

David A. Minster, NA2AA
Publisher

Becky R. Schoenfeld, W1BXY
Editorial Director

Dana Kasowitz, KC1SEB
Managing Editor

Leanna Figlewski, KC1RMP
Editor

Amanda Fahy
Sam Shaner, KE1SAM
Assistant Editors

Paul Bourque, N1SFE
Contest Program Manager

Phil Salas, AD5X
Kai Siwiak, KE4PT
John Stanley, K4ERO
Technical Editors

Dave Casler, KE0OG
Steve Ford, WB8IMY
Steve Goodgame, K5ATA
Sierra Harrop, W5DX
Jon Jones, N0JK
Bernie McClenny, W3UR
Rick Palm, K1CE
Pascal Villeneuve, VA2PV
Paul Wade, W1GHZ
Contributing Editors

Matt Ali
Layout & Production Specialist

Maty Weinberg, KB1EIB
Production Coordinator

David Pingree, N1NAS
Senior Technical Illustrator

Janet Rocco, W1JLR
Advertising Sales Manager

Bob Inderbitzen, NQ1R
Director of Marketing & Innovation

Steve Ewald, WV1X
Field Organization Supervisor

9 Second Century

The Future of DXCC



30 A Full-Power, Inexpensive Antenna Relay

Robert J. Zavrel, W7SX

32 An Antenna Remote-Control Tuning System

Nelson Sollenberger, KA2C, and Jeff Addleman, W3ADD

36 Product Review

Pascal Villeneuve, VA2PV

QRP Labs QMX 5W QRP Transceiver;
Chameleon PRV POTA Antenna (Heavy Kit);
LDG AAF5 Analog Audio Filter



52 Healthy Contesting Habits

Scott Wright, K0MD

54 Isle Royale National Park: A POTA Mini-DXpedition

Jon Oldenburg, AB9AH



56 Summits on the Air in the Navajo Nation

Charlie Brown, NJ7V

58 What Solar Eclipses Have to Tell Us

Gary Mikitin, AF8A, and Dr. Nathaniel A. Frissell, W2NAF



63 Special Section! Contest Season 2024 – 2025

79 Frequency Measuring Test – November 2024

Paul Bourque, N1SFE

80 The 2024 ARRL 160-Meter Contest

80 The 2024 ARRL 10-Meter Contest

81 The December 2024 ARRL Rookie Roundup – CW

95 A Look Back – December 1974



An icon next to an article means there's bonus content in the digital edition at www.arrl.org/qst.

Columns

Ask Dave.....	48
At the Foundation.....	94
Celebrating Our Legacy.....	97
Classic Radio.....	98
Club Station.....	82
Contest Corral.....	78
Correspondence.....	24
Ham Media Playlist.....	84
Happenings.....	75
Hints and Hacks.....	50
How's DX?.....	86
Member Spotlight.....	13
Public Service.....	61
The World Above 50 MHz.....	88
Up Front.....	20
100, 50, and 25 Years Ago.....	100

Departments

ARRL Section Managers.....	16
ARRL Special Service Clubs.....	83
Certificate of Code Proficiency Recipients.....	93
Convention and Hamfest Calendar.....	92
Field Organization Reports.....	85
Guide to ARRL Member Benefits.....	14
Ham Ads.....	124
Index of Advertisers.....	126, 127
New Products.....	94
Officers, Division Directors, and Staff.....	15
QST Cover Plaque Award.....	47
Silent Keys.....	101
Special Event Stations.....	90
Strays.....	91
Volunteer Monitor Program Report.....	81
W1AW Qualifying Runs.....	93
W1AW Schedule.....	28



Our Cover

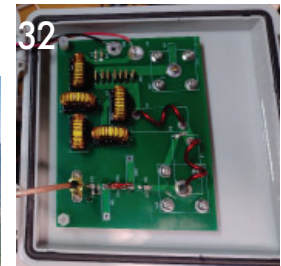
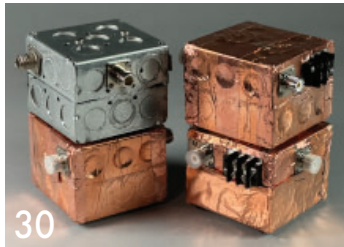
Robert J. Zavrel, W7SX, needed multiple relays for a complex antenna system for HF. He came up with “A Full-Power, Inexpensive Antenna Relay” that gets the job done — read all the details in this issue. [Sierra Harrop, W5DX, photo]

Digital and Mobile Editions

ARRL members can access the digital edition via a link at www.arrrl.org/qst, download our iOS app from the iTunes Store, and download our Android app from the Google Play Store.

Write for QST

www.arrrl.org/qst-author-guide
email: qst@arrrl.org



QST (ISSN:0033-4812) is published monthly as its official journal by the American Radio Relay League, Inc., 225 Main St., Newington, CT 06111-1400, USA. Volume 108, Number 11. Periodicals postage paid at Hartford, CT, USA and at additional mailing offices.

POSTMASTER: Send address changes to: QST, 225 Main St., Newington, CT 06111-1400, USA. Canada Post: Publications Mail Agreement #90-0901437. Canada returns to be sent to The Mail Group, 1501 Morse Ave., Elk Grove Village, IL 60007.

ARRL Membership and QST cannot be separated. All ARRL members have digital, online access to QST. Print subscriptions are available and sold separately. For ARRL members in the US, a subscription to QST via mail is \$25 per year. For libraries and institutions, a subscription to QST is available for \$84 per year; single copies \$7.

ARRL Membership is available to individuals at \$59 per year. A reduced rate is available for licensed radio amateurs under 26 years old, for \$30 per year. Membership is available to the immediate family of a member living at the same address, and to anyone who is legally blind, for \$12 per year. A complete list of dues rates is available at www.arrrl.org/join. Foreign remittances should be by international postal or express money order or bank draft negotiable in the US and for an equivalent amount in US funds.

Copyright © 2024 by the American Radio Relay League, Inc. Title registered at the US Patent Office. International copyright secured. All rights reserved. Quedan reservados todos los derechos. Printed in the USA.

QST®, DXCC®, VUCC®, DX Century Club®, ARES®, Amateur Radio Emergency Service®, Logbook of The World®, LoTW®, and ARRL The National Association for Amateur Radio® are registered trademarks of the American Radio Relay League, Inc.

ARRL and QST in no way warrant the products described or reviewed herein.

QST is available to blind and physically handicapped individuals from the Library of Congress, National Library Service for the Blind and Physically Handicapped. Call 1-800-424-8567 or go to www.loc.gov/nls.

Indexed by Applied Science and Technology Index, Library of Congress Catalog Card No: 21-9421.

To ensure prompt delivery, we ask that you periodically check the address information on your mailing label. If you find any inaccuracies, please contact Member Services at circulation@arrrl.org or 860-594-0200.

Reprints and permissions: permission@arrrl.org

Online Privacy Policy: www.arrrl.org/online-privacy-policy

Telephone: 860-594-0200

Fax: 860-594-0259