

David A. Minster, NA2AA Publisher

Becky R. Schoenfeld, W1BXY Editorial Director

Jen Glifort, KC1KNL Senior Editor

Caroline Kenney Leanna Zwiebel Assistant Editors

Bart Jahnke, W9JJ Radiosport & Field Services Manager

Rick Lindquist, WW1ME Happenings

Bob Allison, WB1GCM Product Review Lab Testing

Steve Ford, WB8IMY Mark J. Wilson, K1RO Al Brogdon, W1AB Bernie McClenny, W3UR H. Ward Silver, NØAX 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 Manager

Steve Ewald, WV1X Field Organization Supervisor

Contents

June 2021 • Volume 105 • Number 6

Second Century Getting Inspired for Field Day

A Portable Two-Element 40-Meter Wire Beam 30 Bob Glorioso, W1IS, and Bob Rose, KC1DSQ

40 – 20 – 15-Meter Inverted-V Antenna Jakin Messer, AG7WW

Explaining Your Transceiver's ALC and AGC Rodrigo A. B. Freire, PY2RAF

Protect Your Transceiver When Using an 36

39

External Antenna Tuner Phil Salas, AD5X **Product Review**

Mark Wilson, K1RO Yaesu FTDX10 MF/HF and 6-Meter Transceiver; Ciro Mazzoni 40 - 10 Meter

Baby Loop Antenna



Rising Sunspot Numbers: It's Not All Good News 56 John Stanley, K4ERO

VHF Roving in a Compact Car Pete Kobak, KØBAK

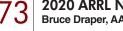
67 Coffee and Radio: A Pandemic-Inspired Net Dino Papas, KLØS

64

Operating ARRL Field Day as Therapy C. K. "Skip" Walter, ADØH

2021 ARRL Field Day Guide Sponsored by Ham Radio Outlet





76

2020 ARRL November Sweepstakes — Phone Bruce Draper, AA5B, and Scott Davis, K5TA

2020 ARRL 160-Meter Contest Results Mark Beckwith, N5OT

The 2021 IARU HF World Championship

A Look Back — August 1971

Columns

Celebrating Our Legacy	93
Classic Radio	
Contest Corral	72
Correspondence	24
The Doctor is In	51
Eclectic Technology	53
Happenings	
Hints & Hacks	54
How's DX?	80
Member Spotlight	13
Public Service	70
The World Above 50 MHz	82
Up Front	20
100, 50, and 25 Years Ago	

Departments

ARRL Section Managers 16
ARRL VE Honor Roll 87
Certificate of Code Proficiency
Recipients79
Convention and Hamfest Calendar
Field Organization Reports71
Guide to ARRL Member Benefits 14
Ham Ads 124
Index of Advertisers 126, 127
Life Members
Officers, Division Directors, and Staff 15
QST Cover Plaque Award
Silent Keys
Special Event Stations
Strays55
This Month in QEX78
Volunteer Monitor Program Report
W1AW Qualifying Runs79
W1AW Schedule
W1AW's QSL File

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.

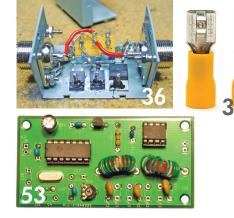
Write for QST

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



Our Cover

Field Day 2021 is coming, June 26 – 27! This issue of *QST* will help you prepare, with articles about antenna options, as well as a pull-out *2021 ARRL Field Day Guide* that features helpful tips, a bonus points calculator, a handy Section checklist to keep near your operating position, and even a Field Day chili recipe! On this month's cover, members of the Nashua Area Radio Society, N1FD, in Nashua, New Hampshire, put their Field Day setup through its paces in preparation for the big event. From left to right are Connor Finchum, KC1GGX; Abby Finchum, AB1BY; Vice President Jamey Finchum, AC1DC; Treasurer Anita Kemmerer, AB1OC. [Lori Pedrick, 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 Vilage, 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 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.

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**