

**Howard E. Michel, WB2ITX**  
Publisher

**Steve Ford, WB8IMY**  
Editor

**Becky R. Schoenfeld, W1BXY**  
Managing Editor

**Jen Glifort, KC1KNL**  
Senior Editor

**Caroline Kenney**  
Assistant Editor

**Bart Jahnke, W9JJ**  
Radiosport & Field Services  
Manager

**Rick Lindquist, WW1ME**  
*Happenings*  
**Bob Allison, WB1GCM**  
*Product Review Lab Testing*

**Mark J. Wilson, K1RO**  
**Al Brogdon, W1AB**  
**Bernie McClenny, W3UR**  
**H. Ward Silver, N0AX**  
**Paul Wade, W1GHZ**  
**Jon Jones, N0JK**  
**Rick Palm, K1CE**  
**Joel R. Hallas, W1ZR**  
**Barry Shackelford, W6YE**  
**Kai Siwiak, KE4PT**  
**Bruce Draper, AA5B**  
Contributing Editors

**Michelle Bloom, WB1ENT**  
Production Supervisor

**Jodi Morin, KA1JPA**  
Assistant Production Supervisor

**Maty Weinberg, KB1EIB**  
Production Coordinator

**Sue Fagan, KB1OKW**  
Graphic Design Supervisor

**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

**Diane Szlachetka, KB1OKV**  
Advertising Graphics Designer

**Steve Ewald, WV1X**  
Field Organization Supervisor

**Eric Casey, KC2ERC**  
Convention and Event Coordinator

**9 Second Century**  
A Recap, and Things to Come

**30 Slot-Cube Antenna for 6 Meters**  
John Portune, W6NBC

**34 Product Review**  
Mark Wilson, K1RO  
Alinco DJ-MD5TGP DMR and Analog FM Handheld  
Transceiver; Diamond X6000A VHF/UHF Triband Antenna  
and MX3000N Triplexer; bhi Ltd ParaPro EQ20B-DSP;  
WA3RNC 40-Meter CW Transceiver Quick Kit

**53 The ARRL HQ FM Sprint**

**54 Amateur Radio at the World Scout  
Jamboree**  
Jim Wilson, K5ND

**57 On the Air — The Next Magazine from ARRL**

**64 2019 ARRL Field Day Results**  
Paul Bourque, N1SFE

**78 2019 ARRL June VHF Contest Results**  
Phil Koch, K3UA

**81 The 2020 ARRL Straight Key Night**

**81 The 2020 January VHF Contest**

**82 The 2020 ARRL RTTY Roundup**

**82 The 2020 ARRL International DX Contest**

**83 January 2020 Kids Day**

**94 A Look Back: October 1969**



34



78

## Columns

Celebrating Our Legacy .....	99
Classic Radio.....	100
Close Up .....	52
Contest Corral.....	63
Correspondence.....	24
The Doctor is In .....	46
Eclectic Technology.....	51
Happenings .....	58
Hints & Hacks .....	48
How's DX? .....	84
Member Spotlight .....	13
Public Service.....	61
Social Media Snapshot .....	28
Up Front .....	20
The World Above 50 MHz .....	86
100, 50, and 25 Years Ago .....	102

## Digital and Mobile Editions

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

## Departments

ARRL Member Benefits .....	14
ARRL Section Managers .....	16
ARRL VEC Honor Roll .....	91
Certificate of Code Proficiency Recipients.....	92
Convention and Hamfest Calendar .....	88
Feedback .....	45, 88
Field Organization Reports .....	62
Ham Ads .....	140
Index of Advertisers.....	142, 143
Life Members.....	90
New Products .....	50
Officers, Division Directors, and Staff .....	15
QuickStats.....	130
Silent Keys .....	103
Special Event Stations .....	89
Strays .....	83
This Month in QEX.....	91
W1AW Qualifying Runs.....	92
W1AW Schedule .....	93

## Write for QST

[www.arrrl.org/qst-author-guide](http://www.arrrl.org/qst-author-guide)  
email: [qst@arrrl.org](mailto:qst@arrrl.org)



## Our Cover

As the end-of-year holiday season approaches, many of us become sentimental, with thoughts turning to the time we've enjoyed on the air. Here, QST's own "Doctor," Joel Hallas, W1ZR, has stopped in at W1AW, the Hiram Percy Maxim Memorial Station at ARRL Headquarters, to send good wishes to ham friends near and far. Speaking of which, check out the new "Celebrating Our Legacy" column on page 99 of this issue. It features hams' reminiscences of their on-air friends, mentors, and their early days in Amateur Radio. Season's Greetings to our members, from all of us at QST. We'll see you in 2020!



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 the 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 the 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 the 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 the ARRL, including a 1-year subscription to Digital QST only, is available to Canadian and International members at \$49.

Copyright © 2019 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.

The 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/](http://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@arrrl.org](mailto:circulation@arrrl.org) or 860-594-0200 immediately. Thank you for your assistance.

Reprints and permissions: [permission@arrrl.org](mailto:permission@arrrl.org)

Details of our Online Privacy Policy can be found at [www.arrrl.org/online-privacy-policy](http://www.arrrl.org/online-privacy-policy).

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