

# **Contents**

March 2023 ♦ Volume 107 ♦ Number 3

David A. Minster, NA2AA Publisher

Becky R. Schoenfeld, W1BXY Editorial Director

**Dana Kasowitz, KC1SEB** Managing Editor

Leanna Figlewski, KC1RMP Editor

Amanda Fahy Sam Shaner Assistant Editors

Bart Jahnke, W9JJ Radiosport & Regulatory Information Manager

John Ross, KD8IDJ Happenings

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

Dave Casler, KEØOG Jon Jones, NØJK Bernie McClenny, W3UR Rick Palm, K1CE Barry Shackleford, W6YE Pascal Villeneuve, VA2PV Paul Wade, W1GHZ Contributing Editors

Michelle Bloom, WB1ENT Production Supervisor

Jodi Morin, KA1JPA Assistant Production Supervisor

Maty Weinberg, KB1EIB Production Coordinator

David Pingree, N1NAS Senior Technical Illustrator

Janet Rocco, W1JLR Advertising Sales Manager

Bob Inderbitzen, NQ1R Director of Marketing & Innovation

Yvette Vinci, KC1AIM Membership Manager

Steve Ewald, WV1X
Field Organization Supervisor

9 Second Century Exceptional Acceptance

WindChime4: A Four-Band Vertical Dipole Richard Lawn, W2JAZ

Measuring the Frequency Accuracy and Stability of WWV and WWVH
Michael Lombardi, KØWWX

38 A Remote-Controlled Balanced Antenna Tuner Randy Mather, AJ7B

Product Review
Pascal Villeneuve, VA2PV
QRP Labs QDX 5-Band HF QRP Digital
Transceiver; Signal Generators



Ham Radio After Downsizing Harry Cohen, KØVZT

58 Desert Portable Gregg Mulder, W8GG

The Care and Feeding of SOTA Chasers
Darryl Holman, WW7D

W9BSP: Remembering a Historic CW Mentor, 100 Years Later
Leanna Figlewski, KC1RMP

72 The 2022 IARU HF World Championship Results David McCarty, K5GN

75 The April 2023 ARRL Rookie Roundup — Phone

85 Volunteers On the Air Update

A Look Back — April 1973

#### **Columns**

Ask Dave	53
Celebrating Our Legacy	95
Classic Radio	
Club Station	76
Contest Corral	71
Correspondence	24
Ham Media Playlist	78
Happenings	66
Hints & Hacks	55
How's DX?	80
Member Spotlight	13
Public Service	69
Up Front	20
The World Above 50 MHz	
100, 50, and 25 Years Ago	98

# **Digital and Mobile Editions**

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

### **Departments**

ARRL Section Managers	16
ARRL Special Service Clubs	77
ARRL VE Honor Roll	89
Certificate of Code Proficiency Recipients	88
Convention and Hamfest Calendar	86
Feedback	52
Field Organization Reports	70
Guide to ARRL Member Benefits	14
Ham Ads	124
Index of Advertisers	. 126, 127
Index of Advertisers Officers, Division Directors, and St	
	aff15
Officers, Division Directors, and St	aff 15
Officers, Division Directors, and St. QST Cover Plaque Award	aff15 65
Officers, Division Directors, and St QST Cover Plaque Award Silent Keys	aff 15 65 99
Officers, Division Directors, and St  QST Cover Plaque Award  Silent Keys  Special Event Stations	aff 15 65 99 84
Officers, Division Directors, and St  QST Cover Plaque Award	aff15 65 99 84 52
Officers, Division Directors, and St.  QST Cover Plaque Award  Silent Keys  Special Event Stations  Strays  Volunteer Monitor Program Report	aff 15 65 89 52 52

#### Write for QST

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



The popularity of portable operating can't be denied just pull up a spotting website and you'll see spots from hams operating from parks, peaks, islands, lighthouses, and more. Activators are everywhere, and they're all hoping for the same thing — contacts.

And in order for there to be contacts, there have to be chasers. Darryl Holman's article, "The Care and Feeding of SOTA Chasers," offers tips and strategies for making your Summits On the Air operation (or an activation for just about any other portable operating program) more efficient and as chaser-friendly as Steven "Etienne" Scott, K7ATN, looks on the summit of Saddle Mountain in Oregon. [Darryl Holman, WW7D, photo]









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. 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 IMEX Global Solutions, 1501 Morse Ave., Elk Grove Village, IL 60007.

US & Possessions: Membership in ARRL, including a 1-year subscription to *QST*, is available to individuals at \$49. Licensed radio amateurs age 21 and under and the eldest licensee in the household may qualify for the rate of \$25. Life
Membership, including a subscription to
QST, is available at \$1,225.\* Membership
includes \$21 per year for subscription to
QST. Membership and QST cannot be separated. Libraries and institutions, \$49 per year. Single copies \$6.95.

## International

International
To compensate for additional postage for mailing outside the US, the following rates apply: Membership in ARRL, including a 1-year subscription to QST, \$76, payable in US funds. Life Membership, including a subscription to QST, is available at \$1,900.\* Libraries and institutions, \$76 per year.

Membership without QST is available to the immediate family of a member living at the same address, and to anyone who is legally blind, for \$10 per year.

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.

Membership in ARRL, including a 1-year subscription to Digital QST only, is available to Canadian and International members Copyright © 2023 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 QS7 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.

\*Payment arrangements available. Please write for details.

white to details.

In order to ensure prompt delivery, we ask that you periodically check the address information on your mailing label. If you find any inaccuracies, please contact the Circulation Department at circulation@arrl.org or 860-594-0200 immediately. Thank you for your assistance.

Reprints and permissions: permission@arrl.org Details of our Online Privacy Policy can be found at www.arrl.org/online-privacy-policy.

Telephone: **860-594-0200** Fax: **860-594-0259**