



**USGA PRESIDENT:**

Stuart F. Bloch

**GREEN SECTION COMMITTEE CHAIRMAN:**

Raymond B. Anderson  
1506 Park Avenue, River Forest, IL 60305

**EDITOR:**

James T. Snow

**ASSISTANT EDITOR:**

Dr. Kimberly S. Erusha

**ART EDITOR:**

Diane Chrenko Becker

**DIRECTOR OF COMMUNICATIONS:**

Mark Carlson

**NATIONAL OFFICES:**

United States Golf Association, Golf House  
P.O. Box 708, Far Hills, NJ 07931 • (908) 234-2300  
James T. Snow, *National Director*  
Dr. Kimberly S. Erusha, *Manager, Technical Communications*  
Nancy P. Sadlon, *Environmental Specialist*

P.O. Box 2227, Stillwater, OK 74076 • (405) 743-3900  
Dr. Michael P. Kenna, *Director, Green Section Research*

**GREEN SECTION AGRONOMISTS AND OFFICES:**

**Northeastern Region:**

United States Golf Association, Golf House  
P.O. Box 708, Far Hills, NJ 07931 • (908) 234-2300  
David A. Oatis, *Director*  
James E. Skorulski, *Agronomist*

186 Prospect Street, Willimantic, CT 06226 • (203) 456-4537  
James E. Connolly, *Agronomist*

**Mid-Atlantic Region:**

P.O. Box 2105, West Chester, PA 19380 • (215) 696-4747  
Stanley J. Zontek, *Director*  
Robert A. Brame, *Agronomist*  
Keith A. Happ, *Agronomist*

**Southeastern Region:**

P.O. Box 95, Griffin, GA 30224-0095 • (404) 229-8125  
Patrick M. O'Brien, *Director*

**Florida Region:**

P.O. Box 1087, Hobe Sound, FL 33475-1087 • (407) 546-2620  
John H. Foy, *Director*  
Chuck Gast, *Agronomist*

**Great Lakes Region:**

11431 North Port Washington Rd., Suite 203  
Mequon, WI 53092 • (414) 241-8742  
James M. Latham, *Director*  
Robert C. Vavrek, Jr., *Agronomist*

**Mid-Continent Region:**

300 Sharron Drive, Waco, TX 76712 • (817) 776-0765  
James F. Moore, *Director*  
George B. Manuel, *Agronomist*

**Western Region:**

22792 Centre Drive, Suite 290  
Lake Forest, CA 92630 • (714) 457-9464  
Larry W. Gilhuly, *Director*  
Paul H. Vermeulen, *Agronomist*  
Patrick J. Gross, *Agronomist*

**Turfgrass Information File (TGIF) • (517) 353-7209**

# Green Section RECORD

**1 Ralph E. Engel — 1993 USGA Green Section Award Recipient**

**2 Fitting the Pieces in the Golf Course Management Puzzle**

**The Environment: Where Environment, Nature, and the Game Can Coexist** by Robert Trent Jones, Jr.

**THE BEST TURF TIPS OF 1993**

**6 Putting Your Cards on the Table** by Larry W. Gilhuly

**7 From Broken Shaft to Soil Probe** by Robert A. Brame

**9 Catch the Drift** by George B. Manuel

**10 Evolving Roles in Golf** by William R. Roberts

**THE BEST TURF TIPS OF 1993**

**15 TGIF — "On Call" for You!** by James Francis Moore

**16 Trail Blazing** by Paul H. Vermeulen

**18 Simple Fences Minimize Goose Traffic** by James M. Latham

**19 Television Golf and the Golf Course Superintendent** by Jerry Pate

**THE BEST TURF TIPS OF 1993**

**22 Survival of the Fittest** by Patrick M. O'Brien

**24 Warmed-Up But Not Worn-Out** by Patrick J. Gross

**25 Ball Marks to Bentgrass** by David A. Oatis

**26 Turfgrass and Golf Course Benefits — A Scientific Assessment** by Dr. James B. Beard and Dr. Robert L. Green

**THE BEST TURF TIPS OF 1993**

**31 Algae Busters** by John H. Foy

**32 'O Holey Night'** by James E. Connolly

**34 Filling Aerator Holes Completely, the First Time** by Stanley J. Zontek

**36 News Notes for Spring**

**Back Cover** Turf Twisters



*Cover Photo:*

*Dr. Ralph E. Engel (left) accepts the 1993 Green Section Award from Raymond B. Anderson, Chairman of the USGA Green Section Committee.*

©1993 by United States Golf Association®. Permission to reproduce articles or material in the USGA GREEN SECTION RECORD is granted to publishers of newspapers and periodicals (unless specifically noted otherwise), provided credit is given the USGA and copyright protection is afforded. To reprint material in other media, written permission must be obtained from the USGA. In any case, neither articles nor other material may be copied or used for any advertising, promotion, or commercial purposes.

GREEN SECTION RECORD (ISSN 0041-5502) is published six times a year in January, March, May, July, September, and November by the UNITED STATES GOLF ASSOCIATION®, Golf House, Far Hills, NJ 07931. Postmaster: Send address changes to the USGA Green Section Record, P.O. Box 708, Golf House, Far Hills, NJ 07931-0708. Subscriptions, articles, photographs, and correspondence relevant to published material should be addressed to: United States Golf Association Green Section, Golf House, Far Hills, NJ 07931. Second-class postage paid at Far Hills, NJ, and other locations. Office of Publication, Golf House, Far Hills, NJ 07931. **Subscriptions \$12 a year. Foreign subscriptions \$15 a year (surface mail) or \$24 a year (air mail).**