

Contents

March 2021 ◆ Volume 105 ◆ Number 3

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

Eric Casey, KC2ERC
Convention and Event Coordinator

9 | Second Century Here Comes Cycle 25!

A Moxon Antenna for 220 MHz
Glenn Morrison, WB6RLC

Portable Flag Antenna for MF/HF Radio Direction Finding
Don Kirk, WD8DSB

37 A Simple DC Power Polarity Checker
John Burnley, NUØV

41 Product Review Mark Wilson, K1RO

Apache Labs ANAN-7000DLE MKII HF and 6-Meter SDR Transceiver with i7 CPU; tinySA — A Small Spectrum Analyzer; MFJ-2010 Off-Center-Fed Dipole Antenna



57 About High-Voltage Safety Ward Silver, NØAX

How to Create a Boy Scout Troop of Hams Scott deMasi, KC5NKW, and David Godell, KG5VLY

64 The 2020 International Museums Weekend Bob McLeod, VP8LP

73 The 2020 IARU HF World Championship Results
Bob Raymond, WA1Z

76 The April 2021 ARRL Rookie Roundup — Phone

QQ A Look Back — May 1971

Columns

Celebrating Our Legacy	89
Classic Radio	90
Contest Corral	72
Correspondence	24
The Doctor is In	53
Eclectic Technology	40
Happenings	67
Hints & Hacks	55
How's DX?	78
Member Spotlight	13
Public Service	70
The World Above 50 MHz	80
Up Front	20
100, 50, and 25 Years Ago	94

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 VE Honor Roll	
Certificate of Code	
Proficiency Recipients	93
Convention and Hamfest Calendar	82
Feedback	39
Field Organization Reports	71
Guide to ARRL Member Benefits	14
Ham Ads	124
Index of Advertisers1	26, 127
Officers, Division Directors, and Staff	15
QST Cover Plaque Award	
Silent Keys	95
Special Event Stations	92
Strays	82
W1AW Qualifying Runs	93
W1AW Schedule	77

Write for QST

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

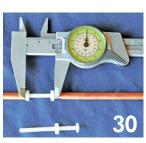


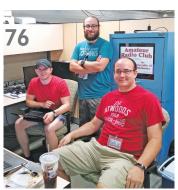
Our Cover

Don Kirk, WD8DSB, hunts down radio frequency interference in the 160-meter and 80-meter bands with his 2-foot-tall by 4-foot-long portable flag antenna. The antenna is the largest size — to maximize gain — that would fit inside his car, but still small enough to maintain a directional pattern from 1.8 to 30 MHz. With an appropriate preamp, the flag is useful for direction finding even in the AM broadcast band. This issue also features build instructions for a Moxon antenna for 222 MHz, as well as a dc power polarity checker. [Chris Kirk, 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

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.

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.

*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**