

Popular Science

SEPTEMBER 1980
Founded in 1872/Vol. 217, No. 3

The What's New magazine

MONTHLY®

HIGHLIGHTS OF THIS ISSUE

Tapping the oceans' vast energy with undersea turbines
Seaworthy water wheels could capture the power that drives ocean currents. PAGE 72

Electronic mail: the coming revolution in message delivery
With satellite links, will postage stamps go the way of the Pony Express? PAGE 78

How to choose from all those glues
Which adhesive for which job? Here's help in picking what you need. PAGE 56

Smokey shrinks GM's V6 to a 50-mpg, 3-cylinder engine
Nothing exotic—just better turbocharging, carburetion, cooling; less friction. PAGE 48

Upgrade your home: Big special section
Wood in wet spots ... energy-saving lighting ... attic redo ... more. STARTS PAGE 101
COVER PAINTING BY DEAN ELLIS

CARS AND DRIVING

- PS car test: family-size compacts
—Who needs big cars? 39
- Smokey shrinks GM's V6 to a
50+ mpg three-cylinder engine . . 48
- Supercar from Germany
—ultra performance, ultra price . . 85
- AMC for '81—
smaller Eagles, sleek Renault 18i . 86
- The ideal burn: Lasers aid quest
for better engine combustion . . . 98
- Trouble-shooting quiz—match wits
with the diagnostic champs 138
- What you can do about car shake . 142

ENERGY NEWS

- Reflective insulating blind
traps solar heat 24

NEW IDEAS AND INVENTIONS

- Speech board recognizes 32 words . 23
- Test kit to find new uses
for Polaroid's skinny battery 26
- Dry-land sailing simulator 27
- Fiber-optic camera takes tiny
pictures where others can't 77

NEW TECHNOLOGY

- Tapping the oceans' vast energy
with undersea turbines 72
- Electronic mail: the coming
revolution in message delivery . . . 78

UPGRADE YOUR HOME —SPECIAL SECTION

- Upgrading what you've got 101
- Face-lift for
basement stairs 103
- Room at the top—make living
space from an unfinished attic . . 104
- Insulated garage door
plugs a major heat leak 109
- Trade an eyesore air conditioner
for a new stationary window . . . 110
- Skip the painting
—install a soffit and fascia 112
- Replace your old aluminum slider
with a hinged patio door 113
- Kitchen, bath, and vanity—now
you can use wood in wet spots . . 118
- Energy-saving lighting:
New watt-savers cut costs 124

What's New DIGEST

- Electric car 88
- Fuel saver: Navy's 603E trainer . . 89
- What's new in photography 90
- What's new in boating 91
- What's new in tools 92
- What's new in home improvement . 93
- What's new in electronics 94
- What's new for your car 95

SPACE AND AVIATION

- Bug-eyed plane
—cheaper than a chopper. 67
- How Shuttle astronauts are
suiiting up for space. 82

HOME AND YARD

- How to choose from
all those glues. 56
- Room with a view 96
- Earth-sheltered, sod-roofed home . 97
- The great flap over
DIY defogging of thermal glass . . 127
- Last call for Popular Science's
second FRP contest 154

REGULAR FEATURES

- PS readers talk back 6
- Calcu-letter 10
- Science newsfront 14
- Look and listen 21
- New ideas from the inventors . . . 22
- Recreation roundup 28
- Detroit report 30
- Alternate-energy answers. 32
- PS/What's news. 71
- Wordless workshop. 132
- Shop talk 134
- Taking care of your car 150
- "Say, Smokey—" 152
- PS readers' product information. . 176

EDITORIAL OFFICES 380 Madison Avenue, New York, N.Y. 10017
Published monthly by TIMES MIRROR MAGAZINES, INC., 380 Madison Avenue, New York, N.Y. 10017

SUBSCRIPTION SERVICE (Only mail regarding subscriptions should be sent to Boulder, Colo., address below). **New or Renewal Orders:** Send to: Popular Science Subscription Department, Boulder, Colo. 80302. One year \$11.94, 2 years \$22, 3 years \$30 in U.S. and its possessions. One year \$15.94, 2 years \$28, 3 years \$42 in Canada and elsewhere. Single copy \$1.50. **Subscription orders processed electronically.** All subscription adjustments: Write to Robert Harlan, Popular Science, P. O. Box 2871, Boulder, Colo. 80302. For change of address allow eight weeks; please give both old and new addresses. Notices of undelivered copies (Form 3579) to Mr. Harlan. Controlled-circulation postage paid at Effing-

ham and Salem, Ill. Publication number 493730. Popular Science is entered as second-class matter at the P.O. Dept., Canada. Microfilm editions are available from University Microfilms, Ann Arbor, Mich. 48106. ADVERTISING OFFICES New York: 380 Madison Ave. (10017), Tel. 212-687-3000; Chicago: 875 N. Michigan Ave. (60611), Tel. 212-8333; Los Angeles (Pacific West Coast): 3550 Wilshire Blvd., Suite 908 (90005), Tel. 213-380-1936. **Mechanics and Handicraft** ® Popular Science ® Copyright © 1980 by Times Mirror Magazines, Inc. All rights reserved. Printed in U.S.A.

Popular Science®

The **What's New** magazine

\$1.50
SEPTEMBER
1980

Good-bye to paper?
The coming revolution in
**ELECTRONIC
MAIL**

Who needs big cars?
**FAMILY-SIZED
COMPACTS**

Tapping ocean energy with giant **undersea turbines**

How to choose from
ALL THOSE GLUES

What you can
do about
CAR SHAKE

BUG-EYED PLANE
challenges
choppers

**SPECIAL
HOME
SECTION**

- Finding new attic space
- Using wood in wet spots
- Saving energy in lighting
- And much more

