#### Our mission: To promote and advance the art, science and enjoyment of Amateur Radio.



Harold Kramer, WJ1B Publisher

Steve Ford, WB8IMY Editor

Joel P. Kleinman, N1BKE Managing Editor

Joel R. Hallas, W1ZR Technical Editor

Larry D. Wolfgang, WR1B Senior Assistant Technical Editor

Steve Sant Andrea, AG1YK Assistant Editor

S. Khrystyne Keane, K1SFA Happenings

> Mark J. Wilson, K1RO Product Review

Bob Allison, WB1GCM Product Review Lab Testing

> Rick Palm, K1CE Public Service

Mary M. Hobart, K1MMH At the Foundation

Sean Kutzko, KX9X Radiosport

Bill Moore, NC1L DX and VHF/UHF Century Clubs

> John Troster, W6ISQ Paul L. Rinaldo, W4RI Al Brogdon, W1AB Bernie McClenny, W3UR John Dilks, K2TQN H. Ward Silver, NØAX Paul Wade, W1GHZ Jon Jones, NØJK 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

Carol Michaud, KB1QAW Technical Illustrator

Nancy G. Hallas, W1NCY Elaine Lengyel Proofreaders

Debra Jahnke, K1DAJ Business Services Manager *QST* Advertising

Bob Inderbitzen, NQ1R Marketing Manager

Amy Hurtado, KB1NXO Circulation Manager

Diane Szlachetka, KB1OKV Advertising Graphics Designer

# In This Issue March 2012 Volume 96 Number 3

### **Technical**

A Coaxial Vertical for 160 and 80 Meters 30 Scott M. Harwood, K4VWK No room for a straight line? Bend it like K4VWK.

## Remote Tuning for a 43 Foot Monopole 33

Shef Robotham, WA1RHT Having the tuner at the antenna can reduce coax loss.

## Webcam Microscope for the Radio Amateur 38

Wayne Smith, WA4WZP A handy way to make SMDs and tiny board traces large enough to see.

## Three Wrong Assumptions about the lonosphere 40

**Eric P. Nichols, KL7AJ** Point of clarification: Some common misconceptions about how signals travel.

## Your 2 Meter Mobile Antenna – What's the Best Mounting Location? 43

John Portune, W6NBC What works best – trunk lid, roof or bumper?

Product Review 46 Mark Wilson, K1RO A look at four antenna analyzers; Bravo-7K Portable Vertical Dipole

### **News and Features**

It Seems to Us 9 The FCC's Parallel Universe

This Just In 12 Joel P. Kleinman, N1BKE Exotic ARRL VE session; 2012 Annual Meeting of the ARRL Board; Inside HQ; Media Hits; more.

#### Mercy Ships – 9L5MS Sierra Leone 2011 DXpedition 64 Arie Kleingeld, PA3A

Three weeks in Africa for a good cause.

Where is the DX Now? 67 Stephen J. Gradijan, WB5KIA How to use DX spotting information.

#### Amateur Radio in Ethiopia 68 Jim DeLoach, WUØI

A single ham has kept ET3AA going for two decades.

#### Selecting a Commercial HF Vertical for Your Station 69 Joel R. Hallas, W1ZR Buyer's guide to multiband verticals.





#### Woodstock – Memories and Morse **71**

Stan Levandowski, WB2LQF One ham's homage to Woodstock Nation 42 years on.

#### ARRL Board of Directors Gathers in Connecticut for 2012 Annual Meeting 73 S. Khrystyne Keane, K1SFA

The ARRL Board approves electronic voting for Director elections and extends thanks to outgoing Treasurer Jim McCobb, K1LU.

#### Philip J. McGan Memorial Silver Antenna Award 75 Allen Pitts, W1AGP

Impressed with a reporter's work during 2011 involving a news story about Amateur Radio? Now's the time to nominate him or her.

#### Happenings 76

S. Khrystyne Keane, K1SFA Still another BPL provider shuts down; ARISSat splashes down; FCC News; more.

#### Our Cover

Limassol Radio Club station 5B4MS on the island of Cyprus is located on property owned by the British East Mediterranean Relay Stations social club. Most 5B4MS club members are in the broadcasting business. The antennas, installed just a few yards from the sea, enjoy excellent take-off paths to Africa.

Sticking with the antenna theme, the inset photo shows the RF deck used to remotely tune a 43 foot vertical. The article begins on page 33. [Background photo by Henryk Kotowski, SMØJHF; inset photo by Shef Robotham, WA1RHT]

Antennas

### **Radiosport**

**Contest Corral 81** H. Ward Silver, NØAX

2011 ARRL September VHF QSO Party Results 82 Jeff Klein, K1TEO

2011 IARU HF World Championship Results 85 Carl Luetzelschwab, K9LA

2011 ARRL 10 GHz and Up Contest Results 89 Bruce Richardson, W9FZ



### Columns

Amateur Radio World	96
At the Foundation	45
Correspondence	24
The Doctor is In	57
Eclectic Technology	97
Hands-On Radio	59
Hints & Kinks	62
How's DX?	90
Inside HQ	13
Public Service	79
Short Takes	61
Technical Correspondence	54
Up Front in QST	
Vintage Radio	98
The World Above 50 MHz	92
75, 50 and 25 Years Ago	. 102

### **Departments**

ARRL Volunteer Examiner Honor Roll 103
Convention and Hamfest Calendar 100
Feedback
Field Organization Reports102
Guide to ARRL Member Services
Ham Ads162
Index of Advertisers164
New Books
New Products
QuickStats
Silent Keys 103
Special Events
- Strays45, 96

Interested in Writing for QST? www.arrl.org/qst-author-guide e-mail: gst@arrl.org

#### March 2012 Volume 96 Number 3

QST (ISSN:0033-4812) is published CS7 (ISSN:0033-4812) is published monthly as its official journal by the American Radio Relay League, Inc, 225 Main Street, Newington, CT 06111-1494, USA. Periodicals postage paid at Hartford, CT, USA and at additional mailting officer. additional mailing offices

POSTMASTER: Send address changes to: *QST*, 225 Main St, Newington, CT 06111-1494, USA. Canada Post: Publications Mail Agreement #40612608. Canada Returns to be sent to Bleuchip International, PO Box 25542, London, ON N6C 6B2.

US & Possessions: Membership in the ARRL, including a one year subscription to QST, is available to individuals at \$39. Licensed radio amateurs age 21 and under and the eldest licensee in the household may qualify for the rate of \$20. Life Membership, including a subscription to QST is available at \$975.\* Membership includes \$15 per year for subscription to *QST*. Membership and *QST* cannot be separated. Libraries and institutions, \$39 per year. Single copies \$5.

#### International

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

Canada: Membership in the ARRL including a one year subscription to QST, \$49, payable in US funds. Life Membership, including a subscription to *QST* is available at \$1225.\* Libraries and institutions, \$49 per year.

All Other Countries: Membership in the ARRL, including a one year subscription to QST, \$62, payable in US funds. Life Membership, including a subscription to QST is available at \$1550.\* Libraries and institutions, \$62 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 \$8 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

Copyright © 2012 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<sup>®</sup>, DXCC<sup>®</sup>, VUCC<sup>®</sup>, DX Century Club<sup>®</sup>, ARES<sup>®</sup>, Amateur Radio Emer-gency Service<sup>®</sup> 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 on audio cassette from the Library of Congress, National Library Service for the Blind and Physically Handicapped. Call 1-800-424-8567

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

See page 14 for detailed contact information.

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



