BECOME** Tax consultant. Our students earn \$1,000-\$3,000 every tax season preparing returns evenings. State approved. National Tax Training School, Monsey Y-2, New York.

**BIG** Cash profits in home importing business. Free details. Willis, Dept. PM3, Box 75142, Los Angeles, Calif. 90005.

**BIG** Paying business, spare time, at home. Be independent. Exline Enterprises, 1403-C Rose Boulevard, Orlando, Florida.

**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.

**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, 575 Lexington Ave., New York, N.Y. 10022.

**PROFIT** With Popular Mechanics' subscription plan. No investment, no experience needed. Earnings begin immediately when you obtain subscription for Popular Mechanics, Good Housekeeping and others. High commissions, bonus. No experience needed. Deal directly with the publisher. Write Popular Mechanics, Room 3B, 250 West 55th St., New York 19, N.Y.

## MONEYMAKING OPPORTUNITIES

**AMAZING** Successes through franchises! Become exclusive franchise holder your territory. Information rushed. National Franchise Reports, WP-528, 333 North Michigan, Chicago 1.

**EARN \$1000.00** month operating Bookkeeping Tax Service. Details free. Universal Bookkeeping, Box 664, Springfield, Missouri.

**MAKE** Plastic novelties for extra income. Low cost home training now available. Write for free booklet. Interstate Training Service, Dept. D-3, Portland 12, Oregon.



**MAKE Money** writing short paragraphs! No tedious study! I tell you what to write, where and how to sell, and supply list of editors buying from beginners. Many small checks add up quickly. Write to sell, right away. Send for free facts. Benson Barrett, Dept. C-27-AA 6216 Clark, Chicago 26.

**RAISE Rabbits** and fishworms on \$500 month plan. Free details. White's Rabbitry, Mt. Vernon, Ohio.

**START Your own home mailorder business**, sparetime! Easy; Fascinating, profitable! Alfano, 19-PM Pine, Closter, New Jersey.

**PAINT Signs** for yourself—others! Easy with our letter patterns, supplies. Also "Raised Letters." Paulow, Crystal Falls, Michigan 49920.

**EARN Big commissions** full or part time. Show America's largest line low priced business printing and advertising specialties. Calendars in season. Big free sales kit samples hundred items used daily by business people. Build profitable repeat business. Start right now. National Press, Dept. 19, North Chicago, Illinois.

**LEARN The secrets** of repairing junk batteries. "Fabulous Profits" at home. Details. Batteryman, Prunedale P.O., Salinas, California.

**UNUSUAL Moneymaking opportunities**. Free literature. Eaton's, 708PM Gold, Centralia, Wash. 98531.

**MAKE Figurines, plaques, lawn ornaments, Molds, plastercraft kits, liquid rubber.** Sample and catalogue 10¢. Wooley Company, Box 29-B, Peoria, Illinois.

**VENDING Machines.** No selling. Operate a route of coin machines and earn amazing profits. 32-page catalogue free. Parkway Machine Corporation, 715 PMM Ensor Street, Baltimore 2, Maryland.

**MAKE It big!** Sell mailorder manuals. Tremendous market, profits. Free details. Rutward Publications, 189 Bryant, Columbia Station, Ohio.

**MAILORDER!** \$25.00 Orders! Keep \$16.67! Distributing \$3.25 product. JanMar, Box 572-M, Washington, D. C. 20044.

**EARN Money** evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle-1, Wisconsin.

**BECOME A Notary Public!** Win extra income, prestige, business contacts. Details free. Stationers Exchange, P.O. Box 617, Kilgore, Texas 75662.

**CIGARETTES.** Make 20 plain or filter-tips for 9¢. Factory-fresh pipe tobaccos. Mild tropical flavored Philippine cigars. Facts free. Moberly, Box 904, Owensboro, Kentucky.

**HOW I make \$50.** day operating Ad Market. Free details. David Magee, Harlingen 4, Texas.

**FABULOUS Profits** raising fishworms. Picture folder free. Excello, Kosciusko 6, Mississippi.

**SELL Titania gems:** more brilliant than diamonds. Catalog 10¢. Diamonite, 2420-G 77th, Oakland 5, California.

**MAKE Money** gathering wild roots, herbs, weeds, leaves, tree seeds, flowers, plants! Over 200 varieties! Buyers listed for all you can ship! Easy! Pleasant! World wide! Rush postcard! Allain, 69-P Hollis, Worcester, Mass. 01610.

**CASH Making** marble jewelry, flowers. Catalog 10¢. Flocraft, Farrell 43, Penna.

**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. 31BD, Lynchburg, Va.

**MEN — Women!** Start money-making plastic laminating business at home in spare time. Material that costs 11¢ brings back \$2.58. No canvassing or selling but mail orders bring in \$20 a day. Write for full particulars free. Rush name on postcard to Warner, Room CI-2-A, 1512 Jarvis, Chicago 26, Ill.

**EASY To start** rubber stamp business at home in spare time. Make up to \$9.80 an hour without experience. Facts free. Write Roberts, 1512 Jarvis, Room CR-2-A, Chicago 26.

**WIN Cash!** 36 pages of contest information. Year's trial, \$1.00. Sample, 20¢. Prizewinner, Box 11569, St. Petersburg, Fla.

**MEN, Women.** Earn extra cash! Fascinating home business. Become professional telephonist. Telephonetics, Box 968-PM, Glendale, California 91209.

**10,000 SECRETS.** Ideas, for home moneymaking businesses! (Free Brochures) Bertholf's, 739-3 Sylvania Avenue, Toledo, Ohio 43612.

**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 26, Ill.

**EXTRA Money** with mail order and coins. Schiefer, 601 Rawson, Fremont, Ohio.

**CLIP Items** from daily newspapers. Get \$1.00 to \$5.00 each. Details Free. Walter, Box 1023-P, Erie, Pa.

**OPPORTUNITIES** 501 Ways to earn money. Part—full time, young—old, men—women. Free information. Opportunities, Box 1331, Merchantville, New Jersey.

**MINK Raising** information free. Lake Superior Mink Farm Inc., Superior, EE1, Wisconsin.

**WATCH Repairing.** Swiss and American watches. Develop skill step by step in spare time at home. Tuition only \$5 monthly. Diploma awarded. Free sample lesson. Chicago School, Dept. YPB, Fox River Grove, Illinois.

**"HOW To run** mail order business profitably." Write Jester, 524 W. Godfrey Ave., Philadelphia, Pa. 19126.

**BIG Profits** mailing baby catalogs imprinted with your address to New Mothers. Details. Catalog 25¢ (refundable). Waterworth Company, Box 1960, Lancaster, Calif. 93535.

**TYPISTS: Homeworkers:** Make money at home: Mailers, 2 Madison, Greencastle, Indiana.

**HOW And where** capital is available. Free details. Counselor Reports, Box 331, Harlingen 5, Texas.

**FABULOUS Mailorder.** Can net \$10,000 year. Budget, Box 501P, Monterey Park, Calif.

**FREE! Mailorder** success formula. Based on successful experience. Write: Mounier's, 209 Armand, Ville Platte, Louisiana 70586.

**100% PROFIT** without risk! Shortages make coins today's best investment. Free information. Small, Box 373A, Boonton, New Jersey 07005.

**MAKE Your fortune** in mailorder. Free details. Mailway, Box 1221, Los Gatos, Calif.

**INCREDIBLE** Investment program for beginners. 20% to 100% yearly increase. Expert guidance. Riskproof plan, "shoe-string" capital. Free details. Gordon Products, 117-B Warner, Syracuse, N.Y.

**WHOLESALE Suppliers,** drop shippers, American and foreign. Information. Free details. Jenkins Publications, Box 1490, Dept. M, Oceanside, California.

**DID You know** there are many easy, little known dollar-maker "tips"? Free details. Towers, Box 1012, New York 10001.

**MAKE Big money** in a business of your own. Details free. Martin, 850A Estella, Pittsburgh, Pennsylvania 15210.

**SLIDEWORD** Cash prize puzzle contest! Free details! Slideword Puzzle Company, 14270 Mortenvue, Taylor, Mich. 48180.

**MAIL Catalogs** for 40% commission. Details, sample catalog. 25¢. Bert's, Box 1151, Dothan, Alabama 36302.

**HOW To make money** at home with newspaper clippings. Free details; Amac, Box 1312, Fremont, Calif.

**BIG Money** raising fishworms and crickets. Free literature. Carter Hatchery, Plains, Georgia.

## PROFITABLE OCCUPATIONS

**FREE Book** "990 Successful, Little-Known Businesses." Work home! Plymouth 87W, Brooklyn 4, New York.

**MAKE Money** writing short paragraphs. Information free. Barrett, Dept. C-27-AB, 6216 No. Clark, Chicago 26.

**WHOLESALE Magazine** subscriptions. Highest commissions! Bonus! Box 151AA, Freshmeadows, N.Y. 11365.

**BECOME Independent** with your own franchise business. Thousands earning handsome incomes. Request interesting facts today. National Franchise Reports, PM-528, 333 North Michigan, Chicago 1.

**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.

**BAKE New greaseless doughnuts** in kitchen. Sell stores. Free recipes. Michael, 3605 South 15th, Minneapolis 7, Minn.

**RAISE Pheasants** on \$100 week plan. Little capital and space can make you independent. Free details. Great Central System, Columbus 1, Kansas.

**BIG Money** raising fishworms and crickets. Free literature. Carter Wormery, Plains, Georgia.

**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 26, Ill.

**AUCTIONEERING—Resident** and home study courses. Auction School, Ft. Smith, Ark.

**NEW Amazing portable 49¢ meal.** Selected by U.S. Olympic team. Sparetime distributors and area wholesalers wanted. Send \$1.00 for three meals. Comidex Corporation, New Canaan 9, Connecticut.

**SHARPEN—Scissor, pinkers, skates.** Inexpensive machines, supplies. Blackhawk's, Sheldahl, Iowa.

**VENDING Machines.** No selling. Operate a route of coin machines and earn amazing profits. 32-page catalogue free. Parkway Machine Corporation, 715 PMP Ensor Street, Baltimore 2, Maryland.

**OPERATE Restaurant** or diner. Free booklet reveals profitable plan. Write Restaurant Business School, Dept. EC-35, 1920 Sunnyside, Chicago 40, Illinois.

**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-3, 6801 Hillcrest, Dallas 5, Texas.

**MANAGE Motel** or resort. Man, woman, couple can make high salary plus apartment. Pick your own location with our employment assistance. Learn at home. Free booklet. Motel Managers Training School, Dept. PMC35, 612 South Serrano, Los Angeles, California 90005.

**PART Time!** Latest method in making an extra income in your spare time through mailorder. Free details. Torres, Box 1012, New York 10001.

**"THE Secret For Making Money."** Over a dozen money-making opportunities in a new publication that every one is talking about! In clear concise language, you'll learn "How To Multiply Your Dollars." Send \$2 to Hamill Publishers, Dept. PM, P.O. Box 842, Palisade Station 07025, Fort Lee, N.J.



## AGENTS WANTED

**PRINTING.** Advertising salesmen—Excellent moneymaking sideline selling decalcomania name plates, small quantities. Automobile initials, sign letters. Free samples. Ralco. XL. Boston 19, Mass.

**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.**

**ESTABLISH Your own business.** Low prices on used clothing, shoes, household goods. Unlimited profits. Free catalog. Northwestern Distributors, 2129 No. Western Avenue, Chicago 47, Illinois.

**SELL Greeting cards, make extra money, all occasion assortments. Easter stationery, gifts, wrappings, toys, jewelry. Experience unnecessary. Salable Samples on approval. Free catalog. Bonus Plan. Write Hedenkamp, 361 Broadway, Dept. CD-1, New York.**

**MAKE As much as \$100. a week selling quality all occasion cards, gifts, novelties, stationery. Write for samples on approvals. Robinson Cards, Dept. 618, Clinton, Mass.**

**SALESMEN Make big profits selling "do-it-yourself" sign kits to merchants. Information free. Signmakers, Inc., Dept. PM4, Box 6626, Denver 16, Colorado.**

**RAISE Rabbits for us on \$500 month plan. Free details. White's Rabbitry, Mt. Vernon, Ohio.**

**FINEST Stainless blades wholesale. Import Shop, Box 561, Bartlesville, Oklahoma 74004**

**EXTRA Paycheck\$ every week! Make big money spare time or full time with famous Mason Shoes. No investment. Top profits. Write for free business kit. Mason, Chippewa Falls K-509, Wisconsin.**

**PRINTING. Office supplies, rubber stamps. Save 50%. Modern, Box 3P, Southfield, Michigan.**

**EARN \$300 a week selling the hottest kitchen gadget on the market. Details free. The Armstrong Co., Dept. PA. 2, Box 116, Ogdensburg, N.Y.**

**NEW Car thief signal. Lightning seller. Samples sent on trial. Northwest Electric, Ave. 737, Mitchell, S. Dak.**

**FABULOUS Opportunity for women, any age. Earn \$45 day or more as beauty advisor. No experience. Get details, sample Hollywood cosmetics: Studio Girl, Dept. OP-338, Glendale, California.**

**MAKE Up to \$50.00 daily soliciting delinquent accounts. Terrific commissions. General Finance Co., Dept. LG-75, Pickwick Bldg., Kansas City, Mo. 64106.**

## SALESMEN—DISTRIBUTORS

**EARN Big commissions full or part time. Show America's largest line low priced business printing and advertising specialties. Calendars in season. Big free sales kit samples hundred items used daily by business people. Build profitable repeat business. Start right now. National Press, Dept. 18, North Chicago, Illinois.**

**\$1,000.00 a month for making dramatic 3-second demonstration of amazing Lightweight Presto Fire Extinguisher. New chemicals 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.**

**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.**

**FREE To salesmen who want more money. Send name, age and occupation for free copy Opportunity Magazine describing 200 new, fast sellers. Entirely free. Opportunity, 850 N. Dearborn, Dept. 17A, Chicago, Illinois 60610.**

**GET New shirt outfit free! \$90 weekly on 5 average orders a day. Famous quality made-to-measure dress and sport shirts at \$4.50 up. sell to all men. No experience needed. Full or part time. Write: Packard Shirt Co., Dept. 213, Terre Haute, Indiana.**

**EARN Cash commissions plus free gifts. Sell matchbook advertising. Sales kit furnished. Matchcorp, Dept. PM-35, Chicago 60632.**

**ASTONISHING Automatic toilet bowl cleaner, deodorizer. Works when toilet is flushed. Housewives buy on sight for every bathroom, at only \$1.98 each. Make up to \$10.00 in hour, spare time. Free sales kit. Merlite, 114 East 32nd, Dept. G-71G, New York 16.**

**DISTRIBUTORS Wanted. Stainless razor blades. Buhl, Box 34, Princeton, Florida.**

**TOP Company in business printing and advertising specialties field will set you up in your own profit business. No experience. No investment. Steady income. Full or part time. Repeat orders pay full commission. Everything furnished free. Write for details. Kaeser, 953 Martin Place, Dept. E-59, Cincinnati 2, Ohio.**

**FAST Repeat wholeselling item to service stations. Write: Box 2183, Wilmington 99, Delaware.**

**LONG Needed invention. Man to contact service stations. Huge profits. Cyclo Mfg., 3816 Dahlia, Dept. 114, Denver 1, Colo.**

**CALENDARS, Novelties. Full or part time. Liberal commissions. Fleming, 6535-A Cottage Grove, Chicago 37.**

**SEEKING New products? Get my outfit 47 money-making specialties. Latest conveniences for home, car. Send no money. Just your name, Kristee, 162, Akron, Ohio.**

**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-365, 7530 S. Greenwood, Chicago 19, Illinois.**

## EMPLOYMENT INFORMATION

**FOREIGN Employment. Construction, other work projects. Good paying overseas jobs with extras, travel expenses. Write only. Foreign Service Bureau, Dept. PM, Bradenton Beach, Fla.**

**DIRECTORY Of foreign-U.S.A. job possibilities. Most occupations. Up to \$1600.00 monthly. Often free transportation. Benefits. Money back guarantee. Send \$1.50 (\$2.00 airmail). International Employment, P3, Box 22038, Indianapolis 22, Indiana.**

**JOBS, Ships, \$100.00 weekly. Beginners, men, women. Information. Seaman's Service, Box M, New York 21, N.Y.**

**MERCHANT Marine. Men, women, ships and boats. High wages. Travel. Captain, Box 501-P, Reading, Massachusetts.**

**JAPAN! Korea! Okinawa! Many jobs available. Complete, detailed reports, satisfaction guaranteed. \$3.00. Japan Reports, Newport Beach, California.**

**CALIFORNIA Is for you? Act now—100 pages of factual information. \$1 ppd. Majestic, 332 M-1 Westway, Orange, California.**

**DIRECTORY Reports. Construction, aviation, shipping, oilfields, government, manufacturing, trucking, etc. foreign-stateside. Helpful information plus job-getting tips on preparing application letters. Unconditional money-back guarantee. Only \$3.00 (\$3.25 airmail) Research Services, Box 6768-PM, St. Louis, Missouri 63144.**

**USA Overseas jobs—application forms, job guidebook only \$1. Pilot, 46 West 33 Street, New York City 1.**

**OVERSEAS—Foreign employment. Steady. High-paying. All occupations, professions. Transportation. Family relocation. Sixth successful year providing immediate direct placement. Global, Box 286-A, Oroville, California.**

**BOOMING Australia needs your skills! Government-assisted passage if qualified. Details \$1.00. Globetrotter! Job information 50¢. Frank Klein, 2913 Chestnut, Costa Mesa, California.**

**THOUSANDS Of high pay Civil Service jobs! Free details! Reports. Box 121, Cambridge 38, Massachusetts.**

**MEN, Women needed for Civil Service employment. Write: Employment Opportunities Service, Box 3392, Youngstown, Ohio 44512.**

**TREMENDOUS Job opportunities. Foreign-U.S.A., construction, trucking, manufacturing, government, shipping, thousands more. Up to \$2,000.00 monthly! Money-back guarantee. Directory plus application forms. Send only \$2.00. Worldwide Opportunities, Box 730-A, Holland, Michigan.**

**100,000 JOBS begging in California. Live and prosper in the golden state. List of 100 agencies searching for applicants \$1.00. California Employment, Box 694-A, Garden Grove, Calif.**

**TREMENDOUS Opportunities—U.S.A.—Overseas—choose jobs—locations—transportation—free details. Occupations, International Airport, Box 100-C12, Jamaica 30, N.Y.**

## MUSIC AND MUSICAL INSTRUMENTS

**ACCORDION-O-RAMA, 874 Broadway, New York 3, N. Y. Tremendous discounts. Top brands. Free brochure.**

**POEMS Wanted for musical setting and recording by America's largest song studio. Send poems. Free examination. Five Star Music Masters, 6-M Beacon, Boston 8, Mass.**

**SONG Ideas wanted. Write with active professional songwriters with publisher contracts. Records made. Share royalties. Send ideas—free examination. Songwriters' Associates, 236 W. 55th, N.Y. 19-P.**

**ITALIAN Accordions Manufacturing, 6343P, So. Ashland, Chicago 36, Illinois. Piano, Chromatics, Hohners, Concertinas. Wholesale catalogs free.**

**PIANO Self-Teaching Book. Includes popular, classical, harmony, theory, chords, scales. Price \$5.00. LaPont Publishing Company, Box 606-P, Franklin, Michigan 48025.**

**USED Professional guitars, amplifiers, drums. Hills, 3526 California, Peoria, Illinois.**

**PLAYER Piano books. Free catalog. Vestal Press, Vestal 11, N.Y. 13850.**

**SONGPOEMS Wanted. Send poems for offer. Nashville Music Institute, Box 532-PM, Nashville, Tennessee.**

**RECORDS! Discounts on all LP's. Free details. Citadel Record Club, 545 Fifth Ave., Dept. 2, New York 17, N. Y.**

**POEMS Wanted for musical setting and recording. Send poems. Free examination. Crown Music Company, 49-C West 32 Street, New York 1.**

**ACCORDIONS. Guitars, band instruments! Save ½. Famous makes, free home trial. Easy terms. Trades. Free discount catalogs. Mention instrument. International Music Mart, Dept. R, 5535 Belmont, Chicago 41.**

**2500 UNUSUAL Hobby, party records, others; free catalogue. Record Suppliers, 300 Chelsea, Louisville, Kentucky, 40207.**

**ELECTRIC Guitar kits, patterns, parts. Kits. 3526 California, Peoria, Illinois.**

**SONGS And song poems wanted. Royalties. Tin Pan Alley, Inc., 1650 Broadway, New York, N. Y. 10019.**

**ELECTRIC Guitars, amplifiers, wholesale. Free catalog. Carvin, PMM, Covina, Calif.**



**POEMS** Wanted. Submit for record companies' and publishers' approval. Offer guaranteed. Free musical setting. Share royalties. Top Tunes, 1 James Building, Washucna, Washington 99371.

**BANJOS!** Custom made direct from factory—Five String, Extra-Long Five String, Tenor and Plectrum. Complete series of replacement needs. Extra-Long 5 String Neck Converts present Tenor or Plectrum Banjo to popular "Pete Seeger" Model. Catalog Free. Stamm Instruments, Division Rock-Wood Carvers, Inc., Dept. FC-35, Oregon, Illinois.

**GUITAR** Slide rule. Helps to play by ear or sheet music, transpose keys, compose songs. \$1.00. Voglers', Box 661, Mount Airy, N.C.

**GUITARS!** Famous brands. Big discounts. Free home trial. Free catalogs. Write: National Guitar Sales, Dept. PM-3, Box 417, Parkersburg, West Virginia.

**VIOLINS.** Selected, rare, seasoned wood for violins, related instruments. Also books. List free. King George Wood Specialties, Box 11, King George, Virginia.

**SWISS** Musical movements. Mechanical, electrical. Spielman, 131 West 42nd, New York 10036.

**VIOLIN** And guitar makers: Send for latest free catalogue of woods and accessories. International Violin, 414 PM East Baltimore St., Baltimore 2, Md.

**FREE** Recording, your songpoem. For information, send poems: Musicrest, 6715 Hollywood Blvd., Hollywood 28, Calif.

**SONGS** Poems wanted. Accepted songs published recorded at our expense. Ted Rosen, 17 Longwood Road, Quincy, Mass.

**GUITAR.** Banjo Making books. Plans, woods, necks, tools. List 15¢. Satinwood, 510 East 11th Street, New York 9, N.Y.

## RADIO, TELEVISION AND ELECTRONICS

**BRAND** New tubes. World's lowest prices on radio, TV-industrial, special purpose tubes. Write for free parts catalog. United Radio, Newark, N.J.

**SAVE** Money on TV and radio repairs. Free catalog. Telefixit, Box 714, Manhasset 1, N.Y.

**GOVERNMENT** Surplus electronics, infra-red equipment. Catalog 20¢. Meshna, Nahant, Mass.

**\$1.00 DELIVERS** plastic packets for 60 QSL's. Teapabco, Browne Blvd., Gallatin, Tennessee.

**FREE** Electronics catalog. Tremendous bargains. Electrolabs, Department C-620B, Hewlett, New York 11557.

**TRANSISTOR** Radios repaired: \$5.00 covers repairs, return postage. Guaranteed. Mail radio, \$5.00 to: Quick T.V., P.O. Box 8758, Pittsburgh 21, Penna.

**TAPE** Recorders, hi-fi components. Sleep learning equipment, tapes. Unusual values. Free catalog. Dressner, 1523 Jericho Tpke, New Hyde Park 3, N. Y.

**SOLAR** Powered radio kit \$3.95. Lectronix, Box 1067, Southgate, Michigan.

**ULTRA** Sensitive transistor listening device. Complete with mike, speaker, battery. \$9.95. J. F. Powers, Dept. S-25, 1215 Grandview Ave., Pittsburgh, Pa. 15211.

**MC GEE** Radio Company. Big 1965 176 page catalog sent free. America's best values, hi-fi—amplifiers—speakers—electronic parts. 1901 McGee Street, Dept. PM, Kansas City, Missouri.

**PROFESSIONAL** Quality tape deck. Build yourself at amazingly low cost! Detailed plans tell how. Guaranteed. Exciting particulars free. Pepke Laboratories, 309-C West 19 Street, New York, N.Y. 10011.

**INVESTIGATORS.** Electronic surveillance devices. Price breakthrough on ultra miniature professional devices. Free details. Trol Electronics—PM, 342 Madison Ave., New York, N.Y.

**33¢** RADIO & TV tubes. Free list. Cornell, 4213-17 University, San Diego 5, California.

## SCIENCE & CHEMISTRY

**ILLUSTRATED** Catalog: Chemistry, mineralogy, biology 25¢. Tracey Laboratories, Evanston, Illinois.

**UNDERWATER** Fuse 3 3/2" diameter, 25 feet \$1.00 postpaid. Rigley, Box 138-F, Addison, Mich.

**CHEMICALS.** Apparatus, Biology. Catalog 25¢. Mid-States Scientific, 7053 N. Clark, Chicago, Ill.

**ROCKETS!** Flight kits, testing equipment. Catalog 25¢. Rocket Development Corporation, Route 3, Seymour, Indiana.

**FREE.** Science fair catalog. Chemicals, glassware, physics, biology. Frey Scientific, 465 S. Diamond, Mansfield 5, Ohio.

**LIQUID** Fuel rocket, 10 lbs. payload to 6000 ft. complete plans only \$2.98. Missile Research, 517 Elder, Anaheim, California.

**AMAZING** New book of science experiments, formulas, and catalogue of laboratory supplies. Only 35¢. National Scientific Co., 13 So. Park Avenue, Dept. PM-3, Lombard, Illinois.

**CHEMICALS** App. apparatus for industrial, analytical, and private laboratories. Catalog 35¢. Dent, M-50, Biological Supply Co., 1176 Mt. Hope Ave., Rochester 20, N.Y.

**ROCKET** Catalog and fuse sample, 25¢. Central Rocket, Waupaca, Wisconsin, 54981.

**UNUSUAL** Chemistry books, courses, kits! Rare chemicals, cheap! Catalog 25¢. NSC, Box 11133, Palo Alto, Calif.

**WUMCO** Chemical Company, Chemicals and chemical apparatus. Catalog—25¢. Booklet of experiments—50¢. Box 681, Reading, Pennsylvania.

**CHEMISTRY** Expendibles kit offer. Details, catalog 25¢. Laboratory Sales, Box 161-A, Brighton 35, Mass.

**64 PAGE** Science catalog in color: Kits, microscopes, experiments, supplies—solar motor only \$1.49—etc. Lowest prices. Send 25¢ to Schoolmasters Science, 3666 So. State, Ann Arbor, Michigan.

**ROCKETS:** New illustrated catalog 25¢. Single and multistage kits, cones, engines, launchers, trackers, technical information, etc. Fast service. Estes Industries, Penrose 7, Colorado.

## FORMULAS, PLANS, ETC.

**LATE.** Modern manufacturing formulas. List free. Moon Chemical, Martville, New York.

**FREE** Folders fully describe our many hundreds of formulas and plans for home-work and profitable small-business enterprises. Western Chemicals, Box 19718-C, Los Angeles 90019.

**PROFITABLE** Manufacturing formulas. Literature free. Pontesso, Idaho Station, Terre Haute, Indiana.

**FORMULAS**—All kinds. Amazing big catalog, 10¢. Kemixal, Park Ridge, Ill.

**YOU** Can make amazing profits in specialty manufacturing. For proof get our literature. It's free. National Chemicals, Box 4485, Ft. Worth, Texas.

**BUILD** Your own speedy cleaner, for cars, tile baths, appliances, etc., for as little as \$35.00. Free formula, makes (1) gal. of cleaner for only 10¢. Details write: E. E. Andrews, P.O. Box 3606, Austin, Texas.

**FOR** Proof of what you can do in specialty manufacturing get our literature. It's free! Miller, Chemist, 1517-P, Tampa, Florida.

## PLASTICS

**PLASTIC** Embedders, jewelry workers. We have everything. Findings, moulds. New catalog 25¢. David Co., 20 Garden St., Dept. M, Providence 3, R.I.

**NEW!** Pressure sensitive plastic laminating machines. Supplies, details. Burr, 7645 Oakland, Kalamazoo, Mich. 49002.

**BOXES.** Plastic, 200 sizes. Free list. Althor, 2260 Benson Ave., Brooklyn, N.Y.

**NEW** Liquid casting plastic clear colors. Embed real flowers, butterflies, photos, coins. Send 25¢ for two handbooks, "How to Cast Liquid Plastics" and "How to Make Extra Money at Home." Castolite, Dept. 101C, Woodstock, Illinois.

## EXPORT — IMPORT

**BIG** Profit importing.—list of over 150 foreign suppliers. Send \$3.00. Cuyppers Ltd., Dickey, North Dakota.

**JAPANESE** Manufacturers list \$1.00. Blogin, 6509 70th Terr. N.W., Kansas City, Mo. 64151.

**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.

## BUY IT WHOLESALE

**FREE!** Name brands catalog! Your own high profit business. Sell name brands, full or part time. No inventory, no investment. More than 2,000 name brand items; lowest wholesale prices. Watches, jewelry, cameras, hi-fi, stereo radios-phonos, appliances, housewares, hardware, power tools, luggage, musical instruments, garden equipment, sporting goods, toys, many others. 8 floors of name brands. Million dollar inventory. Orders shipped complete in 24 hours! Send for free, beautifully illustrated catalog now! Separate wholesale price list. H. B. Davis Corp., Dept. PM, 145 W. 15 St., New York 11, N. Y.

**USED** And new watches \$2 up. Free list. Southern Watches, 5-PM So. Wabash, Chicago 3.

**100,000 PRODUCTS** Wholesale! Terrific bargains! Wholesalers, 1265-MR Broadway, New York, N.Y.

**WORLD'S** Largest wholesale supply. Buy from 679 American, European, Japanese wholesalers. Tailormade suits from Hongkong. 123 dropship catalogs. Rockbottom prices. Free details. International Buyers, 216-M Jackson, Chicago 6, Illinois.

**ELECTRIC** Guitars, amplifiers, wholesale. Free catalog. Carvin PMW, Covina, Calif.

**YOU** Can undersell all catalog houses in America! Free details! Cam Company, 436-08 Bloomfield Ave., Verona, N.J.

**400,000 ITEMS** Free brochures. Pat. 270 E. 60th St., Hialeah, Fla. 33012.

**TRAIN** Set—\$1.36, recorders—\$6.70, pistols—\$5.74, binoculars—\$1.20, radios, watches, rings, cameras. Typical import prices. Buy from 685 American, European, Japanese wholesalers. Exciting details free. Enterprises, Box 160-X8, Jamaica 30, New York.

**1964 DODGES,** Fords \$999.00. Free catalog. Autos, 273-JI Merrick, Lynbrook, New York.

**NEW 6-Color** Deluxe below wholesale catalog. Automobile catalog and others. Housewares, clothing, furs, furniture, appliances, refrigerators, washers, dryers, vacuum cleaners, bolishers, cookware, dinnerware, strollers, cribs, radios, stereos, phonographs, recorders, musical instruments, typewriters, binoculars, luggage, sporting goods, bowling, golf, game tables, motorized: golf carts, scooters, mowers, saws, bicycles, watches, jewelry. Huge discounts, hundreds name-brand items. For free list (factory prices) postcard: Selbyco-5, Decatur, Illinois.

**1963 FORDS** \$549.00, others below wholesale. Info. \$1.00. Moulin, 920 Ferry, Tumwater, Wash.



NEW Automobiles, savings to \$1000. Near wholesale, local dealers. Details \$1.00. John H. Knaust, St. Peters, Mo.

BUYING A new car? Get dealers actual wholesale cost including accessories, plus free bonus how to get best deals when buying. 50¢ per make includes all models—3 makes for \$1.00. Cars, Room 506, 1387 Main Street, Springfield 1, Mass.

BARGAINS! Buy wholesale! Save money! Free catalog! Norris, 273-VG Merrick, Lynbrook, N.Y.

## SPECIAL SERVICES

PROTECT Your eyes! Corrected curve, first quality Case hardened lenses ground to your prescription by New York State licensed Opticians. Deal directly with optical laboratory established 25 years. Mail your eyeglasses or prescription for reasonable quote, also regular spectacles and sunglasses. Global Opticians, 16 East 23 Street, New York City.

DESIGN And drafting services. Highly qualified personnel. Buschle, Centre, Alabama.

LEGALLY Acceptable photocopies made overnight. 20¢ each. Originals returned unharmed. Guaranteed. Kerbs, 3271 Donnieann, Los Alamitos, California.

SAVE Dollars on your income tax. Use our simple fill in forms. Send \$1.00 to Ronald E. Hall, Income Tax Consultant, 616 Wesley, Ann Arbor, Michigan.

INFORMATION On anything. Ferguson Research Specialists, 59 Lent Ave., Hempstead, N.Y.

CUSTOM designs on anything; decals, sweatshirts, ashtrays, etc., any quantity; catalog 25¢; MorVal, Box 371, Sunnymead, California.

FACTS. Any subject—product. Research, surveys, reports, assignments. Information 25¢; Box 1431, Greenville, South Carolina.

## EDUCATIONAL AND INSTRUCTION

AIRLINE Careers. Adventure! Prestige! Four-week course, men 18-35. Airline-trained teachers. Free placement service. 21st year. Catalog B. McConnell Airline School, 1030 Nicollet, Minneapolis, Minnesota.

LEARN Asleep or awake! Records, tapes, equipment! Free catalog! Drawer PM-697, Ruidoso, New Mexico.

BOOKKEEPERS. Operate your own "Dollar-A-Week" system. Ellis, Box 200, Cedar Grove, North Carolina.

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.

WANT A diesel career? Higher pay? Advancement? We can help you qualify! Complete diesel, tractor and heavy equipment and Cummins diesel engine shop-method home-training courses available. Write today. Interstate Training Service, Dept. B-3, Portland 12, Oregon.

USED Courses! Books! List 10¢. Smith's, 124 Marlborough, Salem, Mass.

PCC License in 6 weeks. First class radio telephone. Results guaranteed. Elkins Radio School, 2603D Inwood, Dallas, Tex.

WOODWORKING And cabinetmaking course for beginning and advanced home craftsmen. Only complete low-cost home training program available. Write for free booklet. Interstate Training Service, Dept. G-3, Portland 12, Ore.

HOW To train horses. A book everyone who likes horses or ponies should have. Free. No obligation. Simply address Beery School, Dept. 1103-C, Pleasant Hill, Ohio.

SWEDISH Massage and Physical culture pays big profits. Learn at home. Diploma. Free catalog. National Institute, Dept. E25, 307 North Michigan, Chicago 1.

LEARN Auctioneering. Term soon. Free catalog. Reisch Auction College, Mason City 1, Iowa.

NEW Experimental offer, limited time. Learn special investigation, free information. International Academy of Police Science, Box 314, Oklahoma City, Oklahoma.

AUTOSUGGESTION. Sleep-learning headquarters! Tapes, records, books. Gigantic catalog free. Research Association, Box 24-PM, Olympia, Washington.

MONEY BACK GUARANTEE—C.I.S.T.—The World Wide Institute of Home Study—34 global centres—260 courses—Engineering, Electronic, Academic and Commercial—send for your FREE 100 page copy of "Career Opportunities" today—No salesman will call. C.I.S.T., 624 Garden City Building, 263 Adelaide St. W., Toronto, Canada.

DETECTIVE Training. Robert B. Phillips, Sr., Founder. Former Govt. Special Agent. For free information write to 1917P North Kenneth Ave., Chicago, Ill.

LEARN Technical metaphysics—The ancient masters method of healing. Easy to learn, inexpensive. For free details write to: Premier College of Technical Metaphysics, P.O. Box 95, Ucluelet, B.C., Canada.

PIANO Tuning quickly learned with home study course. Diploma granted. American Tuning School, Gilroy, Calif.

LEARN Civil and criminal investigation at home. Earn steady, good pay. State age. Institute Applied Science, 1920 Sunnyside, Dept. 163, Chicago 40, Illinois.

BE A real estate broker. Insure security for yourself and your family. Study at home. Prepare for state examination. Write for free book today. Weaver School of Real Estate, 3519-P Broadway, Kansas City, Mo. 64111.

ATTEND The nation's finest. Write Gallon Welding School, Gallon, O.

MASTER Watchmaking at home. Free sample lesson. Chicago School, Dept. YP, Fox River Grove, Illinois.

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 13.

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 90.

WRITE For money—free confidential directory of magazines that pay big for jokes, recipes, etc. Writing ability unnecessary. Cash in spare time or become full-time writer of stories, articles, television scripts, etc. Palmer Institute, 941-AZW, North Highland, Hollywood 38, California.

GAME Warden, Government hunter, Forestry, Park and Wildlife Services announce job openings regularly. Enjoy outdoor work, good pay, real security. Complete information free! Write North American School of Conservation, 941-AZW North Highland, Hollywood 38, California.

BECOME High-paid electronics technician, or broadcasting engineer—correspondence; resident classes. Free details. Write: Dept. 7, Grantham, 1505 N. Western, Hollywood, Calif. 90027.

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.

BUDGET—Instructions, forms, get on cash basis, prevent quarrels and divorce. \$1.00. Homer J. McOmber, Flanagan Hotel, Malone, N.Y.

AIRLINES Need young men for communications, operations, reservations. Big pay—opportunity for advancement to supervisor and executive positions. High School graduates 17-38 learn if you qualify. For free facts write now—give age, education, phone. Weaver Airline Personnel School, 3521-A Broadway, Kansas City, Mo. 64111.

MINISTERIAL Home study course. Free qualifying examination. Soms, 5955 Powdermill Road, Kent, Ohio.

DRAFTING Illustrated Correspondence School, First Lesson \$2.00, basic course \$50.00. 471 E. Wood Rd., Rockville Centre, N.Y.

DRAFTING, Blueprint reading, Schematics. Send \$2.00 first lesson. Complete home course \$25.00. Prior Inc., 23-09 169 Street, Whitestone 57, New York.

PENMANSHIP Corrector. Improve poor penmanship quickly. Details free. Ozment, Box 665-34, St. Louis 88, Mo.

TRIGONOMETRY New invention, simplicity itself. Details. Ken Swayze, Box 772, Imperial Beach, California.

USED Correspondence, buying, selling. Box 160, Delorimier Station, Montreal.

FREE Catalog describing home electronics course. Edu-Kits, Department 619B, Hewlett, New York 11557.

ROSICRUCIAN Secret Teachings are offered to those who seek to use them for the perfection of their inner faculties and in the mastering of the daily obstacles of life. The Rosicrucians, an international group of thinking men and women, will be happy to send a Free copy of the fascinating book, "The Mastery of Life," to those who believe worthiness and sincerity determine the right for one to have such knowledge. Let this book guide you to the conservative plan whereby you may widen your scope of Personal Power. Simply address your request to Scribe S.W.F., The Rosicrucians, San Jose, California 95114.

WIN The success, prestige and happiness you have been denying yourself. Details free. Write: Williams, 1545 Beatrice, Detroit, Michigan 48217.

SUCCESS—Make a date with success by practicing success principles. Fulfill the goals in your life now! Apply principles of the success calendar to your life and in just 10 weeks you can have a changed life because you made a date with success. Perpetual calendar fashioned in beautiful black walnut, complete with easy instructions for daily use. \$5.00. Goals Unlimited, Lakeland, Minnesota.

SEXTANTS, Plastic Marine Sextants with instruction booklet \$7.50. Free literature. Davis Instruments, 8289 Baldwin, Oakland, Calif. 94621.

INSTANT Memory. New way to remember. Eliminates memorization, sleep-learning, hypnosis. Release your Photographic memory instantly. Liberates Extraordinary knowledge, powers, confidence, energy. Discover Controlled intuition! Complete course only \$10.00. Institute of Advanced Thinking, Dept. PM-365, P.O. Box 1721, Cleveland, Ohio 44105.

DON'T Be bullied! Learn direct from the Orient. Chinese Kung-Fu Karate, the secret Oriental Art of Instantaneous Disablement, so deadly even a Judo-Karate expert fears. Paralyzes aggressors within seconds. Size don't count! For free details by air, rush your name and address also by air to Asia's Greatest Karate Master: Leong Fu, (Dept. MI/6), 119 Anderson Road, Ipoh, Malaysia.

USED Courses, books. Catalog 10¢. Courses bought! Bayles, 78B Courtright, Wilkes-Barre, Penna. 18702.

INSTRUCTIONS, Board, \$1.00. Circle Chess Journal, Box 326, Park Ridge, Illinois 60068.

DETECTIVES—Secret investigations. Experience unnecessary. Detective particulars free. George Wagner, M125 West 86th, New York 24.



**PENMANSHIP Book.** "Ornamental and Business Writing." Improve quickly, fascinating, artistic. Details free. T. Tevis, Chillicothe, Mo.

**COMPLETE** Your high school at home in spare time with 68-year-old school. Texts furnished. No classes. Diploma. Information booklet free. American School, Dept. X-345, Drexel at 58th, Chicago 37, Illinois.

**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.

### 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.

### 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.

**ADVERTISING Ratebook** leading newspapers, magazines, free. Chicago Advertising Agency, 28-E Jackson, Chicago 4.

**ADVERTISERS!** Acquire listings of new businesses. New York City and Metropolitan area. Amerlane, Box 117, Riverdale, New York 10471.

**FREE!** Redhot book, "More Profit From Your Advertising." Includes best mailorder magazines, newspapers. Adservice, 11730 NW 22C Court, Miami, Florida 33167.

**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, 575 Lexington Ave., New York, N.Y. 10022.

### TYPEWRITERS, DUPLICATORS, OFFICE DEVICES

**OFFSET.** Letterpresses, varitypers, typewriters, mimeograph, multigraph machines. Bargains. DixieGraph, King, North Carolina.

### RUBBER STAMPS AND OFFICE SUPPLIES

**STAMPS,** Business cards, stationery embossers. Evero, Box 9233, Phoenix, Arizona 85020.

**FREE 32 Page** rubber stamp catalog. Signature stamps \$3.50. Youngers Stamp Shop, Princeton, Iowa.

**THREE Lines** \$1.00. Cushion mounted indexed R. Creed, Upton, Mass. 01568.

**HARD Type** for rubber stamp making and printing, free catalog. Barco Type, 237 S. Evergreen, Bensenville, Ill.

**POCKET 3 lines** \$1.00. Office stamps \$1.50. Free catalog. Specialty, 8464 Manhattan, Detroit, Mich. 48211.

**FREE Catalog:** Rubber stamps, printing. Dowling Products, Dept. PM15, Pittstown, N.J.

**STAMP Makers' supplies.** Lowest prices. O'Brien's, 421 Jackson, Toledo, Ohio 43604.

**FREE Catalog.** Metal pocket case—3 lines \$1.75 Scharer, Parkhill, Pa.

**STAMP.** Four lines, automatic inking Bakelite case \$1.00; Metal case \$1.69. Gunned address labels, four lines; 1,000 for \$1.00. Clayton, 509—21st Avenue, San Francisco, California 94121.

**ALL \$1.00—Stamps** with handles, 3 to 5 lines, to 3 inches long. Postpaid. 42 Type choices. Brewer, Box 3098, No. Ft. Myers, Florida.

**RUBBER Stamps,** 3 lines. \$1.50. Free catalog. Tabco, Tomkins Cove, New York.

### CARTOONING, COMMERCIAL ART, SHOWCARD & SIGN PAINTING, TATTOOING

**"HOW To Make Money With Simple Cartoons"**—A book everyone who likes to draw should have. It is free; no obligation. Simply address Cartoonists' Exchange, Dept. 93, Pleasant Hill, Ohio.

**LEARN Profitable** magazine cartooning. Free details. Hartman, Box 3097, Lincoln 10, Nebraska.

**LIKE To draw?** Splendid opportunities in professional cartooning. Write for free catalogue. No obligation. National School of Cartooning, Studio-H, Box 8958, Cleveland 36, Ohio.

**"SIGN Lettering tricks"** (deluxe edition) \$1.00. Speedy methods. Details free! Harris, P.O. Box 1567-F, Portland, Oregon 97207.

**LEARN Cartooning.** Fascinating course. Cartoons, 1017 W. Mulberry, Springfield, Ohio.

**YOU Can entertain** with chalk talks. Catalog 10c. Balda the Cartoonist, Oshkosh, Wis.

**ART Lessons** \$6.00 a month. Includes drawing, painting, advertising art. Art kits (worth \$25) and materials. Assignments corrected, with overlays, by mail, and returned to you. Write for free book. No obligation. Washington School of Art, Studio 143, Port Washington, L.I., N.Y.

**SIGN Painting.** Fascinating system. Straley, 410 South Western, Springfield, Ohio.

### PRINTING, MULTIGRAPHING MIMEOGRAPHING GUMMED LABELS

**PRINTING—8 Page Catalog—1½¢ Free Price List.** Kopen, 288 Atlantic Avenue, Brooklyn 1, N.Y.

**FREE Gift** with 1000 executive embossed business cards. \$4.49. Samples. (other printing bargains). Weaver, Dept. 513, 3524 Northeast 118, Portland, Oregon 97220.

**BUSINESS Printing.** Catalog free. Bill's Press, 538-P Leffingwell, Kirkwood, Missouri 63122.

**HIGH Quality** printed envelopes; thermographed business cards; Rubber stamps. Free price lists! Griffin, 322-PM West State, Ithaca, New York 14850.

**OFFSET Printing** postpaid up to fifth zone. 1000 8½x11 20 lbs. bond \$6.00. Write for price list. Biscayne Products, Box 346, New York 5, New York.

**OFFSET Printing** 500 8½x11 copies \$3.00 postpaid. 48 hr. service. Cisco Duplicating Service, Atlanta, Illinois.

**AMAZING Business** printing values. Samples. Print Shop, Box 576, Greenville, R. I.

**GIFTS Hobbies** mending free sample. Write: Mend Master, 4408 Sillman, Dayton, Ohio 45440.

**FREE Test samples** printed collection aids to sell merchants. Bob Owen, P.O. 758, Shawnee, Oklahoma.

**QUALITY Printing:** lowest prices. Samples. Dowling Products, Dept. PM15, Pittstown, N.J.

**LETTERHEAD Specialist.** Samples. Community Press, Circle Court, East Aurora, N.Y.

**MIMEOGRAPHING.** 75 copies \$1.00. Samples. Tico, Box 809, Hot Springs, S.C.

**TWO-Color** matching Letterheads, Envelopes. Samples. Chicke Press, Harvey, Illinois.

**PHOTO—Offset** 8½x11 20 lb. bond 100—\$2.20, 1,000—\$4.00. F.O.B. Oliverprint, Romeo, Michigan.

**500 8½x11 EMBOSSED Letterheads** \$7.90. Universal, 226-PC Myrtle, Scotch Plains, New Jersey.

**MIMEOGRAPHING,** Offset printing. Free samples. Pennway, Drawer 1340, Scranton, Penna.

**250—8½x11 HAMMERMILL Letterheads** \$2.75, 250 envelopes \$2.75. Samples. Patton, Box 248S, South Haven, Mich.

### PRINTING & RUBBER STAMP OUTFITS & SUPPLIES

**DO Your own printing.** Save money. Simple rules. We supply everything. Print for others; good profit. Raised printing like engraving too. Have home shop. Details free. Kelsey Presses, V-11, Meriden, Connecticut.

**PRINTING Presses,** type, supplies, lists 5c. Turnbaugh Service, Mechanicsburg, Pa.

**RUBBER Stamp outfits,** supplies. Kiewiet, 2025 Barney Road, Kalamazoo, Mich.

**MAKE Your own self-molding** rubber stamps and printing cuts. Plexirubber, Argyle 1, Wisconsin.

**TYPE And supplies** for rubber stamp makers. New wholesale price list No. 3 free. Star Stamp Supply, 732 Federal, Chicago 5, Ill.

**RUBBER Stamp presses,** hydraulic operated, electrically heated. Sizes 5" x 8", 8" x 12", 10" x 15". Starting outfits, supplies. Printing presses. Type cases and cabinets. Custom Manufacturing, 1464-P East Commercial, Springfield, Missouri.

**RUBBER Stamp presses,** mounts, supplies. Martin, 1425S Major, Jefferson City, Missouri 65101.

**90% PROFIT** Rubber stamps. Complete outfit, \$99.95. Duckman, Avoca, Ark.

### FOR INVENTORS

**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.

**BETTER Patent services:** profit from patents with good sales values and effective market protection by patent. I help inventors to have both at low definite fees: free self protecting forms give you security in disclosure; patents filed for \$200.00 up; foreign patents filed at very low cost. Forty years successful practice. Joseph O'Brien, Patent & Development Engineer, R 1127, Munsey Building, opposite U. S. Patent Office, Washington, D.C. Patent searches made for \$7.50, with references.

**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, 1311 "G" Street NW, Washington 5, D.C.

**SAVE High fees!** Prepare your patent application yourself! New "Do-It-Yourself" patent kit now makes it easy! Free "Registration Form." Miss Blaine, 306A Carry Building, Washington 5, D.C.

**PATENT Searches,** including copies of related U.S. patents. \$6.00. Inventors, attorneys, manufacturers use my "worldwide" airmail service! "Invention Record" form and "Information Every Inventor Needs," sent free! Miss Hayward, 1029P Vermont, Washington 5, D.C.



**INVENTORS:** Save time and money. Prepare and file your own patent application. Our complete "Patent Kit" makes it easy. Includes detailed instructions and all necessary material. Only \$14.75. Money back guarantee. Don't delay. Send check or money-order today to National Inventors Service, 1244—19th Street, N.W., Washington, D.C.

**AMAZING Manual;** how to protect, sell and finance inventions. Excellent results. Galleon, P.O. Box 409, Back Bay, Boston, Mass. 02117.

**THERE'S A fortune in ideas!** Companies need ideas—sell them yours. Directions, protective contract—complete, \$1.00. Thousands successfully satisfied. Promotion Products, Dundee 1, Ill.

**PATENT Searches—48 hour airmail service,** \$6.00, including nearest patent copies. More than 200 registered patent attorneys have used my service. For free invention protection forms, write Miss Ann Hastings, P.O. Box 176, Washington 4, D.C.

**U.S. Patent Office Searches,** 234 Broadway, Room 3615, New York. Free invention certificates.

**INVENTIONS Wanted immediately** for promoting on cash or royalty. Patented, unpatented. Free booklet outlines royalty rates, requirements. Write Kessler Corporation, C-53-FI, Fremont, Ohio.

**TREMENDOUS—Savings!** Prepare your patent application yourself—easily, with our New "Patent Kit." Complete instructions, materials, sample application—send \$8.95 for immediate delivery. Money-back guarantee! Congress Invention Company, 210 McKim Building, Washington 5, D.C.

**PATENT Search and evaluation of market potential of inventions,** \$15. Patent Searches, Box 8925-M, Chicago 60666.

**INVENTORS:** Your ideas and inventions (patented; unpatented) expertly searched and developed for commercial appeal and cash/royalty sales to manufacturers by professional Invention Developer with excellent record of experience. B.S., Industrial Engineering; U.S. Patent Office former Patent Examiner; U.S. Government former Patent Adviser. Second decade of reliable service! Free "Invention Record" and Important Information. Airmailed! Write: Raymond Lee, Invention Developer, 1606N Bush Bldg., New York City 36.

## INVENTIONS WANTED

**INVENTORS Wanted:** Manufacturers need new items! Your inventions, ideas developed for cash/royalty sales. Free "Invention Record"; Information. Raymond Lee, 1606P Bush Building, New York City 36.

**INVENTIONS Wanted immediately** for promoting on cash or royalty. Patented, unpatented. Free booklet outlines royalty rates, requirements. Write Kessler Corporation, C-53-IW, Fremont, Ohio.

**INVENTORS** Sell your inventions 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 cash bonus. Write for details, no obligation. Universal Inventions, Marion 44, Ohio.

**AUTOMOTIVE Or housewares products** wanted. We will manufacture and promote nationally. Send details in confidence. No samples. Irving Jacobs, Glass Labs, 863 65th Street, Brooklyn 20, N.Y.

**FEDERAL Trust Company,** 4344 East Indian School Road, Phoenix, Arizona 85018.

**INVENTIONS Wanted.** Patented; unpatented. Tremendous manufacturers lists. Global Marketing Service, 2420G 77th, Oakland 5, California.

## MANUFACTURING

**MODELS—Small lot manufacturing.** Metals, plastics, etc. Milburn, Burlington, Kentucky.

**FOR Inventors.** Model building. Manufacturing. Any quantity. Research. Forging and Plastic Dies. Injection molding. Top consultants in all fields immediately available. In the Heart of Technical New England since 1942. William Parker, 32 Westminster, Worcester, Mass. 01605.

**WIRE Forming progressive dies,** send print, part sketch, short run turning. B. L. Tool & Die, 413 26th St., Union City, N.J. B. Lindberg, prop.

## MODELS—SHIPS, TRAINS, PLANES, ETC.

**SHIP Model kits and fittings:** clippers, frigates, etc. Catalog paint-tool list, book list, 35¢. Model Shipways, Box 85, Bogota, N. J.

**LIONEL Trains bulletin 10¢,** catalog 25¢. Mack Bros., 2043 Chicago Ave., Chicago 60622.

**SHIP and yacht model fittings:** Pine construction hull kits; blueprints. Send 50¢ 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 50¢. James Bliss & Co., Dept. SM. 342 Atlantic Avenue, Boston 10, Massachusetts.

**TRAIN Bargains:** 25¢ brings catalogue of 2000 Gilbert, Lionel, Atlas, etc. Bargains—all gauges. Also Strombecker, Aurora, Eldon and other slot racer parts. Hobby Surplus, P.O. Box 1106M, New Britain, Conn.

**LIVE Steam models.** Castings and machined kits. Marine, walking beam, mill engines, boilers. From \$7.45. Pictured catalog 50¢. H.P.K. Models, Box 34, Centuck Station N, Yonkers, New York.

**CANNONS—1/4 scale model of the famous Valley Forge cannon** actually shoots black powder and ball. Complete plans and specifications and photo. for only \$3.95 set. Myers Models, Dept. M-3, P.O. Box 654, Coatesville, Penna. 19320.

**ROCKETS:** New illustrated catalog 25¢. Single and multistage kits, cones, engines, launchers, trackers, technical information, etc. Fast service. Estes Industries, Penrose 2, Colorado.

## HOME CRAFTSMEN

**SKIL-CRAFTS New '64-65 catalog.** Largest and finest selection of leathercraft, artist, hobby-craft supplies in the world. Free gift with first order. Send 50¢. Refundable with first order. Skil-Crafts, Box 105-P, Joplin, Missouri.

**WOODWORKERS—Home craftsmen!** Catalog containing lamp parts, veneers, lazy susan bearings, Swiss movements, chair cane, folding metal legs, wooden legs, moldings, furniture hardware, finishing materials, etc., only 15¢. Barap Specialties, Box 2044-CB, Chicago 60609.

**WALNUT, Cherry, silver maple, gun stocks, squares lumber, picture frame moulding.** Midland Lumber Company, Box 262, Savannah, Missouri.

**2512 PLANS.** Patterns, things to make, do. Fun. Profit. World's greatest selection. New catalog 10¢. Craftplans, 18250-A Harwood, Homewood, Ill.

**PLANS, Bird houses and feeders.** Illustrated catalog 25¢ coin. F. Yeager, 1665 Linden Road, Homewood, Illinois.

**KNOCKDOWN Cedar chests,** also over fifty kits. Catalog 25¢. Giles Kendall Co., Huntsville 2, Alabama.

**101 PATTERNS** Of smart gifts, novelties, shelves, action windmills plus "Make Money Jig Sawing." \$1.00. Mastercraft, 35M. 7041 Olcott, Chicago 31.

**FREE Car coat.** For accepting no-risk Trial of our Duwel Sabre-jig saw. Details free. Fingerhut Manufacturing, Box 1041, St. Cloud 1, Minnesota.

**KNOCKDOWN Cedar chests,** also over fifty kits. Catalog 25¢. Giles Kendall Co., Huntsville 2, Alabama.

**DOVETAIL All dado joints.** Simple shop-built machine. Plans \$2.00. Jenks Craft Shop, Bolivar, Mo.

**MONEYMAKING Crafts!** "Scrapknacks." 50¢. Ostrander, 67-M Cobour, Winnipeg, Canada.

**WIND Vane ball bearing.** Mount your own gadget or ? right on wooden outer shell. \$2.75 Postpaid—No C.O.D.—Arelco, Box 138, Cranford, New Jersey.

**FREE "Do-it-yourself" Leathercraft** catalog. Tandy Leather Company, Box 791E53, Fort Worth, Texas.

**FREE! Big 80 page Leathercraft catalog,** 100's of new items! MacPherson Bros., Dept. K, 730 Mission St., San Francisco, Calif. 94103.

**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.

## DO IT YOURSELF

**HEAT Home** from your hot water tank, thermostat controlled, quiet, safe, clean, economical, easily installed. Complete plan, instructions \$2.00. Heart Heating, 3761 Promontory St., San Diego, California 92109.

**BUILD Concrete blockmaker.** Motor or hand operated. Easy, inexpensive. Make block a minute. Write, Clyde Lee, Mountain View-2, Oklahoma.

**FIBERGLASS Chair Shells** with molded-in studs, contoured, durable and comfortable, seven colors. Send \$1.00 (refundable) for do-it-yourself pamphlet. D & W Equipment, Inc., 500 W. 8th St., Muncie, Indiana.

**SIGN Letters—all sizes, styles, colors.** Make own sign and save! American Plastic Letters, Box 63, Blue Hills Station, Hartford, Connecticut.

**GIANT Soldering kit offer!** Includes soldering iron, set of pliers, resistors, printed circuit board, instruction manual and free guidance by mail! \$14.95 Complete. Soldering instruction manual alone; \$1.00. Micro-Kits Co., Dept. PMC, Box 494, Paramount, California 90724.

**AMAZING Rope pump,** pumps water any height. Simple, easy to build. Low cost. Ideal for cabins, farms, homes. Complete description and plans \$1.00. Aripco, 3422 N. 45th Pl., Phoenix, Arizona.

**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.

## FOR THE HOME

**MECHANICAL Brain ash trays** prevent table burns. Details free. Radford, Dept. C-1, Box 4622, Midland, Texas 79702.



## WATCHES, OLD GOLD, JEWELRY

HIGHEST Cash for gold, teeth, jewelry, rings, diamonds, watches, silver platinum. Mail articles today. Free gift with information. Chicago Gold & Precious Metals, 6 E. Monroe, Dept. 1758, Chicago 3.

CASH Immediately for old gold, jewelry, gold teeth, watches, diamonds, silverware, spectacles, platinum, mercury. Free information. Rose Industries, 29-A East Madison, Chicago 2.

WANTED, Gold, silver, platinum, scrap (any form), coins. Information free. Wilmot's, 1067 Bridge St., Grand Rapids 4, Michigan.

WATCHMAKERS' Tools, materials, supplies, watches. Catalog. Gales, Box 1000, Chicago 90, Ill.

WATCHES Overhauled \$4.00. Prompt service. A.M. Watch Repair, 10625 Char-don, Ohio.

WATCHMAKERS'—Jewelers' supplies, instructions. Catalog 50¢. Bengali's, 10717 Venice, Los Angeles 34, California.

WATCH And clock repairing books. Free catalog. North American, Box 77-AC, Fox River Grove, Illinois.

## OF INTEREST TO WOMEN

DOLLS! Dolls! Dolls! We teach you to make, repair, dress and sell. Study at home. Earn while learning. Free booklet. Doll Hospital School, Studio MC-35A, 11826 San Vicente Blvd., Los Angeles 49, Calif.

NYLONACE 40 yards \$1.00. Buttons 800—\$1.00. Schaefer, Drummondville, Quebec.

FREE Recipe. World's best fried chicken. Recipes, Box 7149, Oakland, California 94601.

LEARN Expert cake decorating, candy making. Free details on home instruction method. Candy & Cake, Dept. E-10, Fallbrook, Calif.

FREE Darner fits any sewing machine. Bargain catalog with every order. 25¢ for postage & handling. We give S & H green stamps. LeMay Associates, 3232 Travis Z-3, Fort Worth, Texas 76110.

25 PROFITABLE Uses for old vacuum cleaners. Complete plans, \$1.00. Johnson Sewing Center, Searcy, Arkansas.

WORK At home caring for children. Parents pay you. Guardian Method, 120-PM South LaSalle, Chicago 60603.

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 26, Illinois.

HOUSEWIVES. Teachers, students, office workers. If you need extra cash each week but household or other duties prevent you from taking a part-time job, learn how you can earn by accepting orders to Popular Mechanics, Good House-keeping and all other magazines. No experience needed. Write Popular Mechanics, Room 3-W, 250 West 55th St., New York 19, New York.

## TREASURE FINDERS

GOLD, Treasure, coin locator \$2.00 complete. Guaranteed. Treasures—3, Ashland, Oregon.

NEW Supersensitive transistor models detect buried gold, silver, coins. Kits, assembled models, \$19.95 up. Underwater models available. Free catalog. Relco-A40, Box 10563, Houston 18, Texas.

TREASURE Hunters, prospectors, beach-combers; pin-point exact location buried coins, relics, gold, silver with powerful metal locators. Free literature. Write: Goldak, Dept. B-3, 1544 W. Glenoaks, Glendale, California 91201.

TREASURE. Gold, silver relics. Find them with new 1965 models. Free information. Rayscope, Box 715, North Hollywood, California.

TREASURE Metal detectors most complete line in U.S.A. Free catalog. Bill's Service Center, Box 1, Paramount, California.

TREASURE. Find gold, silver, relics with super, powerful Detetron locators. Free information. Detetron, Dept. 2-PM, P.O. Box 243, San Gabriel, California.

METAL Locator kits and assembled models from \$39.90. Terms. Transistorized models available. Free catalog. Electronic Applications, Dept. M, Box 6095, Alexandria, Virginia.

SAVE! Build transistorized treasure finder. Details free. Del Research, Box 347-B, Alden Manor, Elmont, N.Y.

NEW. Coin locator! Free literature! Howe, 811-C Kansas, Atchison, Kansas.

FIND Underwater placer gold, \$1000's recovered. 100 page handbook shows how, where. \$3.00. Back Country Bookstore, Box 866AF, Tarzana, California.

FUN & Profit finding buried treasure, relics with Transistor M-Scope. Booklet, interesting customer comments Free. Terms. Fisher Research, Dept. AX, Palo Alto, California.

DETECTOR Buyers—get owners reports first. Using, testing several new models. Genuine data; send only \$3.00. Honest Ed's Electronics, Detector Enthusiast, 3709 Fannin, Houston, Tex.

TREASURE Finders—late models bought; sold. Honest Ed's Electronics, 3709 Fannin, Houston 4, Texas.

MAPS And charts of lost, buried, and sunken treasures. Free information. Franklin, Box 532, Owosso, Michigan 48867.

POWERFUL Metrotech locators detect gold, silver, coins, relics. Moneyback guarantee, terms. Free information. Underground Explorations, Dept. A, Box 793, Menlo Park, California.

## REMAILING SERVICE

SECRET Mail receiving system. Hedg-peth, 406-M South Second, Alhambra, California 91802.

SECRET Mail! Confidential service system! Cox, 84 Chestnut, Saugus, Massachusetts 01906.

CONFIDENTIAL New York City mail address \$3.00 month. Remails 25¢. Details free. Birnhan, 152 W. 42, New York City 36.

HAWAII Secret unadvertised address. Remails 25¢. Receiving-forwarding \$3.00 monthly. Postcards. Souvenirs. Coe, Box 984, Kailua, Hawaii 96734.

REMAILING 25¢. Monthly \$3.00. Details free. Cooper, 1902 Good Hope Rd., S.E., Washington, D.C. 200-20.

SECRET Receiving and remailing. Discreet and confidential. Remail 25¢ single. 8050 S. Main, Houston, Texas.

CHICAGO Area remails 25¢. Monthly \$2.50. French, 815 E. Oakton, Des Plaines, Illinois.

REMAILING 25¢. Monthly \$3.00. Details. Acosta, Box 4327, Tampa, Fla. 33607.

INTERNATIONAL Remailing. Domestic 25¢. West, 226-P Spruce Drive, Wilmington, N.C. 28403.

CONFIDENTIAL Secret address. Remailing 25¢ or \$3.00 monthly. Haley & Son, Box S, Imola, California.

COLUMBUS, Ohio remailing. 25¢. 4492 Keeler Drive, Columbus, Ohio 43227.

CONFIDENTIAL. Mailing address, details free. World Wide Service, Box 2284, Baton Rouge, Louisiana.

RICHMOND, California, remailing 25¢. \$3.00 monthly. Prompt service. Belco, 3027 Ohio Avenue, Richmond, California.

SECRET Mail receiving system. Details free. Mihm's, 1110-J South Barrington Avenue, Los Angeles 90049.

PACIFIC Remail service. Fast, reliable, confidential. 1225 Luzern, Seaside, California.

PADUCAH Remailing 25¢. \$3.00 monthly. James Prince, Route 7, Paducah, Kentucky 42002.

CONFIDENTIAL Remails 25¢. monthly \$3.00. Petit, Box 86-M3, Brooklyn, 11214.

LAS Vegas, Nevada. Free details. Box 5027P, Airport 89111. Low as 1¢.

SO. AMERICAN Registered re-airmails \$1.00. Confidential reliable. Genaro, Box 360, Guayaquall, Ecuador.

PRIVATE Address, personal-business. Information 25¢. Remails 25¢. advise city: Baltimore, Richmond, Charlotte, Atlanta, Jacksonville, Tampa, Dallas, Horton, 68 Kensington, Greenville, South Carolina 29609.

SO. AMERICA Registered re-airmails \$1.00. Confidential, reliable. Genaro, Box 360, Guayaquall, Ecuador.

QUEBEC City, Canada, Box 567. 25¢—\$3.00. Send dime for literature.

CHICAGO Remails. 25¢. monthly \$3.00. Yost, Box 4, Chicago, Illinois 60627.

GATEWAY Remailing, 25¢ single, \$3.00 monthly. G.R.S., Box 6904, St. Louis, Missouri 63123.

MIAMI Remails 20¢. Monthly rates. Marle, Box 1266, Coral Gables, Florida.

## PERSONAL

SUBCONSCIOUS Conditioning remakes personality while you sleep. Free details. Sleep-Learning, Box 24N, Olympia, Washington.

LOANS By mail. \$100-\$1000. Anywhere. Confidential. Write Union Finance, Dept. PM, 222 W. Osborne, P.O. Box 7457, Phoenix, Arizona.

BORROW \$100 to \$1000 by mail. Quick, easy, private. No co-signers. Repay in 30 small monthly payments. For the amount you want write today to Dial Finance Co., 410 Kilpatrick Bldg., Dept. 3-001, Omaha, Nebraska 68102.

INVESTIGATORS. Free brochure, latest miniature electronic surveillance equipment. Ace Electronics, 11500-P NW 7th Ave., Miami 50, Florida.

ONLY \$44.00 monthly repays \$1008.46 (thirty payments). Borrow \$100-\$1000 entirely by airmail. Write today. Bankers Investment Company, 67-A, Hutchinson, Kansas 67501.

NEED Money? Borrow \$100-\$1000 by mail. Confidential, repay in 24 months. Free loan application. American Loan Plan, Dept. CA-185, City National Bldg., Omaha 2, Nebraska.

OCCULT Supplies and services, catalogue free. "Lodge" Brantridge Forest, Balcombe, Sussex, England.

LEARN Spanish fast! New proven method. Free Details. Ray, Dept. C-1, 68 River Route, Kingman, Arizona.

STRAIN—Rectal strain relieving device, (External). Dr. Charles Hudson, 680-B Dwr., Easton, Pennsylvania 18043.

RUPTURED. Relief and comfort. No understraps, elastic or steel. Write Hand-Lock Products, Preston 4, Ont., Canada.

STYLED Personal pocket printers. Personalized stationery items. Brochure free. Current House, Dept. 463, 3480 Centinela Ave., Los Angeles, California 90066.

I.Q. Test taken at home gives best score. Know your I.Q. \$2.00. Test Center, Box 139, Fresh Meadows 65, New York.

BORROW \$1,233 Airmail! Repay \$54 for twenty-nine months. State licensed. Postal Finance, Dept. 17-K, Kansas City, Kansas 66117.

PROBLEMS? Ten effective verses, free. Postcard, New Purpose Publications, Box 284, Manchester, Missouri 63062.



**DEEPLY** In debt? Clear credit—Quick relief write Advisor, Box 48337PM-2, Los Angeles 90048.

**SCALP**-Hair worry, men, women try European Tonic. Money back guarantee. International Laboratories, Box 4176, Miami Beach, Fla.

**HOW** To consolidate your own debts. Clear credit. Free details. David Magee, Box 331, Harlingen 7, Texas.

**BIBLE** Questions answered. Stamped envelope. Bylon, 17167 Bentler, Detroit, Michigan 48219.

**WANTED—MISCELLANEOUS**

**\$1.00-\$5.00** FOR comic books, 1933-1941. Jones, 6900 Shoup, Canoga Park, California.

**STAMP** Collections, accumulations. Eagle Stamp Co., 2221 Romine, Pittsburgh 26, Penna.

**FOR SALE, MISCELLANEOUS**

**CREATIVE** Ideas in luxury gifts. Free brochure. Write: Roberta-Lenn Co., Box 70, Lathrup Village, Mich., 48037.

**AUTOMATIC** Rafter computer. Dial hip, common, jack lengths instantly. Free literature. \$4.95 postpaid. Satisfaction guaranteed. Emmert, Box 221, Sycamore, Illinois 60178.

**AFRICAN** Hand-carved letter opener, \$1.50. Mailed direct from Kenya. Universal Trading, Box 7301, Los Angeles, California 90022.

**SPECIALIZED** Hospital calendars designed for all hospital employees for shift, cycle, or rotating systems. Calendars 35¢. Wallet size 7 for 35¢. Haley & Son, Napa State Hospital, Box S, Imola, California.

**SENSATIONAL!** Orbit cordless shaver, \$9.95. Free details. IVIE, 1020 East 67th Street, Inglewood, California 90302.

**HEARING** Aids, re-chargeable batteries. 10¢. Philupi, 1225 Hillside, North Bergen, N.J.

**FALSE** Teeth. Broken or loose? Repair or reline them yourself. Quickly, easily with same professional materials and instructions your dentist uses. Send \$2.98 today for new guaranteed kit. Details free. vonGries Laboratory, Box 762, West Sacramento, California 95691.

**BEN** Cartwright's Ponderosa map 23x35" color \$1.25. Postpaid. 600 Hotsprings Road, Carson City, Nevada 89701.

**PAINTERS!** Get the newest tool in the painting line. The painter's step saver, only \$1.19 postpaid check or money order. Fish-Cole Mfg. Co., P.O. Box 266, Denville, N.J. 07834.

**HEARING** Aid batteries wholesale. Free list. Habs, Box 51, York, Penna.

**MISCELLANEOUS**

**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.

**LOANS** By mail, \$100-\$1000. Anywhere. Confidential. Write Union Finance, Dept. PM, 222 W. Osborne, P.O. Box 7457, Phoenix, Arizona.

**SEND** Us wool for blankets. Free Literature. El Dorado Woolens, Eldorado, Texas.

**BIRTH** Certificates, Marriage Certificates, Diplomas! 2 blank forms \$1.00. Sample 10¢. Standard Forms, Box 7228-M, Washington 4, D.C.

**FREE** Wholesale catalog! 100,000 products. Tremendous discounts! Taylor Distributors, Newton 2, New Jersey.

**YOUR** Name sent to 1000 importers, publishers, mallers, wholesalers, etc. on our mailing list. Year \$1.00. Dixie Mailers, King, N. Car.

**CIGARETTES**—Make 20 plain or filter-tip for 9¢. Factory-fresh pipe tobaccos. Mild tropical flavored Philippine cigars. Facts free. Moberly, Box 903, Owensboro, Kentucky.

**SUPER** Memory overnight! Success guaranteed! Bijou, Box 1727-M, Hollywood 28, California.

**ARTHRITIS**, Rheumatism sufferers. Get relief. Free literature. Penasa-M, Box 843, St. Cloud, Minn.

**BOOKS** On antiques and their prices. Free circular! P. Warman Publishers, Uniontown, Penna.

**TAX** Records a must now. Business—personal bookkeeping aids. Free details. Pequot, Box 307A, Fairfield, Connecticut.

**PEDOMETER**—Measures the miles as you walk. Ideal for sportsmen, scouts, etc. \$2.00 P.P. Charles Andrews Co., 2466 Holton, St. Paul, Minnesota.

**RECEIVE** Magazines, catalogs, folders, mail order money-making opportunities. Year \$1.00. Marvin Green, Box 26983, Los Angeles 26, California.

**INCREDIBLE** Money savings and extra gasoline mileage, free details. Incs, 2730 Michigan, Box 11203, Ind'pls, Ind. 46201.

**STOP** Garnishments, suits, judgments. Free details. Counselor Reports, Box 331, Harlingen 19, Texas.

**FREE!** Globe Shopper illustrated newsletter. Bargains galore. Dept. A1., Box 75628, Los Angeles, Calif. 90005.

**FIREWORKS**. Full instructions. Free list. Titus, Box 376, Greenlawn, N.Y.

**TERRIFIC** Savings! Books, all subjects. Dime brings 60 page catalog! Hallows, 14 Drexel, Cahokia, Illinois.

**CESSPOOLS**. Septic tanks restored to newness by miracle crystal pellets. Free literature. Electric Sewer Cleaning Co., Allston 34, Mass.



**travel trailer tips!** from a quality manufacturer

Discover the hidden values in a superior travel trailer. Holiday Rambler's 1965 catalog plus their 16-page "Travel Trailer Selection and Evaluation Guide" gives you details, pictures, charts on what to look for in pride-of-ownership travel trailer living. They're yours FREE. Write today.

**HOLIDAY RAMBLER CORP.**  
Dept. 3-D, Wakarusa, Indiana

Gentlemen: Send me 1965 Catalog and Selection Guide

Name \_\_\_\_\_

Address \_\_\_\_\_

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

**What's so fine about a**

**DIAMOND**



Nickel chrome plated

Perfect mesh of knurl and moveable jaw for maximum strength

Handles smooth—no rough edges. Ideal for good grip

Jaw faces machined to insure close fit

Moveable jaw fits precisely

Thin heads reach tight places

Enduring quality steel... each part heat treated, precisely machined, hand fitted... all reasons why "There is nothing finer than a DIAMOND."

Ask your dealer for Diamond Tools... write for free booklet.

**DIAMOND TOOL and Horseshoe Co.**

DULUTH, MINNESOTA      TORONTO, ONTARIO

EST. 1908





**Does your GM car  
need a part  
this important?**



**Take it where  
you'll get a GM part  
just like it.**

You've got good reasons for doing so. Because there's hardly anything so important to your family's safety as the way your car's brake linings do their job. Remember, simply looking at them can't tell you the big difference between unsafe brake linings and linings you can trust. And simply looking can't tell you the difference between most replacement parts and GM parts

just like the originals—designed and tested by the people who built your GM car. Whenever you need car or truck service, go where you know they use genuine General Motors parts. And wherever you go, insist on genuine General Motors parts. You can find them in most service outlets and just about anywhere you drive in the country. You'll recognize them by their bright new GM and United Delco packages.

## **GENUINE GENERAL MOTORS PARTS**



CHEVROLET • PONTIAC • OLDSMOBILE • BUICK • CADILLAC • GMC TRUCKS

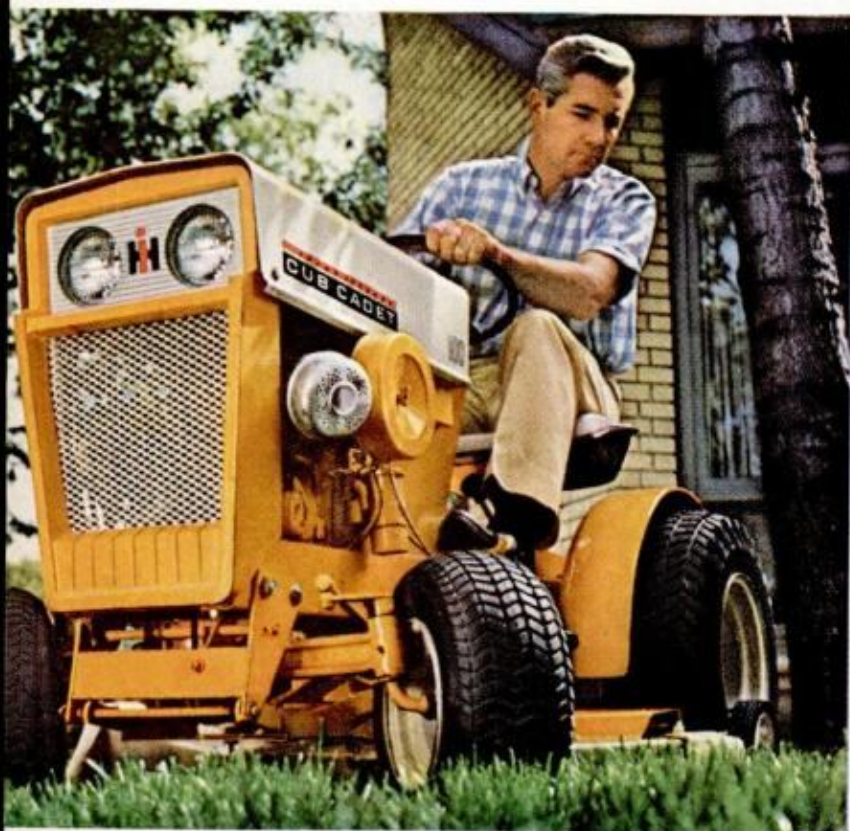
**United  
Delco**



Материал, защищенный авторским правом



# Test drive IH Cub Cadet soon— This Saturday maybe?



International® Cub Cadet® is no toy; it's a tractor. Direct drive (no belt) power train in 7 and 10 HP Cadets is the same as in bigger IH Cub® tractors. The warranty is the same as with the biggest IH tractors, too.



Haul up to 800 lbs. Mow or leaf-mulch an acre an hour or more. Make easy work of a dozen jobs year-round on your lawn, grounds or garden.



Front blade dozes everything from dirt to snow. There's a rear blade available, too — easily changed into a stiff-tooth rake.



Test drive a Cadet first chance you get. This Saturday maybe? Your nearest dealer? Phone Western Union by number and ask for Operator 25. International Harvester Company, Chicago, Illinois 60601.



**International Harvester — the people who bring you the machines that work**

Материал, защищенный авторскими правами



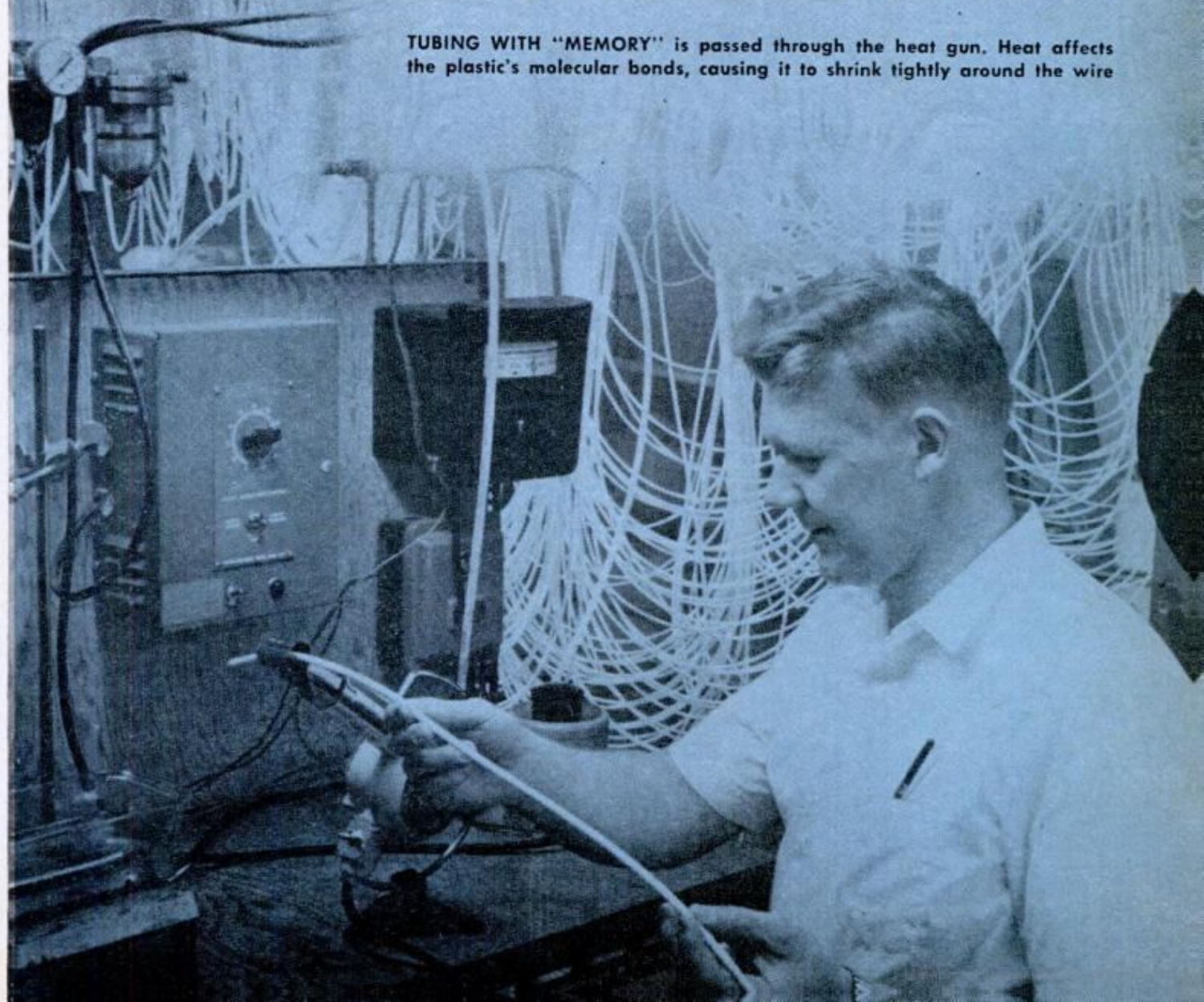
# WONDERFUL WORLD OF IRRADIATED MIRACLES

*Wood with finish all the way through, plastic that shapes itself, food that stays fresh—they top a growing list of startling atomic products*

By John F. Pearson

THERE'S A NEW KIND OF WOOD that you won't find in any home workshop—not yet, anyway. It's up to nine times harder than normal wood of the same variety. A column made of it will support as much as 50 percent more weight than its country cousins. It takes between 50 and 100 percent more stress to bend it. It's fire-resistant. And, what's more, if you scorch it with a cigarette, a light sanding will remove the mark—but not the

TUBING WITH "MEMORY" is passed through the heat gun. Heat affects the plastic's molecular bonds, causing it to shrink tightly around the wire





clear, satiny finish which is indestructible. The sanded area—no matter how deep—will have the same sheen as the rest of the piece, because the “finish” goes clear through to the center.

This is no “miracle” of the future. It’s in existence now, though not on the market. It is a plastic-wood composite.

The unique new material is only one of a number of new products, and improved old ones, now being produced by means of atomic radiation. Nuclear particles have proved an efficient way to preserve food and sterilize medical supplies. They are putting toughness into plastics, making them heat resistant and giving them “shrink memory.” They are producing a new kind of detergent that’s sudsy in the dishpan, but is quickly broken down by bacteria when it hits the drain. Radiation also improves transistor performance.

Beauty of the process is that it leaves no residual radiation in the product.

“We’re working with a whole new technology,” says Martin H. Stein, chief of the Atomic Energy Commission’s process radiation section. “And we’re just beginning

to reap the rewards of a research and development program started less than 10 years ago.” E. Alfred Burrill, vice president of the High Voltage Engineering Corporation, a producer of radiation devices, thinks that the field is “at about the point Thomas Edison was when he started playing with the distribution of electricity.”

The process for making the plastic-impregnated wood was developed a few years ago by Dr. James A. Kent at West Virginia University. The idea of combining the two substances occurred to him one night in 1960 after he’d gone to bed. He jotted down a few notes and shortly thereafter put a graduate student to work on the project. (Dr. Kent loudly disclaims any role as the discoverer, however. The development, he points out, was a natural outgrowth of exploration that went on in many places—Brookhaven National Laboratory, New York, and a research center in Russia, among others.)

Here’s how it works:

Wood is placed in a vacuum chamber. Then plastic, thinned to the consistency of water, is pumped in. The wood absorbs



**POLYETHYLENE BOTTLES** shown have just been taken from boiling water. Those that had been irradiated retained their shape, but untreated ones collapsed



**IRRADIATED TUBING** is at cold size on lower pair of pliers. Moderate heat makes the plastic contract and form a tight, insulated grip for handle



the plastic the same way a sponge soaks up water; when you squeeze a sponge, you expel air from its cells and it is then able to take up a liquid. Similarly, air is "squeezed" out of the wood cells by the vacuum, and is replaced with the plastic as it enters the chamber and replaces the vacuum.

Then the wood is irradiated with a gamma ray source such as cobalt 60. This bolt of energy causes a vigorous chemical reaction to take place in the liquid plastic, transforming it into a tough solid. Dr. Kent and associates have used the process on many different kinds of wood, but have worked primarily with white pine, sugar maple, birch and white oak.

The irradiated composites have amazing qualities. Depending on the kind of wood used, they are up to 900 percent harder than untreated stock. They may have a 50 percent greater compression strength and from 50 to 100 percent greater bending strength. They absorb moisture much more slowly than untreated wood, allowing them to resist warping and swelling, and are fire resistant.

And that's only half the story. In most cases this "wonder wood" actually looks better than the natural stuff. The process enhances grain and color. Stains can be built in simply by adding a dye to the plastic. Scrape a board treated this way and you'll never hit raw wood.

Martin Stein and engineers at the Lockheed-Georgia Company, which is exploring the potential of commercial production, say the composites will be ideal in places where wood ordinarily rots, where resistance to wear is important, where a natural finish is called for.

Indoor and outdoor furniture made of composites will be virtually indestructible.



**ORDINARY WOOD** is put into vacuum tank. With air sucked out, cells soak up liquid plastic sprayed into chamber. Gamma rays solidify the plastic

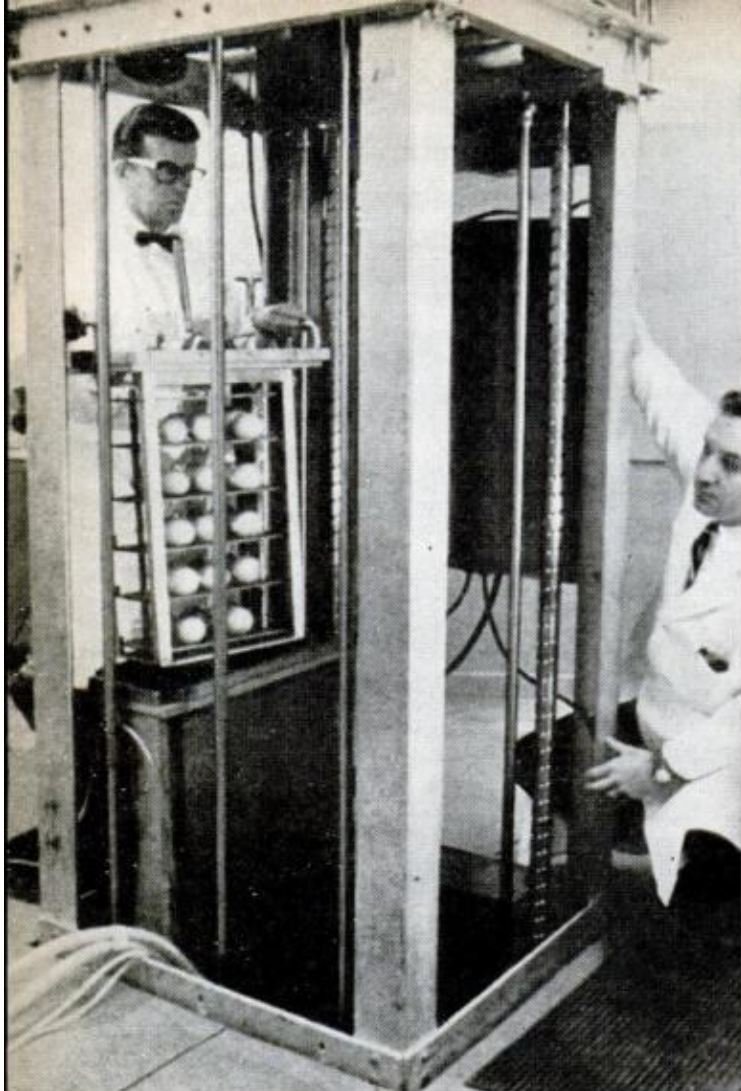


**PLASTIC-WOOD** composite, though many times harder than untreated wood, can be worked in the usual ways. It can be sawed, drilled, turned and sanded

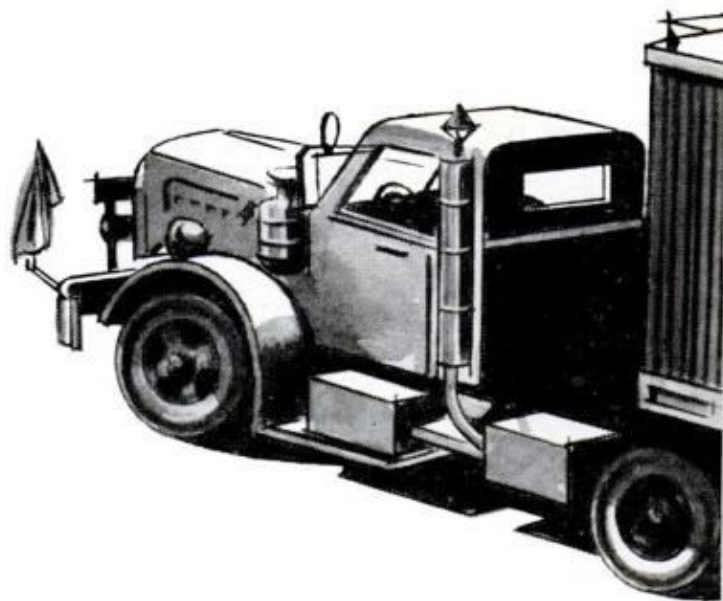
**THESE COMPOSITES** were made from pine, maple, birch and oak. The process retains and enhances natural look of wood and creates a built-in hardness. Gavels can drive stakes into hard ground without showing a scratch



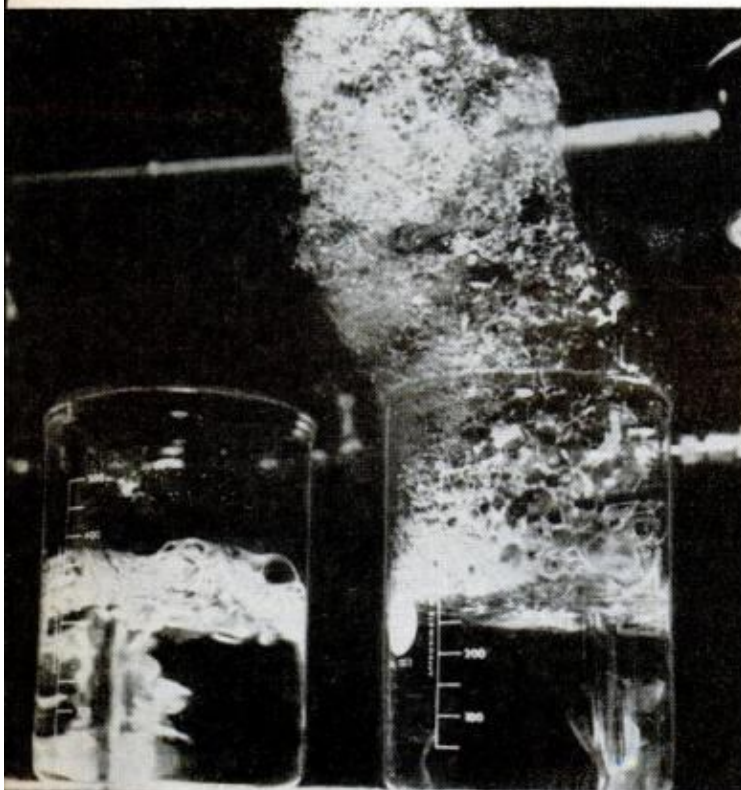




**LEMONS** are loaded into research irradiator at the University of California. So far, irradiation has not been as successful with lemons as with oranges



**MOBILE IRRADIATOR** for use next summer is under construction for Atomic Energy Commission. It will be used on fruit right after picking to get most benefit from pasteurization. It can follow harvest crews as they move through a region



**DETERGENT SUDS** in beaker at right are standard. They failed to break down under induced bacterial action. Irradiated product (left) decomposed readily

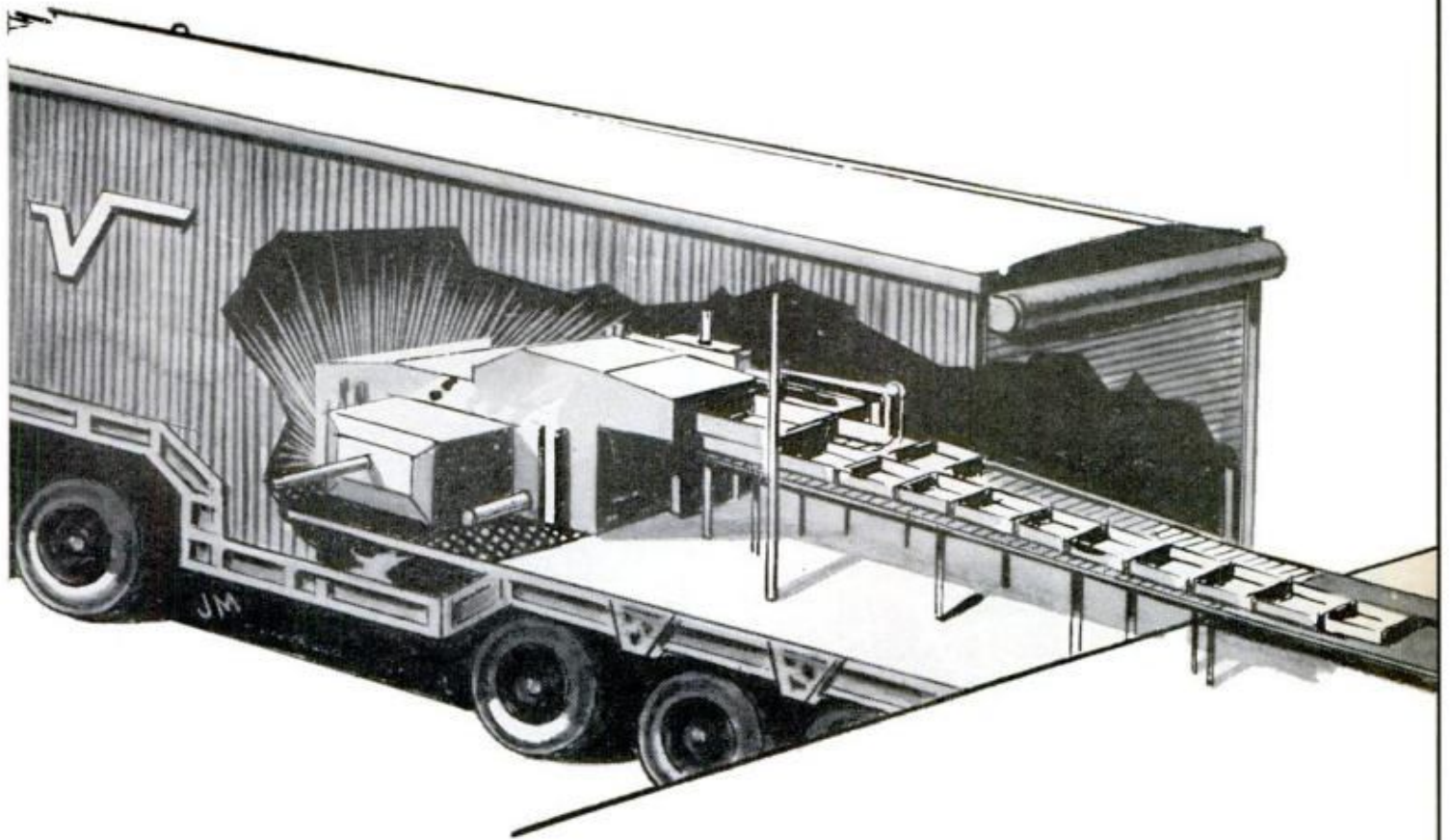
Fine flooring, boat decks and bowling pins and lanes will just about last forever. Doors and window frames will have a built-in resistance to moisture. Gun stocks will have the strength and hardness of plastic but the full beauty of natural wood. There's the possibility of a whole new family of natural wood shingles.

The nice thing about this new "super-wood" is that it can be worked just like any wood. It can be sawed, drilled, turned and sanded. But in handling it, its special characteristics must be kept in mind. Like many other miracle products, it does have its Achilles' heel.

One golf club manufacturer learned this after he'd had a number of heads for drivers made from a composite. They looked fine and promised to wear like iron. But one screw after another was ruined in attaching the small metal plate to the underside of the club heads.

The manufacturer finally came to the AEC for help. There it was explained to him that the composite doesn't "give" the way wood does because of its lack of air cells. Since he'd drilled the same size holes as he had for normal wood, the screws got stuck in the hard material and broke off. The solution, he was told, was to drill





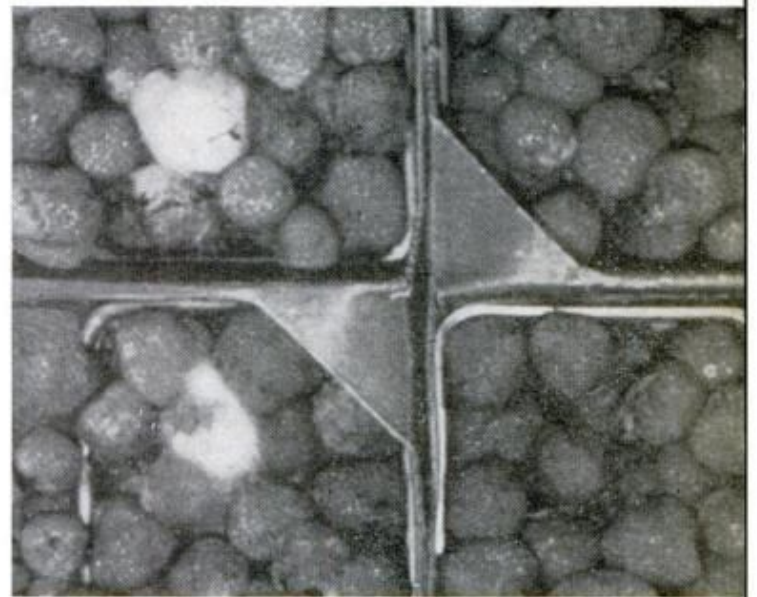
the holes to a slightly larger diameter.

All industrial radiation operations employ either a cobalt-60 isotope or particle accelerators—atom smashers like the cyclotron—as the energy source. The cobalt emits gamma rays—electromagnetic waves similar to X rays. The accelerator delivers high-energy electrons, like the electrical energy charge in a bolt of lightning.

Each has advantages and drawbacks. Electrons have limited penetrating power but are easily focused on the target. Gamma rays, on the other hand, penetrate much more deeply but are a relatively low-power source of energy. To deliver a large dose takes much longer with cobalt 60 than with an accelerator. But both forms of radiation affect materials in basically the same way.

They knock pieces loose from molecules, making them highly unstable. The “damaged” molecules vigorously seek to regain stability and so hook up with a molecule of the same family. Multiply this thousands of times and you have a first-rate chemical reaction. The result is a change in molecular structure.

A plastic such as polyethylene is made up of carbon-hydrogen molecules, or links, strung out in long chains. For purposes



**STRAWBERRIES** (left) stored for eight days at 41 degrees F. became moldy. Irradiated fruit (right), stored under same conditions, was free from decay

of illustration, you might think of a piece of polyethylene as being made up of many, many such chains, all parallel to each other and running in the same direction. But when the plastic is irradiated, some links are broken. They immediately swing out and connect with a broken link in the nearest chain to form a short bond across

[\(Please turn to page 226\)](#)





**PM  
OWNERS  
REPORT**

A Nationwide Survey  
Based on 725,874  
Owner-Driven Miles



**PARKING AND MANEUVERING ARE EASY**, thanks to fast power steering; handling was favorite feature of nearly half of owners. Dealer can adjust the driver's seat for height—which may be why 9.9 percent praised visibility

# Easy Dodge Handling Tops Beefs About Assembly

*Marginal and boldface comments by Ed Nelson,  
PM's Automotive Editor*

**T**HIS CAR probably came off the truck assembly line," complains a marketing man from New Jersey. But he gets an immediate argument from other owners. One in particular, a Massachusetts teacher, likes the way Dodges are improving. "Ever-excellent engineering continues in '65," he told us, "and now Dodge has good looks."

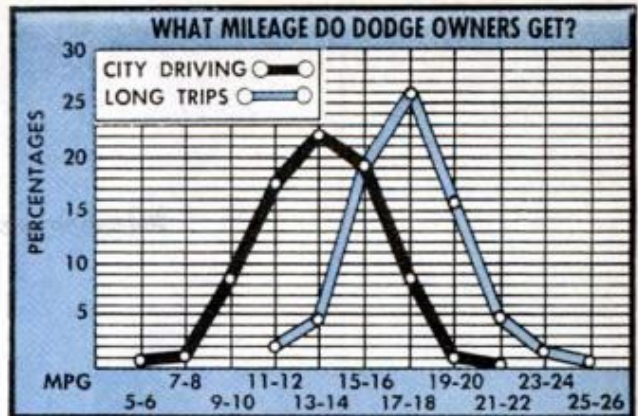
Owners surveyed by *PM* also reported their pleasure with features ranging from good handling to details like a good heater. And they registered complaints ranging from bad assembly and workmanship to details like the shallow glove box. The dispute between the marketing man and the teacher continued to another general area: Good ride was the second most popular virtue owners reported, and the teacher agrees

**Dodge owners  
complained less about  
assembly than owners  
of some other  
1965s tested** →





EXTRA-NARROW REAR PILLARS and the king-size rear window contribute to excellent rear visibility. Rear passengers enjoy more than adequate headroom



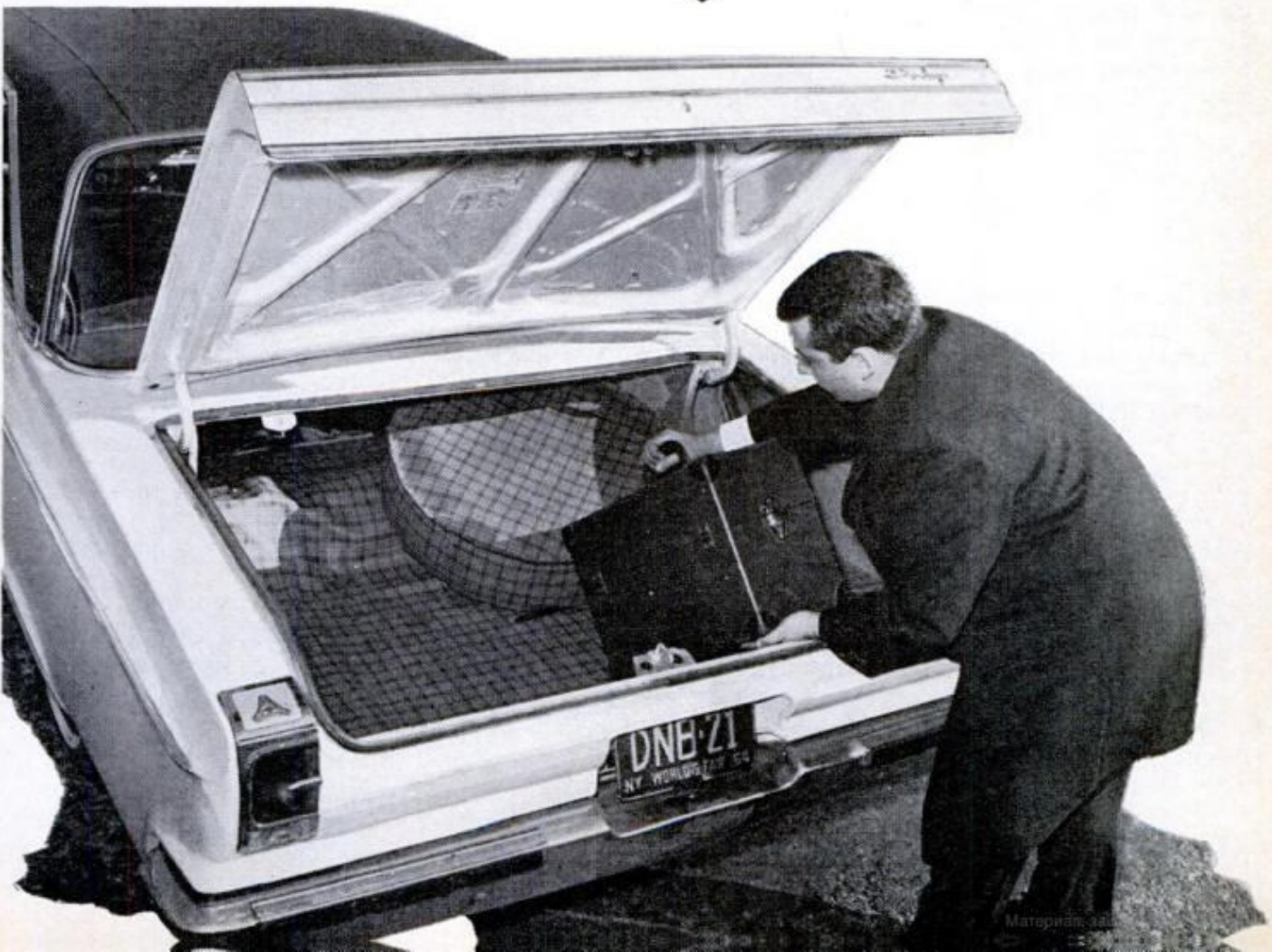
### Owners Like

Easy handling	(47.1%)
Solid ride	(26.5%)
Clean styling	(25.1%)

### But Dislike

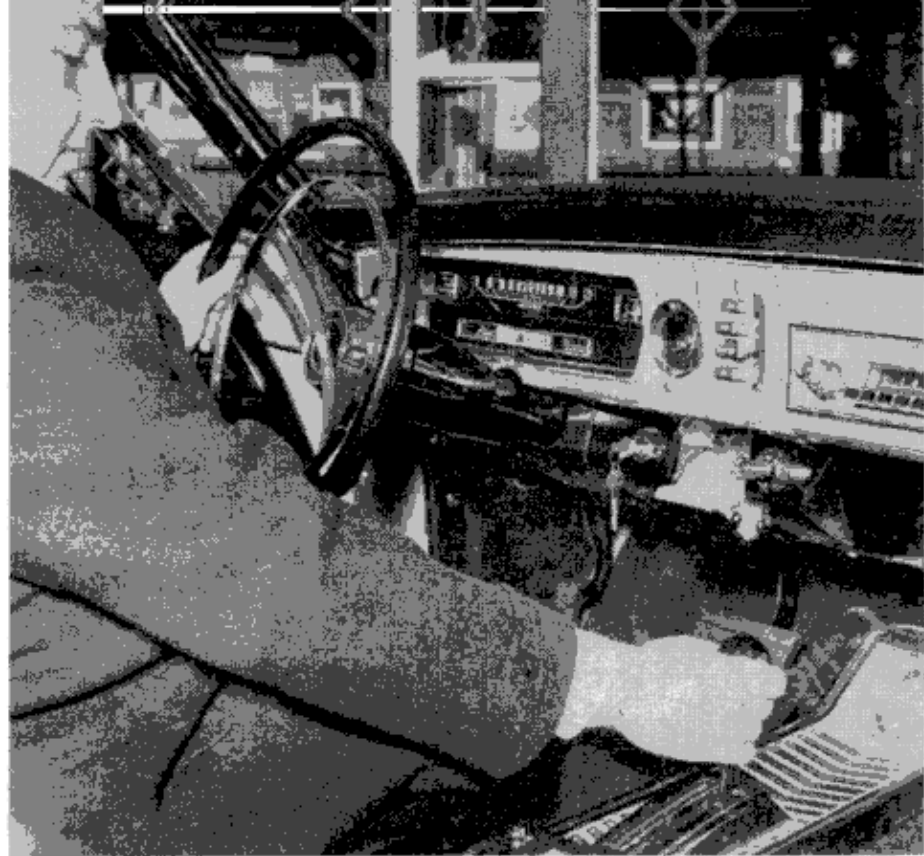
Careless workmanship	(12.1%)
New shift lever	(8.5%)
Rattles and squeaks	(6.3%)

TRUNK DISPLACES 16.7 cu. ft. of usable space, a bit below the average for full-size cars. No owners praised the trunk, but only 1.8 percent complained





**"TRANSMISSION** pushbut-  
tons, please," clamored the  
8.5 percent of Coronet own-  
ers who were asked what  
changes they'd like most.  
Buttons were replaced by  
console or steering-column  
levers on all Chrysler Corp.  
cars in the hope that more  
conventional shift would at-  
tract more new customers



**The smaller Coronet's  
230-hp option is easily  
its most popular engine.  
But most big Dodge  
buyers stuck with its  
basic 270 mill** →

**Both speedometers were  
almost dead—on at 30,  
6½ mph fast at 70.  
Odometers were  
about 3% high** →

it's comfortable. But the marketing man calls it "very hard," and comments, "I traded in a '62 Plymouth that rode better than the Dodge."

The cars—we surveyed owners of both the new 117-inch-wheelbase Coronet series and the 121-inch-wheelbase Polara, Custom 880 and Monaco—are generally successes with owners. More than 87 percent told us they'd buy another Dodge based on their experience with the '65. That's better than the average results for all '64s and compares well with the other '65s checked so far. And over 60 percent called the Dodge Excellent, while a miniscule 0.5 percent called it Poor.

Coronet owners generally got in-town fuel figures of 13 to 16 miles per gallon, long-trip results of 17 to 18, and overall consumption at 15 to 16. Big Dodge owners reported 11 to 12 in town, 15 to 16 on trips, and from 13 to 16 overall.

For PM's steady-speed fuel tests, which provide a cross check on owners' reports, we used two Coronets, a 265-hp, two-door 500 and a bigger, heavier Coronet convertible equipped with the 315-hp, 383-inch V8. Both had SureGrip differentials and oversize 8.25 x 14 tires.

The fifth-wheel speedometer and electric fuel meter were hooked up to eliminate any problems of inaccurate car meters. Here are the fuel consumption rates in miles per gallon:

	30 mph	40 mph	50 mph	60 mph	70 mph
265 hp	19.33	18.20	17.41	16.28	14.02
315 hp	18.43	17.75	16.68	14.16	12.80

With the 265-hp Coronet and Torque-Flite transmission, we obtained an overall fuel figure of only 10.803 mpg. The test involved little highway driving, however, and included the acceleration tests. Normal driving should deliver better economy.

The same two Coronets were used in our acceleration runs. The small improvement that results from the big power of the four-barrel 383 may surprise you, but when times start to get low, a small further improvement demands lots of extra horse-



power. Besides, that 383 was pulling a convertible, about 300 pounds heavier than the hardtop. Here are the times:

	265-hp 361	315-hp 383
0 to 60	9.2 secs holding car in L until 45 mph 10.2 secs starting in D	7.7 secs holding car in L until 46 mph 8.5 secs starting in D
40 to 60	5.1 secs using 2nd	3.8 secs using 2nd 3.5 secs shifting from L to 2nd at 46 mph
50 to 70	6.1 secs using 2nd	4.7 secs using 2nd

What do the owners themselves have to say about this year's Dodges after living with the cars day after day, in town or on the highway? Here are samples of the most common remarks, with those mentioned most often being listed first. Dodge's easy handling leads off:

"I have the feeling of complete control at high speed or with any road condition."—Pennsylvania laborer.

"It's easy to handle in traffic."—Arkansas storekeeper.

"The ride is above average—like a dream."—Kansas mechanic.

"It's heavy and sticks to the road well."—retired North Dakotan.

"It looks like an automobile, not a bloated cow."—South Carolina traveling salesman.

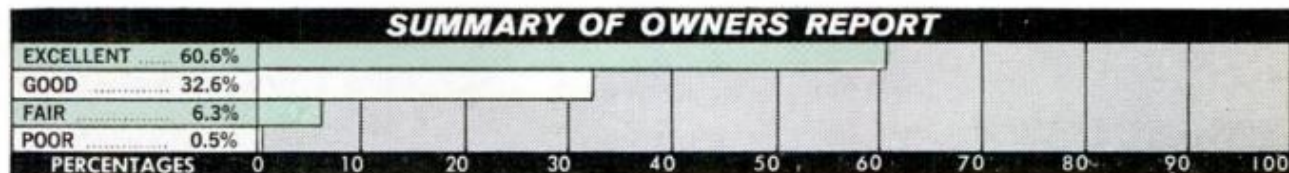
"Simple lines give it the appearance of a luxury car."—Pennsylvania fireman.

"The engine response and pickup is very good."—Kansas postal clerk.

"The bench seats and the suspension system make this

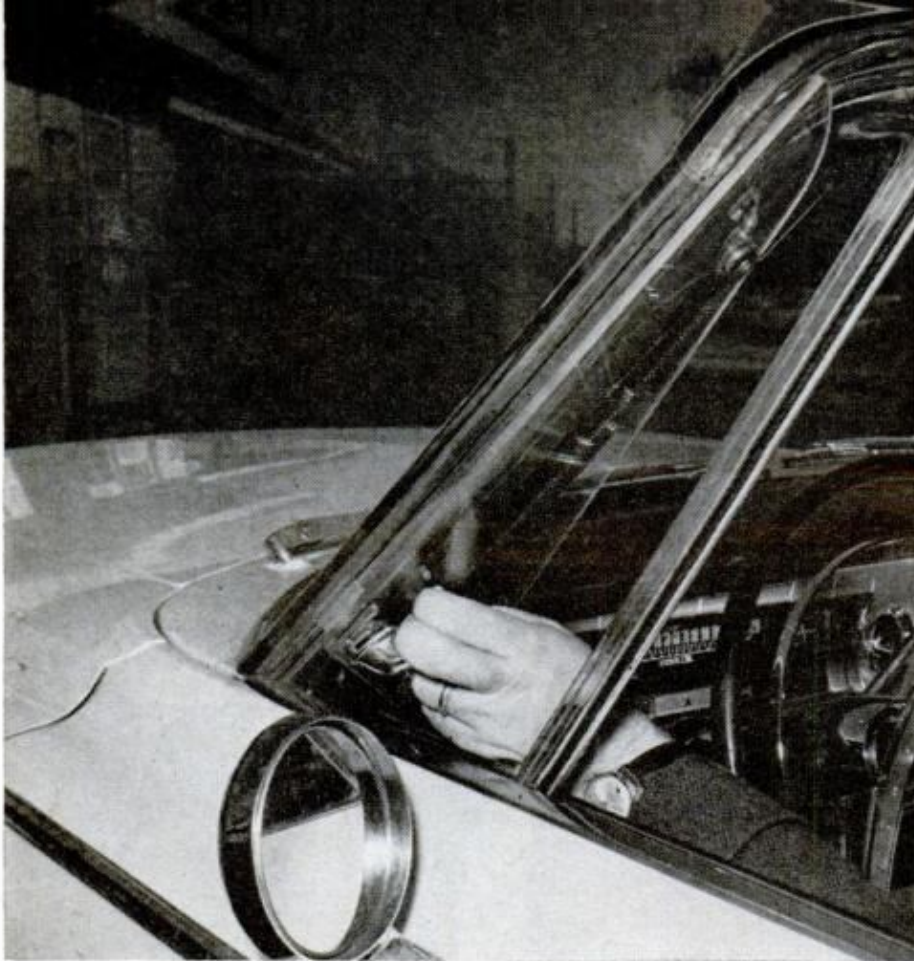
← Famous last words department. Rather solid suspension actually helps control

He's talking about his Coronet with the 230-hp V8 engine ←



Best-liked features		Least-liked features		Other car considered, if any	
Ease of handling	47.1%	Assembly and workmanship	12.1%	None considered	31.4%
Ride	26.5	Shift lever replacing buttons	8.5	Chevrolet	26.9
Styling	25.1	Rattles and squeaks	6.3	Ford	20.6
Overall design	24.7	Carburetor trouble	6.3	Pontiac	11.7
Power and performance	21.5	Gas mileage	4.9	Plymouth	11.7
Plain lines	21.5	Ash tray	4.9	<b>Is Dodge family's only car?</b>	
Seats	19.7	Bumpers	4.5	Yes	58.3
Comfort	13.9	Wind noise	4.0	No	41.7
Upholstery	10.8	Chrome	4.0	<b>Make of other car</b>	
Visibility	9.9	Transmission trouble	3.6	Another Dodge	13.5
Dashboard	9.4	Grille	3.6	Ford	5.8
Roominess	9.0	Dashboard	3.6	Chevrolet	4.0
Size	8.1	Idiot lights	3.6	Plymouth	3.6
Brakes	7.2	Styling	3.6	<b>Make of car traded in</b>	
Warranty	6.3	Steering	3.1	Dodge	35.1
Instrument panel	6.3	Spare fire location	3.1	Chevrolet	9.0
Interior	5.8	Ride	3.1	Plymouth	8.5
Economy of operation	5.4	Heater	3.1	Ford	7.6
Transmission	5.4	Taillights	3.1	Dodge Dart	4.9
Grille	5.4	Windows	3.1	No trade-in	9.9
Gas mileage	4.9	Doors	3.1	<b>Dealer Service</b>	
Front-end design	4.9	Glove compartment	3.1	Excellent	58.3
Assembly and workmanship	4.5	Power-steering trouble	2.7	Average	31.8
Paint	4.5	Electrical-system trouble	2.7	Poor	4.5
<b>Dodge decision based on</b>		Headroom	2.7	<b>Would you buy from him again?</b>	
Styling	29.6	Instrument panel	2.7	Yes	74.9
Previous Dodge ownership	27.8	Lack of roominess	2.7	No	6.3
Warranty	18.8	<b>Fuel economy</b>		<b>Buy another Dodge?</b>	
Price	16.1	About as expected	51.1	Yes	87.4
Dealer	10.8	Better than expected	21.1	No	7.2
Chrysler Corp. reputation	10.3	Not as good	20.6	Undecided	5.4





**WINDOW VENTS** have no cranks and are clumsy to open except by reaching across with the right hand. Worse yet, they won't stay open at high speed; wind resistance pushes them closed

**Domestic car builders** →  
change products more  
often, have more  
trouble staying sharp

**Too many owners, 6.3**  
percent, have carb →  
trouble for us to say  
they might be cranks

about the most comfortable riding car I have ever driven."  
—Washington receiving inspector.

"The seats are high, which provides comfort."—Alabama management analyst.

Dodge said it dropped its pushbutton transmission in hopes of winning new customers. The old ones, as the company reported, were happy with the buttons. Their absence prompted complaints second only to assembly and workmanship. Here are sample comments:

"This car does not match the detail quality of construction of my trade-in (Sunbeam Alpine), although it costs approximately the same."—Louisiana mechanical engineer.

"The handwork in assembly does not keep pace with its good engineering."—Kentucky commercial artist.

"I was fond of those pushbuttons."—Maryland railroad brakeman.

"Too many rattles in the dashboard."—Virginia appraisal executive.

"This is a noisy car with many little squeaks and rattles."  
—Maryland electrical engineer.

"I've had carburetor leakage that caused a mileage drop. The car idles roughly, stalls occasionally. It's hard to start every so often and the carburetor bottom is usually wet. I've had enough practice fixing old cars to know I'm right."—Massachusetts computer programmer.

"I've had trouble with a sticking needle valve."—Pennsylvania insurance agent.

"My Monaco has a 383-inch engine, and 12½ mpg overall isn't economy in my book."—Tennessee textile worker.

"My main complaint is gas mileage, 10½ to 12 mpg with a 270-hp Polara."—Louisiana auto mechanic.

A good view fore and aft and the virtues of the Dodge inte-

[\(Please turn to page 234\)](#)





A Nationwide Survey

Based on 670,472

Owner-Driven Miles

# Olds Owners Like Feather-light Handling, Lament Wind Noise

*Marginal and bold face comments by Ed Nelson, PM's Auto Editor*

**T**HE NORTH DAKOTA FARMER who exulted—"I have never owned a car that could outperform this one on the highway, yet handle as well in snow or mud or on ice"—has lots of company among other '65 Olds owners.

But so does the painting contractor from New Jersey who complained of wind whistling past his windows. Wind noise topped the list of complaints in Olds owners' reports, while handling ease topped the raves. Next best rave notice went to the floating ride; third loudest applause to power and performance.

Reports of ill-fitting doors and curved glass windows often tied in with wind noise references. The rake of the open edge doors and windows is "hazardous" according to some owners.

A rural mailman spoke for 35 percent of his fellow owners,

**"SLEEK" AND "SPORTY"** were popular words owners used to describe styling of their '65 Oldsmobiles. Some didn't like the "humpbacked" rear fenders

## Owners Like

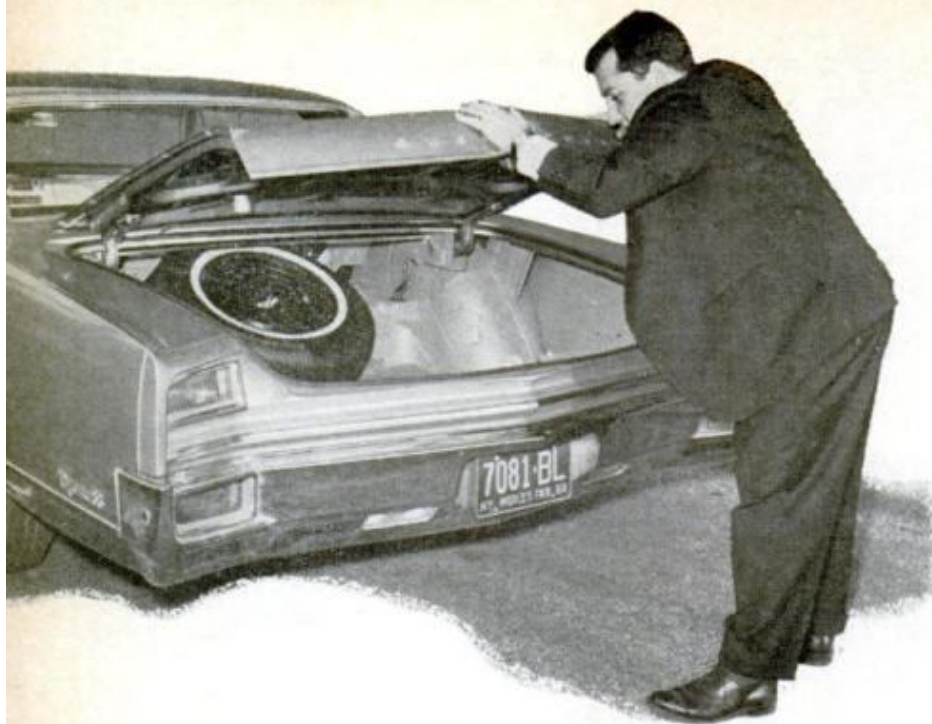
Light Handling	(42.1%)
Floating Ride	(35.0%)
Gutty Power	(31.2%)

## But Dislike

Wind Noise	(22.4%)
Careless Assembly	(18.6%)
Curved Windows	(9.8%)

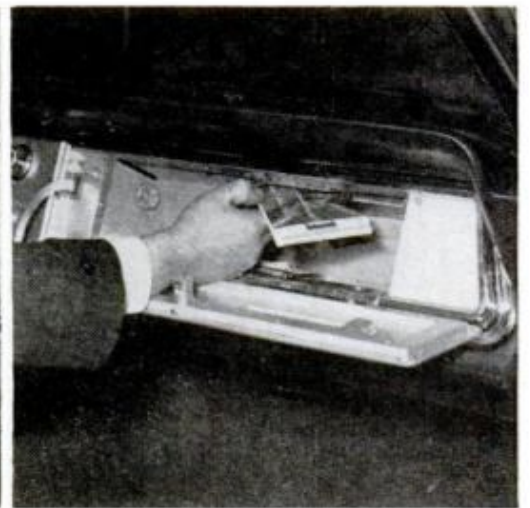






**SOME OWNERS WANTED** a handle to close the trunk with and one complained about poor spare location and luggage space arrangement. Most owners didn't bother to comment. Styling was generally praised by owners

**OLDSMOBILE FEELS DASH** is adequately recessed, but owner complaints about reflections from brightwork were common. Instruments are grouped together well and circular speedometer is easy to read. Glove box space is snug



**Our test car rode like a canoe on quiet water** →

though, in praising "the exceptionally smooth ride for a car of its weight class." He added, "I've tried it on some pretty rough country roads, too." There were a sizable number of praises for the car's sleek, "sinuous" styling and its "luxurious" upholstery. And not a few owners commented happily about "higher seats," which cradle the back and shoulders.

In answer to our question as to whether or not owners would buy the same car again, 78.6 percent of Olds owners said yes.

Careless assembly and inadequate quality control came in for noisy complaints from 18.6 percent. Typical of the kind of noise was the comment of a New Jersey civil servant who said: "There are many bugs, from outright engineering blunders to careless workmanship." He listed "oil leaks, excess vibration, windshield washers that didn't work, a door handle that fell off, doors that didn't fit, a fan that slipped forward into the radiator during a cross-country trip, lights improperly wired, a leaky trunk, and numerous other things."

**But he raved about service at Olds dealerships on his cross-country trip** →

Every car builder turns out an occasional lemon, of course. But not many lemon owners have ever equaled the Philadelphia assembler who, asked what he'd like to see changed on his '65 Olds, answered simply: "The owner—me." The 18.6

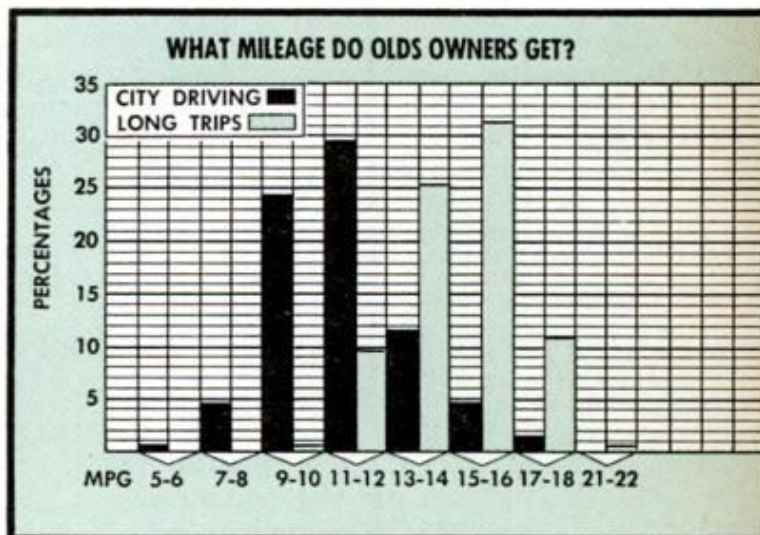


percent who disliked assembly and workmanship compares to Ford and Chevy owner complaints, in the same area, last month totaling 18 and 16.5 percent, respectively.

The praises for Olds performance were backed up by our acceleration tests. In a 360-hp Dynamic 88 with the optional four-barrel, 425-inch V8, we did 0 to 60 in 8.3 seconds by upshifting from Low to Super at about 45. In Drive it took 8.9 seconds. The Turbo Hydra-Matic appeared to up-shift automatically at about 37 mph, although its action is so smooth it's hard to tell.

In checking passing speeds, we went from a true 40 to 60 in 4.2 seconds, from 50 to 70 in 4.9.

The North Dakota Oldsmobile owner previously quoted gets 16 miles per gallon [after 1600 miles] on long trips, 10 mpg in town. "But what can you expect," he points out, "from a 310-hp engine?" Not all owners did that well. Poor gas mileage shows up in fourth place on the brickbat list. The fuel chart on p. 97 gives the figures for all the PM owners. Breaking them down, we found the bulk of 88 owners (Jet



**CURVED-GLASS WINDOWS** were source of many complaints from the owners PM surveyed. Imperfect closing stimulated many of the wind noise complaints. Bare glass, owners reported, can go un-noticed when front doors are swung open in dark

**PM'S ACCELERATION AND FUEL** tests were run with the Olds Super Rocket engine, rated at 360 hp at 4800 rpm. The fuel figures were respectable while acceleration times were good. Owners put power and performance third on list of Olds praises







**EASE OF HANDLING** made a hit with owners, who said it's not tiring even on long trips on expressways—probably thanks to the many power assists

**Owners were no more disappointed in gas mileage than the owners of most other cars** →

star 88, Dynamic 88, and Dynamic 88 Delta) got 11 to 12 mpg in town and 15 to 16 on trips, for a 13 or 14 mpg overall average. Owners of the hotter Jetstar I or Starfire generally got about 9 or 10 mpg in town and 13 or 14 on long trips.

As a controlled basis for comparison with other cars, we checked steady-speed fuel consumption with our Tracktest fifth wheel speedometer and electric fuel meter. Here are our results:

Speed	30	40	50	60	70
Fuel mpg	19.51	19.69	17.05	16.30	14.50

Our speedometer was one mile per hour high at 30, only 3 mph optimistic at 70. And we found the circular Olds speedometer more readable than most GM units have been for some time.

**You could look for a little more economy as the miles add up** →

We got 11.32 mpg overall during a test that was mainly highway driving plus a premium-gas-gobbling series of accelerations. We finished with 1682 miles on the clock.

What did the owners themselves find? Here are their statements, picked to represent the five most popular characteristics of the '65 Olds, with leaders shown first:

"Considered buying a Pontiac, but the Olds handles easier."  
—South Dakota salesman.

"Like the handling qualities on the expressway."  
—self-employed South Carolinian.

"Rides very smoothly; I don't get tired driving."  
—Louisiana salesman.

**Hope he sold himself enough insurance** →

"Plenty of speed! Really moves out at over 100—I couldn't get all the speed it had, ran out of road."  
—North Carolina insurance man.

"I like the sleek look; it gives an expensive appearance."  
—South Carolina plant manager.

"The fine upholstery is easy to keep clean."  
—Rhode Island barber.

*The five most widespread complaints include wind noise, poor assembly, window trouble, poor gas mileage and a glistening dash. Here's what owners have to say:*

"Over 40 mph, wind noise makes conversation impossible;



at higher speeds it causes earache."—New Jersey college professor.

"Windows don't close properly against whistling wind."—Rhode Island businessman.

"Assembly is very poor: Air comes in around doors, chrome is loose around windshield and rear window, paint has runs."—Kentucky over-the-road trucker.

"Poor check of body construction before delivery."—Oklahoma oil company engineer.

"Never, since 1930, have I owned a car where so much brute strength was necessary to raise and lower the windows."—Maryland resort owner.

"Slanted front door and window edges tend to stab you when opening the door; I've cut two jackets to date."—New Jersey contractor.

"Gas usage (8.5 mpg in town after 4350 miles) is excessive."—Pennsylvania industrial process control manager.

"My engine uses regular, but at 10 mpg in town and 13 overall it isn't economical."—Professional Pennsylvania wrestler.

"Bright metal across the dash throws reflections. The stylist who came up with this one should be boiled in oil."—Washington real estate man.

"The spun aluminum on the dash is very attractive, but also reflects sun into your eyes."—Nebraska florist.

*There's more to be said on the bright side, however; here are samples from owners' praises numbered six through ten:*

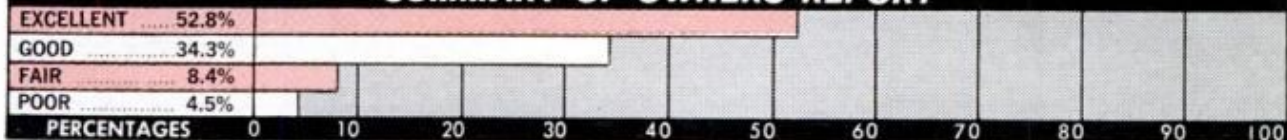
"I don't like bucket seats, but my Delta 88 has a front arm rest that can flip from almost-buckets to a regular style seat."—Maryland postal garage worker.

(Please turn to page 232)

← "We don't find this trouble on warranty claim records," says Olds

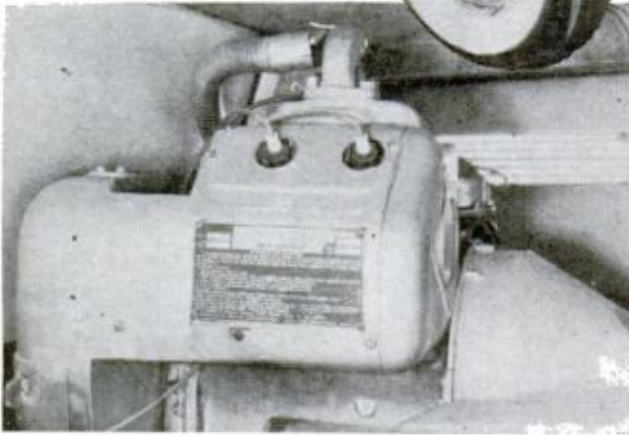
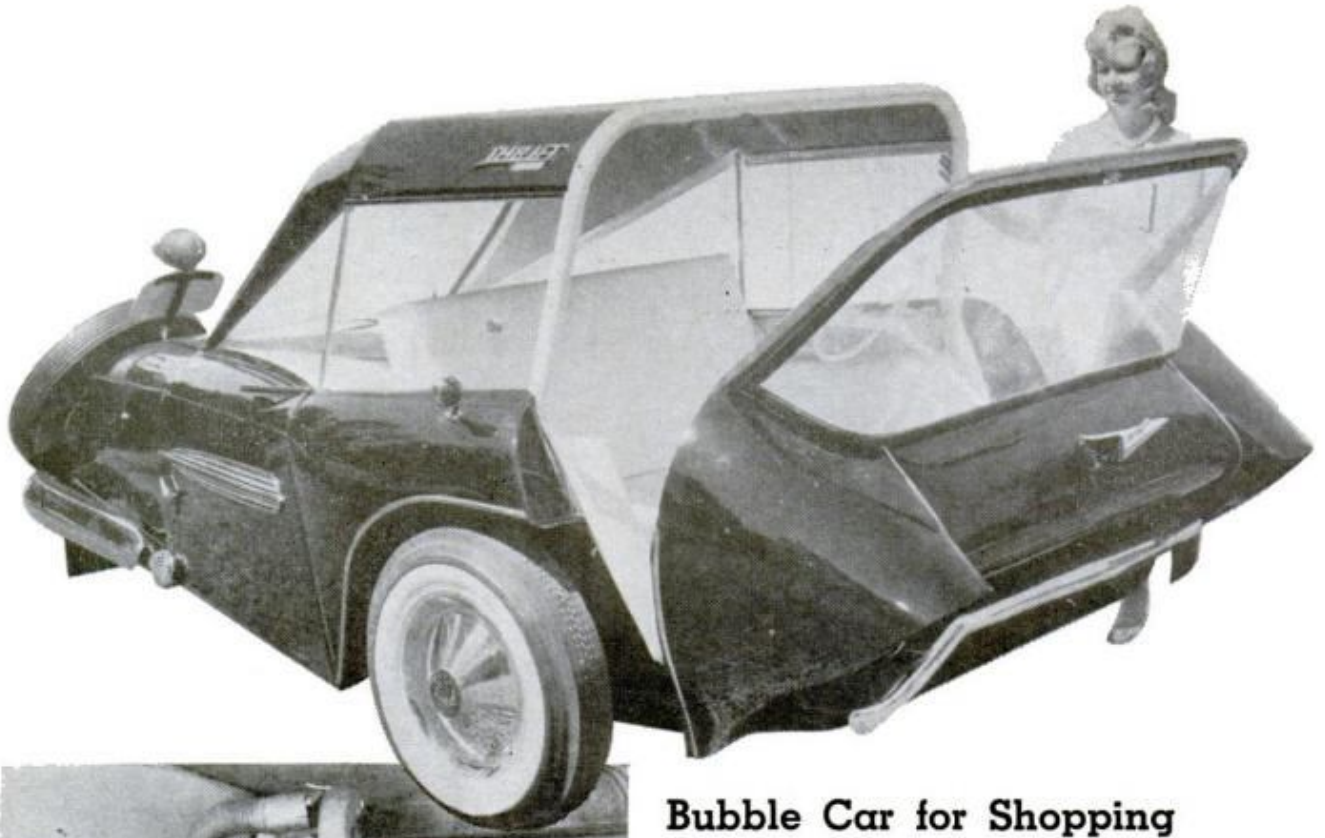
← "It's adequately hooded," says Olds

### SUMMARY OF OWNERS REPORT



<b>Best-liked features</b>		<b>Least-liked features</b>		<b>Is Oldsmobile family's only car?</b>	
Ease of handling	42.1%	Wind noise	22.4%	Yes	52.5%
Ride	35.0	Assembly and workmanship	18.6	No	47.5
Power, performance	31.2	Windows	9.8	<b>Make of other car</b>	
Overall design	28.5	Gas mileage	9.3	Chevrolet	10.4
Upholstery	18.0	Chrome on dash	7.1	Another Oldsmobile	9.8
Seats	13.7	Inaccurate gas gage	6.6	Ford	6.0
Comfort	13.1	Rattles and squeaks	6.6	Rambler	3.6
Transmission	11.5	Visibility	6.0	Falcon	3.3
Dashboard	8.7	Lack of roominess	4.9	Volkswagen	2.7
Driving ease	7.7	Rear-end styling	4.9	Pontiac	2.7
Roominess	5.5	Transmission trouble	4.4	Corvair	2.7
Front styling	4.4	Instrument placement	4.4	<b>Make of car traded in</b>	
Instrument panel	3.8	Lack of headroom	3.8	Oldsmobile	55.3
Roadability	3.8	Instability	3.8	Chevrolet	7.7
Dependability	3.8	Carburetor trouble	3.8	Pontiac	3.8
Brakes	3.3	Rear wheels show too much	3.8	F-85	2.7
Fastback styling	3.3	Lack of chrome strip	3.8	Rambler	2.7
Lighting	3.3	Styling	3.8	Chrysler	2.7
Steering wheel	3.3	Suspension	3.3	Ford	2.7
Visibility	2.7	Leaks	3.3	<b>Dealer service</b>	
Quietness	2.7	Paint	3.3	Excellent	61.7
Interior	2.7	<b>Fuel economy</b>		Average	29.0
Chrome	2.7	About as expected	66.1	Poor	7.7
Color	2.7	Better than expected	6.0	<b>Would you buy from him again?</b>	
Rear styling	2.7	Not as good	20.2	Yes	61.7
<b>Oldsmobile decision based on</b>		<b>Other car considered, if any</b>		No	8.7
Previous Olds ownership	48.1	None considered	48.6	<b>Buy another Oldsmobile?</b>	
Styling	21.3	Pontiac	20.2	Yes	78.6
Price	9.3	Buick	12.6	No	7.7
Power, performance	8.2	Chevrolet	12.0	Undecided	13.7





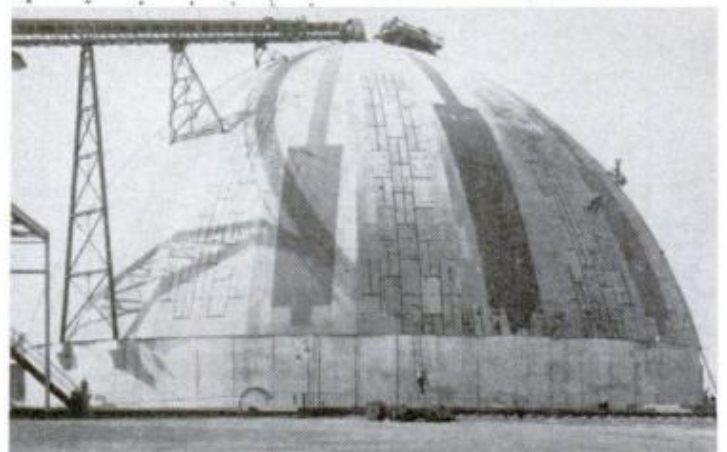
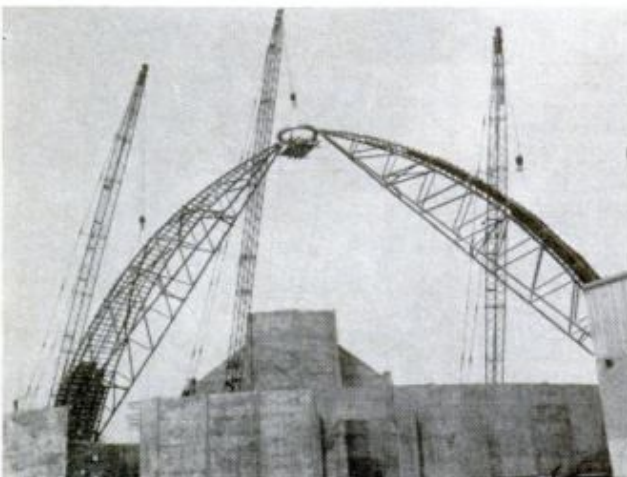
### Bubble Car for Shopping

The four-seat "Citycar" is designed for heavy traffic: Its 26-foot turning circle eases parking; its rear end is crunch-proof (thanks to outside-mounted spare), and its body panels unbolt quickly. The 90-inch Wisconsin air-cooled Four burns any grade fuel, even kerosene, and gives a 60-m.p.h. top speed. Designer Leopold Garcia of Bernallio, N.M., plans production in Germany next year. Price: \$995.

### Domed Roof Formed of Bowstring Trusses

Twenty-six wooden bowstring trusses alone support the dome of this storage building in Wyandotte, Mich., which employs a rooftop conveyor to spill bulk chemicals onto a huge mound on the 180-foot-diameter floor. Trusses were put up

two at a time, as shown. They were anchored on a concrete retaining wall and joined at the top with a 10-foot steel compression ring. Designed by the Weyerhaeuser Company, the structure is said to be able to withstand 75-m.p.h. winds.





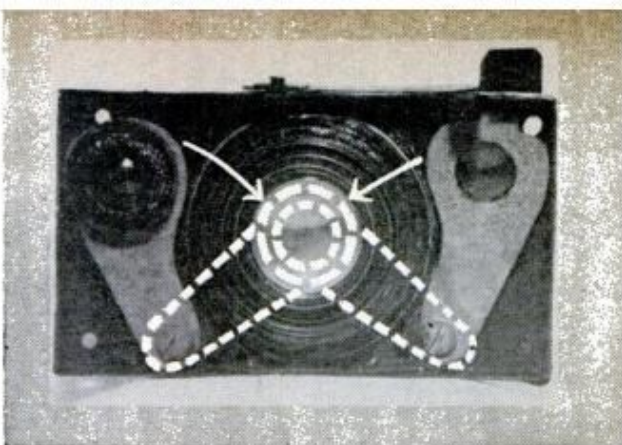


### Camera Has Built-In Telephotos

We recently previewed a hand-made prototype of the Multifocal Camera, a 35-mm single-lens reflex that gives four focal lengths (photos, right). To select a focal length, you flip either or both of two knobs, each of which moves an auxiliary lens (top right) into place to extend the focal length of the camera's normal lens. Inventor Leonard Westphalen says his system is more compact and simpler than quality zoom lenses.—Arthur Maher

### Electric Loader

Claimed to be more efficient than hydraulic power, electric motors operate a front-end loader with a 40-ton dipper, rooting it through earth and rock, dumping the load and powering the steering wheel. The earth-mover is made by R. G. Le-Tourneau, Longview, Tex.





# New Look in Keyless Locks

*They are pick-proof and child-proof. And you can change the combination whenever necessary*

**I**F YOU'VE EVER come home a bit late and found yourself without a front-door key, you'll appreciate one of the big advantages of the new keyless locks. Instead of having to rouse the little woman, all you do is punch a few buttons and, *click*, you're inside.

The makers of these locks point out other advantages, too:

- Since there's no keyhole, the locks are pick-proof. Skeleton keys are no threat.

- Combinations can be changed, should the secret of your lock be compromised. There are thousands of possible combinations to choose from.

- Pushing buttons is a lot easier than fumbling for a key when your arms are laden with groceries and the like.

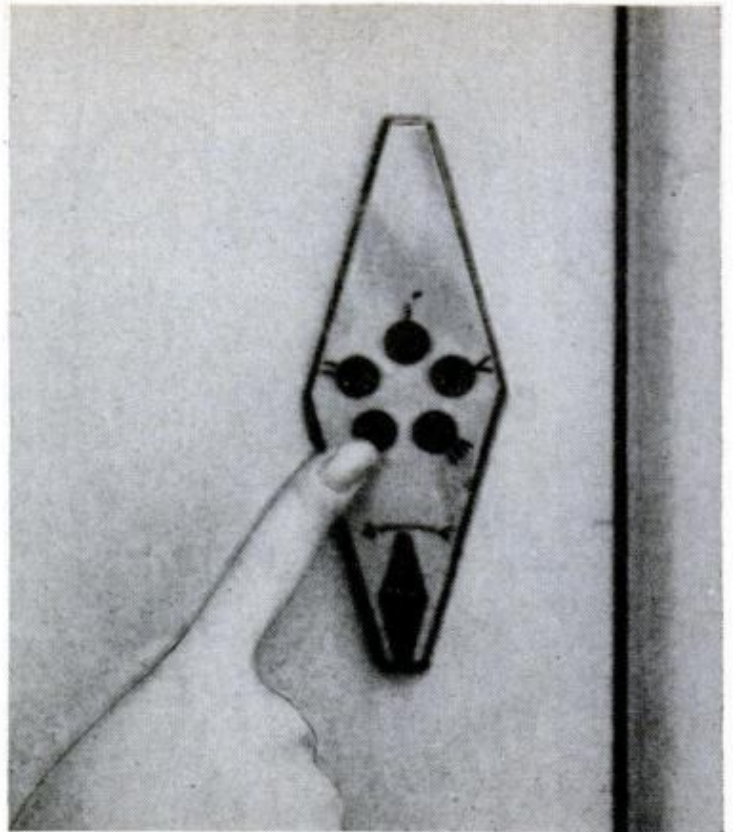
- The locks are child-proof and can be used on cabinets containing sharp tools, poisons, medicines, etc.

The Simplex Corporation has had a cabinet lock on the market for over a year. The same basic push-button mechanism is used in Simplex's two new door locks. They can be installed in wood or hollow metal doors from  $1\frac{3}{8}$  to  $1\frac{3}{4}$  in. thick (and up to  $2\frac{1}{8}$  in. with an adapter kit). Both models are rim-mounted and can be installed in either right- or left-hand opening doors.

Another outside door lock is the Preso-Matic, which features 10 numbered buttons, four of which must be pressed in correct sequence to open the lock. The bolt and locking mechanism are reset by hitting the reset button.

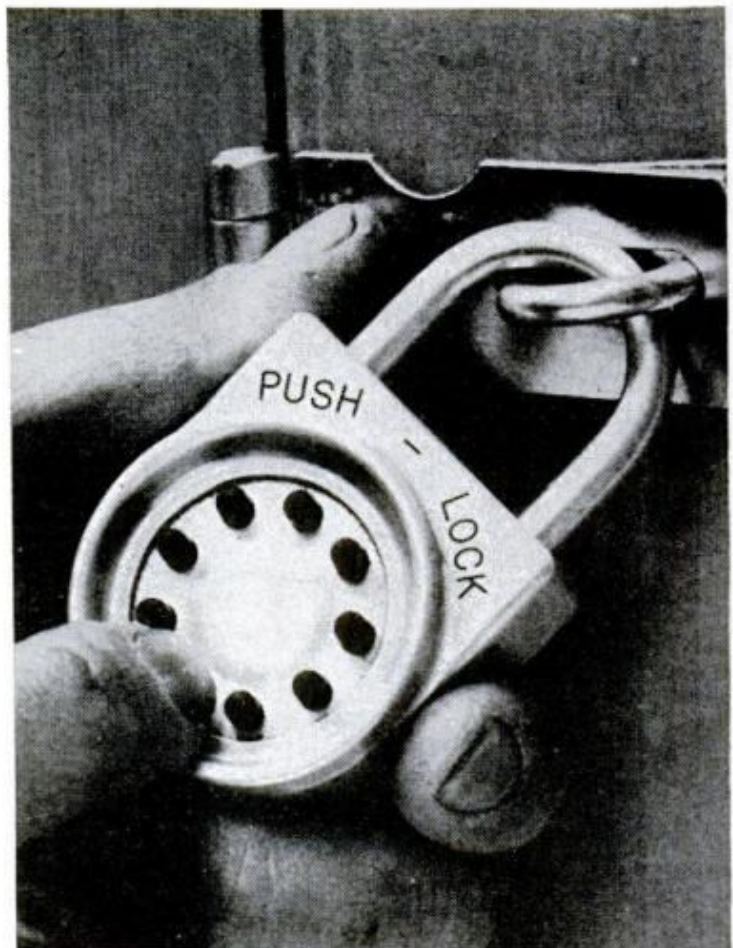
A push-button padlock, boasting of 1000 different combinations, also is available. All it takes to change the combination is a screwdriver and a few minutes' time.

Car keys may be on the way out, too. Right now at least one company is working on combination ignition locks.

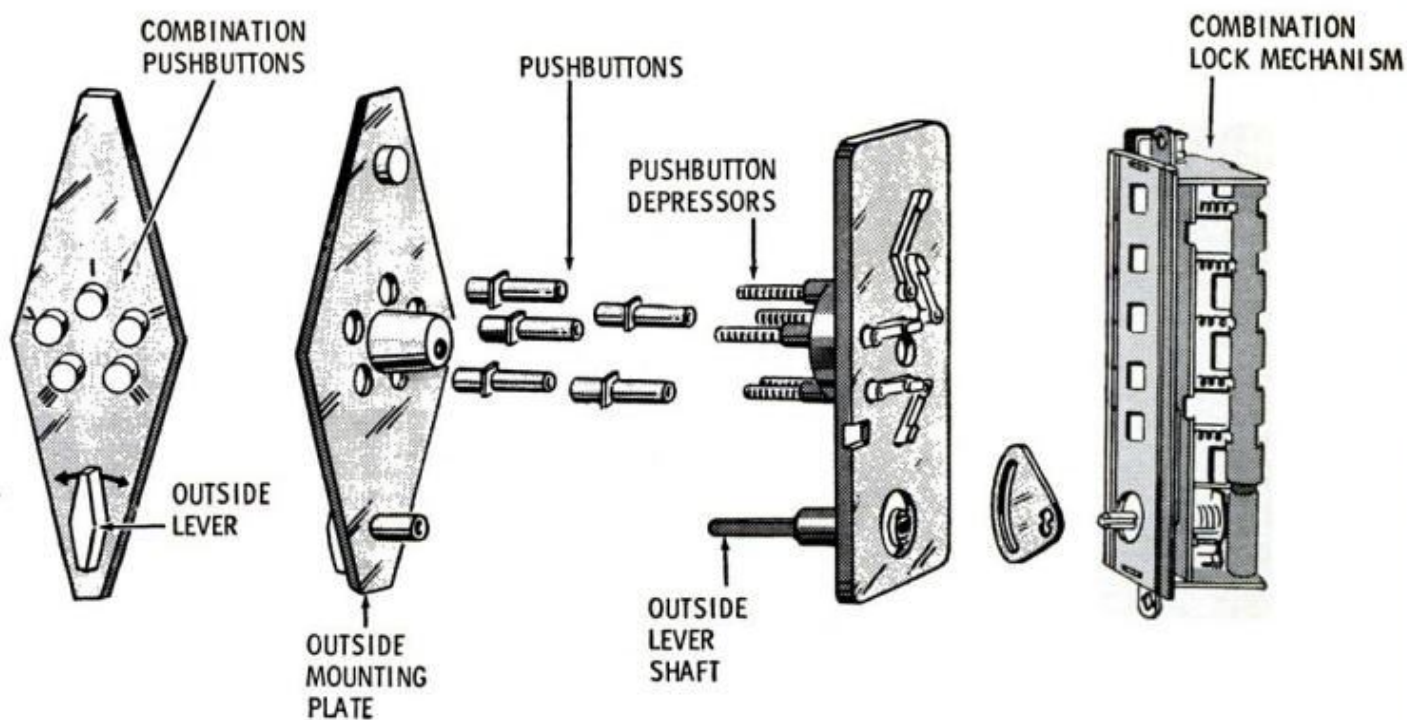


**THE SIMPLEX** lock is opened by pushing, say, three different buttons in a given sequence. Then you turn the small knob to the right to pull back bolt

**VULCANA** padlock eliminates the problem of lost keys and is easy to open in the dark. The maker says the lock offers 1000 possible combinations





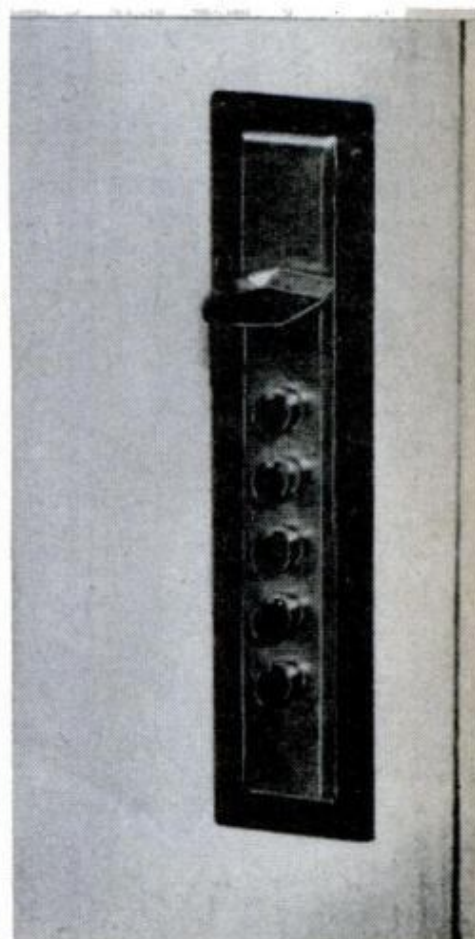
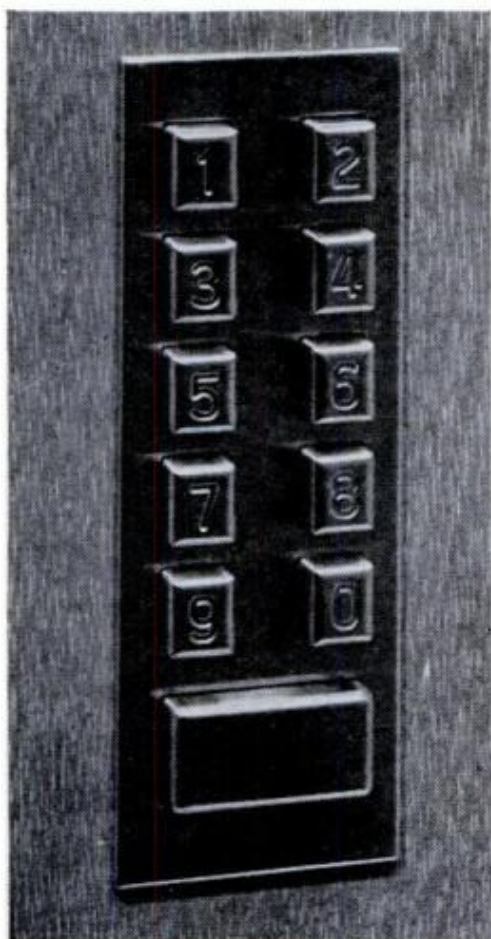


**THE HEART OF THIS** lock is the combination chamber (far right), which permits setting a new combination without the use of tools or removing lock from the door. From one to five numbers can be used in combination

**UP TO 10,000** different four-number combinations are incorporated in the works of the Preso-Matic

**FLIP** small night latch on inside plate of Preso-Matic and the mechanism is made inoperable

**CABINET** lock: Nylon buttons don't show wear and thus give away combination to snoopers

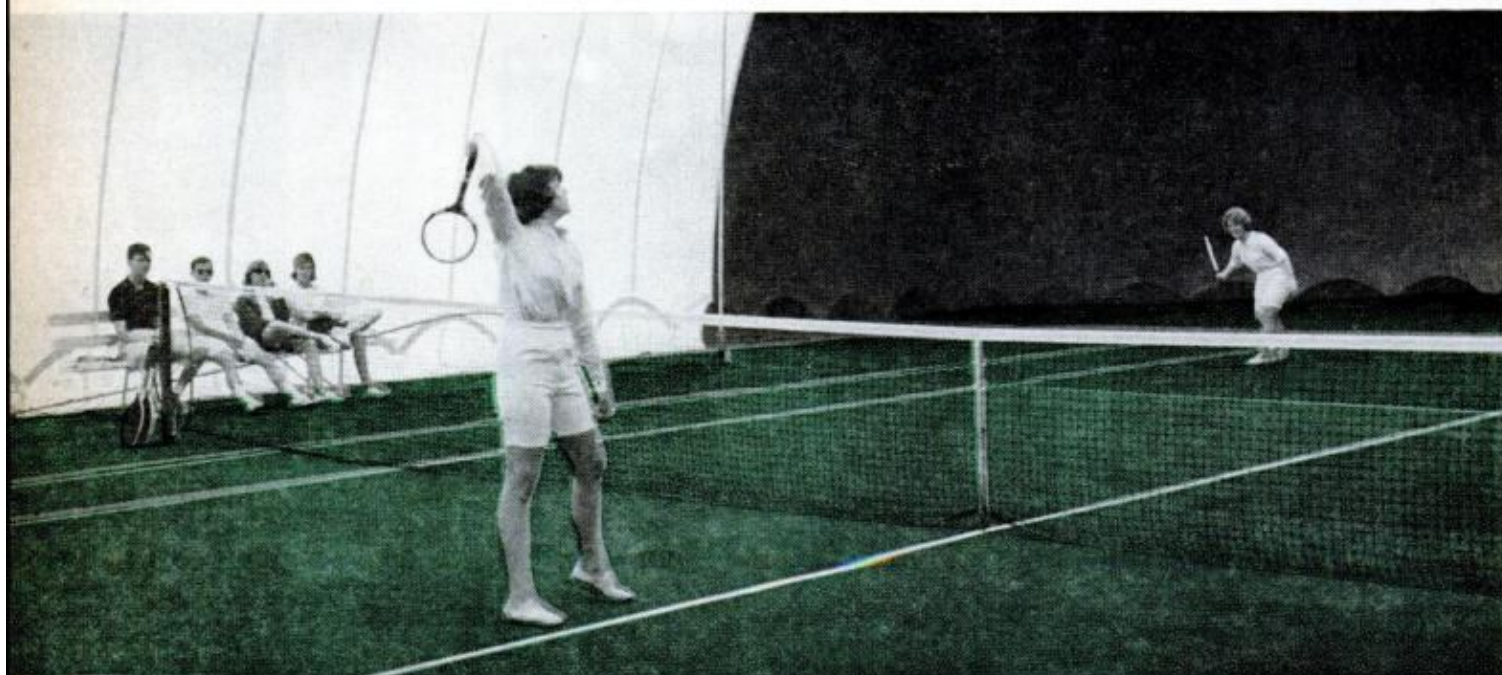






**LAWNS THAT NEVER NEED MOWING:** Colored gravel replaces grass on many lawns in Sun City, Ariz., retirement-home community built by Del E. Webb Corp.

**CHEMISTRY IMPROVES ON NATURE:** Tennis courts covered with synthetic vinyl turf are said to have better playing characteristics than those of real grass





# Fresh Ideas For Easier Homeowning

Green gravel, plastic grass and adjustable weatherstrips are a few of these worksaving features

By Richard Dunlop

**P**ARADOXICALLY, some of the youngest ideas in easy living are coming out of houses and communities built for the aged.

Since about the mid 1950's, research agencies, both commercial and non-profit, have been taking a long, hard look at traditional housing concepts to find out what changes could, for example, save Grandpa a fainting spell caused by stooping to plug in a lamp. Or help him in and out of the bathtub without risking a dangerous fall. Or grant him the pleasures of a luxurious green lawn without maintenance work.

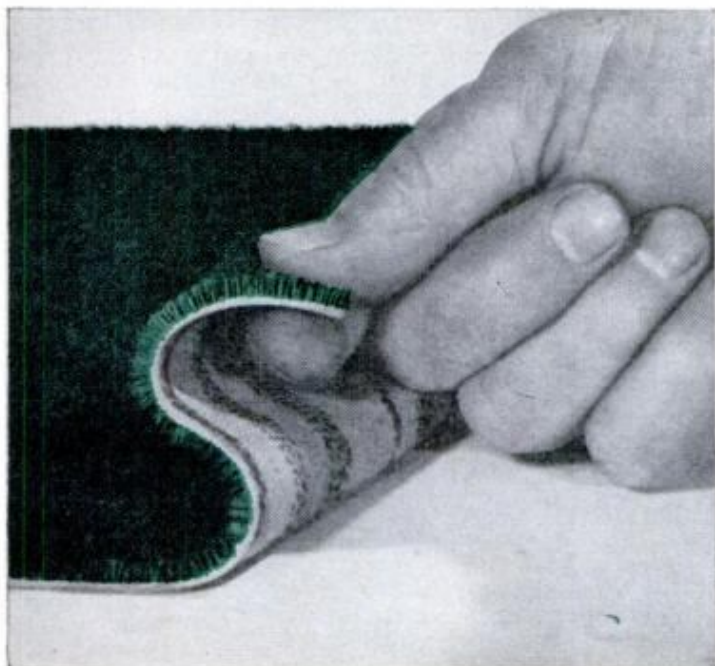
But the result has been just as beneficial to younger home buyers as it has been for the rocking-chair set. Young marrieds, for example, were quick to see that a house made safer and more convenient for an older person is safer, too, for a toddling child. And what housewife will pass up a chance to avoid many of the deep-knee bends associated with housework? Perhaps for that reason, Frank Mackle, a Florida-based retirement home builder, reports that many of his buyers are young married couples.

Inevitably, one area that has come under the innovator's critical eye is the lawn. "That lush, green grass is a joy to behold," he admits, "but it requires a lot of work." Result: artificial grass.

In one Arizona housing development, buyers can choose between real grass and low-maintenance lawns consisting of patches of green gravel. The gravel is



**BELOW, SURFACE OF THE TURF** resembles tiny blades of grass. This material is suitable for year-round exposure to weather. It's set in place with epoxy







**KITCHENS ARE EASY** to clean in prefabricated houses offered by National Homes Corp. Here, a housewife washes a cabinet drawer molded from plastic

nothing more than concrete aggregates treated with dye. Gardening buffs may gnash their teeth in horror, but the effect is realistic enough for the elderly suburbanite who prefers a Saturday afternoon on the golf course, to one spent behind the lawn mower.

On the other side of the country, in Boston, the American Biltrite Rubber Co. has raised the psuedo-grass business to a science. It has developed a green vinyl material called Neo-Turf. At first glance, this product looks like a green carpet. But closer examination shows a surface made up of tiny grass-like blades. Spread Neo-Turf over a patch of soil, and you have a "lawn" without weeds, without gophers, that never needs mowing, watering or fertilization.

For over a year now, students at the Forman School, in Connecticut, have played tennis on a court of vinyl grass. Another such court is to be seen at Montclair, N.J. YMCA. Experienced players judge the courts "excellent." Footing is sure, permitting fast, sharp turns. And, because the surface is smoother than grass, balls tend to bounce truer.

Stepping back inside the house, we find the quest for the good life shunting aside many old concepts of design and layout. In the kitchen, for example, easy-to-clean plastics now appear on cabinet facings, as well as countertops, and are even being used inside the cabinets. By lowering wall cabinets to 63 inches from the floor,



**BATHROOM OF RETIREMENT HOME** has grab bars near tub to help bathers climb in and out safely. At left of photo is built-in seat for use while dressing

and raising under-counter shelves to 27 inches from the floor, we eliminate many of the daily bend-and-stretch calisthenics that have given not only Grandma, but Mom and daughter, many a backache.

Moving to the sink, why not place it six inches lower than the standard 34 inches? By so doing, and adding a desk-like knee hole, we let Mom sit down while washing the dishes.

Other changes being made in the kitchen include making stove controls larger and easier to read. Some manufacturers have begun locating the controls at eye level. Again, less stooping for Mom.

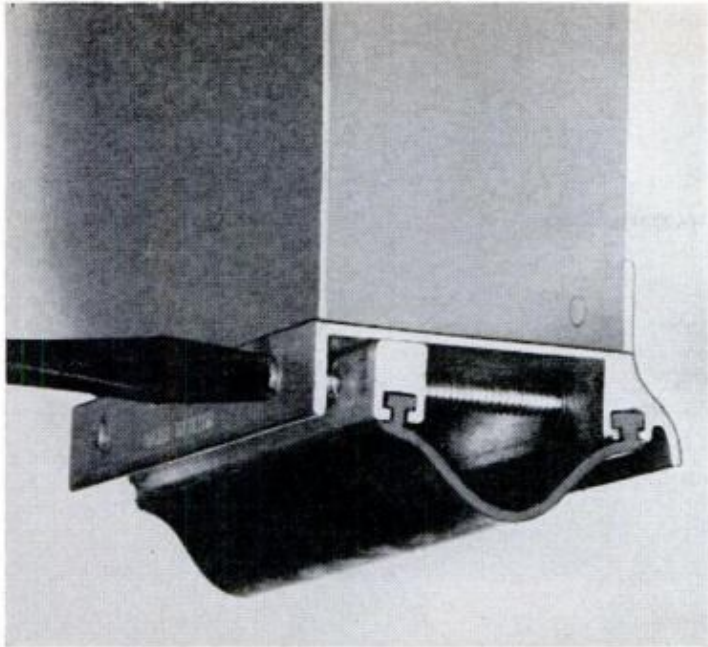
What about the bathroom, which is one of the most dangerous areas of the home? The safety measures being introduced here are as much a boon to children and pregnant housewives as to old timers.

One of the most common household accidents, particularly for senior citizens, is to slip and fall in the bathtub. Last October, this happened to former President Harry S. Truman, resulting in two broken ribs, shattered eye glasses and lacerations of the right eye.

Several changes are being made to lessen the danger. For example, some builders install grab bars on the wall behind and/or at the head of the tub. Another idea being tried by the Kohler Co. is to break up the smooth surface on the bottom of the tub by texturing it. The aim here, of course, is improved footing.

New York University's Institute for





**A TURN OF THE SCREW** expands vinyl insert of this door-bottom weatherstrip to maintain tight seal. Device represents trend to simplified maintenance

Physical Medicine and Rehabilitation, in designing retirement homes for St. Petersburg, Fla. builder Joseph Rosati, suggested surfacing the bathroom floor with terrazzo containing carborundum chips to keep feet from slipping.

Safety experts and doctors maintain that a non-skid shower with a seat and hand spray is a lot safer than a conventional tub. But, since most people, young and old alike, want a tub as well as a shower, Rosati provides a flexible hand spray and a built-in seat for the tub.

Other changes taking place in the bathroom are placing a built-in seat next to the tub, to be used while drying or dressing after a bath, or re-locating the toilet next to the tub so its folded-down seat can be used for the same purpose.

Because older people spend much time in the living room, it takes on new importance. Plans for the House of Freedom, designed by architect Robert B. Waring and co-sponsored by the American Plywood Association, the American Association of Retired Persons and the National Retired Teachers Association, call for a minimum of 140 square feet of space in the living room.

Built-in bookshelves and game storage space—previously thought proper only in the family room—are specified, along with cathedral or beamed ceilings to save construction costs while creating a feeling of spaciousness. Sometimes, sleeping alcoves are added to the living room. The alcoves



**NO BEND, NO STRETCH** is the aim of retirement-house kitchen planners. Lights pull down and cabinets and ovens can all be reached without stooping

give more space during the day, and can be screened off at night as a "guest room."

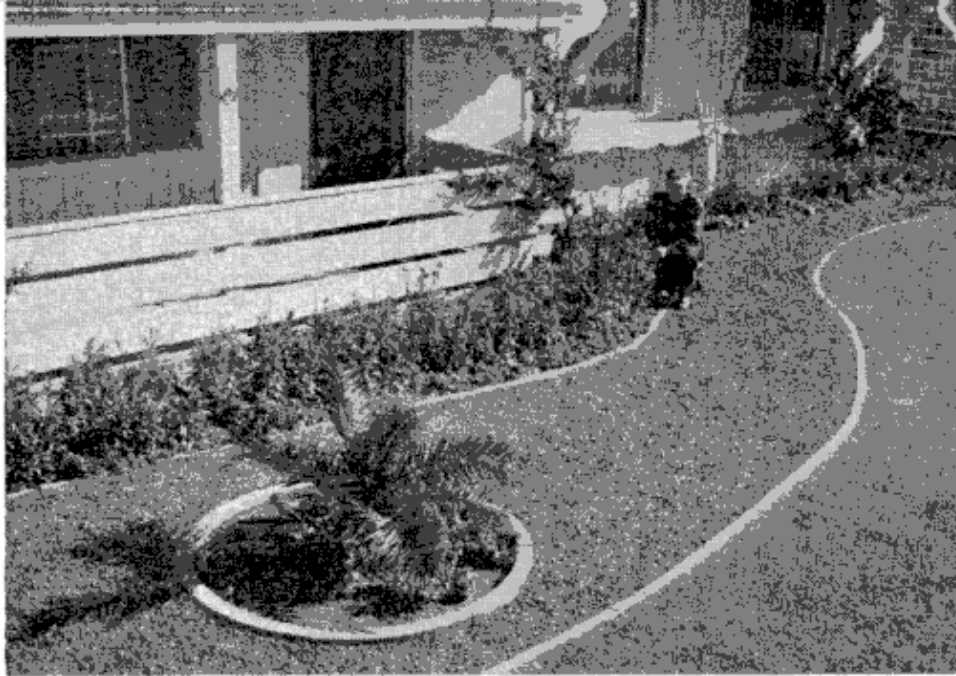
Geriatric research is also making the bedroom more convenient. A minimum clear space of 18 inches on three sides of the bed is considered necessary for easy bed making, and five feet of floor space should be provided on one side of the bed for possible use of a wheel chair or dining cart. For younger housewives, that extra space means the bedroom can double as a sewing room.

A handy change being made in closets of retirement homes is to place some of

**SELF STORING SASH** are now appearing on storm doors, as well as windows. Housewives need only raise a window sash to allow use of screen panel







**COMBINATION LAWN** has broad strip of green gravel bordering a patch of natural grass. Gravel blends visually with the grass, prevents it from spreading into the adjoining flower garden

the clothes bars at half the usual height, which would also bring them within easy reach of children.

No aspect of house design, no matter how insignificant it might seem, is ignored in the quest for safer, more carefree living. Researchers have even gone so far as to prove that hexagonal or octagonal door knobs are easier to turn than round ones, although some elderly people prefer lever-type openers.

Doors in retirement houses are made at least three feet wide and, except for exterior doorways, have no raised thresholds. Hallways are made four feet wide. These dimensions facilitate passage of a wheel chair. But they also permit easy moving of furniture and appliances.

Have you ever stopped to realize how inconvenient the usual placement of electrical outlets on the baseboard can be? In retirement homes, some builders place the outlets at waist level, where they can be reached without bending over. Other builders place the outlets 18 inches above the floor, which makes them almost as accessible, but doesn't offend the buyer's sense of tradition. Switches, too, are being relocated. Placed a foot under the usual four feet, they can be operated by children and old folks with greater ease.

To prevent accidental falls, experts insist that all floors in a house should be made of non-slip unglazed tile, cork, composition flooring or wood. And, for the comfort and good health of old people and kids, floors should be insulated.

Another neat safety trick, from color consultant Jo Ann Zimmerly, is to make stairs easier to see by painting treads and risers different colors. And, to improve

footing on exterior or basement stairways, some builders coat the treads with a mixture of sand and deck paint.

Finally, there's the subject of home maintenance. Manufacturers have long produced innumerable materials, such as plastic laminates, prefinished sidings and longer lasting paints, that lessen the heavier maintenance chores. But recent years have seen an increased emphasis on products that simplify the day-to-day nuisance jobs. For example, Central Metal Strip Co. recently introduced an aluminum-and-vinyl weatherstrip for door bottoms, which permits quick readjustment of the seal should warpage of the door or wearing of the threshold admit a cold draft. All you do is turn one of several adjusting screws. This squeezes the sealer strip, pushing it tightly against the threshold to renew the lost contact.

Fortunately for us all, researchers continue their search for ways to make life easier and more pleasant for the elderly. And, in view of what's been accomplished so far, we can expect tomorrow's architects to borrow more and more heavily from retirement house designers. But, looking at the convenience and safety of today's senior-citizen housing, who among us will object?

After all, says Alexander Kira, Assistant Director of the Cornell University Housing Research Center, "the aged are no different than the rest of us, and the house properly designed for an aged person would, in most respects, be equally desirable for his grandson. . . . We may find that paying attention to the needs of the elderly might result in good housing for us all." ★ ★ ★



## Four-Finned Ferry

Powered by turboprop engines, a new Navy cargo plane can carry 40 passengers or 7½ tons of parts and land on carriers deployed in forward areas.

It will increase both the range and capacity of supply aircraft, with a range of 1300 nautical miles at a maximum cruising speed of 300 m.p.h.

Made by Grumman, its Navy designation is C2A.

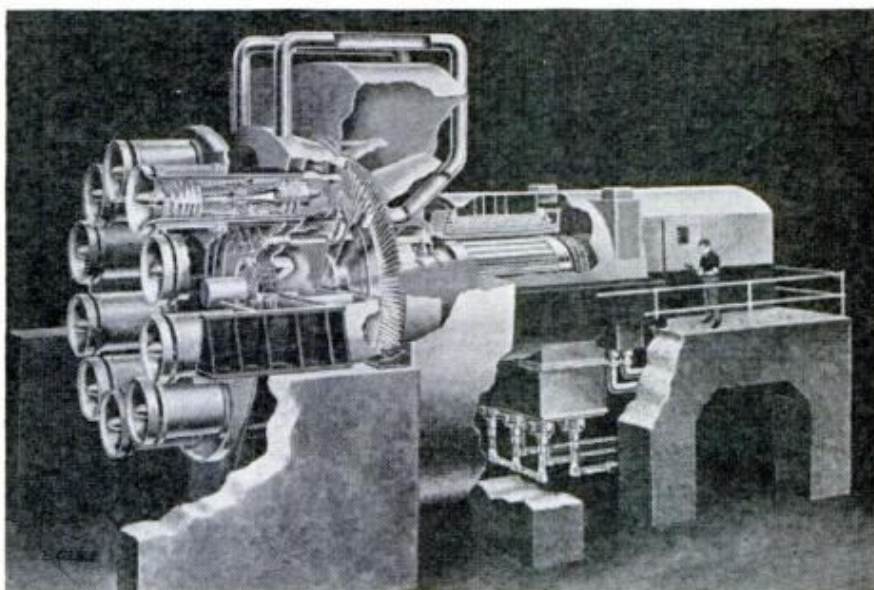


## Ten-Jet Generator

Ten aircraft-type jet engines arranged in a circle, will drive a generator now being built by General Electric Company.

The jets exhaust into a turbine, driving a hydrogen-cooled generator at 1200 r.p.m.

The 100,000 - kilowatt unit will be installed this spring at the Cincinnati Gas and Electric Co. It's said to be the first cylindrically arranged jet turbine.



## 12,000 Bits

Over 12,000 pieces of wood were inlaid in a 36-inch tabletop by a Texas teacher to form a map of Texas.

H. H. Wright of Brenham, Tex., who made the table, got a piece of wood from an historic spot in each Texas county and then cut the wood to the shape of that county.

Among the wood bits are pieces from the rafters of the Alamo (Bexar County) and from a covered wagon (Lipscomb County).

All the work was done with a pocketknife, razor blade and small chisel.





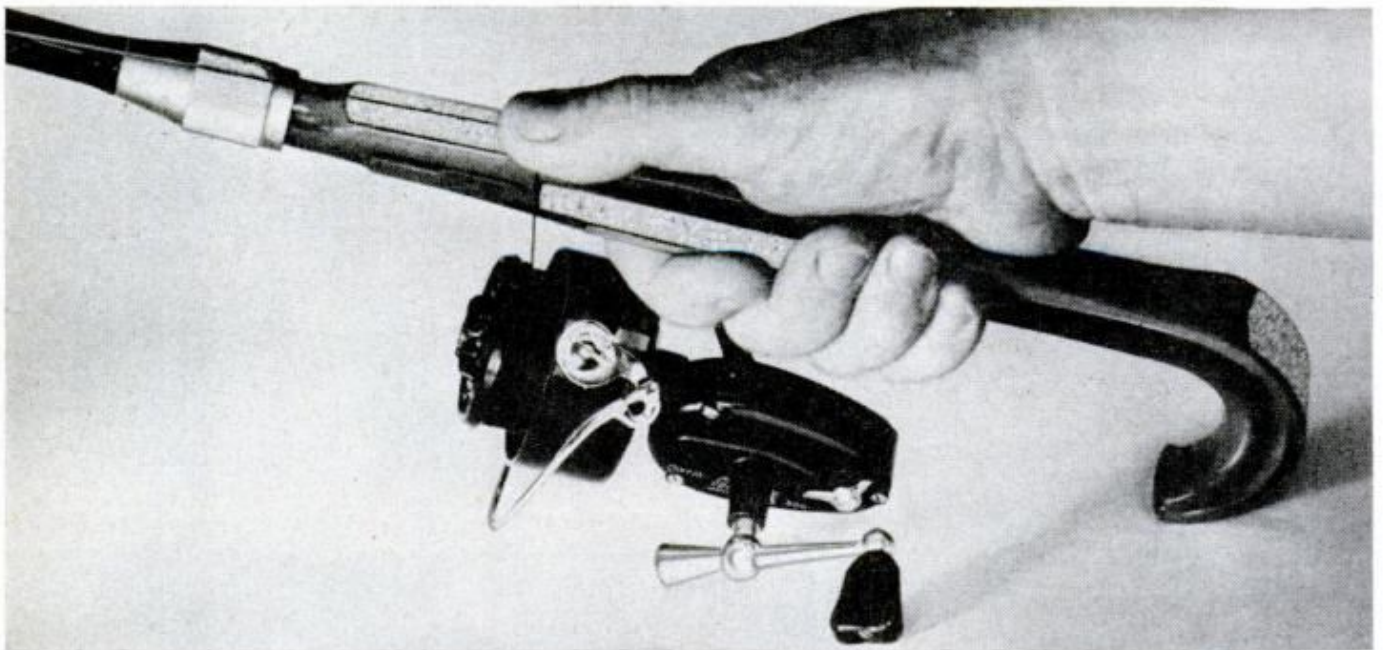
# Want to Be a



**I**T WAS SOME 25,000 years ago that a Cro-Magnon sportsman fashioned a hook from the bone of Teraton, attached it to a gut line and put aside the problems of meat gathering for a day of angling in a forest lake.

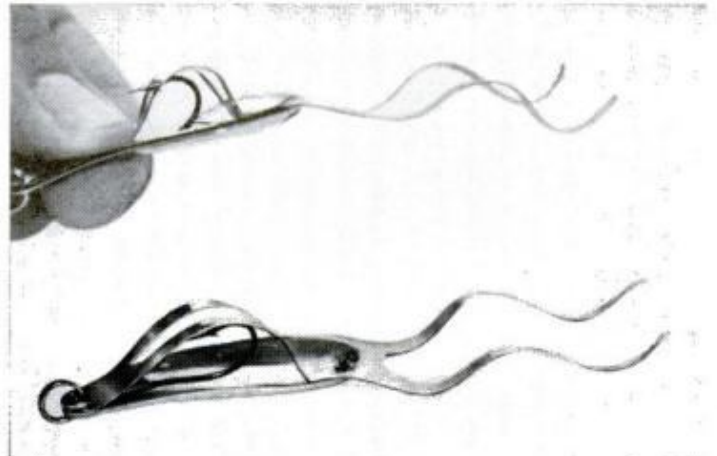
Fishing is still basically a matter of putting a hook into the water and hoping that some fish will be foolish or hungry enough to bite it. And the universal appeal

**CURVED BUTT** on this fishing grip by Magnus Corp., 100 Naylor Ave., Livingston, N.J., rests against the body to prevent fatigue in fish-fighting. The flat sides eliminate rolling, and clip on the side lets the fish take the line in controlled stages



**PANFISH KNIFE** is specifically designed for crappies and bluegills. The short, triangular point is excellent for gutting and cleaning these difficult smaller fish and the serrated back is for scaling the fish. It costs only \$1.50 from Kinfolks, Inc., Perry, New York

**WEED DEFLECTOR** on the Sneaky Neeky is a pliable metal foil that depresses with pressure to expose the hook. The trailing tails give the lure an erratic action in the water. It is priced at \$1.49 from TVL Products, 630 Cedar Ave., Uniondale, N.Y.





# More Compleat Angler?

to men of high and low station in every corner of the world is the return to the primordial, the reflective calm that is part of spinning in a lake or dropping a fly in a mountain stream.

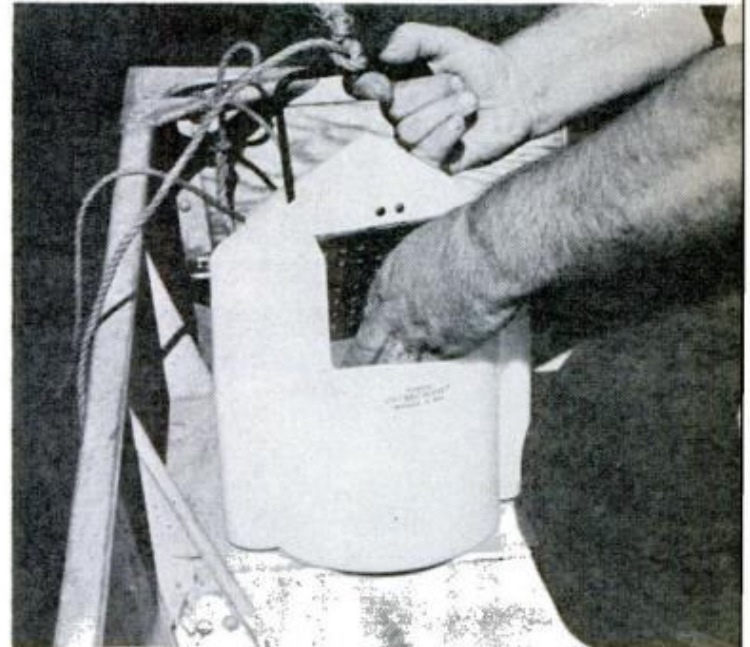
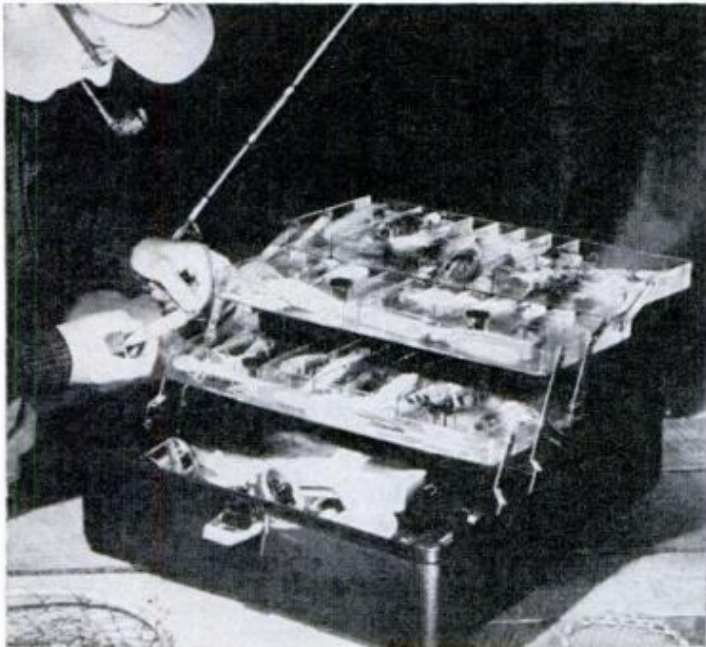
But the equipment—as a visit to any tackle store will testify—has changed and multiplied. And most of it has added something to the sport. Fiberglass has made it possible to have a strong, top

quality rod at a moderate price. The close-faced spinning reels have made it easy for a novice to cast like an expert. A little thing like a hook disgorger has taken a lot of the cussin' out of the sport.

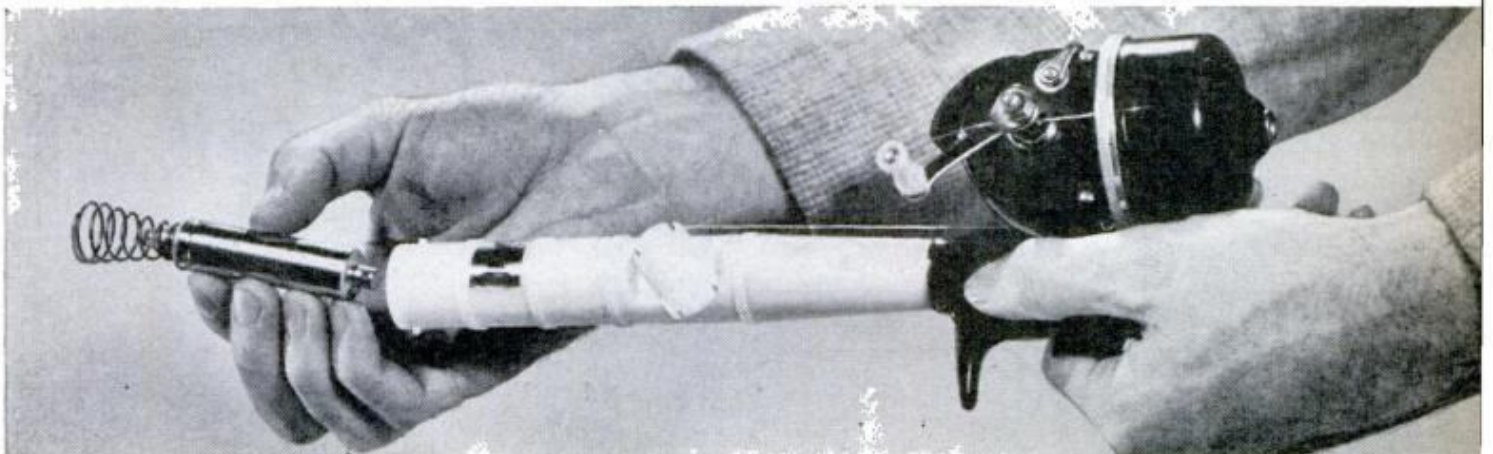
Lures seem as numerous as asteroids and just as mysterious. But they catch fish. Most are sleek and colorful and some of these are famous, but there are others like the Texas Hootie, which looks like an

**NIGHT FISHERMEN** will welcome a tackle box that lights up. Made by Old Pal, Inc., Lititz, Pa., and priced at \$24.95, the box has three fold-out trays of clear plastic equipped with four small lights that operate off ordinary flashlight batteries

**TROLLING BUCKET** for live bait has air chambers that float it horizontal with the door out of the water, making it easy to reach in for bait. Holes in the bottom admit fresh water. It sells for \$4.95 from Cosom Corp., 6030 Wayzata Blvd., Mpls., Minn.



**SIGNALLING A BITE** when fishing in the dark, a plastic rod handle is equipped with a bulb and penlight battery. After line is cast it is pulled back and inserted in a notch on a small cam. A tug on the line moves the cam, activating the battery, and the light flashes in the handle. It is priced at \$4.95 from Kamp Products, 918 Blackhawk, Rockton, Ill.







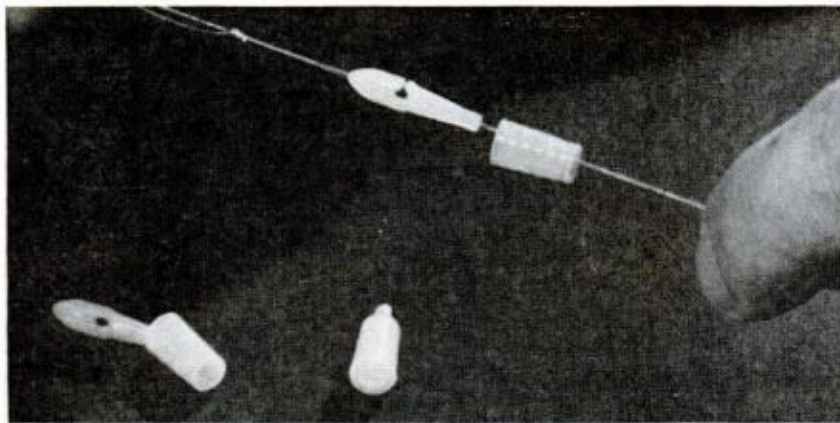
**FIFTEEN TOOLS** are combined in the Fisherman's Pliers, ranging from a knife blade, wire cutter, hook hone to a unique device for opening split shot. Available from Kilmer Co., 1504 Dodge, Omaha, Neb., and Corcoran, Inc., Stoughton, Mass. for \$5.95



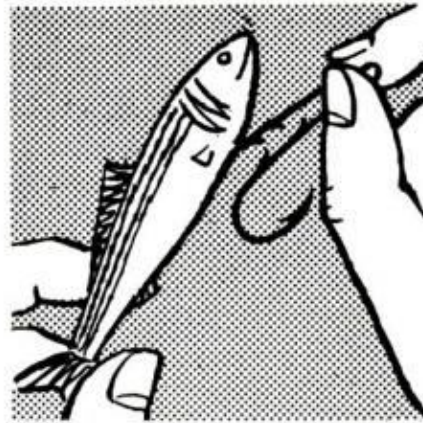
**BARBLESS HOOK** features a locking device to make it difficult for a fish to throw the hook once it has been set. Named Kant-Thro and priced at \$1 for a half dozen by Farrell Specialties, Neosho, Mo., it comes in sizes for lunkers and for pan fish



**FLY TYING FOR BEGINNERS** is made easy and inexpensive with a kit that is offered by Worth Fishing Tackle Co., Stevens Point, Wis. for \$3.25. The kit includes a metal vise, cement, thread, a wide variety of feathers, and step-by-step instructions



**LINE LEADER CONNECTOR** is a tiny plastic device to eliminate tying leader to the line. Line is doubled and slipped through a sleeve (above right) and over a slot in an insert. Leader is looped over opposite slot and the insert is pulled tight into the sleeve. They cost 49 cents for six from Meinzingler & Rade Co., Livonia, Mich.



**BOBBY PIN HOOK** is a barbed pin on a hook that is inserted into the body of live bait such as minnows or crickets. Six hooks cost 50¢ from DACCO Prod., Ridgecrest, Colo.

old mop on a hook, that are local legends. Most new lures are oddball gimmicks or copies and innovations of existing lures. Some of the innovations seem practical. The Fred Arbogast Co., for instance, is adding a flocked (furlike) finish to the Jitterbug and the Hula Popper, and the Hula Dancer now has weedless hooks.

Knowing depth and water temperature adds to the pleasure of fishing and Vexilar

Engineering Co., Box 6286, Minneapolis, Minn. has put out a Fish Finder for \$3.95 that shows temperature and also records depth through water pressure on the instrument. Practical items like this will always find a corner in the tackle box.

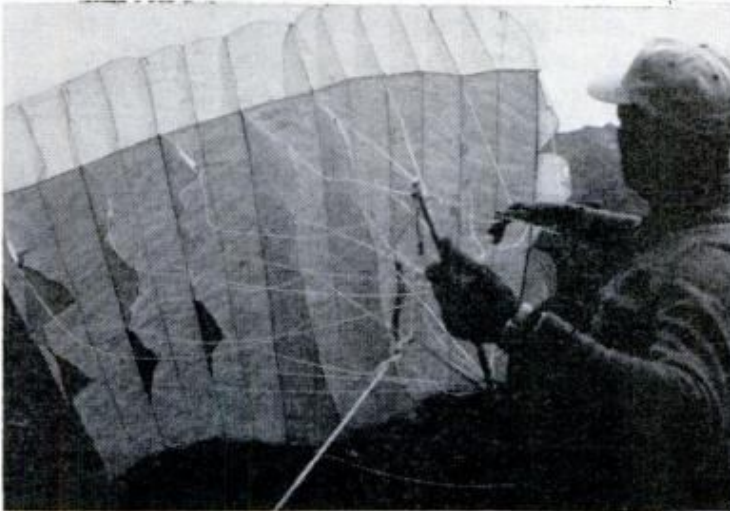
It is common to scoff at fishermen's gadgetry, but Mr. Cro-Magnon would have happily swapped his bird bone for a weedless hook.—Stuart James



## Flying Mattress

High-altitude cloud seeding is being studied with the aid of a rectangular stickless kite that carries scientific instruments up as high as 14,000 feet.

Ordinary kites are too fragile and balloons, aircraft and parachutes won't stay put. But the stickless kite—made of nylon and dacron—is stiffened by the wind. Its designer, Domina Jalbert, calls it "a bunch of wind socks sewn together." The smallest size (7 pounds) can lift 100 pounds, and the largest several times more.



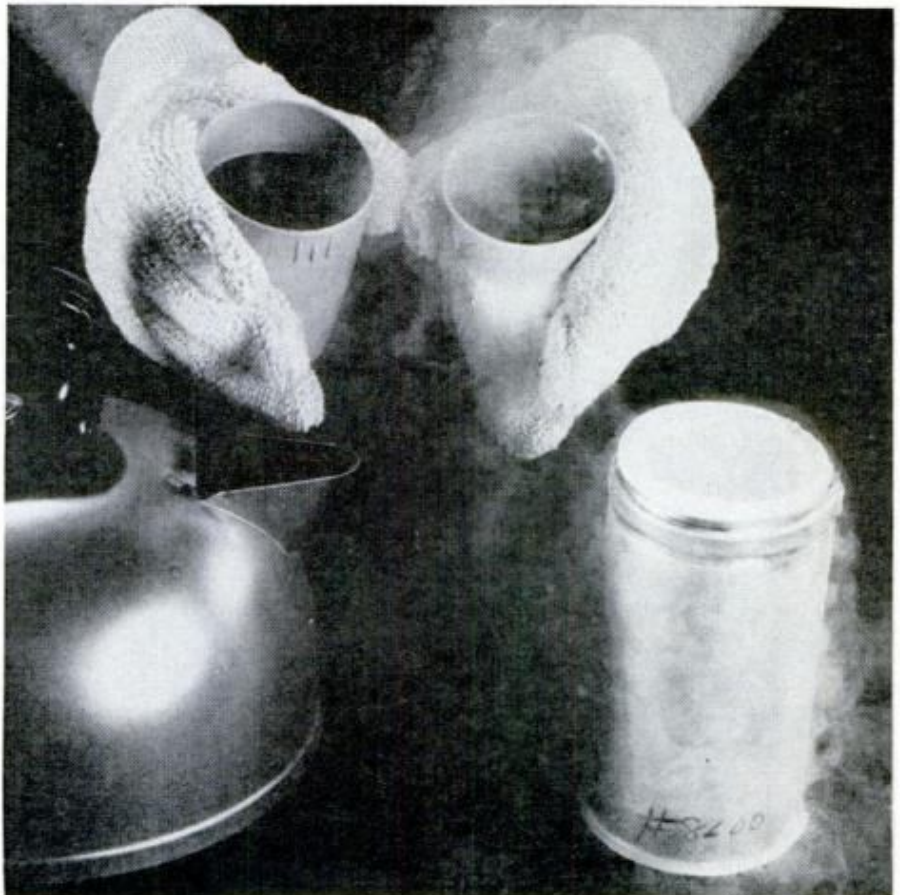
## For Hot or Cold

Plastic drinking cups, which remain strong and "squeezable" even in extreme heat and cold, demonstrate the properties of General Electric's new PPO polymer.

The cup at the left in the photo is filled with boiling water (212 degrees F.) while the one at right is full of liquid nitrogen (320 degrees below zero).

Among products which can be made from the new plastic are surgical instruments which are lightweight and can be sterilized repeatedly.

The plastic is a product of a new chemical technique, "polymerization by oxidative coupling."





# Splashy Ending to Roller

*Snowless summers don't stop Norwegian jumpers; they don't wheel boards and land in lake*

**By Pat Snook**

**I**T WASN'T WARM when I visited Oslo, Norway, last August, but it wasn't snowing either, so I was a little startled when a friend asked if I was going out to watch the ski jumping.

"Without snow?" I asked.

"Sure, we put wheels on skis, extend the jump out over a lake and jump in."

I should have figured. After all, this was

the land of the Vikings, and when hard-headed Norwegians make up their minds to do something, well that's it. No snow wasn't going to stop them from skiing.

Sure enough, on Sunday they jumped. At the edge of a lake they had erected a special jumping ramp. About 200 feet long, with a vertical drop of 100 feet and the end positioned about 20 feet above the water's edge, it looked formidable.

The ramp itself was wood, with a tubular steel understructure. Down each side was a raised track about an inch square. At the top were metal handrails.

The swimming-suited skiers climbed up

**SKI RAMP** is wood with tubular-steel understructure. Inch-high side runners form track. Two-hundred feet long, ramp has vertical drop of 100 feet

**SKI JUMPER** assumes same positions on rollers as he would on skis, crouching as he comes down ramp and windmilling arms for balance as he leaves it





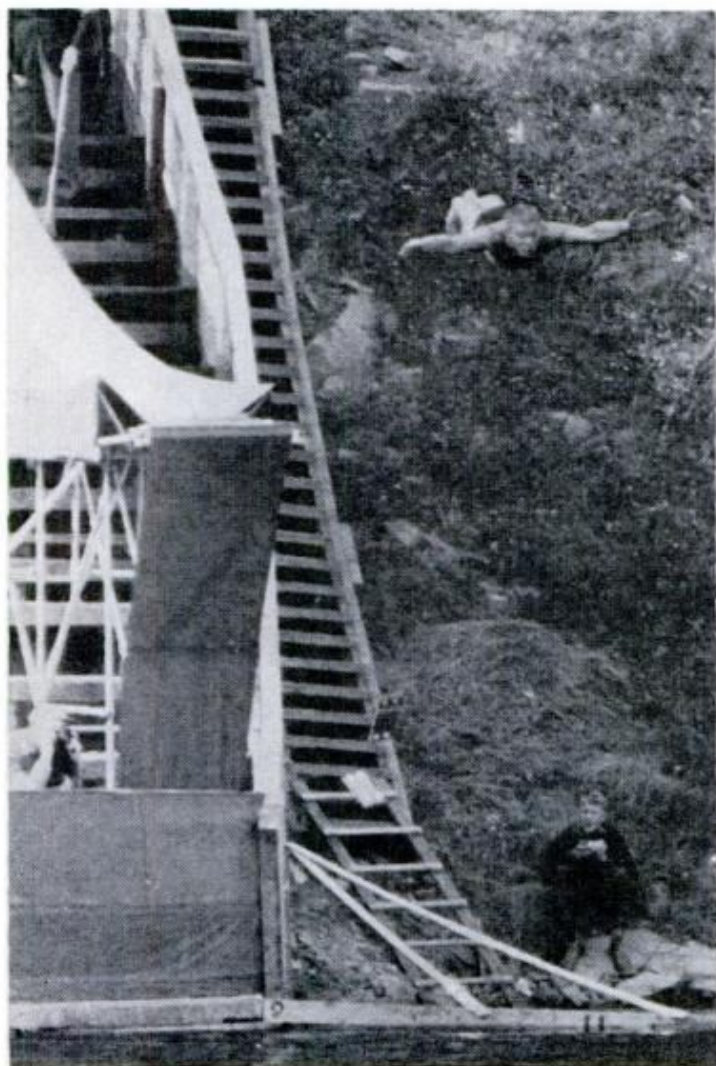
# Ski Jumping

and positioned themselves on their "skis," nothing more than 2-feet-by-6-inch-boards with nylon rollers. Raised abrasive-surfaced blocks served as footrests.

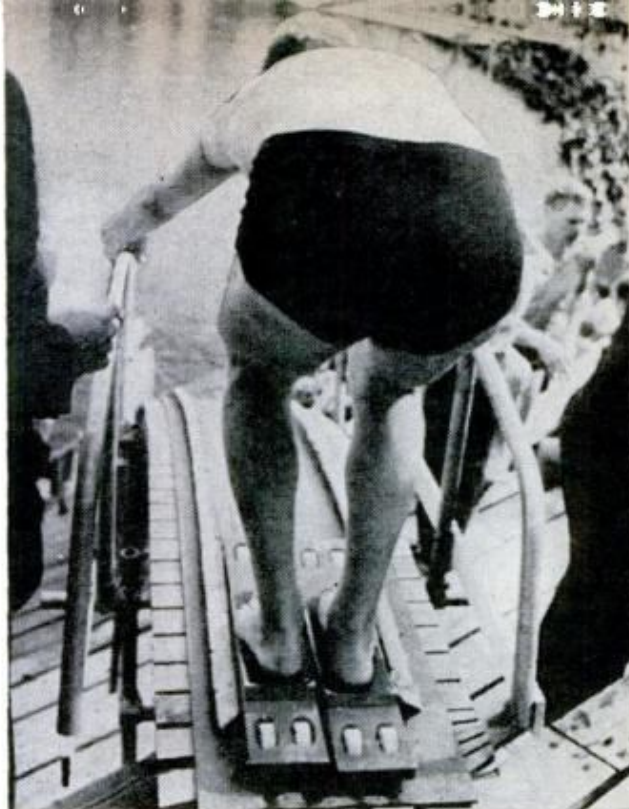
In position, each man gave a mighty heave and rocketed down. It looked like an invitation to disaster just to stand on those unstable things, let alone go down that ramp, but no serious injuries occur.

Each man assumes the usual crouch going down, then soars out at the end, his arms windmilling. The skis drop into the water, and the skier tries for form and distance. Some drop like watermelons on a sidewalk, but most are graceful.

**SKIER'S FORM**, as well as distance, is judged on each jump. Judges sit in rowboats out on lake and use large floating ruler anchored at side of run

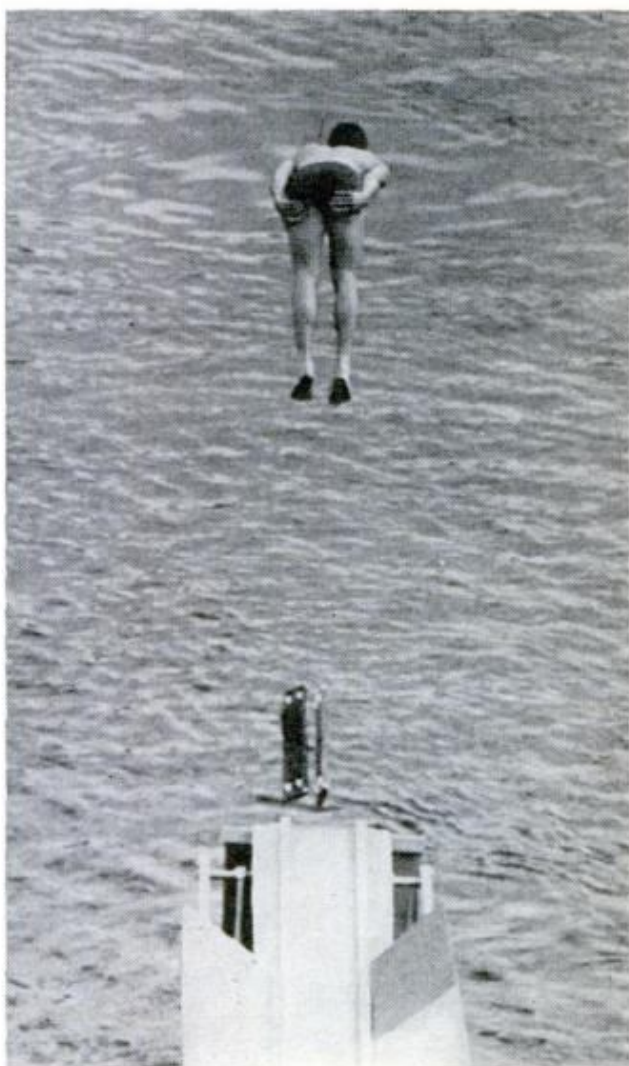


MARCH 1965



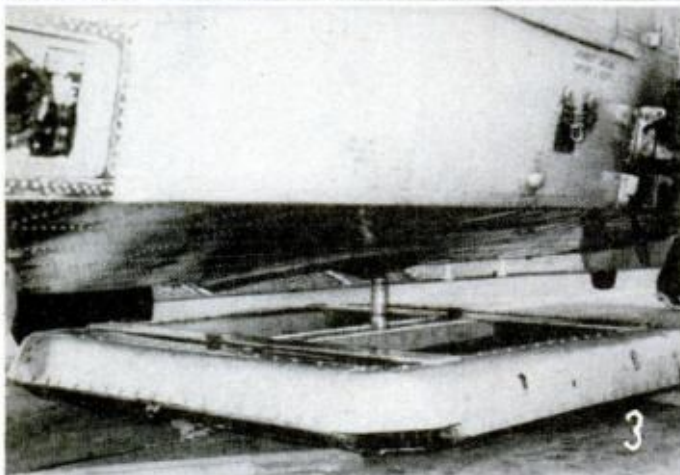
**ROLLER BOARDS** have no foot straps, just skidless matting on raised wood blocks. About two feet long, boards are equipped with four nylon roller wheels

**INJURIES** are rare, and usually minor. No one has been hurt coming down ramp, only from landing in water in awkward positions, result of poor jump



115





## 'Beartrap' Snags Helicopters on Rolling Deck

How to land 10-ton helicopters on the rolling and pitching deck of small destroyer escorts was solved by the Canadian Navy with a winch and "beartrap."

A cable with a quick-attach probe is run through the beartrap from the winch.

After it is attached to a mating probe on the base of the hovering helicopter (it's pulled up on a nylon cord, dropped from the cabin, photo 2), the winch reels the aircraft down until the probe enters the beartrap where it is instantly gripped (3).

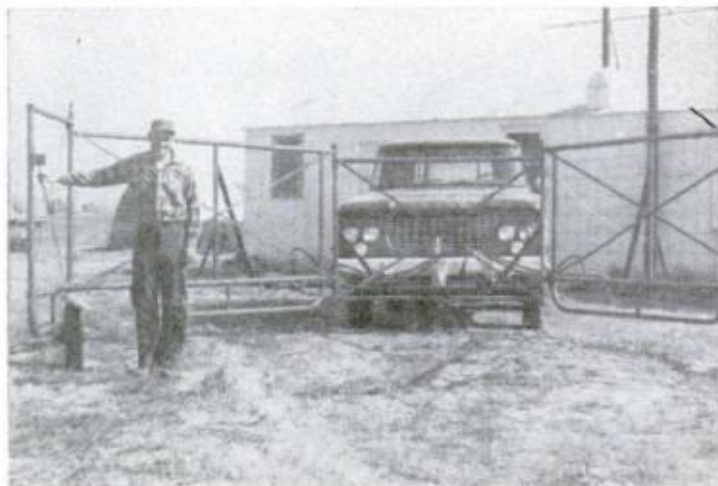
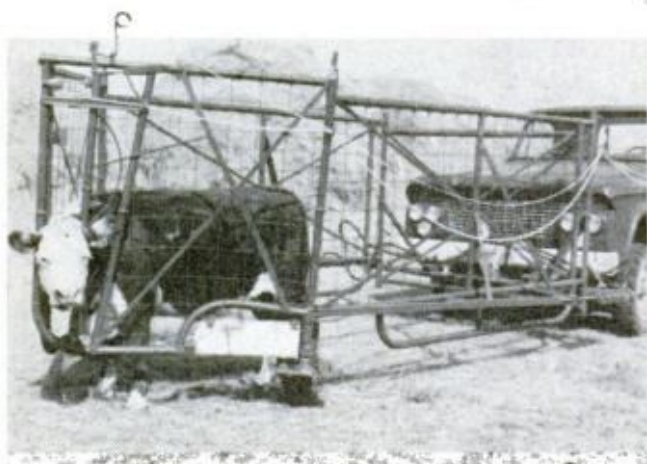
## Mechanical Cowpoke Goes After the Strays

Another step in the taming of the West has been taken by a Nebraska rancher who has built a mechanical cowpoke.

The rig is really a wheel-mounted corral that's swept over the range by a truck, car or even a fast tractor. With its "jaw"

spread wide open (right), the machine is pushed toward the animal that's to be caught. Hydraulic pistons then snap the wing panels shut, trapping the animal.

Rubber bumpers on the corral protect the animal from injury.







### A Four-Wheeled Motorcycle?

Balancing a car on two wheels is Euclides Montiero's idea of an amusing way to pass the time. The Brazilian stunt driver's agile vehicle is a Volkswagen Kombi, supplied by a local dealer. It's stock except for a locked differential.

### Trunk Converts for Canines

A convertible "sunroof" in the trunk of this Tokyo car lets Fido enjoy the fresh air. This lucky pointer's generous master has also lined the inside of the trunk with soft felt, providing all the comforts of a giant doghouse on wheels.



MARCH 1965



### Balloon Antenna Folds Up

This Mylar antenna mast inflates to 50 or 100 feet, and folds into a small package when not in use. It's for troops in the field, where rough terrain may require a tall mast, but would make it hard to haul lengths of conventional mast. The self-supporting air-column structures retain low pressure for at least two days. A pump, cylinder or good old-fashioned breath can be used to inflate the mast, made by Kearfott Division of General Precision Aerospace, Little Falls, N.J.

117

Материал, защищенный авторским правом



# Shop Short Cuts with New Magnetic Forming

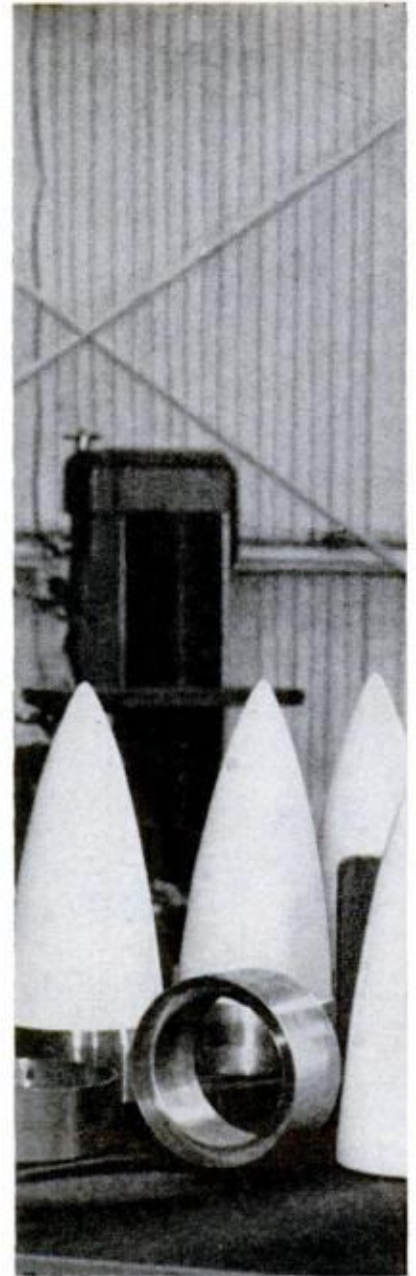
"INSTANT MAGNETISM" was until recently only a laboratory curiosity. Today, it's a useful metalworking tool that's replacing many welding, brazing, drilling, shaping and assembly operations.

In one typical application, the following work is done in microseconds on a short length of 4-inch aluminum tubing: One end is bent back into a wrap-around flange, part of the tube is expanded to a new size and, simultaneously, two large burr-free holes are punched through the tube wall. This single operation formerly required two spinning and two blanking operations plus trimming and deburring.

The versatile machine that does this and a hundred other jobs is called Magneform, a product of the General Atomic Division of General Dynamics. The machine stores up electrical energy that is discharged as a pulse through a wire coil, creating a split-second magnetic field around the coil. An opposite current is produced in the metal being worked on, and the metal is violently driven away from the coil and against a die. There's a sharp *Snap!* and the work is done.

Magnetic forming works best on light to medium-gauge materials having good electrical conductivity such as brass, copper and aluminum. It's effective in the joining of metallic and nonmetallic parts, as in attaching an aluminum dial to a plastic knob. It also provides an efficient, one-shot assembly method in the production of small transformers, loudspeakers and similar units.—*Thomas E. Stimson Jr.*

**MAGNETIC FORMING** is especially useful in joining parts made of different materials. At right, an aluminum band is being attached to end of a ceramic missile nose cone. Pressures as high as 50,000 p.s.i. can be produced



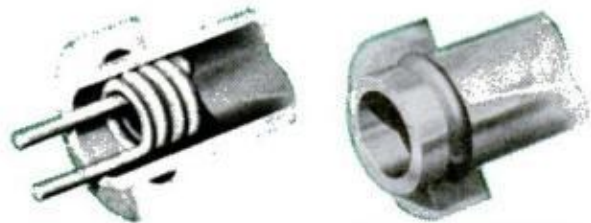
**THREE** basic shapes of coils are used. Type A (below) surrounds work and produces compression because work tends to move away from magnetic field

**TYPE B COIL** fits inside the work and produces a powerful expansive force. As a result, the work is slammed into the die surrounding it and is reshaped



COIL AROUND TUBING AND INSERT

TUBING COMPRESSED INTO GROOVES OF FITTING



COIL INSERTED IN TUBING SURROUNDED BY DIE

TUBING EXPANDED INTO DIE TO FORM BEADING



TYPE A COIL



FIELD SHAPING INSERT

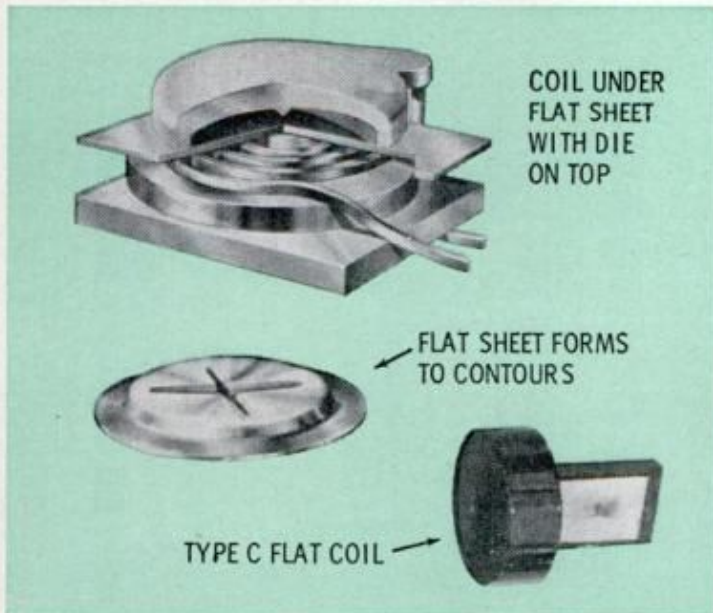


TYPE B COIL

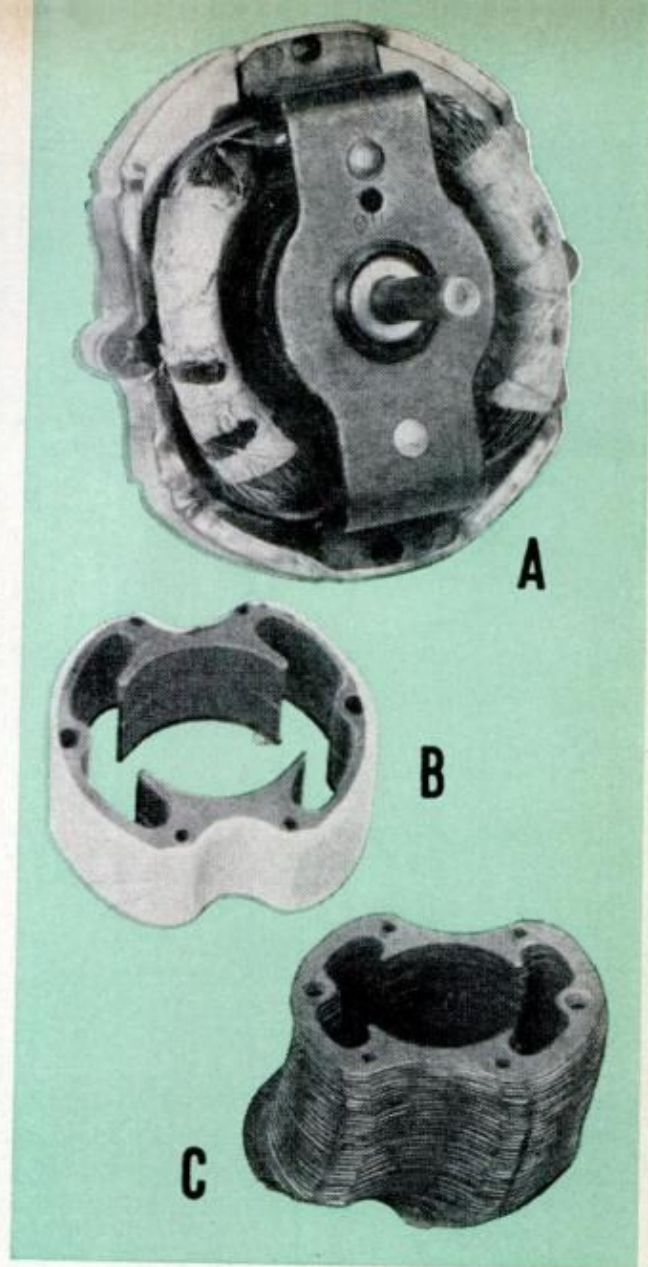




**TYPE C** lies flat and is used for contouring metal sheet into shape of die above it. Forming works best with materials that are good electrical conductors

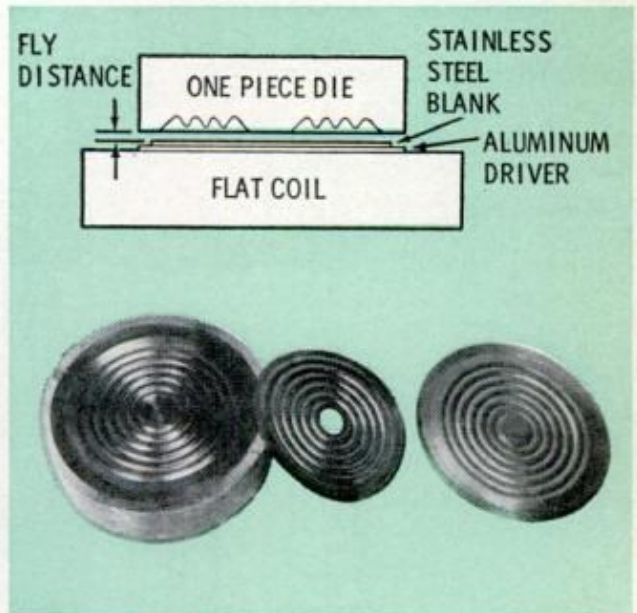


MARCH 1965



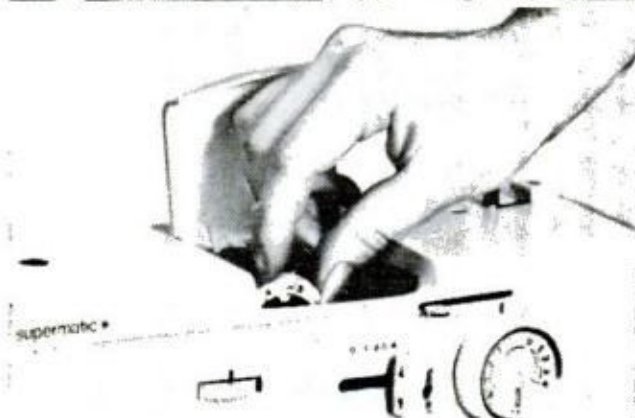
**MAGNETIC** forming machine crimps aluminum band around motor assembly (A). It also binds loose motor laminations (C) with band (B) in a single operation

**BECAUSE** stainless steel is poor conductor, aluminum "driver" (bottom, right) was used in shaping of the steel diaphragm (center). Die is shown at left

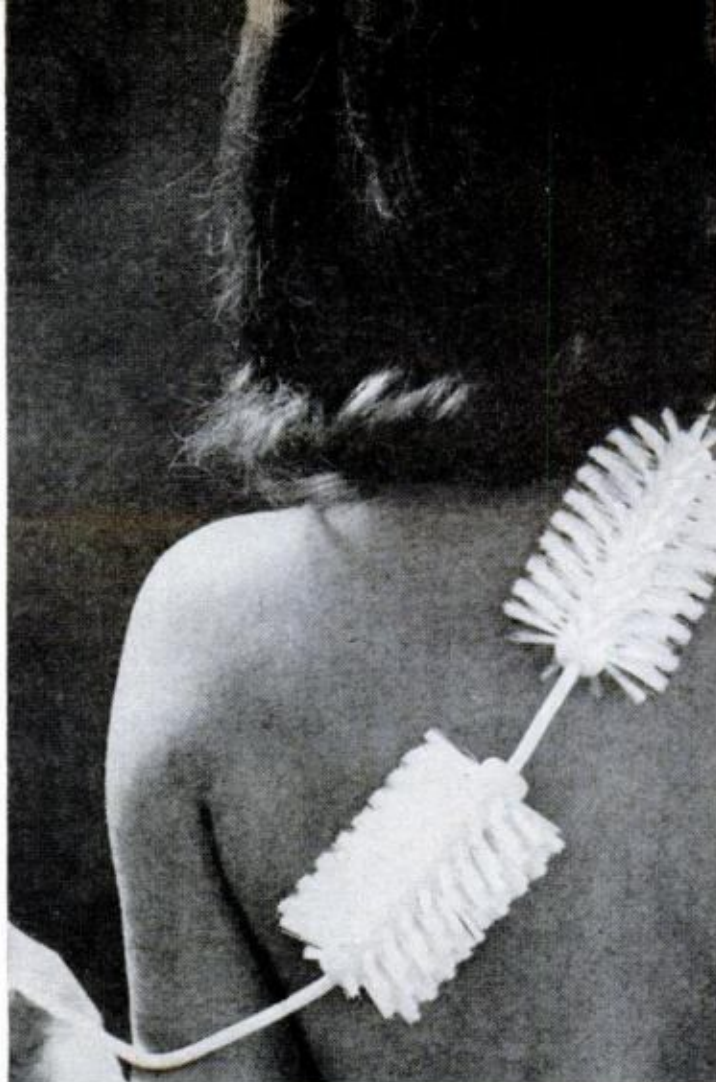


119





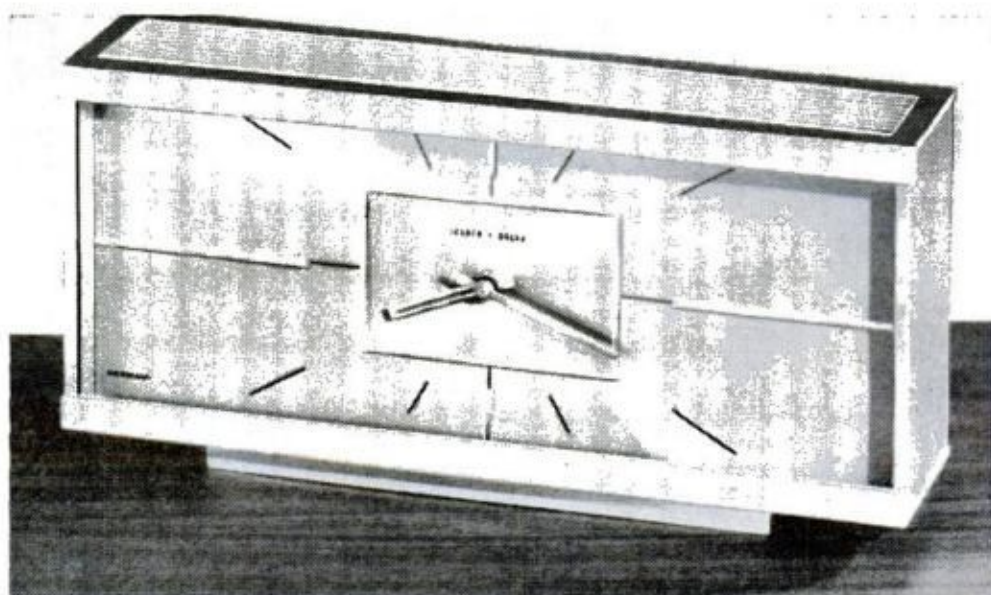
**SEWING MACHINE** makes any of 200 stitch designs automatically. Simply insert interchangeable double-profile discs for desired pattern. Deluxe Elna model costs \$379. By White Consolidated, 11770 Berea Rd., Cleveland, Ohio



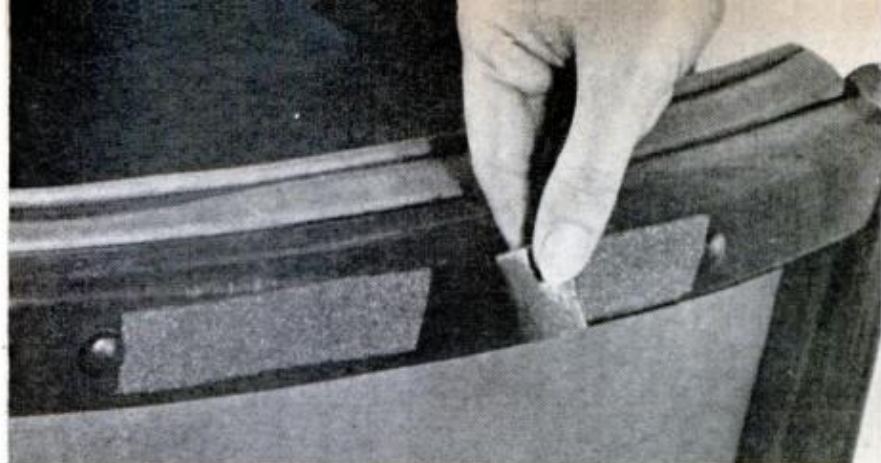
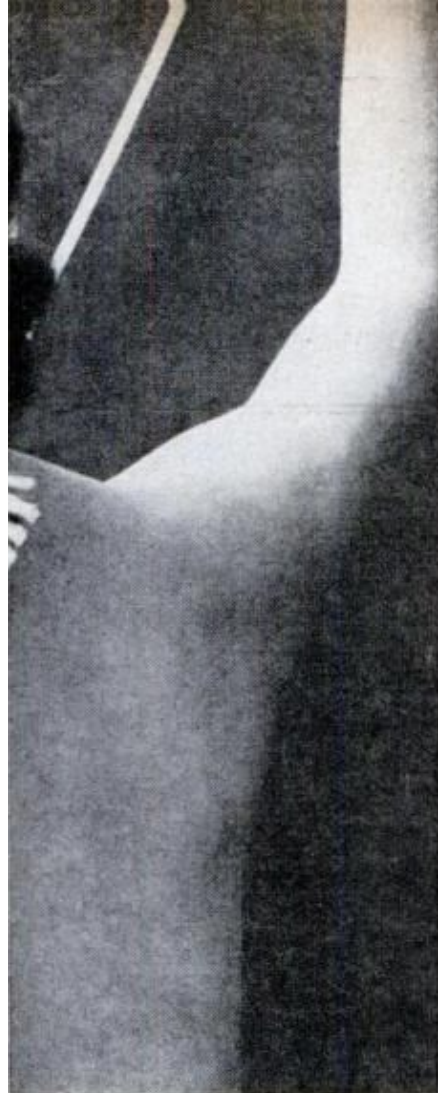
**BATH BRUSH** scrubs and massages, reaching all areas easily. Soft brushes on plastic handles draw from side to side or up and down. Adult model is \$5.95; children's, \$4.95. Available from Worthy Products, 303 Fifth Ave., New York

# New for Your Home

**SOLAR CLOCK** needs no winding; its energy is the sun. Cells in the top charge batteries while a sensitive accumulator stores excess energy to run clock even without sunlight. Silver-cased model costs \$135. Elgin Watch Co., Elgin, Ill.







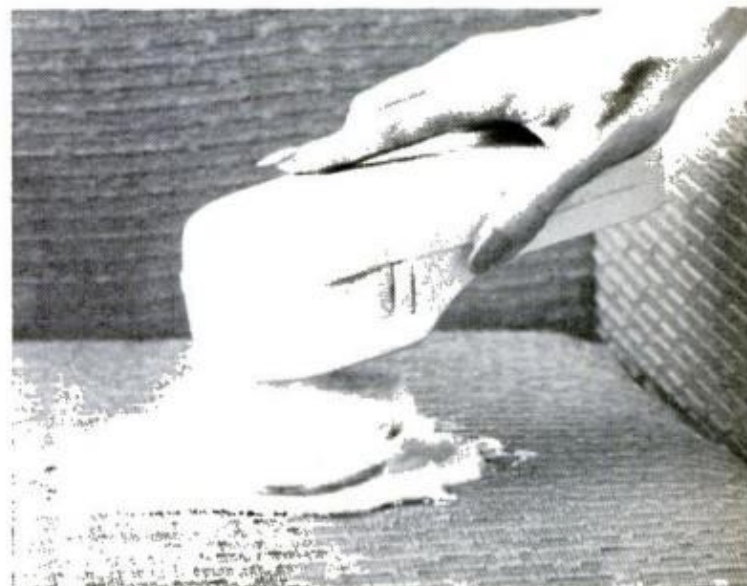
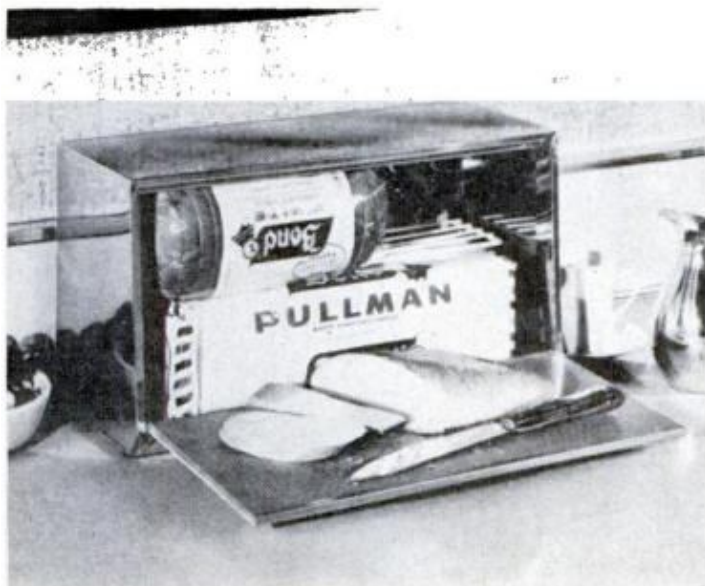
**FOAM TAPE** sticks onto the protruding portion of any chair back and prevents damage to walls or other furniture. Tape's adhesive back won't mar chair finish. Simply cut 5 by 5-inch sheets to size. Pack of 3 sheets is 49 cents; Neatape, 457 Broadway, New York



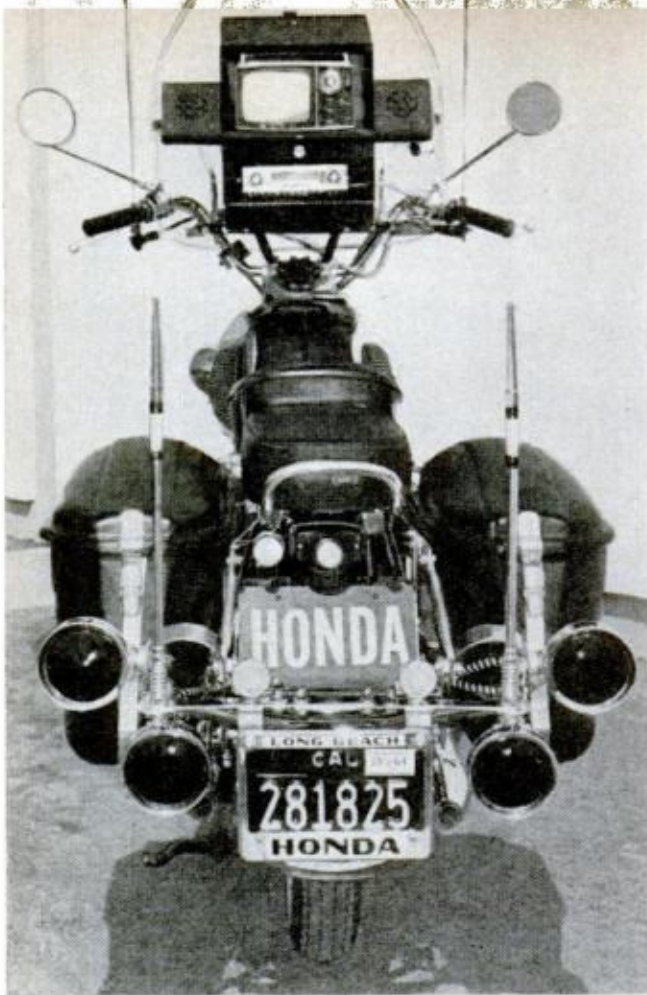
**PAD HOLDER** for steel scouring pads installs conveniently on any surface. A magnet holds pad out of sight but easy to reach. Because pads are air dried, they don't rust, and thus last longer. Units are 79 cents each and come with a pad. Made by Maggie Magnetic Inc., 111 Marion Street, Paterson, New Jersey.

**BREADBOX** compactly houses rolls, etc., on tilt-up shelf above large loaves. The magnet-latched door snaps shut with elbow nudge and doubles as a cutting board, right where one is needed. In chrome, box is \$8.98. By Beauty-Ware, 225 42nd St., Brooklyn, 32, New York

**ELECTRIC UPHOLSTERY SHAMPOOER** works on four-battery motor. Unit includes globular brush for large areas, a spot-cleaner for touch ups, plus spray can of cleaner. Light and portable, it's safe even on brocades. Price: \$9.95 from Empire Brushes, Port Chester, N.Y.







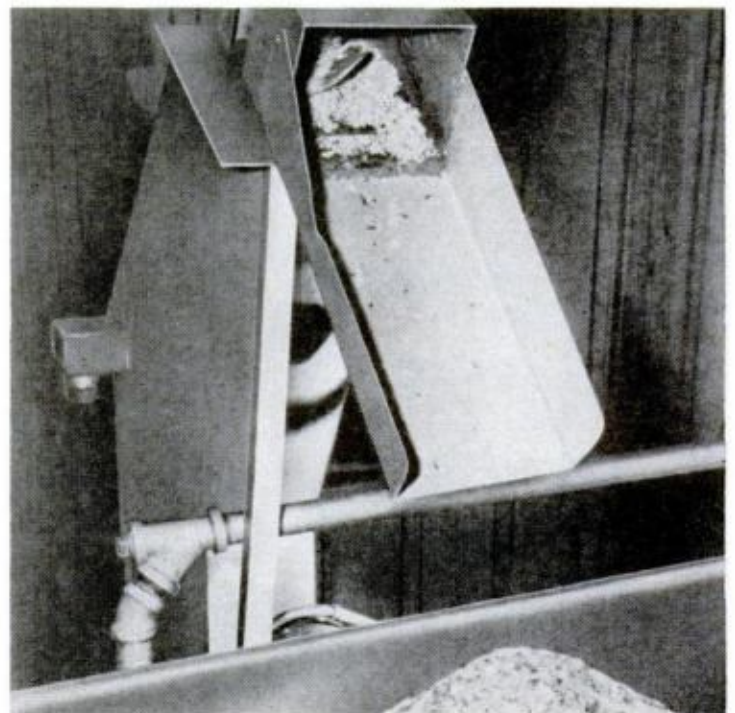
### Loaded Motorcycle

Out in California, where they do things up brown, Harland "Bud" Curtis bought a new Honda and made a rolling livingroom of it. The motorcycle boasts TV (it locks out when motor runs, to comply with law); AM radio; cigarette lighter; brake lights; turn lights fore and aft; saddle bags. The cost of all those extras? Only \$445.

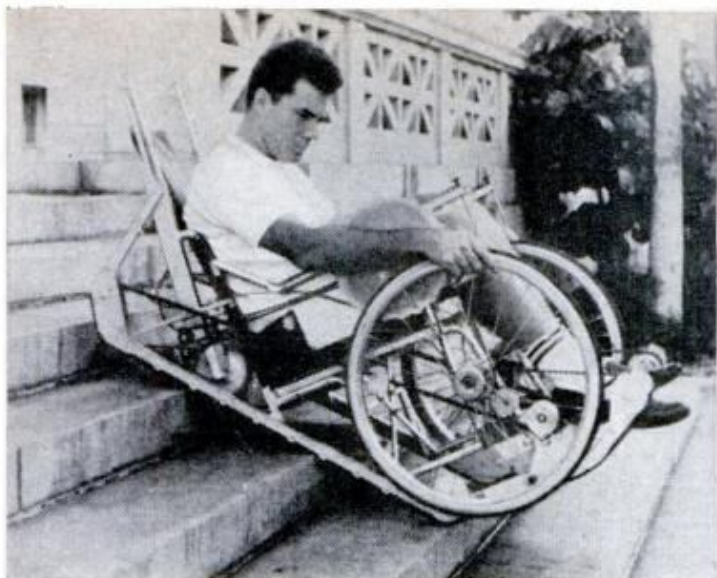
### Mechanical Goat Gulps Leftovers from Thousands of Meals a Day

What happens to all the table scraps and trash from the 15,000 to 20,000 meals a day served at several World's Fair restaurants? At each, leftovers, including paper plates, make an eight-ton pile daily—enough to fill an 80-cubic-foot garbage pail. Instead it feeds the maw (below left)

of a mechanical monster—the Somat waste handler. Trash hits a spinning disc studded with teeth. Soft material is chewed to pulp; bottles, tins, spoons, etc., are spun off. The pulp, squeezed dry in a helical extractor, is then jettisoned via chute—at 80 percent less bulk.

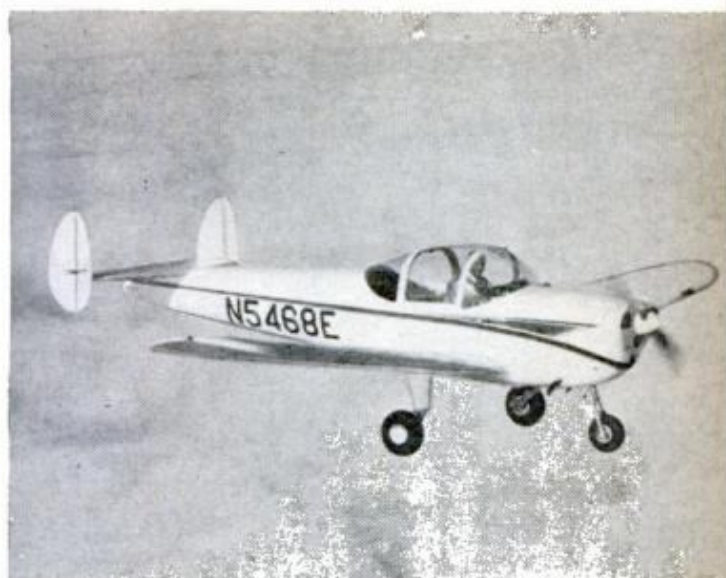






### Stair-Climbing Wheelchair

Faced with a curb or step, the occupant of the wheelchair shown here simply retracts the rear wheel and lowers a frame carrying a nonskid belt. The belt grips the steps, enabling occupant to wheel himself upstairs backward and downstairs forward. The device was invented by a Miami Springs airline mechanic.



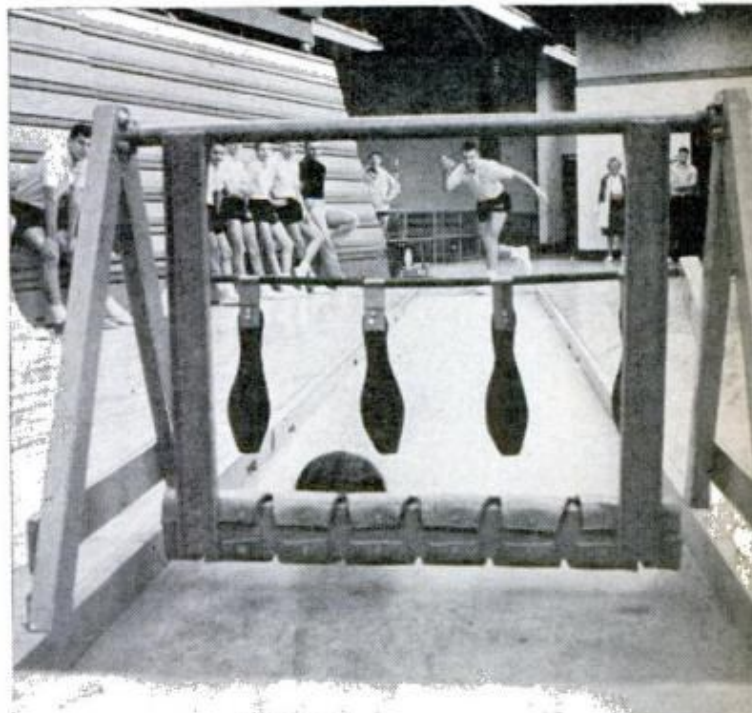
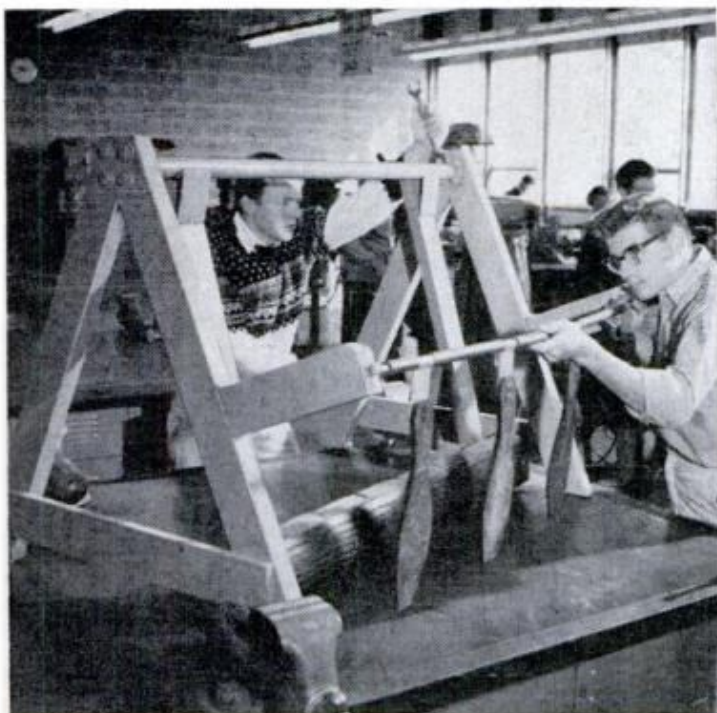
### Aircoupe Reborn

With an improved 120-m.p.h. cruise, 445-mile range, and climb rate of 640 fpm, the renowned Alon Aircoupe is back in production again. The new two-place Aircoupe has a ceiling of 17,500 feet, boasts a sliding bubble canopy and soundproof cabin. Famous old pedal-less rudder control is optional. Price starts at \$7825.

### Practice Bowling Setup Has Ball Return

Swinging pins that set up at the end of a gymnasium practice bowling lane, make an ideal instruction tool for beginners. Even better, a simple, swinging weight behind the pins stops the ball, backs off from the impact, then comes back to shove the ball up the alley again to the bowler.

The lane, pin rack and ball-return can be built of the simplest materials by anyone. Plans for the entire rig are free for the asking. Write to: Bowling Lane Plans, Public Relations Department, Brunswick Corporation, 632 South Wabash Avenue, Chicago, Illinois 60606.





# How Big City Cabbies



*To these professional drivers, making time in traffic is a game—and they set the game's rules*

**By Alex Markovich**

I'VE BEEN MAKING better time in traffic lately. That's because some of the best city-type drivers have been teaching me. I've been pumping cab drivers for hints—and usually they're happy to oblige.

Take that time in mid-Manhattan, when my cab was pulling up to a red light. The front spots were taken, one by a big Olds, the other by a Corvair.

The driver, a veteran of 22 years, asked me, "Which one do you think will pull away first?" Before I could answer, he nosed in behind the Corvair.

The light changed, and the Corvair was three car lengths in front before the Olds even started to move.

"I can call 'em nine times out of ten," he said. "That Olds had an out-of-state license plate. When I see one, I figure the driver doesn't know the way. He'll drive slower, and may make sudden stops or turns without signaling. And he may not be used to big-city traffic.

"There are other things to watch for," he continued. "A man is a better bet than a woman. A young driver is usually wider awake than an old guy."

It seems the car make is important too.

"I'd rather get behind a Pontiac or Chev than a Rambler or Buick," the cabby said. "A sports car or hot rod is a sure thing. Foreign cars, even little economy jobs like VWs, are okay. So's a small pickup or panel truck. Get behind a cab only if he has a fare. If he's cruising, he won't make any time."

Another driver added: "You can peg a driver just by watching him a couple of minutes. Is he sure of himself? Does he look alert? Or is he busy gabbing with his wife or watching the curvy blonde across the street?"

Another hint he gave me: "Don't pull up too close to the car ahead. Leave room so you can pull around if he decides to double-park or drop off passengers—or stall."

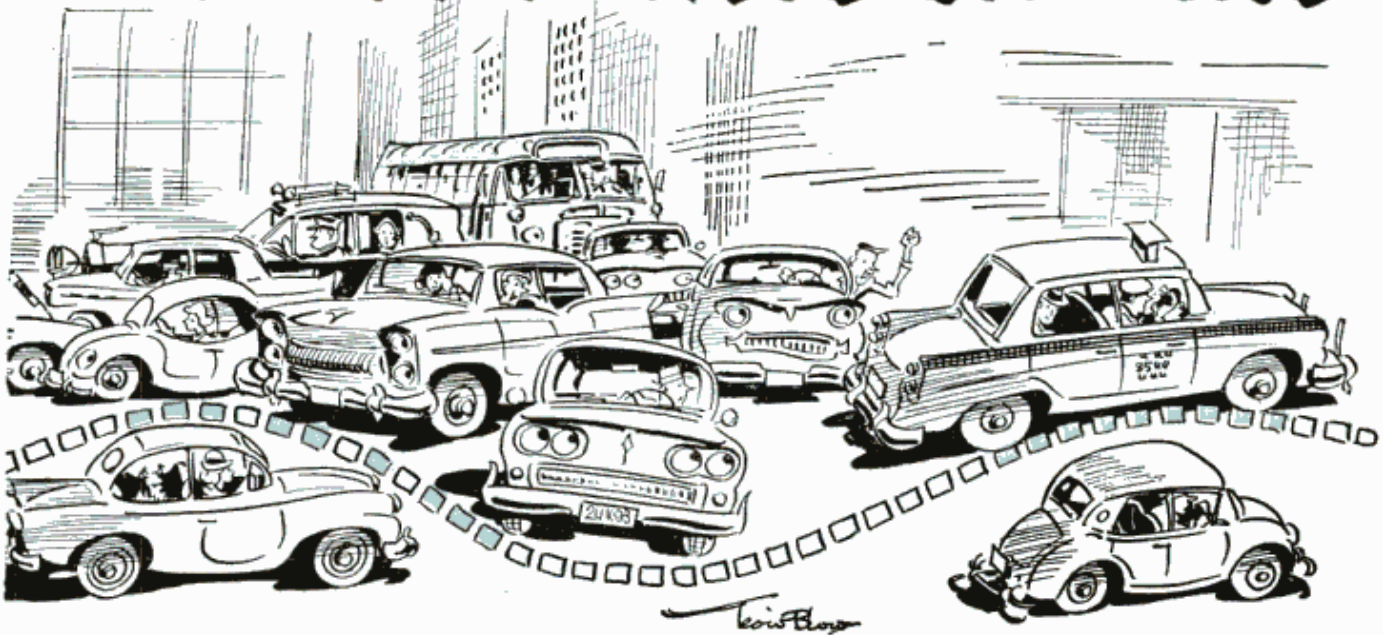
Which lane is fastest? When traffic is moving on a wide street, usually the right, drivers agree. The left one gets clogged by left-turn traffic. But on some streets, double-parking is a problem in the right lane.

A good rule to follow when you're about to cut across a one-way street is to stay in the lane opposite the direction of the cross traffic.

One driver suggested it's better to stay toward the right when going straight through an ordinary intersection. This gives oncoming cars less chance to make a left turn across your bow and cut you off. "Once one car makes a left turn in front of you, all the others follow him,"



# Get You There on Time



he said. "This way, even if he does turn in front of you, you can go around behind him without losing speed as long as nobody's turning behind him."

Sometimes cabbies stay on the right lane even when they plan to turn left. The left lane quickly clogs up, but meanwhile they scoot around on the right and into the middle of the intersection before the light changes.

"If there are two lanes, why not use them both?" asked one driver. "But before you turn, make damn sure the guy on your left isn't going straight."

Each street has its own traffic pattern, which may change at different times of the day. If you travel the same route often, it pays to learn this pattern. Sometimes it's wise to avoid problem streets, even by going a little out of the way.

The same strategy, I found, holds true on highways. Each develops its own flow pattern, depending on exits, merging traffic or lanes narrowing or ending.

"That's why you can't outrun a cop," said a salty, hard-driving old cabbie from Brooklyn, who seemed to know from bitter experience. "Cops know their beats inside out, so they make better time."

To study a traffic pattern, sight in on cars in other lanes and watch their progress compared to yours. Sometimes a seemingly slow lane may be best. I remember a Detroit cabbie switching to the right lane of an expressway even though he knew another expressway would merge

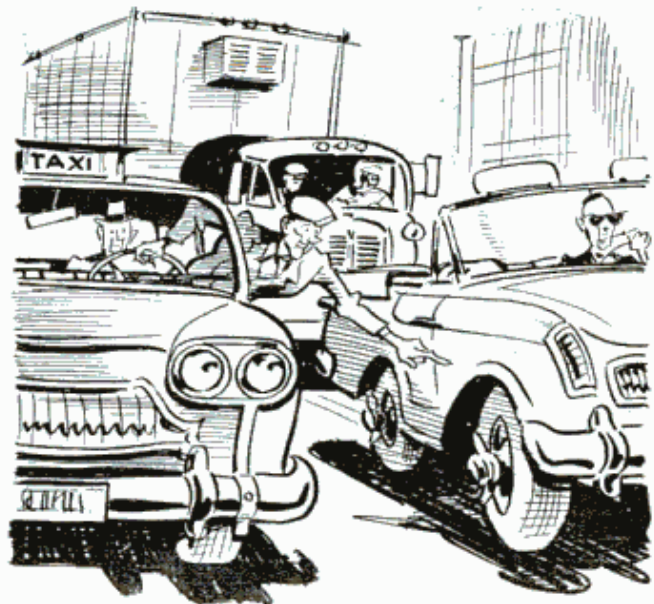
into it within a quarter of a mile. Everybody else knew it too—and left the lane wide-open for us.

## Mirror Trick

A young college student who drove a cab part-time came up with this advice: To move to a right lane on a crowded parkway, don't crane your neck looking for an opening in the traffic.

"It's amazing how fast the holes close up when other drivers know you want to switch lanes," he said. His trick was to temporarily tilt his rear-view mirror so he could see the right lane without turning his head. "The best time to change

"HEY, YOUR TIRE'S FLAT!" It's a corny trick, but this cabbie swears it works on city hot rod roadhogs







**A CLEVER WAY TO CHANGE LANES:** Tilt the mirror, so other drivers don't see you looking for an opening

lanes," he went on, "is when traffic first starts moving after a stop. There's always someone slow on the accelerator."

He checked his mirrors often while he drove. "If you always know who's alongside and behind you," he said, "you can change lanes fast when you need to."

Should you tailgate? Cabbies agree sometimes it's unavoidable. "You leave a car space ahead of you and some wise guy'll always squeeze in," one said. "To tailgate safely, look through the windows of the car ahead or even around the car. If the second or third car ahead stops suddenly, you have advance warning."

### Smart Ones Slow Down

But there's a difference between tailgating to hold your position and riding someone's bumper to speed him up. "If he has any brains at all," said a cabby, "this will only slow him down. He'll leave more room ahead of him so he can stop gradually."

But if the car ahead is leaving a big gap in front, cab drivers will usually try to get ahead of him—like the time my cab was crawling behind a staid old gentleman in a big Olds. He left just enough room ahead for everyone to cut in, forcing him to brake and drop back constantly. Finally, the cab driver, with a burst of speed, cut around him.

"I hate to cut people off that way," he said, "but a guy like that can get you involved in his accident.

"How about using the horn to get clods out of the way?" I asked.

"Some cab drivers think leaning on the horn clears the way ahead," he answered. "A few beep just before the light turns green, to keep the guy in front awake.

"I figure one short, polite beep is okay when it's needed. Two blasts, or one long one, make people mad. And if you get enough people mad, they'll slow you down and box you in."

He went on: "A buddy of mine was telling me about the time he was in a mean mood and kept leaning on the horn. The guy in front took it for a while. But finally, at a red light, he pulled up his hand brake, got out of his car, leaned on my buddy's door and asked, 'Okay, so what else did you get for your birthday?'"

"What do you do about a driver who edges into your lane and squeezes you?" I asked.

"Here you gotta give him the horn," he answered. "And you gotta squeeze right back, not only to keep him from getting ahead of you, but to give you more room to duck away if he keeps coming. If you give him lots of room right away, you've robbed yourself of a safety margin."

This brings to mind a variation of the same idea. When someone tries to pass on the right, the cabby may squeeze back, pushing the offending car farther and farther over until a parked car brings it to an abrupt stop.

Other tricks of roadmanship cabbies have taught me: Pull away from a light briskly, so you don't get tangled in traffic. If you shift into neutral when stopped for a light (this saves wear on automatic transmissions as well as on the clutch throwout bearing in manual boxes), keep your eye on the light for cross traffic; when it turns yellow, shift into gear so you're ready to go.

All the drivers agreed that the most important thing to learn is the exact width of your car. This lets you scoot into tight spots that other drivers are afraid to take advantage of.

### "Sucker Every Minute"

All's fair in driving, as well as in love and war. Wherever a hole appears in traffic, the cabby will duck in. On a jammed parkway, he'll shoot into an acceleration lane for entering traffic and squeeze back farther ahead to make up a few car

(Please turn to page 218)



# BOATING

## What's New for the '65 Season?

*Cockpits loaded with sit-down space, a 60-horsepower stern drive and an aluminum-fiberglass hull are just a few of this year's show-stoppers*

By Art Mikesell

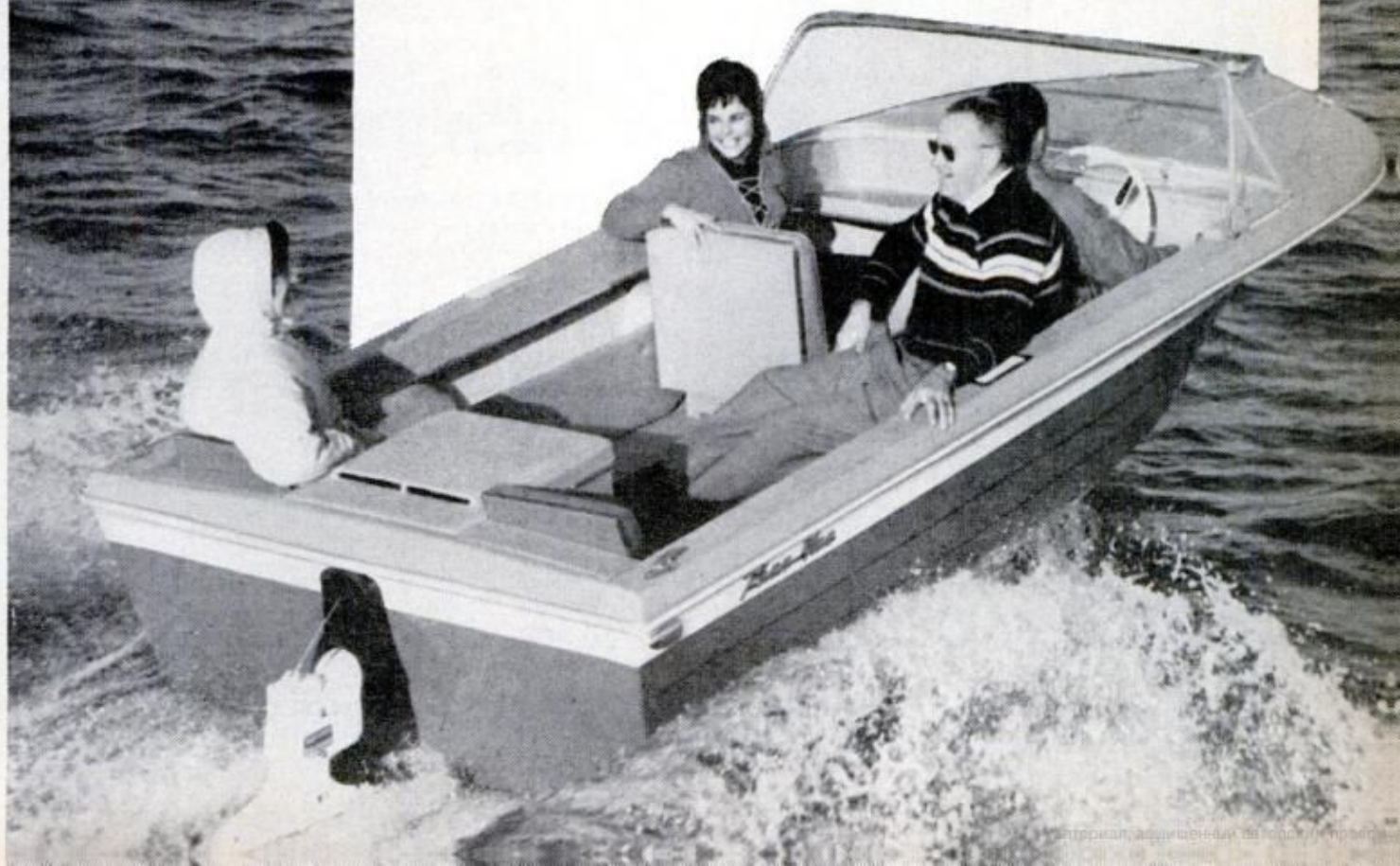
**T**HE BEST WAY to get an over-all view of what's going on in boating today is to head for the nearest boat show.

Whether it's New York's Coliseum, Chicago's McCormick Place or the local armory, you'll find everything under one roof, with plenty of knowledgeable people standing by to answer any questions you might have. You can't beat a show for comparison shopping, and even if you're not in the market you're bound to enjoy just wandering around thumping hulls, asking questions and looking at boats.

If this season's early shows are any indication (and they usually are) you can expect the biggest boom in boating since the late fifties.

One of the most obvious trends this year is in the shape of the boats being introduced. While traditional designs and familiar hull shapes are still by far the most popular, you'll see even more of those squarish multi-bowed runabouts in

**COMPACT MERCUISER 60** is entirely transom-mounted, requires no engine bed. Small enough for 14-ft. boats, it's powered by a four-cycle Renault







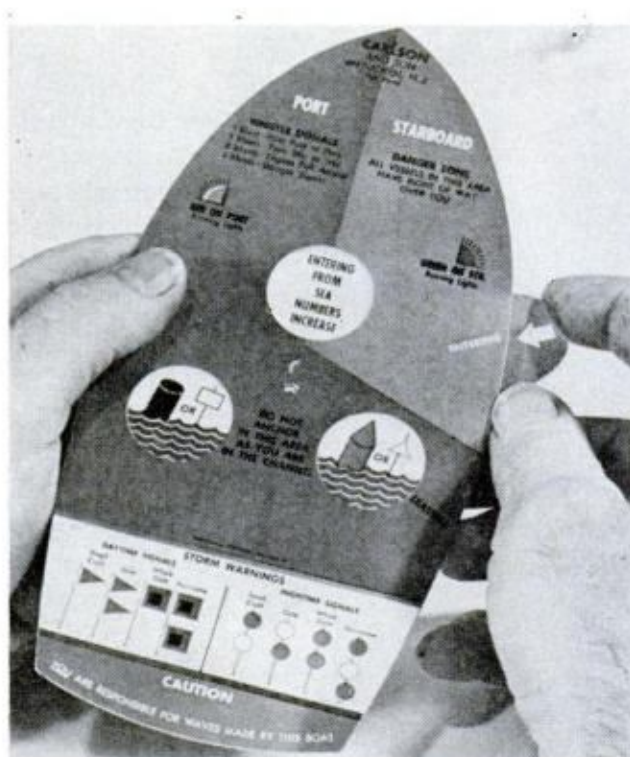
**IT FLOATS**, it has a waterproof compartment and it's a comfortable cushion—these are three of the best points of the Keep-it-DRI sea bag. It sells for \$3.95 from Connecticut Artcraft, 21 Ann St., Norwalk, Conn.



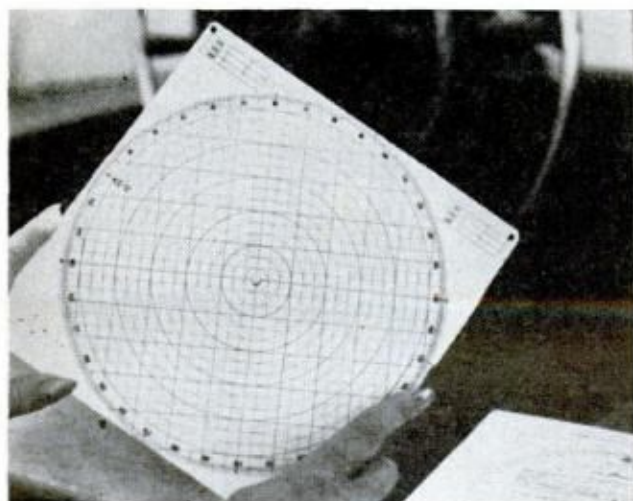
**MOST SEXTANTS** cost well over \$100. This plastic model reads to two minutes of arc and sells for only \$7.50. Great for practice navigation, it's from Davis Instruments, 8907 San Leandro St., Oakland, Calif.



**TIME AND TIDE** wait for no man, but the Tidemaster watch tells you both with an adjustable tide scale around the dial. It's \$29.95 plus 10% excise tax from Maker Products, Inc., S. Buckout St., Irvington, N.Y.



**NEW BOATERS** learning the "rules of the road" will find the Carlson Navigation Guide handy for quick cockpit reference. Made by Carlson & Son, 19 James Place, Metuchen, N.J., the Guide sells for \$1



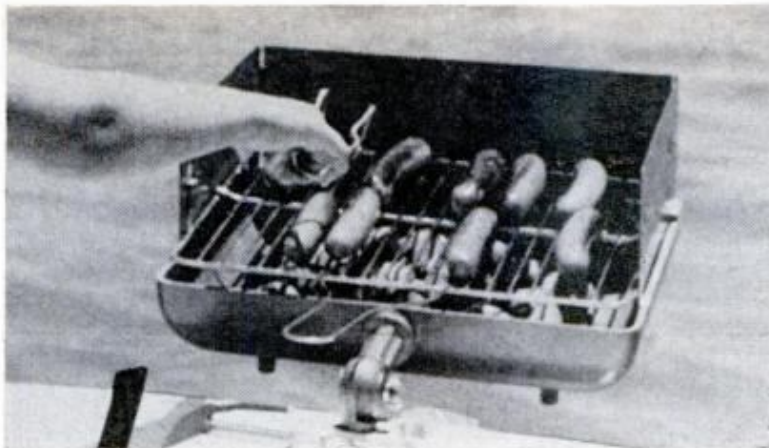
**INSTANT INFORMATION** on speed, time, distance and fuel problems can be computed easily with the Kenyon Calculator. The price is \$8.50 from Kenyon Marine, Div. of Flexible Tubing Corp., Guilford, Conn.

evidence. This design approach has been gathering momentum slowly for the past three or four years, but this season it's passed out of the novelty stage and become a solid part of the industry. Chris-Craft and Thunderbird, which pioneered this trend with Dick Cole's cathedral hulls, are just a couple of the many companies offering such designs.

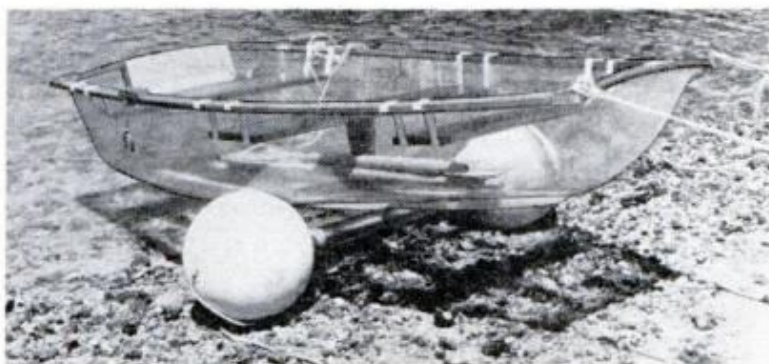
Topside, you'll find that a lot of ingen-

ious thinking has gone into turning every bit of space into *usable* space. Many of the multi-bows mentioned above are wide open from stem to stern. Others have retained the basic runabout layout, but recessed the foredeck to form a "sun lounge" forward of the cockpit. This recessed-deck idea is even being used in boats of otherwise conventional design, such as Fabu-glas Company's 16½-ft. Portofino.





**HIT OF THE BOAT SHOWS** this year is a unique line of accessories which snap into sockets installed in the gunnels. Side Kick line includes a ski tow bar, grill, boarding ladder and table, all from Beachcomber Marine Corp., 1821 Yolande, Lincoln, Neb.



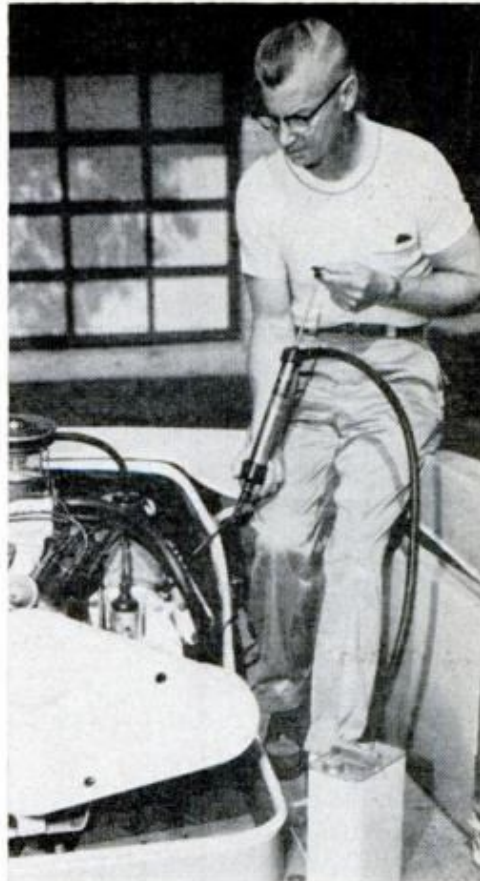
**COMBINATION** fender and fender board can also serve as close-up tow rig or roller for hauling out small craft. Balls are removable for use individually as fenders. The unit is made by Marine Products Mfg., Inc., 221 S.W. 14th Court, Ft. Lauderdale, Fla.



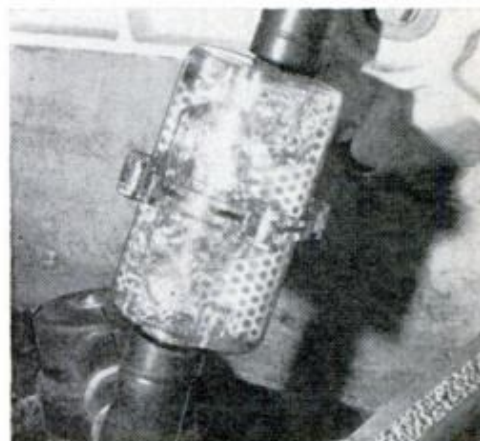
**CLEAR ANTIFOULING** Unepoxy paint introduced by Pettit provides excellent protection and is non-yellowing, according to the company's chemists. It's aimed at the fiberglass market and offers complete fouling protection without any color clashing

In the cockpit, watch for wild new seating arrangements. Crosby Aero Marine has one of the wildest in its "sombbrero seat," a circular seat with the backrest in the middle. The same company also has an oversized back-to-back seat in its 16-footer which folds down to form a super-width sun lounge. When running, this improves the trim since the big seat is located over the centerline.

MARCH 1965



**LOW-COST PUMP** equipped with a 1/4-in. tube that fits through dipstick hole makes it easy to drain inboard crankcases. The \$7.25 unit made by Peters and Russell can also pump out the bilges



**CLEAR PLASTIC** strainer stops foreign material from clogging pump. Pumpgard sells for \$3.50, is made by Peters and Russell, 550 W. Liberty St., Springfield, O.

Formula's 17-ft. Formula Jr. takes just the opposite approach with a bucket seat for the driver and an upholstered L-shaped bench seat running along the opposite gunnel and around behind the driver. And speaking of buckets, you'll notice that a few boats this year feature molded plastic bucket seats sans upholstery. Trojan's Manhattan comes with two of these seats on swivel mounts, and while

129

Материал, защищенный авторским правом

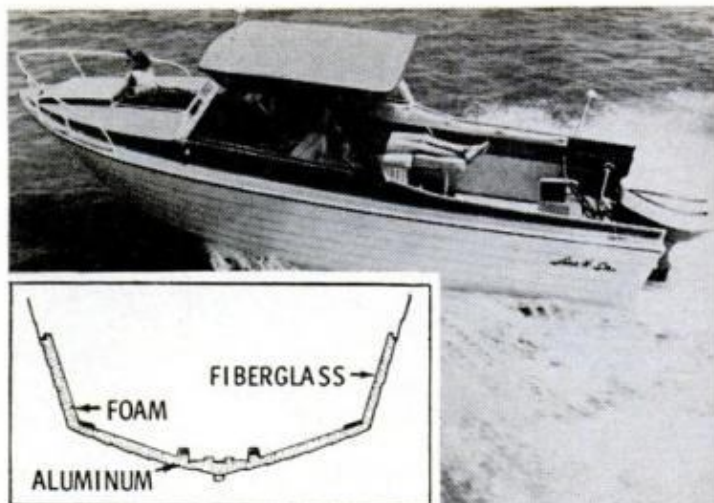


they aren't the saltiest looking helmsman's seats around, that smooth easy-to-clean plastic is pure utility. And comfortable.

Another encouraging trend is quality of design, workmanship and performance found in today's low-priced boats. This isn't really new—there have always been a number of good low-priced boats around—but this year it seems to be more widespread. Glasspar's Goldcup line is a good example, so take a look at them.

The power picture this season? Big news is MerCruiser's new 60-hp. stern drive package which fits into a boat as small as 14 feet and has all sorts of things going for it. Offering those two favorite four-cycle virtues, fuel economy and convenience (no

[\(Please turn to page 132\)](#)



**LONE STAR'S SANDWICH** construction—aluminum hull, fiberglass inner hull and polyurethane foam bonded between—is offered in both open and express cabin models of the company's 19-ft. Sovereign

**A** NEW SILVER-GRAY bottom coating originally developed to lubricate jet engines and missiles has been winning races for powerboat and sailboat owners on the West Coast.

"It adds about five miles per hour to a drag boat that formerly did 75 m.p.h. wide open," Howard Brown of Howard Boats told me. One driver reported a 4 m.p.h. increase, another 7 m.p.h. "Low-speed handling is improved," several agreed.

After hearing more stories like these, I talked to Harry Owen, who was the first to try the coating on a boat. Owen is a field engineer for Electrofilm, Inc., manufacturer of solid film lubricants. These

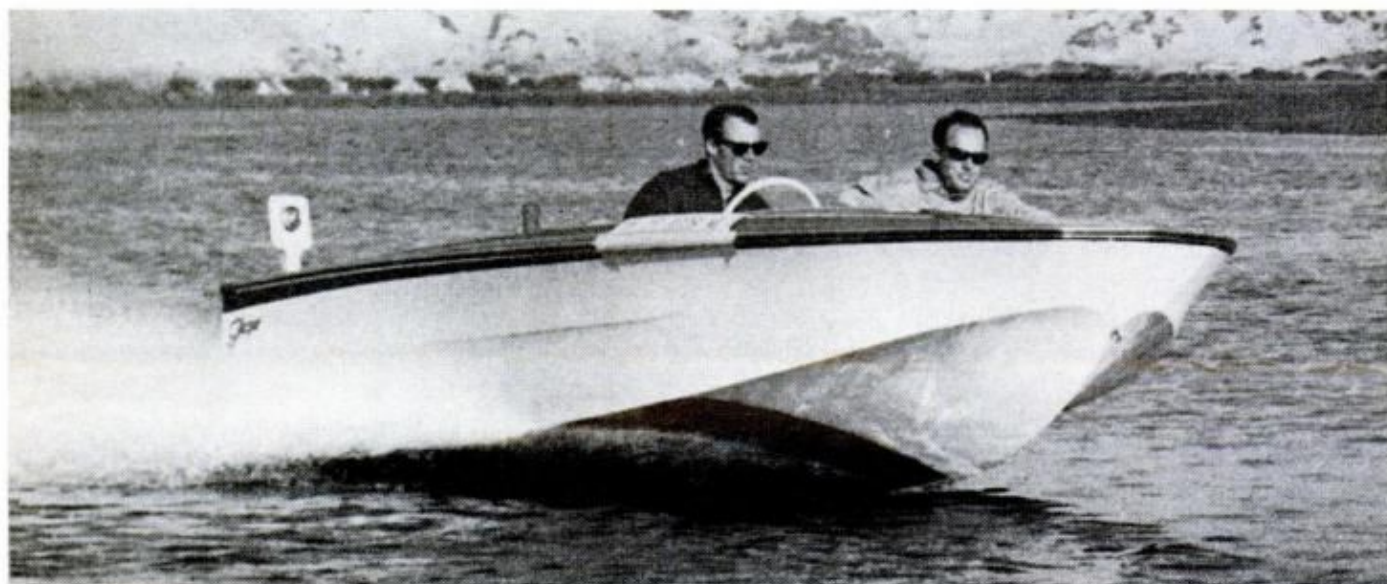
lubricants consist of minute particles of silver, molybdenum or other materials in a resin that cures to form a slippery, low-drag surface.

About a year ago Owen applied one of these lubricants to his outboard boat's planing surface. He says the slick coat gave him only a couple of miles per hour higher top speed, but that the main improvement was that now he could plane at much lower throttle.

A friend of his who races a stock outboard runabout tried the coating, began winning races and the word spread.

I made arrangements with Glasspar to borrow a 1965 16½-ft. Citation powered

**FORWARD EDGE** of the speed coating on the planing surface is visible in this photo of Glasspar Citation riding high during speed test runs. Performance was improved considerably, in spite of the rushed application of lubricant







**WHEN BUTTONED UP** tight, Hydrodyne's new 2100 cruiser seems to have the standard cockpit-cabin layout, but come mealtime the port bulkhead can be swung open to put the galley out into the cockpit. With the walk-through front hatch open this also provides plenty of light and ventilation for the cabin

with a 120-hp. MerCruiser outdrive unit to test the product. In "before" trials the boat made 10.7 m.p.h. at 2000 r.p.m., planed at 21 m.p.h., mushed back in again at 15 m.p.h. and reached a top speed of 40 m.p.h.

Then we sprayed on the speed coat. Instructions were to wait for an hour before burnishing and to let it air-cure for six hours. But since time was limited we burnished the surface within a few minutes and had the boat back in the water within an hour.

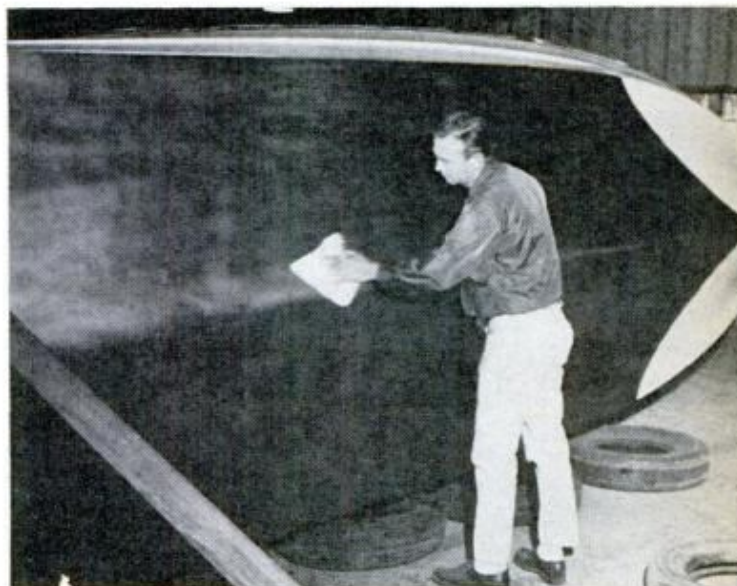
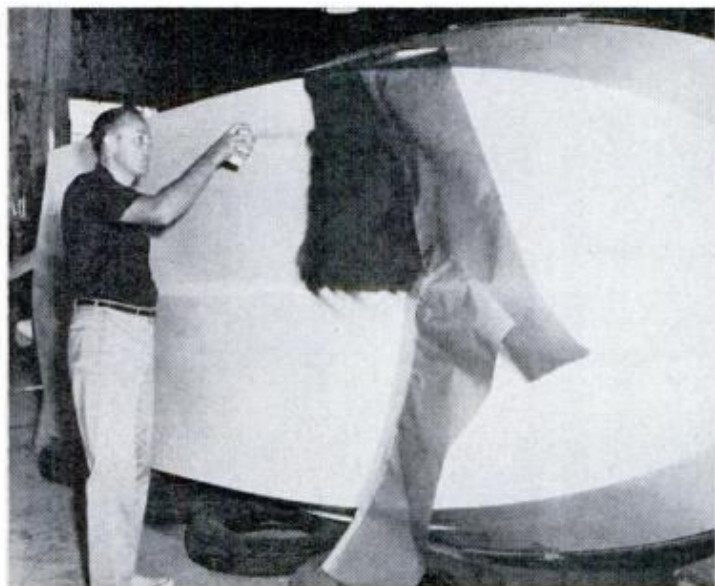
At 2000 r.p.m. we averaged 13 m.p.h., a speed increase of more than 20 percent. And now the Citation leveled off on a plane at 12 m.p.h., away below the pre-

vious 21 m.p.h. speed. The boat mushed back in again at 12 m.p.h., maintaining its plane at 3 m.p.h. slower speed than before. With six people aboard, the top speed fell off only 1 m.p.h. from the speed it had made with three on board.

So I'm satisfied that the coating does what its enthusiastic users say it does. It's available under the name "Super-Glide" from SHF Distributing Co., Box 7244, Long Beach, Calif. 90807. The price is \$14.95 plus shipping charges for three aerosol spray cans, enough to cover the planing surface of a 16-ft. boat, or \$12.88 per quart, sufficient to cover 100 square feet with a spray gun.—**Thomas E. Stimson, Jr.**

**AFTER MASKING OFF** everything but the planing surface, the slippery metallic compound in a resin is applied as an aerosol spray and allowed to dry

**AN HOUR LATER** the coating is burnished to a bright finish with a soft cloth or a power buffer, after which it should be allowed to air-cure for six hours







**MOLDED BUCKET** swivel seats both port and starboard are standard equipment on 2200 Sea Skiff Manhattan made by Trojan. She sleeps two forward under that solid teak planked foredeck, sells for \$3695 f.o.b. Lancaster, Pa.



**ONE SOLUTION** to the problem of seating vs. open cockpit space is the round "Sombbrero Seat" in Crosby's 18-ft. Vee Sled. It holds four (possibly even six, if they're good friends or midgets) and leaves more deck area free

oil to mix in), this compact unit requires no more interior boat space than a good-sized outboard with a drain well. It's powered by a 67.6-cu.-in. four-in-line Renault engine (the same one used in the Caravelle) which has been modified by Kiekhaefer to meet marine requirements. It's linked to an all-new stern drive, available only in this package, and the whole thing bolts to the transom—no engine bed.

Last, but hardly least, is a new hybrid

aluminum-fiberglass hull from Lone Star. It's an outgrowth of the company's Foam-Pac process in which high-density polyurethane flotation is bonded between inner and outer hulls of fiberglass. The Sovereign hull is made in basically the same way, but the outer hull is aluminum.

It's going to be a bang-up season, so get a head start and take in your local boat show. Who knows? You might end up with a new boat. ★ ★ ★

**BOTH THE SAME BOAT**—the runabout on the left is just the deluxe version of Starcraft's fiberglass trihedral-hulled Explorer at right. Live-bait well built in near the transom makes a good seat for running or trolling





# Tips on Choosing the Perfect Prop

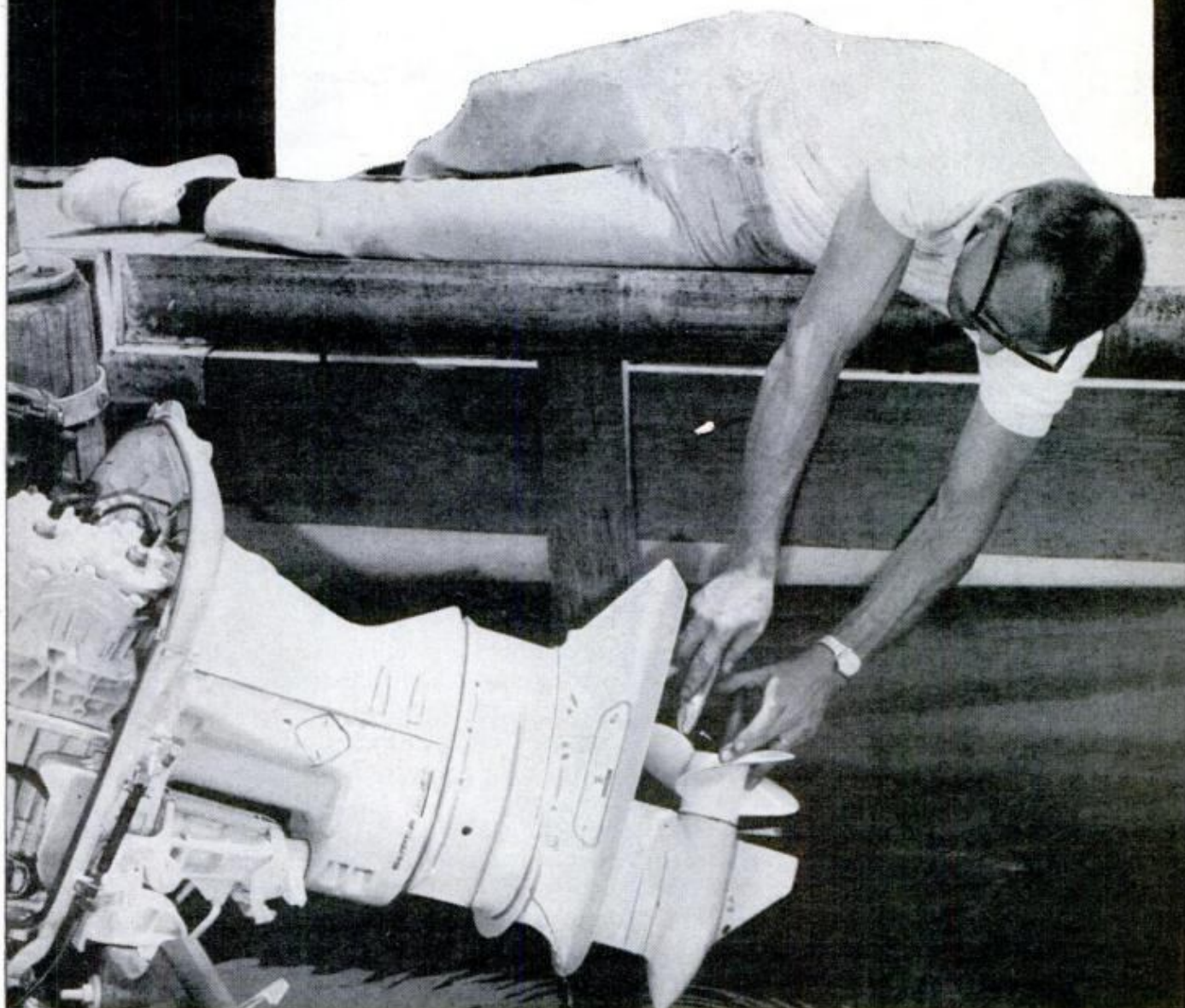
*For every rig there's just one prop that will deliver top performance, efficiency and economy. Here's the way you can find that ideal wheel*

By Pack Bryan and Marc Michaelson

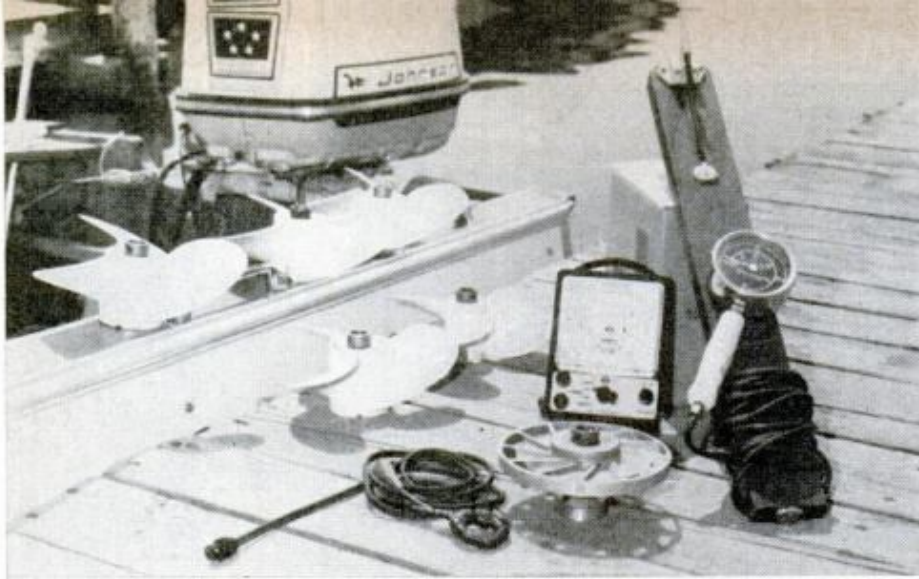
**F**OR EVERY BOAT AND MOTOR combination there is one propeller that will produce optimum performance. The finest engine tuning job and the slickest hull in the world will be second rate unless they are combined with the right prop.

Whether you're operating a runabout or a houseboat; looking for speed or economy, ease of handling or pulling

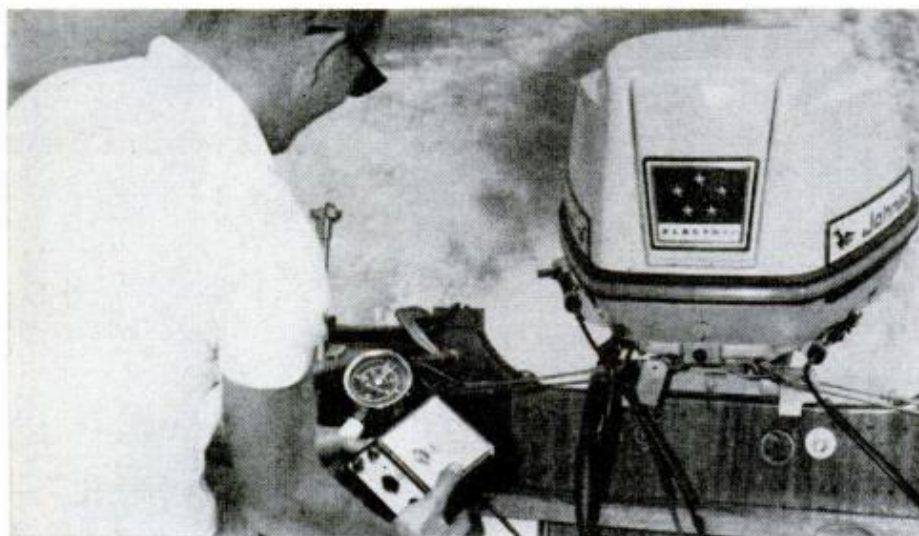
**CHANGING PROPS AT DOCKSIDE** is a simple matter of removing a pin and taking the prop off the hub. A number of props can be tested in a short time







**EQUIPMENT FOR A COMPLETE TEST** includes a variety of props, a tachometer, a speedometer and a factory test wheel. The operating specifications for the motor and prop recommendations for boat and motor are also necessary



**RUNNING AT FULL THROTTLE** on open water, a speedometer is used to compare the speed with the reading of the tachometer, which will tell if a particular prop is allowing the motor to operate within its proper range



power for water skiers, for peak operating efficiency you must do some personal research to find the correct propeller for the particular job.

When the U.S. Coast Guard entered two boats in the punishing 188-mile Miami-Nassau race as part of a small-boat evaluation program, they chose two 30-foot Pearson fiberglass utility hulls powered by paired Cummins 588-cubic-inch turbocharged diesels. Designed for rough water, the boats were to be raced in "semi-stock" condition, leaving on board most of the extra equipment that a rescue craft would ordinarily carry. The only changes from "stock" were in the engines, which were revamped to produce well over 300 hp. per engine.

Each boat weighed about two tons and with the addition of a full load of fuel and the problem of rough water, and you

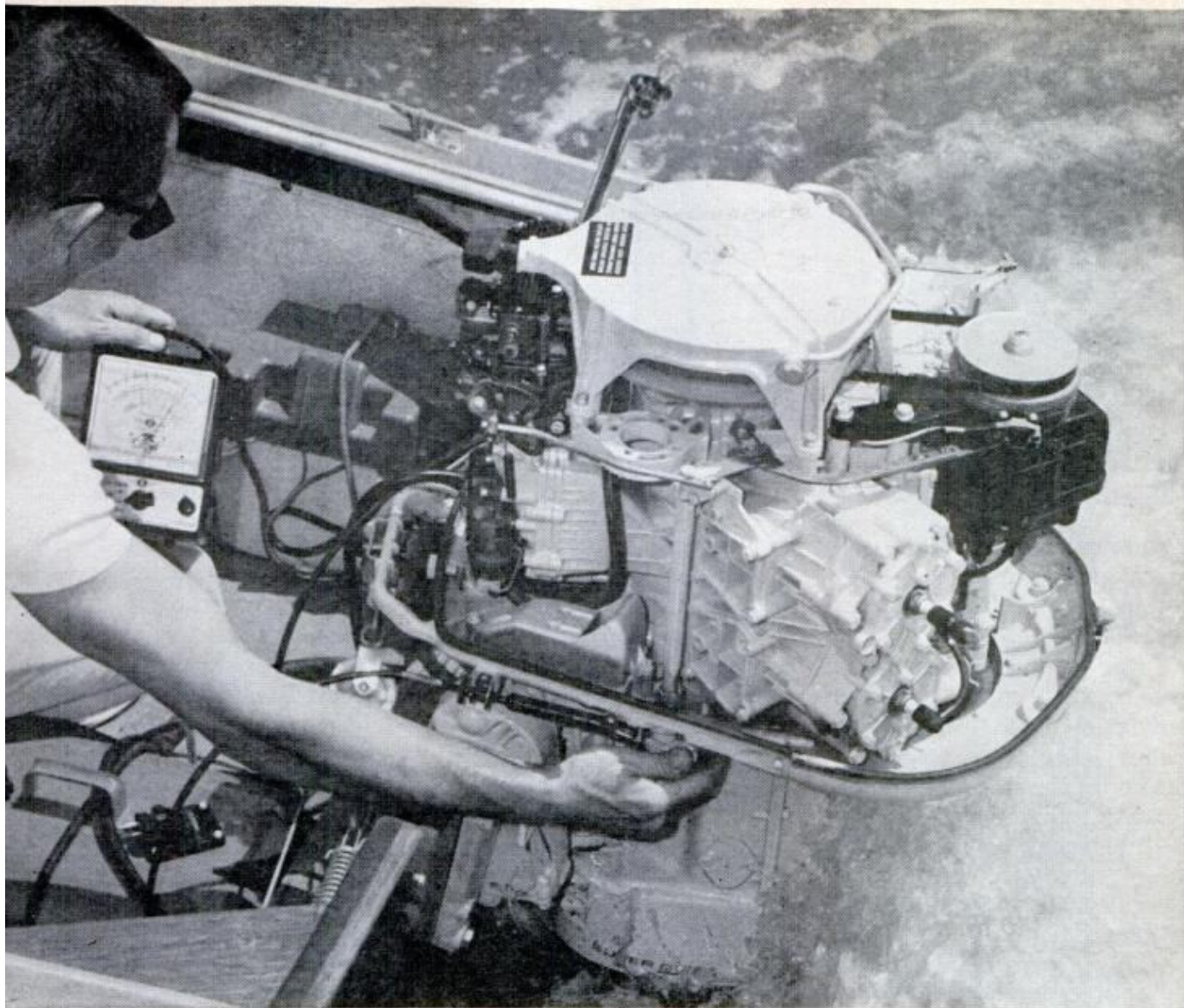
might think that a flat-pitch work propeller would be needed.

But it did not work out that way. The first props they tried were not capable of utilizing all the power the big diesels were putting out, allowing the engines to hit maximum r.p.m. before top speed was reached.

A prop was needed to match the powerplant and the boat's design, giving constant thrust and "bite" even on high speed turns. Finally, the Columbian Bronze Corp. of Freeport, L.I., came up with a deep-pitch prop whose blades were 50 percent wider than usual and contained a special section in each blade to give it added lift. With these special props custom matched to the boat and motors, the Coast Guard took first place in their class.

The same lesson also applies to your own boat and motor. Using simple tests to





**DOCKSIDE TEST** requires a tachometer and a test wheel, a hubbed wheel into which predetermined water resistance has been built. With the test wheel on the hub, the motor should reach top r.p.m. with the throttle wide open

make sure that your engine is operating at peak efficiency, you can then match it with the best possible propeller.

The equipment you need is available at most dealers and the majority of them will either lend or rent it to you for the few hours it will take to get the job done. You'll need a tachometer and a speedometer, the correct operating specifications for your motor, a list of recommended propellers for your own boat and motor combination, and the factory test wheel for your motor.

A test wheel is literally what its name implies, a hubbed wheel or disc with a calibrated amount of water resistance built into it. Every manufacturer provides such a wheel to match each of the motors he produces. The wheel puts the correct load on the motor when running at peak r.p.m. and will help you to set the standard

against which you'll compare various propellers. It can be used with the motor in a test tank or on the transom at dockside.

Having checked plugs, magneto, timing and carburetion to see that they match manufacturer's recommendations, replace the existing propeller with the test wheel, put the lower unit into the water, and hook up the tachometer. Start the motor and allow it to warm up for a few minutes. Then open the throttle wide and when the tachometer steadies, take a reading. If it goes to the top of the recommended r.p.m. range in the specs, you're all set. If not, make the necessary adjustments to timing and carburetion (you can probably do this when the engine is running) until the needle climbs to the point you're after.

Once you know that the engine will put out the power it's supposed to, you can





**COAST GUARD** boat won its class in Miami-Nassau race, required special props that had a deep pitch and were 50 percent wider than usual to utilize the output of two powerful diesel engines

begin your search for a perfect prop. However, there's a key step you'll want to take care of first. Check the bottom of the boat.

If the boat has been in the water for any length of time, it will probably have accumulated a slippery growth that's slicker than glare ice. You would think this might increase the boat's top speed, but it can actually cut your speed many miles an hour and should be thoroughly removed. We've found that a plastic scouring pad will cut it better than anything without harming the finish. While you're at it, fill any nicks or gouges and, if there's time, wax the bottom with a good grade of auto wax.

With your present propeller on the shaft, rig the boat as it will run during normal activities. Your first test will be to run straight, without "optional load (O.L.)." Under O.L. include anything not considered standard equipment always carried

in the boat. This could be extra fuel, passengers, camping equipment or anything else not used in day-to-day running.

Your standard equipment might be two full fuel tanks, water skis, anchor and rope, safety cushions and life jackets, fire extinguisher, first aid kit and boat hook or paddle. The idea is to test the boat under conditions as close to normal as possible, rather than setting it up for absolute maximum speed in a superlight condition and then finding it unable to get on plane when you take the family out for a spin. For the first, or base, test, you'll be in the boat alone with all the standard equipment. Move equipment around until the boat floats on an even keel.

Head for open water where you can safely run at full throttle. Once on plane, when you can hear that the engine r.p.m. has leveled off at a peak, check both speedometer and tachometer and record

*(Please turn to page 210)*

#### PROPELLER SELECTION TEST \*

	Prop	R.p.m.	Speed	Notch	Load	Comments
1st	10 x 11	4000	32	2d	600	First test, recommended wheel
	10 x 11	4300	33	3d	600	First test, recommended wheel
	10 x 11	4400	33½	4th	600	Bow wild, required over steering
2nd	10¼ x 10	4500	32½	3d	600	Notable improvement
	10¼ x 10	4500	34	3d	200	Notable improvement
3rd	10 x 9¼	4800	33	3d	200	Fast getaway, best all around prop
	10 x 9¼	4600	33	3d	600	Fast getaway, best all around prop
4th	9½ x 10	4900	33½-34	3d	200	Original wheel, kept as spare
	9½ x 10	4900	33½	3d	400	Original wheel, kept as spare

\* Cruisers, Inc. #100 14-Foot Lapstrake Runabout with 60 hp. Johnson



# New Fuel for Modern Outboards

*Some day soon you may start saving 60 percent on fuel costs, have smaller maintenance bills and leave no oil slick on the water behind you*

By Pack Bryan

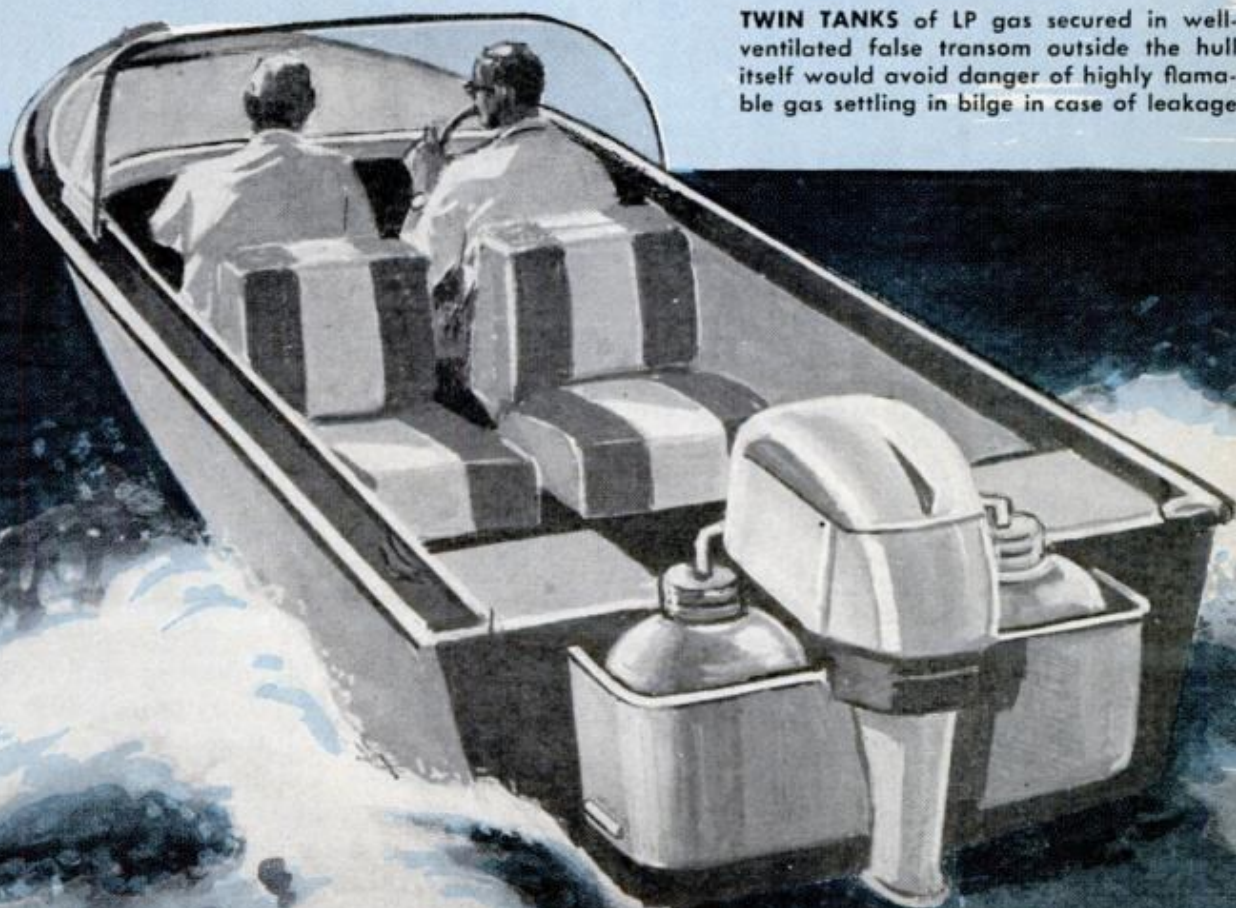
**I** HAVE NO DOUBTS WHATSOEVER," says Dick Mielke. "The four-cycle outboard converted to run on LP gas will eventually take over from the standard gas and oil burning outboards. There are still drawbacks to be ironed out for the runabouts, but for bigger boats LP just can't be beat."

Owner of the largest fleet of rental houseboats in Wisconsin, Mielke converted a new 55-hp. Homelite four-cycle outboard to bottled gas last summer and came up with a 60-percent drop in fuel costs.

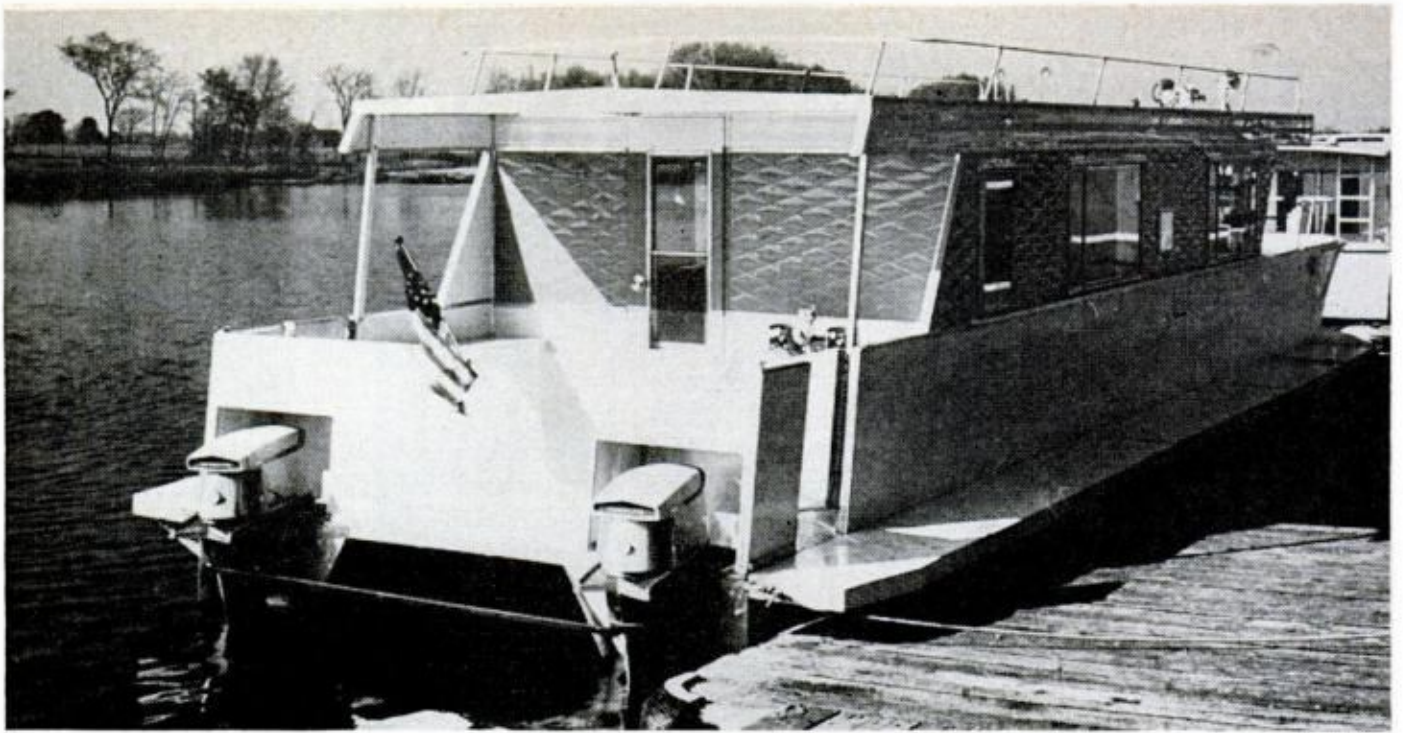
The switch to bottled gas came as a result of a long series of recurring motor troubles during the 1963 season, troubles which caused him to spend over \$2000 in replacement spark plugs alone. He eventually traced these troubles to a combination of customer carelessness and the specialized nature of his rental business.

Unlike most rented boats and motors, which are fueled at their home base and returned the same day, Mielke's houseboats go out for as much as a week at a time and range as

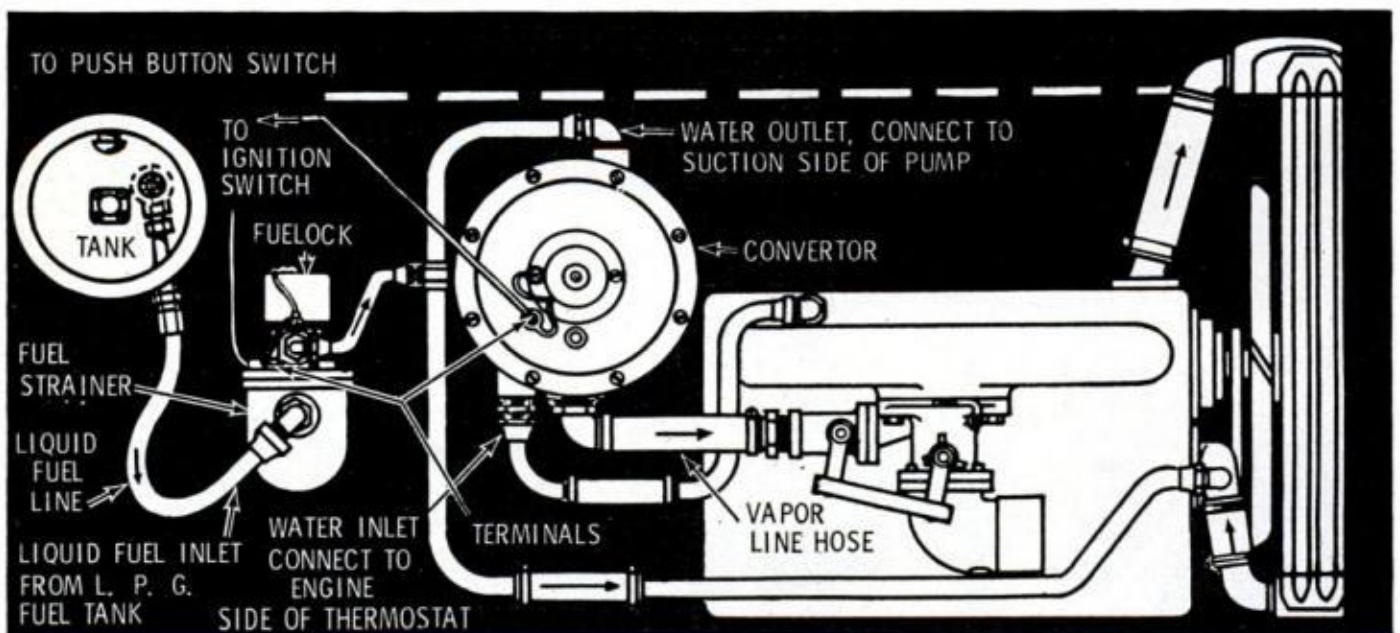
**TWIN TANKS** of LP gas secured in well-ventilated false transom outside the hull itself would avoid danger of highly flammable gas settling in bilge in case of leakage







**TWIN HOMELITE FOUR-CYCLE OUTBOARDS** were fitted to this rental houseboat and run off propane vapor to test the fuel's efficiency. The motors not only ran without mishap, but operated at 60 percent less cost than gasoline



**TYPICAL LP GAS INSTALLATION** in an automobile is illustrated in the drawing (above). The outboard installation is similar, with the exception that a water intake and exhaust replaces radiator and provides water circulation

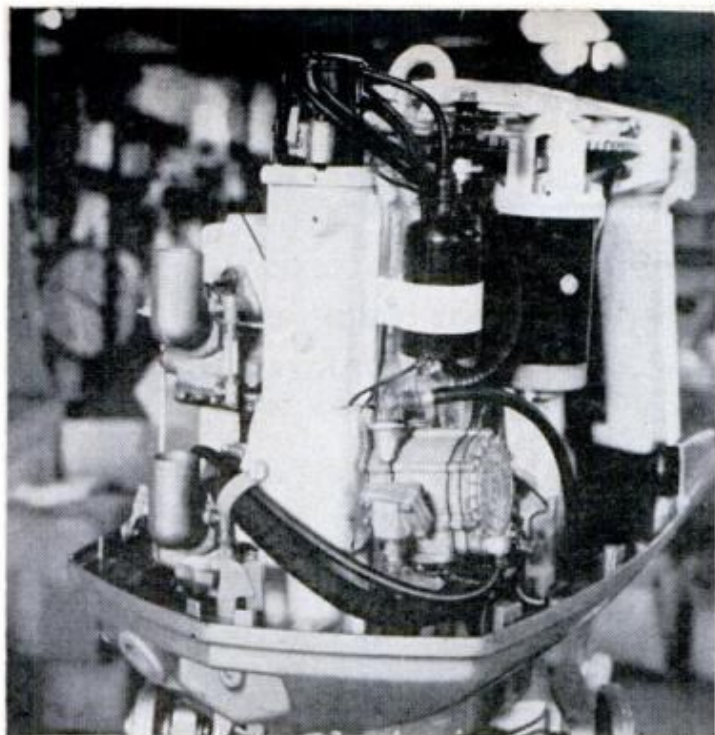
far as 200 miles away from home port. Two-cycle outboards can be temperamental when they're fed the wrong gas and oil formula, and not every person who rents one is familiar with the fuel requirements. A careless or ignorant dock attendant who does not take the time to mix the fuel properly can cause considerable trouble. An engine that is run first on raw gas from the top is not being lubricated and the cylinder walls can easily be scored. And when it is suddenly

slugged with a stiff dose of oil from the bottom of the tank, the engine will smoke and the plugs will invariably become fouled.

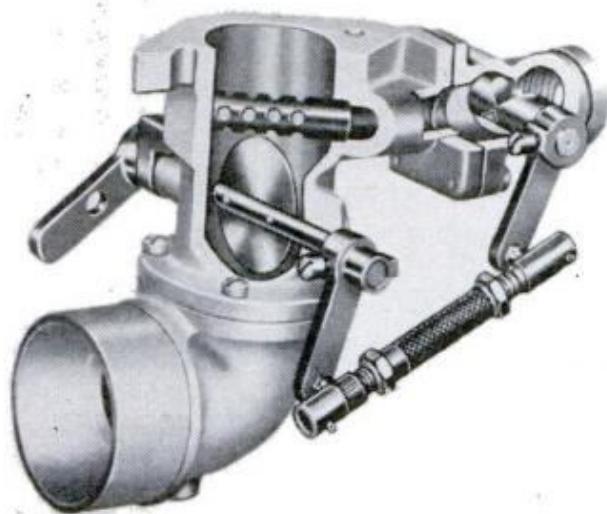
After months of covering hundreds of miles to rescue irate customers who were stranded by fouled plugs, Mielke knew he had to make a change.

Reasoning that a four-cycle engine, which doesn't require the mixing of oil with the gas would be less susceptible to the ills described above, he re-equipped





**SPECIAL LP GAS** carburetor replaces the gasoline carburetor. The liquid LP is converted to a vapor in an expansion chamber before it reaches the motor



**LP CARBURETOR** is equipped with a rotary valve with contours that establish amount of gas needed for idling. Full throttle is controlled by a spraybar

his fleet in early 1964 with new, 55-hp. Homelite outboards, husky four-cycle jobs with a good record of reliability behind them. Immediately his plug problems evaporated and he was able to send his customers out without a quiet prayer that they'd get the right kind of fuel whenever and wherever they stopped. Fuel costs dropped significantly, too, and once on the track of operating economies, he decided to experiment with using LP gas.

Already experienced with the LP gas

which fueled the lamps, stove, refrigerator and heaters on his boats, he also knew that fleets of busses and taxis in dozens of cities were using it, and that countless thousands of farm tractors and industrial power plants of all sorts had also been converted successfully.

LP gas is cheaper than other marine fuels. And although there is currently a lack of LP gas fueling facilities at most marinas, when the demand is created, the bottled gas will follow. LP gas burns clean, with no by-products to blow past the rings and contaminate the oil. Plugs will last up to 25,000 miles, for example, in a car or truck. It's dry, so it won't wash down the cylinder walls and leave them subject to scoring while diluting the oil. It has a high enough octane rating for standard engines so that there's no need to add lead to prevent knocking and then pile other compounds on top to counteract the bad side effects of the lead. It produces much less monoxides and fumes and its exhaust, as a result, is clear.

With a "let's do it and see what happens" approach, Mielke set to work with engineers from Pyrofax (a leading marketer of LP gas) and Marvel-Schebler (the division of Borg-Warner that makes Century LP gas equipment). Contact was also maintained with Homelite. An extra line was run from one of the LP gas bottles already on the boat and connected to a regulator at the engine. An LP gas carburetor replaced the gasoline carburetor on the engine, and the timing was changed.

The engine fired on the first crank and was run for a total of 155 hours before they took it off to check it over. (155 hours is roughly twice what statistics say the average outboarder uses his boat each summer.) Operating costs dropped from 75 cents an hour to 26 cents, pushing a 36-foot twin-hulled houseboat with a 12-foot beam.

Spark plugs remained almost unbelievably clean and at the end of the 155 hours, looked good enough to go for another three or four times that number.

In addition, the oil stayed clean and didn't need to be changed once. Having been warned that the oil would remain deceptively clean and fresh looking, Mielke decided to install an engine-hour meter so that regular oil change and maintenance intervals could be scheduled accurately.

By using the existing bottle set-up on

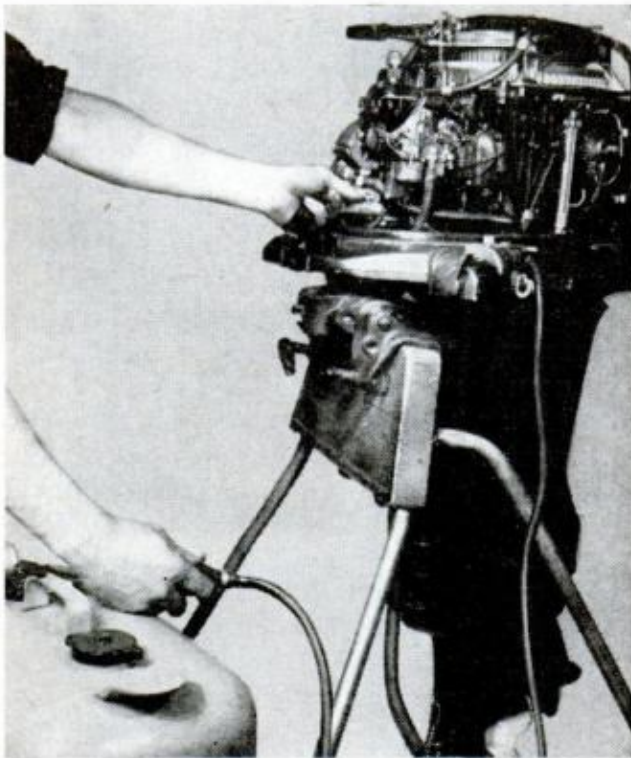
[\(Please turn to page 214\)](#)



# What to Do Before Your

Black tracks on the magneto, a hairline crack in the flywheel casing, pitted points or a spittleless exhaust—all are clues to potential conkouts

By Henry B. Notrom



**TO CHECK FUEL FLOW**, hook up the tank-to-engine line and remove the bottom drain plug from the carburetor, then pump gas through the system. Any obstructions or damage can then be pinpointed with ease

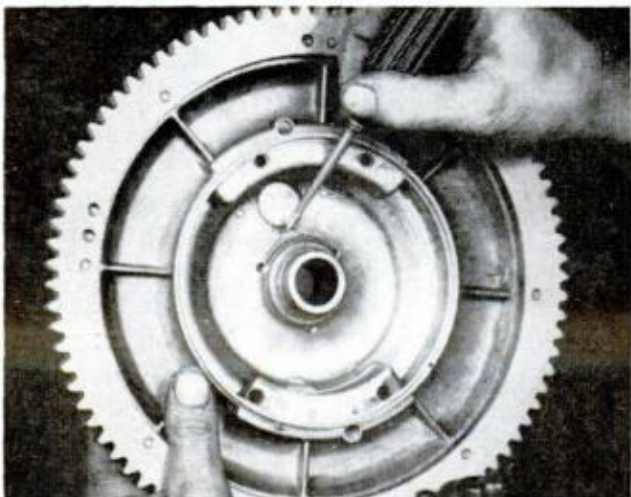
**S**UPPOSE A TINY CRACK developed in the flywheel casing of your motor at the tail-end of last season. The ignition probably wouldn't give you any trouble on your final run, but that crack is going to get bigger as this season progresses. And one bright boating weekend you're going to find yourself in the middle of a lake, cussing out a dead motor.

Such breakdowns can be avoided by checking your motor over carefully before the season starts, and this involves a lot more than switching spark plugs, pumping in grease and polishing up the cover.

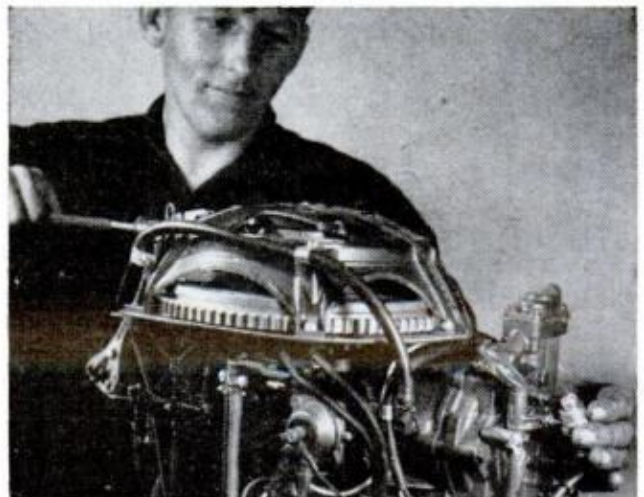
Ask a man whose bread and butter is outboard maintenance. According to Don Boron, owner of D&R Boat Sales in Greenbrook Township, N.J., "Starting in late May and right through the season, we get engines in our repair shop that shouldn't be there in the first place. They started OK in March, but after being run awhile an undetected problem snowballs and the customer gets a bill that could have been avoided."

Taking it from the top, the first *necessary* service when preparing your outboard for the season is to make sure all

**CRACKS IN FLYWHEEL** can prevent full ignition spark and impair performance, and will probably become more serious as season progresses. Buy a new flywheel



**TO TEST SPARK PLUGS**, hold each plug to ground while you spin the recoil starter (or activate the electric starter). If plug's good, you'll get a fat spark





# Outboard Conks Out

parts turn free and easy. Always use the recoil starter to check this, even though your motor may be equipped with electric starting. (If full current is shoved through the system and something is binding, things could literally bust wide open.) Engines with electric starters have a pulley on top of the flywheel for this purpose.

Remove the cover, put the engine in neutral and pull the recoil starter. If parts are binding—if the recoil starter doesn't pull out easily and all the way—chances are moisture has rusted metal somewhere inside.

Depending on the extent of the seizure, you might be able to free it yourself. At least you won't hurt anything by giving it one or two tries.

First, remove the starter top. Then, with a breaker bar and a properly fitting socket on the flywheel nut, give one or two quick tugs in the direction of flywheel rotation—but that's all. If the engine doesn't free itself, it has to be dismantled and this means a trip to the repair shop.

Suppose, though, that the engine does break free. This doesn't mean that the same rust won't cause binding again, so lubrication is needed. (This lubrication, by the way, is a step that should be handled in the fall to help prevent internal rusting during storage.)

After removing the spark plugs, squirt a little motor oil into each cylinder. Now, give the engine a few whirls with the re-

coil starter to distribute the oil around the cylinder walls.

As long as you have the plugs removed, make sure they're in good shape, then clean and regap them (or buy a new set). But before replacing them, check the overall condition of the ignition system.

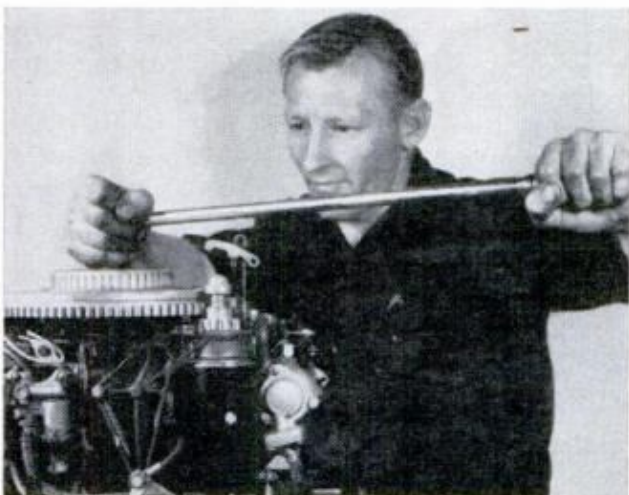
Put a plug boot on one of the plugs, hold the plug to ground and pull the recoil starter. (If your engine has electric starting, you can run this test by cranking it electrically.) A fat, hot spark should jump the plug's electrodes.

If not, you've got an ignition breakdown and the flywheel has to come off to check points, coil clearances and, most important, the condition of the flywheel itself.

Should you pull the flywheel if the ignition check proves satisfactory? That's up to you, but it's one sure way to detect an ignition problem in its early stages and it's the only way to make sure points are properly gapped. To remove the flywheel, though, you have to borrow or buy a flywheel puller, a specialized tool costing anywhere from \$4 to \$25, depending on the size of your motor. These are specialized tools that you can't purchase at a local hardware store. Order one through your local outboard dealer or direct from the manufacturer of your motor.

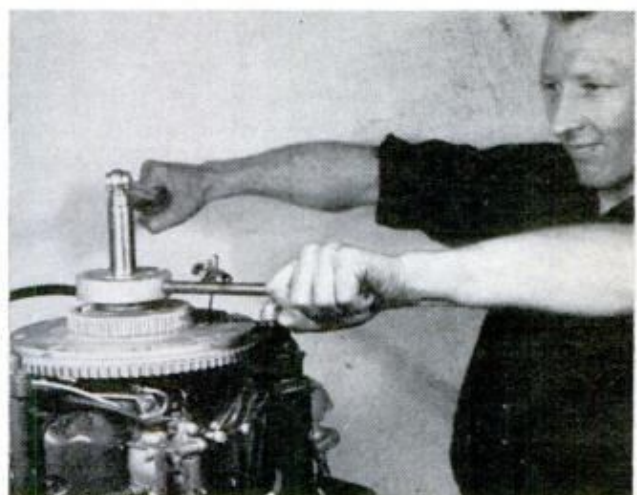
Check the inside of the flywheel closely for cracks that might prevent full ignition sparking. If you find any cracks, replace the flywheel.

**ENGINE DRAG** caused by internal rust can often be overcome by first breaking the engine free with a breaker bar and socket placed on the flywheel nut

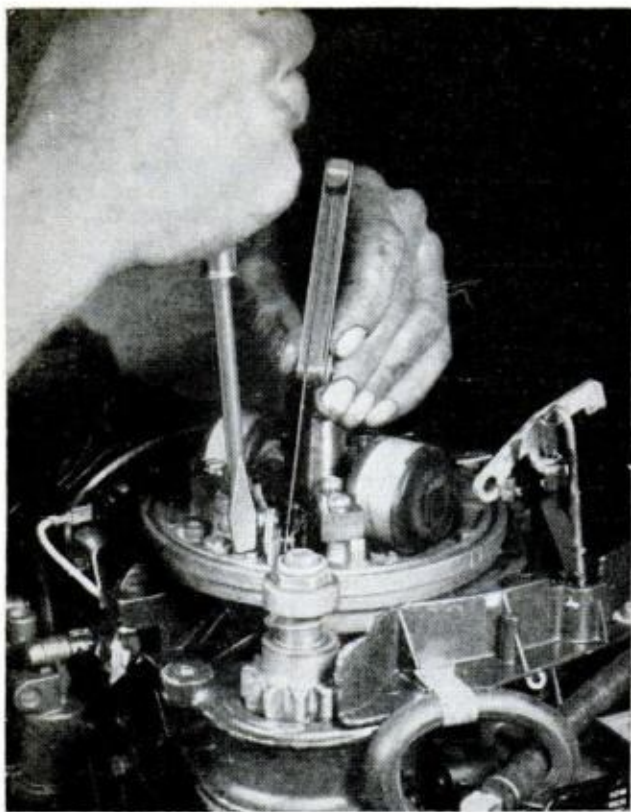


MARCH 1965

**FLYWHEEL PULLER** is one tool you should have if you plan to do much of your own maintenance. You can probably buy one from manufacturer of your motor







If your engine is mechanically started or a direct battery-to-starter type, check magnetos on the flywheel for black tracks caused by misadjusted coil laminations, hitting against them. These coils, by the way, are pre-set by machine, so don't try to reset them yourself. Get replacements from your dealer.

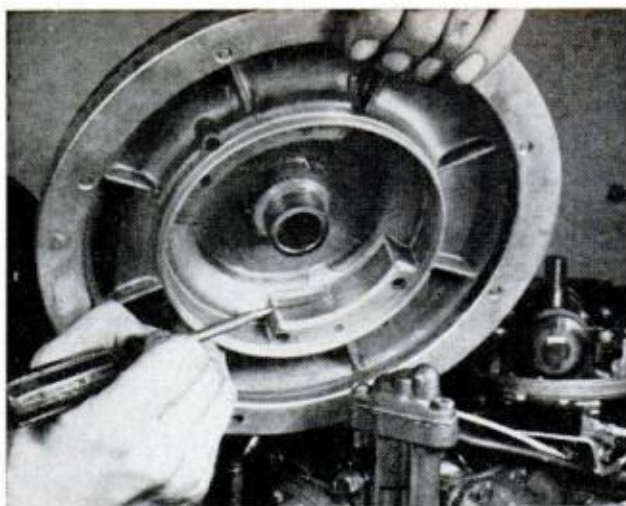
The magnetos must also be shiny and free of rust. If not, it indicates a cracked or bent flywheel, or a bent crankshaft. So, again, check the flywheel carefully. You might not be able to determine whether it's bent. If you can't, try a new flywheel first (it's cheaper than checking for a bent crankshaft). If this doesn't clear up the trouble, then the crankshaft will have to be checked.

If the magnetos are in good condition, coat them lightly with ordinary engine oil.

The other common cause of poor spark is worn or misadjusted breaker points. Examine the points. If worn or pitted, replace them. Then regap to the specification indicated on the flywheel housing.

If a fat spark fails to occur with an electrically operated engine of the direct battery-to-starter type you should, naturally, check the battery and associated parts (solenoid, cables and ignition switch) in addition to the flywheel and magnetos. Any interruption of current flow from the battery will prevent good spark.

In battery-powered engines that have an automotive-type ignition set-up, in addition to the battery and the rest of the charging system (alternator or generator and regulator), one major cause of poor spark is a weak coil. Test with a volt-



**TRACKS ON MAGNETOS** indicate that the coil laminations have thrown their adjustment. Magnetos in good shape should be shiny and free of any rust

**ADJUSTING POINTS** is a simple job requiring a screwdriver and the correct size feeler gage. If you find the points are pitted, it's time to replace them

meter and ammeter to pinpoint the malfunctioning area.

When ignition system checks are complete, install the spark plugs and turn your attention to the fuel system. (This is especially important if it wasn't done in the fall, and if all gas wasn't drained at that time.)

An over-all check of the fuel system is made by hooking up the fuel tank to the engine, unscrewing the bottom drain plug of the carburetor and pumping up tank pressure to send gas through the fuel system. This does two things—it gets rid of stale gas that was left in the system and checks the fuel system for obstructions or damage.

If no gas comes flowing from the bottom drain, remove the fuel line entering the carburetor. Gas pouring out indicates trouble inside the carburetor—gas is getting to, but not through, the carb. If no gas comes out at the carb, then there's a restriction back toward the fuel tank in the filter or fuel line. In such cases, change the filter element and clean out the line.

Remember the greasing operation we seemed to berate before—we didn't mean to, because it's important. It's a job that should be handled in the fall, but if you didn't get around to it then, be sure to cover it now. Otherwise you're asking for trouble.

So, remove the bottom plug and overflow plug of the lower unit and let the old fluid drain out. The engine must be in a vertical position to permit full drainage.

Pump in fresh oil (hypoid 90 gear oil) until it flows out the overflow plug. While



## Outboard Clinic

down on that lower unit, check the prop for pitting, nicks or other signs of damage. If bent, your dealer might be able to straighten it with a prop block. If he can't, or if the prop is otherwise damaged, replace it. Running a bad prop is the quickest way to lose both performance and fuel dollars. (See "Tips on Choosing the Perfect Prop," p. 133.)

Finally, lube all zerk fittings with marine multipurpose grease, type A.

You're now ready to put the engine in the water to test the cooling system. This can be done in a 55-gallon drum or at the dock before that first weekend of boating. But the engine shouldn't be run for any period of time without checking its cooling condition, no matter how it operated on the final run last fall.

Start it up and keep your eye on the exhaust port on the lower unit. Engines that don't have thermostats should have water spitting out that port immediately. If your engine does have a thermostat, allow a three-minute warmup period for the thermostat to open.

If no water spurts out, chances are the water pump's shot, which means that the lower unit will have to be ripped into and the pump replaced. The exhaust port could be clogged, but this is comparatively rare. With a thermostat-equipped unit, maybe the thermostat has gone bad and is not opening. ★★

**FILTER CAN BE** a trouble spot in your fuel system, so clean and inspect it thoroughly. A torn or punctured filter should be replaced immediately



MARCH 1965

**Q** I'm stumped. After a complete fuel system service, which included cleaning the carburetor and replacing the fuel filter of my Evinrude Sportwin, the engine continues to cough and die. Never happened before. It's getting spark, so I don't believe it's ignition. Any ideas?—**J.B., Fla.**

**A** One or two. There might be a kink or break in the fuel line. Or you may be operating the engine at full throttle with too lean a mixture. I'd also check the gas tank cap. As strange as it might sound, if that cap were put on too loose the last time you filled up the tank, it can cause engine coughing and dying. A loose cap results in a pressure drop—pressure that's needed to insure a proper gas feed to the engine.

**Q** I just bought a new 60-hp. Johnson, and in looking over the engine, I found this caution on the red lead going from the battery to the starter solenoid: "Disconnect Battery First. . . Then Disconnect Solenoid." Can you tell me why?—**B.C.J., Wisc.**

**A** This model has an alternator, with the battery cables running directly from the battery to the engine and not through a junction box, which has been eliminated on many 1965 models. This, then, is a caution which must be observed since that positive cable, which you call the "red lead," is hot whenever the battery is connected. If you unhook the lead at the starter solenoid without first disconnecting it at the battery, any accidental touching of that cable to a ground, or even to the wrench you're using, will result in an electrical arc and possible burning up of the cable insulation or damage to the alternator.

As a service to the readers of *POPULAR MECHANICS* in solving problems relating to their outboard engines, you are invited to submit your questions to this column. All questions will be answered, either in the column or by mail. Address Outboard Clinic, Popular Mechanics Magazine, 575 Lexington Avenue, New York, New York 10022 and enclose a 5 cent stamp.





# Saucy Shingle

Don't let the \$25 price tag fool you. This sleek one-man skimmer is a rugged boat built for speed

**DESIGNER:** Glen L. Witt  
**TYPE OF HULL:** Three-Point Hydroplane  
**LENGTH:** 8 ft. 2 in. Over-all  
**BEAM:** 54 in.  
**WEIGHT:** 74 lbs.  
**COST TO CONSTRUCT:** \$25  
**MAXIMUM HP:** 20  
**SPEED:** 33 m.p.h. with 14-hp. McCulloch motor turning 7½ x 10 two-blade prop; load included 175-lb. driver and 5 gal. gas  
**CONSTRUCTION DRAWINGS:** George Blow, PM Art Dept.

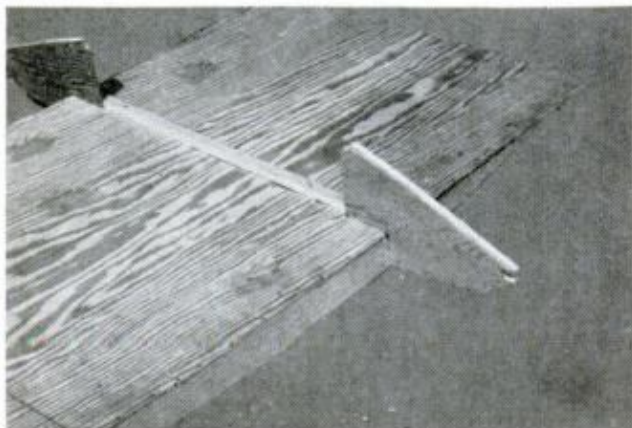
**W**HILE NOT INTENDED for an assault on world speed records, *Saucy Shingle* is basically the same breed as those big record boats. Three-point hydroplanes hold all major water speed records, and though her points may be smaller, she's a miniature thoroughbred.

Small enough to fit inside a station wagon or on top of a compact car, the bare hull weighs only 74 lbs. It's an easy construction job that can be accomplished in a corner of your garage or basement.

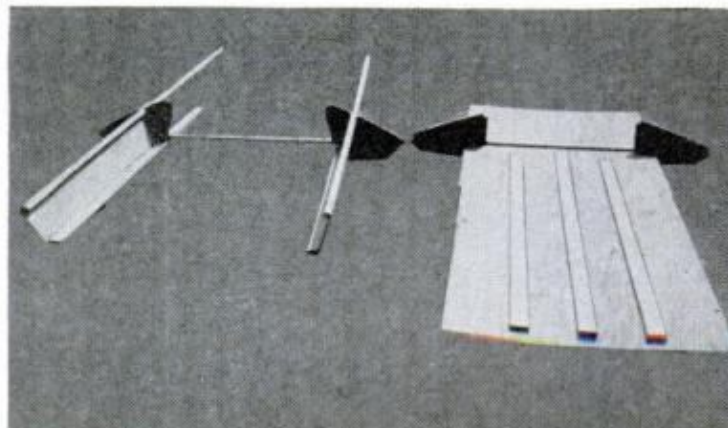
Study the drawings and photos carefully before starting to build. No building jig is required, but the steps must be carried out in order.

**STEP 1.** Cut the bottom planking sheet from ¼-in. plywood, and mark the posi-

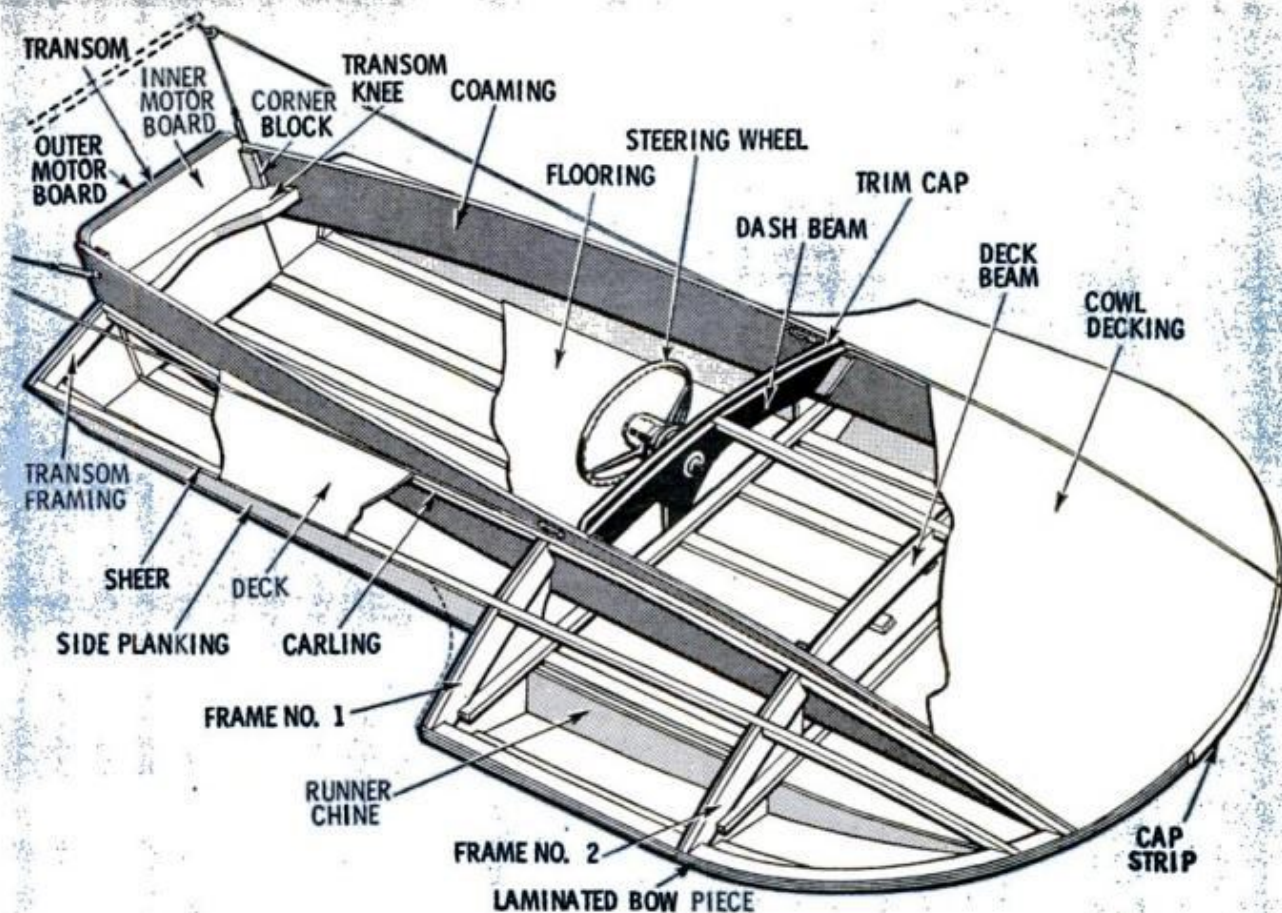
**RUNNER CHINE** is installed on the bottom planking forward of the line marking position of Frame 1



**TWO FRAMES** are secured to different sub-assemblies which are then assembled to form the hull framing







tions of the two frames, the transom and the battens. The runner chines are cut from  $\frac{1}{2}$ -in. spruce and extend from Frame 1 forward on both of the outer edges of the bottom panel. Nail from the inside of the planking with  $\frac{3}{4}$ -in. nails spaced 2 in. apart, after coating the contacting surfaces liberally with glue.

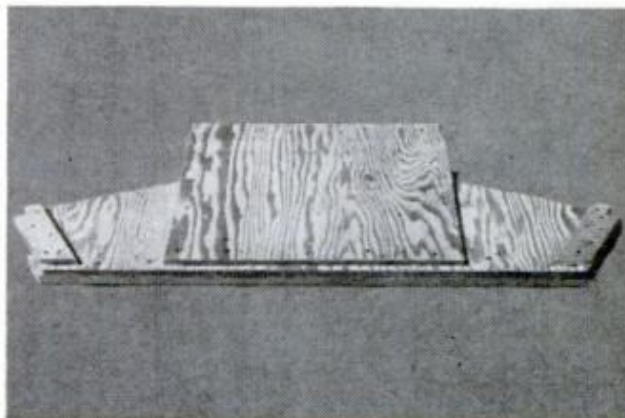
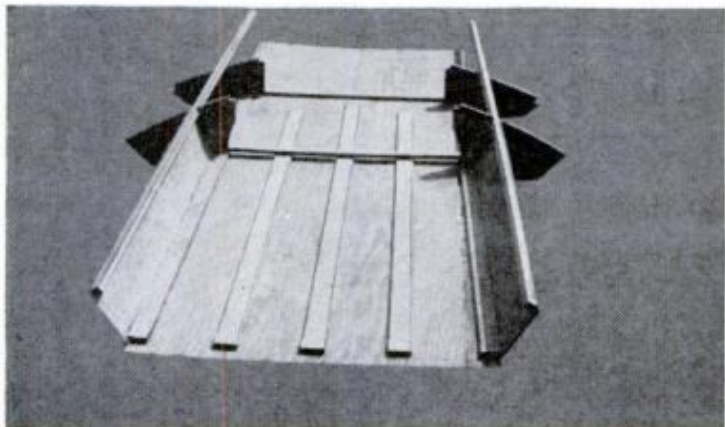
**STEP 2.** The frames are cut from  $\frac{1}{2}$ -in. spruce assembled over  $\frac{1}{4}$ -in. plywood gussets. On Frame 1, notches for the non-trip chine and the bow piece are cut into the frame only; on the balance of the longitudinals and also on Frame 2, the notches are cut into both the framework and the plywood gussets. Coat contacting surfaces with glue and assemble the framework to the  $\frac{1}{4}$ -in. plywood with  $\frac{3}{4}$ -in. nails. After the two half assemblies

**WHEN ASSEMBLED,** note that the bevelled chine member extends forward to where it meets Frame 2

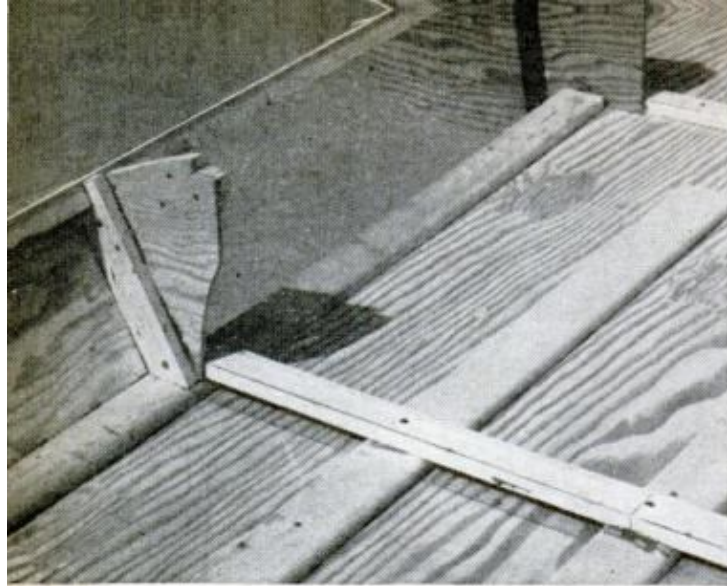
#### PATTERN KIT AVAILABLE

For those who desire to work from full-size patterns a kit is being offered. In addition to patterns for the runner chines, bow piece, side planking, and coaming this kit includes half-section templates of the transom, frames, deck and dash beam. A complete instruction sheet with written text, construction photographs and a separate drawing of construction details is also furnished. The price of the pattern kit is \$8.50 postpaid, and it may be obtained from Glen L. Marine Designs, 9152 E. Rosecrans, Bellflower, Calif.

**BOTTOM EDGE** of the transom must be bevelled 15 deg. to mate with bottom planking when it's installed

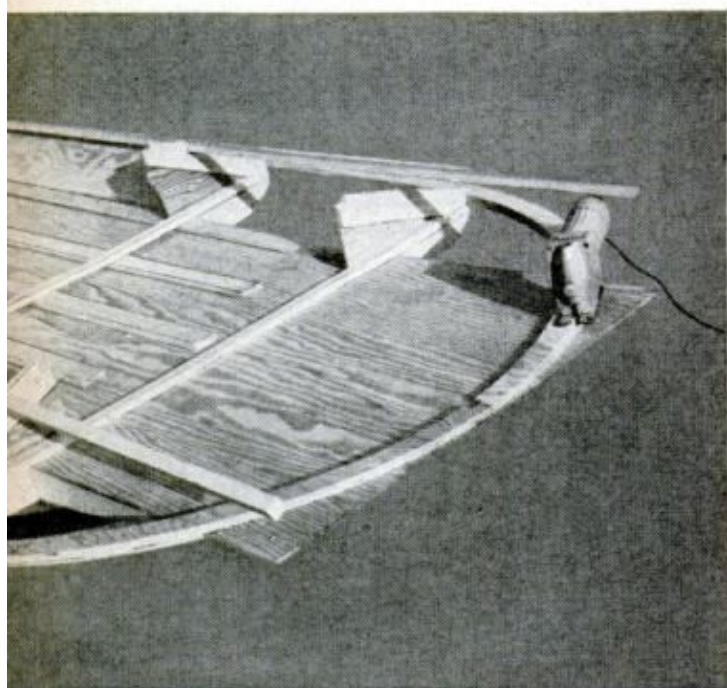




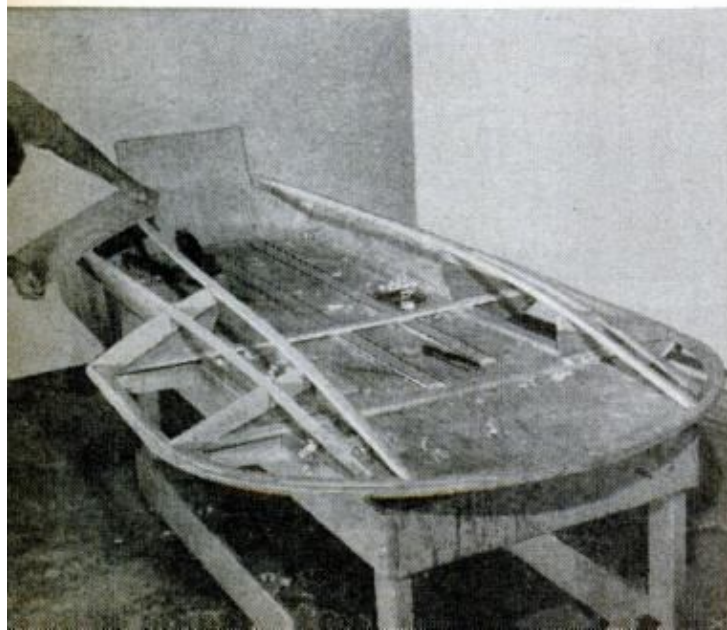


**BLOCKING ON AFT** side of Frame 1 should be secured to side planking before it's attached to frame

**BOW PIECE** made in two halves fits in notches in frames and rests on the bottom planking assembly



**WHEN ALL FRAMING** has been installed, it must be faired to assure perfect mating with the planking



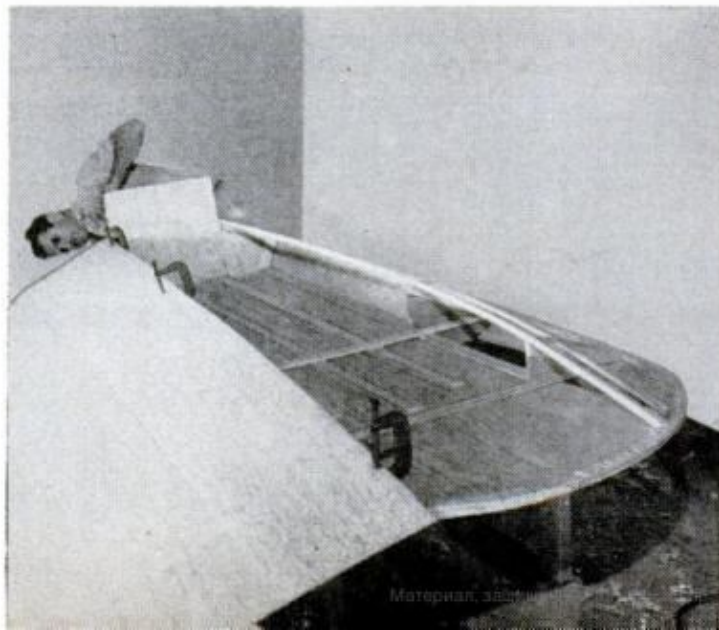
are made, they are mounted over the  $\frac{3}{4} \times 1\frac{1}{4}$ -in. crossmember so that the inside distance that will contact the runner chines is accurately spaced at 16 in. on either side of the center line.

**STEP 3.** Tack Frame 2 in place on the bottom planking, then permanently fasten it by driving nails through the underside into the cross member and through the runner chines into the side frame member. The three  $\frac{1}{2} \times 2$ -in. bottom battens are nailed from the underneath side with  $\frac{3}{4}$ -in. nails spaced about 3 in. apart. Note that at the aft end these members are bevelled to accommodate the 15-deg. angle of the transom and aligned to the inside of the transom surface.

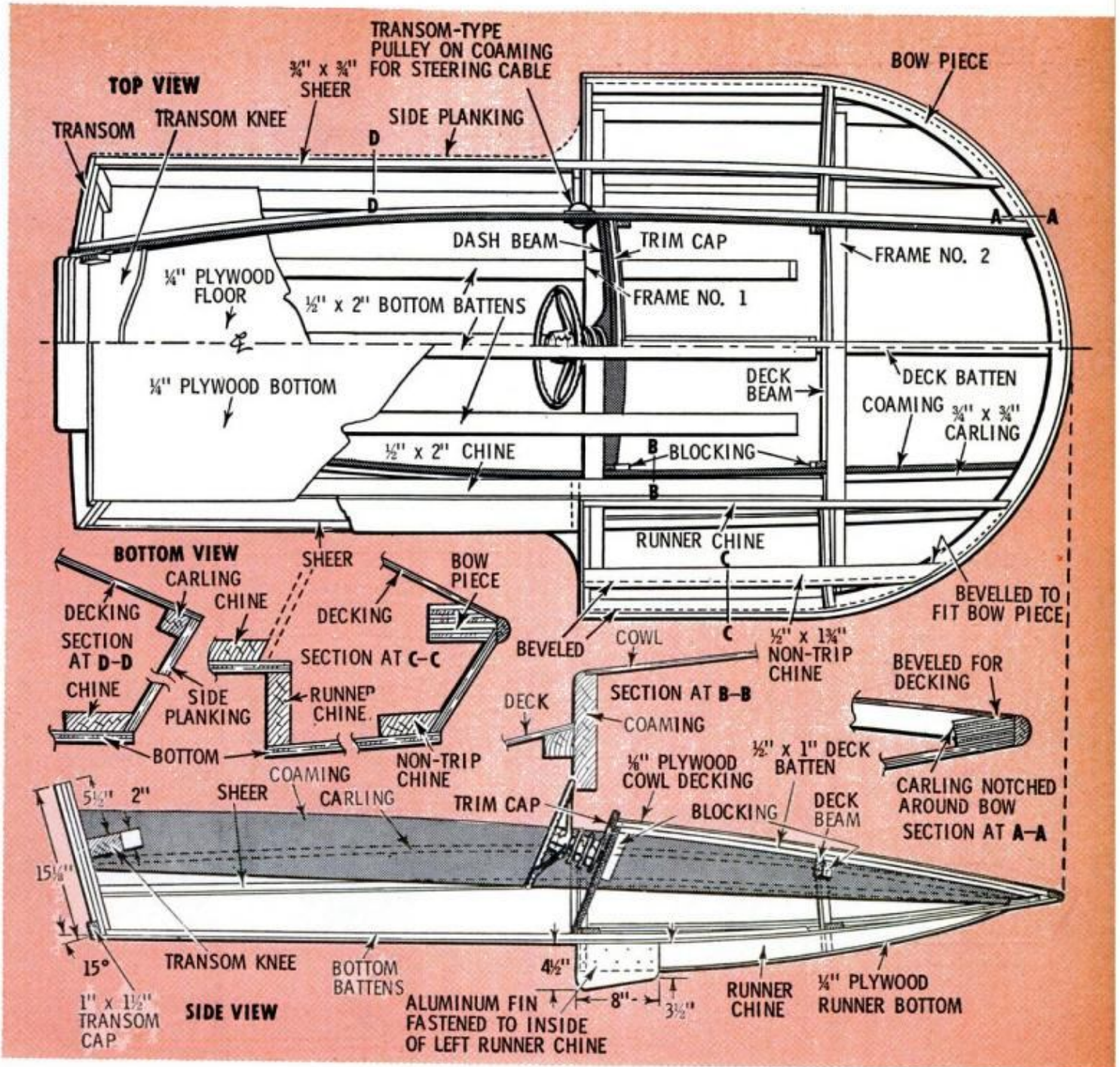
**STEP 4.** The side planking is cut from  $\frac{1}{4}$ -in. plywood and assembled to the chine and sheer clamp. Align the aft portion of the chine and sheer clamp carefully to allow for the thickness of the transom. The forward ends are allowed to run wild for cutting to length after assembly. Observe that the bottom edge of the plywood side planking and the chine are bevelled at a 30-deg. angle. During assembly, be sure that the bottom planking is straight as it contacts the chine member. Coat mating surfaces liberally with glue and nail with  $\frac{3}{4}$ -in. nails spaced about 2 in. apart. Frame 1 is then assembled and slipped into position over the chine members. Notice that a notch will be made in the chine to enable the frame to be slipped into position over the chine. On the aft side of the Frame 1 gusset, a block is used to fasten the side planking to the frame.

**STEP 5.** The sub-assembly just completed—side planking, chine and sheer with Frame 1—is now assembled to the bottom planking. The chine should run forward to contact with Frame 2. The sheer clamp is left to run wild over the

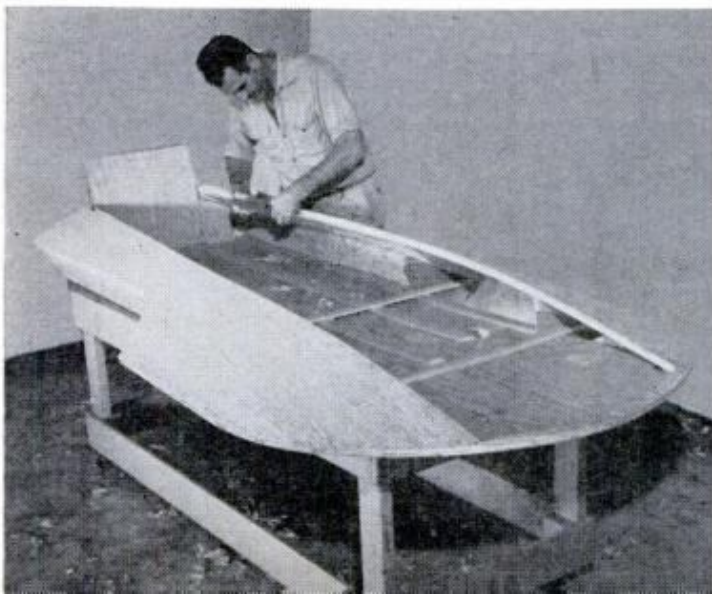
**BY CAREFUL CUTTING** you can obtain all the decking from a single sheet of plywood, so don't rush it







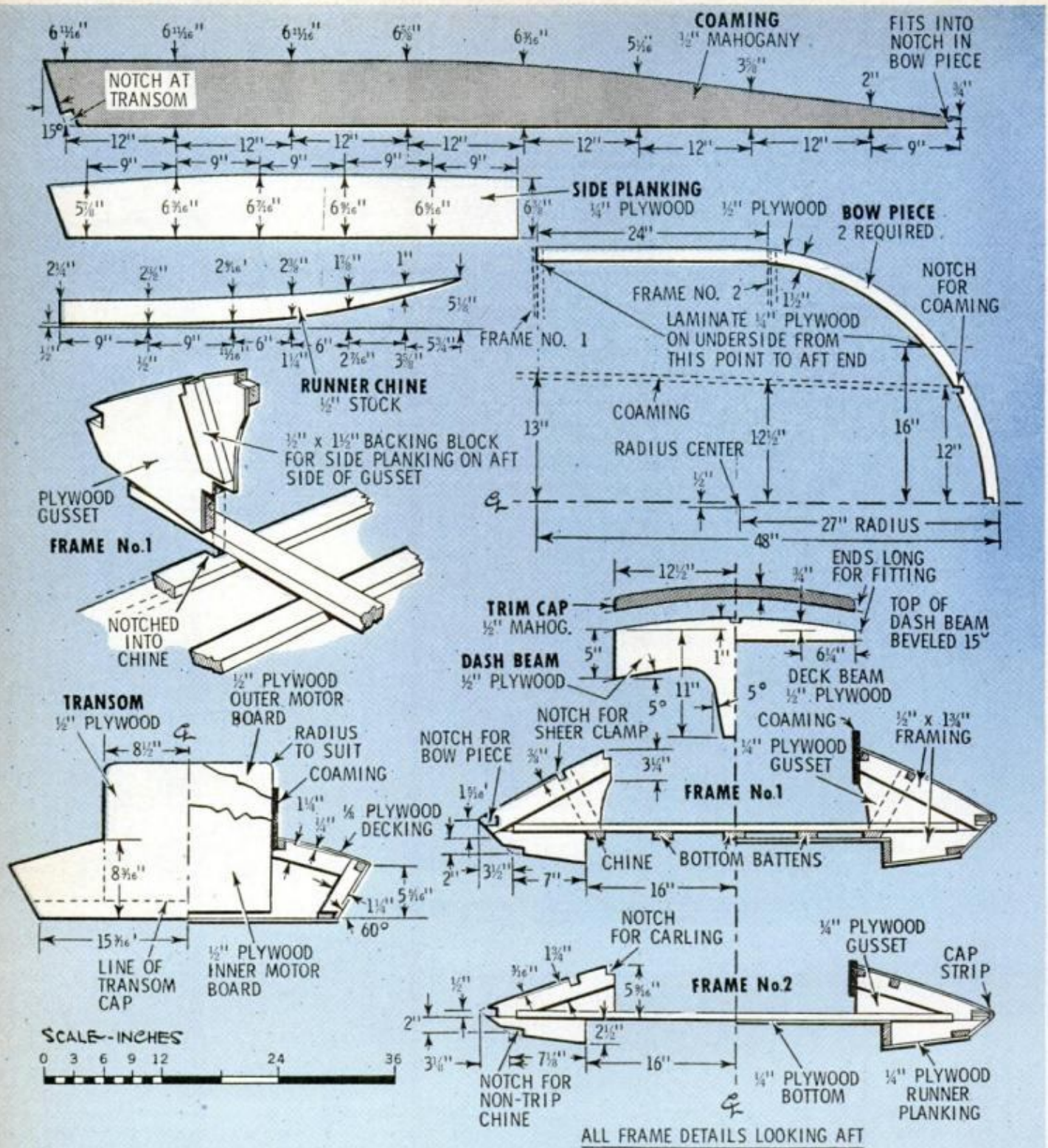
**FAIR DECKING** edge flush to the vertical carling so that the coaming will mate tightly for a good joint



**BLOCKING MOUNTED** on the inside of the coaming is used to secure dash beam and forward deck beam

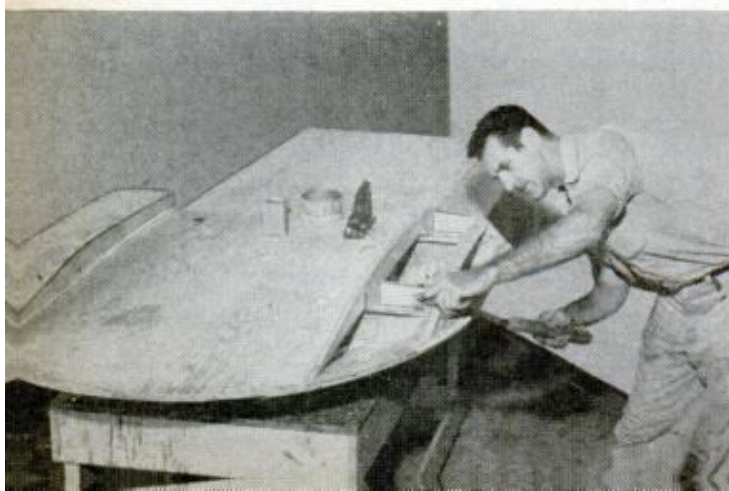






**TURNING HULL OVER**, the fairing is completed for planking. Note glue blocks at frame-chine junctions

**PLANKING** for non-trip chine should be bevelled flush with runner so it can be lapped by bottom planking







**WHEN RUNNING** any motor over 10 hp. on *Saucy Shingle*, play it safe by wearing life jacket and crash helmet

top of Frame 2. Work as rapidly as possible after coating the contact surfaces with glue, and nail through the bottom planking into the chine with  $\frac{3}{4}$ -in. nails spaced about 2 in. apart. Where Frame 1 contacts the battens, drive a  $1\frac{1}{4}$ -in. nail into each.

**STEP 6.** The transom is cut from  $\frac{1}{2}$ -in. plywood with the lower edge bevelled to contact the bottom planking. The inner motorboard is raised  $\frac{1}{2}$  in. above the bottom to act as a bearing surface for the bottom battens. The cap on the aft side of the transom must also be bevelled 15 deg. to accommodate the bottom planking. Assemble the side frame members to the transom, notching for the sheer clamp in the framework only and angling at the bottom for the chine members. Observe that the side frame member is left  $\frac{1}{2}$  in. above the bottom to provide a bearing for the chine members. Do not assemble the top frame member to the transom at this time. Cut it oversize on the carling end and set aside. The transom may now be

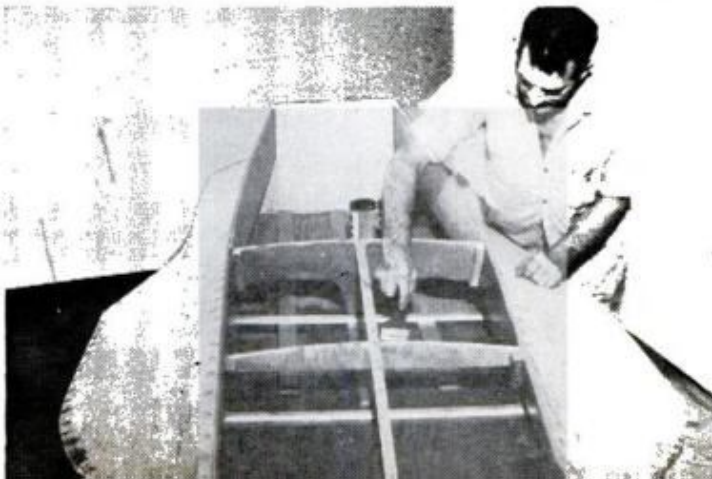
assembled to the bottom planking. Nail through the bottom planking into the  $\frac{3}{4}$ -in. member on the aft side with  $1\frac{1}{4}$ -in. nails spaced 2 in. apart. The side planking is nailed in position with  $\frac{3}{4}$ -in. nails.

**STEP 7.** The  $\frac{1}{2}$ -in. plywood bow piece is made in two halves. As indicated in the drawing, a  $\frac{1}{4}$ -in. piece of plywood is laminated to the underside of the aft portion of each of these pieces. The bow piece is then assembled to the bottom planking fitting into the notches in Frames 1 and 2. After coating the contacting surfaces with glue, nail from the planking into the bow piece with  $\frac{3}{4}$ -in. nails spaced about 2 in. apart. The excess bottom planking around the bow member is then trimmed off. *NOTE: From this point until the boat is finished, the hull should be set on a level surface so that the transom is not twisted in relation to the runners.*

**STEP 8.** The sheer clamp is notched into Frame 2 and extended forward to the [\(Please turn to page 206\)](#)

**PAINT INTERIOR** of the boat before mounting forward decking, using good rot-preventative coating

**CAR STRIP** on dash covers exposed edge of forward decking and projects about  $\frac{3}{4}$  in. above the surface





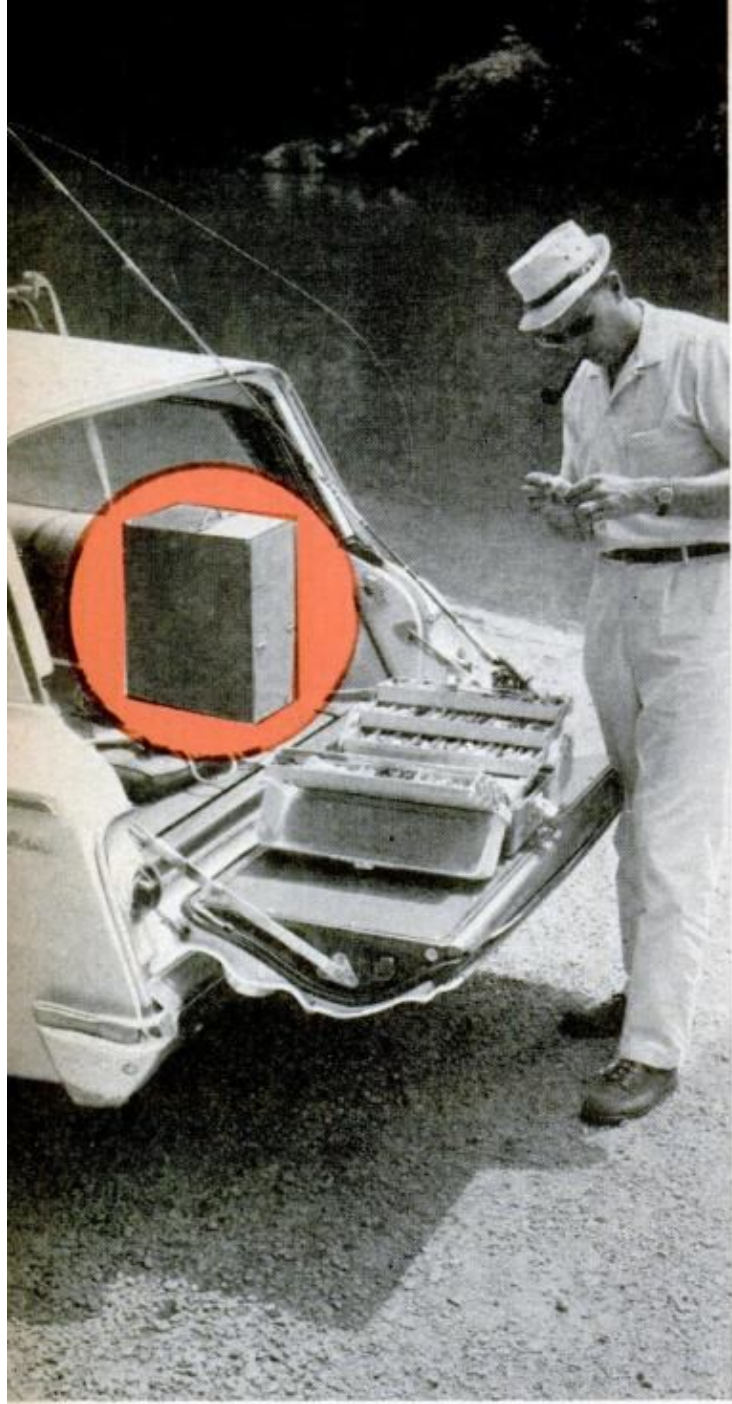
# Take-Along Depth Finder Totes in a Box

**Strictly for fishermen, this clamp-on unit fits any boat and packs in a compact carrying case**

**J**OHN ORNEY, the man who designed this project, has a job that any fisherman would envy. He's in charge of research and development for the Fred Argogast Co., one of the world's largest lure manufacturers, which means that he has to travel all over the country test-fishing experimental lures.

Often fishing a different lake every day, John seldom has time to locate the best fishing spots by trial and error. It was this problem that started him thinking about depth finders.

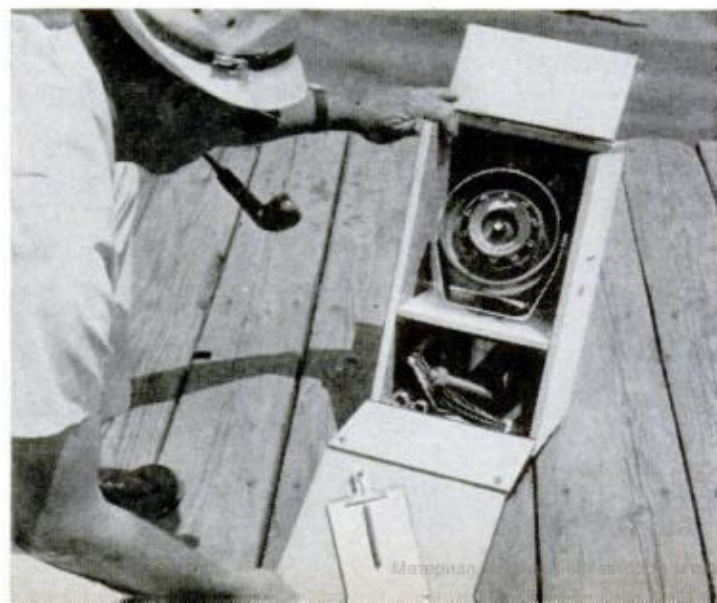
A depth finder can be quite a versatile accessory when fishing unfamiliar waters. It not only tells how deep the water is, but gives you an idea of whether the bottom is rocky or muddy. It will also spot any fish swimming around between your boat and the bottom below. Using a depth finder, you can locate holes, sand bars,



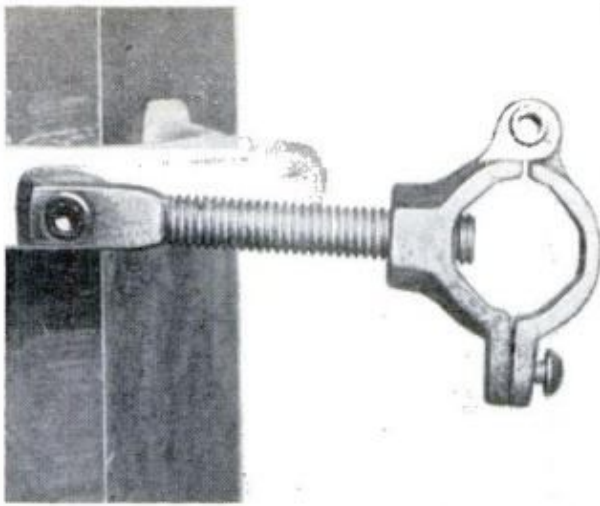
**EASY TO CARRY**, the depth-finder case doesn't take up much more room than any good-sized tackle box

**CONNECTING WIRE** from the transducer is fed up through supporting bracket and plugged into unit

**EVERYTHING STOWS** inside the box, even the paper pad for making notations when charting the lake





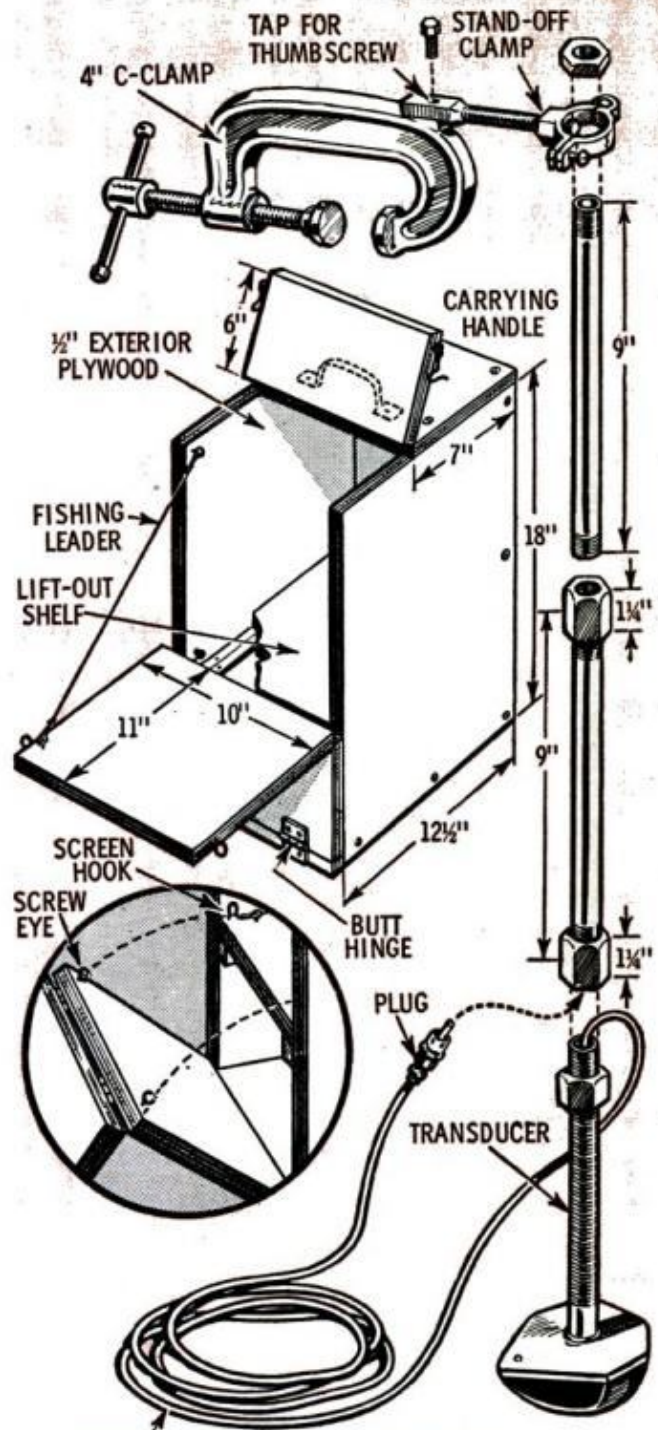


BY LOOSENING CLAMP and sliding pipe up or down, it's possible to align transducer with the hull bottom to achieve an accurate reading. To dismantle the unit, wire is unplugged and top nut removed so that pipe can be slid out of clamp and taken apart

submerged weed beds, drop-offs and other promising bottom features which give a clue to where the fish might be hiding or feeding.

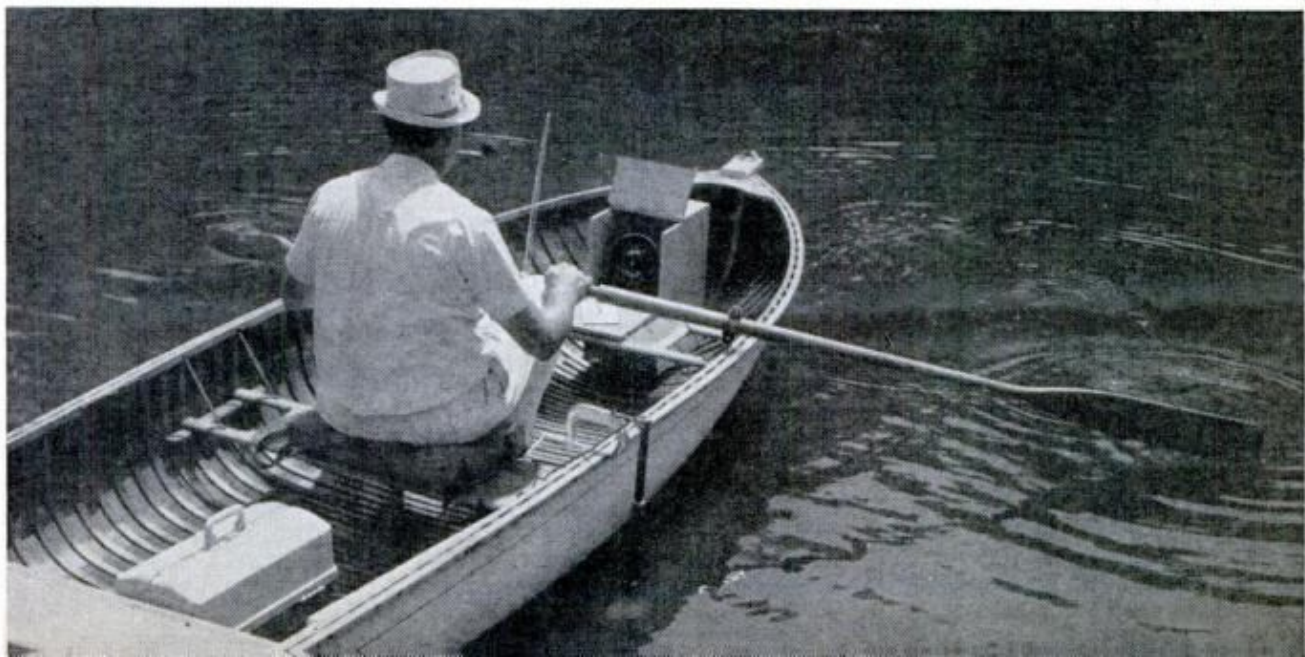
The trouble with most depth finders, however, is that they are designed for permanent installation on reasonably large boats, and John needed something that could be used on any small rental fishing boat. So he made this conversion.

He chose Columbian's "Aqua Probe" because of its compactness and ability to operate off two small 6-v. lantern batteries. Using three short sections of brass pipe, a stand-off clamp and a C-clamp, he assembled a bracket for suspending the transducer from the gunnel. Disassembled, this fits neatly in the bottom of the box in which the depth finder is mounted. The cost of making the conversion was about \$20. Cost of the original Aqua Probe unit is about \$99.—*Frank Kuchirchuk*

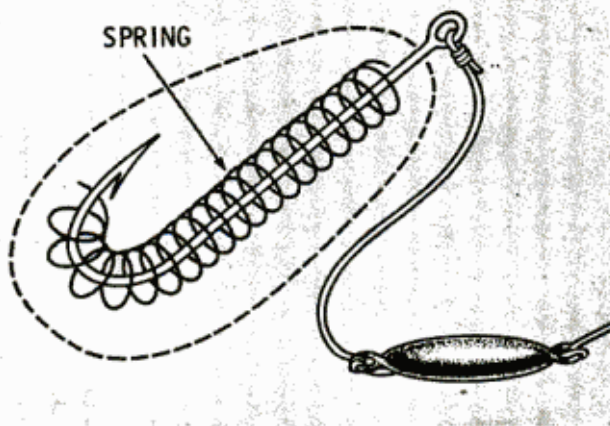


UNDERWATER EYE of transducer sends a continuous bottom reading to the depth finder sitting in bow

CONNECTING WIRE THREADED THROUGH PIPE AND PLUGGED INTO DEPTH FINDER







## Spring Holds Bait

For carp and other rough fish, dough is often an effective bait. It's difficult though to keep the dough from washing off the hook, and frequent re-baiting is necessary. This annoyance may be overcome to a large extent by slipping the coil spring from a discarded ball-point pen over the hook as shown. The dough, pressed into the open coils of the spring, will be anchored in place and is less likely to be washed away. Once in place on the hook, the spring will stay put since it can't slip past the projecting barb.

—G. E. Hendrickson

## How to Read Weather

Whether you're an old salt or just a weekend sailor, a barometer is an indispensable part of your boating gear. The principle is simple: Changes in pressure indicate changes occurring in the atmosphere. This information may be used to forecast weather or to supplement weather reports given in newspapers, radio bulletins, and by the U.S. Weather Bureau.

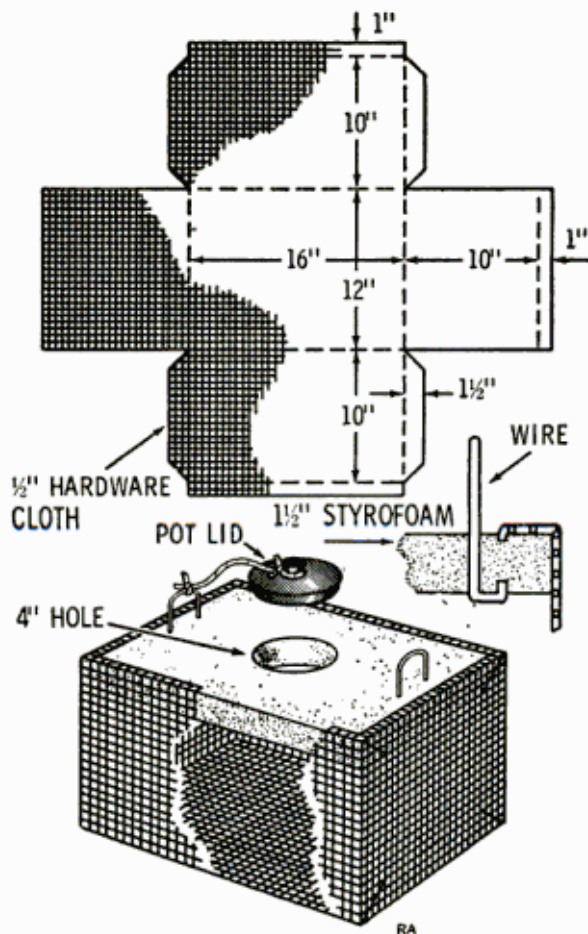
Barometers are made in either of two types—mercury and aneroid. The mercury barometer offers greater accuracy but carries a high price tag. The less costly aneroid type is best for amateur use. With either barometer it's essential to read the manufacturer's instruction sheet before installation to find out what adjustments or corrections may be needed.

Here's how to understand what your barometer is telling you: A falling needle means that a storm is on its way. A fast rising needle indicates clear, windy weather. Variable or rainy weather is indicated by a steady but slowly falling barometer. A steady but slowly rising barometer signifies that the weather has settled. If the wind is shifting to the westward and the barometer is rising, you can expect fair weather. East wind and falling barometer spell bad weather.



## Floating Creel

Fresh-caught fish for dinner can be a real treat—if they are stored properly after you reel them in. The floating box shown here keeps your catch alive and in perfect condition. The box is bent from hardware cloth and fitted with a Styrofoam cover to keep it afloat. A pot lid attached with a cord caps the opening cut in the top of the box.—Hi Sibley





# PIPE RACK

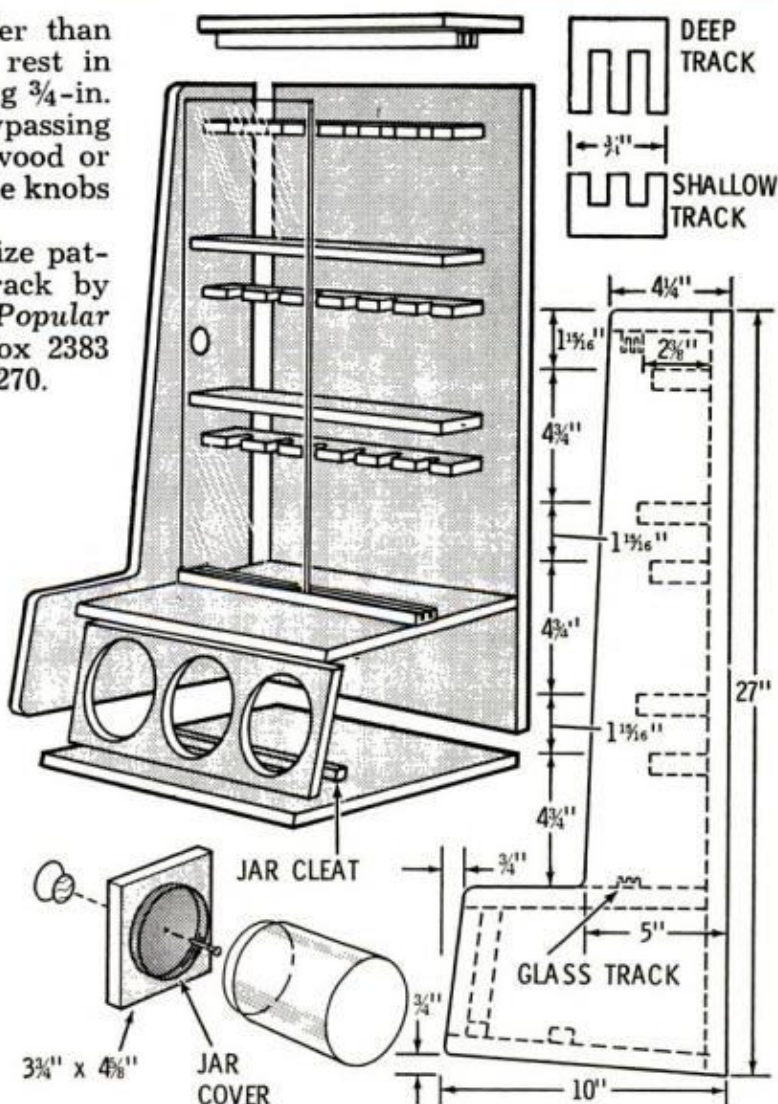
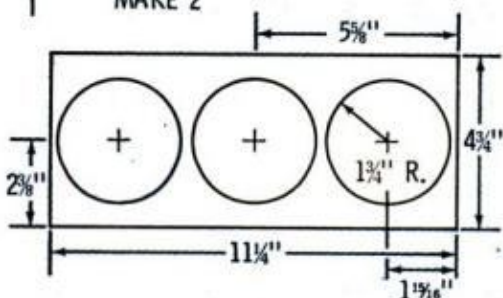
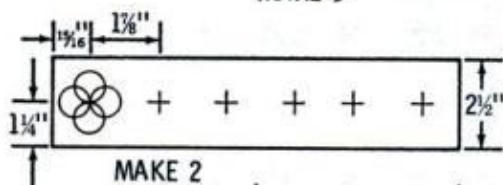
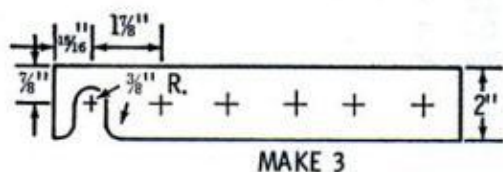
By Steve Ellingson

KEEPING a collection of pipes around the house can be a headache—a headache for the housewife who has to dust them, and a headache for the pipe smoker who finds his favorite bowl tinged with the smell of furniture polish.

The answer is to keep them undercover and dust-free in this glassed-in wall rack. It'll hold as many as 18 pipes and can be made wider if you have even a larger collection. In addition to keeping pipes clean and regimented, the rack features two airtight humidor drawers (6-oz. instant coffee jars) for tobacco, plus a third drawer for storing pipe cleaners, reamers and filters.

The kind of wood you want to use is up to you; the rack you see here was made of knotty pine. All the parts are cut from  $\frac{3}{4}$ -in. stock and you need nothing wider than 1 x 12 lumber. The pipe bowls rest in recesses formed by four overlapping  $\frac{3}{4}$ -in. holes, bored  $\frac{1}{4}$  in. deep. The bypassing (6 x 19-in.) glass doors slide in wood or standard aluminum door tracks. The knobs are cemented to the glass.

If you like to work from a fullsize pattern, you can get one for this rack by sending \$1.00 to Steve Ellingson, *Popular Mechanics* Pattern Dept., P. O. Box 2383 Van Nuys, Calif. Ask for pattern 270.







# Shelves That G-R-O-W

**MOST PEOPLE** can't keep up with their collection of books. By the time they build a new bookcase, their library has already outgrown it. Paperbacks, especially, proliferate like rabbits. But if you build from the plans on the next page, you've licked the problem. When one two-shelf unit fills up, you just stack another identical unit on top. You might say the sky's the limit, since you can stack all the way to the ceiling—though if you go up too high, it's best to tie the top unit to the wall.

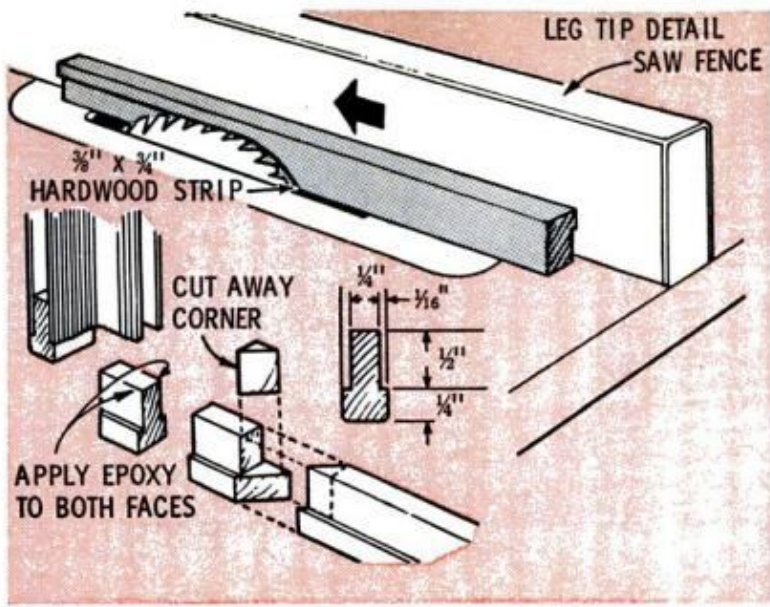
The design is ingenious in several respects: A single unit looks fine by itself, and the protruding end panels serve as built-in bookends for the top shelf. The

legs of the next unit slip over these panels to set the new unit's ends flush with the old—so that no matter how many units you stack, you'll have solid, gapless panels running down each end.

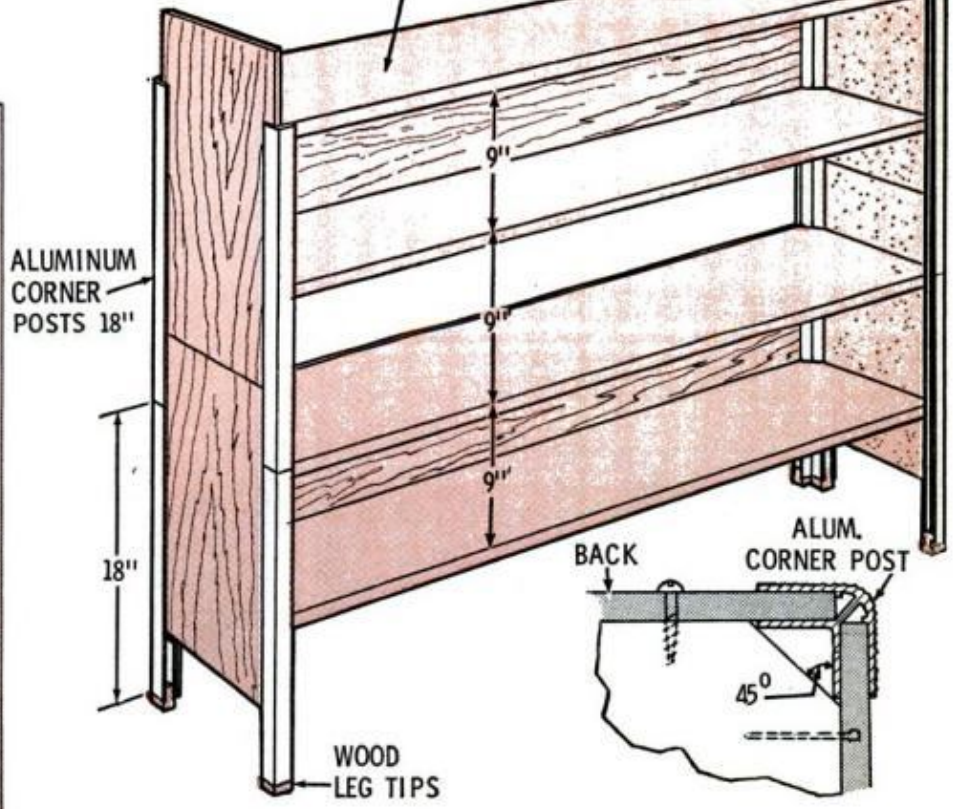
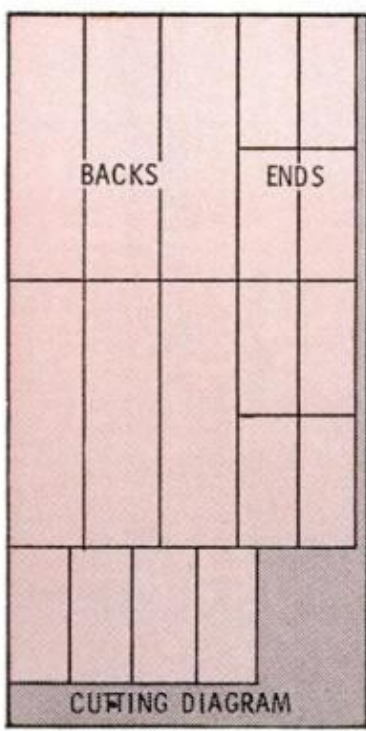
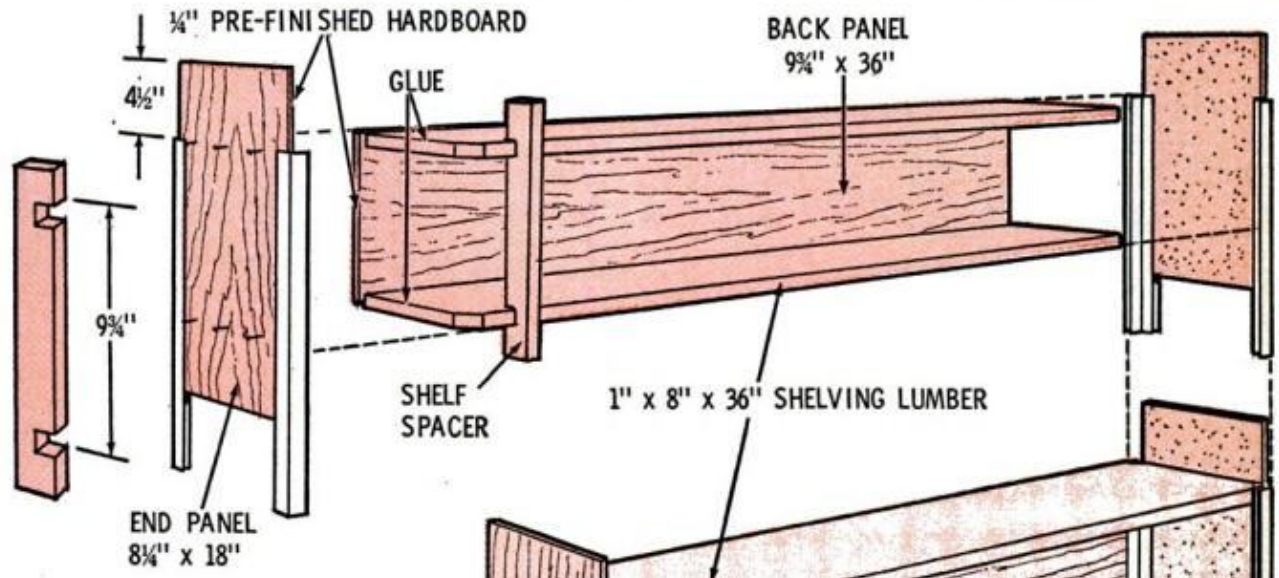
Best thing about the design is the ease of construction. You cut 1x8 shelving into 3-foot lengths and bevel each corner to take 1/4-in. posts. Backs and ends are pre-finished hardboard, glued into the posts' grooves with epoxy cement. Paint all rear faces of end panels to match the shelves before assembly, leaving a narrow strip along the edges for gluing into the posts. You'll also want to roughen the finished edge of the hardboard for gluing.

—Dave Swartwout





FEET FOR BOTTOM UNIT come from T-shaped hardwood strip, cut on bench saw. Fasten shelves along edges of back panels with epoxy and screws; notched spacer (below) keeps them parallel







# Solving Home Problems

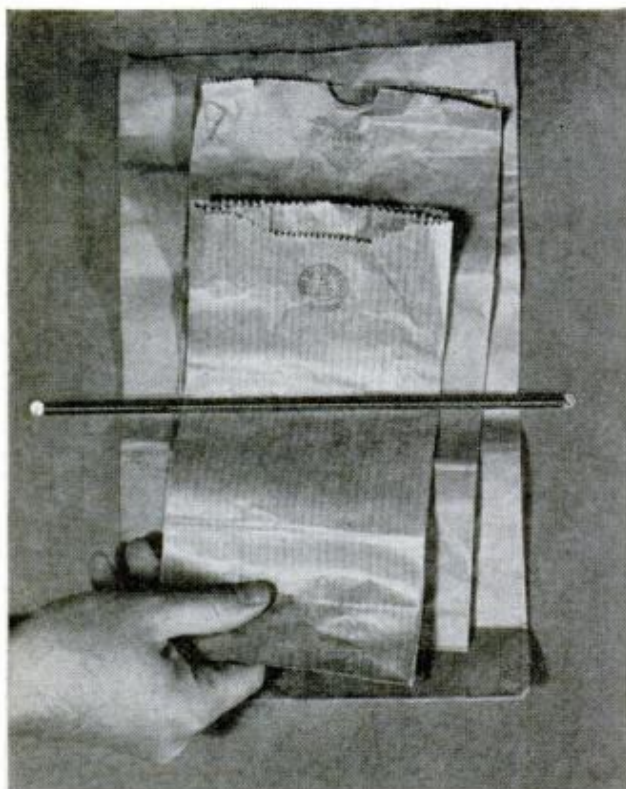
●

**CLOSET HANGER SPACE** can be doubled for storing a child's clothes by stretching out two wire coat-hangers and placing a length of dowel in the loops as shown. Staple hangers to underside of dowel. A low rod like this also helps promote the habit of neatness when hangers are within reach of a child

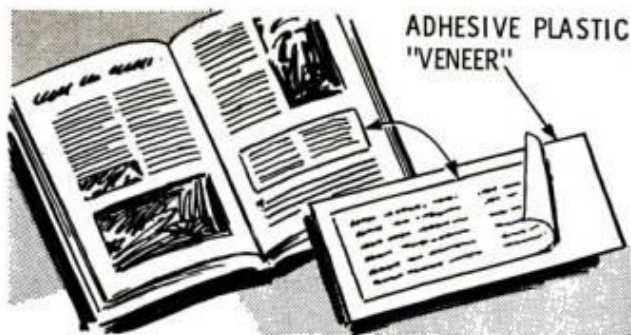
●

**PAPER-BAG HOLDER** can be quickly installed on the inside of any convenient kitchen cabinet door. Merely attach a common screen-door spring with two 1/2-in. screws, spaced to hold it under light tension

**FLOUR SIFTING** will be neater if you first slip a plastic funnel of proper size up into the bottom of the sifter. You can then sift the flour directly into a measuring cup or other small-size container







**PLASTIC ADHESIVE VENEER** will preserve any ready-reference pocket clipping. Attach clipping to sticky side of the veneer, trim off excess. Clipping may then be folded for carrying, will resist wear and wrinkling

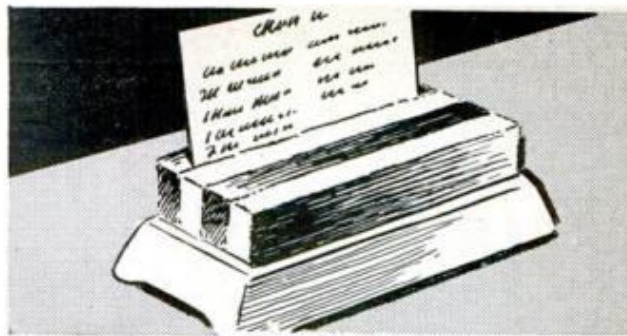
**GLAZIER POINTS** are easy to set in upright sash when pushed into small dabs of putty placed at the desired locations. Putty holds points squarely in driving position, lessens chance of nipping finger



**MILKMAN'S NOTE** will not blow away or fall into the bottle if inserted between the tines of an ordinary kitchen fork as shown. Use a paper stiff enough to keep fork from slipping when suspended

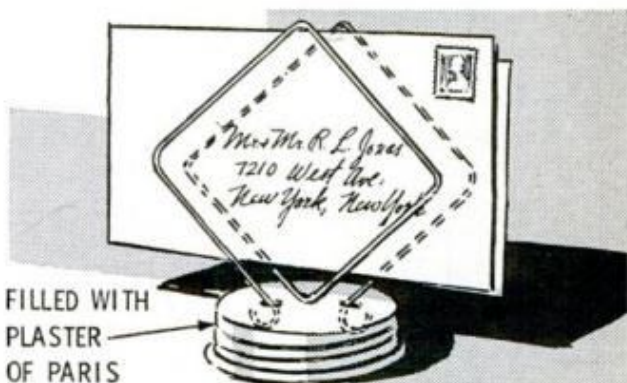


MARCH 1965



**RECIPE-CARD HOLDER** can be improvised with a blackboard eraser as shown. The felt plies in the eraser will grip card securely as handy reference. One eraser will hold several cards in this manner

**DESK-TOP LETTER RACK** is made of coat-hanger wire and a jar cap. Bend wire around 2 3/4-in. sq. block, letting ends extend. Insert through holes punched in cover, open ends, then fill cover with plaster of paris



**GANG JUG HOLDER** means fewer trips to water supply for campers. To make it, thread plastic clothesline through 1/2-in. conduit, attach S-hook and add dowel handle, then insert conduit through jug handles



157



# Caulking That Lasts The Life of Your House

**A space-age bonus for the homeowner: Sealants developed for rockets and jet liners let you tighten your home against weather—permanently. Here are the facts on synthetic rubber caulk**

**By Chris Edwards**

**H**OW'D YOU LIKE to do your Spring caulking this year and then throw away your gun—confident that you'd never have to do that tedious job again? There are new sealants on the market that could make that dream come true.

These synthetic rubber compounds let you seal water out of almost every joint around your home—inside as well as out. And they're a boon to boat owners, too. Just look at some of the things you can accomplish with these space-age sealants:

- A permanent white or colored sealant joint between bathtub or shower stall and

ceramic tile or plastic-surfaced wall panels.

- Bedding a kitchen sink or washbowl to eliminate the metal rim that often interferes with the draining of water from the counter into the sink bowl.

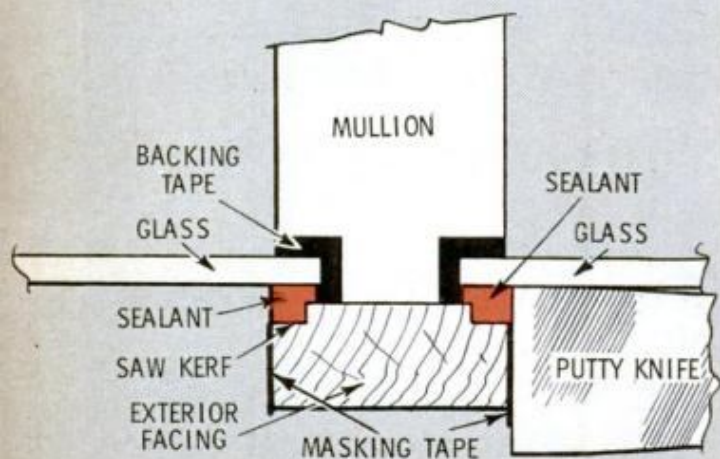
- Wood gutter sections butt-joined with a permanent seal that moves with the joint as gutters expand or contract. Or an equally permanent seal of slip joints between metal gutters.

- Fixed window panes, door glazing and window frames, sealed once and forgotten. Butt joints between panels or strips of wood siding, batten joints without flash-

**WHERE BATTEN** (exterior facing strip) can be removed, saw off edge of old putty to expose bare wood and to widen groove. On new work, bed glass in backing tape; if fresh putty were used instead, oil might affect adhesion of sealant to glass and batten

**SQUEEZE SEALANT** into widened groove between batten and window. Here, masking tape has been applied to side of batten (as in sketch, left) to simplify clean up and leave neater edge. None is needed on glass because cured sealant scrapes off easily

## WOOD MULLION JOINT





ing, and joints between siding and door or window frames sealed against the water that often causes paint peeling.

- Joints between dissimilar materials, such as wood structure and fireplace walls, or between concrete walks and a house, sealed to prevent water from seeping through the openings. (Joints between dissimilar materials are particularly likely to move with the seasons, cracking out hardened oil-base putty or cheap caulking.)

- Boat seams and joints of all kinds made watertight. (Rubber sealants move with the joints to keep seams leakproof.)

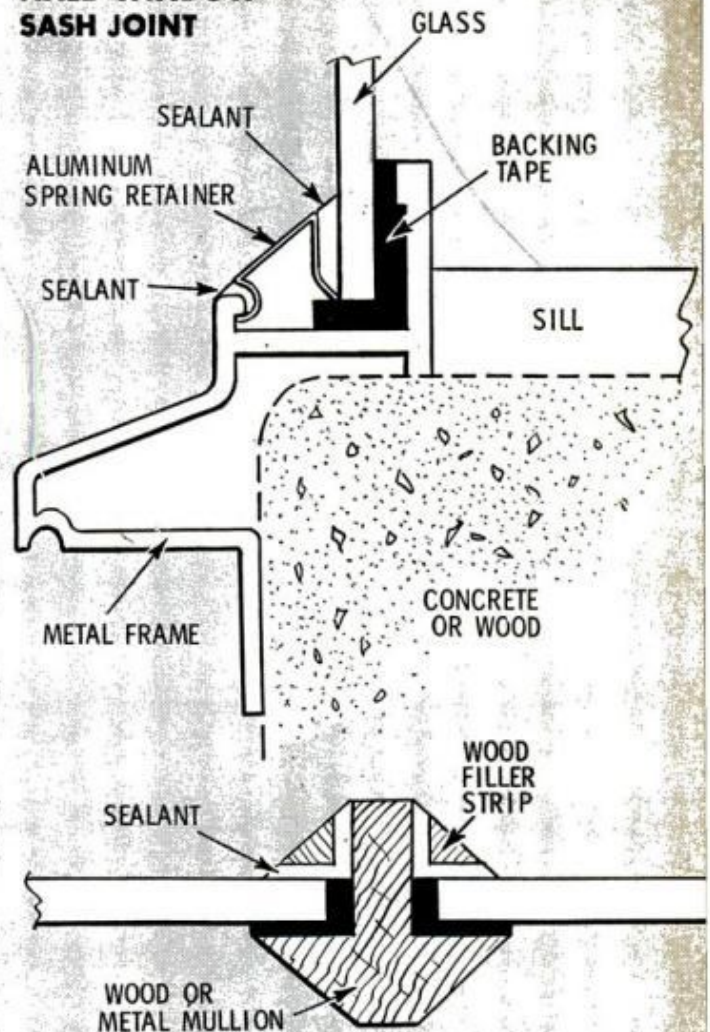
- Concrete, brick and stone joints sealed without fear that alkali from cement will destroy the bond as it does between oil-base caulking and concrete or mortar. Cracks in swimming pools, or in the concrete deck around pools, sealed with matching color sealants.

- Cracks in foundation walls, or between concrete block, sealed to keep water out of the basement.

With time as scarce as it is or labor such an expensive part of any repair job, it makes sense to use a material that will do a better job and last through several repainting jobs. Rubber sealants work better for several reasons:

- No shrinkage or cracking—synthetic polysulfide rubber caulking cures chemically. Oil-base caulking or putty “skins over” when its solvents evaporate; rubber sealants cure by absorbing water or through the chemical action caused by mixing two materials. As a result, there’s no shrinkage. And, since the rubber seal-

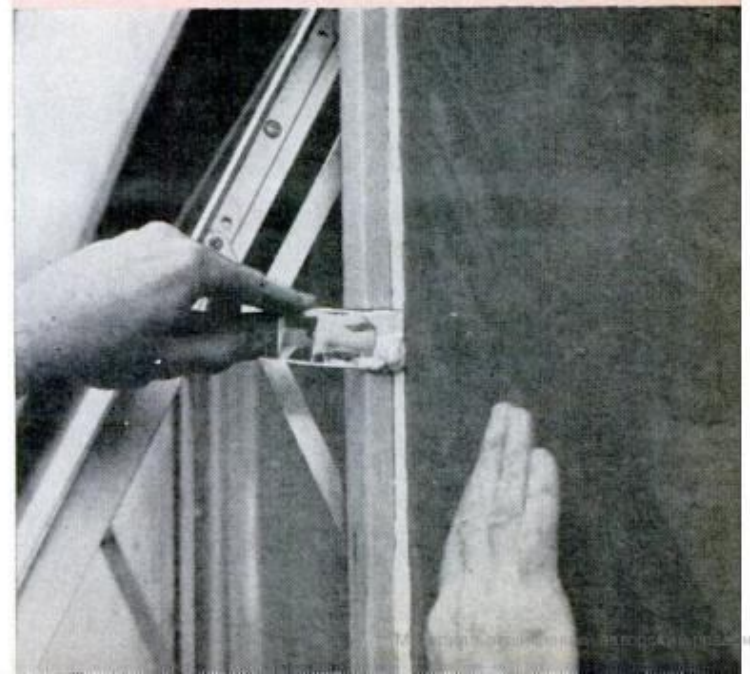
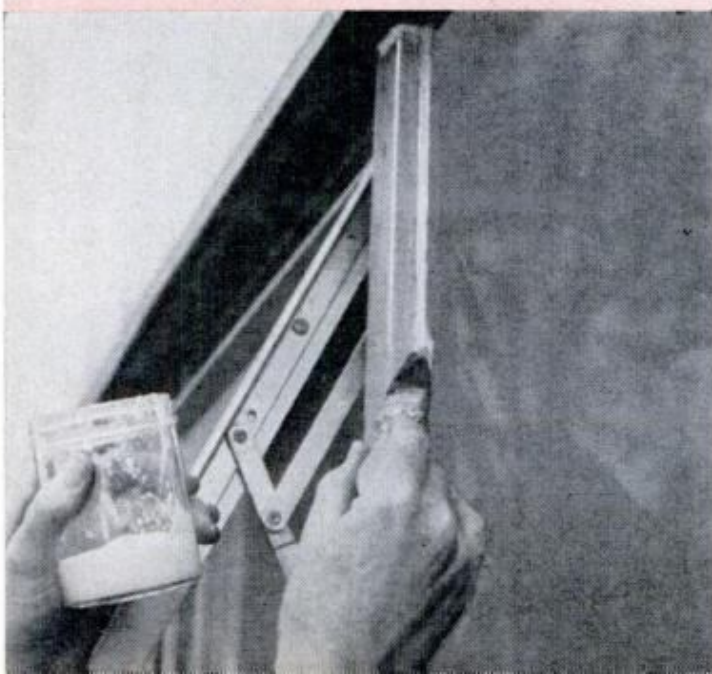
### FIXED WINDOW SASH JOINT



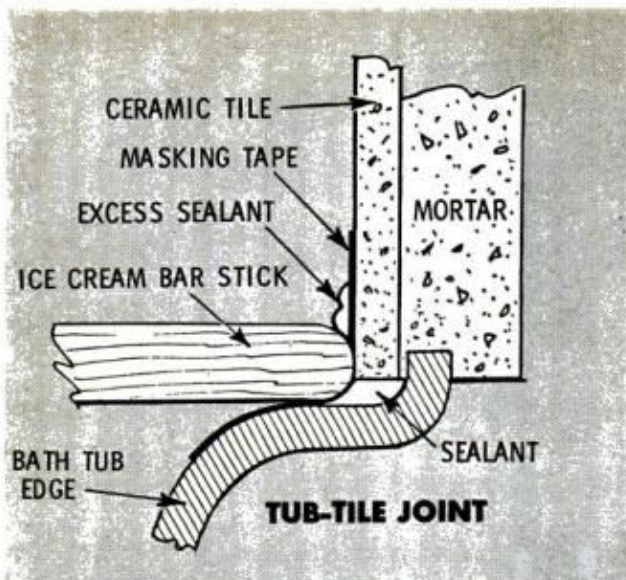
**FILLER STRIPS SAVE SEALANT**

**BRUSH SOAP** in thick solution over bead of sealant before trimming, to keep excess from sticking to putty knife and glass. Soak thin shavings of a white hand soap overnight in just enough water to soften them into thick paste. Use it on hands, too

**PUTTY KNIFE** trims excess sealant to leave smooth square joint. Where bevel is needed, trimming is more difficult and can be avoided by seating a triangular wood filler in sealant, as sketched above. Top sketch shows how you seal aluminum spring strip







**CROSS-SECTION** of tub-to-tile joint shows how sealant extrudes into space for watertight seal. Trimming with stick leaves nearly flush joint

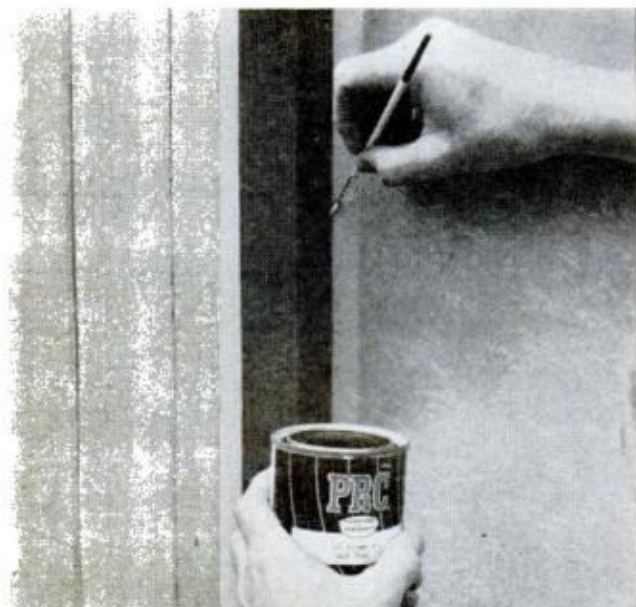


**AFTER REMOVING** cracked grout between tub and tile, wipe tub clean with solvent-soaked cloth wrapped around putty knife and inserted under edge of tile

ants cure to form a true rubber, the joint remains flexible rather than gradually becoming hard and cracking from joint movement.

● **Permanent performance**—rubber sealants last as long as your house. Polysulfide rubber resists ultra-violet radiation and remains flexible from 65° F below zero to 250° F—hotter than boiling water. Accelerated life tests showed no change in characteristics after more than 50 years of simulated exposure to weather, sun and extreme variations in temperature. Hundreds of gallons of rubber sealants are being used to seal windows into new glass-walled skyscrapers. Until rubber sealants were available, putty in these

**DISSIMILAR MATERIALS**—here, wood trim and asbestos cement board—present ideal joint for rubber sealants. Apply primer to joint area (note masking tape)



buildings was replaced every three to five years to keep windows watertight.

● **Adhesion**—rubber sealants stick to nearly any material. In stress tests, part of the wood or stone will often break off before the bond between the sealant and the surface lets go.

● **Flexibility**—a joint can spread up to three times its original width while maintaining its seal. For example, beads of polysulfide sealant applied around the structural joints inside the wings of the Boeing 707 and Douglas DC-8 jetliners turn these metal cavities into leakproof fuel cells even though wing joints are constantly bending in flight and on landing impact. With rubber sealant in boat seams

**PISTOL-GRIP GUN** for plastic tubes simplifies application of bulk sealant. Metal guns can be used as well, but clean-up presents more difficult problem







**SIMPLIFY CLEANUP** by applying masking tape to both tub and tile. Trim plastic nozzle of disposable tube at angle and squeeze sealant well into gap



**AFTER TRIMMING** with stick as shown in sketch far left, pull up masking tape. Excess comes up with it to leave smooth, permanent tub-tile joint

—particularly those hard-to-seal joints around the centerboard well or transom—you can keep your boat dry and the joints watertight without waiting for water to soak the planks and swell joints shut.

Older formulations of polysulfide rubber required mixing two parts together before use. Depending on temperature, these mixed sealants have a pot life of two to four hours. A new polysulfide material comes ready for use in bulk or in regular disposable cartons. New one-part sealants cure chemically by absorbing water from the air. Normally, the sealant will skin over in 24 hours and is tough enough to withstand some abuse in 48 hours. But the sealant does not reach a full cure until 60 days after application. You can speed up the cure several ways. One is to keep a moist towel over a seam after it has skinned over. Or you can apply methyl ketone (MEK) or isopropyl alcohol to the surface. Actually, no action to speed up a cure is necessary unless the caulked joint will be subject to severe shear action soon after application.

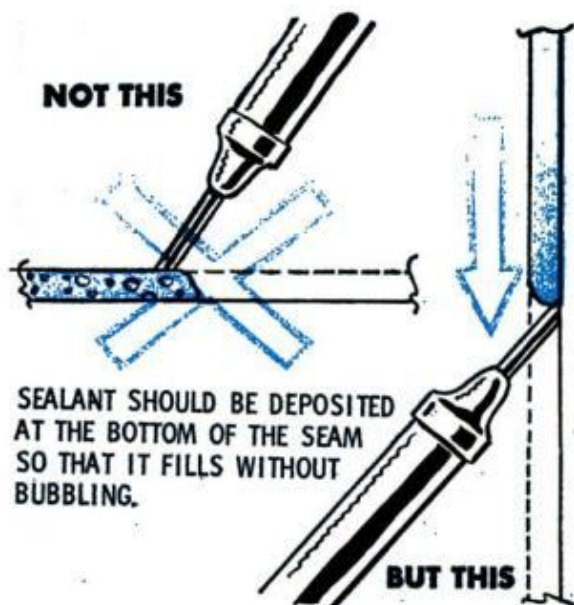
Like many high-performance materials, however, synthetic rubber sealants have a cost disadvantage. They're considerably more expensive than the oil-base caulking or putty they displace. Depending on the kind, quantity and packaged form you buy, they will cost up to three times as much as marine caulking. For this reason, you will probably not use them to replace older materials at every possible location. But you can use rubber sealants economically in two situations: First, where no other material will do the job (for example, many boats can be repaired easily with sealants instead of ripping out hull

#### LINEAL FEET OF SEAM ONE GALLON OF SEALANT WILL FILL

		Width of Joint				
		1/4"	3/8"	1/2"	5/8"	3/4"
Depth of Joint	1/4"	308	205	154	123	102
	3/8"	—	136	102	82	68
	1/2"	—	—	77	61	51
	5/8"	—	—	—	49	41
	3/4"	—	—	—	—	34

To compute for 12-oz. cartridge, divide gallon length by 10. Example: Gallon fills 205 feet of joint 1/4 in. deep and 3/8 in. wide. So one 12-oz. cartridge fills 20 1/2 ft. of same joint.

**GUN NOZZLE** should be small enough to reach into groove, to fill it from bottom up so bubbles aren't trapped. Figure amount you'll need from chart above



SEALANT SHOULD BE DEPOSITED AT THE BOTTOM OF THE SEAM SO THAT IT FILLS WITHOUT BUBBLING.

**BUT THIS**



# SYNTHETIC RUBBER SEALANTS, PRIMERS, AND TOOLS

Material	Mfgs. No.	Application	Solvent	Colors Available
Joint sealant	PRC <sup>1</sup> 5000 PRC Marine Rubber Caulk PRC Pool & Deck Caulk	caulking gun, bedding with knife	trichloroethylene	white, gray  white, gray, red, buff, green, blue
	Pro-Seal <sup>2</sup> 929	caulking gun, bedding with knife	toluene or MEK (methyl-ethyl-ketone)	white, gray
	PRC PR-391	pour	trichloroethylene or toluene	black, neutral
	Pro-Seal 901	pour	toluene or MEK	black, gray, tan
	Weatherban One-Part Sealant 101 3M Co. <sup>3</sup>	caulking gun	toluene or MEK	white, gray, black
Primer	PRC Primer	brush	toluene or MEK	beige
	Pro-Seal 977	brush	MEK or xylene	beige
	Weatherban Primer 101 3M Co.	brush, cloth	water	clear
Backing tape	PRC 620		none required	white
	Pro-Seal 101B		none required	black
	Weatherban Ribbon Sealer 3M Co.		none required	black
<sup>1</sup> PRC materials Products Research Company 2919 Empire Avenue Burbank, California		<sup>2</sup> Pro-Seal materials Coast Pro-Seal & Mfg. Co. 2235 Beverly Boulevard Los Angeles 57, California		<sup>3</sup> Minnesota Mining and Mfg. Co., Adhesives, Coatings & Sealers Div., 900 Bush Avenue St. Paul 6, Minnesota

planks or deck boards with rotted edges); second, where the long life of rubber sealants saves frequent replacement of old-style caulking or putty. At locations where maximum performance is required and the cost of replacing less effective materials regularly is high, spending the additional money to use a permanent material actually saves you money and time. As in painting, the biggest cost in reglazing or recaulking is the labor cost for preparing the joints. Time saved in chipping out old, dried caulking before you can repaint your house, for example, more than repays the additional cost of the new, permanent rubber sealants. Boat owners particularly recognize the time and money saved in the yearly maintenance to keep their craft in top condition.

Rubber sealants must be applied to clean wood. Rubber caulking will not stick permanently to old oil-base caulk, paint, or any oily surface. A new application of the sealant may appear to stick to a hard-painted surface, but the bond is between the sealant and the paint. When the paint cracks or chips from the wood, the sealant goes with it. Wood preservatives applied to prevent rot in boats will not interfere with a rubber sealant joint, providing the spirit solvents are allowed to dry out thoroughly before the rubber sealant is applied. On some materials and under some conditions, a primer will improve the sealant joint.

**Primers** Normally no primer is needed for house caulking because joints are not immersed in water continuously,



## FOR CAULKING

### Remarks

One-part materials, no mixing. Available in quarts, gallons or 12-oz. cardboard tubes with spout.

One-part material, no mixing. Available in 2½-oz., 6-oz., 12-oz. plastic tubes. Also, pints, quarts, and gallons in bulk.

Two-part material, mix in can and pour directly into horizontal seam. Available in ¼-pt., ¾-qt., 3-qt. cans with space for mixing.

Two-part material, mix in can. Available in ¼-pt., ¾-qt., ¾-gal.

Available in 1/10-Gal. cardboard tubes, ready to use. Tubes fit standard caulking gun and include plastic spout.

One-part material. Use on wood, porous stone, brick, or concrete. A gallon covers 300 sq. ft.

One-part material. Use on wood or masonry where water resistance is important for sealant adhesion. Do not use on metal.

Apply to glass, glazed tile, porous and non-porous masonry. Do not use primer on wood. Do not apply below 40°F.

Sticks on contact. Both 1/16 and 1/8 in. thick x 1/2, 3/4, 1, & 1½ in. wide. Tape can be "thumbed" into recesses. Available in rolls 25 ft. long.

Impregnated felt 1/32, 1/16, 1/8, 3/16, & 1/4 in. thick, widths from 1/4 to 36 in.

Includes own pressure-sensitive adhesive. Comes in 1/32, 1/16, 1/8, 3/16 and 1/4-in. thicknesses, widths from 1/4 in. to 1 in. in 1/8-in. increments. Not all combinations in stock.

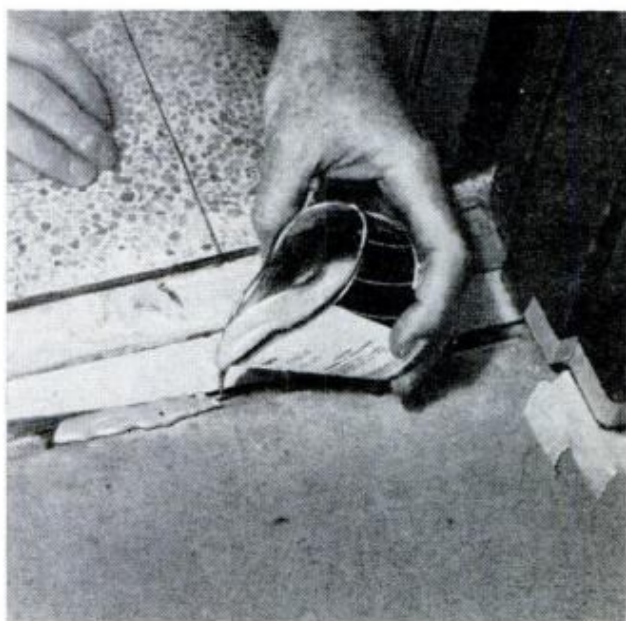
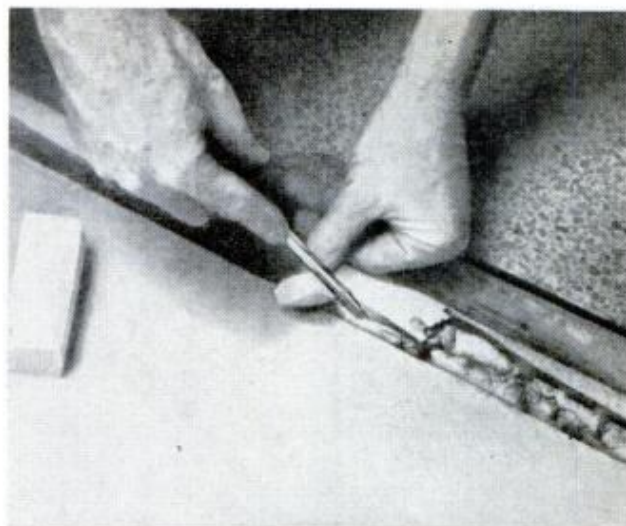
Hand-operated sealant guns available from:

Pyles Industries Inc. 20855 Telegraph Road Southfield, Michigan (SP-1832, for 2½ or 6 oz. polyethylene cartridges)	A. G. Barstow Company 8420 Otis Street Southgate, California (Semco 850 series)
--	--

nor are they under pressure. About the only place you might want a primer is along a sill joint where water stands. Make sure you use a primer made by the manufacturer of the sealant; otherwise, they may not be compatible. Consult the selection chart on pages 162-3. A primer used on wood doesn't make the sealant stick any better or last longer, but it keeps the wood surface next to the sealant from deteriorating. After years of soaking, the layer of wood behind the sealant may let go. The primer penetrates the wood and aids in building a thicker layer of preserved wood for a tight, long-lasting seal.

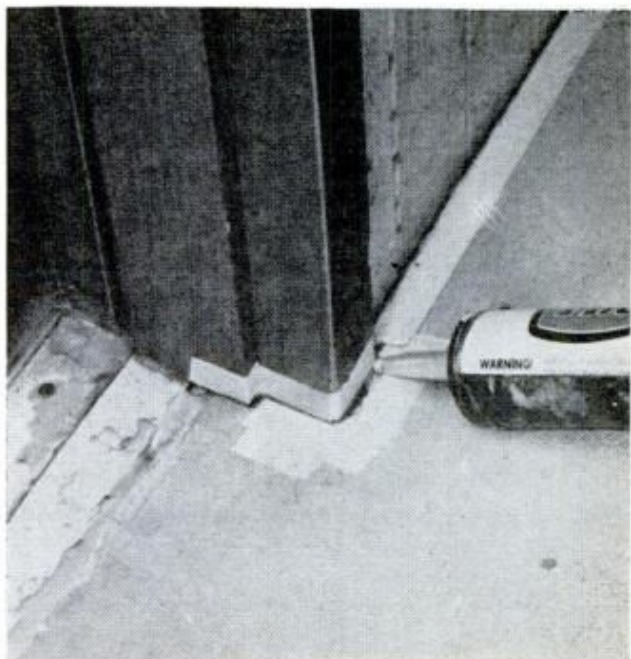
Primers are liquid and can be applied like paint. Use a small brush to control the coverage. If you'll need masking tape

(Please turn to page 199)



**HORIZONTAL JOINT**, as one between sidewalk and entry threshold, is first stuffed with vinyl or rubber sponge (top) then filled flush with flow-type sealant

**SEAL GAP** between siding and sidewalk to keep water from running down siding and eroding earth under concrete. Tape keeps sealant off concrete

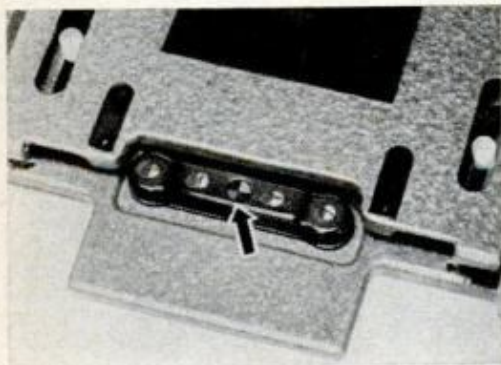




# New for Camera Buffs

By Arthur J. Maher

**FOCUS IN A SECOND**, no matter how dense or thin the negative, with one of three new Meopta enlargers. They have small optical devices built into their negative carriers (photo, below) which project two beams of light onto your easel. By turning the focusing knob to align these beams, you focus the image. We tried one of these enlargers, and found it gave excellent results in much less time than other focusing aids we've used. Retail prices are as follows: the Axomat Ia (35-mm), \$87.95; the Opemus 11a (35-mm to 2¼x2¼), \$109.95; the Magnifax II (35-mm to 2¼x3¼), \$179.95. Distributed by Magniphoto Corp., 17 E. 17 St., N.Y., N.Y.



**PRECISE EXPOSURE READINGS** are easier with the Metrastar CdS meter. It has a reflex viewfinder that shows exactly which portion of a scene is being read by the meter. Also, its angle of acceptance is only 18 deg., about half that of many CdS meters. \$66. E. Leitz, Inc., 468 Park Ave. South, N.Y., N.Y.

**UNUSUALLY COMPACT 35-MM CAMERA**, the Minolta P, is almost as small as a half-frame camera, but gives a full 24x36-mm negative. Another useful feature is the 38-mm lens, which focuses as close as 2½ ft. without a close-up attachment. Costs \$59.95. Minolta Corp., 200 Park Avenue South, N.Y., N.Y.

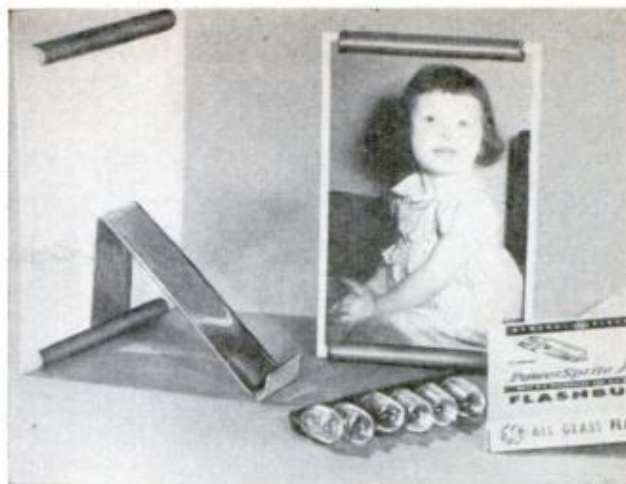




## DARKROOM HINTS

### Instant Picture Holders

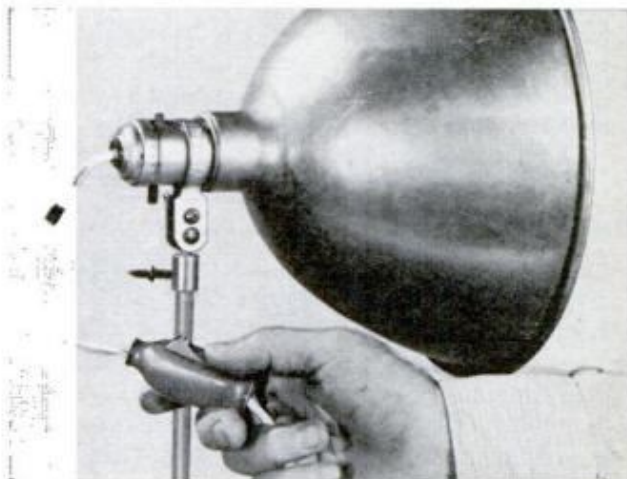
Instead of throwing out the slitted plastic tubes used to pack AG-1 flashbulbs, turn them into desk-top holders for your snapshots. Mount each photo on a piece of cardboard and insert the top and bottom edge into the slits of two plastic tubes. To hold the photo in an upright position, bend a piece of light-gauge aluminum into a Z-shaped "leg" and insert it into the tube on the bottom of the photo.—*Ken Patterson*



### No More Burnt Fingers

After a photoflood has been on for a few minutes, touching the socket to push the on-off switch can give you a painful burn. To save your fingers, install a line switch on the photoflood cord as shown at right, placing the switch about a foot from the socket. Naturally, the original switch should be left in the "on" position.

When buying the switch, spend a little extra for a heavy duty type. When used with photofloods, light-duty switches tend to arc and burn out, which, of course, is both wasteful and hazardous.



### Dry Hands Mean Better Prints

Wet fingers in the darkroom can stain your prints, dirty your enlarging easel and contaminate your chemicals. So for quite a while now, I've rented a wall-hung towel dispenser from the linen supply house that services local businessmen.

I placed the dispenser on my darkroom wall, right above the wet table. Once a week the linen supplier comes to put in a new roll-type towel. While this service costs a few dollars each month, the convenience and cleanliness are more than worth the expense.—*Wayne Floyd*



### Billfold Saves Lost Shots

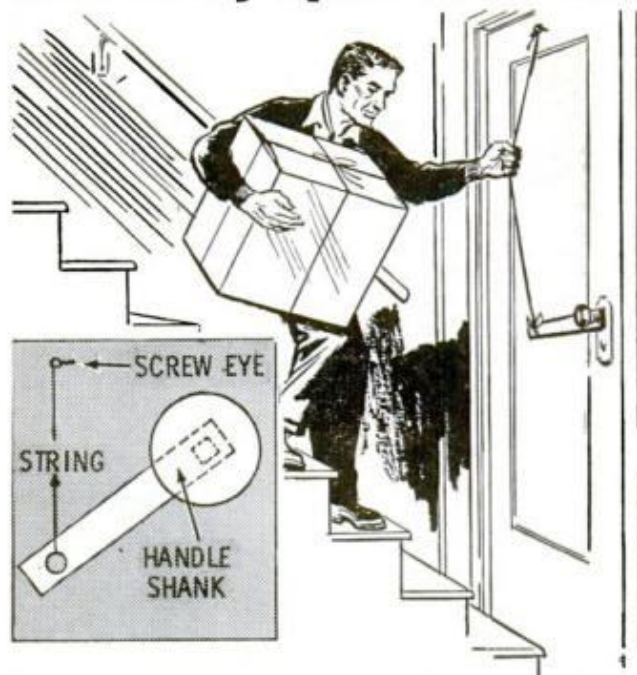
How many times have you begun calculating an exposure, only to find you've forgotten a flash guide number or the ASA rating of your film when processed in the developer you plan to use?

An old billfold puts an end to that problem. Stored in your gadget bag, where you can't forget it, it will hold a large number of cards on which you can record the important data on every type of film, flashbulb, developer, etc. you use. Then, if your memory lets you down at the critical moment, just reach for the billfold.





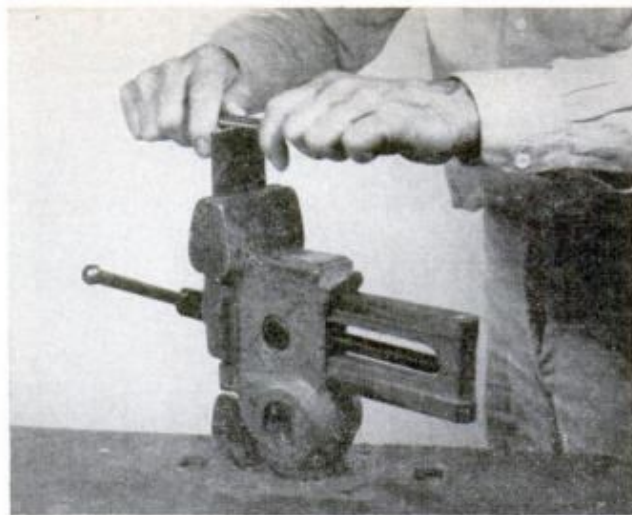
## Latch String Opens Attic Door



Ever find yourself trapped on an attic stairs with your arms full and struggling to reach the door knob? The solution, of course, is to leave the door open, but unless you'll only be a minute, you can chill the house this way. To make it easy to turn the knob without standing on his head, one homeowner rigged this simple latch string to open the door. A square hole in a metal bar fits the knob shank to turn it.—H. F. Wendt

## A Ripping Good Stunt

To avoid sawing into a sawhorse when ripping a long board, try this stunt: Start the cut for a foot or so, then turn the board end for end and finish ripping. In this way you'll meet the starting cut before you forget about the second sawhorse and saw into it.—G. E. Hendrickson



**TO SHARPEN**, file at right angles to face till you feel fine burr at each side. Dub off corners, too

# The Forgotten

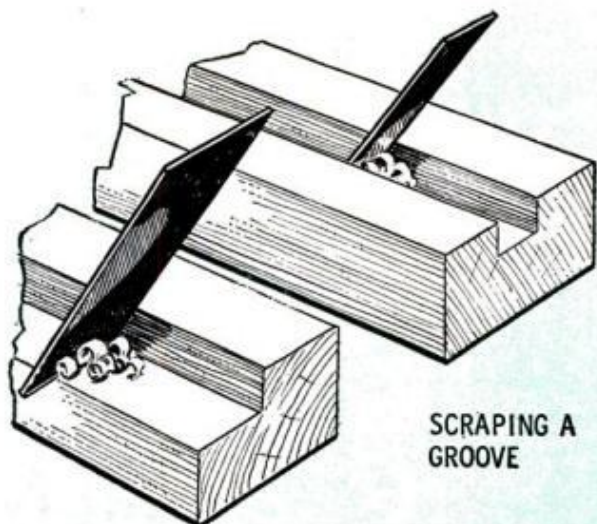
A FAVORITE finishing tool of old-time cabinetmakers has mysteriously disappeared from the modern toolbox. Yet the square-edge scraper does much finer work than the hook type that's replaced it. Maybe the old square-edge was just too simple a tool to survive in this age of specialized gadgetry. It's nothing more than a  $\frac{1}{16}$ -in.-thick rectangle of tool (saw) steel. The handy, inexpensive  $2\frac{1}{2} \times 4\frac{1}{2}$ -in. size (still available at most hardware stores) gives you 28 in. of cutting edge, if you sharpen all eight arrises.

What will the scraper do? It will cut with, against, or across the grain of both fir and hardwood, shearing off the most stubborn fibers—even those twists of birdseye and blister maple. It's the only safe means of cleaning up fine veneers. It's fine for smoothing away ridges made

**RUB OFF BURRS** with down strokes of file held flat against face. Hone upright, then flat, on oilstone







SCRAPING A RABBET

SCRAPING A GROOVE



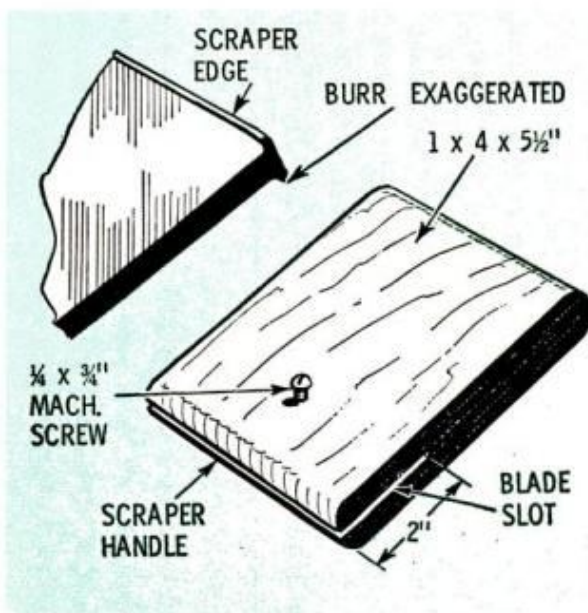
SHARP SCRAPER cuts real shavings. Sliding diagonal stroke gives shearing cut, keeps work flat. Blade above is clamped in kerfed handle, sketched below

# Square Edge

by nicked plane blades, and it'll take down any crown left by a power sander.

Probably the main reason this tool has faded from popular use is that it's tricky to sharpen—until you teach yourself how. If you're working all edges, be sure to clamp the blade between wooden liners in the vise. A hard burnisher is the best tool for turning the edges (after filing and honing them straight) but a smooth nail-set can be used. Three strokes per arris should be enough, increasing the pitch for each pass. This turns a smooth burr toward the face of the scraper. Repeat for the other face.

To resharpen, just flatten the burrs with your burnisher, then turn them again as if the edges were newly dressed. You can do this two or three times before you have to file again.—*Edwin M. Love*

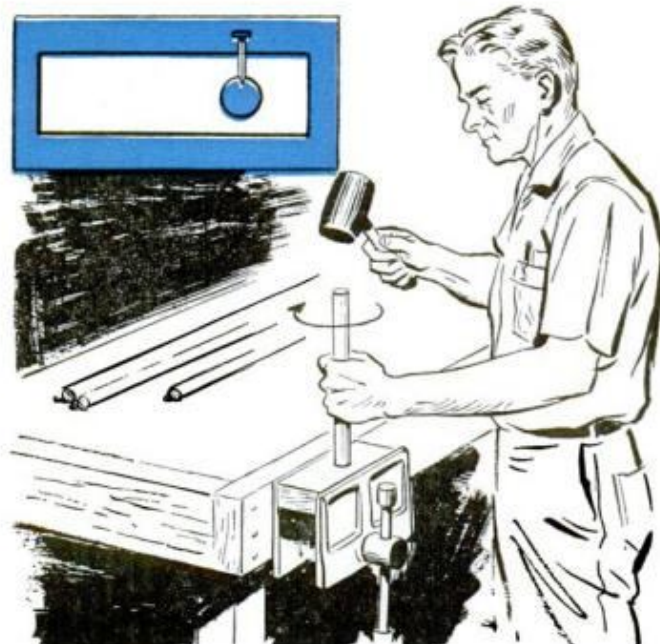
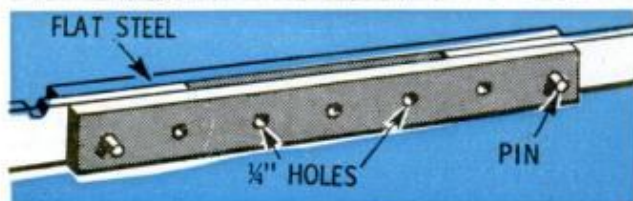
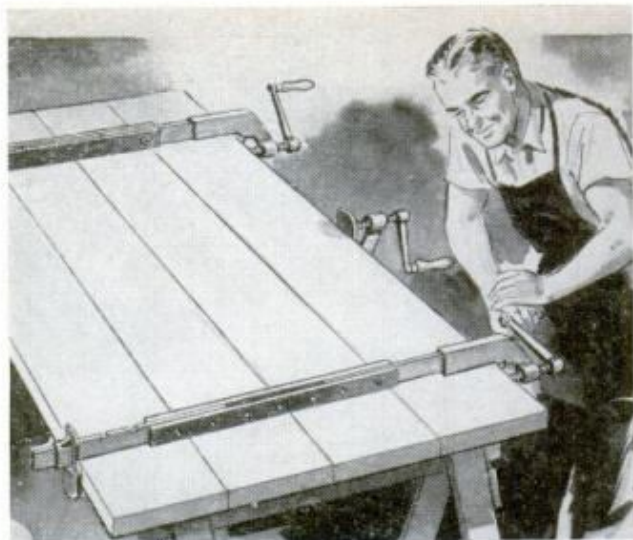


**DRAW EDGE** with several heavy, full-length strokes with burnisher flat against face, using drop of oil

**STROKE EDGE** with burnisher, starting almost square and increasing pitch to 85° on successive passes







## "Stretching" Bar Clamps

Every once in a while a clamping job comes up for which your bar clamps are too short. But if you don't mind sawing them in half, there's a way you can "stretch" them to handle the widest clamping job you'll ever have. It's done by linking the two sections with flat steel plates placed on each side. The ends of the clamp sections are drilled and fitted with a  $\frac{1}{4}$ -in. steel pin to engage a series of  $\frac{1}{4}$ -in. holes drilled in the steel plates. Thus to adjust the length to suit the clamping job at hand, you simply slip corresponding holes in the plates over the protruding pins in the clamps. Naturally the holes in each pair of plates must align and therefore should be bored through both at the same time. In using bar clamps to glue up a wide panel, remember that they should always be placed on alternate sides of the work to avoid cupping.—C. W. Woodson

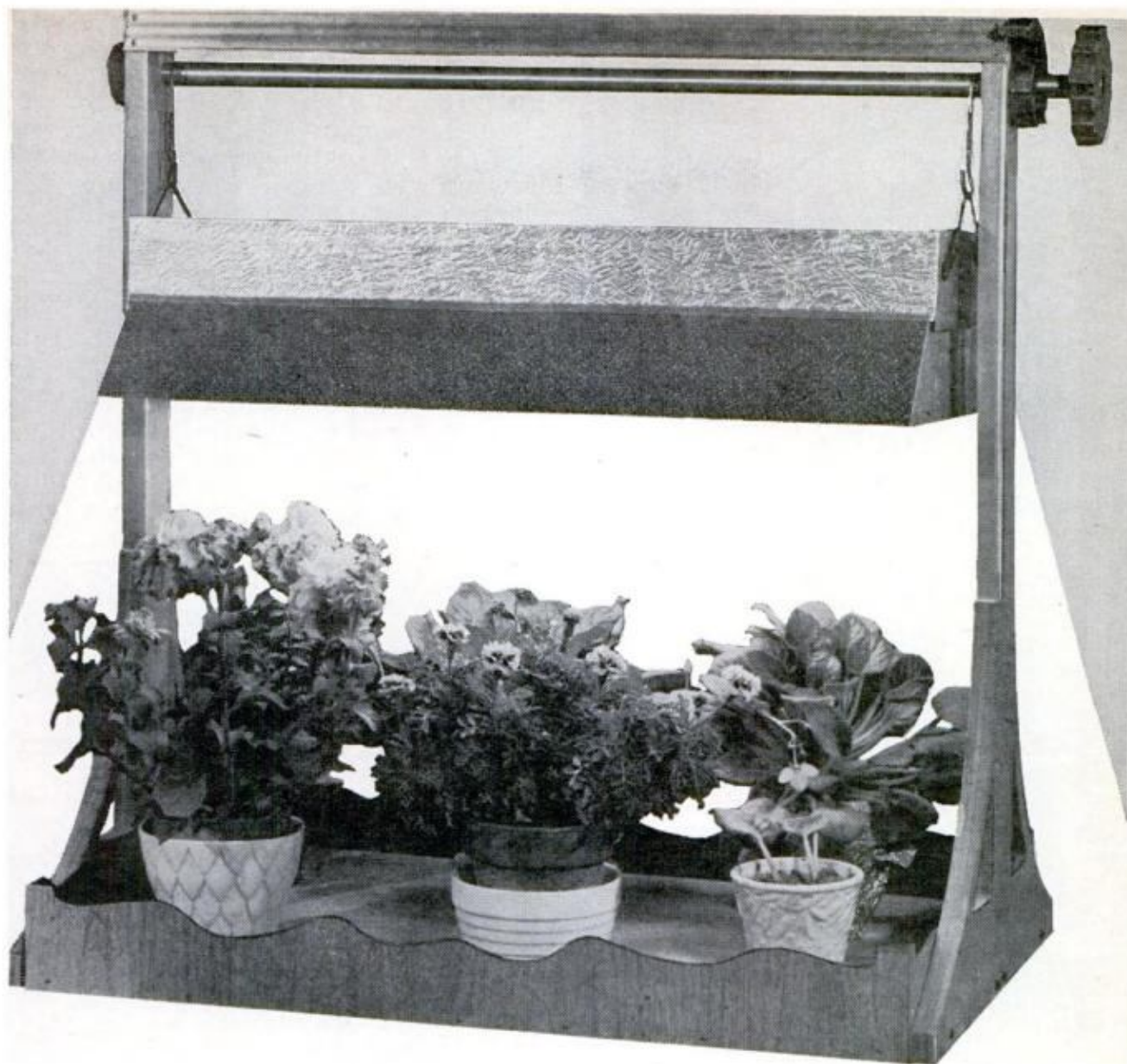
## Venetian-Blind Tool Rack

Fastened to the wall over your workbench, a section of a discarded metal venetian blind makes a clever tool rack that costs you nothing. Being curved, the metal slats will cradle such rolling items as twist drills, pencils, punches and nailsets, and will provide storage galore for small boxes of tacks, brads, screws and what not. Only a portion of the full blind is used, with every other slat being removed and discarded. Remove the cords but leave the tapes attached to the bottom rail. The remaining slats are flipped over within the tapes so their cupped sides are up. Cut the tapes off a few inches above the top slat and tack the ends to 1-in.-thick blocks fastened to the wall.—Frank Shore

## Dowel Grooving Jig

You can buy dowel pins in lengths up to 3 in. already grooved but they're not as commonly available as regular dowel rod and they cost more. With this simple jig you can groove your own dowel pins anytime you want. It's nothing more than a 2 x 4 block with a hole in it which is reamed just slightly larger than the dowel size being used. The grooving bit is the point of a nail driven in from the edge until the point enters the hole about  $\frac{1}{16}$  in. In use, the block is clamped in the vise and the dowel rod is tapped through the hole while it's being "twisted." The nail point will cut a spiral groove the full length of the dowel. A row of holes to accommodate common dowel sizes can be made in the one block.—Wilfred C. Nise





# Adjustable Light Stand Speeds Plant Growth

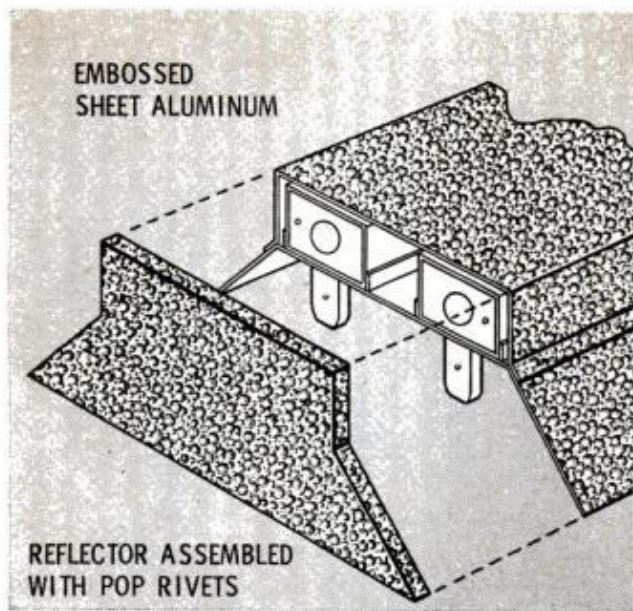
By Walter Burton

**L**IKE MAGIC WANDS of glowing glass, fluorescent lamps can work wonders on African violets and many other house plants. Fluorescent light sources improve germination and growth of seedlings, hasten the rooting of cuttings, make foliage flourish, and accelerate or hold back the production of flowers.

To support these magic wands of light it is essential that you have a plant stand in which the lamps can be raised and lowered to control light intensity. This is nec-

essary to avoid scorching delicate plants and to be able to lower the lamps to 6 or 8 in. above flats when germinating seeds. The plant stand detailed here consists of a tray-like base from which two uprights extend to support a fluorescent fixture containing two 24-in. 20-watt lamps. These are spaced 4½-in. apart. The fixture can be any two lamp reflector units, or if you prefer, you can construct one as shown, using sheet aluminum and two single lamps, ready-wired "strip" type fluores-

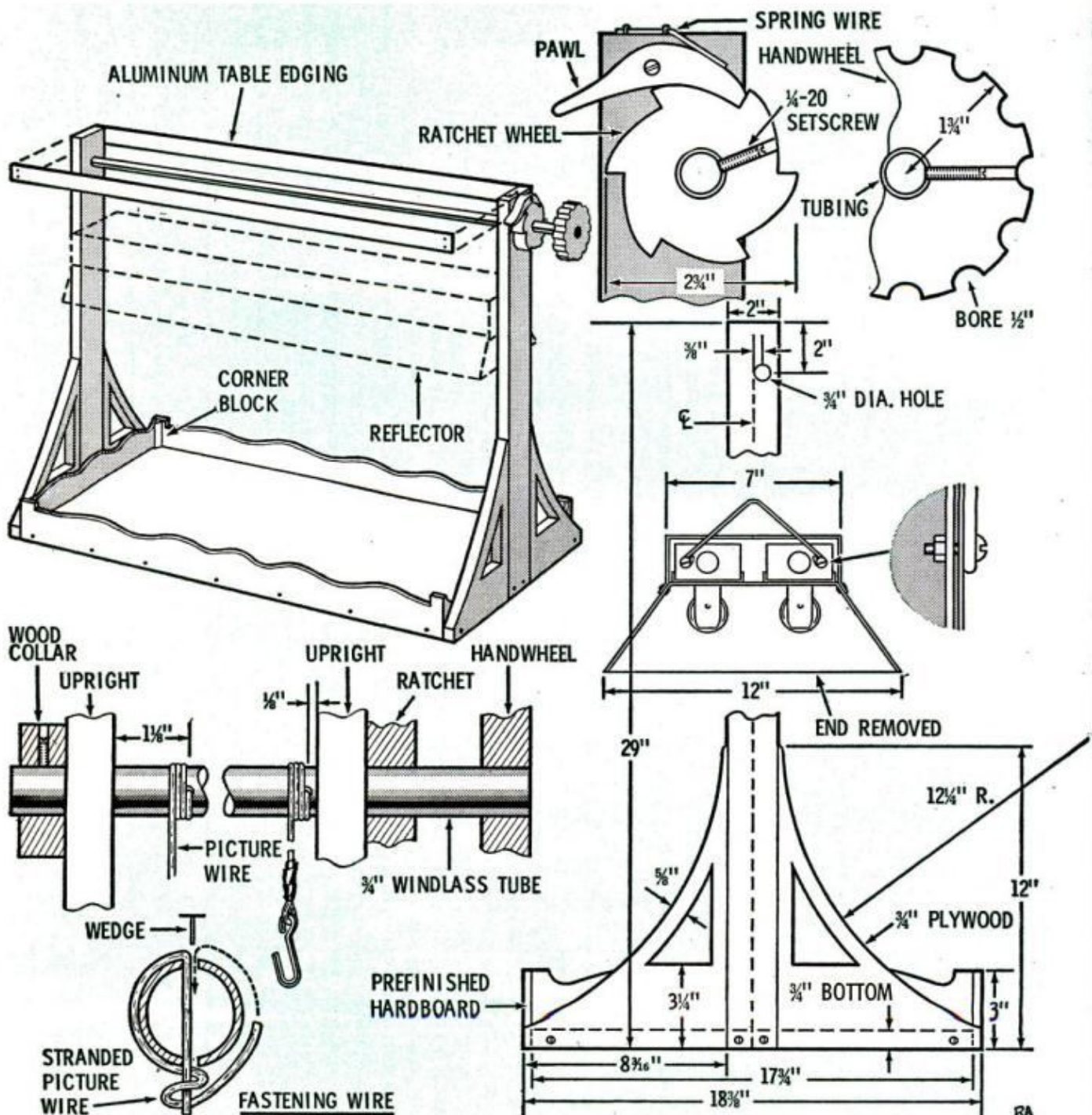




cent fixtures which you place side by side. An interesting feature of the planter is the wooden pawl and ratchet design used in the windlass, which makes it simple to adjust the height of the lighting unit.

No specific lengths are indicated on the drawings for bottom, edgings, and the windlass tube and braces paralleling it, because these vary with the length of the lighting fixture. In any case, however, there should be about 1-in. clearance between the fixture ends and uprights.

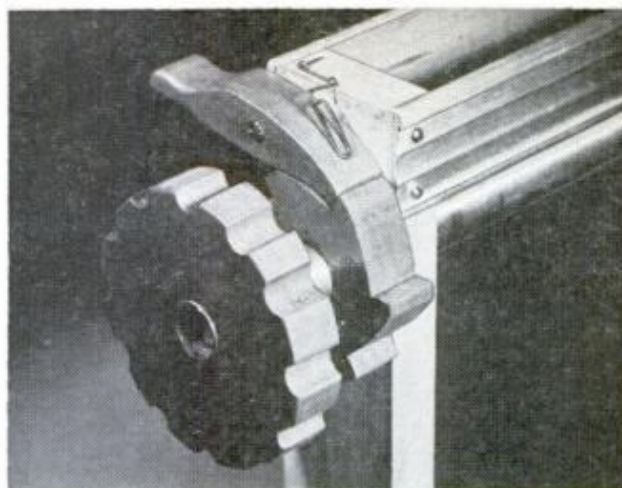
The bottom and the four curved brackets bracing the uprights are made from 3/4-in. plywood. Strips of factory finished hardboard, fastened finished-side-out to the bottom with water-resisting adhesive and rustproof screws or nails, form a tray-like receptacle for plant pots and boxes. The







**USE A JIGSAW** or bandsaw to cut the ratchet from a  $\frac{3}{4}$ -in. maple board. The center hole, through which the windlass tube passes, is bored before cutting



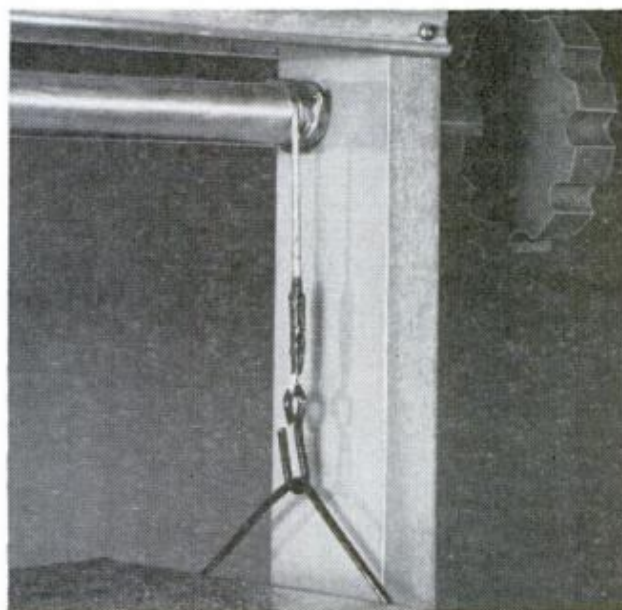
**KNOB AND RATCHET** mechanism makes it easy to control lamp height. The spring that holds the pawl in the ratchet notches is bent from a length of music wire

hardboard strips are scalloped to provide a decorative edging. After the tray has been assembled and the glue used to attach the corner reinforcing blocks has dried thoroughly, apply three coats of waterproof paint or varnish to the inside. This will protect the tray bottom from wetting when a flower pot overflows.

Before gluing the curved brackets to the uprights, bore a hole 2-in. from the top of each upright for the tube from which the lamp will be suspended. These holes are intentionally bored off center so that the suspension wires will be aligned with the upright centerlines. The uprights are fastened to the ends of the base with 2-in. wood screws which pass through holes drilled in the hardboard edging. Make the uprights long enough so that the lamps can be positioned about 12-in. above the tallest plants.

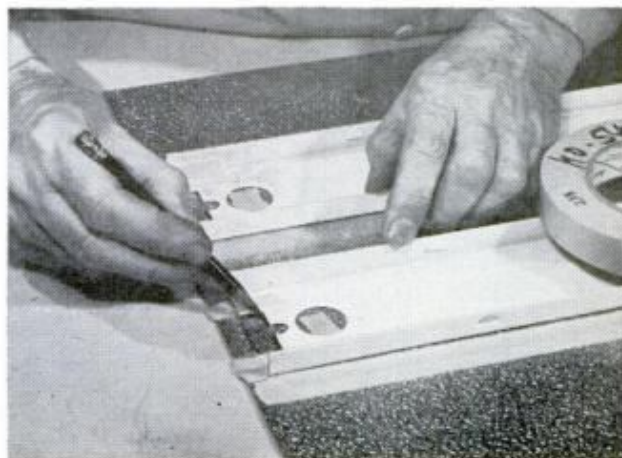
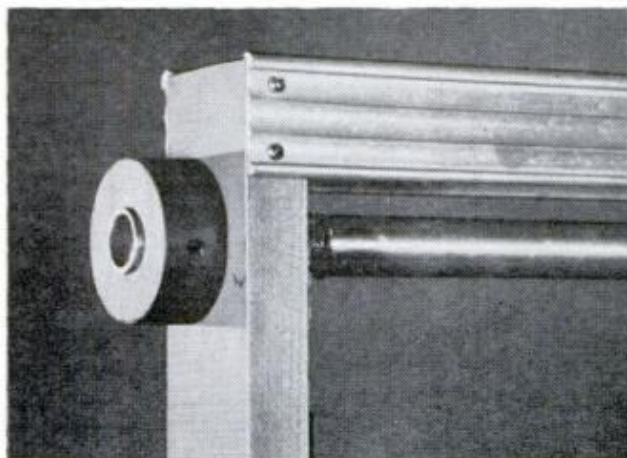
A  $\frac{3}{4}$ -in. aluminum tube was used as the windlass drum on the planter shown, but brass, stainless steel or even iron pipe  
(Please turn to page 204)

**PICTURE-FRAME WIRE** is used to suspend the reflector from the windlass tube. A piece of coat hanger wire is formed into a hook to engage the wire arch at the end of the reflector. The wire is looped through the hook eye, twisted and wrapped with plastic tape

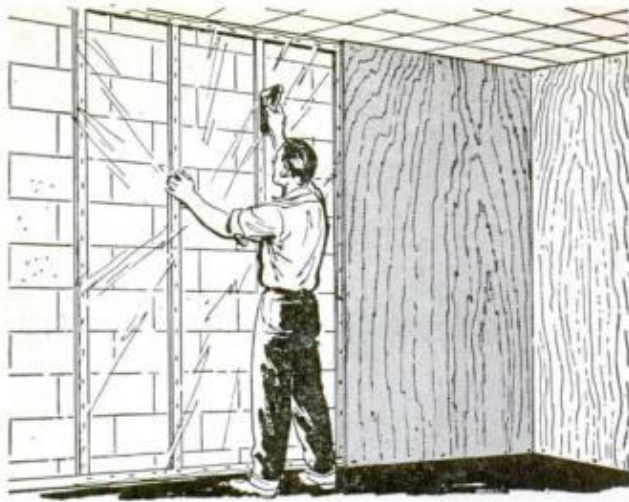


**A MAPLE COLLAR** on the end of the windlass tube prevents endwise shifting. Aluminum table-edging strips installed between the uprights increases rigidity

**WHEN LAYING OUT** aluminum reflector blank for cutting and drilling, use covers from strip-type fluorescent fixture as templates to assure accuracy



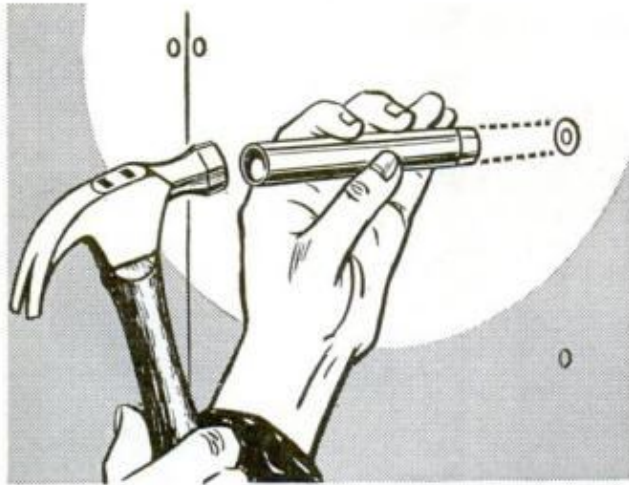




## No More Damp Walls

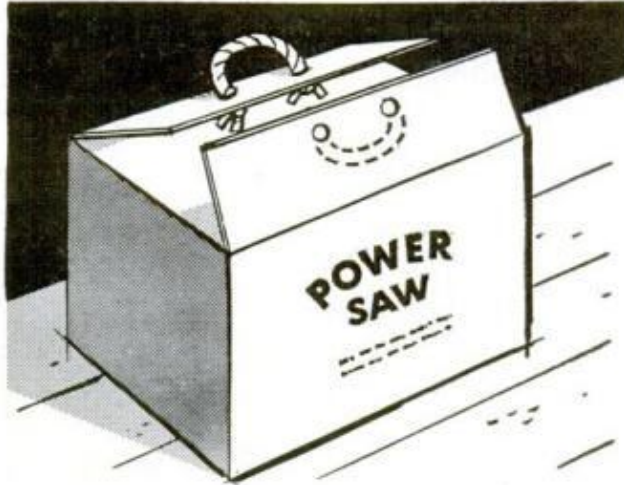
Planning to build a basement rumpus room? If you intend to install wood wall paneling, you can beat the dampness problem with polyethylene sheathing. After installing furring strips with masonry anchors, attach the sheathing, using a stapling gun. The sheathing is obtainable in various widths and is low in cost. It should be applied with as few laps as possible, and any holes cut for pipes or electrical outlets should fit closely. A bead of caulking along the bottom, behind the paneling, will stop moisture at the floor line.

—Victor H. Lamoy



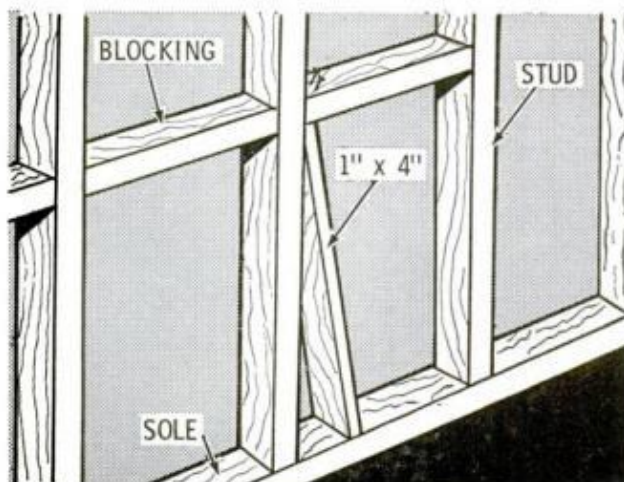
## Punch Removes Drywall

When making electrical or plumbing repairs, it may be necessary to remove a panel or two of drywall. This may be done without damage to the panel by using a homemade punch made from a length of electrical conduit. Beveled to form a chisel-like cutting edge, the tube is placed over the nailhead and struck sharply so that it cuts completely through the gypsum board. When replacing the panel, fit it over the projecting plugs and drive new nails into the studs. The punched holes are then filled level with drywall joint compound.—Wilfred Beaver



## Free Case for Your Saw

Portable circular saws, sanders and similar tools are often purchased without a carrying case. Usually though, the tool is packed in a sturdy cardboard carton. This can be made into a serviceable case that will protect the tool when not in use and making carrying easier. All you have to do is punch two holes in each side of the lid and insert two short pieces of sash cord to be used as handles. Then knot the ends of each rope on the undersides of the flaps as illustrated.—Morris G. Hulst



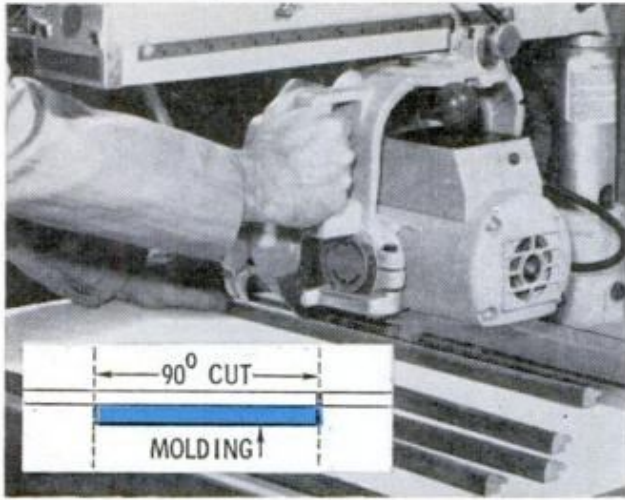
## Nail Blocking Like This

Installing blocking between studs is a tough job because, when you toenail the blocking into the stud, the force of the hammer drives the blocking downward. An effective method for holding the blocking in position while the nails are driven, is to cut a piece of scrap slightly longer than the underside height of the blocking. Place this piece on the sole plate, underneath the blocking as illustrated. After toenailing the blocking, knock out the supporting piece and go on to the next opening. One end of the blocking can be nailed, of course, without toenailing.

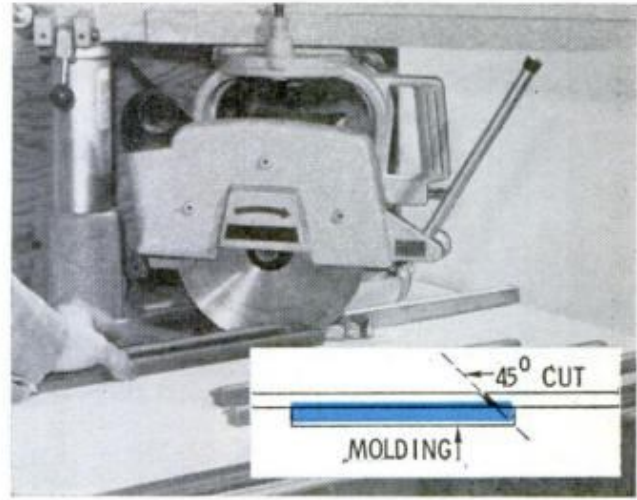
—N. M. Pittman



# Cutting Picture Frames with a Radial Saw



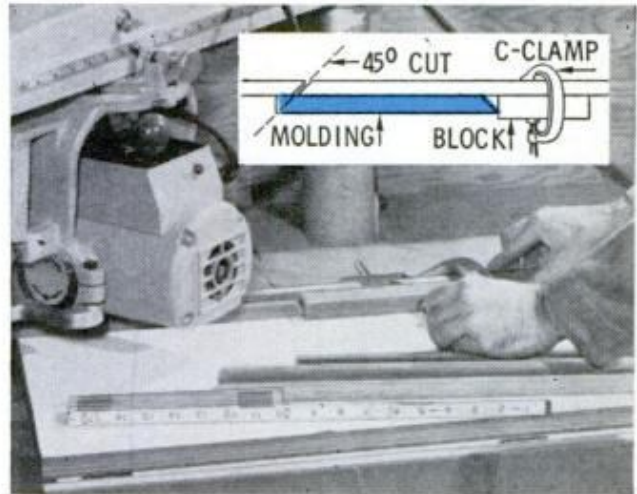
1. **CUT MOLDING** to length and height of picture to be framed—plus twice the overall width of molding



2. **LOCK SAW** for right-angle 45-deg. cut and trim triangular scrap from inside edge of all four pieces

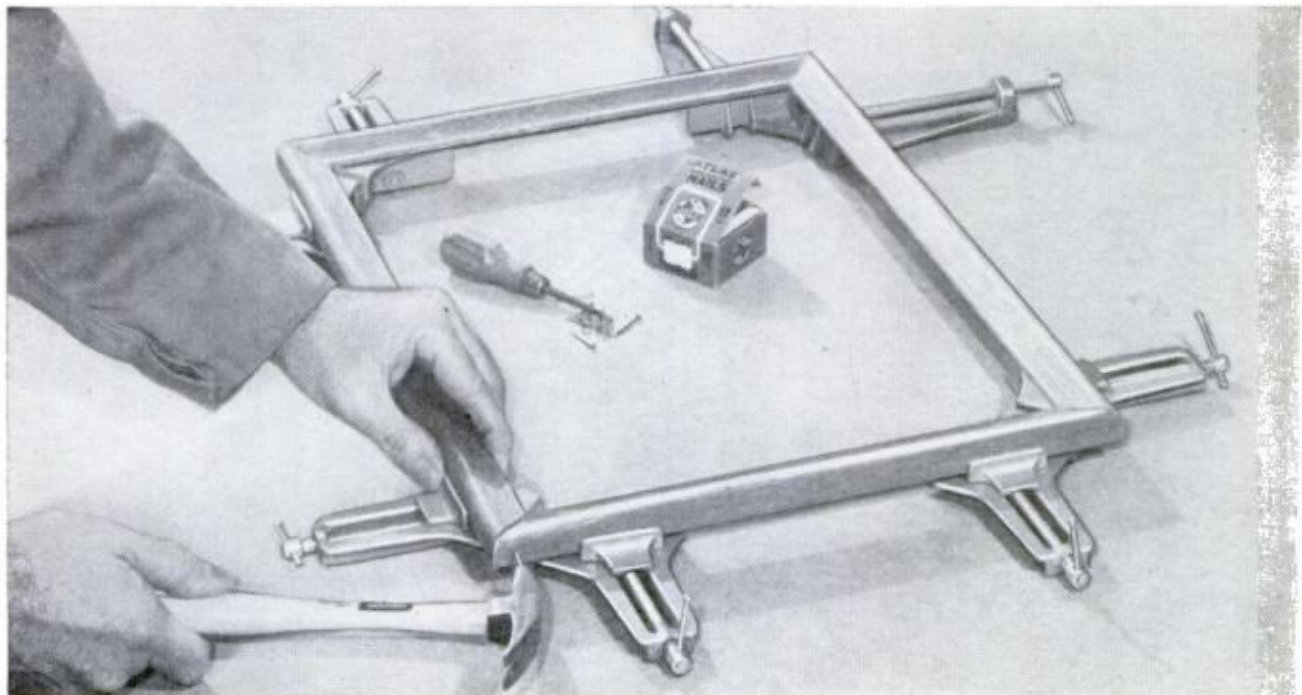
**PERFECT MITERS** make square frames—that's why most framers fuss with miter boxes. But you can cut tight, square corners on your radial arm saw. And by organizing your work into the steps shown, you can make one frame—or a dozen—with only three settings: straight, right miter and left miter.

Use a fine-tooth blade, and keep the molding's rabbeted edge pressed tight against the fence. Forget the rabbets when you calculate the lengths of the square-cut pairs (two sides; top and bottom). This will leave each piece slightly oversize. But be sure you position the stop block so that the left-hand cut will create an *inside* length  $\frac{1}{2}$  in. less than the actual dimension of the picture (if rabbets are  $\frac{1}{4}$  in.). After applying glue to miters, adjust joints in clamps by tightening one side at a time.



3. **STOP BLOCK** assures that matching pairs will be identical lengths after left-hand miters are cut

4. **ASSEMBLE CORNER** to exact fit in corner clamp, after gluing, then pin each joint with small nail





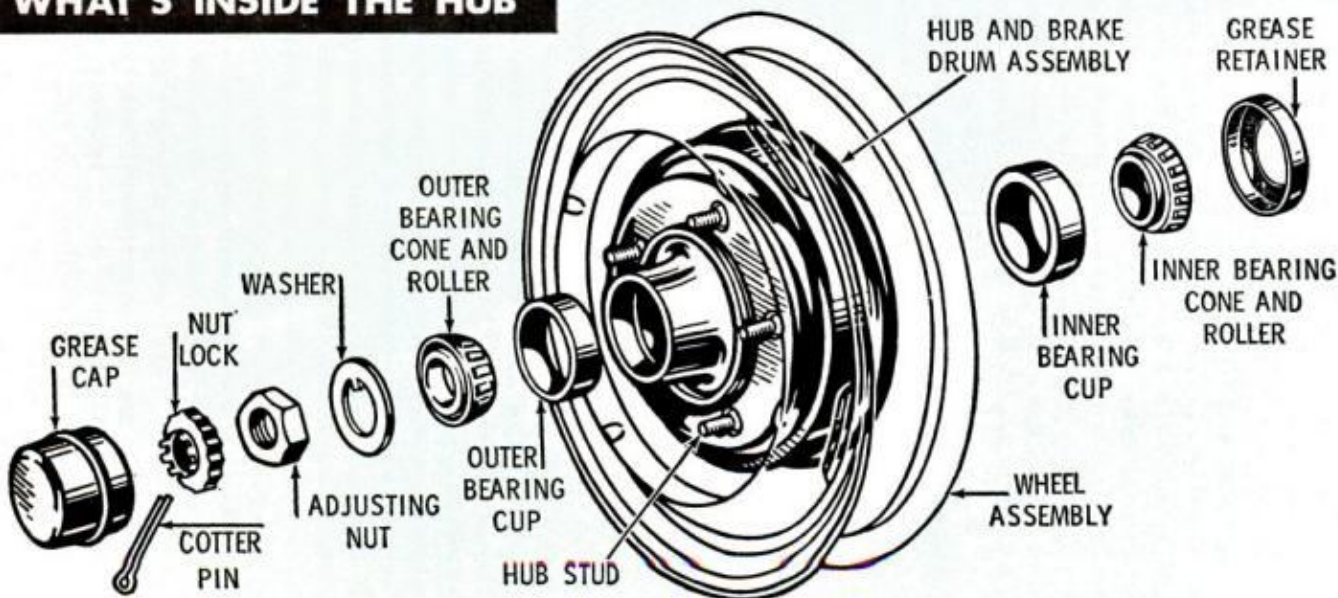
# How To Keep Your Wheels From Coming Off

By Morton J. Schultz

It's not as rare a failure as you might think—particularly now that maintenance intervals are being extended. Preventing the problem is pretty much up to you. Here's how

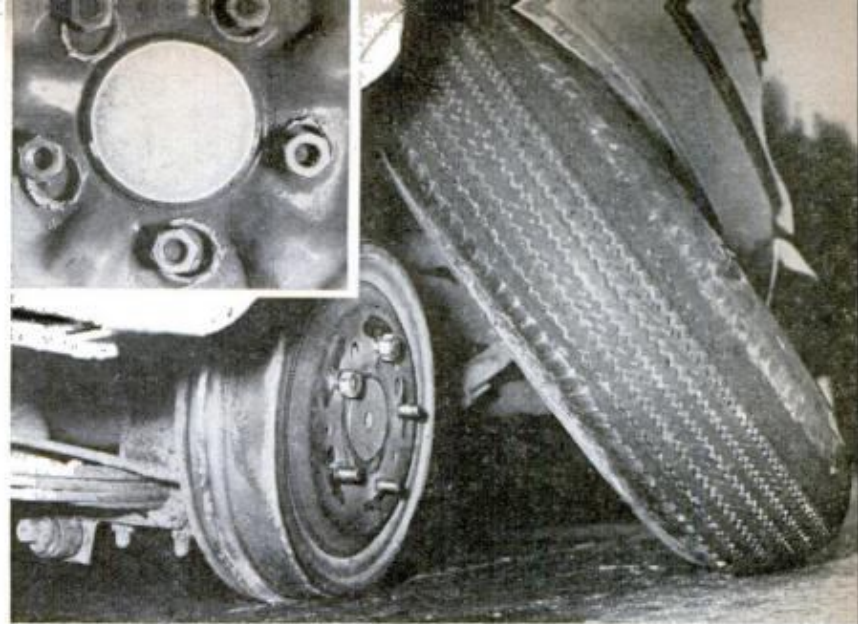
HE EASED DOWN from the 65 m.p.h. thruway speed and swung into the turn-off lane, away from the speeding four-lane traffic. As the decelerating car arced easily around the exit curve, the wind roar subsided and the muscles at the back of his neck began to relax. Suddenly, a grinding, scraping noise came from

## WHAT'S INSIDE THE HUB





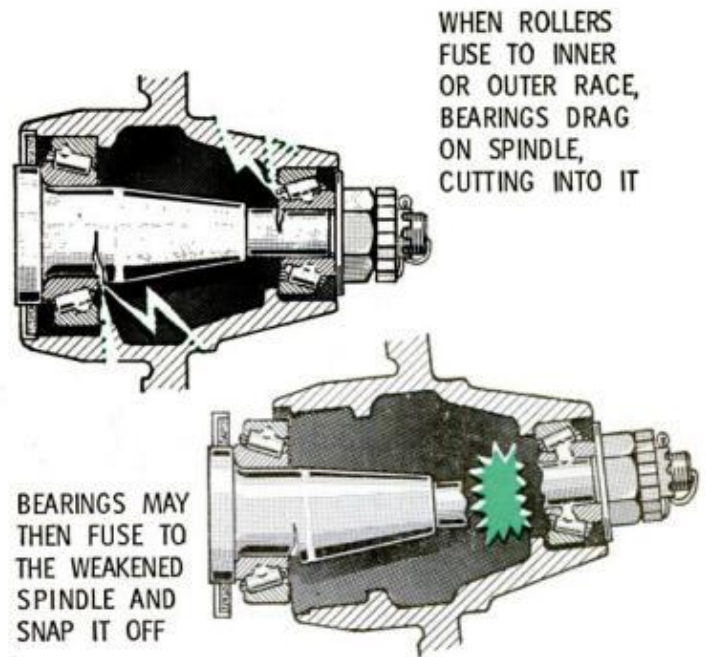
It's a letdown, whether it's a back wheel, as at left, or a front one. This is one wheel problem common to both ends of the car—and the cause is the same: improper tightening of the stud nuts. The resulting play lets studs chew rim holes larger, until nuts slip through (inset). Off flies the wheel, letting the drum drop to drag on pavement until car comes to rest. Loose wheel may lodge inside fender, as in these photos (courtesy Motor Vehicle Research of New Hampshire), and be damaged by road drag. If this were a front wheel, it would have meant total loss of steering and braking



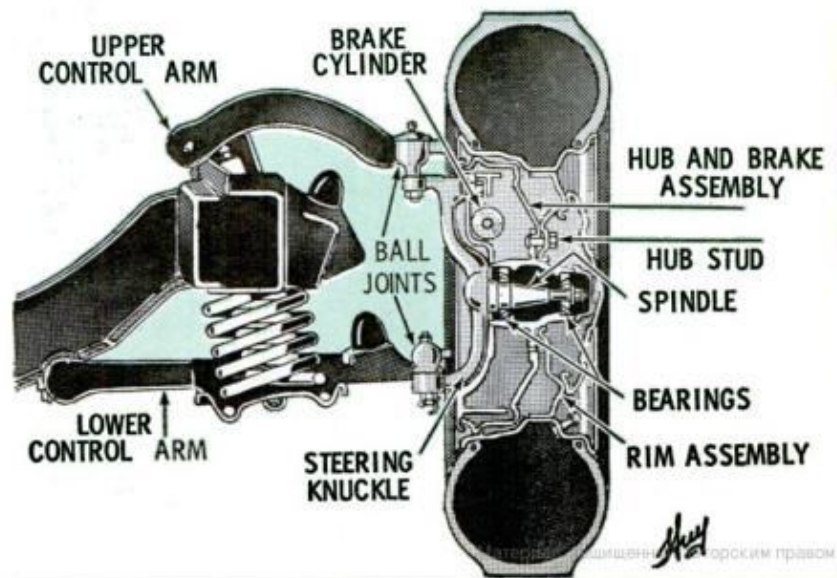
somewhere up at the front of the car. "What's that?" asked his wife, tensing upright beside him. His neck muscles tightened again as he peered out into winter dusk. "Dunno," he replied. The noise stopped abruptly, then started again, as he swung the car into the county road toward home. But there was no feel of wobble or thump as he worked the wheel back and forth and gingerly tried the brakes. Finally, the sound (which had become intermittent) stopped completely. "You'd better get it down to the shop tomorrow," he told his wife, "and have them check out the front wheels. I don't like that sound."

And, dutiful wife that she was, she tried to do just that, next day. But as she eased the car out of their driveway and headed up the street, the left front wheel snapped off. The brakes and steering cut out, of course, and the car drifted softly—and luckily—into a snowbank at the curb. All she could think was: "What if this had happened on the thruway last night!"

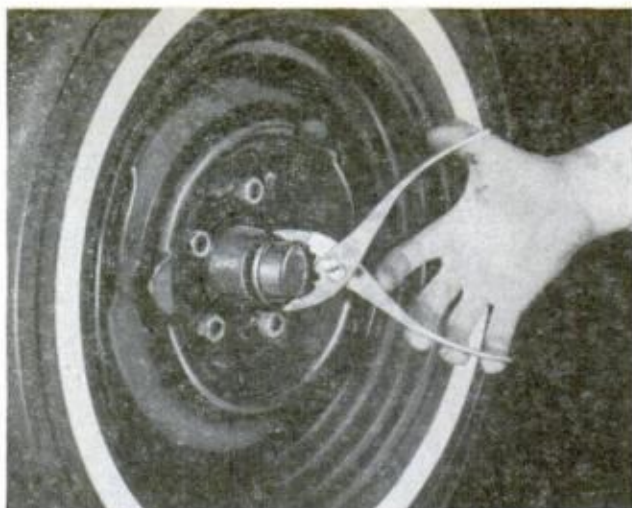
The story is true—and in many ways typical of something that happens more



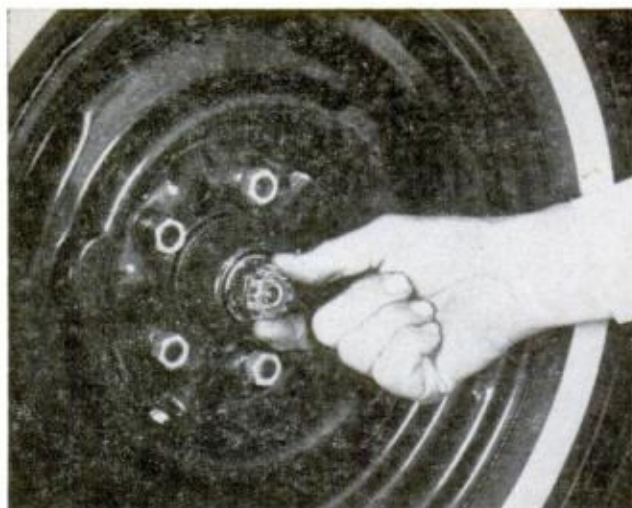
The parts "exploded" at the left all pack inside the hub to support the wheel on the spindle. Spindle is rigid extension of steering knuckle, so wheel must ride on a pair of bearings. The cross-section at right shows the completed assembly. Only the nuts on the threaded end of the spindle hold the complete wheel on. If they loosen, or if spindle snaps, you'll lose the wheel. If only hub studs loosen (or pull through rim holes) brake drum stays on spindle. Another danger spot: badly-worn ball joints can pop out of their sockets on bumpy road, letting wheel collapse







**FIRST STEP** in front-wheel bearing service is to jack up car, pry off hub cap and remove grease cup by tapping it with hammer, pulling it off with pliers



**CASTELLATED NUT** inside cup is locked on spindle with cotter pin. Once pin is removed and discarded, nut can usually be removed by pulling with fingers

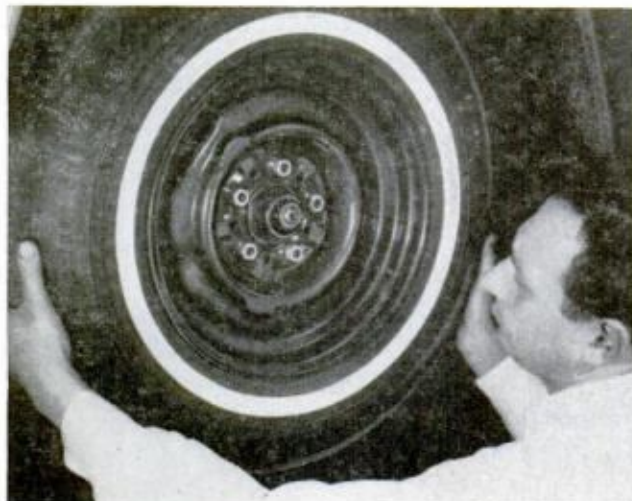
often than you'd think. Why did the wheel come off? Because the bearings burned out, "froze" to the spindle and snapped it off!

At high or even moderate speeds, such wheel failures can become grisly accident statistics. And the tragic irony is that these mishaps are all *avoidable*.

Wheels fall off for a number of reasons. Next to a broken spindle, the main cause is a part of the hub assembly coming loose—especially the locking nut. Wheel lugs, too, are critical parts that can cause wheel failure. And still another area is badly-worn ball joints that pop out of their sockets when the car hits a bump that lifts the front end and slams it down, causing the wheel to collapse.

Of 2.1 million motor vehicles inspected during a recent six-week period in Massachusetts, 40,000 were rejected because of front-end faults such as bearings and ball joints. It seems significant that *since* that inspection there's been a drop-off in

**QUICK JERK** toward you—about an inch—then pushing wheel back will leave outer bearing loose on spindle. Draw it off and lay it aside on clean paper



vehicle fatalities in that State.

But, short of being rejected by official inspectors, how can *you* tell when this danger lurks? As in our opening example, wheels that are about to fail usually give forth an audible warning. With wheel bearings, this warning can come in other ways, as well: Jerky or loose steering, wheel tramp, pulling to one side, side-to-side wander, or irregular tire wear.

But the main warning sign given by a bad wheel bearing is *noise*, and sometimes the ear is quicker than the eye—or hands—in detecting trouble. This noise could be a squeal, resembling a bad fan belt. Or it could be a clicking or grinding sound.

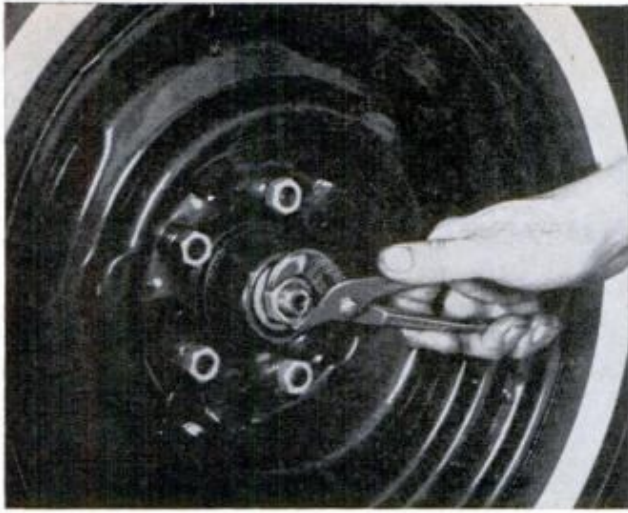
If the noise is a squeal, one way to pinpoint whether it's a bearing is to vary your speed. Apply the brakes and slow down. If the tone of the squeal changes, check the bearings—fast.

How? Your first course of action is to pull over to the side of the road and feel the hubcap of the noisy wheel. Unless

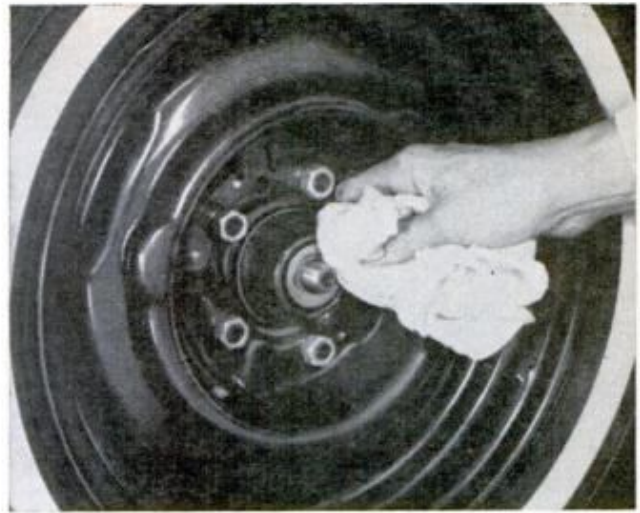
**REMOVE WHEEL** and lay it on clean cloth, outside up. With brass drift set on inner race of inner bearing, gently tap it out. Grease retainer will fall out, too







**LOCKING NUT** comes off next, plus washer beneath. Nut has either left- or right-hand thread; on some cars, locking nut and adjusting nut are one and same



**CLEANLINESS IS BYWORD** in handling bearings. Keep clean rag handy and wipe dirt and grease from spindle before pulling wheel forward, to protect bearings

you've been doing a lot of heavy braking, a hubcap that's really hot to the touch is a fair indication of bearing trouble.

Jack up the car and give the wheel a spin by hand. If you hear a click or grind, limp for home or the nearest garage—wherever you can pull the wheel to in-

spect the bearings. *Don't* risk any turn-pike driving.

Just because the noise might stop after a few miles doesn't mean the trouble's past, either. A bearing that isn't turning because it's welded to the spindle won't make a noise.

**ONCE BEARINGS ARE REMOVED**, wash each thoroughly in special solvent, using soft brush. Never use gasoline or water. Next, repack bearing by working it into glob of grease in palm of hand till grease gets packed between rollers. Throw light coating of grease inside hub, then seat inner bearing with finger pressure







**NEW GREASE RETAINER**—never replace old one—is laid over inner bearing. It must fit tight to prevent leakage onto brake linings. Best way to seat it is with special tool, center photo—this one sells for about \$6. One whack puts retainer in place, but to make sure it's seated against bearing, tap retainer's edge with drift (right). If you don't have seating tool, you can do whole job by tapping drift around retainer's edge

A worn ball joint gives plenty of warning before it can cause a wheel to collapse. As a matter of fact, the warning usually precedes the chance of collapse by many hundreds of miles. This warning is in the form of road shock transmitted to the steering wheel, a front wheel shimmy at low speed and pulling to one side when brakes are applied.

So far, we've been talking about losing the whole wheel. But, often, only the rim assembly breaks loose from its stud bolts, letting the still-attached hub and brake drum drop to skid along the road, as in the upper-right photo, page 175. But this type of failure still sounds a warning. A clicking or clanging noise that's especially pronounced when you slow down may indicate a lug or two has worked free and is gyrating inside that hub cap. The only way you're going to be sure is to remove

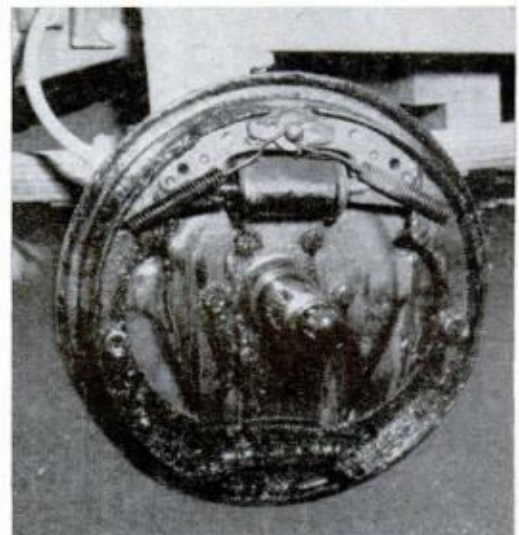
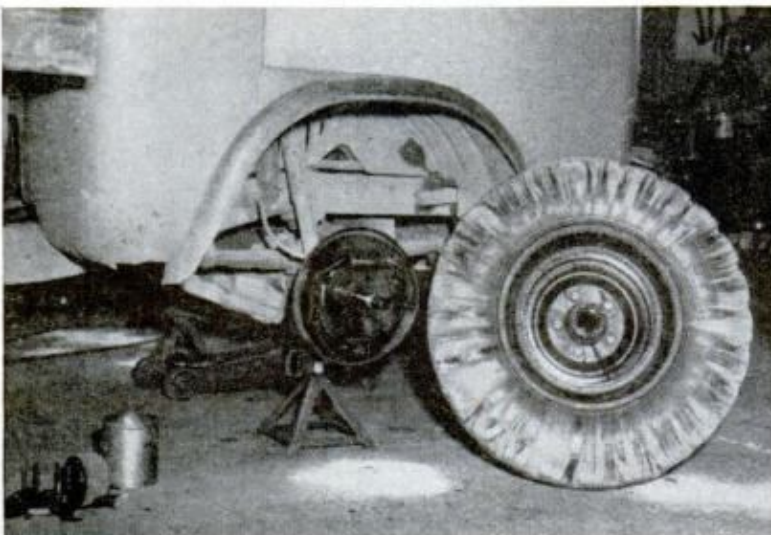
the hub cap and check if they're tight.

A good habit to get into is to check not only the tightness of the lugs, but also the condition of the wheel holes before starting on a trip—especially if the wheels have recently been removed and reinstalled, as in tire-rotation.

But by far the main cause of wheels coming off is bad wheel bearings and trouble in adjacent wheel bearing parts, such as the adjusting and locking nuts. In this respect, then, it may be unfortunate that most new car manufacturers have recently revised their approach to wheel bearing service. Not too long ago, most recommended inspection, cleaning and re-lubrication every 10,000 miles.

Nowadays, many state that servicing of wheel bearings is a "special" job to be done "only when wheels are off for other service." That might not be in 35,000 miles.

**KILLER TRUCK**, photographed by New Jersey State Police after accident involving death of pedestrian, had defective grease retainer on right-front wheel bearing. This allowed grease to spew over brake linings and drum, as shown in close-up at right. When driver applied brakes, wheel locked and pulled truck out of control





Other manufacturers have increased the interval between servicing from 10,000 to every 25,000 or 30,000 miles.

Of 30 mechanics I spoke to, not one agreed with this decision to make this area of the car "service free."

"Call me old-fashioned," one new-car service chief said, "but I still believe in the 10,000-mile wheel-bearing service. It's not that I'm looking for business (the price of this service is next to nothing), but there have been some stories afloat in the industry that support my theory."

These "stories," appropriately enough, concern incidents of wheels flying off cars. Two years ago, for example, one popular make vehicle had the problem. The cars it happened to had relatively few miles on them—between 10,000 and 15,000. Yet, wheels were coming off on the highway.

The cause of the trouble was traced to the wheel bearing lubricant which had been applied at the factory. (The particular car's recommendation for wheel bearing service, by the way, was every 25,000 miles.) The lubricant broke down under heat. The bearing consequently became so hot it welded itself to its own cup, press-fitted inside the hub. The bearing, in trying to rotate, couldn't; the drag this created on the axle spindle was so great it wore the spindle down until it broke. Or in some cases, the friction-heat welded the bearings momentarily to the shaft, and snapped it off. Either way, good-bye wheel!

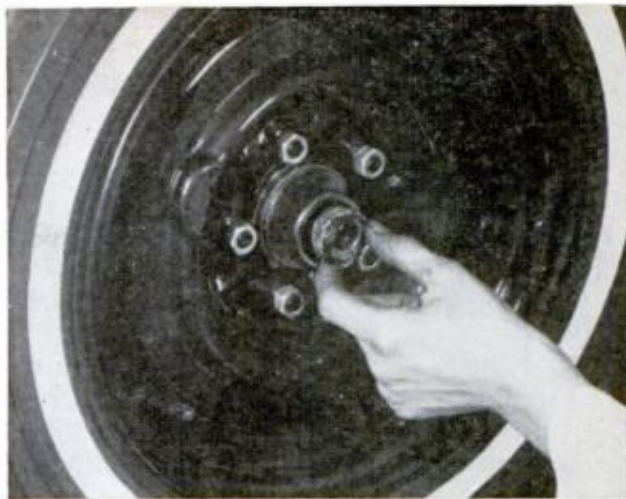
If the wheel bearings in these cars had been checked at 10,000 miles, the chances of catching the trouble before it sent a wheel flying would have been much greater.

A truck accident in New Jersey in which a child was killed revealed that a wheel bearing's grease retainer had broken down and grease had leaked onto the brake linings. The driver applied his brakes, but they locked because of the grease and the truck veered into the child at the side of the road.

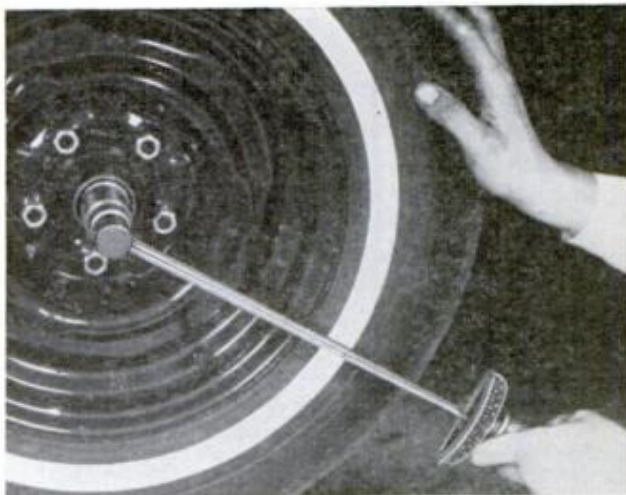
No one could tell, of course, how long it had been since the bearings and associated parts had been checked. But, again, more frequent service, which should always include replacement of the grease retainer (as you'll see later on) would lessen the chance of this sort of tragedy.

The sad irony is that there is no reason to extend the intervals between wheel-bearing servicing. It's certainly not an economy measure. If you had a garage do the job for you once every 10,000 miles, it shouldn't cost you over \$5 for checking, cleaning and repacking both front bearings. Replacement of these bearings, if

[\(Please turn to page 222\)](#)

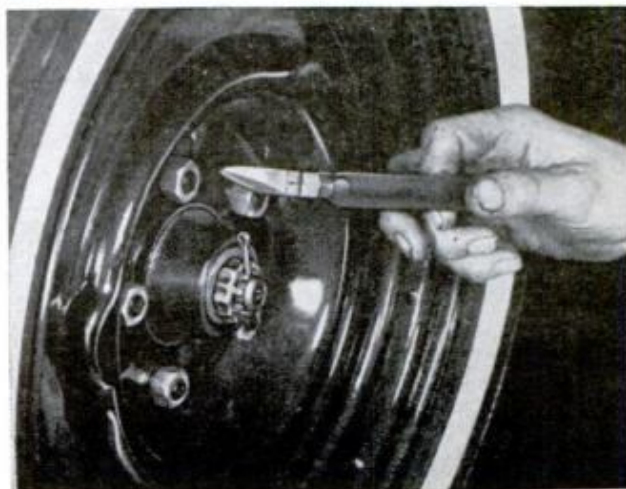


**WITH WHEEL REPLACED** on spindle, insert packed outer bearing into its cup in hub. Put back washer and run up adjusting nut. You're now ready for most important reassembly step—adjusting the bearings



**SPIN WHEEL** as you tighten adjusting nut to car's specification with torque wrench. Then loosen nut and adjust bearings by torquing again. But check your car's specs. On some makes, you tighten to spec, then back nut off specified amount, such as  $\frac{1}{8}$  to  $\frac{1}{4}$  turn

**FINAL STEP** is very important one. That cotter pin locks everything in place. Don't try to reuse the old one—tap in new one that's long enough to let you wrap legs around lock nut. If pin is omitted or poorly installed, wheel can work loose and come off





# AUTO CLINIC

**Q** The car's a 1962 Oldsmobile Dynamic 88. The problem's a ping that's been there since I bought it. Tune up after tune up has failed to reveal the cause. I use only high test gas. What's the solution?—P.L., New York

**A** We've come across this one before with the '62 Olds. You'll probably find the cause of the trouble is the vacuum spark advance unit—it's too sensitive and advances too much. You'd best have it replaced. A friend who had the same problem switched to a unit off the 1958 Olds, which is known for its ruggedness. You might try this, to avoid the chance of getting another over-sensitive unit.

**Q** Twice in the past year I've had to have the valves cleaned, and all rocker arms and several tappets replaced in my 1961 Ford Falcon. Seems sludge just piles up there. Can this be avoided, or shall I resign myself to a semi-annual repair?—D.P.M., Illinois

**A** Quite a common problem according to the number of letters we've been getting, but it's now curable, thanks to Ford. Seems that the cause of it is the rear head bolt that controls the flow of oil to the rockers and valves. It has a way of clogging up, so oil doesn't flow and what's already there sludges up. Here's what to do.

Get that system thoroughly cleaned out so no sludge remains in and around the valve train. Replace the old rear head bolt with a new one (part number C1GY-6065A). It has a bigger slot and shouldn't clog. Finally, revise your engine oil change policy. Instead of changing it once every 4000 miles, as originally recommended, you'd best have it changed once every 2000 miles and replace the oil filter cartridge every 5000 miles.

**Q** What would make windshield washers malfunction although you can hear that pump clicking away? The hoses are clear—not crimped. The car's a 1962 Chevy.—M.A.B., Michigan

**A** A part in that pump's gone bad, and although you can hear it clicking away it's not pumping wind-

shield washer fluid. There's a little rubber piston in the pump. If it's busted, it won't exert the force needed to get the fluid through the lines and to the windshield. You can have it replaced for a couple of dollars for part and labor. No need to get a new pump.

**Q** There are holes just below the valve covers at every intake valve of my 1959 Pontiac. These holes go right through to the stems. I'd like to know why they're there and if I can plug 'em up in some way since they draw dirt in, and I'm afraid I'll wear out stems and guides.—T.J.M., Calif.

**A** Those holes were an experiment in "breathing." Pontiac toyed with the idea that putting them there would enhance engine ventilation, but the factory found out, as you did, that they're nothing but "dust collectors." So, a special plug has been issued to plug 'em up (part number 534989). Putting these stoppers in won't affect engine performance or operation.

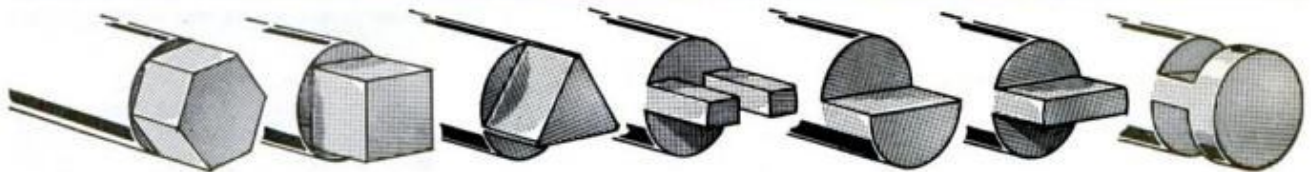
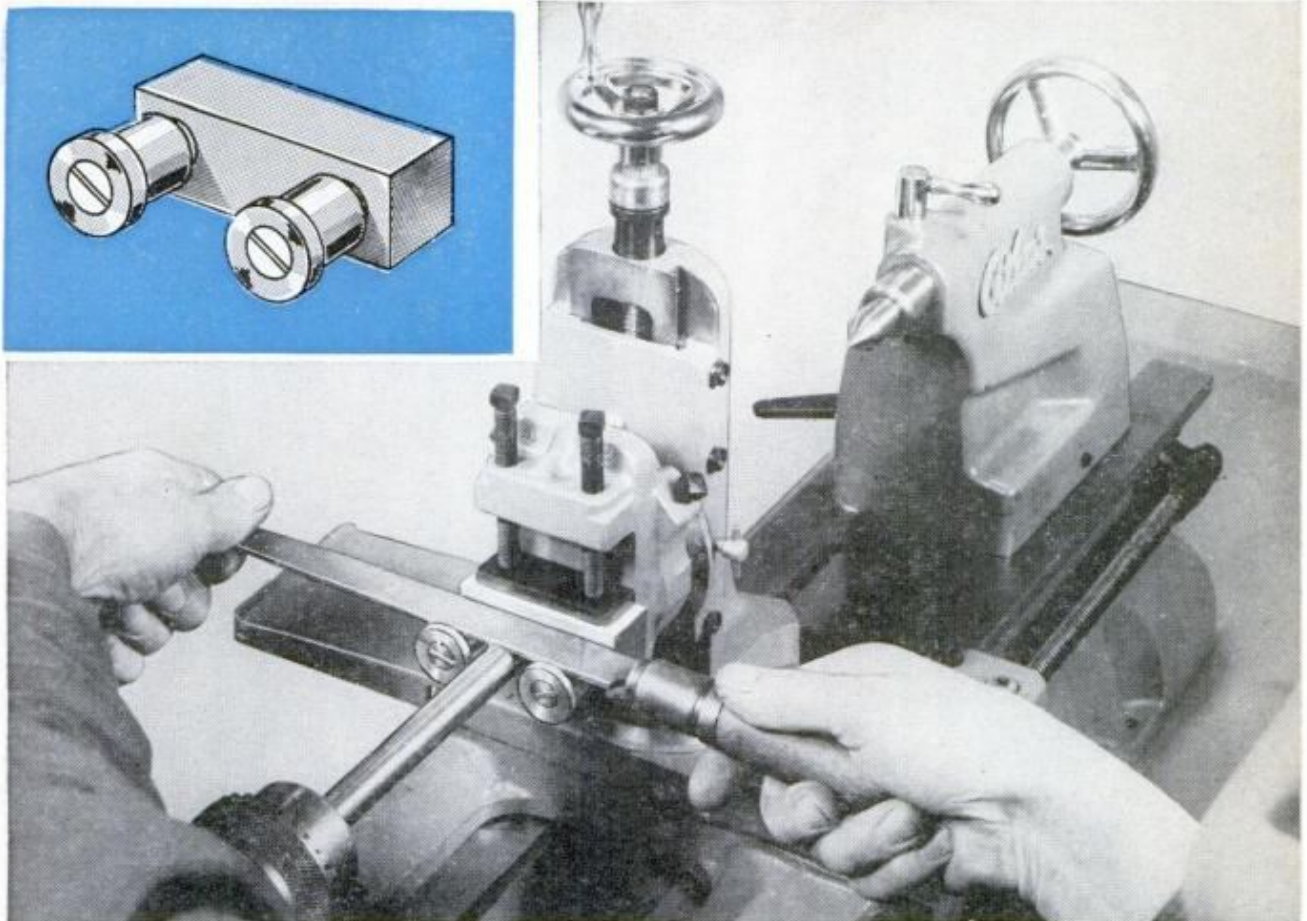
## Monthly Service Tip

If you hear any squeaks coming from your 1963 F-85 with Hydramatic transmission, it could well be the speedometer driven gear assembly. It most likely will occur at low speeds. There are two ways to test to make sure. Warm the car up to operating temperature and drive it at about 25 miles per hour. At this point, shove the transmission selector lever into "N" and turn the engine off. Let the car coast down in speed. If you begin to hear a squeak, you can bet it's the driven gear assembly. Another way to pinpoint this is to remove the gear assembly while the transmission's at operating temperature and rotate the gear by hand. A noisy assembly will drag and squeak slightly. The only thing you can do about a bad driven gear is—replace it.

As a service to Popular Mechanics readers with problems relating to their cars or to driving in general, we invite you to submit your questions for answering through this column or by mail. Address Auto Clinic, Popular Mechanics Magazine, 575 Lexington Avenue, New York, N. Y. 10022, enclosing a stamped, self-addressed envelope.



# Roller Guide for Hand Filing

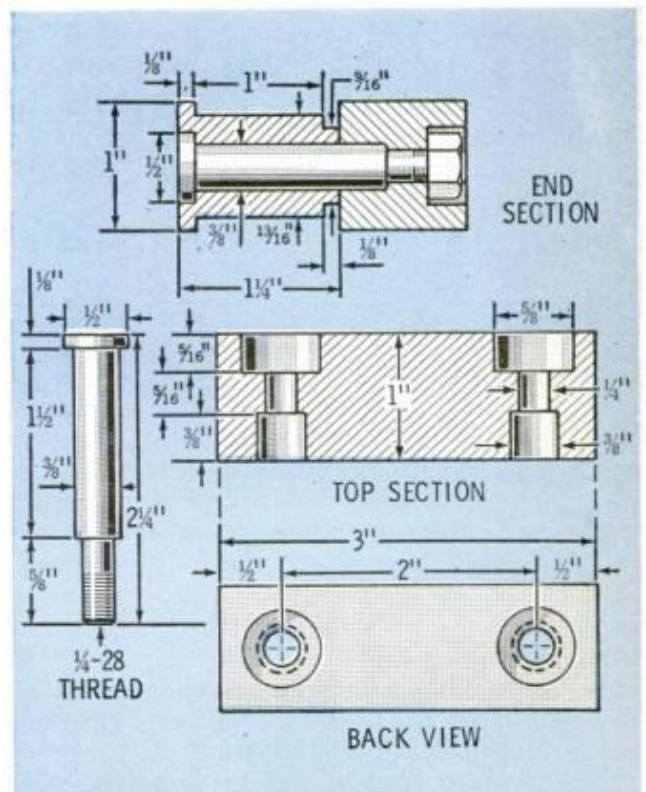


EXAMPLES OF SHAPES WHICH CAN BE FILED WITH THE ROLLER GUIDE

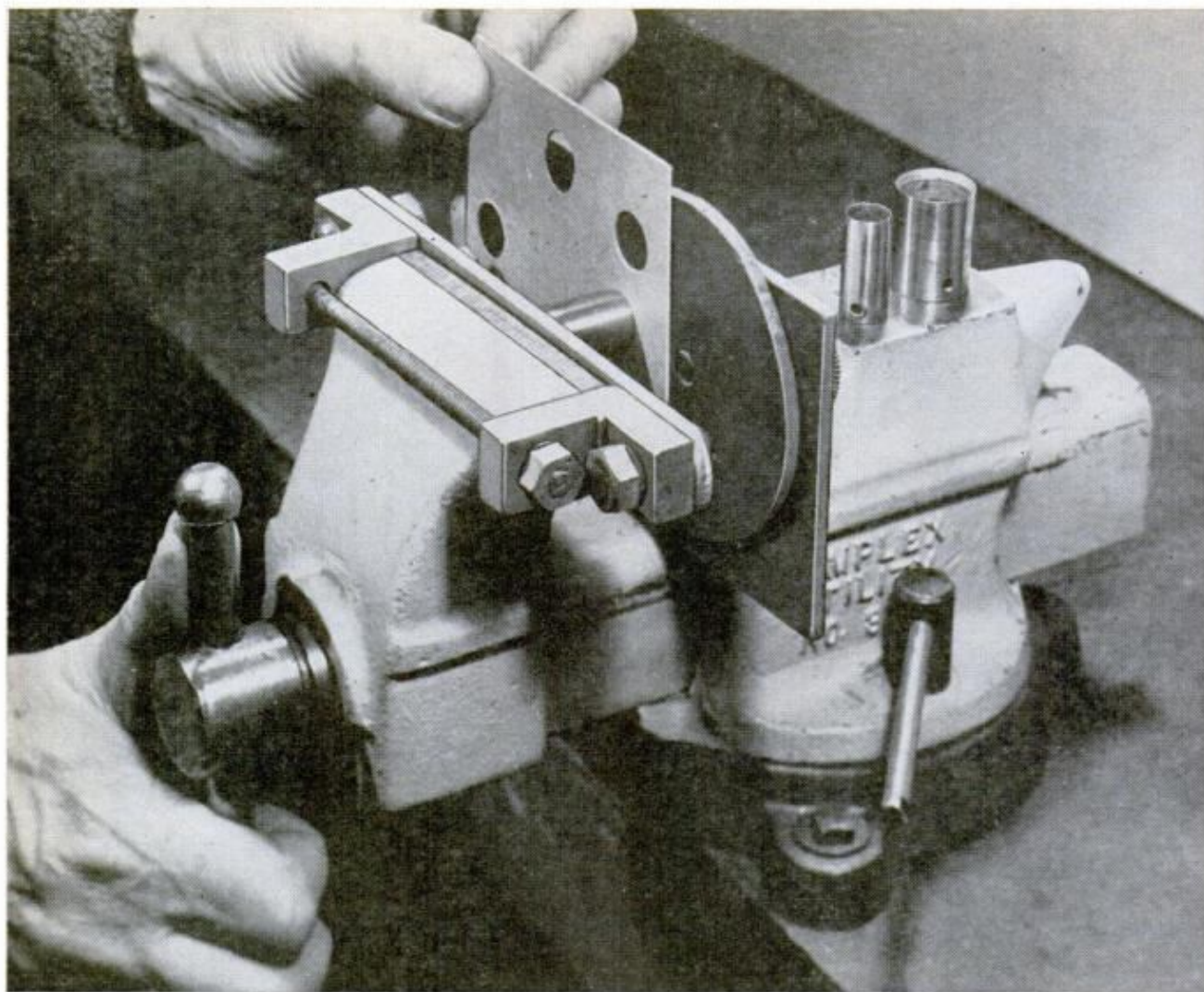
OLD-TIME MACHINISTS did much of their work with a hand filing guide like the one shown here. Clamped in the milling attachment, the guide makes it easy to file octagons, hexagons, squares and many other shapes, as well as sharpen the teeth of end mills, rod drills and spot facers. Accuracy is assured by use of the lathe's dividing head.

The base of the guide is made from 1-in.-square cold-rolled steel drilled and counterbored as detailed. The pivots which support the rollers, are of drill rod, whereas the rollers are made from tool steel. Each roller should be drilled a bit under-size and reamed to its final fit. The shouldered pivots are turned to size, filed smooth and polished for a close running fit in the holders.

To use the guide, lock the headstock spindle with the back gear lever; then select a flat file having parallel edges. Hold the file's safe edge against the guide flanges. As the work nears final size, keep the file bearing on the rollers.







# put in your vise

**Add this hollow punch accessory to any bench vise and you can cut clean holes in sheets of leather, plastic and metal**

**By Walter E. Burton**

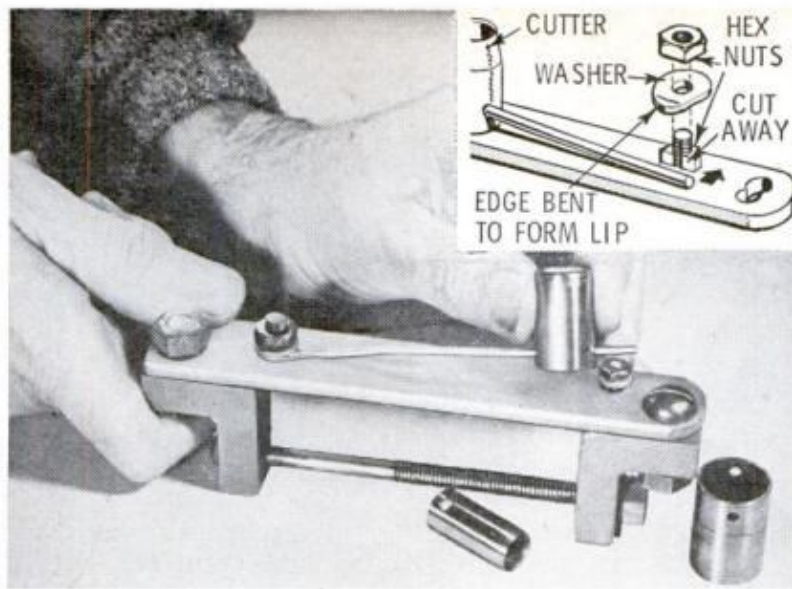
**I**T'S ALWAYS A PLEASURE to add a piece of equipment to your shop that doesn't cost you anything—especially a gizmo as useful as this one. You can custom-make it from scrap to fit your bench vise. The great pressure you're able to exert with the vise screw lets you punch your way neatly through leather, cardboard, thin plastic or metal sheet, and wood veneers. The easily-made tubular punches let you retrieve the cuttings, if you're making discs or washers. And you can create cutters in many shapes—square, triangular or even cookie-cutter-type designs—from knife-edged steel strip.

The gadget consists of three parts: the

punch assortment, punch holder, and back-up pad. The round punches shown in the photos are sections of tube with the outside of one end filed, ground or turned to form a sharp edge. For greatest efficiency, the tube should be machined on a lathe so that its interior diameter tapers slightly, as indicated in the sketch on the facing page. This permits the cut discs to move easily to the rear, so you can make repeated cuts without clogging.

If you don't have the equipment for machining, you can make the punches by filing or grinding a cutting edge on a length of thin-walled steel tubing, but you should harden and temper the cutting





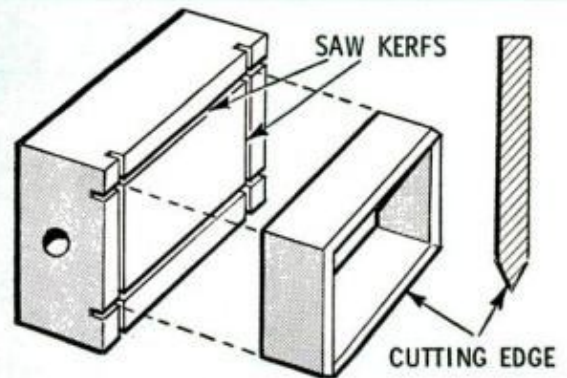
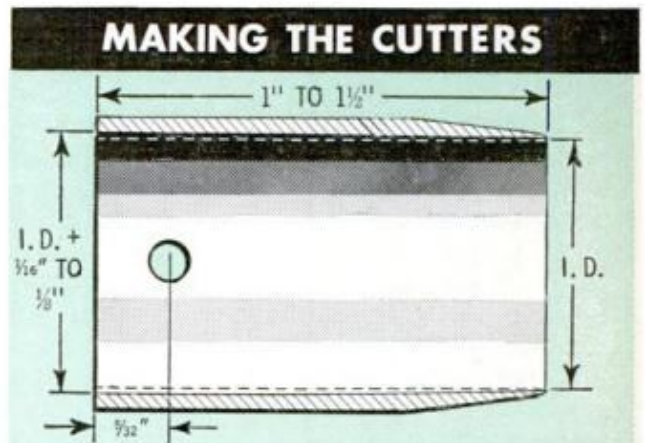
**CHANGING CUTTERS** is simple matter of slipping one off pivoting wire, the other on. Free end of wire is tucked against flat-cut nut and held by lipped washer (inset). When top nut is tightened, tension is created on wire to keep cutter in position. Same holds true for block-mounted cutters, below. Right photo shows how rivet is spread for disc pivot. Coil-spring loops pass around vise jaw to hold back-up unit in place

edge. If the tubing is low-carbon steel, use a case-hardening compound. Still another method is to ream out one end of the tube, putting the cutting bevel on the inside and leaving the outside diameter uniform. This is recommended when you must cut accurate holes in fairly thick materials. But such punches will load quickly unless emptied after a few cuts.

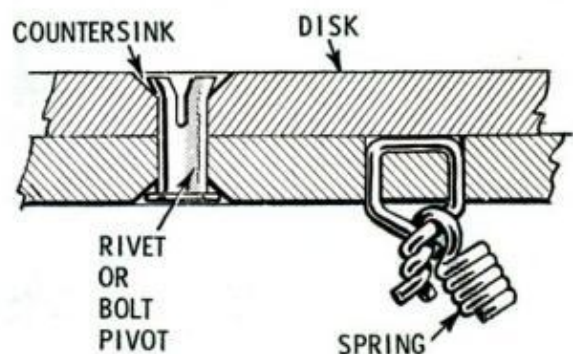
An oval punch can be made by flattening a round punch slightly in the vise before hardening. The built-up punches can be bent from any steel strip having one edge sharpened like a knife blade. Printer's cutting rule is most convenient, but you can grind a hacksaw blade and anneal it for bending. Once you've got the shape you want, you fasten the blunt edge of the strip to a drilled block of metal or plywood, either forcing it into matching grooves or seating it in epoxy, metal paste, or solder. The drilling is to let you "string" the finished punch on the holder rod.

Construction of the punch holder depends on the shape of the vise jaws. The holder shown consists of a  $\frac{3}{16}$  x 1 x 6-in. steel bar bracketed to the jaw with two heavy angles on a long  $\frac{1}{4}$ -in. bolt.

To protect cutting edges, the material to be punched is backed up by a pad. The one shown is a  $3\frac{3}{8}$ -in. disc of  $\frac{1}{8}$ -in. tempered hardboard, pivoted on a panel of the same material. The disc revolves to present fresh surfaces, and after the face becomes badly chewed, you just remove the rivet and replace the disc with a new one. The disc could also be zinc, or soft aluminum, and the pivot could be a flat-head bolt, as long as the head is countersunk so that the work lays flat against the disc. A means of attaching this unit to the vise is shown above. ★★★



### ASSEMBLING THE BACK-UP







**By Bruce Burk**

**T**HERE'S NO DENYING that dovetail joints are the hallmark of fine cabinetwork—and the best joints for drawers and other box-frame assemblies that must withstand frequent movement. They're also among the handsomest of joints, so it's ironical that they're usually tucked out-of-sight. In fact, the whole purpose of a blind dovetail is to be invisible when the drawer's closed! Maybe that's why amateur woodworkers shy away from dovetailing: They figure it's not a skill worth acquiring since the results often don't even show.

So if they use such joints at all, they're likely to settle for commercial router jigs—as do many professional furniture shops. Such jigs produce strong joints, but they can't turn out authentic *through* dovetails, or the neat, square-cut half-blinds used on the drawers of fine old furniture. These prize joints always have been, and always will be, a hand job.

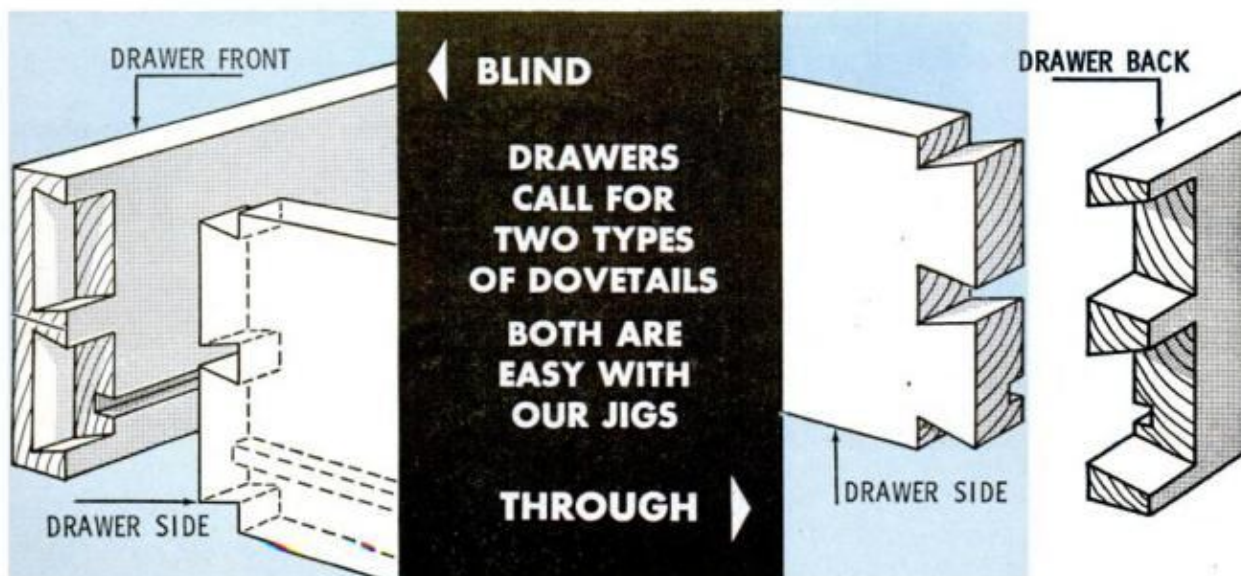
But the easily-made jigs detailed on the following pages spare you tricky layout and fussy cutting with a handsaw. And you needn't invest in any extra equipment—not even a special dovetail bit. The

router templates clamp on the work as shown far right. There's one for cutting both types of drawer dovetails shown above (assembled) and below (separated). These dovetails are wider than you may be used to. Centerlines of the pin sockets can be up to 2 in. apart, depending on the height of the drawer. Sockets wider than the template cutouts must be cut with *two* positionings of the jig, left and right.

The second jig is for cutting multiple through dovetails of the type sketched, bottom right, next page. The end-grain will show on both dovetails and pins when this "through" joint is assembled. It makes a very decorative corner treatment for chests and other small furniture. This jig, or a variation of it, would also be helpful in cutting *single* through dovetails, when assembling frames where extra strength is desired.

Both jigs are designed for use with a  $\frac{7}{16}$ -in. diameter router template guide and a standard  $\frac{7}{16}$ -in. router bit. This combination makes a cut  $\frac{1}{16}$  in. *inside* the template outlines. If you make the little layout T-square first, you can use it to establish the dovetail angles on the jigs.

Once you've cut your front, back and side drawer members to size—making cer-





tain all end cuts are square—you're ready to put the jigs to work, as demonstrated in the step-by-step photos on the next page. You start by cutting pin sockets on both ends of two drawer members.

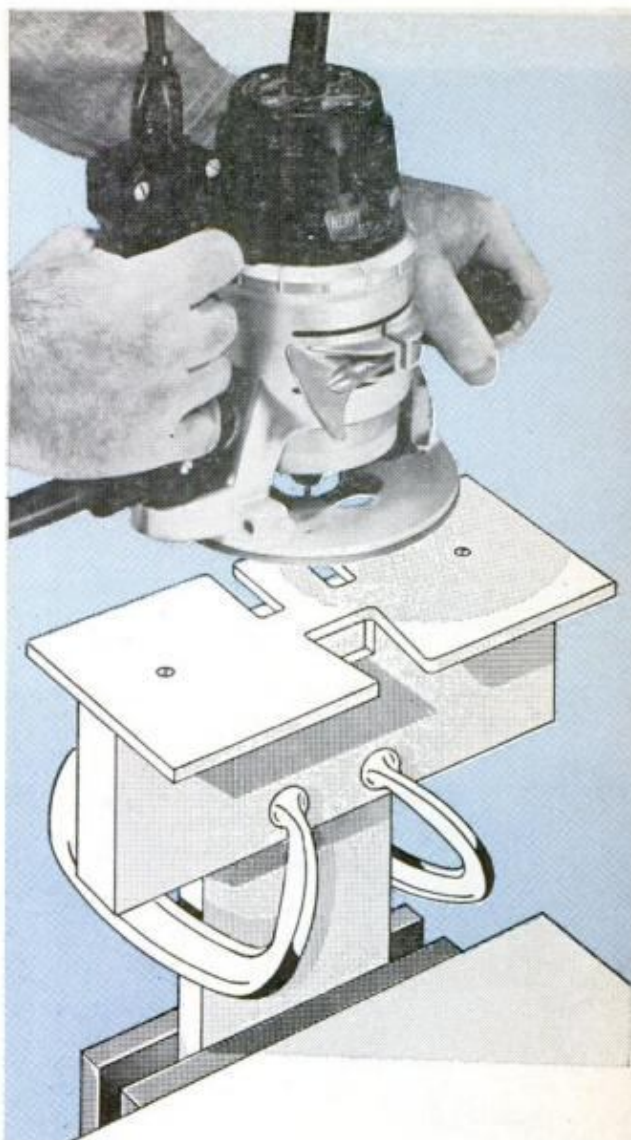
**With the multiple through dovetail jig,** you first establish the socket centerlines at  $1\frac{5}{8}$ -in. intervals. The easiest way to do this is shown below. Then you adjust your router depth-of-cut to  $\frac{1}{64}$ -in. greater than the combined thickness of the side member and template hardboard. After the pin-socket slots are cut, it's a simple matter to trim back each side at an 8-degree angle to form the dovetails between. (You could save this step by using a tapered dovetail bit, but most commercial types are too short and have too steep a taper for this use.)

The completed front or back member now becomes the layout template for marking the dovetail sockets on the end grain of the side member. Because of possible discrepancies in cutting, it's always best to mark from the set of dovetails that will eventually be glued into the sockets you're marking—don't mix pieces end for end. If you've cut the template correctly, Cutout B on the pattern, next page, should match the end-grain outlines, fitting  $\frac{1}{16}$  in. outside the lines.

Clamp the jig in place, routing the dovetail sockets one-by-one, with the bit at the same setting you already used for the pin-socket slots.

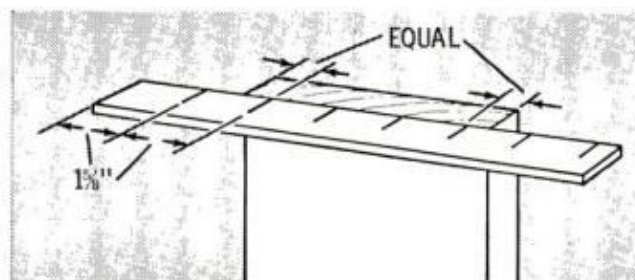
**With the drawer jig,** the procedure is nearly identical. It's designed for use with standard drawer stock, where the front is usually 1-in. lumber (actual thickness:  $\frac{3}{4}$  to  $1\frac{1}{16}$  in.) and where sides and back are normally  $\frac{1}{2}$  in. thick. Since the dovetails on the front end of the side member normally pass more than half-way through the front member, you must determine the depth of the pin sockets by a special step.

Clamp a scrap piece, the same thickness

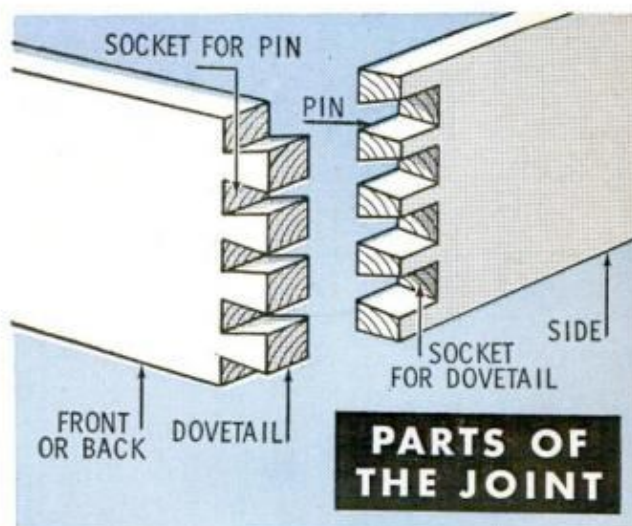


as your front member, vertically in the vise and clamp the jig over the end. Using Cutout D and an estimated bit setting, make a sample socket in the scrap, as shown in the top right photo on page 187. Now, detach the jig and lay the scrap flat on your workbench, socket up. Rest your router on the face, with the bit extending alongside the socket, and adjust the depth-of-cut to the depth of this socket

**TO LOCATE PIN SOCKETS,** lay off strip of wood with marks spaced  $1\frac{5}{8}$  in. apart. Clamp this strip against face of front or back member, centering maximum number of marks, as sketched below. Transfer these marks to the stock, then scribe them across end with try square. These are centerlines of pin sockets, to let you line up template slots of jig, top right

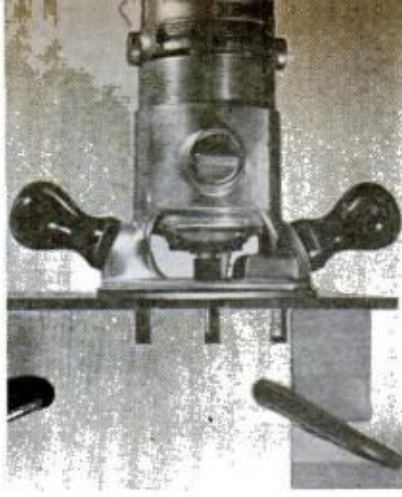


MARCH 1965



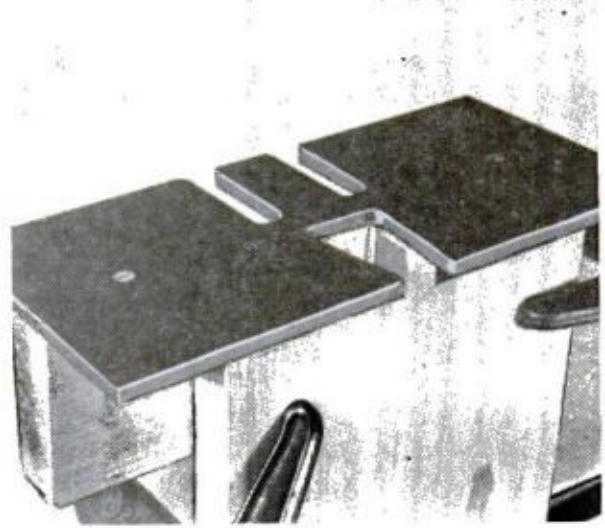
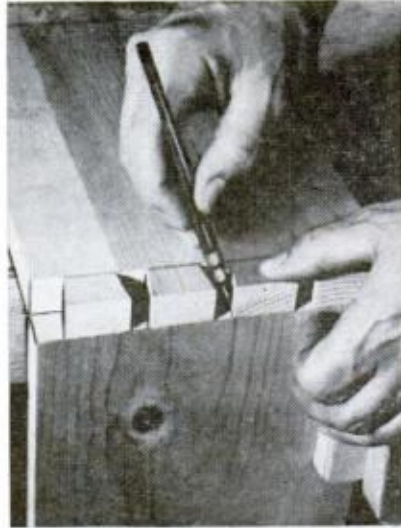
185



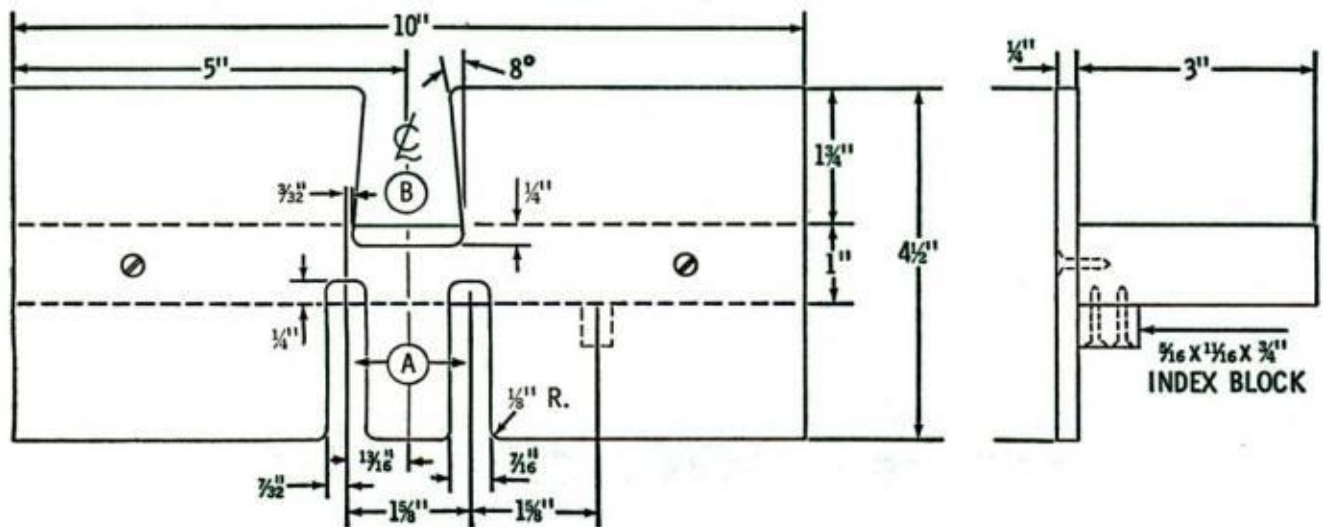


**CENTER RIGHTHAND CUTOUT A** (see plan sketch below) over pin-socket centerline and anchor with two C-clamps (left). Rout first socket, then shift jig to insert index block in cut (center) and rout next two sockets. Proceed this way across stock; when all are routed, lay out dovetail shapes with T-square jig (right)

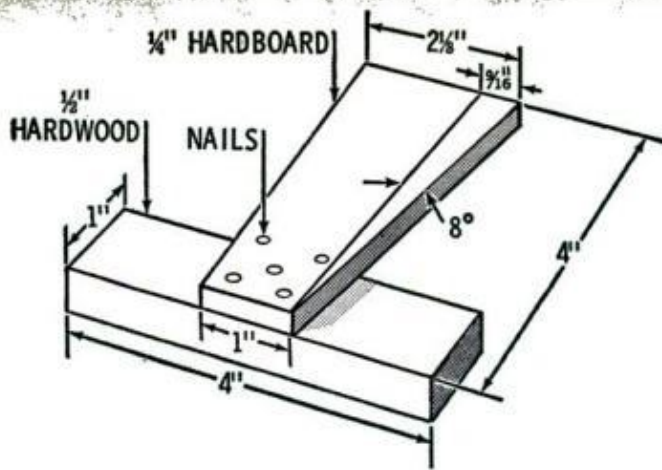
**COMPLETE DOVETAILS ON JIG SAW** (left) or bandsaw, by trimming small wedges off each side of pin socket. Lay dovetailed edge over end of side member and outline dovetail sockets with sharp pencil (center). Align Cutout B with marks, clamp jig, and rout (right), then move jig on to next position and rout again



**THROUGH-DOVETAIL JIG** consists of tempered hardboard template attached to hardwood to form a T. Small hardwood block is added to position the pin-socket slots (A). Note that all slots lap into hardwood  $\frac{1}{4}$  in.—this is necessary to cut through stock, since router's guide collar holds cutting bit away from end (and edges) of slot. Bit will still pass into hardwood, forming its own clearance notch first time you use jig







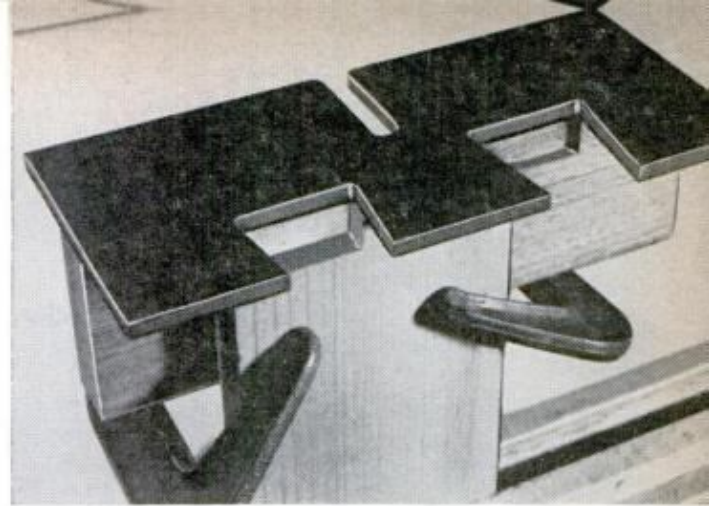
plus the thickness of the hardboard template. This will be the proper depth for the pin sockets in the side members.

Mark the center lines for these sockets and cut the slots for them. Since fewer are involved and their spacing may vary, this jig provides only one slot and dispenses with the index block. You simply center Cutout A over each centerline scribed across the end grain of the side member. Finish the shaping of the pin sockets on the jig saw, as before, after laying them out with the little T-square. Transfer the resulting dovetail pattern to the end of the front member and position Cutout D around these lines. If the drawer side is to set flush with the end of the front member, set the router's depth-of-cut to the combined thickness of the side and template. If the drawer front is to be lipped, increase the depth-of-cut accordingly. After routing the dovetail sockets, sharpen the rounded corners with a small chisel.

Some shaving may be indicated by your first trial fitting. You don't, of course, assemble any of the joints until *all* dovetails and sockets are cut on both ends of each member. Then you carefully spread glue on all butting surfaces and slip the joint together. Just as you can *assemble* it only one way, there's only one way for it to break apart. Where the joint must withstand stress, be sure to design it so that the stress won't be applied in the direction of assembly. Look again at the sketches at the bottom of pages 184 and 185. The stress of opening and closing the drawer would tend to separate the joint directly forward and backward, and this is impossible since the joint can only separate toward the side.

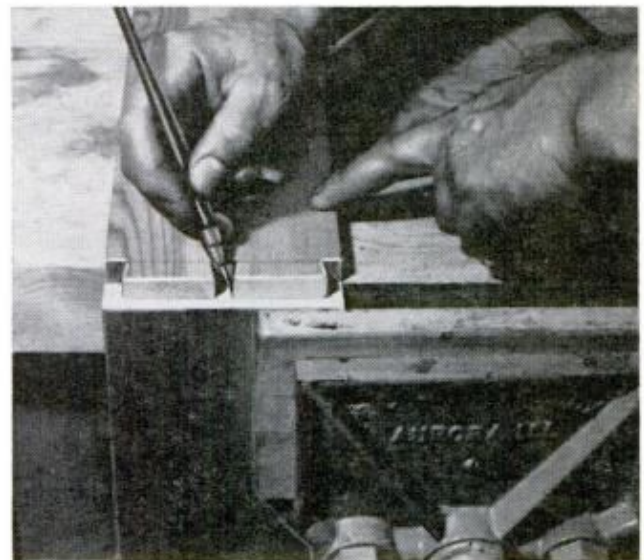
Stress is of less concern when assembling the multiple through dovetails of a piece of furniture, so the joint may be turned for its best decorative effect. Once you've sanded it down and applied a natural finish to emphasize the grain contrasts, you'll have a joint that echoes the golden years of fine hand cabinetmaking.

And it won't look machined. ★★★

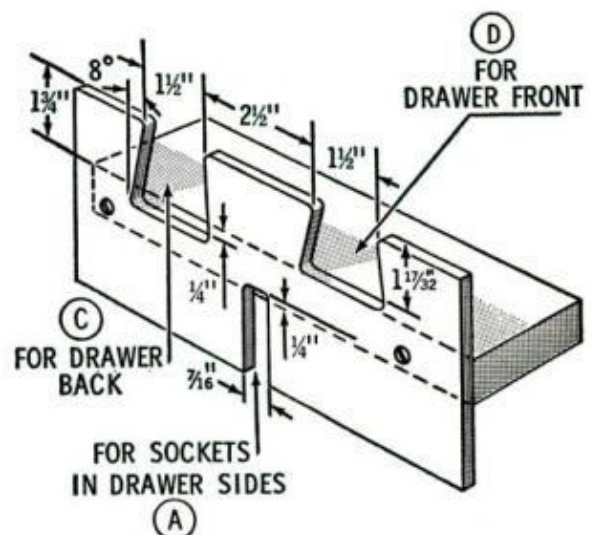


**WIDER DRAWER DOVETAILS** take special jig. Here it's positioned for cutting blind sockets in front member. Align Cutout D with dovetail outlines (below)

**CUT AND OUTLINE** wide, blind dovetails in same steps shown on facing page—except that dovetails at end of sides are shorter than front member is thick

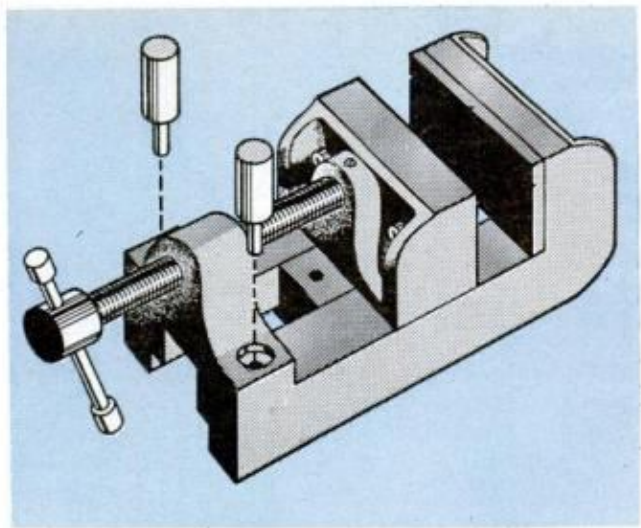
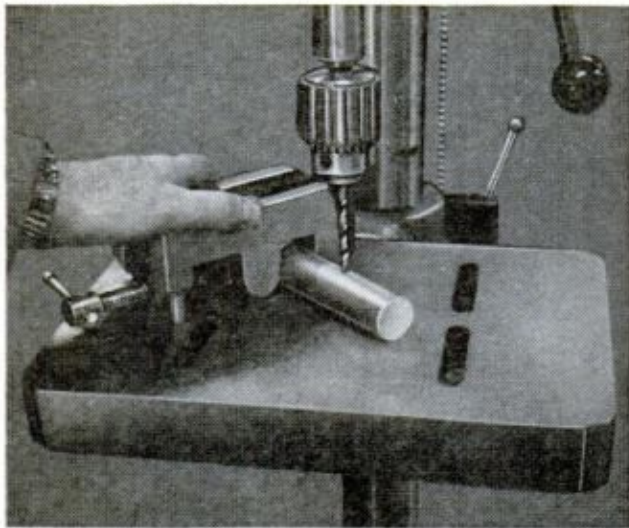


**DRAWER JIG** is assembled like first one, but has cutouts of different depths to handle blind dovetails on drawer fronts and through ones on drawer backs. Cutout C laps into hardwood, as does A



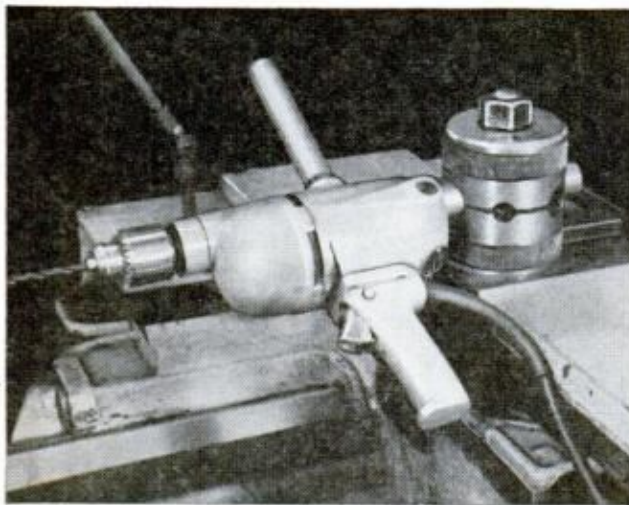


# For Tricky Jobs, Flip Your Drill-Press Vise



THOUGH IT MAY SEEM odd, turning your drill-press vise upside down makes some jobs a lot easier. For one thing, when you're drilling round stock, if the work is placed in an inverted vise as shown, the drill press table provides extra support and assures that the work will be at right angles to the drill. The stunt is equally effective when working with long rod stock on a metal cutting bandsaw. In this case, the vise keeps the rod from turning and

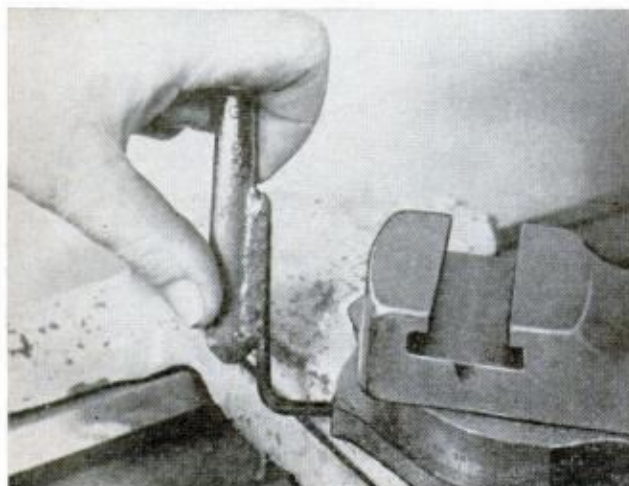
possibly snapping the blade. Also, because the vise is inverted the work is supported along its entire length by the bandsaw or drill-press table. I modified my vise by facing a spot on each side of the frame at the handle end, using a  $\frac{1}{2}$ -in. end mill. Then, I center-punched each flat spot and drilled a  $\frac{15}{64}$ -in. hole,  $\frac{1}{2}$ -in. deep. After reaming the holes with a  $\frac{1}{4}$ -in. bit, I inserted two shouldered posts turned from  $\frac{7}{16}$ -in. steel rod.—*Stanley Burwell*



## Automatic Lathe Drilling

I found that by replacing the rear handle of my  $\frac{1}{2}$ -in. electric drill with a pipe adapter, I can mount the drill in the boring-bar holder of my lathe. So held, I can feed the bit to the work automatically by simply engaging the carriage lead screw. With the drill bit chucked in the drill rather than in the lathe tailstock, I am also able to perform boring operations with both the work and the drill bit rotating which results in extremely accurate drilling. Here, again, the drill can be power fed by engaging the carriage lead screw.

—*H. J. Gerber*



## Keeping Allen Wrench Handy

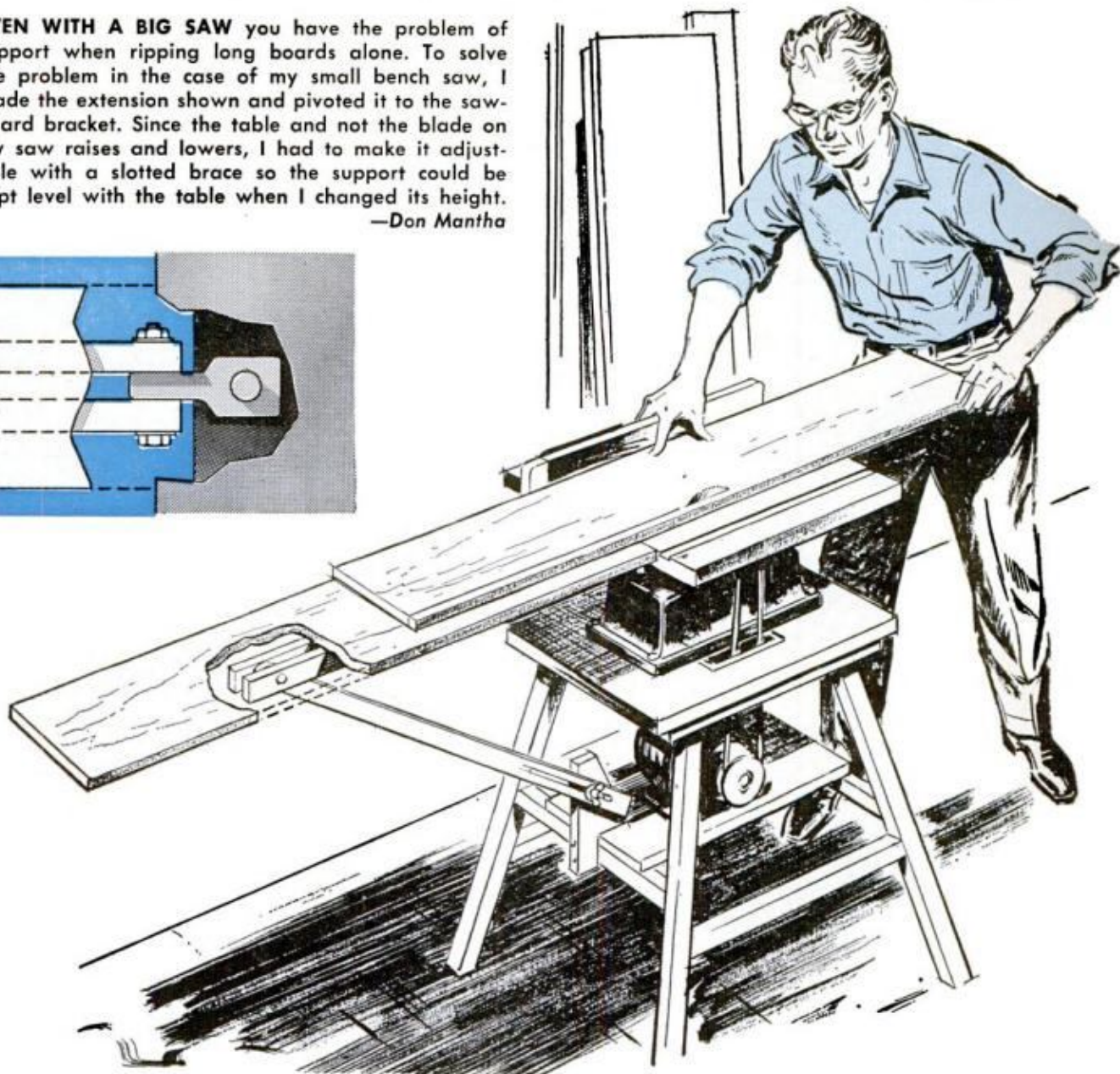
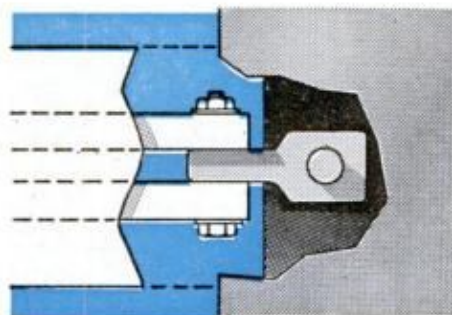
Due to its small size, the Allen wrench used for locking the compound swivel of a lathe has a way of becoming lost just when you need it. You'll spend less time looking for it if you take the time to braze it to the handle of your tool-post wrench. Aside from having it right with the tool-post wrench all the time, you'll also find it easier to use since it now has a better grip. If you prefer to have the two wrenches separate, you can achieve the same result by brazing the Allen wrench to any short length of steel rod.



## Outboard Ripping Support Adjusts Along with Table

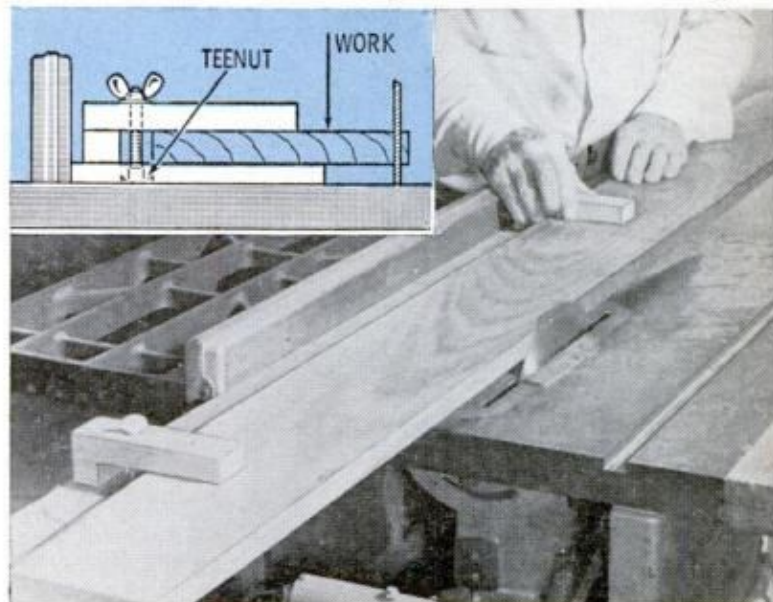
**EVEN WITH A BIG SAW** you have the problem of support when ripping long boards alone. To solve the problem in the case of my small bench saw, I made the extension shown and pivoted it to the saw-guard bracket. Since the table and not the blade on my saw raises and lowers, I had to make it adjustable with a slotted brace so the support could be kept level with the table when I changed its height.

—Don Mantha



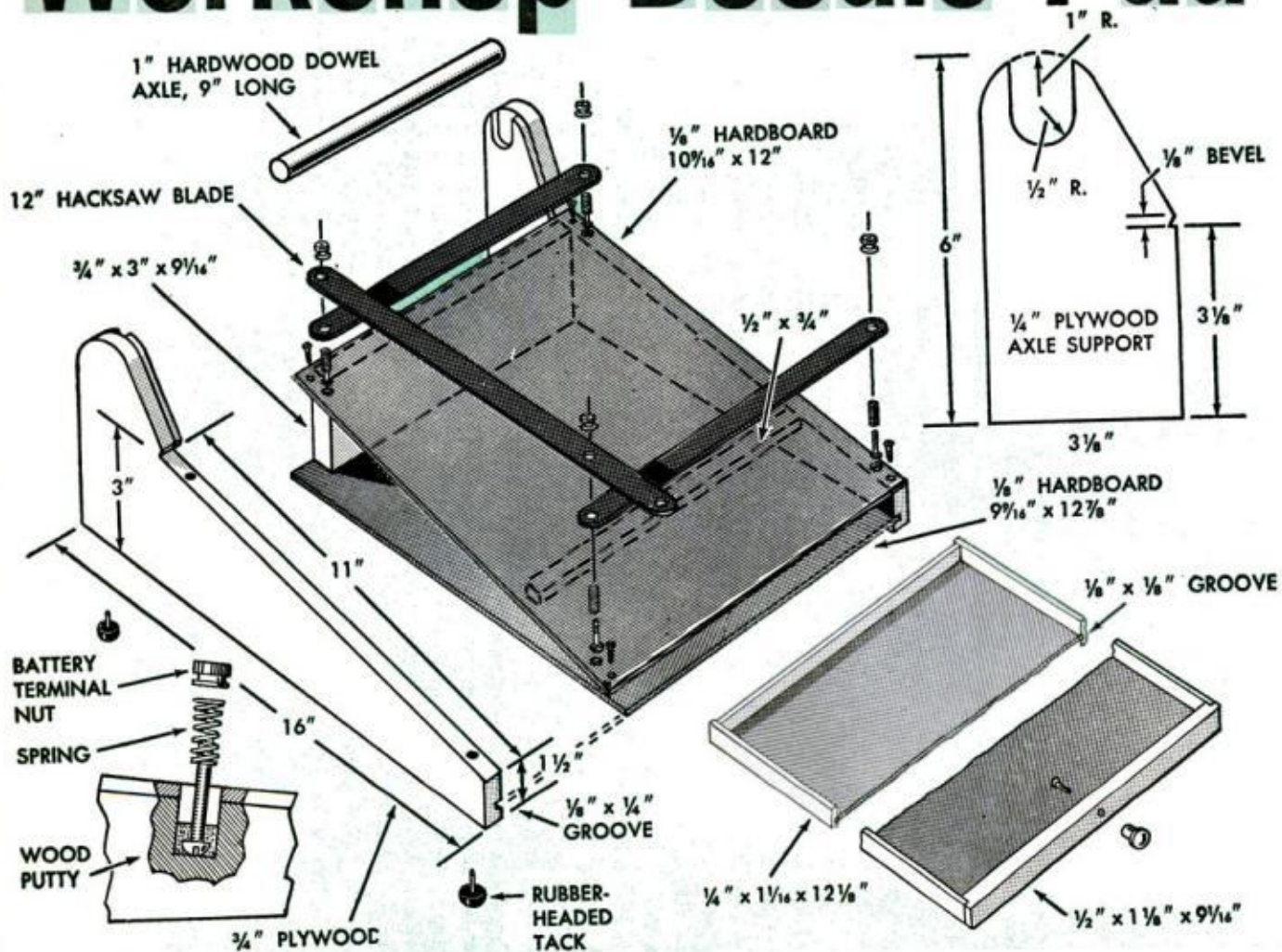
## Clamping Jig Holds Rough Boards for Truing Undressed Edges

Recently I had a chance to obtain a good price on some walnut boards which were surfaced but not edge-dressed. But before I could work with them I had to think up a way of clamping the boards to a straightedge so I could true one edge on the saw. Here's what I did: I took a  $\frac{1}{2}$  x 6-in. straight board about 8 ft. long and by means of Teenuts embedded on the underside, I attached two hold-down clamps to the board in the manner shown in the detail. As you see, the hold-downs, when tightened by wing-nuts or thumb bolts, clamp the work to the straightedge.—F. Greenwald

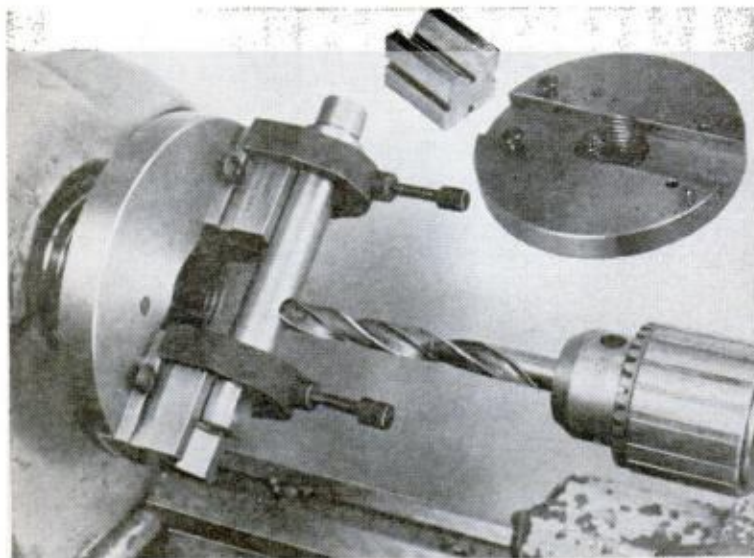




# Workshop Doodle Pad



## Lathe Drilling Setup Is Self-Centering



**CROSS DRILLING** and boring of short pieces of shafting is easy to do with this jig made from a faceplate and two V-blocks. If care is taken to center the groove when milling it exactly across the faceplate, the workpiece will center automatically. Heads of screws hook in slots to clamp V-blocks to faceplate

ACCURATELY drilling a hole through the diameter of a shaft is tricky because the work is difficult to hold, and where precision requires that the hole be finished by boring, the job may become an almost impossible one.

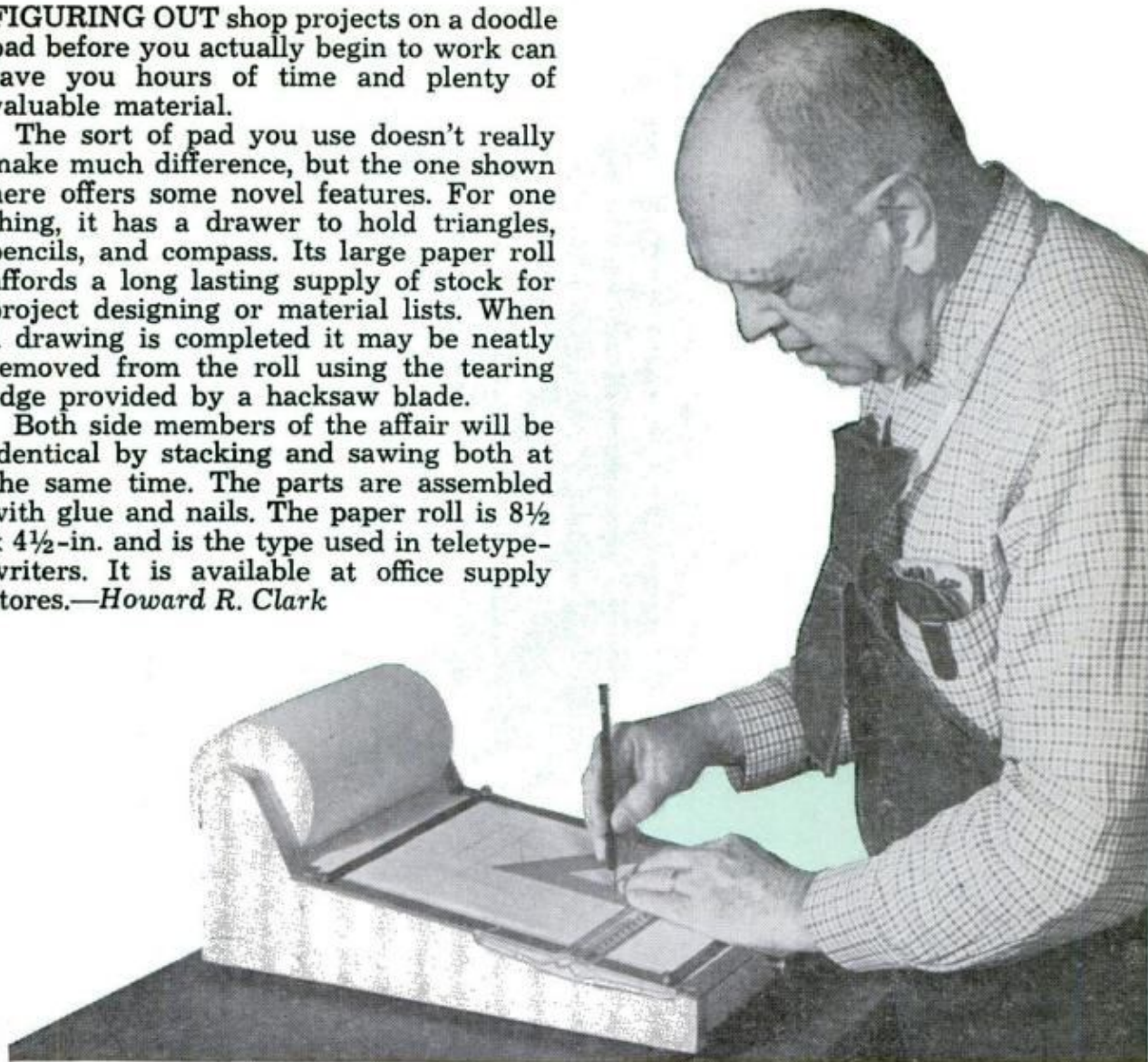
The jig shown in the photograph makes drilling, boring or tapping of shafts or rod stock just another routine operation. To make the jig, you'll need a spare lathe faceplate and a pair of V-blocks. A slot just wide enough to accept the V-blocks is milled across the faceplate. The width of the slot is critical; if the blocks are a loose fit, accurate work will be impossible. The faceplate is tapped for four 1/4-20 button-head socket screws which bear against the clamp slots in the sides of the V-blocks.



**FIGURING OUT** shop projects on a doodle pad before you actually begin to work can save you hours of time and plenty of valuable material.

The sort of pad you use doesn't really make much difference, but the one shown here offers some novel features. For one thing, it has a drawer to hold triangles, pencils, and compass. Its large paper roll affords a long lasting supply of stock for project designing or material lists. When a drawing is completed it may be neatly removed from the roll using the tearing edge provided by a hacksaw blade.

Both side members of the affair will be identical by stacking and sawing both at the same time. The parts are assembled with glue and nails. The paper roll is 8½ x 4½-in. and is the type used in teletype-writers. It is available at office supply stores.—Howard R. Clark



## **NEXT MONTH IN SHOP AND CRAFTS**

**NEED A GARAGE?** Don't build one until you see our garage bonanza in the April issue. We commissioned an architect to come up with fresh new ideas in garage design, and wait 'till you see them! More than just a place to park a car or two, these new designs include built-in cookout areas, patio decks and storage walls. To show you how to build your own, we had one of the designs built. We photographed every step from the ground up, we've detailed every joint and for the next four issues we're going to show you every step of the way. Don't miss Part I in the April issue

**ISLAND ENTRY DIVIDER.** Does your front door open directly into the living room? In the April *PM* you'll discover plans for a tasteful room divider that can turn a corner of the room into a traditional entry. On the entry side, visitors are welcomed with a view of louvered doors and polished panels, while the room side is an L-shaped unit made up of a tall bookcase and roomy storage cabinet. Watch for the plans in next month's *PM*

**CANNED GOODS CABINET.** Though it's only 3 ft. wide, this ingenious counter-height cabinet provides storage for as many as 100 cans of food. With shelves only 5-in. deep, it's impossible for anything to be shoved back out of sight. If you're interested in finding out just how this storage miracle is accomplished, read the how-to-build-it article in April

**REMODELING WITH DRYWALL.** If you're expecting the same old how-to-install-drywall story, prepare for a surprise. Some exciting things have been happening to wallboard. For instance, you can panel a room with drywall "wood" for far less than you'd pay for wood paneling. Or repair badly scarred walls by covering them with new super-thin wallboard panels designed just for this job. Don't miss Part I of this two-part article next month



# BIG REELS

## For Little

# RECORDERS

By Clyde Steiner

**DON'T BE BOUND** by the 3-inch limitation built into your portable tape recorder. This handy adapter will play 7-inch tapes.

We used a chopping board for a base, but a sheet of  $\frac{3}{4}$ -inch plywood will work as well. Make sure it is large enough to support your recorder.

Bend the extension bracket. Make sure the finished unit is long enough to allow room for the 7-inch reels which will sit on it. Its height should be approximately that of the tape recorder. Small differences can be adjusted by placing appropriate shims under the recorder.

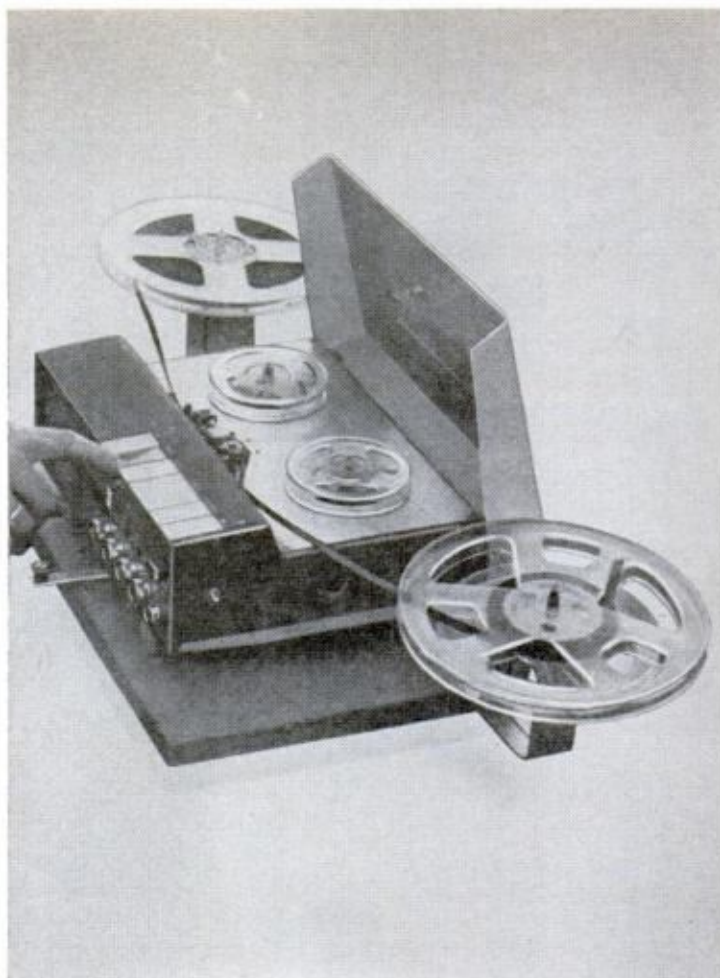
The extension reel support pulleys are standard empty 5-inch tape reels with solid rims. Three-inch reels are used as drive reels from the recorder. Don't use the new easy load reels for either of these as the slits in the rims will catch the drive belts when in use.

Spindles for the support pulleys are made from discarded ball-point pen housings. Check the reel against the housing for a good fit. Brass 8-32 bolts are used as spindle axles. The pen cases slip into place over them and should spin freely but should not wobble.

Extension reels can be handled two ways. Cement the 5 and 7-inch reels together as shown or cement the 5-inch reels to the pen cases and press fit the 7-inch reels.

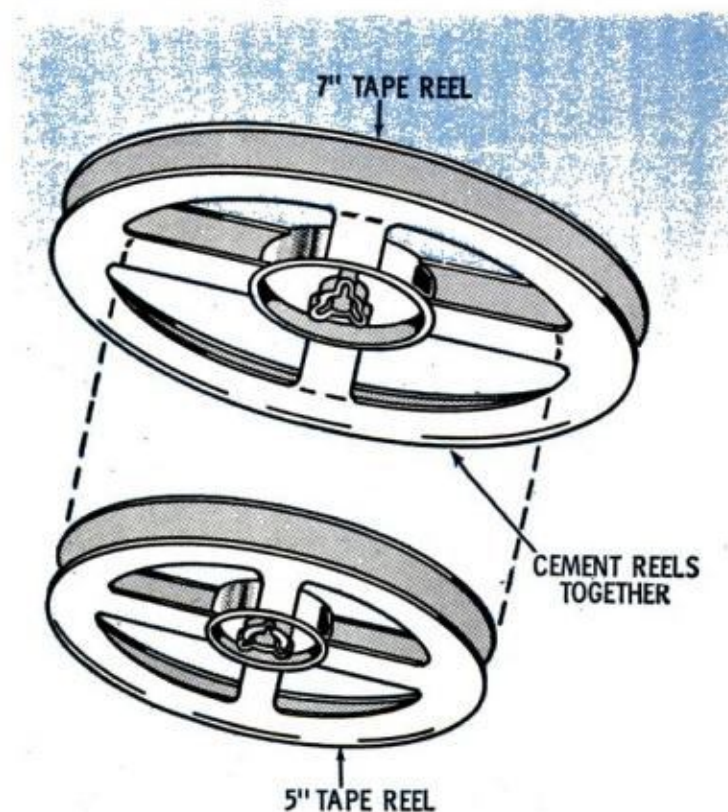
Now tie the string operating belts into place. They run around the 3-inch reels on the recorder and the 5-inch reels on the adapter. Use figure eight slip knots at first so they can be adjusted. Do the takeup reel first. With the tension control arm centered tie the belt tight. Now do the rewind belt, but leave a little slack here.

Now thread tape through the machine and turn the recorder on "play." If the recorder does not operate properly, adjust the drive belts and control arm till it does. Then tie the drive belt permanently.

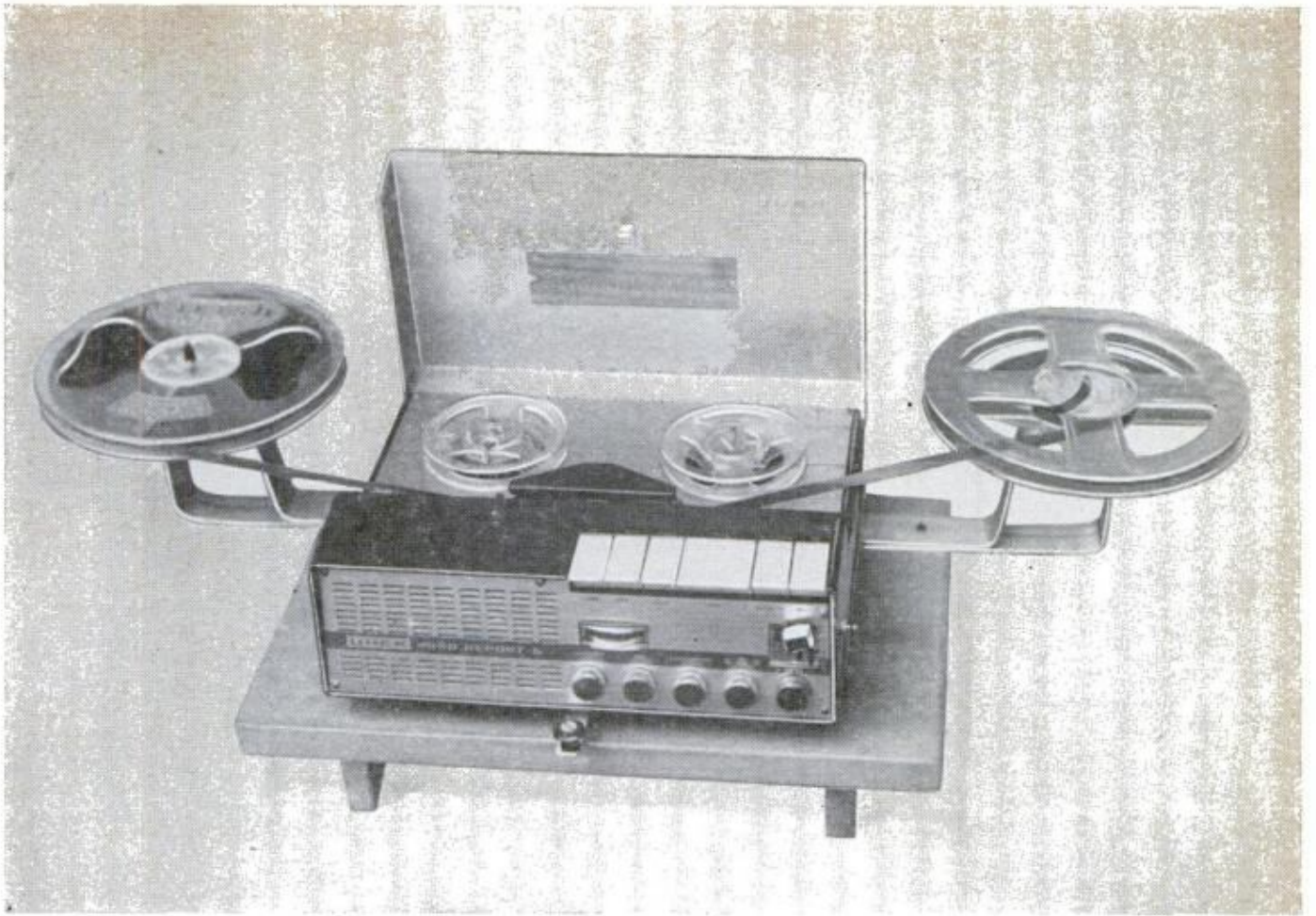


**UP TO EIGHT HOURS** of music can be played on a portable tape recorder if you use this adapter jig to allow for outboard mounting of 7-inch tape reels

**EXTENSION REEL** consists of a 7- and 5-inch reel stacked and cemented together as shown. Drive belt from the recorder goes around the small reel

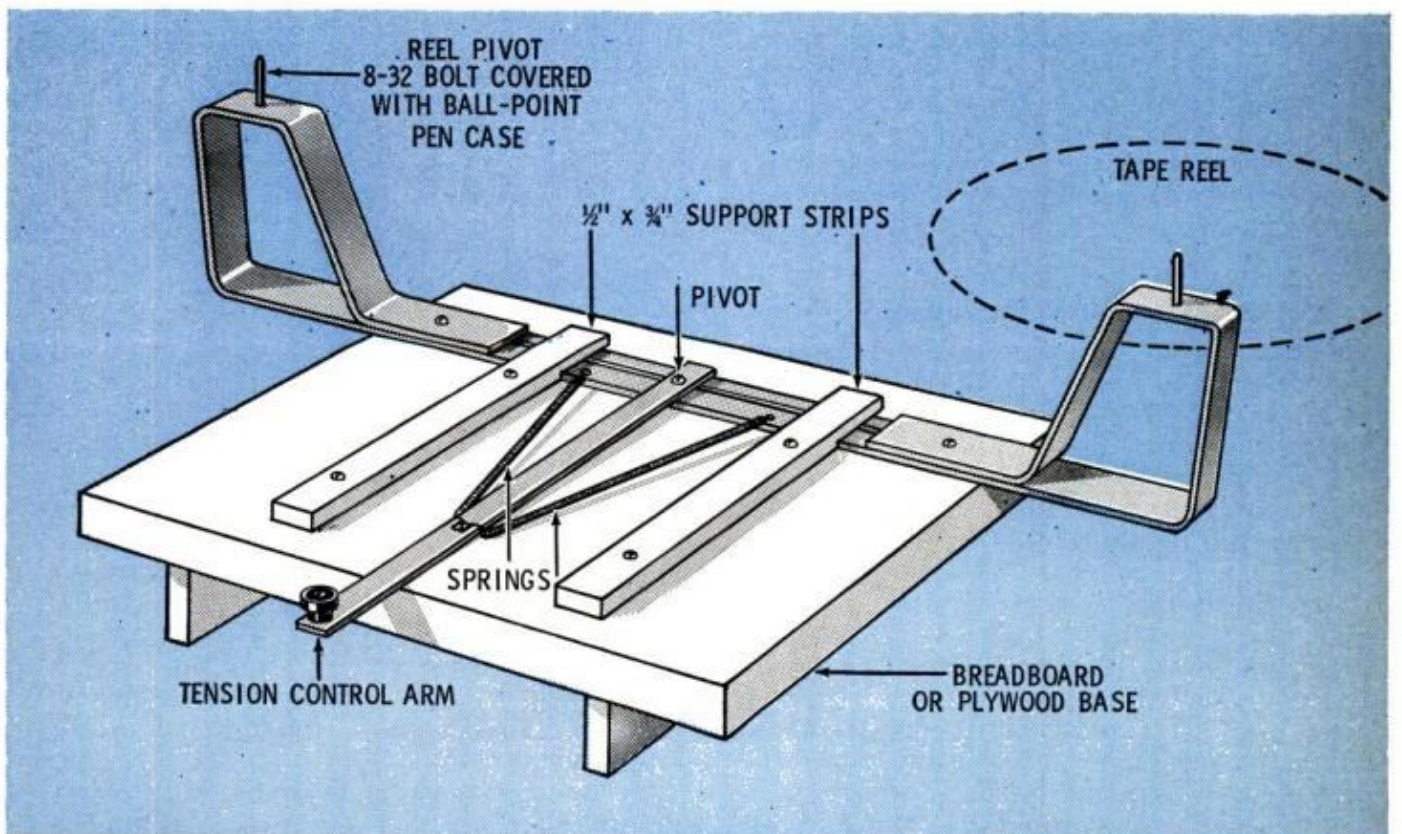






**HERE'S THE RECORDER** sitting on the adapter. Note that you may have to vary adapter size to suit your particular recorder. This is why no detailed dimensions are given in the diagram below, that illustrates the device

**DETAILED SKETCH** of the adapter. The hardest part is to bend the aluminum strip that holds the reels. Also, make sure it slides easily under the support strips. The springs are ordinary screen door types cut to fit





# Have Fun with an Electronic Jumping Jack

*Hopping endlessly up and down on its track, the jumping jack will amuse your friends—and have them wondering why it goes*

By A. J. Molinara

**I**F YOU LIKE GADGETS that amuse and amaze, here's one you can't afford to miss. A flip of the switch and a little disc hops up and down, a captive on a shiny brass rod.

What's the secret?

The electronic jumping jack consists of a specially wound coil energized by pulses of current from a timed power supply. Every time current is applied to the coil, the round disc (a ceramic magnet in disguise) is shot up the rod. When the current is turned off, the magnet drops down again only to shoot up the rod the next time the current is applied to the coil. This process continues as long as the power stays on.

The coil core must be made of either iron or steel. I used a steel spacer post from an old washing machine and turned it down to the dimensions shown in the diagrams. You can start with a piece of steel rod.

## Rest on the Shoulders

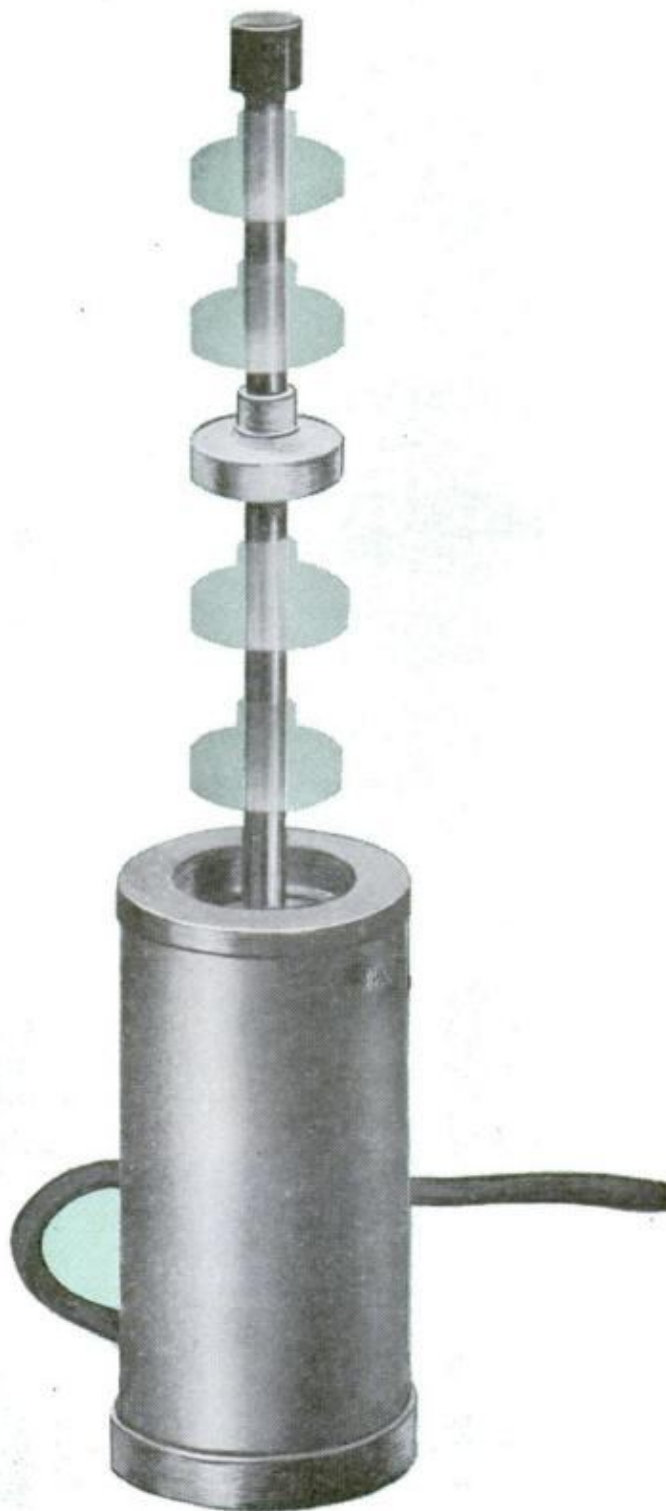
The top and bottom ends of the coil form slip over and rest on the shoulders of the core. The chamfers on the ends leave space for the epoxy cement that holds them in place. Let the cement dry overnight before winding the coil itself. When winding the coil fill the coil space entirely.

I made the coil ends from surplus phenolic discs, but almost any kind of insulating material (plastic or wood) can also be used. My center post is made from a brass rod. This material seems to work out best here. Again, almost any nonmagnetic material could be used. Aluminum would make a good substitute, but may be lacking in strength. Whatever you use,

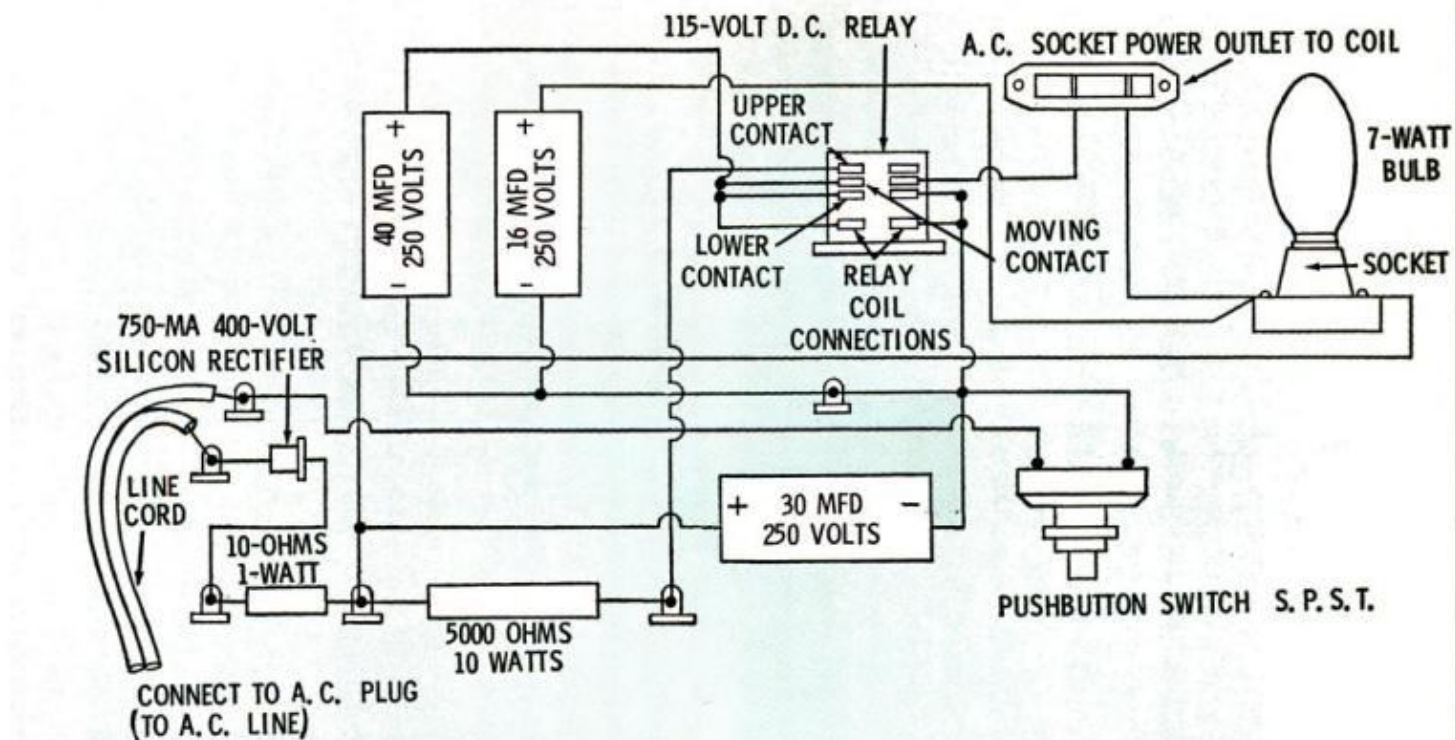
polish its surface carefully making sure it is as smooth as possible.

The magnet is a ceramic disc unit that is polarized along its axis. It can be purchased from the D. M. Steward Manufacturing Company, P.O. Box 510, Chattanooga, Tenn. Order their part No. 1434. Use only a ceramic magnet here. Other types tend to become demagnetized in a very short time.

The magnet housing is made of one of the smoother plastics; nylon or Teflon is excellent. It also doubles as a bearing for







**CLOSEUP** of the jumping jack. The pictorial diagram of the power supply must be followed carefully. Mount the pushbutton switch in some convenient spot. The plug on the side of the power supply is from separate coil assembly

the magnet as it rides along the rod during its up-and-down travels. As magnet dimensions may vary, you may have to tailor the housing to fit. Try for a tight press fit, and if this doesn't work, use epoxy cement to hold the parts together. The magnet has a small chamfer on one side. Leave this side facing out of the housing.

My coil housing was made from the leg of an old maple chair. However, it can be made from any nonmagnetic material. A length of plastic tubing would be fine.

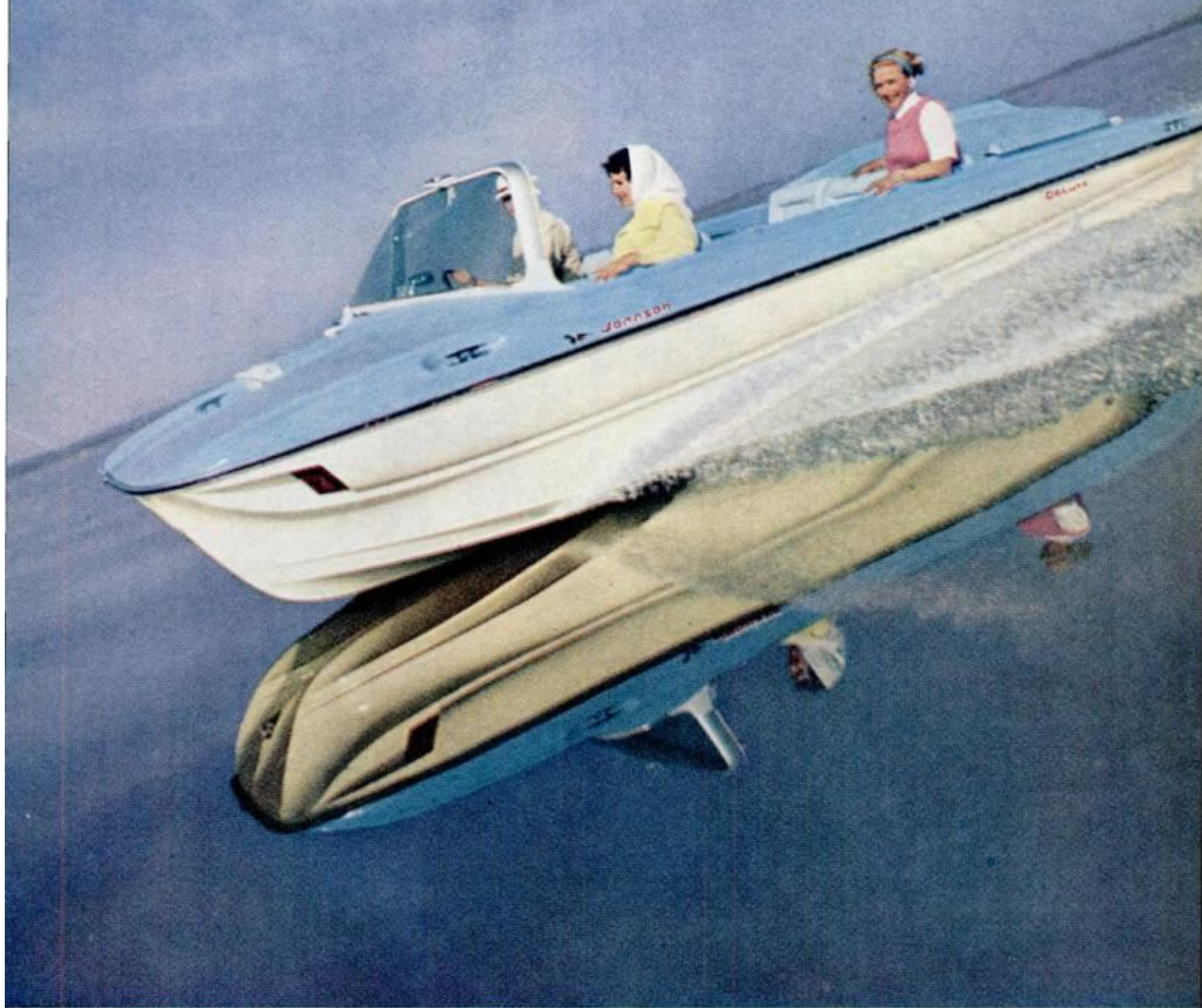
The nonmagnetic material is required so the housing has no effect upon the coil.

When finishing off the assembly of the coil, first insulate the bottom part of the coil core with electrical tape. Then clean the coil ends and solder them to the stripped ends of a five-foot length of dual-lead lamp cord. Insulate the connections again with more tape and anchor the wires in place with another piece of tape. Feed the lamp cord through the housing and out the hole. Then, while pulling the cord out, carefully lower the









## It only feels downhill all the way . . .

We tipped the camera to capture the exhilarating swoop of a Johnson Boat in action. It gives you some idea of the way it takes off with our 150 hp V-6 providing the push. With skiers, this engine has pull — zero to ski speed in 5 seconds. Cruising buffs appreciate its fuel economy. There's a peppery 120 hp straight-4 and a compact 88 hp V-4 available, too. Order "full speed ahead" with any one of the 3 Johnsons and get it! They all make the water seem slicker somehow. ■ Our wide-track hull planes on three dart-shaped surfaces like a racing hydro, yet it has the stability of a catamaran — keeps level in tight high-speed turns, crosses wakes without tripping, won't tip under lopsided loads, at the dock or on the go. ■ Luxury-yacht comfort tops

off the Johnson Deluxe — cushioned shock absorber seats, power-operated windshield, built-in storage space for everything, a convertible top that goes up almost as easy as an umbrella, a flat snag-free floor. ■ Whatever your boating pleasure, you'll have a lot going for you. And you'll be going a lot. Point of departure? Your Johnson Boats dealer. ■ 3 Models for 1965. Stern Drive or Outboard Powered.

**Johnson Boats**  
First in *DEPENDability*

Division of Outboard Marine Corporation, Waukegan, Ill.  
Write for Free "Boat Ride" Brochure! Address Dept. PM-52



# Sure, this GMC pickup costs \$49\* more than others. But look at it this way.

Progressive leaf rear springs automatically adjust to the load. Heavy loads, light loads or no load at all, the ride's slick as silk.

Husky wood floor is quiet and long lasting. None of that annoying drumming and rusting.

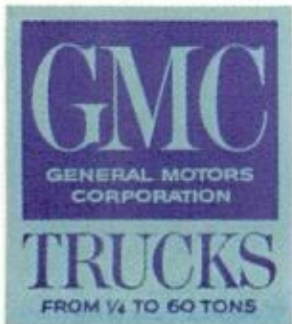
Two walls of steel and a thick pad of insulation keep the GMC cab strong, quiet, comfortable.

No tangle of wires behind the instrument panel. In its place is a printed circuit. Only GMC has it.

The exclusive V-6 truck engine has gone 120,000, 130,000, even 150,000 miles before major overhaul. About half that is average. But the V-6 isn't just an average engine.

GMC offers a proven total suspension system of independent front and progressive leaf rear springs. Result? Always a smoother ride even with maximum loads.

\*Based on manufacturers' suggested retail prices, the GMC V-6 model pictured above is never priced more than \$49 over comparable competitive base models. Often the difference is less.



Tires are king-size (8.15 x 15). Yet they're standard equipment. Others charge extra.

You can clearly see this is a superior pickup. GMC has 4 headlamps. Most others have only 2.

Three letters that stand for three important things. Built by truck people. Sold by truck people. Serviced by truck people.

## See? More truck for your money!



## Polysulfide Sealants

(Continued from page 163)

when you apply the sealant, put the tape in place before you brush on the primer. Let the first coat dry for about an hour at room temperature; then apply a second coat. Allow the two coats to cure for 24 hours at room temperature, longer if temperatures are below 70 degrees.

Primers should also be used on concrete, tile, brick and other porous materials, to improve the seal. Here, again, the primer penetrates the surface to build a thicker, solid base for the sealant. Since primers turn brown on exposure to sunlight and are difficult to remove, be careful to keep your application within the joint area.

Most one-part polysulfide sealants don't need a primer to aid bonding to metal, glass or glazed tile. All of these surfaces, however, must be clean.

**Surface Preparation.** Loose dust, old caulking material, oily or bituminous residue of any kind, or other coatings on a surface, can prevent polysulfide rubber sealants from bonding tightly. But since the rubber sealant will last for life if put on right the first time, you can afford to spend more time cleaning and preparing the surface.

Joints around a house should be about  $\frac{1}{4}$  in. deep by  $\frac{1}{4}$  in. wide. Seams on boats or at locations around the house that may move more than about  $\frac{1}{8}$  in. should be wider. A rule of thumb for figuring joint widths is to multiply the expected joint movement by three. For example, if a joint between the wood framing and the fireplace is  $\frac{1}{8}$  in. wider in the winter than in summer, make the joint at least  $\frac{3}{8}$  in. wide. If the joint is already  $\frac{3}{8}$  in. or more wide, stuff flexible tubing or closed-cell sponge of vinyl or rubber into the joint until the space left for the sealant is just as deep as the width, or  $\frac{3}{8}$  in. deep for this example. The chart on page 161 shows how much sealant is required for seams of various sizes.

When replacing old, aged caulk or putty on an outside seam, there's no problem with oil from the old material soaking into wood and loosening the seal between the rubber sealant and the wood. However, on new window installations or if an entire window is replaced, the use of putty to bed the panes might affect adhesion. So, instead of putty for bedding, use one of the backing tapes listed in the selection chart. Sketches on pages 158-9 detail how the dry side and edges of the glass rest in the tapes. The selection chart lists the all-rubber type, either polysulfide or butyl base, and impregnated felt tapes.

Small-pane windows normally installed with putty chamfered to a 45-degree angle can be installed with polysulfide sealant, but the many panes use a large quantity of the material, and trimming the sealant to an even angle requires considerable skill. For deep fillets of sealant, a triangular wood filler, seated in sealant as sketched on page 159, simplifies getting an even trim and reduces the quantity of sealant required. Just apply a bead of sealant to a clean corner, press the filler strip into it and trim away squeezed-out sealant. Miter the ends of the filler pieces and fit them to openings before applying sealant. When the sealant has skinned over, wood and sealant can be painted to match the window frame.

The easiest way to remove all old oil, caked caulking or paint is to saw a slight kerf along the rear edges of window battens as sketched on page 158. When the batten or other facing strip cannot be taken off easily, remove all of the old putty with a beer can opener or linoleum knife. As a final step, shave off a thin layer of wood with a utility knife or chisel. When caulking a batten around a house or boat window, leave a space at each end to fill with sealant. Remove any paint or finish down to bare wood from the space opposite the batten end for a good seal between these members.

### What Else Needs Priming?

Ordinarily, around the house, wood surfaces need not be primed because they are not constantly immersed in water. However, on a boat either below or above water line, priming the wood before squeezing in rubber sealant will extend the life of the joint. PRC's package of Marine Rubber Caulking includes enough primer for use with each tube of sealant.

Before priming stone, concrete, tile and similar materials, all traces of oil, old paint or putty and loose dust or particles should be removed. Scraping, sandblasting or brushing with a stiff wire brush is normally all that is needed to prepare stone and brick surfaces.

Glazed tile, glass, non-porous marble and metals require no priming, but these slick surfaces must be absolutely clean to assure a tight bond with the sealant. Any old caulking or paint should first be scraped off with a razor blade. Just before you're ready to squeeze on the sealant, clean the surface with a clean cloth dampened with trichloroethylene or MEK. Wipe off the solvent with a clean cloth before it dries. Any corrosion-preventive coating such as lacquer must be removed from aluminum window frames.

(Please turn to page 200)





## Good deal

Tilling and cultivating is faster, easier than ever with new Simplicity SUPERMATIC Roticul! To its tireless 4 hp "go" is added an all-gear reverse with pushbutton fingertip control for greatly increased efficiency with very little effort. Roticul's scientific slow-speed tilling action crumbles toughest soils without damaging soil structure. Self-sharpening tines stand off punishment. Releasing handle grips automatically stops machine. Also available: 3 hp economy version Roticul.

## Good dealer

Your nearby Simplicity dealer is proud to stand behind the machines he sells — America's No. 1 line of power equipment for lawns and gardens. And he's anxious to help you gain and maintain peak performance, with dependable service. Ask about his convenient budget terms.



Simplicity Manufacturing Company  
6540 Spring St., Port Washington, Wis.

## Polysulfide Sealants

(Continued from page 199)

**Application.** Once the joint surfaces are cleaned (and primed if necessary), applying the sealant is similar to the application of any caulking material. However, because the polysulfide rubber sealants cure chemically, either by absorbing moisture or from an accelerator added to the base material before application, the sealant is more fluid and is easier to work. In fact, one of the big bonuses when caulking boat seams is the ease and rapidity of squeezing in rubber sealant. Instead of knifing in thick, hard-to-work marine caulking, the rubber sealant can be gunned in and smoothed out accurately with a putty knife.

One hint about cleaning up. Polysulfide rubber sealants are plenty sticky, and they will cling to your skin with the same tenacity as to wood and stone. In fact, if the sealant remains on your hands for a few hours, you'll have to let it *wear* off. So, before starting to work with the sealants, rub several layers of thick soapy paste on your hands—unless you prefer to wear gloves. You'll need this paste anyway in trimming the sealant, as shown on page 159.

### Now, About Those Tubes

Polysulfide rubber sealants are available in sealed cardboard tubes that fit into a standard tube caulking gun. Polyethylene tubes, on the other hand, must be used with special hand- or air-operated guns. Once emptied, the polyethylene tubes can be cleaned and reused. Cured sealant can be rubbed off these tubes like rubber cement off paper. Individually packaged tubes of the rubber sealant cost more but are handy when only small quantities are needed. When using more than two quarts of the sealant, purchase of a gun that fits the reusable plastic tubes will pay off. Sources are given in the selection chart.

Individual tubes can be loaded from bulk packages by first knifing material from its container onto a smooth surface, such as glass, plastic laminate or hardboard. With a wiping motion cut off portions of the sealant with the tube edge and force it up into the tube. Leave enough space for the plastic cap to fit into the end. Sealant can be worked down into the tube by holding it upright and kneading the tube gently between the fingers. Allow any excess sealant to flow out the nozzle end back onto the pile of sealant on the loading board. Since it is easier to keep your equipment clean than to clean

(Please turn to page 202)



**Choose the  
RIGHT wrench for your job...**

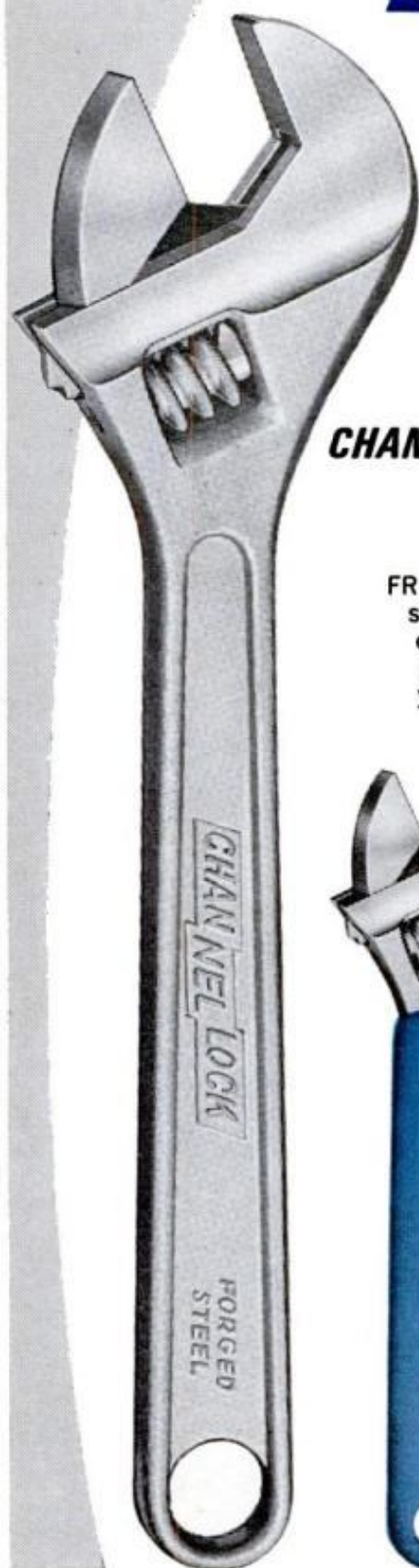
Tools by  
**CHANNELLOCK**

When You Buy CHANNELLOCK Adjustable Wrenches you buy the finest—at no extra cost. CHANNELLOCK wrenches are drop forged of special analysis steel . . . heat treated for maximum toughness and proper hardness of working surfaces . . . chrome plated . . . built to last. Available also with blue dipped plastic cushion grip handles. Specify CHANNELLOCK adjustable wrenches . . . you'll be glad you did.

**CHANNELLOCK, INC. Meadville, Pennsylvania**

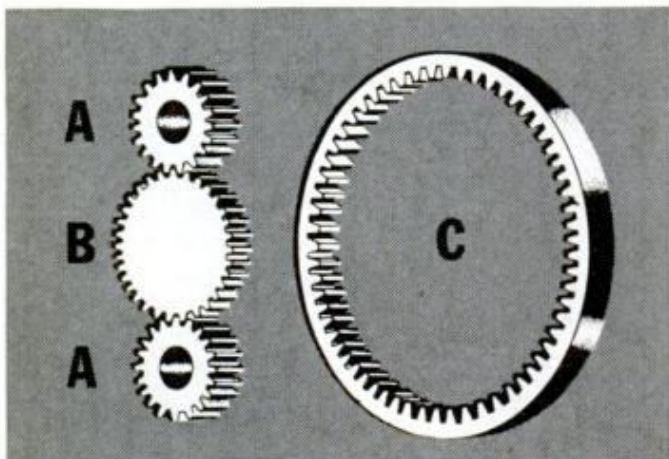
*Formerly Champion DeArment Tool Co.*

FREE Catalog showing complete line of hand tools . . . yours for the asking.





# Test your automotive I.Q.



Name the gears in this planetary set.



What does this symbol stand for?

A. Planet gear. B. Sun gear. C. Ring gear. The life preserver stands for Quaker State Motor Oil—the best engine life preserver for your car. Made from 100% Pure Pennsylvania Grade Crude Oil, Quaker State keeps your car on the road and out of the repair shop. Insist on this quality protection—by name. Quaker State your car—to keep it running young.



QUAKER STATE OIL REFINING CORPORATION  
OIL CITY, PENNSYLVANIA

## Polysulfide Sealants

(Continued from page 200)

it later, wash off any excess sealant around the cap with a brush dipped into a can of solvent. Use the same brush and solvent to clean your putty knife, parts of the caulking gun and the loading surface.

Plastic nozzles screw into the ends of the plastic tubes. By cutting off the end of the nozzle at an angle, you can control the flow of sealant into the groove. The end of the nozzle should be small enough to reach the bottom of the seam so the sealant can be deposited from the bottom up. Don't worry about an uneven surface on top while squeezing in the sealant, as the surface will be smoothed and trimmed later. A little practice is all that's necessary to know when there's enough sealant to fill the seam with least waste.

On a flat seam, smoothing can be done simply by drawing a putty knife over the surface and forcing the sealant into the seam. Any sealant that spreads to either side of the seam comes off with the masking tape to leave a smooth, even joint. Since there is negligible shrinkage with the rubber sealant, no excess material need be left for trimming later. If any excess sealant remains after curing, it can be sliced off with a razor blade or sanded flush with the surface.

### Trimming Window Beads

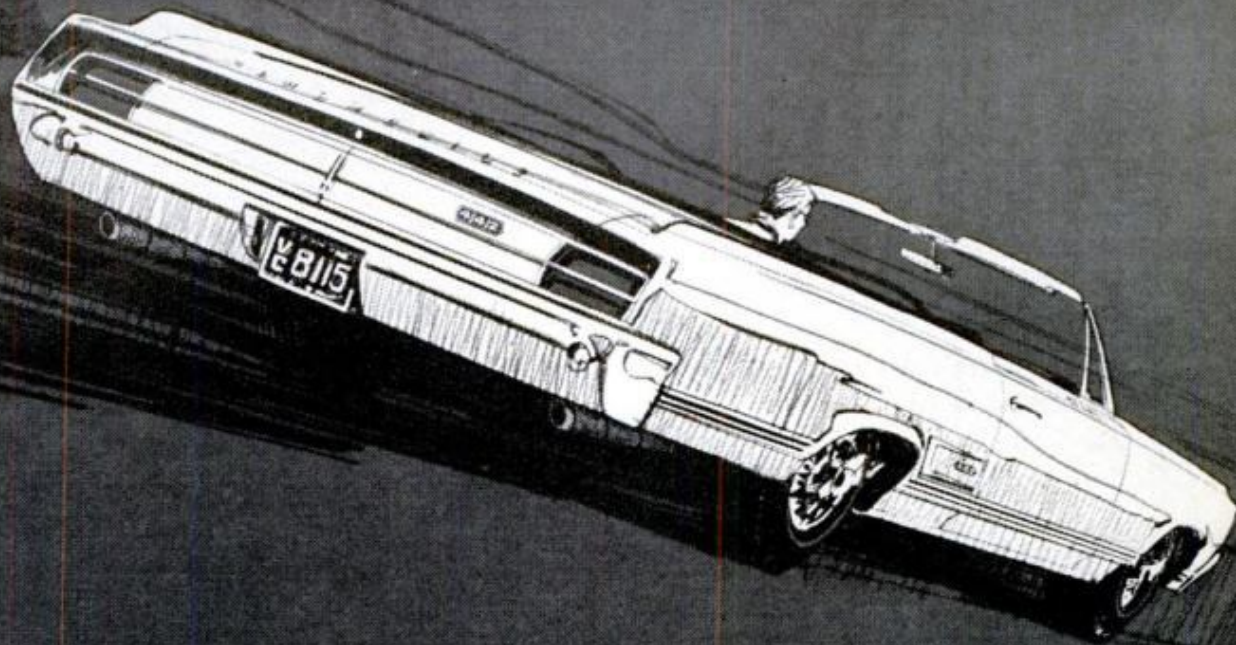
Around windows, brush the surface of the sealant bead with your soap paste before trimming, then shape the bead into a smooth, even seam that is parallel with the batten face on vertical joints and is slightly angled along horizontal ledges. The slope will allow water to drain off the joint after running down the window.

On joints  $\frac{3}{8}$  in. and wider, make two or more passes with the gun to fill in the space. Succeeding layers of the rubber sealant will bond perfectly to previous beads. As much material as necessary can be laid in without fear of shrinkage cracks developing because of the negligible reduction of volume as the sealant cures. Wide seams cure to a long tough joint of resilient rubber.

Cured seams of rubber sealant can be patched or expanded easily by first trimming away any excess sealant. New rubber sealant is then squeezed into the seam where it bonds onto the cured rubber. Bubbles or voids that show up after curing can be cut out and patched in this manner.

A second article, concentrating on the marine applications of these wonder sealants, will appear next month. If you are a boat owner, don't miss it. ★★★





Olds **442**  
 New package  
 of instant action:  
Color it cool!

4-4-2 Convertible shown. Also available in F-85 V-8 Coupes.

Ready? Go! Color that Rocket action V-8 400-cubic-inches *big . . .* and 345-horses *eager!*  
 Color the four-barrel carb *neat . . .* the acoustically tuned, chambered twin pipes *sweet!*  
 Now we're moving with heavy-duty frame, shocks, front and rear stabilizers  
 (color the curves *flat*) and four heavy-duty coil springs (color the bumps *gone*).  
 There are three spirited transmissions available: color Jetaway *easy*, the close-ratio  
 four-on-the-floor *potent*, the three-speed synchromesh *smooth!* And color the price  
*low* (starting lower than any other high-performance car in America  
 designed for everyday driving!). We've already colored  
 the tires with a slim red line. Nice job. Now why not compare it with the original at your Olds Dealer's!

OLDSMOBILE DIVISION • GENERAL MOTORS CORPORATION

'65  **OLDSMOBILE**  
*The Rocket Action Car!*



# We've got something against nails.

(That nobody else has got.)

It's our newest Ranger. The Carpenter's Shoe. And it's got some things that no other utility shoe in the world has.

First. A *steel arch protector*. Other shoes try to protect the sole. But only halfway. You're only half-safe. Ours has an impenetrable steel wall at the instep where nails often find their way.

Ours also has a *one-piece steel support* that runs the full width of the shoe, *without a break*. So protection from nails and other sharp objects is complete.

(None of those old "venetian blind" slats that allowed things to slip in.)

And above it all is wall-to-wall carpeting. An Air-tuff® cushion sits there, and your foot sits on top of it. It's as soft, as light as the finest carpeting.

Here are some other vital statistics on our Carpenter's Shoe. It's made of oil-stained glove leather. It's got a seamless back. A Permacounter. A storm welt. And an oil-resistant Miragum sole and heel.



Got the picture?  
Get the

Carpenter's Shoe.

Look for it, and other Rangers, at the store nearest you or write for name of nearest dealer. America's largest-selling utility shoes start at 8.95.

## Table-Top Plant Stand

(Continued from page 171)

would have served. The drum must turn easily in the holes bored through the two supporting uprights.

To maintain spacing of the uprights, increase rigidity and prevent binding of the windlass, it's a good idea to install a couple of braces paralleling the tube. Aluminum table edging is ideal for this purpose but a  $\frac{3}{4}$  x 2-in. wooden strip may be used instead.

The windlass is turned by grasping a knob cut from  $\frac{3}{4}$ -in. maple. A pin or setscrew is used to secure the knob to the tube. Turning the windlass winds up or lets out two lengths of picture wire from which the lamp unit is suspended. The ratchet and pawl locks the windlass to hold the lamp at the desired height. The ratchet wheel must be fastened securely to the tube, about 1 in. from the hand-wheel. Position the pawl by trial, so that it engages and disengages the ratchet notches smoothly. The spring holding the pawl in the ratchet notches is bent from music wire. To lower the lamp, disengage the pawl by pressing its outer end while grasping the knob with your other hand.

Some lamp units are fitted with eyelets so that they may be suspended. Lacking these, bend two hooks from coat-hanger wire and fasten them to the picture wire. Attach the other end of each wire to the windlass drum. The wires must wind in a single layer, without overlapping.

Some manufacturers produce special lamps for the purpose, such as Sylvania's "Gro-Lux" fluorescent and the Westinghouse "Plant-Gro." These lamps have high red and blue radiation. The red stimulates vegetative growth; the blue helps to regulate chemical and enzyme processes. General Electric, on the other hand, recommends its standard cool white fluorescent for plant growth, though in some cases it may be necessary to supplement the fluorescent with incandescent lighting. One advantage of fluorescents used alone is coolness. There is no danger of scorching delicate flowers.

For safety, it's best to ground the fixture by running a sizeable wire from the reflector or some other part of the housing to a water pipe. This is a must if the planter is to be used in a basement or other damp location. A time switch of the type used for controlling electric signs is handy for automatic intermittent operation of the lamps.

The correct lamp-to-plant distance may be found by experimentation; for seedlings, try 6-in. Larger plants usually grow best with the lamp a foot above. ★★★





## a Merc doesn't disturb the peace

There's a new sound on the water for 1965 . . . a new quiet sound, 50% less than before. It's the sound of the new 1965 Mercs. Silencing came, primarily, from two new principles:

- Engine cooling water surrounds Merc's new internal exhaust pipe and prevents noise from escaping through the sides of the drive shaft housing. This wall of water pressing against the inside of the housing also damps out mechanical vibration.

- Mercs have a new, non-broadcasting cowling that is isolated from engine operating sounds by large, soft-rubber mounts. The cowling actually "floats" around the powerhead. All openings for controls are sealed with neoprene to insure that sound is trapped inside the cowling.



Dyna-Float, aircraft-type suspension . . . an elastically isolated remote steering control arm . . . offset wrist pins . . . small-bore, short-stroke design . . . these are just a few more of the reasons why Mercs are 50% quieter.

While other manufacturers attempt to quiet their engines by padding in the sound, Mercury has engineered it *out* in 15 different ways, from the rubber floated cowl all the way down through the Jet-Prop exhaust. That's why you'll always get more RUN for your money with Mercury . . . 3.9, 6, 9.8, 20, 35, 50, 65, 90 and 100 hp.

**MERCURY**



©1965, Kiekhaefer Corporation, Fond du Lac, Wisconsin and Toronto. Subsidiary of Brunswick Corp.



## Saucy Shingle

(Continued from page 149)

bow piece where it ends in a long taper. Spring any scrap member around the inner surface of the frames past the transom to simulate the coaming. Note that it will be necessary to bevel the side of the transom and motorboards to accommodate this member. After this bevel is cut, the top frame member of the transom may be installed allowing  $\frac{1}{2}$  in. clearance between the motorboards and coaming, and also providing the notch for the  $\frac{3}{4}$  x  $\frac{3}{4}$ -in. carling. The carling, set vertically, is fitted into the notch in the bow piece first and then sprung aft into the notches in each of the frames. Leave the end overhanging at the transom for trimming later. Fasten with  $1\frac{1}{4}$ -in. nails into each of the frames and transom, after coating all of the contacting surfaces with glue.

**STEP 9.** Fair or bevel all surfaces which will contact the side decking so that the planking will fit flush to the framework. This is a progressive process that may seem rather complicated, but a study of the drawings and photographs should help clear up the matter. After fairing, the  $\frac{1}{8}$ -in. plywood sheet is clamped to the side deck area so that the outline can be marked roughly. If you're careful, it's possible to obtain all of the decking from a single 4 x 8-ft. sheet. You won't have a great deal of excess material, however, so be careful in rough trimming. Next, the contact areas of the deck are coated liberally with glue and the side decking fastened around all the outer extremities with  $\frac{3}{4}$ -in. nails spaced about 2 in. apart. It isn't necessary to fasten to any of the inner contact points. The opposite side is put on and any excess trimmed.

**STEP 10.** The coamings are cut from  $\frac{1}{2}$ -in. mahogany and, preferably, rabbeted on the top edge to receive the decking. (If preferred, the decking may merely lap over the coaming with the routed groove being eliminated.) The coaming is fitted into the notch in the bow piece with the point extending over the top of this member. It is progressively sprung around the hull on the inside of the carling and frames and notched out on the aft end to fit over the transom and extend flush with the outer motorboard. In assembly, coat the contacting surfaces with glue and fasten with  $1\frac{1}{4}$ -in. nails spaced about 6 in.

**STEP 11.** The dash beam and the forward deck beam at Frame 2 are fastened against blocking provided on the coaming. The dash beam must be bevelled on the bottom to contact the  $\frac{1}{2}$  x 2-in. center bottom batten. At this point it rests against the frame and is canted forward

as indicated in the drawings. In assembly, use two  $1\frac{1}{2}$ -in. No. 8 screws to fasten the dash beam at the contact point with Frame 1 and bottom batten.

**STEP 12.** The hull is now turned upside down and the  $\frac{1}{2}$  x  $1\frac{3}{4}$ -in. non-trip chine installed. A long bevel is cut so that this member will rest on the bow piece. Corner glue blocks are installed at the junctions of Frames 1 and 2 with the runner chines. The bottom area is then faired for both the runner chine and the runner bottom. (This operation is similar to fairing the frame for the decking.) The  $\frac{1}{4}$ -in. anti-trip planking is fitted first. Cut it slightly oversize and do any necessary trimming after fastening it in place. After coating the area liberally with glue, begin fastening it along the bow piece. Then use a C-clamp to pull the non-trip chine so that the aft portion is parallel to the runner chine. This section must be flat. After pulling the chine down with the C-clamp, fasten it along the member with the  $\frac{3}{4}$ -in. nails spaced about 2 in. apart. The area is then faired flush at the non-trip chine and the runner bottom planking installed, lapping it over the non-trip planking. It, too, is bedded in glue and nailed with  $\frac{3}{4}$ -in. nails spaced about 2 in. apart.

**STEP 13.** Before finishing the forward decking, the interior should be painted with a dry-rot preventative. Cover as much of the area as possible, particularly down in the runners where water may tend to settle. The cowl plywood is fitted on one side of the coaming and tacked into position while the other side is fitted. The panel will tend to buckle as this is a slight compound curve, but as you progressively work the panel down the wrinkles will disappear. In fastening, again, use the  $\frac{3}{4}$ -in. nails spaced about 2 in.

**STEP 14.** The transom knee may be cut from any scrap 2-in. material. The distance you mount this below the transom top edge should actually depend upon the motor used. The maximum is  $5\frac{1}{2}$  in., but it's desirable to mount the knee as close to the top as the motor clamps will allow. Drive three 3-in. No. 14 screws through the rear of the transom into the knee and three  $\frac{1}{2}$ -in. No. 8 screws through the coaming on either side. The cap strip at the dash covers the exposed edge of the forward decking. It should be cut from the scrap material from the coaming to extend  $\frac{3}{4}$  in. above the decking. Round the edges generously and nail in place.

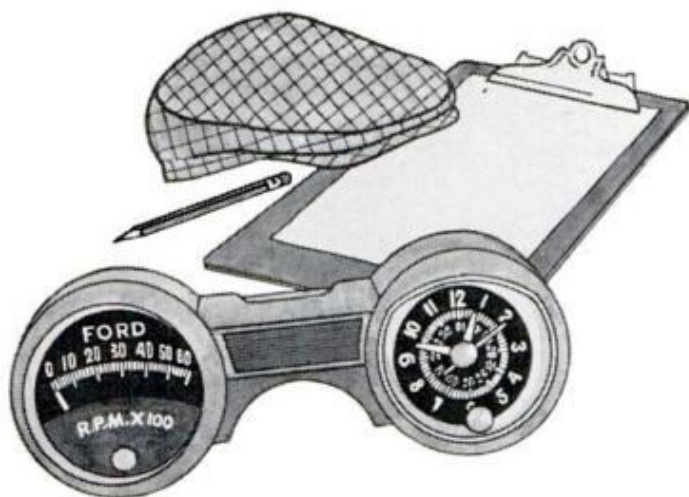
**STEP 15.** Due to the weight-sensitive nature of the three-point hydroplane, it is usually not fiberglassed. If you desire to fiberglass it, however, use a light cloth. In the prototype, the bottom was primed

(Please turn to page 208)



# Who's got everything for your Ford

## from Rally-Pacs...



A must for performance enthusiasts, this Mustang Rally-Pac is a unique, illuminated, twin-pod cluster with a 6,000 or 8,000-rpm tachometer and a precision electric clock. Has "camera case" finish. Mounts on steering column. \$79.95\*

## Floor Mats...

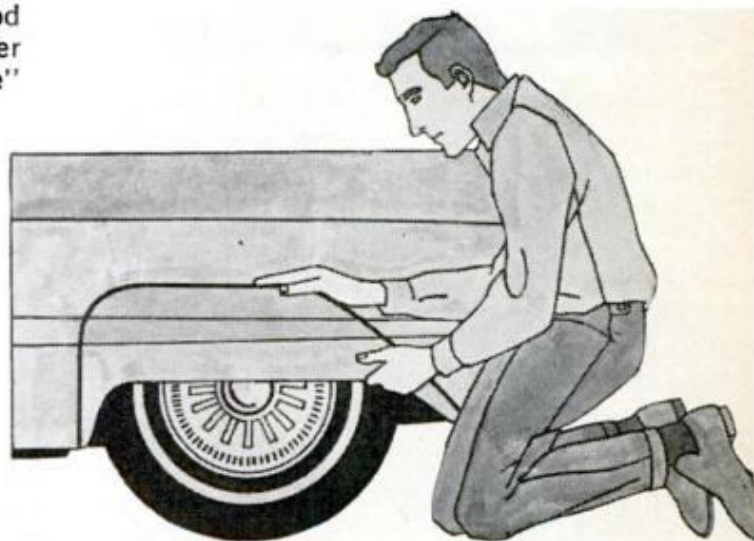


These durable floor mats come in two styles—contoured full-front and rear or twin 2-piece front and rear mats. Available in colors harmonized to your Ford's interior—rubber or vinyl. Fronts from \$7.95,\* rears from \$3.80\*



## to Tri-Pacs

This kit can give your car that showroom look. Has car wash for 16 washes, an auto polish designed for all car finishes, a no-rub-chrome cleaner. \$2.99\*



## to Fender Shields

Here's a way to add to the fine styling of your Ford. These shields are easy to install, have a lock device. Available in gleaming stainless steel or primed for painting. From \$8.99\*

PRODUCTS OF  
  
 MOTOR COMPANY

# Your local Ford Dealer, of course!

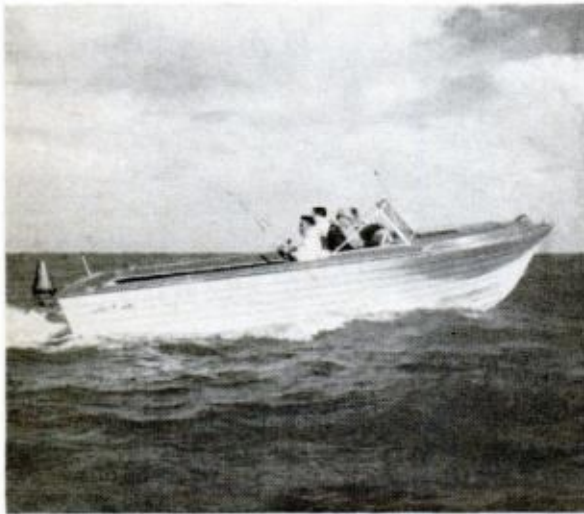
You'll get the most for your driving pleasure from your Ford Dealer

\*Manufacturer's suggested retail prices. Installation charges, state or local taxes are extra.





## HERE'S HOW LONE STAR CUSHIONS THE ROUGHEST RIDE



There are deep-v's and deep-v's . . . but only one Cushion-V, Lone Star's newest hull configuration just introduced in the 22-ft. fiberglass SOUTHWIND. It's the secret of sharp-turning, crisp-banking, high-speed performance. Six deep inverted lapstrakes that run from bow to stern on the bottom help lift the boat, deflect spray and add stability. V-angle under driver is 45°; at transom, 26° . . . a combination that delivers outstanding maneuverability with "kid glove" smoothness. Cushion-V hull (with FOAM-PAC flotation throughout) and 8-foot beam provide 65 square feet of deep cockpit space, the answer to the big water fisherman's prayer. Three large below-deck compartments total over 22 cubic feet of space; two of them double as ice chests. If big water is your bailiwick, don't miss the SOUTHWIND in inboard/outdrive options to 150 hp. now at your Lone Star dealer's. Write for color catalog of the "Funmakers," Lone Star's complete line of aluminum and fiberglass fishing boats, runabouts, cruisers and boat trailers.

**Lone Star**

LONE STAR BOAT COMPANY

Headquarters Plant: 1036 Industrial Ave. • Plano, Texas

## Saucy Shingle

(Continued from page 206)

with a plywood sealer and then given three coats of marine varnish. The top side on the original was painted a brilliant red-orange. After sealing with the plywood primer, flat paint was applied and sanded until the grain had disappeared. Two coats of a marine enamel went on.

**STEP 16.** The steering should be a tiller rope type with the drum exposed or forward of the dash. These are available

### BILL OF MATERIALS

Item	Material	No. Pcs.	Size
Bottom, Side & Runner Planking	DF PW Exterior AB	1	1/4"x4'x8'
Bow Lamination, Frame Gussets & Floorboards	DF PW Exterior AB	1	1/4"x4'x4'
Bow Piece No. 3, Dash Beam No. 7, Transom & motor boards	DF PW Exterior AB	1	1/2"x4'x4'
Decking & Cowling Cover	DF PW Exterior AB	1	1/8"x4'x8'
Bottom Battens	Spruce or Mahogany	3	1/2"x2'x6'
Anti-Trip Chine Frames	Spruce or Mahogany	2	1/2"x13/4"x4'6"
Frames	Spruce or Mahogany	1	1/2"x6"x9'
Cross Pawl at Frames 1 & 2	Spruce or Mahogany	2	3/4"x11/4"x4'
Transom Cap	Spruce or Mahogany	1	3/4"x13/4"x3'
Sheer Clamp & Carlings	Spruce or Mahogany	4	3/4"x3/4"x8'
Deck Batten	Spruce or Mahogany	1	1/2"x1"x4'
Coaming	Spruce or Mahogany	1	1/2"x7" (net) x 14' (make two)

**GLUE:** Resorcinol or Plastic Resin, Approx. 3 lbs.

### FASTENINGS:

**Nails:** Ring-type boat nails, bronze or monel.

3/4" #14—1 lb., 1/4" #12—1/2 lb.

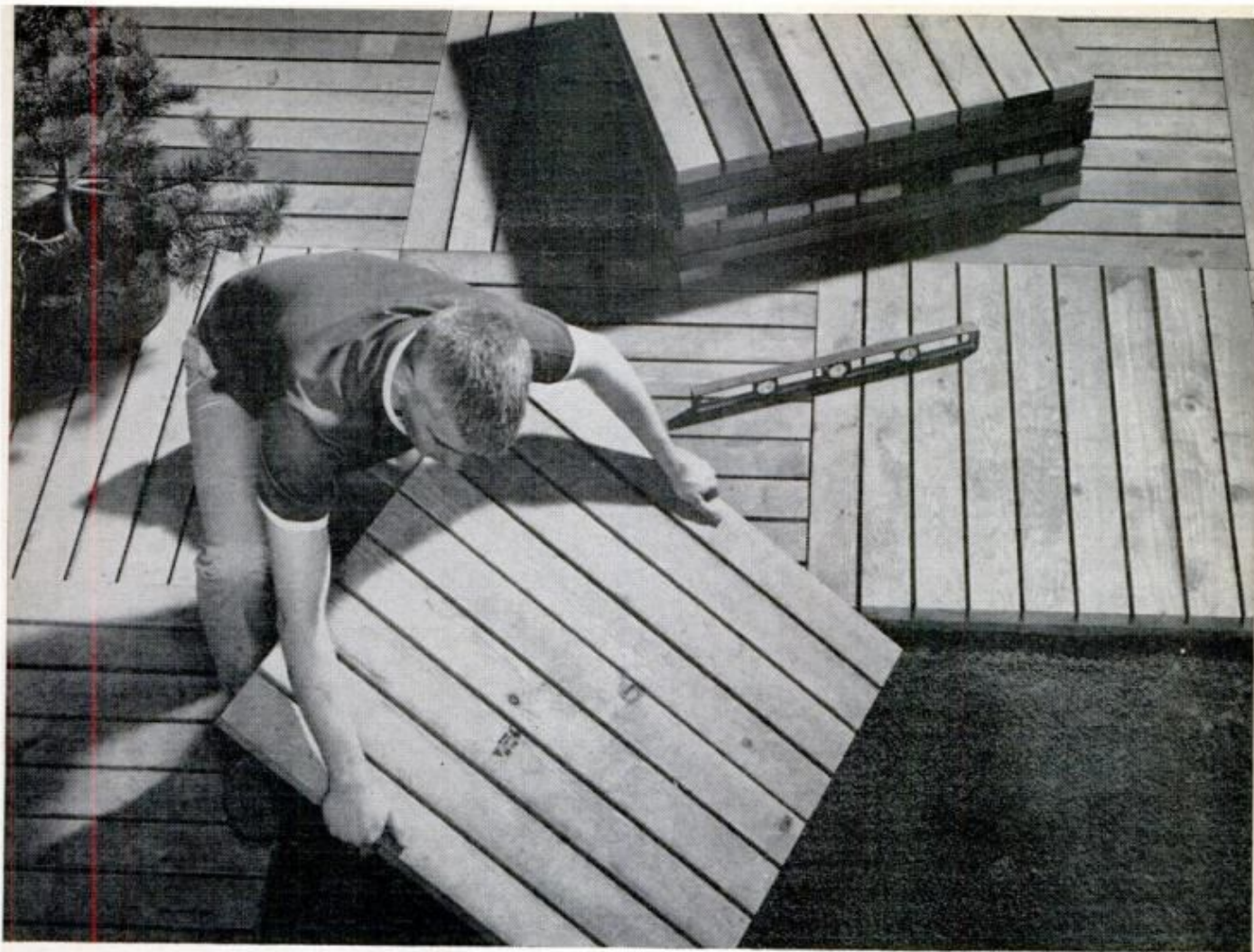
**Screws:** Flathead wood type, hot dipped galvanized iron.

1 1/2" #8—22 only, 3" #14—3 only

with a standard 15-in. wheel or a small 10-in. wheel. The tiller cable should lead through transom-type pulley sheaves recessed into the coaming, extend aft to a pulley on the bar mounted to the motor and then back down to the coaming where it joins the transom. A spring at this point maintains tension on the steering system at all times. A throttle control of the dead-man type or automatic release is recommended with larger motors, though a standard lever control can be used. To prevent slipping in turns, an aluminum fin is installed inboard of the port runner.

Saucy Shingle can handle almost any motor below 20 hp. You can get adequate speed for small fry with a motor under 10 hp., but the stock propeller should be replaced with one to match the boat. To achieve maximum performance it will also be necessary to adjust the height of the motor on the transom with "rev sticks"—1/4-in. pieces of wood slipped under the motor bracket one at a time. For high speeds it is recommended that the driver wear a life jacket and crash helmet. For the small fry it goes without saying that this equipment is a must at all times. ★ ★ ★





# You can stretch your home this weekend- for less than \$50.

Here's the way to add living space and make your home seem new again for surprisingly little money—add a Western Wood outdoor deck.

Western Wood is easy to work. Easy to nail, and easy to saw. Goes with any design or material.

A Western Wood deck is restful underfoot. It wears well, cleans easily, doesn't hold puddles or heat—and it's cooler than all other decking materials.

You can easily put one over a garage or driveway, off a second story, or one step off the ground. Just tell your dealer where you want to put it and how big you want to make it. Items you need for a 12' x 12' unit run less than \$50. He'll put together a kit that'll include everything you need. Ask him for a booklet of decking ideas too. If he doesn't have one, mail us 10c and this coupon. We'll send you one.

Please send me your book on Western Wood Decks. Enclosed is 10c.

Name \_\_\_\_\_

Address \_\_\_\_\_

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



**WESTERN WOOD PRODUCTS ASSOCIATION**

Dept. PM-265, Yeon Building,  
Portland, Oregon 97204





**GRINDS**      **POLISHES**  
**DRILLS**      **SHARPENS**  
**CARVES**      **DEBURRS**

No. 2  
Moto-Tool Kit  
Illustrated

## MOTO-TOOL THE POCKET SIZE MACHINE SHOP

Handiest tool you'll ever own. Does fine detail work with pin point accuracy. Eliminates time consuming hand work. Gets into places difficult to reach with larger tools. 27,000 RPM. Collet sizes 1/8", 3/32" and 1/16". An industrial favorite since 1936. Wt. 13 oz.

**NO. 2 MOTO-TOOL only** ..... \$19.95  
**NO. 2 MOTO-TOOL KIT with 23 accessories in steel case** ..... \$29.95

### NEW HEAVY DUTY NO. 3 MOTO-TOOL

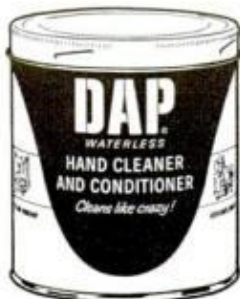
New high torque motor designed for hard industrial use. Same features as No. 2 plus 50% increase in power.  
**NO. 3 MOTO-TOOL only in steel case** ..... \$29.95  
**NO. 3 MOTO-TOOL, 23 accessories, steel case** . . . \$37.95

SEE YOUR DEALER OR WRITE FOR CATALOG  
 Dremel Mfg. Co. • Dept. 115-C • Racine, Wis.

# CUTS GRIME

## DAP® Waterless HAND CLEANER & CONDITIONER

Dissolves dirt soap can't get! Removes grease, oil, ink, carbon paper smudges, shoe polish. Lanolin conditions skin, prevents chapping. Hexachlorophene kills bacteria on contact. Even *smells* clean! Sold at leading hardware, building supply, paint and specialty stores.



**DAP** DAP INC., Dayton 31, Ohio  
 SUBSIDIARY OF *Plough, Inc.*

## Choosing the Perfect Prop

(Continued from page 136)

the readings. (Having a speedometer on board for these tests is important, because while the tachometer will tell you that a particular propeller is allowing the engine to run within its proper range, it won't tell you how efficiently.) Throttle back slowly to idle, let the boat come to rest and then repeat the process, this time noting how quickly the boat gets on plane and reaches top speed.

The first propeller you've tried will most likely be the one recommended by the factory for your boat and motor combination. It's a compromise selection picked for average performance over a wide range of uses to which you might put your boat; it's probably not ideal for any one of them. If the engine rpm did not reach the peak it registered with a test wheel, that means it's working too hard (lugging) and you'll next want to try a flatter pitch. In view of the fact that a flatter pitch implies getting closer to a work propeller, you may feel that this will cut your speed. Just the opposite will probably happen, for as the engine gets running closer to its peak rpm, it also is capable of more work and will push the boat faster.

### Second Try May Hit Peak

With the flatter pitch prop, repeat your tests, noting once more the top speed, peak rpm reading, and how fast the boat gets up on plane. You may have hit the peak with this second try, or you may have to experiment with one or two other propellers, but we'll go on to the next step.

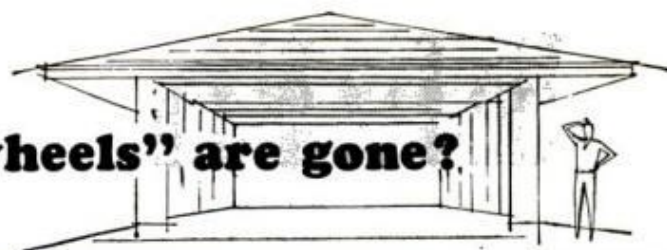
Take someone on board with you and repeat the test; then once more with two passengers. This is part of your "optional load," so keep these readings handy for future reference. With the extra load on board, your speed will probably decrease slightly and engine rpm will go down. You've reached the critical point in the tests, for the object has been to find the propeller that will permit your engine to turn at peak rpm with a light load while still turning within the recommended operating range when an extra load is added. Lower than recommended rpm at full throttle means possible engine damage and wasted fuel.

Once you've selected the propeller which will give you the top speed at the proper tachometer reading, experiment with your tilt pin setting. You may find that handling will be improved or that the boat will get up on plane faster. Although acceleration is usually a function of engine and propeller performance (note on the

(Please turn to page 212)



**Missing out on fun  
when the "family wheels" are gone?**



*Spring free...*  
**on a new M-50**



Owning title to a Harley-Davidson M-50 is like having your own "Declaration of Independence." You go where you want, when you want. No need to depend on mom's or pop's chariot. No need to miss out on the fun.

What's more, you'll like the way an M-50 takes to the road. How it cruises at a comfortable 40 mph. And puts nearly 300 miles between filling stations. Sometime soon,

check out an M-50 at your nearby Harley-Davidson dealer. Run it through its paces. When you go, take a friend along.

**only  
\$225**

*Plus low delivery charge*

**HARLEY-DAVIDSON**





"THERE'S A BETTER WAY DEAR,  
THE SAVOGRAN WAY... WITH  
KWIKKEEZE FAST ACTING PAINT BRUSH CLEANER!"

IT IS . . . America's favorite liquid paint brush cleaner. Will not injure nylon or natural bristle brushes in any way.

IT DOES . . . clean brushes instantly that are filled with fresh paint . . . automatically renews old paint hardened brushes. Soak . . . rinse . . . let dry.

"Where Paint Is Sold"

**SAVOGRAN**

Addison, Ill.

NORWOOD, MASS.

Los Angeles, Cal.



**Speedy Sprayer**

**7 times faster than brushing!**  
Does an hour's work in minutes!  
Paints anything from toy to house.  
Pays for itself with the first big job. A professional sprayer for the amateur!  
Speedy Sprayer "Compact No. 404"

**only \$39<sup>95</sup>**  
Slightly higher Denver West.

Write for "How to Spray" booklet and catalog.  
**W. R. BROWN CORP.**  
2701 N. Normandy Ave., Chicago, Ill. 60635

## Choosing the Perfect Prop

(Continued from page 210)

chart that one prop gave better acceleration while not achieving top speed as compared to its neighbor on the chart) your tilt pin settings are critical factors in achieving top performance.

For absolute top speed, you may want to experiment with "rev sticks." These are nothing but quarter-inch slats designed to raise the motor on the transom in small increments. In most cases, with a standard motor and transom, you won't have to get into this experiment, but here's the way if you want to try it.

The anti-cavitation plate on your motor's lower unit (the flat, horizontal fin just above the prop) should ride approximately parallel to the boat bottom just below the surface of the water when the boat is on plane. If it's too low, you're adding needless resistance and wasting fuel. If it's too high, your propeller will cavitate, overspinning as air bubbles displace the water it should be pushing. This can damage the engine quickly and expensively, so keep a fast hand on the throttle as you experiment. Add one rev stick at a time until the prop just begins to cavitate. Then remove one stick and install transom through-bolts with the engine in the new position. You may want to replace the rev sticks with a single piece of wood, cut and finished to match the transom.

The importance of the prop in boat performance is best illustrated by an inventory of Columbian Bronze Corp., a propeller manufacturer whose activity in the outboard and outdrive field is confined to replacement props only. They stock more than two thousand varieties of props that vary in diameter, pitch, blade shape and number of blades (plus right-and-left handed props for twin installations). And they're not the only prop manufacturer.

So for better performance this year, plan a test session early in the season. It'll pay off in efficiency, economy and better boating. ★★★

## Timer for Laser Pulses

A method has been developed whereby the duration of a laser light pulse may be varied from a few billionths to several thousandths of a second.

Laser light is highly directional and extremely bright. Its application can be found in such wide-ranging fields as communications, welding, ranging and tracking, and medicine. Westinghouse Defense and Space Center researchers expect the new development to render the laser still more versatile.





Jack Bowsher won the Automobile Racing Club of America Championship two years in a row with Champion-sparked Fords

## **Champions use Champions!**

**Jack Bowsher wins the ARCA championship in his '64 Ford – equipped with Champion spark plugs. Champions deliver maximum performance – in every make of engine. Why settle for less in your car?**

To feel new power, instantly, install new Champions now and every 10,000 miles





## New Outboard Fuel

(Continued from page 139)

the boat, Mielke was drawing the fuel as a vapor from the top of the tank, rather than as a liquid from the bottom. Although this eliminated the need for a converter on the engine, it created the first obvious problem—a power loss at full throttle.

Traveling to the engine as a vapor, not enough of the gas was available under full throttle. This caused the engine to run too lean. In all future installations, Mielke would prefer to use the more efficient liquid withdrawal system and utilize the converter that is standard on most LP gas fired engines. While today's marine safety codes prohibit the use of this system in boats, he's going ahead with tentative plans for such conversions in the hope that these regulations will be changed.

### Engine Heat Offsets Cooling by Gas

The converter manufactured by Century is basically an expansion chamber that utilizes heat from the engine's water system to counteract the refrigeration effect of the evaporating gas. Most outboards run cool, using the water in which they're running. A warmer chamber will improve vaporization and allow a fatter charge to get to the carburetor. Homelite has incorporated a thermostat to raise jacket temperature to about 140°. To control fuel flow from the pressured tank to the regulator, a vacuum-actuated valve system adjusts flow to engine demand in the Century set-up.

The ignition advance curve will be modified. This modification depends on the peculiarities of the individual engine design, but generally begins with a greater advance in the lower rpm ranges and then tapers off more rapidly to the point where there is actually less advance in the higher ranges.

Exhaust valve seats were in rough shape when Mielke's engine was torn down, but this had been expected. Most engine conversions begin with the replacement of exhaust valve seats with a harder material, usually Stalite, and Mielke's next engines will incorporate this change. Because LP gas is dry and provides no lubricating action, the valves will be non-rotating to reduce wear.

Since LP gas, unlike gasoline, enters the manifold fully vaporized, the usual hot spot on the manifold will be eliminated so that a denser mixture is available for each intake stroke.

The standard Century LP gas carburetor performed well and will be used on the new engines. This carburetor features a combined system that uses a metering

valve and a throttle valve interconnected with a positive linkage. As the valves open, gas is admitted to the mixing chamber through orifices in a spraying on the downstream side of the throttle valve, assuring thorough mixing of fuel and air.

We asked Mielke why he was planning to convert all of the engines in his fleet to LP gas operation on the strength of only 155 hours of testing. His answer:

"My 155 hours was like the demonstration ride you take with a new car. You might find you want the seat changed, or stiffer shocks added, different tires put on, or even a different carburetor and manifold set-up hooked onto the engine. But, basically, all the engineering's been done. You're just tailoring what's available to fit your needs. I'm doing the same.

"I have to handle LP gas in bulk quantities for the stoves, refrigerators, heaters and lights on my boat, so I'm ready there. Tanks are available now for my operation that will allow me to pull vapor off the top for cooking and heating, and liquid off the bottom for the engine. They were available before, but I didn't have time to look for them for our experiment.

"Century has converted thousands of trucks, tractors, taxis and fleet passenger cars to LP gas operation and they know what they're doing. The equipment I'll get from them for my engines is thoroughly engineered, in production, and backed with a good parts system.

"Homelite has a good engine. It would have to be, because our conversion last summer broke a few basic rules and it still performed even better than I expected it to. They've been working on LP gas conversions for a long time—I don't think I was really the first to think of it for their outboard—and with my experiment and the dyno tests they've been running all winter, we've about passed the final exam.

### Relieves Costs and Headaches

"Put all those factors together and you can see why I'm so confident. I've compared the cost of installation with the savings I'll achieve in fuel costs, oil, spark plugs, maintenance and aspirin and, for my business at least, it can't help but make sense."

The safety factor in using LP gas is still a debatable point. The gas is not only colorless and highly flammable, but also heavier than air so any leakage would settle in the bilge of a conventional hull.

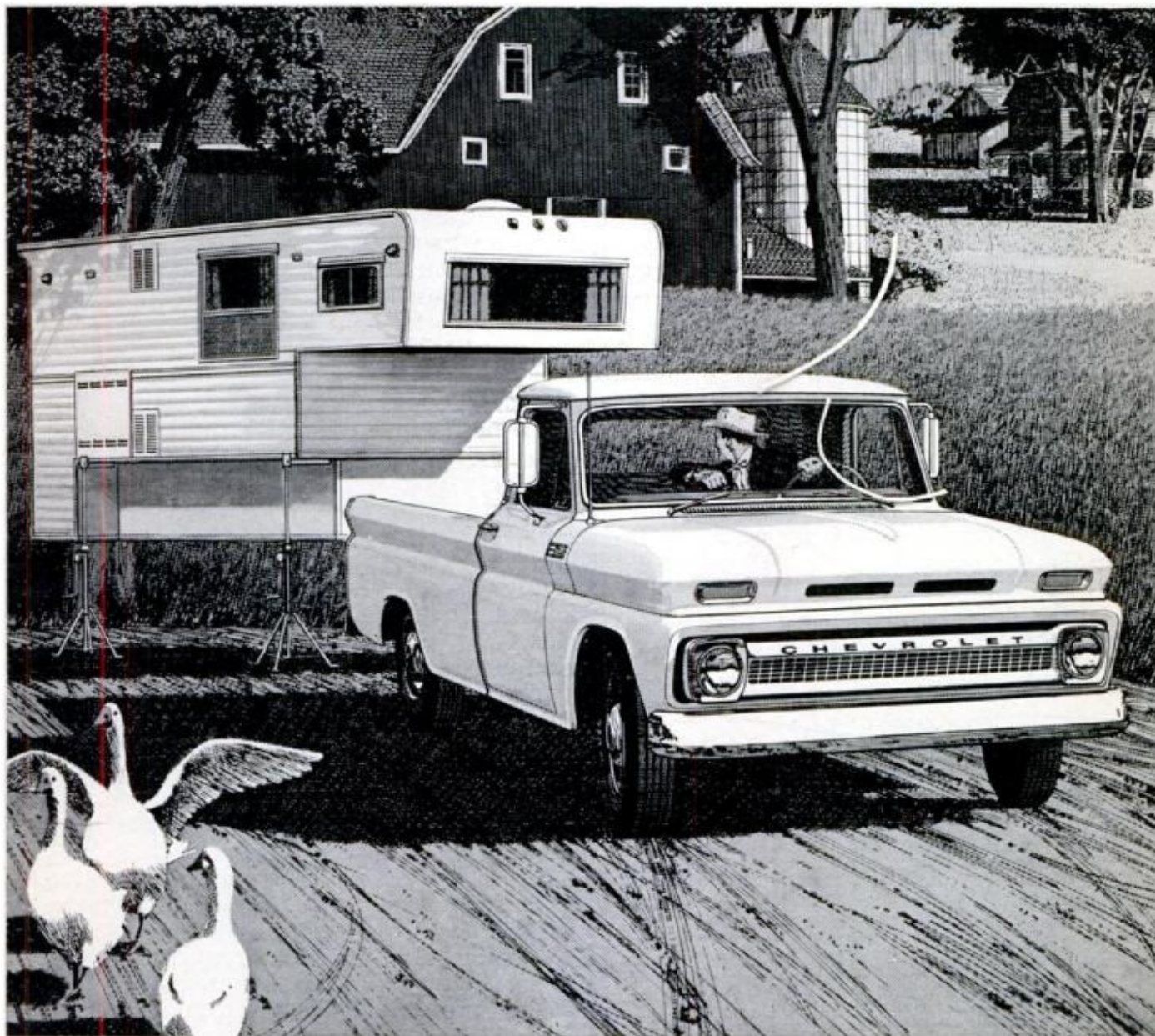
Mielke claims that statistics from the Interstate Commerce Commission show that LP has a better safety record than gasoline or diesel fuel. He also cites a Coast Guard regulation that allows LP

(Please turn to page 216)



# ANNOUNCING: CHEVY CUSTOM CAMPER!

*A pickup that's specially built to handle camper coaches and perform all kinds of pleasure truck assignments . . .*



***(An hour ago this one was hauling feedsacks!)***

Soon this same truck will be loafing along toward some pleasure spot, loaded with a full cargo of campers and their gear. The Chevy Custom Camper comes factory-equipped for just such service with a Camper Option Package that contains the following items:

- Front stabilizer bar for easier handling.
- Heavy-duty shock absorbers and auxiliary springs in the rear for extra payload capacity.
- 7.50 x 16 tires—6-ply front, 8-ply rear.
- West Coast side mirrors for safer rear vision.
- Transistorized radio.
- Tinted windshield.
- Deluxe heater and defroster.
- Windshield washers and

- wipers.
- Chromed front bumper, grille and hub caps for improved appearance.
- Foam-cushioned seat with nylon and vinyl upholstery.
- Custom Camper emblem on the cowl.

In short, here's a pickup that'll play just as hard as it will work! Get the complete story from your Chevy dealer. . . . Chevrolet Division of General Motors, Detroit, Michigan.







## QUICK-WEDGE

SCREW-HOLDING  
SCREWDRIVER

### HOLDS THE SCREW

so firmly, the screw virtually becomes part of the screw driver, to help you

### START THE SCREW

anywhere... even in hard to get at places, then...

### DRIVES THE SCREW

straight, to save time, energy and your frayed nerves

Plus they're  
**UNCONDITIONALLY  
GUARANTEED**

Try one  
at your  
dealers  
or write



KEDMAN COMPANY, Box 267, Salt Lake City, Utah 84110

## New Outboard Fuel

(Continued from page 214)

operated fork lift trucks to work in the holds of cargo ships as an indication of the fuel's safety.

On the other hand, the National Fire Protection Assn. says in their standards governing marine LP gas appliances: "Only systems of the vapor withdrawal type are permitted. Containers designed or installed so as to admit liquid gas into any other part of the system are prohibited." And even with vapor withdrawal systems, the regulations covering installation are extremely strict.

The artist's conception on p. 137 illustrates one possible solution to the problem of how to install an LP gas fuel system in a conventional runabout. By locating the entire system in a well-vented false transom outside the hull, any leaking gas would be immediately dissipated outside.

### Can Go for a Week

Mielke's customers like the LP conversion. With two of the big tanks on the back, they can go out for a week without having to worry about stopping, or finding the right fuel, and they like the clean exhaust that allows them to cruise downwind without being bothered by fumes.

"There's another reason why I'm pleased with the conversion and plan to do the whole fleet," Mielke says. "Since the four-cycle crankcase must be sealed to retain its limited amount of oil and because no oil goes through the engine and out the exhaust pipe, there's relatively little oil slick produced. This is important to me, not only because some of my customers swim in the river near where the fleet is moored but also, as a conservationist with an admittedly business-oriented attitude, I do not want to offend those who feel that any oil slick, no matter how slight, is detrimental to marine life. That has never been proved, but it's a case where avoidance of a possible problem makes sense."

There are limitations, at least for now, on applications best suited for LP outboards. Houseboats are a natural, as we've seen. Future development of the LP gas outboard hinges on a number of factors—changes in the NFPA standards mentioned above, development of a marine distribution system for the fuel, and most important, perfecting the whole system and putting it on the market. Homelite, the world's only manufacturer of four-cycle outboards, has no such marketing plans at present. However, they're following Mielke's experiment with great interest, and the situation could change in a hurry. Only time will tell. ★★

Turns **CONCRETE**  
into **DRAIN TILE**

This machine's a MARVEL. Costs less than \$500 and lets you make 100 or more top-quality tile per hour at a unit cost (including labor) of 4¢-5¢. Sell your tile at 10¢ to 15¢ each. Earn extra or full income making and selling a product that is in constant demand. Booklet with complete details free. Don't wait! Write for yours now.

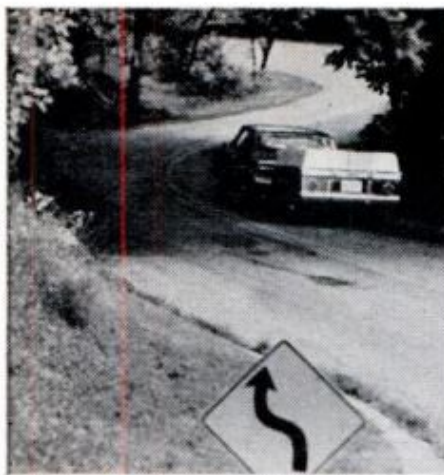
**CONCRETE  
MACHINERY**  
Box 99, Hickory 2, N. Car. 28601

**SAVE . . .**  
MAKE FORMS AND  
COPIES OF DRAWINGS  
WITH  
DIAZO DRY METHOD

**Rotolite**

COPIES COST ONLY 1 1/2¢ SQ. FT.  
PUT ON TABLE OR HANG ON WALL.  
SIZES TO TAKE 18", 27", or 42" WIDE PAPER.  
PRICES START AT \$129.50.  
SEND FOR FREE CATALOG OF 7 MODELS.  
**ROTOLITE SALES CORP., STIRLING 6, N. J.**





Apache Golden Eagle, \$795.00 F.O.B., Lapeer, Michigan.

## UNWIND IN AN APACHE

Apaches are built for relaxation. Plenty of room to move around in, plenty of space for storing things. It goes up in the time it takes to boil a pot of tea. You laze around on built-in double beds with foam mattresses. Everything's above ground (you can live off the land!). Big screened picture windows let in fresh air and beautiful view. Pre-shrunk, treated Army Duck tenting and zippered storm flaps keep out the elements. A lightweight aluminum Apache tows at normal highway speeds, with all your gear tucked neatly inside, not in the car. Locking ABS polymer hard cover makes it pilfer-proof. Relaxing price, too . . . Apache Camping Trailers start at as little as \$445.00.



*When traveling, stop at this sign for camping information. Apache dealers are ready, willing and able to assist you.*

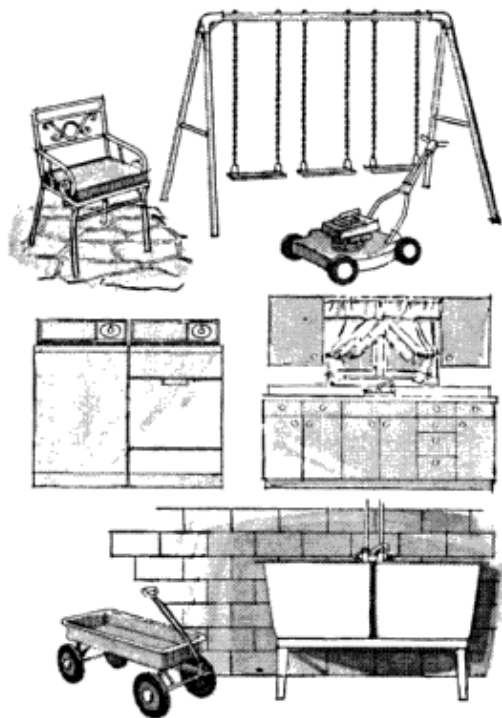
©Vesely Co. 1965



Send your name and address to Vesely Company, Lapeer, Mich., for free 1965 Apache brochure. Check the Yellow Pages for the name of your nearest Apache Camping Center.



# Don't paint it...



## Mira-Plate it!



**Rustproof,  
waterproof,  
miracle epoxy  
coating lasts  
5 times longer  
than paint!**

If you can paint it—you can Mira-Plate it and get a surface that far outlasts any conventional finish. Rustproofs metal toys, tools, lawn furniture. Re-news appliances, boats, pools. Beautifies cement, plaster, wood, etc. . . . with non-porous, tile-like finish. Goes on like paint with brush, spray, roller. Non-toxic. Fire-resistant. Wide range of colors.

**O'BRIEN  
PAINTS**

TOP QUALITY SINCE 1875

O'Brien Corporation, Dept. PM-3  
South Bend, Indiana 46621

Send me your free color card explaining Mira-Plate polyamide epoxy coating and its thousands of uses.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

## Big-City Cabbies

(Continued from page 126)

lengths. One cynical driver explained: "Like that circus fella, Barnum, said, there's a sucker born every minute. Somebody always lets us back in."

What do cabbies say about speeding? Cops won't bother you in the city unless you're reckless, some say. It's too hard for them to clock you. But on highways, don't go faster than five mph over the limit. A cab driver will get a ticket "as fast as the next guy," all agreed.

One driver added: "Even more important than how fast you go is keeping up an even pace. It takes time to get back up to speed after hitting your brakes."

Once, after a flashy red convertible cut off a cab I was in, I asked the driver, "Are you ever tempted to get back at nuts like that?"

The driver, a white-haired old-timer, answered, "When you drive 150 miles a day in this kind of traffic, you'd become a rubber-room case if you got mad every time you got cut off. But we're only human. Sometimes people do get our goat."

As we inched ahead in the heavy traffic, the red convertible lurched back into the other lane, cutting off another car. Gradually we moved up until we were alongside. The cabby, a mischievous gleam in his eye, pointed to the right rear wheel of the convertible. "Hey, your tire's going flat!" he yelled.

The driver stared back stonily. "He didn't bite," I said sadly as we pulled ahead.

The oldster shook his head. "Give him a chance," he said. "It's eating him now. He figures I'm pulling a fast one, but he's not sure."

### He Finally Bites

A couple of minutes later, he hollered, "Whoops, there he goes." I turned in time to see the convertible scoot over to the curb and the driver jump out to check the far-side tires. "He's really burning now," the cabby chuckled. "If you can't out-manuever 'em, out-psych 'em."

From this, we went on to discuss other "road boors."

"Watch out for the character that noses into your parking space while you're waiting to back in," he said. "When I wait for someone to pull out of a space, I always wait behind him, not in front. That makes it easier for him to pull out too."

"Another thing to remember: When you park, cut your wheels into the curb, or some so-and-so will push you up to a hydrant or into a driveway to get his

(Please turn to page 220)





## Lawn tamer

**For complete lawn and garden care, nothing's as great as a Gravely.** The Gravely Tractor (with a wide choice of rotaries and reels) wends its way across any lawn to make a jewel out of a jungle. Although mowing will probably be the lion's share of the Gravely's contributions to your well-being, it works with a total of 31 attachments to make your life easier. It will dig those crazy seed beds, plow like a demon, haul a highboy or a load of kids, and even scoop or blow snow from in-the-way to out-of-the-way. It eats up work . . . out front, for safety's sake. It's a long-time friend, lasts for years. Give the Gravely a go at your local dealer now. If you want to dream, write for our '65 catalog. It tells all. It's colorful. So is the Gravely. **You can be a Lawn tamer—on our easy budget plan.**

# GRAVELY



5703 GRAVELY LANE  
DUNBAR,  
WEST VIRGINIA 25064



# How a little pill helped me STOP SMOKING



**From 4 packs to 0 in 5 days!**

*By Quentin Reynolds*

*"I was a 4 to 5 pack-a-day smoker. With the help of a little pill called Bantron, I stopped completely in 5 days. It's wonderful to think there is such a marvelous aid to quitting or cutting down."*

Bantron is an important medical discovery, developed at a great American university, that has helped people in over 14 countries to stop smoking. A series of clinical tests reported in a leading Medical Journal\* established that 4 out of 5 people who wanted to quit smoking stopped within 5 days when they took Bantron.

And the Bantron way is so easy and pleasant! Bantron does not affect your taste, is not habit forming. It acts as a substitute for the nicotine in your system, and curbs your desire for tobacco.

Taken as directed, Bantron is perfectly safe. Just take 3 Bantron tablets a day, after meals, for four days. Then only 2 a day until all desire to smoke leaves you. 80% are "Free" in 5 to 10 days. Now at drug stores without prescription. Also available in Canada.

**Bantron**  
BRAND  
Smoking Deterrent Tablets

\*Copies available to doctors on request.  
Write Campana Corporation, Batavia, Ill.

## Big-City Cabbies

(Continued from page 218)

car into your parking space."

I smiled at this misanthropic advice—until I remembered that it had happened to me a couple of times.

"And when you pull out of a space and there's no break in traffic, nose out as far as you can without clobbering someone," the driver went on. "This makes passing cars slow up and swing wide. Each time they give you extra room, grab it. Soon you'll stick out so far they'll have to let you through.

"You know," he continued, "that reminds me of a guy I knew who owned one of them little foreign puddle jumpers. He drove it into the city every day, and it was getting banged up something awful. Everybody would dent those little tinfoil bumpers, or jump over them and dent the bodywork. Everybody parks by ear in this town. So he typed up a couple dozen little cards saying something like 'I'm much smaller than you, please don't bump me when you pull out.' He put one on the car in front and one on the car behind. Nobody hits him anymore."

My funniest experience was in Los Angeles. We were stopped for a light, and a shiny new Cadillac with the inevitable cigar-puffing driver was jockeying for position inches away on our left, waiting to squeeze into our lane.

"Will you try to bluff him out?" I asked the cabby.

"We bluff only so far, and then we give in," he answered. "If we have too many accidents, no matter whose fault it is, we lose our jobs. But one trick usually works for me. Watch this."

As the light changed, the Caddy charged ahead. As it shot by, the cab driver gave its quarter panel a resounding slap with the flat of his hand. The cigar-puffer jammed on his brakes and jumped out to look at the "damage." Meanwhile, we pulled smoothly around and went on.

You just can't beat those cab drivers.

★★★

## Africa Still Losing Arabia

Arabia, joined to West Africa twenty million years ago, is drifting away from the African continent at a rate of two centimeters each year, according to Dr. A. S. Laughton of the British National Institute of Oceanography.

Evidence shows that wadis (dry river beds) which start from the south coast of Arabia, continue in African Somaliland—and the Gulf of Aden now separating the two is becoming an ocean.

WORLD'S FINEST CORED SOLDER

**ERSIN MULTICORE  
5-CORE SOLDER**

BUY IT AT  
RADIO-TV  
PARTS STORES

EASY DISPENSER  
ONLY 50c



# FREE!

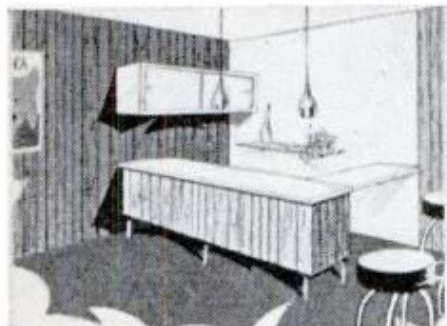
## 55 "IDEA PLANS"

show you how and where to use Masonite panel products

Handyman Plan Book Includes:

- Descriptions and uses of Masonite hardboard panels
- Important construction tips on working with hardboard
- 55 Illustrated plan ideas

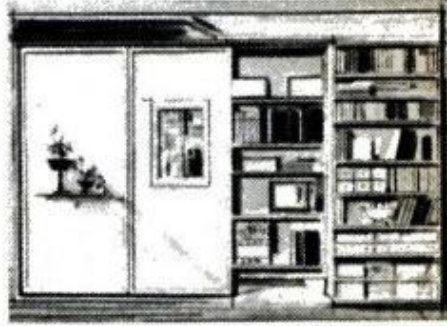
All Yours For The Asking. Send Coupon Today.



4 Sip'n snack center or cocktail bar. With wall cabinet. Built at moderate cost.



24 Vent-a-sort hamper. Partitioned compartments for sorting laundry. Hinged lid.



2 Family leisure center, provides 120 sq. ft. of storage in 4 ft. square area.



# MASONITE

*Shows The Way!*

Masonite and Peg-Board are registered trademarks of Masonite Corporation

Masonite Corporation, Dept. PM-3  
Box 777, Chicago, Illinois 60690

Please send me free "Idea Plans" booklet and Plan No. \_\_\_\_\_ (one only)

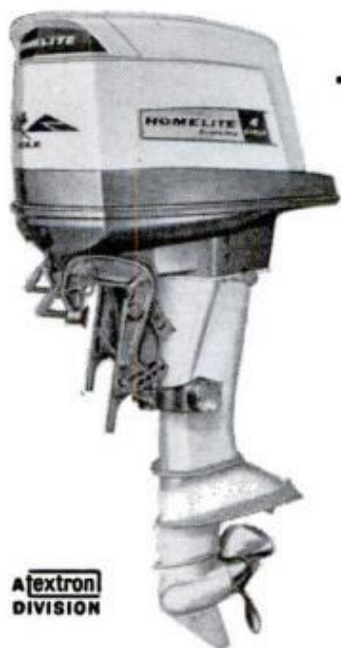
Name \_\_\_\_\_

Address \_\_\_\_\_

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

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

# The LIVE ONE!



Textron  
DIVISION

... YET WHISPER-QUIET, WITH NOISE AND VIBRATION ENGINEERED TO THE VANISHING POINT

New super-silencing makes the HOMELITE 4-Cycle-55 Grand Prix sensationally quiet at any running speed. At idle, you'll find yourself double-checking to make sure it's still running!

### Homelite has these unique features

4-Cycle/4-Cylinder — runs on regular gas, eliminates hard to measure mixtures. Cuts gas-oil cost in half!

Dual carburetors with fixed high speed jets... factory-set, they eliminate gas eating, over-rich mixtures. Lubricating oil pump with full-flow Filters, regulated to give constant pressure lubrication.

- Trolls on less than a quart of gas an hour
- High capacity 20 amp alternator
- Racing-type overhead camshaft
- Corrosion-proof water pump
- Thermostatically controlled cooling
- Tilt ignition cut off switch

Ask your Homelite dealer for a free demonstration

# HOMELITE 4-CYCLE-55

10203 RIVERDALE AVE., PORT CHESTER, N.Y.

MARCH 1965

221



## Keep Wheels from Falling Off

(Continued from page 179)

they're neglected and go bad, costs about \$22.50, and this doesn't take into consideration what could happen if a wheel comes off because a bearing's been neglected.

If you want to save the five bucks, moreover, you can do the job yourself—as long as you stick to the front wheels only. Rear wheel bearings should be left to a mechanic with the proper tools.

A typical front wheel bearing set-up is shown on page 174. Each wheel, as you can see, has two bearings—one in the outer part of the hub and the other toward the car. How you service them is shown in step-by-step photos on pages 176-7.

Each bearing has a cup (or outer race) to which it's mated. Most cups are press fitted into the hub and will not come out with the bearing. You can inspect them while they're in the wheel, by playing a light into the hub. If damaged, they can be removed by knocking them out with a drift and hammer, and new cups can be installed by tapping them in with a drift.

### A Word of Caution

As they've been in operation, a bearing and its cup have become thoroughly and closely mated with each other. Neither will work as well as part of another assembly. For this reason, if a bearing needs to be replaced because of damage, replace its cup along with it, and vice versa. Buy them as a set, through your auto dealer's service department, or from an automotive parts supply outlet.

With the bearings removed, it's time for cleaning, inspecting and repacking. The first thing to note is the color and odor of the old grease. If it looks black or has an acrid smell to it, it's a dead giveaway that the bearing has been running hot. Either the grease was breaking down or the bearing wasn't properly adjusted. In any event, you can expect to find a damaged bearing or cup.

Try not to handle a bearing by its rollers or balls. Dirt and acid from your hands (in the form of perspiration) can harm these critical surfaces. Wash each bearing in a non-flammable bearing cleaning solvent, which you can buy in an auto parts outlet. Get off all the old grease.

If you have an air hose or tire pump available, you can dry the bearing with short, quick spurts of air. If not, let the bearing air dry on a clean sheet of paper. If you wish to quicken the drying action, carefully wipe off excess cleaner with a clean, lint-free rag.

After the bearing's been dried, dip it into a clean bucket of clean light engine

oil to provide it with some lubrication for inspecting. The two worst things for any bearing are dirt and lack of lubrication.

If the bearing is cracked or has pit-marks or pocks on it, get rid of it—and don't forget to replace its cup as well. Don't take chances—that "roller" has to go another 10,000 miles before you again look at it.

As part of your inspection, you should turn the bearing slowly, feeling for any binding effect caused by dirt or grit between the rollers. If a bind is felt, you can try rewashing the bearing, but chances are you'll end up replacing it.

If you find the surface of the bearing has turned slightly blue or straw colored, don't be too concerned—as long as there's no other evidence of damage. It doesn't mean the bearing has overheated. Discoloration of this sort can be caused by a chemical reaction of substances in the lubricant. However, if you can't be sure, don't take chances—it's best to replace the bearing.

### Packing a Bearing

Whether you use the old bearings or replace with new, they should be greased. New bearings are lubricated at the factory, but you can never be sure that lubrication has been adequate.

To repack a bearing, use the high temperature bearing grease recommended on the lubrication chart for your car. You'll find this chart either in your owner's manual, or at a service station or new car dealer's. There are two popular types of wheel bearing lubricants, and either is suitable, but they must *not* be mixed. The two are not compatible and, if mixed, could break down under heat and leak past the grease retainer to the brakes. This action damages not only the bearings, but also the brake linings.

The two types of wheel bearing grease are a lithium type and one with a sodium base. The lithium grease is light in color, resembling petroleum jelly. The sodium type is dark green.

If you happen to own a bearing packer, use it. But you can do a good job by hand—a photo on page 177 shows how. Just make sure your hands are clean and dry.

Regarding that grease retainer you threw away, as I've pointed out, this is a good precaution to follow whenever you disassemble to get at the bearings. You never know if the retainer is damaged, so always replace it with a new one. By the way, if your setup calls for a leather-type grease retainer (most don't), soak it in light engine oil for about 15 minutes before installation to make it more pliable

(Please turn to page 224)



# TRY ON 10 DAY FREE TRIAL



**Genuine Leather BULL WHIPS**  
Loud Noise! Cracks like a rifle!

Experts knock people off their feet, put out cigarettes, knock ashes off cigars. Coil it or crack it! Used by cowboys, trainers, ranchers. Loud rifle type blast. Woven 4 ply genuine leather. 6 feet long \$1.98. 12 ft. long \$5.45. Send check or money order on 10 day Free Trial. Mail Coupon.



## Metal Piercing Throwing Knife

Great for hunting game. Weighted, balanced for sure throwing accuracy. Hits with a hard smack. FAST, EASY TO THROW. Use for self defense, hunting, thrills, targets. Razor sharp cutlery steel. 16" long—Double edge. Wrapped leather handle. \$1.00 (2 for \$1.85) (3 for \$2.75). Knife-throwing instructions FREE. Order Now.

## FEAR NO ATTACKERS

**NEW PUSH-BUTTON SPRAY REPELS ASSAILANTS. SCARCELY LONGER THAN A PEN • SAFE • EASY TO USE**

A new weapon called "Protect-U" now protects people from attack. The tiny can "fires" by pressing the button. Spray strikes the nose and eyes of the attacker, sends him screaming for help. Damage is only temporary. No license. No regulations against use of Protect-U. The perfect weapon for pocket, purse, car, night stand. Ideal against dogs, and other animals too. Not sold to minors.



Up to 25 "shots" per can. Accurate to 15 feet. Proven 100% effective.

**\$1.98**

NO PERMANENT INJURY



## SEE FISH BELOW WATER

Amazing water vision glasses lets you see deep below the surface of the water. Fish smarter! Catch the BIG ones, take more fish. Like looking into your own aquarium as you explore below surface. See into gullies, holes, brush piles, weeds. New optic type lens eliminates surface glare.

Only **\$1.98**

per pair plus 25c pp. & hdg.

## SEWS LEATHER, CANVAS FAST!

Stitches Like Machine



No experience needed. Sew, repair leather, canvas convertible tops, upholstery. Just push in, pull out. Fast, easy. Automatically you have a Lock-Stitch just like an industrial sewing machine. Half a million satisfied users. Order now.

**FREE 30 MT. Heavy Cord Special Needles**  
You also receive utility wrench, extra waxed thread and needles that fit right in handle. Easy pictured directions. Pays for itself with first repair job.

Send **\$1.97**

plus 25c pstg. & hdg.



## America's Lowest Priced Gas Engine Amazing Gas-Burning Jet Engine

Works all by itself or powers model autos, plane, boat, train, etc. Strong constant thrust for exciting experiments. Operates on ram jet principle. Fast Starting. No Moving Parts. Operates on gasoline about 6" long. Only \$1.50. (Use 3 for triple power only \$4.00.)



## Remote Control TV

Don't leave your easy chair to turn off or tune down any channel. Now—by remote control you can control your TV—up to 20 feet away. Works from any where in the room, or even the next room.

**\$2.98**

**STANDARD AMERICAN SUPPLIERS, INC.**  
1 Park Avenue, Dept. 3-PM,  
New York, N.Y. 10016

## Amazing, New Gallo Mark II "Golden Ace"

## INDOOR TV ANTENNA SYSTEM



Guarantees sharp, clear reception—Where other indoor antennas fail. A spectacular break thru in indoor TV Antenna based on a completely new concept. Works in fringe areas, peak efficiency for all 83 channels.

The precision engineered GALLO "GOLDEN ACE" indoor antenna uses the entire electric system of your home as an effective counter-poise for balance. Electro-Magnetic counterpoise, one of the most remarkable developments in indoor antennas is manifest physically by the AC electric line attached to it. The GALLO "GOLDEN ACE" delivers the highest quality signals in metropolitan areas and also gives better reception in so-called "fringe" areas as well.

## YOU WATCH TV FOR PLEASURE. WHY NOT GET YOUR MONEY'S WORTH?

The GALLO "GOLDEN ACE" indoor antenna system consists of two separate antennas on a hand wired, printed circuit board, coupled to a balun, whose output is fed to a 300 ohm flat line. The "capture area" of the GALLO "GOLDEN ACE" is sharply increased with the addition of the built-in electro-magnetic counterpoise and magnification of the received signals occurs in a DEMONSTRABLY DRAMATIC MANNER. The result . . . clean-sharp-high quality signals right across the TV band. Now you can do away with unsightly rabbit ears, for the GALLO "GOLDEN ACE" antenna hangs like a picture and is small (Only 7" x 9" x 1") in size.

## GOLDEN AGE SYSTEM ADVANTAGES

Strongest signals thanks to dual antennas tuned to all channels. Completely non-directional, needs no rotors, receives all stations equally well no matter where located from your home. Factory tuned to reject noise and unwanted out-of-band signals for interference-free reception.

No lightning hazard, no chance of wind and storm damage. Ends roof mounts, lead wires, antenna deterioration caused by weather. Completely portable. Move from room to room to make any TV set portable by assuring better reception in any location.

Order your GALLO "GOLDEN ACE" indoor TV antenna on our 10 day no-risk offer. You must be completely satisfied or return it within 10 days for money back. Enclose \$9.95 plus 55¢ shipping charge. Mail coupon today.

## AUTOMATIC 100-SHOT PELLET STINGER



Dogs, Other Animals, Assailants Instantly Repulsed. The pellet is harmless but STINGS. Holds and fires 100 pellets automatically as fast as you can pull the trigger to knock most stubborn assailants off guard. Portable. Fits easily in pocket or purse. Made of high impact styrene for long life, trouble-free use. Fully guaranteed. Keeps dogs and animal pests off your property. A great training aid. More humane to animals than kicking or hitting. Send \$1.98 cash, check or money order plus 27c to cover handling and we include 50 stinging pellets. Not sold in N.Y.C. or if under 16 (State age with order). (100 pellets \$1) (250 pellets \$2) (1000 pellets \$5). Mail Coupon.

## STILETTO SPORTS KNIVES



OPENS WITH FLICK OF FINGER and locks with a click into position. Blade can't shut when in use. PUSH BUTTON release. Handy pocket size, yet rugged. Fine quality, polished stainless steel razor-sharp blade. PIERCES METAL. Narrow tapered stiletto blade with thick rigid backbone for heavy duty trout-free use. Fine outdoor knife for sportsmen and emergencies. Comfortable handle. Safety guards. Order now.

**\$1.98** Ppd.

## 60,000 CANDLEPOWER Long Distance Land & Sea POWER BEAM



100% waterproof. Made for skin divers to withstand underwater pressures. Illuminates objects up to 1 1/2 mile distances. Powerful beam can be seen for 12 miles. Cuts through fog & smoke. Stands sturdy on end. Floats. Dentproof. Can't rust or corrode. EXTRA BONUS—4-way switch can be positioned for "ON" & "OFF" flash. Signal many miles in case of distress. Used by skin divers, boatmen, hunters, fishermen, shippers, watchmen, firemen & police. \$4.95 cash, check or M.O.

**\$4.95**

Post Paid



## Ends TV Troubles! TV & RADIO NOISE FILTER

Just Plug In!

ONLY **\$1.00**

Money Back Guarantee

Now enjoy your favorite program without buzzing, scratching, static and annoying hum caused by electronic interference from airplanes, appliances, neon signs, auto ignition etc. These troubles end INSTANTLY with this new, improved noise filter. Order Now.

## ALL-WEATHER PORTABLE CAR GARAGE

Reinforced Heavy-Duty Clear Plastic. Stays Pliable 50 degrees below zero. Slips on and off in a jiffy.



It's a shame to let dirt, dust, sleet, rain, snow, and corrosive salt air destroy the value and appearance of your expensive car. This portable car garage slips on quickly, easy to take anywhere. Can't deteriorate in scorching sun, won't mildew, stands up under rough handling, folds compact for easy storage. Huge 12x25. Fits all make and model cars, station wagon, boat, small trucks, etc. Extra Strength Portable Garage—Complete with Rustproof Grommets 3 MIL—Twice as heavy as car garage above, rustproof grommets to secure coverage in any weather. Made by Monsanto Chemical—fully guaranteed. \$6.98 plus 75c postage and handling.

**\$3.69**

plus 50c pp. & hdg.

## 10 DAY FREE TRIAL

ORDER NOW—MONEY BACK GUARANTEE  
STANDARD AMERICAN SUPPLIERS, INC.  
1 Park Avenue, Dept. 3-PM,  
New York, N.Y. 10016

Please rush my order listed below on 10 day free trial. If not satisfied I may return for money back refund.

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

Enclosed 10¢, send your new catalog.



# Carburetor gum can choke the life out of your engine

Remove it easily with **GUMOUT**

**T**HE gasoline constantly being evaporated in your carburetor leaves a residue of varnish and gum. As this builds up, your carburetor has trouble "breathing." The symptoms are hard starting, stalling, rough idling, power loss, poor gas mileage.

Some premium grade gasolines now have an additive which, with continuous use, cleans the carburetor throttle plate area after about 5,000 miles. This is the roundabout, costly, time-consuming way to do the job. And the results are never complete.

**GUMOUT** is the right way to clean a carburetor. **GUMOUT** is a hard-working solvent you simply add to the gas tank. It goes to work instantly, removing harmful gum, varnish and moisture from your entire fuel system. Your carburetor *cleans itself* as you drive. **GUMOUT** does a fast, thorough cleaning job because it has a greater concentration of cleaning power than additives in premium gas.

By adding **GUMOUT** to your gas tank only three or four times a year, you'll get the performance your engine is designed to deliver, cut gasoline waste, and prevent a major cause of engine trouble. Get **GUMOUT** at your service station or auto supply store and let your carburetor clean itself!

## GUMOUT

Cleveland, Ohio 44104



## Keep Wheels from Falling Off

(Continued from page 222)

and easier to install.

You're now ready to put everything back together again. But first, clean as much grease as possible from inside the hub and off the inside part of the spindle. You don't have to use solvent unless the grease is caked and hard to remove—just a clean, lint-free rag will do.

Though the inner bearing will fall into its cup easily, a metal grease retainer won't drop into place—it has to be knocked in. There are two ways of doing this, as shown at the top of page 178.

Before you install the wheel, hub and drum assembly back on the spindle, make sure you inspect the inside of the brake drum for any grease that may have gotten on it. *This is most important*, since that grease can be transferred to the brake linings. If any is there, clean it off with gasoline and let it dry before reassembling.

### Putting the Wheel Back

In placing the wheel assembly back on the spindle, hold it so it's centered on the spindle to prevent the retainer and spindle from banging together and causing possible damage to these parts.

Slip the outer bearing onto the spindle and into its cup in the hub. Put back the washer and run up the adjusting nut. Now, you must adjust the bearings to the specifications for your car. The preferred way to do this job is with a torque wrench. You can do the job by "feel," but you're dealing with safety when you deal with bearings, so there should be no guesswork.

Generally, the adjusting procedure involves setting the bearings by first tightening to the specification for your car while spinning the wheel assembly by hand. The adjusting nut is then backed off and retightened for adjustment purposes to the correct specification.

Specifications for your car are not hard to find. Your local agency is usually glad to supply them. Or, you can go to most libraries and find automotive books, such as Motor's Auto Repair Manual, which give them. As a last resort, you can write to the manager of technical services of your car's manufacturer.

Keep in mind that it's important to get that adjusting nut just right—neither too tight nor too loose. If the nut's too loose, it could cause the bearings to become damaged by permitting them to bang against their cups. If bearings are adjusted too tight, too much stress can be placed on them and could lead to trouble.

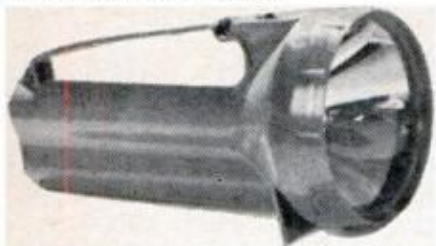
Even if these things don't occur, a car

(Please turn to page 226)



## 80,000 CANDLEPOWER

as low as \$6.95 ea. ppd.



### UNDERWATER BEAM LIGHTS

Used by skin divers, hunters, fishermen, shippers, watchmen. "Too bright to read by," says one enthusiast. Special die-casting process gives reflector the most distance, greatest brilliance of any flashlight made.

### TREMENDOUS PIERCING BEAM ON LAND - CUTS thru FOG & SMOKE

Made to pierce murky depths and withstand pressures of underwater operation. On land its beam leaps out for twenty miles. 80,000 candlepower illuminates objects clearly a mile away. Pierces smoke-filled areas. Stands alone on special foot. Floats in water. Unbreakable lens. You can jump on this flashlight.

1 at \$10.95..... 2 at \$9.95 ea.  
3 at \$8.95 ea..... 6 at \$6.95 ea.

All Prices Postpaid

### 4000 VOLTS at the End of a 10-oz. 29" Cane



The Police "Shock-Rod" has power to control the most stubborn adversary... is ideal protection from nasty dogs. Also effective in riot work. **SAFE TO USER**

#### FULLY TRANSISTORIZED

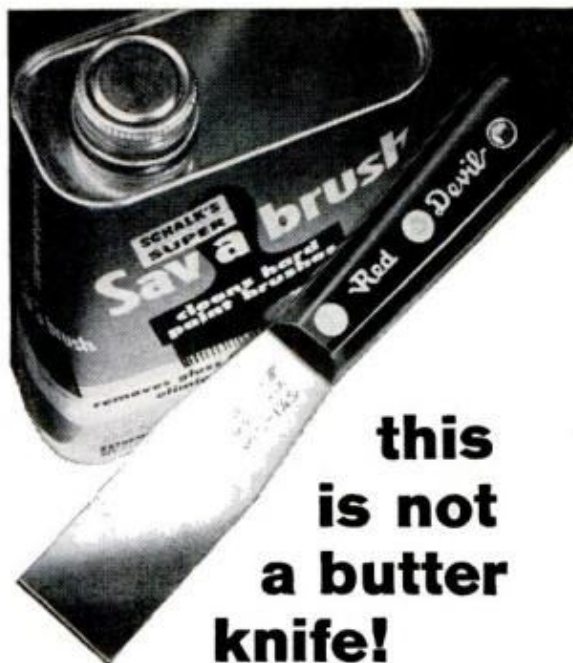
Circuit converts electricity into safe but huge voltage. No moving parts. Rugged. Absolutely guaranteed.

Harmless to adversary. **\$14.95 ppd.**  
The current is tiny (from two small c-size cells) but high voltage gives kick. Shorty Model same price as regular aluminum walking stick. **2 for \$27 Bats., Inc.**

#### COUNTRY CLUB PRODUCTS

349 Manufacturers Exchange Bldg.

KANSAS CITY  
50, MO.



**this is not a butter knife!**

A butter knife never had it so good! Our putty knife goes through 14 steps to insure perfection. Any Red Devil tool you buy is your best buy. At paint, hardware, variety stores. ■ Try Schalk's Super Savabrush Cleaner - another fine Schalk Home Repair Product.

WRITE FOR FREE PAINTING HINTS BOOKLET



**Red Devil Tools.**

Dept. PM-3 2400 Vauxhall Road  
Union, New Jersey

Since 1872

14778-1

MAKE \$30 TO



\$100 A DAY

Some make more, some less

**MAKE BIG MONEY** • With an easily operated, highly efficient WALL WASHER, H.D. Hart makes \$30 to \$100 every day he works. E. Goss took in more than \$10,000 in one year. C.H. Jones wrote, "I made a net profit of \$1200 on one job." And no wonder - this machine washes walls 6 times faster and better than by hand and with no mess - no drop cloths needed.

**Your Money-Making Opportunity** • We want more men to go into this profitable business for them-

*We help you to start your own all-year business*

selves and enjoy independence - freedom from layoffs and bosses. Customers everywhere - homes,

offices, schools, churches, hotels, etc. How much you earn depends largely on you, but we help you to start and work with you for your success. What you take in is mostly profit. No need to rent shop or office; operate from home. Can start spare time until full time is justified.

**Ours is NOT a lease arrangement** • You are free to operate in an independent manner. You sign no contract. You own the detergent outright and are always your own boss...and every dollar you take in is yours to keep. You pay no fees, or dues, or royalties to anyone, and enough supplies come with it to return far more than your investment. Many earn the cost of the detergent in a week or two. It costs nothing to get the details...write TODAY.

### FREE BOOK! MAIL COUPON TODAY

VON SCHRADER MFG. CO.  
310 "W" Pl., Racine, Wisconsin

Send at once (no obligation) your FREE booklet containing information about your WALL WASHING MACHINE and how I can start my own permanent, profitable business.

Name \_\_\_\_\_

Address \_\_\_\_\_

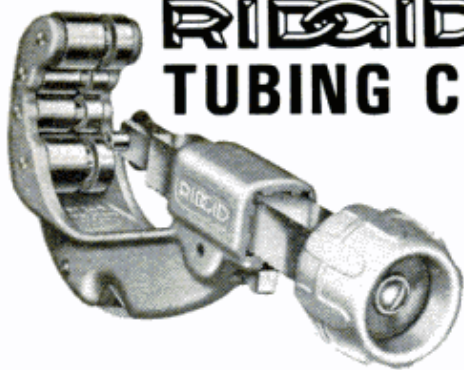
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**Lose No Time - Send Coupon Today for All the Facts**



Save time on all tube cuts  
with a fast-action

## RIGID No. 205 TUBING CUTTER



Cuts all  
Copper,  
Brass,  
Aluminum Tube  
and Thin-Wall  
Conduit

### LOOK AT WHAT YOU GET:

1. Slide-to-size feed gives instant adjustment to tube size.
2. Enclosed feed can't jam.
3. Fold-in reamer is always handy, but out of way.
4. Grooved rollers let you cut tube right at flare . . . stops waste.
5. Extra-wide tube size range . . . 1/8" through 2 3/8" O.D.
6. Rollers smooth tube ready for soldering.
7. Feed screw handle holds spare cutter wheel.

You can't get more in any tubing cutter made, so for fast, perfect tube cuts everytime get a RIGID No. 205 Tubing Cutter from your Dealer today!

THE RIDGE TOOL COMPANY  
ELYRIA, OHIO, U.S.A.

**RIGID**



**MAN-SIZE  
Economy  
ALL-GEAR-DRIVE  
TRACTOR**  
Garden-Size Price

With 48"  
mower,  
60" & 36"  
available.

9 - 10 - 12 - HP!

**NO BELTS IN DRIVE-TRAIN!**



6  
MODELS

25  
ATTACHMENTS



**Economy** handles your big—tough jobs, plus mowing and everyday tasks. Larger size and weight gives you more pull-power from engine horsepower. Extra leg room for all-day comfort. Automotive steering and drive-train including clutch, 3-speed transmission, 176 to 1 reduction in low gear. Quick change attachments for farm, lawn, snow, woodland. See your dealer or write for free catalog.

**ENGINEERING PRODUCTS CO.**

1005 K-3 Anoka Ave., Waukasha, Wisconsin

## Keep Wheels from Falling Off

(Continued from page 224)

with improperly adjusted bearings lacks steering stability, has a tendency to shimmy and wander, and leads to abnormal tire wear.

With the adjusting nut properly in place, put the lock nut on the spindle. Install a new cotter pin and make sure its legs are spread wide—wrap them around the lock nut to be sure. Improper installation or failure to put on the cotter pin are other reasons for a wheel's working loose.

Finally, install the grease cap. It might be a good idea, though, to follow one maintenance trick used by many trucking garages. They coat the inside of the cap with some grease to keep water out of the front wheel bearings. Now you're ready to roll—with confidence.

### Rear Bearings? Hands Off!

We said earlier that rear wheel bearings should not be tackled except by a mechanic with the proper tools. Fortunately, it's not necessary to treat them as often—only when there's evidence that they're bad. There are a few reasons for this.

First, rear wheel bearings (one to each wheel) are tough to remove and usually require the use of a special rear-wheel bearing puller. You often have to remove the rear axle to get to the bearing.

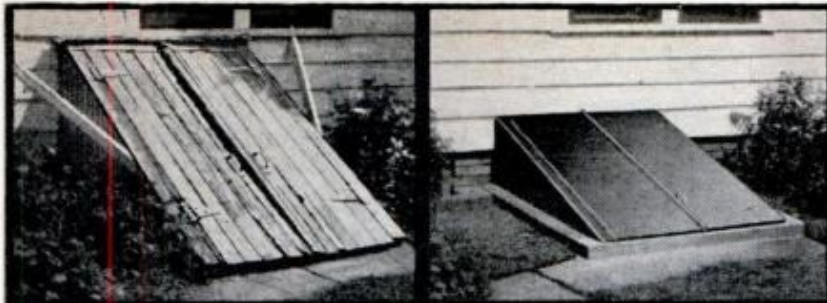
Secondly, tests prove that the life of a rear wheel bearing is at least 50,000 miles and even greater. On many cars, lubricant from the rear end penetrates to the bearings, keeping them constantly greased.

Thirdly, if a rear wheel bearing does go bad you don't stand as much chance of losing control of the car as you would should a front wheel pop off.

This doesn't mean, of course, that if you suspect a rear wheel bearing is defective you should neglect it. You should have it removed, inspected and replaced. A bad rear bearing gives out with a rough growl or grating sound which continues with the car coasting and transmission in neutral. To test it positively and separate it from similar noises that could be created by a bad part in the rear, such as a bad pinion or differential bearing, jack up the rear wheels and spin them by hand. If you hear the noise while doing this, you'd best have the bearing looked at. ★★★

**Albatrosses** become as seasick as any landlubber when they land aboard ships at sea. They waddle clumsily about deck, often unable to take off over the gunwales because of cramped space. Sailors call the larger albatrosses "gooney," or "goney," meaning dunce.





**EASY TO REPLACE**

**THIS MODERN WAY**

**Bilco®**

**AMERICA'S FINEST  
BASEMENT DOOR**

Here's the way to add amazing new beauty and convenience to your home. Replace that troublesome wood door with a modern Bilco. All steel, permanent, watertight, opens and closes at a touch. A new Bilco Door will do wonders for your home . . . and for you!

The Bilco Co., Dept. R-63 New Haven 5, Conn.  
Please send me your free illustrated folder and name of local dealer.

Name \_\_\_\_\_

Address \_\_\_\_\_

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

**The P-500 JET OUTBOARD Offers Twice the Fun in '65**

**5 H.P. WEIGHS APPROX. 29 POUNDS  
ONE YEAR WARRANTY**

12,000 Clinton Repair Stations Service This Engine  
Operates in 3" of water • Skims over weeds • Perfect  
for trolling • No prop • Separate 3-gal. gas tank

**JET INBOARDS**

**MACH 500**  
for 10 and 20 H.P. Motors . . . \$285

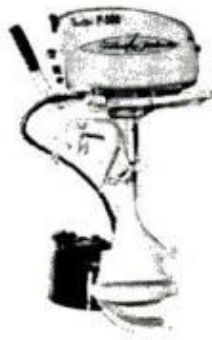
**MACH 1200**  
for up to 350 H.P. Motors . . . \$895

Send check or M.O. for full amount of  
P-500 Outboard \$123 and we pay other  
half shipping charges in continental 48  
states. For C.O.D. send \$30.00 down  
and pay balance and shipping on delivery.

Send for **FREE 12 page Catalog**

**PROPULSION RESEARCH, INC.**

7644 KNOX AVE. SO. DEPT. B MINNEAPOLIS, MINN. 55423



Retail  
**\$169**

Now! Limited Time  
One Month Offer

**\$119**

Plus \$4.00  
(1/2 shipping charge)

**ELECTRIC ARC WELDER \$14.95!**

**MAKE—REPAIR MOST ANYTHING MADE OF METAL!**

**LIFETIME BURNOUT GUARANTEE—10 day money back trial!**

Works on 110 volt plug in  
**10 WAYS! WELDS, BRAZES,  
SOLDERS, CUTS, MELTS most  
ALL metals! HEATS, SOFTENS,  
LOOSENS, THAWS, BENDS  
most ANYTHING. COMPLETE  
READY TO USE WITH face  
mask, clamps, arc torch, rod  
holder cables—and supply of  
welding, brazing carbon, sol-  
der rods, flux**

and ARC WELDING INSTRUCTION BOOK—Tells how  
YOU can use for CARS—HOME—FARM—SHOP or FAC-  
TORY all 10 WAYS—NO EXPERIENCE NEEDED!

**SEND ONLY \$2.00** (cash, ck, M.O.) and pay  
postman \$12.95 plus C.O.D.  
postage or send \$14.95 for PP del. in USA. **BEST  
WELDER FOR THE MONEY IN THE WORLD. FREE:**

EXTRA "Helpers" dark goggles if you order from this ad. Sold  
ONLY by **MIDWAY WELDER, Dept. DPM-3, Kearney, Nebraska.**



**3-Ton Hydraulic Press Set**



. . . for bending, forming, straightening, body work, etc.

You'll handle tough jobs like a pro with this new EnerPac Press Set (S-401). Includes hydraulic pump, hose, cylinder and C-clamp, plus hydraulic oil and coupler . . . everything needed for doing your own body work, sheet metal work, forming, laminating, embossing, etc. Compact, easy to use, low in cost—a real money saver for home handy-men and hobbyists. Send today for illustrated data.

**ENERPAC.**

BLACKHAWK INDUSTRIAL PRODUCTS COMPANY  
DIVISION OF APPLIED POWER INDUSTRIES, INC.



ENERPAC, Dept. AP, Butler, Wisconsin, 53007

Send free data on S-401 and other presses.

Name \_\_\_\_\_

Address \_\_\_\_\_

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

**Be Ready For Summer**

With  
Sailboats From

"FIREBIRD"



Fiberglass & Plastic. Factory  
assembled or save \$\$\$  
with do-it-yourself kit.

**\$109 to \$695**

Viking Eng. & Mfg. Co., Inc., Lakeville, Minn.  
Please send free brochure & name of closest dealer

Name \_\_\_\_\_

Address \_\_\_\_\_

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

**KITS  
AVAILABLE**



## World of Irradiated Miracles

(Continued from page 89)

the two chains. This, of course, happens at many points in the piece of plastic, to create an overall network of bonds. Radiation chemists call this "cross-linking."

That's the structural change that took place in the plastic in the impregnated wood. And it's the same kind of transformation that results in the plastic that has become a second skin for frozen turkeys and other birds. In addition to extraordinary toughness, this plastic has a quality known as "shrink memory."

Here's how that works. Polyethylene film is irradiated by a beam from an accelerator. It is then heated to the temperature at which the same plastic in *unirradiated* form would melt. The "cross linking" of molecules prevents the melting. But the plastic can be stretched to nearly any desired shape and size, then cooled under tension. Once cool, it remains at the larger size. When the plastic is to be used, it has only to be heated slightly above the unirradiated melting point and it obligingly tries to shrink back to its original size and shape. Thus it forms an air-tight, skin-tight fit around a turkey. In tubing form, it will pull itself tightly around the handles of tools and around wiring connectors to produce snugly fitting insulation that is moisture proof and heat resistant, which is one reason for its ready acceptance in the aerospace industry.

### "Vintage" Bacon for Army

Radiation is an amazingly versatile tool. Though its use in some fields is still largely experimental, it has already proven itself an effective way to sterilize and pasteurize food, as a transplanted German scientist, Dr. Arno Brasch, demonstrated in the Brooklyn laboratory of the Electrical Chemical Corp. he headed in the mid-1940s. Brasch used a capacitron. Radiation kills bacteria outright or slows their metabolism and reproductive rate.

The Army became interested in irradiated food in 1953—for the same reasons that Napoleon spurred development of canned goods 150 years ago. Modern efforts were made by irradiating ham, pork, chicken and beef, with the object of using them as rations that would need no refrigeration. They were sterilized in sealed plastic by means of high-dose radiation.

Since then soldiers have eaten sterilized bacon that has been on the shelf for two years and have found it highly palatable. Sterilized cooked hamburger at room temperature for a year reportedly looks, smells and tastes freshly-cooked.

Denmark, according to Dr. Kevin G.

Shea, chief of the AEC's processed foods section, may soon be exporting canned hams sterilized by radiation and heat.

Civilian needs are quite different from the military's. Limited preservation, or pasteurization—not sterilization—is of greatest commercial interest. The AEC has led the way in this area and reports especially good results with fruits and seafood.

The basic aim is to increase shelf life, with no loss of wholesomeness or good flavor. The storage life of fresh strawberries, for example, has been extended from about 10 days to two weeks. Oranges, cherries, pears and figs also last longer after irradiation. Lemons, on the other hand, pose a problem. They tend to become spongy and their vitamin-C content declines by about 50 percent.

### Seafood Shows Promise

The AEC reports that irradiation has pushed the refrigerated shelf life of seafood up to 30 days or more. Shrimp, for example, has been kept fresh for 40 days (14-21 is usual); crab from 7 to 35 days; haddock from 12 to 30 days.

The AEC operates small food irradiators at a number of research sites. These devices essentially are deep tanks filled with water to shield operating personnel from radiation. The isotope source—cobalt 60—is placed at the bottom in two rectangular vertical plates that glow with an eerie blue light. Food in watertight containers is lowered between the plates.

Last fall the AEC dedicated a new marine-products laboratory in Gloucester, Mass., serving opening-day guests irradiated clams, haddock and lobster. A relatively large cobalt-60 device was installed there. Under construction are a pilot grain irradiator, a mobile truck unit for processing fruit at any distribution point, and small units for use aboard fishing vessels.

When will you be able to sample succulent 30-day-old clams or shrimp? Right now it's anybody's guess. The Food and Drug Administration has to approve all irradiated foods and, so far, has okayed sterilized bacon, the use of irradiation to kill insects in wheat and wheat products, and the pasteurization of potatoes to keep them from sprouting in storage.

Of course, the Food and Drug agency has to move cautiously. But there's also a certain amount of unjustified public hesitancy. The fact is that such foods are as wholesome as foods processed by heat or freezing. The gamma rays tear right through the fish or fruit, explains Dr. Shea. The food most certainly is not "hot" or radioactive in any way.

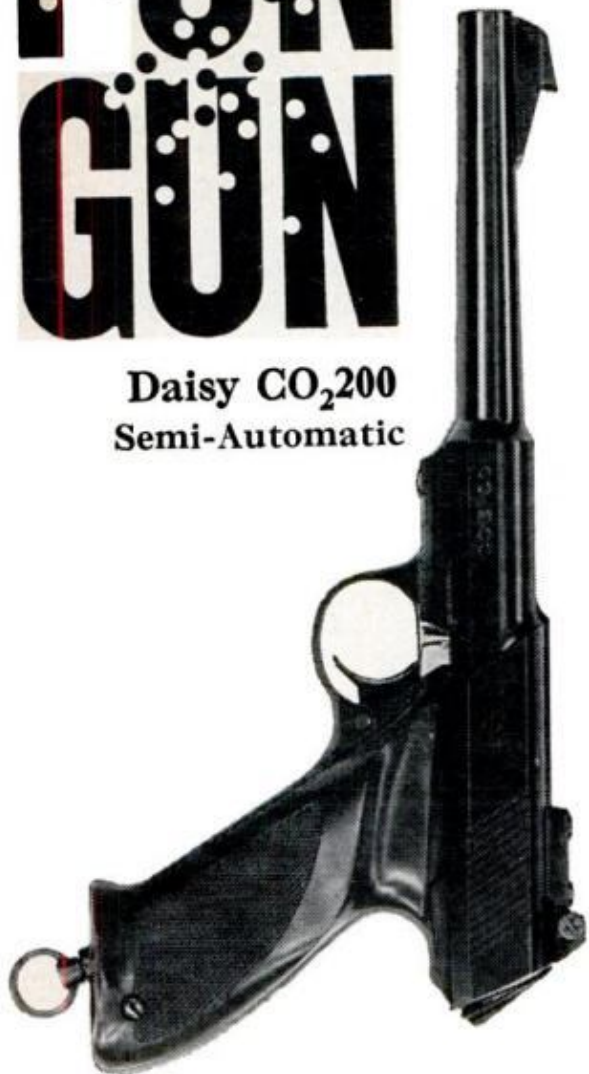
Sterilization by irradiation is also used

(Please turn to page 230)



# FUN GUN

Daisy CO<sub>2</sub>200  
Semi-Automatic



## Penny-pinching plinker with a punch!

Take along your DAISY CO<sub>2</sub>200 when you're fishing, or set up a range in your basement. This handsome handgun shoots inexpensive B•Bs at 400 feet per second. Gets its constant, controlled velocity from giant or standard Jett® CO<sub>2</sub> cylinders (more than 150 shots from the large size). Adjustable sights. A lot of gun and fun for any shooter. About \$18.50

# Daisy

CO<sub>2</sub> GUN DIVISION

For more information, see your local dealer or write DAISY MANUFACTURING COMPANY, CO<sub>2</sub> Division, Box 35R1, Rogers, Ark. 72756



Styled by Kurt Boehm & Associates

# Springfield

when you want better  
power equipment!

Suburban tractors, lawn tractors, power tillers. If they're Springfield they're better. Love-at-first-sight styling. Rigid, rugged construction. Unequalled comfort and handling ease. Completely satisfactory performance. Nationwide service, if ever needed. 4-season attachments. Lowest possible price for highest possible quality. Put all those together and they'd make any product better. That's why Springfield is better. You can prove it for yourself by talking to a Springfield owner or checking with a Springfield dealer. Tell you what. Visit a Springfield dealer to see why... your best choice is Springfield when you want better power equipment.

# Springfield

Product of QUICK MFG., INC.

The House of Power • Springfield, Ohio





**No**

**Ordinary Oil Filter  
Can Protect a Car's  
Engine for the 6,000  
Mile Oil Change  
Interval Specified  
by Car Factories . . .  
WIX Multi-Cel Filters  
Can and . . . . . Do!**

Whether you drive a car, truck or tractor go to the dealer who gives you your money's worth . . . the man who sells WIX Oil, Air and Fuel Filters. Get the extra bonus miles of filtering performance . . . you'll notice the difference with WIX, in improved mileage and reduced engine wear.



**WIX CORPORATION • GASTONIA, N. C.  
THE GOLD STANDARD IN FILTRATION**

## World of Irradiated Miracles

(Continued from page 228)

by Ethicon, a subsidiary of Johnson & Johnson. Sutures are put in air-tight packets and then irradiated with a cobalt-60 source. The rays kill microorganisms in the sutures, which remain more pliable and about 15 percent stronger than those sterilized the old way (heat).

Another interesting product has been developed by scientists at the Esso Research and Engineering Company. By hitting a petroleum derivative with gamma rays, they triggered a chemical reaction that produced "sodium alkane sulfonate"—a new detergent that appears to be more easily broken down by bacteria than any other in existence.

Esso's product, say company officials, could go a long way toward solving the foam problem in rivers and sewage.

There are other interesting uses of irradiation, too. The Dow Chemical Company produces ethyl bromide, a clear, sweet-smelling liquid reagent used in the chemical industry. Gamma rays act as a catalyst in the reaction between hydrogen bromide and ethylene gas. The biggest advantage of this process over the previous one is that the product is now virtually 100 percent pure—not so before.

### Quick-Cured Auto Paint

Electronized Chemicals Corporation, a subsidiary of High Voltage Engineering, radiates many different kinds of materials and devices, among them transistors. Radiation makes slight changes in the atomic structure of the transistors, enabling them to function faster.

The near future holds promise of even more interesting products and applications:

- Quick-curing of auto finishes, eliminating the need of heat and big ovens. It's reported that one of our car-makers is now testing an irradiation method that will produce a tougher, more indestructible color skin for your car.

- The grafting of one plastic to another. Polypropylene has much to recommend it as a textile fiber—it's strong, lightweight and cheap. But it doesn't hold dyes well and has such a low melting point that it sticks when ironed. Researchers recently succeeded in the radiation grafting of a second plastic to function as its outside surface. This provides a good dye site and heat resistance.

Add it all up—surgical supplies, plastic packaging, heat-shrinkable tubing, improved transistors, etc.—and you have an estimated \$100 million worth of products turned out last year. Not bad for an industry that's really just starting. ★★★

POPULAR MECHANICS





## Handy About Your Home? You're Our Kind of Guy!

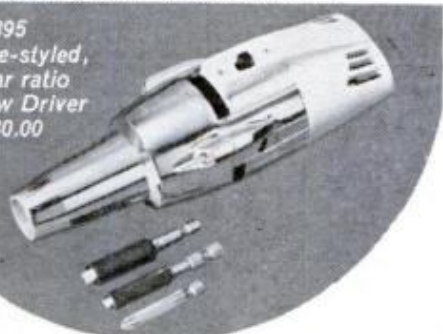
Take pride in your personal touches? Like adding your own improvements? Then Shopmate tools are built for *your* home workshop. Built to industrial standards, yet designed for home use, these tools make tough jobs easy, every project fun, whether you work in a mansion or apartment.

**Shopmate Electric "Zip-Screw" Driver:** 100 to 1 gear ratio assures positive power. Instant release "on-off" switch. It's reversible. 3.0 amp Life-Weld motor. 3 bits furnished for # 4 thru # 12 slot or Phillips head screws.

# SHOPMATE

Portable Electric Tools, Inc., 1200 E. State, Geneva, Ill.  
At Better Dealers—or write Dept. ZSD

Model 1895  
Appliance-styled,  
100-1 gear ratio  
Zip-Screw Driver  
Under \$30.00



## Print Your Own

Cards, Stationery, Advertising, Circulars, labels, photo and movie titles, church work, tags, etc. Save money. Sold direct from factory only. Raised printing like engraving, too.

### Own a Printing Business

Print for Others, Good Profit. Have home shop. Junior press \$15; Senior \$35 up. We supply everything. Easy rules. Pays for itself in short time. Write now for free details. **KELSEY PRESSES, Z-37 Meriden, Conn.**

## STOP AUTOMATIC TRANSMISSION TROUBLES TRANS-MEDIC

- ELIMINATES SLIPPAGE
- SMOOTHS ROUGH SHIFTING
- CURES SLUGGISH ACTION

AT SERVICE STATIONS AND AUTO SUPPLY STORES

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



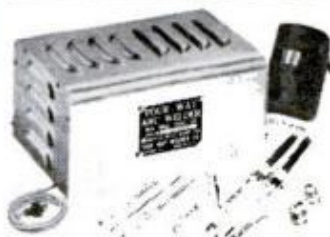
1,001 uses. Stainless shaft. Won't rust or clog! Use 1/8 HP motor or larger . . . 3/4 HP for up to 2,400 GPH; 450 GPH 80" high; or 1,800 GPH from 25" well, 1" inlet; 3/4" outlet. Coupling included free. **\$8.95.**  
**HEAVY DUTY BALL-BEARING PUMP.** Up to 5,200 GPH; or 3,000 GPH from 25" well, 1 1/4"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

MARCH 1965

## BEST LOW COST ELECTRIC WELDER MONEY CAN BUY ONLY \$14.95



**SEND ONLY \$2.00**

You Get: **FULL FACE SHIELD**, heavy metal cabinet, ground clamp, 12 ft. of heavy duty welding cables, twin carbon arc torch, rod holder, carbons, welding and brazing rods, flux, solder, instructions. **SEND ONLY \$2.00.** Pay \$12.95 plus C.O.D. charges on delivery or send only \$14.95 and we will ship prepaid. Order today.

**5-YEAR GUARANTEE  
10-DAY MONEY BACK  
TRIAL. WELDS, BRAZES,  
SOLDERS, CUTS  
ANYTHING OF METAL**

No comparison for performance and value. No experience needed to make or repair auto bodies, fenders, trailers, boats, furniture, farm equipment, garden tools, anything of metal. Use up to 1/8-in. welding rods and 1/4-in. carbons on up to 1/4-in. metal. Operates on any 110 V. line. **WORLD'S GREATEST WELDING VALUE.** Over 500,000 in use by home owners, farmers, hobbyists, mechanics. **5-Year unconditional guarantee.** Order on 10-day moneyback trial, if not satisfied return for refund. **LITERATURE FREE**

**FOUR-WAY WELDER CO.**

DEPT. W2-C, 1810 S. FEDERAL ST., CHICAGO 60616

## "MOBILE-COTTAGE"



# WAYFARER

Mark 5

- Sets up in minutes • sleeps 10,
- 14' x 7' living area • 60 cu. ft. storage • rustproof aluminum "sculptured" body • tows light—priced right.

Dealer Franchises Available.

### FREE WAYFARER BOOKLET

on complete trailer line

WAYFARER CAMPERS

582 Ford Blvd., Hamilton, Ohio

Send me your full-color folder on the Wayfarer Mark 2, 4, and 5 Campers

Name \_\_\_\_\_

Address \_\_\_\_\_

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

231



## Owner's Report—Oldsmobile

(Continued from page 99)

"Comfortable seats; I never tire when riding."—Arizona housewife.

"I am 6' 2" and I feel comfortable at the wheel."—Missouri real estate man.

**Me, too. But have you tried to relax in back without jamming the front seat forward against the dash?**

"Smooth acceleration from this Turbo Hydra-Matic transmission." — Virginia contractor.

"No chipping on the brushed bright metal dash."—Idaho laborer.

"Like the business-like dash."—Kentucky oil operator.

**The clean brightwork has a no-nonsense look—until it kicks a slug of sun into your eyes.**

"Effortless driving quality; it practically drives itself."—Virginia field engineer.

*Erratic gas gages, rattles and squeaks, and a limited view out the back lead the next group of five complaints. Here are representative remarks by owners:*

Gas gage is worthless, reads . . . 'Empty' after using 13 gallons from the 25-gallon tank"—Nebraska electronics engineer.

Gas gage needle swings as much as  $\frac{1}{4}$  to  $\frac{1}{2}$  a tank while driving."—Kentucky certified public accountant.

**"We've had a few variations," Olds told PM, "but the warranty will get you a good replacement."**

"Rattles like a log wagon."—Oklahoma professor.

"There's too much loss of rear view from wide rear supports of the top."—Utah transportation clerk.

**You need an outside mirror, just as most cars do. But don't place it too low; some owners found reflected view blocked by the rear fender kickup.**

"The two rear panels create large blind spots."—Massachusetts engineer.

"A big body but no room inside. Comfortable in front, very little legroom in back."—Pennsylvania machinist.

"Raised rear fenders and rear slope effect give a heavy, clumsy appearance, too dumpy and unbalanced."—Missouri auto mechanic.

**Some owners figure this gives the car a ready-to-race look—so there you are.**

*Here are samples from the final five of the common praises owners listed:*

# 14'

## Sea Sled



### The Unsinkable\* **CROSBY**

Ideal for fishing, hunting, skiing, boating fun. Rides smooth. Perfect balance. Greater deck space. Choice of colors. All fiberglass, double hull, foam filled. Unbelievable low price. Complete information, name of nearest dealer on request.

\*Under rated load conditions.

**CROSBY AEROMARINE CO.**  
Municipal Airport, Marianna, Florida



"With plenty of room to move about, trips are less tiresome than they were in my '60 Olds."—Alabama general contractor.

"Like the front end shape."—Kentucky furniture store manager.

"Excellent instrument arrangement with large, graduated fuel gage."—Louisiana oil field roughneck.

"It's heavy and holds the road, a smooth running automobile."—New Jersey construction foreman.

"Mechanical reliability is the outstanding feature. My repair bills are practically non-existent."—Kansas attorney.

**That's what makes horse races.**

*There are a few sour notes left in the Olds symphony. Transmission and carburetor trouble lead these last five complaints.*

"After 2000 miles across country, transmission burned out. Dealer thought tight adjustment at factory kept oil from rear plates."—Utah bank trust officer.

"Don't seem able to get carburetor adjusted."—Retired Alabama salesman.

**Olds owners aren't alone here. Carb adjustment seems to be joining music box making as a lost art.**

"I would like about two inches more headroom."—Tennessee pipefitter.

"At around 70 mph, it has a slight tendency to wander. Seems that the front end tries to get out of the way so that the back end can pass."—Kentucky civil servant.

**Anyone planning a trip on Kentucky roads better watch out for this guy.**

"The car needs side molding located to protect the paint from other people's doors."—Wisconsin police officer.

*There you have it—the report on the '65 Olds from the test drivers who know it best, the owners themselves. ★★*

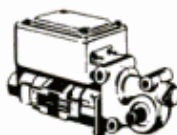
## Radio-Controlled Watchdogs

British police dogs will soon be controlled by their masters' voices, broadcast to them by radio. Special radio equipment to be worn by patrol dogs is being developed at the Royal Aircraft Establishment at Farnborough, England.

In addition to their usual security work, the dogs of the Ministry of Aviation Dog Training School have already played an important role in crash investigations by their recovery of small fragments of accident debris. Attaching "bleep" radio transmitters to the dogs, allowing them to be tracked by one man throughout their solo security patrols, is foreseen as a future development.

MARCH 1965

## GOVT. SURPLUS AND OTHER BARGAINS SAVE UP TO 90%



**1500-1 GEAR HEAD MOTOR**  
Speed 6 RPM @ 24 V.D.C. Reversible. 5 AMPS. Also runs well on 12 V.D.C. on reduced power. Excellent for small drive unit for small winch, toy cars, capstan, etc. Has 5/8" drive shaft. Shpg. Wt. 7 lbs. Like new. Tested prior to shipment. Approx. GOV'T COST \$97.50. Just **\$12.95**

**12V RETRACTABLE LIGHT** Contains 8" seal beam light. 250 watts. Self-contained 12V retract motor drives light mechanism from 0° to 90°. Excellent for trucks, tractors, construction, hunting, etc. Shpg. wt. 9 lbs. NEW. Approx. GOV'T COST \$65. Only **\$9.95**.



**HEAVY DUTY MAGNET** Fantastic power, will pull 125 lbs. on steel block. Excellent as underwater retriever. Picks up all ferrous metals. Dim. 4" x 2" x 1 3/4". **\$7.95**.



**175 AMP D.C. WELDER** burns 1/8" to 3/16" rod at 24 to 43 V. Ideal for farm, workshop, etc. Can also be used as an DC power source. Complete unit consists of new 9 h.p. B & S engine. All ball bearing construction. Direct coupled to 175 AMP Gen. Portable wheeled frame. Control rheostat and reactor coil & rod. 1 yr. factory warranty on defects of parts, and workmanship. Shipping weight 200 lbs. A \$450 value **\$199.50**

**DC JET GENERATOR ARC WELDING KIT** Complete with GE Type CM-77 Generator (30 volts D.C., 400 Amp., 3000 RPM up; ampere rating is for continuous duty, intermittent amperage is 500 to 600 amps.), also 2 rheostats, 1 voltage reg., 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 items guaranteed pre-tested. Wt. 110 lbs. Approx. GOV'T. COST \$700. All items, now only **\$64.50**.



### ELECTRIC STORAGE BATTERY

**WINCH** For use on 12 V. D. C. Heavy-duty ball bearing construction. 160-1 gear reduction. Reversible spool will handle 80' of 1/4" cable. 2000 lb capacity. Ready to install & operate. 19" x 9" w. x 8" h. Excellent for jeeps, trucks, boats, etc. Complete with mounting bracket, shpg. wt. 60 lbs. Approx. Gov't cost \$400. New, Model E. 90-day guarantee. Special **\$56.50**. Plus \$3.39 Fed Tax.



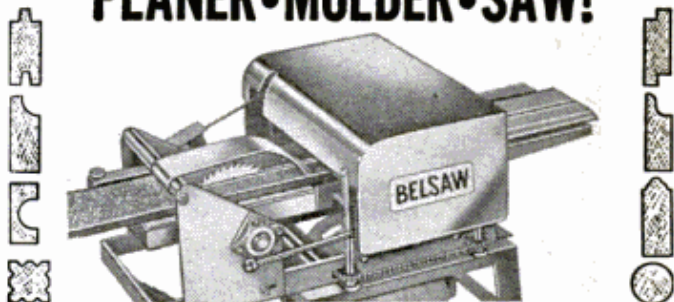
### NEW! BIG! 1965 CATALOG

Send 25¢ for your copy of this new and amazing catalog containing 1000's of bargains in hydraulics, electric precision tools, marine items, automotive etc. for hobbyist or industrial. Order from this ad. All prices FOB Culver City, Calif. 50% deposit for COD. Send check, cash or money order.

## AIRBORNE SALES CO. DEPT. PM365

8501 Stellar Drive • Culver City, Calif., Box 2727

## PLANER • MOLDER • SAW!

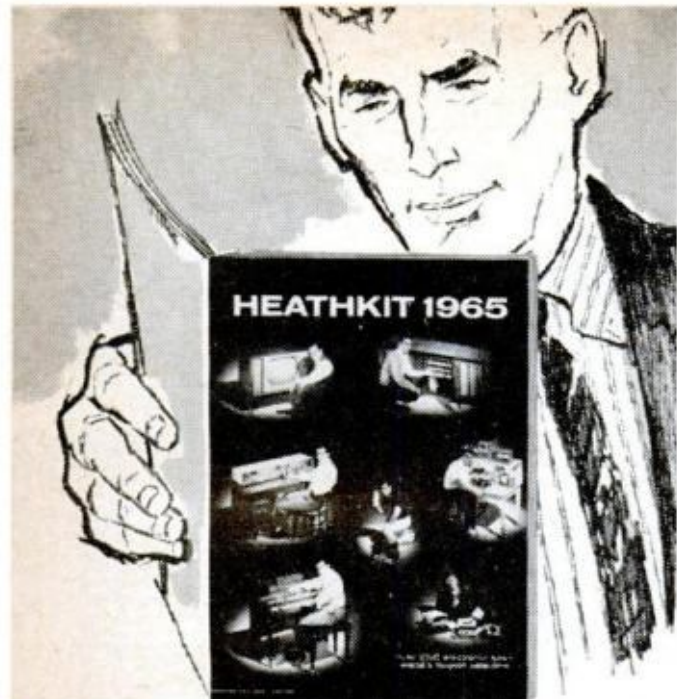


Now you can use this ONE power-feed shop to turn rough lumber into moldings, trim, flooring, furniture... ALL popular patterns. RIP... PLANE... MOLD... separately or all at once with a one HP motor. Use 3 to 5 HP for high speed output. Low Cost... You can own this power tool for only **\$30.00** down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

Send postcard today for complete facts.

**BELSAW POWER TOOLS**, 905 Field Bldg., Kansas City 11, Missouri





## Owner's Report—Dodge

(Continued from page 94)

rriors brought praises from the next set of owners. Here are samples of the most popular remarks, numbers six through ten:

"The upholstery is finished off so neatly."—Colorado electronic technician.

"The interior fabrics are durable."—Maryland maintenance supervisor.

"It seats you so you look down on the hood and dash, not out from behind them."—Arkansas laboratory technician.

"The style of the body makes parking very easy."—Vermont teacher.

"I like the layout of the dash. Several of the knobs have a dual purpose and everything is handy."—Pennsylvania machine operator.

"I like the appearance and the ease of reading various instruments."—Nebraska salesman.

**But reading the horizontal speedometer accurately between 50 and 70 takes a hawk-sharp eye.**

"Plenty of headroom for the 'tall ones'".—Oklahoma retiree.

"Lots of legroom. Doors are wide so it is easy for a six-footer to get in and out."—Kentucky salesman.

"The 440 has the appearance of a larger car and a family of six does not have problems riding in it."—Maryland painter-decorator.

*Thoughtless location of ashtray and lighter, poor bumpers, and wind noise are among the next crop of disappointing Dodge characteristics. Here are owners' comments illustrating numbers six through ten:*

"The front ashtray is too close to the dash to put out a cigarette in it."—Oklahoma insurance agent.

"The cigarette lighter is hidden in the dashboard. You'll scrape your knuckles getting it out."—North Carolina retail supervisor.

**With knuckles bleeding, the auto editor agrees heartily. When is someone in Detroit going to design a decent dash ashtray?**

"Lacks bumper protection. The rear end is too easily damaged."—Tennessee accountant.

"Not enough protection in front and back to prevent other cars from damaging your fenders. My chrome is cracked already."—Pennsylvania teacher.

"I would like to know someday to eliminate this wind noise."—South Carolina field worker.

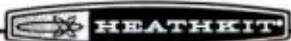
"The wind whistles in around the top of the front windows."—Virginia communications engineer.

"The chrome strip along the sides is

(Please turn to page 236)

## EXPLORE... The Exciting World Of Electronic Kits With This New FREE 1965 HEATHKIT Catalog!

Space-age fun at 50% savings! Build your own stereo/hi-fi, marine electronics, color TV, electronic organ, portables, ham radio, plus many more! No special skills, talents or tools needed! ... find out how simple it is. Tear out coupon for your Free Catalog now!



**HEATH COMPANY, Dept. 17-3**  
Benton Harbor, Michigan 49023

Please send FREE 1965 Heathkit Catalog.

Name \_\_\_\_\_ (Please Print)

Address \_\_\_\_\_

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

Prices & specifications subject to change without notice.

CL-190R

## WORKING WITH WOOD?

**FILL HOLES, DENTS AND CRACKS WITH**

Makes a smoother job, blends with unfinished wood, no shrinkage.

**Wood Patch**



**Putty Stik**  
PATENT PENDING

Fills Nail Holes and Blemishes  
Save finishing time... apply prefinished paneling... set nails... and putty last. Choice of 35 wood colors.

At Your Dealer, or Write

**FIC FOREST INTERIORS CORP.**  
P.O. Box 1848, SEATTLE, WASH. 98111



# SURPLUS SALE

GOVT. SURPLUS  
EXCESS INVENTORY  
BANKRUPT STOCK



**400-AMPERE WELDER**  
• Item #156. Heavy duty. Ready to use. Built-in blower, reactance, current control, pulley, etc.  
• Drive with gas engine, tractor, etc. Will handle heaviest work. Wt. 100 lbs. Gov't Cost Over \$400.  
Sale ..... **\$119.95**

**BATTERY HYDRAULIC PUMP**

• Item #920-A. 12-volt motor driven 1000 PSI pump. Use for snow plow and cultivator lifts, hydraulic presses, etc. Size 15"x17"x6". Wt. 24 lbs. Gov't Cost \$175. Sale .....



**\$18.49**

**50-AMPERE DC GENERATOR**

• Item #1X07. Expensive ball bearing DC generator. Will furnish 50-amps. at 12 volts. Many applications. Size 7"x11". Wt. 25 lbs. Gov't Cost \$151. Sale .....



**\$11.90**

**BATTERY WORM GEAR WINCH**

• Item #321. Powerful (2000 lb.) 12-volt, ball bearing, battery winch. Excellent for auto wreckers, farms, trucks, tractors, boats, etc. Holds load any position. Holds 80 ft. 1/4" cable.  
• Size 19"x15"x9". Wt. 64 lbs. Gov't Cost \$275. Sale .....



**\$84.50**

**EXAMPLE BARGAINS IN CATALOGS**

- \$269. Power Plant, 115-v, 1250-W. **\$149.50**
- \$395. Transfer Switch, 200-a, DPDT. **\$ 28.71**
- \$ 60. Air-Vacuum Unit, Delco. 12-v. **\$ 17.95**
- \$ 48. Surveying Level with Tripod. **\$ 27.95**
- \$ 29. City Dial Telephone, W.E. **\$ 7.95**
- \$ 35. Electric Timer Switch, 115-v. **\$ 8.91**
- \$ 11. Fish-Worm Shocker. **\$ 3.98**

**30-1 WORM GEAR REDUCER**

• Item #1317. Leading make, ball bearing worm drive unit. Use for grain augers, hand saws, drill presses, etc.  
• Ratio 30 to 1. 1/2 h.p. Size 6"x7"x7". Wt. 22 lbs. Gov't Cost, \$79.00. Sale .....



**\$21.62**

## SPECIAL OF THE MONTH!

**GOVT AC GENERATOR**



• Item #626. Heavy duty, brand new surplus. Excellent for emergency or full time use. Drive with engine, farm tractor, etc.  
• 3,000-watts, 115-v, 60-c, 1200 RPM Full ball bearing. Finest Gov't design. Complete with voltmeter, control, etc. Size 21"x14"x20". Wt. 260 lbs.

Cost Over \$450

Sale .....

**\$147.90**



Send 25¢ stamps for  
**THREE War**  
Surplus Mechanical-  
Electrical Catalogs

All items FOB LINCOLN

**SURPLUS CENTER**

Dept. PM-35, LINCOLN, NEBR.

# POLYSEAMSEAL®

**TUB CAULK • TILE ADHESIVE**

Pure White • Elastic  
Permanent

Sticks like glue! 101 Household Uses!

L. W. FERDINAND & CO., INC., SIMSBURY, CONN.



**BUY DIRECT  
• SAVE ON •  
TILLERS • TRACTORS**

Full line of attach-  
ments for mowing,  
gardening, farming.

**FREE CATALOG  
& PRICE LIST**

6-9-12 H.P.



4 wheel tractors

**RED-E TRACTOR CO.**

RICHFIELD, WISCONSIN  
4th Street

**For a Complete Book of Professional Secrets**

Plus Illustrations  
Of Products  
And Prices Of  
Over 300 Different  
Molds You Can Use  
To Make And Sell  
Ornamental  
Concrete Items . . .  
SEND \$2.00



rushed to you by **FIRST CLASS MAIL**

CONCRETE MACHINERY COMPANY, INC.  
839 Lenoir Rd. - P. O. Box 99 - Hickory 2, N. C.

Piano-hinge top,  
two drawers and  
tote tray. 20x9x  
9 1/2 steel box in  
blue finish.

At Hardware Stores or Write:

**HUOT MFG. CO.**  
555 N. Wheeler St.  
St. Paul 4, Minn.

Deluxe hip-roof  
tool-saver

**HUOT  
TOOL  
BOX**

FOB \$18.00  
St. Paul



Model 110

"She finally gave back my  
**SPRAYIT**"



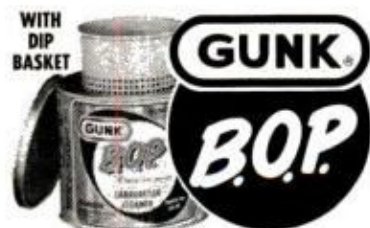
You buy a Sprayit because it's not only a fine professional paint sprayer, but also perfect for spraying insecticides, for inflating tires and toys. Then your wife finds out *she* can use your Sprayit for jobs like de-mothing closets, applying waxes . . . and just try to get it back!

Home, shop or farm models available . . . all guaranteed 5 years at most hardware, auto and paint supply stores.

**SPRAYIT**



**THOMAS INDUSTRIES INC.**  
207 E. Broadway, Louisville, Ky. 40202



**DO-IT-YOURSELF  
CARBURETOR  
AND  
SMALL PARTS  
CLEANER**

AT SERVICE STATIONS, AUTO & HARDWARE STORES

**BUY GREAT NECK HAND TOOLS**

... for long-lasting performance  
**Precision Balanced  
NAIL HAMMER**



One-piece, forged steel, rubber-cushioned, no-slip grip



**GREAT NECK** SAW MFRS., Inc.  
MINEOLA, N. Y. — SEE YOUR LOCAL STORE

MARCH 1965

235



# LIVING IS

...CARAVANING WITH THE  
STREAMLINE ROYAL ROVERS

Streamline's Royal Rovers, the nation's fastest growing travel trailer caravan, offers new fun, friendship and travel adventure. Like the pleasures of visiting the finest attractions on the North American continent, fish fries, pitch-ins, dances, song fests, plus a whole gaggle of goings-on that makes caravanning real living!

You can make all this and more possible by joining the Streamline Royal Rovers. Write today for a free color brochure on the lifetime guaranteed Streamline travel trailers, travel cars and complete information on the Royal Rovers.

**STREAMLINE**  
TRAILER COMPANY  
Dept. P  
10840 Central Ave. So. El Monte, Calif.  
1213 Main Street Thorntown, Indiana

## STARCRAFT 65

new fishing boats—every inch keepers!

Starcraft '65 measures its fishing boats just as you measure a fish. A straight line down the center from bow to stern. Centerline length. Some people measure boats by gunwale length—which is like measuring a fish by half its circumference. Doesn't make sense. For greater values, choose from Marlin, Super Duty, Seafarer, and Sea Scamp. 12 to 16 ft. Write for free '65 catalog. Starcraft Boat Company, Dept. PM-3, Goshen, Indiana.





### ROUTERMATIC

**MAKES EVERY MAN  
AN EXPERT  
WOODWORKER**

Clamp this amazing tool to your electric drill and route, mortise, trim, shape, mitre and tenon like a professional cabinet maker. Even inlays become easy.

Handles any job better by letting you take the tool to the work. Routermatic is precision made, sturdy, lightweight. Use it once and you'll wonder how you ever got along without it. Only \$6.95 including \$1.50 router bit. No C.O.D.'s. Can't be sold thru stores at this low price. Descriptive folder on request.

**COMP-TOOL, Inc.**  
355 Prospect Rd., Ashtabula, Ohio

## Owner's Report—Dodge

(Continued from page 234)

up too high. It should be across the center of the body and doors to protect them from being struck, scarred and scratched by doors of cars parked alongside."—retired Alabaman.

**He's right. The sheet metal bulges out beyond the protection of the molding.**

"The chrome strip is a dirt catcher."—Pennsylvania foundry layout man.

"The four-speed manual transmission will not shift smoothly back into first and second. And if you shift fast, the body bounces on the rear end. I have heavy duty shocks but it doesn't help much."—Pennsylvania maintenance man.

"Torque-Flite shifts hard into second and high gear."—Colorado Air Force master sergeant.

**Reports saluting Dodge brakes and warranty lead the list of widespread praises. Here are numbers 11 through 15:**

"Stops are comfortable even when I have to stop fast."—Arizona electrician.

"The brakes are excellent."—South Carolina engineer.

**In six hard stops from 60, the required pedal pressure increased gradually to only 50 percent above first-stop requirements. We'd call that calm and collected braking.**

"You can't beat the five-year or 50,000-miles warranty."—Tennessee salesman.

"I've gotten excellent service from Chrysler products with minimum expense and trouble."—South Carolina real estate man.

"Chrysler products stand up, for me, better with less maintenance cost."—Oklahoma Air Force officer.

**With critical parts covered by a long warranty, the factory is inspired these days to exercise special care in building the car.**

"I don't think there's a car with a smoother transmission. You can hardly tell when it changes speed."—Nebraska restaurant worker.

**Grille styling and dash panel prompt the leaders among the last five complaints. And although Dodge has whittled idiot lights down just to the oil pressure indicator, owners won't let up—some want a gage there, too. Here's the final list:**

"Would like to see grille changed to correct its drooping appearance from the front."—South Dakota court officer.

"I prefer the horizontal lines of my '61 Lancer's grille to the vertical lines on the Coronet's."—Retired Washingtonian.

"Dash panel poorly engineered; bright light indicator impossible to see when sitting erect; can't read various control knobs at night."—Pennsylvania salesman.



The car's interior is handsomely lighted, but Dodge could have done a better job on the instruments.

"The dash, although handsome, is made of a great deal of coated plastic. I have my doubts as to its future wear."—Pennsylvania teacher.

"There should be an oil gage. I watch the instruments closely."—Nebraska electronics instructor.

"Hood ornament is ugly; body style too wide in front."—Arkansas school librarian.

"The power steering is oversensitive."—Massachusetts purchasing director.

The power comes on, in Chrysler products, as soon as you start turning. It can seem nervous until you're used to it.

There you have the reactions, both enthusiastic and disappointed, by '65 Dodge owners from across the country. ★★

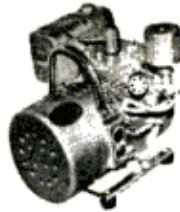
### Fish Eat Weeds, Save Power

Baby grass carp—14 tons of them—make gluttons of themselves to keep lights burning in England. By thriving on fast-growing weeds in the Cavendish Dock, which supplies water to the cooling system of the electric power station at Barrow-in-Furness, the two-inch fish free the clogged inlets, keep water flowing.

The carp were flown in from Hong Kong in water-filled plastic bags packed in a heated box and then put in a 3,000 gallon fresh-water tank (gradually made as salty as the dock water). A few weed-hungry London Zoo carp prompted the Central Electricity Generating Board to order the fish. Eventually, the babies will munch their way to 70-pound adults. One problem remains: do these fish breed in England? If not, the whole operation may have to be repeated in a few years.



## EVERLITE\* World's THRIFTIEST Light Plants



### NEW TRANSISTOR ALTERNATOR REPLACES GENERATOR

Now a Service Free Light Plant built with a transistORIZED alternator. Offers 30% greater efficiency—more power for less fuel. Terrific service life—no brushes to arc and burn. No more commutator to wear, no collector ring trouble. And best of all it costs no more to "go modern with Everlite." Thrifty 1200 watt, 115v. AC plant powered by a rugged easy starting 4 cycle engine—leader priced. Model 869-12T. Wt. 65 lbs. as illustrated . . . . . **179.50**  
f.o.b. factory

\*Trade-Mark Registered. All sizes available—can finance. Write for catalog. Special models for public utilities—Approved for Civil Defense. Write

**MASTER MECHANIC MFG. CO., Dept. A35, Burlington, Wis.**  
Southern Customers Write to Dept. A35, Box 65, Sarasota, Florida



## 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-35  
KANSAS CITY 11, MISSOURI

Please send me complete information

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

Street \_\_\_\_\_

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

**FORGET IT...**

GET A

**CHORE MASTER**

Leisure loving gardeners need one tool. CHOREMASTER! Puts labor-saving power into ground breaking, cultivating, weeding. Dependably built by the world's largest tiller manufacturer. Write for literature.

**MAGNA AMERICAN**  
CORPORATION

Dept. 132—  
Interstate 75,  
Evendale,  
Cincinnati, Ohio  
45215



# PHIL RIZZUTO

# DISCOVERS A NEW NATIONAL PASTIME!

Network Sportscaster and Ex-Yankee Shortstop



I HAD NO IDEA HOW MUCH FUN IT COULD BE TO MAKE THINGS OF WOOD—NOR HOW EASY IT COULD REALLY BE!

## WITH AN AMCO 8" TILT ARBOR POWER SAW



I'M CONSTANTLY AMAZED WITH THE ACCURACY, SPEED AND EASE...

**PERFORMS EVERY OPERATION OF FAR HIGHER PRICED POWER SAWS.** Crosscuts, rips, mitres, dadoes, cuts compound angles, bevels, makes mouldings and coves! Blade tilts while the ample 11" x 13" ground cast iron table stays level, locks securely at any angle to 50°; raises, lowers 0"-2 1/4". Patented tilt mechanism has accurate etched scale. Patented motor mount takes any 1/4 hp or larger motor, keeps belt tight for full power, perfect alignment at any angle. Uses standard 8" blade. Saw insert removes for insertion of standard dadoe heads, cutters, etc. Accurate scaled mitre gauge incl.

**BUY DIRECT FROM AMCO FACTORY SAVE 80%**

**MANY REASONS FOR THE AMAZING LOW PRICE.** Improvements over 32 years plus 3 patents have cut manufacturing costs drastically. Parts cast, assembled in our own plant; perforated ground cast iron table top cuts weight, material cost, finishing time; factory-to-you selling eliminates middleman profits. Such economies and know-how give you one of the world's greatest power tool values.

SOLD WITH 10-DAY MONEY-BACK GUARANTEE.

**FILL IN AND MAIL THIS MONEY-SAVING COUPON TODAY!**

AMERICAN MACHINE & TOOL CO., Dept. PM-35B, Royersford, Pa.

- Send AMCO 8" Tilt Arbor Power Saw at \$14.95.
- Include standard Rip Fence #354 at \$3.50
- or longer Rip Fence #354C at \$4.50 (for use with cabinet base).
- Payment in full enclosed \$..... or
- \$3 deposit enclosed, balance C.O.D. I MUST BE FULLY SATISFIED OR WILL RETURN WITHIN 10 DAYS FOR FULL REFUND. No questions asked.
- Send FREE catalog of America's greatest lower tool values.

NAME .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

(please print)

... THE LOW COST OF THESE PROFESSIONAL QUALITY TOOLS HAS TAKEN NOTHING AWAY FROM THEIR ABILITY TO DO A JOB ...



... I SURE RECOMMEND AMERICAN MACHINE POWER TOOLS TO ANYONE ...



**PAY ONLY \$14.95**

f.o.b. factory less blade. Wt. 25 lbs.

If desired, RIP FENCE for easier work alignment, \$3.50 add'l.



Saw Unit mounted in cabinet base made from FREE plans furnished.

**FREE! CABINET BASE PLANS INCLUDED**

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 ... sheet of 3/4" plywood and 3-4 hours are all you'll need. Use your AMCO saw for cutting. Plans provide 27" x 24" work surface, 33" height, pullout sawdust bin, tool storage compartment.



# Buy Below Wholesale



JEWELLED

**LENDAR WATCH \$2<sup>33</sup>**  
WITH-OUT BAND

movement. Styling. Time and date, too. Sweep hand, gift case, stainless steel, water resistant, and synthetic. METAL EXPANSION BAND.

WITH-OUT BAND

movement. Styling. Time and date, too. Sweep hand, gift case, stainless steel, water resistant, and synthetic. METAL EXPANSION BAND.

## Fabulous 2-Piece KNIT SUIT

ONLY \$4<sup>50</sup>

- Fine wool.
- Beautifully tailored abroad.

## DERRINGER PISTOL



\$5<sup>99</sup>

Beautiful blued finish. Double barrel fires two shots. Product of West Germany's precision craftsmanship.

- Short cut plan guides you step by step
- Previous experience unnecessary
- Start without investment in merchandise
- Start anywhere—city, town, rural area



I SHOW YOU WHAT TO DO  
—HOW TO DO IT

B. L. Mellinger, Jr., Famous World Trader, says: "I reveal secrets of Import-Export that have made a fortune for me. My plan gives you hundreds of overseas suppliers—opportunities for thousands of exciting imports."

### DO NOT ORDER FROM US

Plan shows where to get buys like these for big profit sales. Prices shown are direct from suppliers abroad.

DETAILS ABOUT FREE PORTS COSTS SENT FREE



4-TRANSISTOR TAPE RECORDER \$6<sup>70</sup>

Complete with powerful built-in dynamic speaker. Records—Plays Back—Erases—Rewinds. Includes microphone, battery, tape, reels, etc.



ELECTRIC RAZOR \$1<sup>70</sup>

Product of Swiss craftsmanship... Shaped to shave the heaviest beard. Maker guarantees for 2 full years. With cord, head guard and brush.



DOGGIE RADIO \$3<sup>10</sup>

Soft cuddly pup has transistor radio cleverly concealed inside. Nose is control button. Luxurious leather-like vinyl coat.

# START YOUR OWN BUSINESS HOME IMPORT

with DAZZLING BARGAINS like these...

## AMAZING NEW PLAN STARTS YOU FAST

Thousands of amazing import bargains can lead you to opportunities far beyond your wildest dreams. Start now at home, spare or full time. Cash in now without previous experience or capital investment. Pocket cash even before ordering merchandise! Sparkling imports bring first day profits. Beginners—make your first import transaction 10 minutes after you receive my drop ship plan. Bargains go fast to stores, premium users, to friends and others.

... And, these are only a few of the hundreds of import bargains you can get to make fantastic profits of 200% and more... here are examples of other high profit imports:

BLACK FOREST CLOCK . . . . .	\$ .63	TEAKWOOD CHEST . . . . .	\$ .90
ELECTRIC TRAIN SET . . . . .	1.50	WINDBREAKER JACKET . . . . .	1.40
CIGARETTE LIGHTER . . . . .	.21	STAR SAPPHIRE RING . . . . .	6.00
ELECTRIC CARVING KNIFE . . . . .	1.50	ELECTRIC HAIR DRYER . . . . .	1.37
8mm MOVIE PROJECTOR . . . . .	2.80	Products subject to availability, price fluctuation	

MELLINGER CO., Dept. P253, 1554 So. Sepulveda Blvd., Los Angeles, Calif. 90025

SEND NO MONEY...RUSH THIS AIR MAIL REPLY CARD for FREE BOOK, FREE DETAILS





## Meet our "Moonlighter" model

By day, it keeps  
budget-minded  
skiers happy

At night, it  
sneaks out quietly  
to go fishing

We named this new 33 hp model the "SKI-TWIN." Its high-torque power and fuel economy make it ideal for water skiing. Its low cost puts it within reach of modest recreational budgets.

The electric starting model gives you up-front control. The powerhead is sound-sealed and rubber-cushioned. Quiet is built in. You get a choice of four props to fit your boat and load requirements. No extra cost.

FREE! Two new catalogs. 1965 motors and boats. At your dealer, or write Evinrude Motors, 4059 N. 27th St., Milwaukee, Wis. 53216.

All of which makes it a wonderfully versatile motor. Skiers soon realize this and take it fishing. It trims the time to the fishing grounds, then throttles down to a smooth, steady troll. When you team the SKI-TWIN with a versatile boat like Evinrude's new gull-wing Sport-14, shown above, there's no limit to the fun you can have. Fishermen may even try a little water skiing.

What will boating come to next?

# EVINRUDE



FIRST IN OUTBOARDS

IN CANADA: PETERBOROUGH, ONT.

DIVISION OF OUTBOARD MARINE CORPORATION