

David A. Minster, NA2AA Publisher

Becky R. Schoenfeld, W1BXY Editorial Director

Jen Glifort, KC1KNL Senior Editor

Caroline Kenney Leanna Figlewski Assistant Editors

Bart Jahnke, W9JJ Radiosport & Regulatory Information Manager

Rick Lindquist, WW1ME Happenings

Paul Cianciolo, W1VLF Product Review Lab Testing

Steve Ford, WB8IMY Mark J. Wilson, K1RO Al Brogdon, W1AB Bernie McClenny, W3UR H. Ward Silver, NØAX Dave Casler, KEØOG Paul Wade, W1GHZ Jon Jones, NØJK **Rick Palm, K1CE** Joel R. Hallas, W1ZR Barry Shackleford, W6YE Kai Siwiak, KE4PT Bruce Draper, AA5B Phil Salas, AD5X John Stanley, K4ERO 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 Product Development Manager

Yvette Vinci, KC1AIM Marketing and Sales Manage

Steve Ewald, WV1X Field Organization Supervisor

Contents

September 2021 • Volume 105 • Number 9

Second Century

ARRL Governance: Why is it Important?

Node-RED for Ham Radio David De Coons, WO2X, and Michael Walker, VA3MW

Eliminating Radio Frequency Interference from Power Lines Richard Kiefer, KØDK

39 Product Review

Mark Wilson, K1RO Alinco DJ-VX50T VHF/UHF Handheld Transceiver; Two Autotuners for the Icom IC-705: The Icom AH-705 and the MAT-TUNER mAT-705Plus; MFJ-261 Dry Dummy Load; *HAMRS* Logging App for iOS; Pacific Antenna Wall Wart Tamer 2.0 Kit



- 56 The SKYWARN Storm Spotter Program Rob Macedo, KD1CY
- 58 A Synopsis of the 2021 HamSCI Virtual Workshop Phil Erickson, W1PJE
- 60 Understanding the Changes to the FCC RF Exposure Rules Ed Hare, W1RFI
- 63 Completing the DXCC Challenge Bart Jahnke, W9JJ
- 64 2021 Simulated Emergency Test Steve Ewald, WV1X
 - 2021 ARRL International DX Phone Contest Results Chris Tate, N6WM
 - Q A Lo
 - A Look Back November 1971

Columns

At the Foundation	
Ask Dave	51
Celebrating Our Legacy	93
Classic Radio	94
Contest Corral	70
Correspondence	24
Eclectic Technology	55
Happenings	65
Hints & Hacks	53
How's DX?	
Member Spotlight	13
Public Service	68
The World Above 50 MHz	
Up Front	20
100, 50, and 25 Years Ago	

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 Volunteer Examiner Honor Roll 88
Certificate of Code
Proficiency Recipients75
Convention and Hamfest Calendar
Feedback
Field Organization Reports
Guide to ARRL Member Benefits 14
Ham Ads 124
Index of Advertisers 126, 127
Officers, Division Directors, and Staff 15
QST Cover Plaque Award
Silent Keys
Special Event Stations
Strays79
Volunteer Monitor Program Report
W1AW Qualifying Runs75
W1AW Schedule

Write for QST

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



Our Cover

Interference can cause problems for any amateur radio operator. Richard Kiefer, KØKD, explains how he located and resolved power line interference in his article, "Eliminating Radio Frequency Interference from Power Lines," on page 34 of this issue. This issue also features guidelines to "Understanding the Changes to the FCC RF Exposure Rules" on page 60 to help you determine whether your station is affected.



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: QS7, 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

To compensate for additional postage for mailing outside the US, the following rates apply:

Canada: Membership in ARRL, including a 1-year subscription to QST, \$62, payable in US funds. Life Membership, including a subscription to QST is available at \$1,550.* Libraries and institutions, \$62 per year. All Other Countries: Membership in ARRL, including a 1-year subscription to QST, \$76 payable in UIS funds Life Membership

All Outer countries. Membership in Annu, 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 at \$49.

63

00 6

CHALLENGE

Copyright © 2021 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.

(GST[®], 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.

*Payment arrangements available. Please write for 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**