

IN THIS ISSUE . . .

President's Message	1
Flying the Desk	2
Covert Penetration Systems	8
Auto-Recovery System	13
Impact Potential of New Technology	20
Robotic Systems	24
Inside AESS — Organizational Affairs	28
Chapter Chairmen	32
Annual Index	
Foreign Technology Abstracts	Centerfold Insert
Conference Information	Insert Inside Covers

ABOUT THE COVER . . .

On December 12, 1961 the first Amateur Radio Satellite, **OSCAR-1 (Orbiting Satellite Carrying Amateur Radio)** was launched.

A dozen have been launched over the past 25 years — each with increased capability and duration. These satellites are designed, constructed, and operated through the international cooperation of university groups and amateur radio operators employed in the aerospace industry worldwide.

A large section of the IEEE Press book, *Compendium of Communication and Broadcast Satellites: 1958 to 1980* was devoted to details and photographs of these satellites and many papers reviewing the technical aspects and mission objectives have been published. (Refer to the *Compendium Reference Section* for some detail.)

To commemorate the 25th anniversary of this launch we have reproduced many photographs that were provided by Richard Daniels of AMSAT, the Radio Amateur Satellite Corporation, P.O. Box 27, Washington, DC 20044.



IEEE AEROSPACE AND ELECTRONIC SYSTEMS SOCIETY

The Aerospace and Electronic Systems Society is a society, within the framework of the IEEE, of members with professional interests in the organization, design, development, integration and operation of functional systems for space, air, ocean or ground environments. These systems include, but are not limited to, navigation, avionics, spacecraft, aerospace power, radar, sonar, telemetry, defense, transportation, and command and control. All members of the IEEE are eligible for membership in the Society and will receive this *Magazine* and the *Transactions* upon payment of the annual Society membership fee.

The Society Board of Governors, Organization, and its Committees will be found on cover 3.

EDITOR-IN-CHIEF	Lee D. Dickey	1615 White Way Drive, Arlington, TX 76013, (817) 277-9992
ASSISTANT EDITOR — AESS Affairs	Joseph F. Kasper	TASC, 8301 Greensboro Dr., Ste 1000, McLean, VA 22102, (803) 734-4100 x262
ADMINISTRATIVE EDITOR	David B. Dobson	6411 Chillum Place, NW, Washington, DC 20012, (202) 722-2246
CONTRIBUTING EDITORS		
Careers	Don C. Friedmann	4220 Falstaff Road, Baltimore, MD 21215, (301) 859-6007
Foreign Technology	Joan Doerr	Westinghouse, MS 1138, P.O. Box 746, Baltimore, MD 21203, (301) 765-2858
Patents	Ben J. Goldfarb	1001 Playford Lane, Silver Spring, MD 20901
Military Systems	Rick Kenefic	4603 Aboite Lake Drive, Ft. Wayne, IN 46804, (219) 429-5825
New Horizons	Paul J. Nahin	Dept. EE, Kingsbury Hall, Univ. NH, Durham, NH 03824, (603) 862-1357
Research & Publications	Steven Riter	Dept. EE, Univ. Texas at El Paso, El Paso, TX 79902
USAB	John J. Kelleher	3717 King Arthur Road, Annandale, VA 22003, (703) 560-4438
EDITOR EMERITUS	Ben J. Goldfarb	1001 Playford Lane, Silver Spring, MD 20901

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

Bruno O. Weinschel, *President*
Henry L. Bachman, *President-Elect*
Charles A. Eldon, *Past President*
Emerson W. Pugh, *Executive Vice President*
Mitsuyuki Uenohara, *Secretary*
Edward J. Doyle, *Treasurer*

Cyril J. Tunis, *Vice President, Educational Activities*
Carleton A. Bayless, *Vice President, Professional Activities*
Charles H. House, *Vice President, Publication Activities*
Dennis Bodson, *Vice President, Regional Activities*
John E. May, *Director, Standards Activities*
Merlin G. Smith, *Vice President, Technical Activities*

HEADQUARTERS STAFF

Eric Herz, *Executive Director and General Manager*
Elwood K. Gannett, *Deputy General Manager*
Thomas W. Bartlett, *Controller*
Donald Christiansen, *Editor of IEEE Spectrum*
Thomas C. White, *Public Information*
Charles F. Stewart, Jr., *Staff Director, Administration Services*

Anthony L. Rigas, *Staff Director, Educational Services*
Donald L. Suppers, *Staff Director, Field Services*
Leo Fanning, *Staff Director, Professional Activities*
David L. Staiger, *Staff Director, Publishing Services*
Sava I. Sherr, *Staff Director, Standards Services*
Irving Engelson, *Staff Director, Technical Activities*

IEEE AEROSPACE AND ELECTRONIC SYSTEMS MAGAZINE is published monthly by The Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, NY 10017. Responsibility for the contents rests upon the authors and not upon the IEEE, the Society, or its members. IEEE Service Center (for orders, subscriptions, address changes): 445 Hoes Lane, Piscataway, NJ 08854. Telephones: Headquarters 212-705 + extension: Information—7900, General Manager—7910, Controller—7748, Educational Services—7860, Publishing Services—7560, Region/Section Services—7751, Technical Services—7890. IEEE Service Center (201) 981-0060. Washington Office/Professional Services (202) 785-0017. NY Telecopier No. (212) 752-4929. Telex No. 236-411 (International messages only). This Journal is available in either microfiche or printed form. Additional copies may be purchased at \$3.00 (first copy only) by IEEE members and \$6.00 per copy by nonmembers. Annual subscription price: IEEE members, dues plus Society fee. Price for nonmembers available on request. **COPYRIGHT AND REPRINT PERMISSIONS:** Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limits of U.S. Copyright law for private use of patrons: (1) those post-1977 articles that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 29 Congress St., Salem, MA 01970, (2) pre-1978 articles without fee. Instructors are permitted to photocopy isolated articles for noncommercial classroom use without fee. For other copying, reprint or republication permission, write to the Director of Publishing Services at IEEE Headquarters. All rights reserved. Copyright © 1986 by The Institute of Electrical and Electronics Engineers, Inc. Printed in U.S.A. Second-class postage paid at New York, NY, and additional mailing offices. Postmaster: Send address changes to IEEE Aerospace and Electronic Systems Society, IEEE, 445 Hoes Lane, Piscataway, NJ 08854.

This publication was formerly known as the *IEEE Aerospace and Electronic Systems Society Newsletter* (USPS 212-660) which was distributed to members only. Back copies of these issues are not available.