

JOURNAL of the SMPTE

PUBLICATION OFFICE, EIGHT SIXTY TWO SCARSDALE AVE, SCARSDALE, NY 10583

Officers

President, 1973-74

BYRON S. ROUDABUSH, Byron Motion Pictures, Inc., 65 K St. N.E., Washington, DC 20002

Executive Vice-President, 1973-74

KENNETH M. MASON, Eastman Kodak Co., MP & AVMD, M.C. 600, 343 State St., Rochester, NY 14650

Past President, 1973-74

WILTON R. HOLM, Association of Motion Picture & Television Producers, Inc., 8480 Beverly Blvd., Hollywood, CA 90048

Engineering Vice-President, 1974-75

WILLIAM T. WINTRINGHAM, 56 Elmwood Ave., Chatham, NJ 07928

Editorial Vice-President, 1973-74

GERALD G. GRAHAM, National Film Board of Canada, Box 6100, Montreal, Quebec H3C 3H5

Financial Vice-President, 1974-75

JOSEPH T. DOUGHERTY, 472 Vassar Place, Brick Town, NJ 08723

Conference Vice-President, 1973-74

HARRY TEITELBAUM, Hollywood Film Co., 956 Seward St., Hollywood, CA 90038

Sections Vice-President, 1974-75

WILLIAM D. HEDDEN, Calvin Communications, Inc., 1105 Truman Rd., Kansas City, MO 64106

Vice-President for Educational Affairs, 1974-75

HERBERT E. FARMER, University of Southern California, Division of Cinema, University Park, Los Angeles, CA 90007

Vice-President for Photo-Instrumentation Affairs, 1974-75

A. EARL QUINN, Eastman Kodak Co., Bldg. 35, Kodak Park Works, Rochester, NY 14650

Vice-President for Motion-Picture Affairs, 1974-75

EDWARD H. REICHARD, Consolidated Film Industries, 959 Seward St., Hollywood, CA 90038

Vice-President for Photo-Science Affairs, 1974-75

RODERICK T. RYAN, Eastman Kodak Co., 6706 Santa Monica Blvd., Hollywood, CA 90038

Vice-President for Television Affairs, 1974-75

JOSEPH A. FLAHERTY, JR., CBS Television Network, 51 W. 52 St., New York, NY 10019

Secretary, 1973-74

RICHARD S. O'BRIEN, CBS Television Network, 51 W. 52 St., New York, NY 10019

Treasurer, 1974-75

ROBERT M. SMITH, Du Art Film Laboratories, Inc., 245 W. 55 St., New York, NY 10019

Governors, 1973-74

CHARLES E. ANDERSON, Ampex Corp., 401 Broadway, MS-3-46, Redwood City, CA 94063

HAROLD J. EADY, Bonded TV Film Service, Ltd., 205 Richmond St., W., Toronto, Ont., Canada

NEAL KEEHN, Byron Motion Pictures, Inc., 65 K St. N.E., Washington, DC 20002

JOHN J. KOWALAK, Movielab, Inc., 619 W. 54 St., New York, NY 10019

SHELDON NEMEYER, National Broadcasting Co., 30 Rockefeller Plaza, New York, NY 10020

HERBERT R. PILZER, Motion Picture Enterprises, Inc., Tarrytown, NY 10591

STANLEY F. QUINN, Canadian Broadcasting Corp., 7925 Cote St. Luc Rd., Montreal, 267, P.Q., Canada

FREDERICK M. REMLEY, JR., University of Michigan, 400 S. 4th St., Ann Arbor, MI 48103

V. C. SHANER, Eastman Kodak Co., Box 3145, San Francisco, CA 94119

ALLAN L. WILLIAMS, Eastman Kodak Co., 6706 Santa Monica Blvd., Hollywood, CA 90038

CORNELIUS ZICHTERMAN, 8429 Morton Avenue, Morton Grove, IL 60053

Governors, 1974-75

ANTHONY D. BRUNO, Eastman Kodak Co., 6706 Santa Monica Blvd., Hollywood, CA 90038

K. BLAIR BENSON, Goldmark Communications Corp., One Communications Plaza, Stamford, CT 06905

ROBERT A. COLBURN, Geo. W. Colburn Labs, Inc., 164 N. Wacker Drive, Chicago, IL 60606

LEONARD F. COLEMAN, Eastman Kodak Company, 1901 W. 22 St., Oak Brook, IL 60521

EDWARD MESSINA, ABC-TV, 67 West 66 St., New York, NY 10023

PETRO VLAHOS, Association of Motion Picture and Television Producers, Inc., 8480 Beverly Blvd., Hollywood, CA 90048

RAYMOND J. WULF, Central Marketing Research, Eastman Kodak Co., 343 State St., Rochester, NY 14650

Section Chairmen

RAY ALBERTS, Consultant, S. Florida Hospital, Hollywood, FL 33021

RICHARD S. ALTHOFF, King Film Lab., 1501 SW Jefferson St., Portland, OR 97201

A. F. ANDERSON, Commonwealth Film Unit, 17 Korangi Rd., St. Ives, N.S.W., Australia

GORDON W. BALLANTYNE, Applied Electronics Ltd., 299 Evans Ave., Toronto 18, Ontario, Canada

JON CARTER, Movie Makers, 4614 Prospect, Cleveland, OH 44103

LELAND D. EDELMAYER, Metropolitan Television Co., 1044 Lincoln St., Denver, CO 80203

LEONARD W. EDEN, WJW-TV, 622 Lafayette Blvd., Detroit, MI 48231

LEONARD A. GREEN, National Film Board of Canada, Box 6100, Montreal 3, P.Q., Canada

ROBERT GUSTAFSON, Consolidated Film Industries, Inc., 959 Seward St., Hollywood, CA 90038

MATHIAS J. HERMAN, Geo. W. Colburn Labs., Inc., 164 N. Wacker Dr., Chicago, IL 60606

WILLIAM D. HOLFORD, ACA Recording Studios, Inc., 6116 Skyline, Houston, TX 77027

WILLIAM C. HUNTER, WHAS-TV, 525 W. Broadway, Louisville, KY 40202

STEPHEN A. KALLIS, JR., Digital Equipment Corp., 146 Main St., Maynard, MA 01754

LEIGH H. KELLEY, Tucker Wayne & Co., 4518 Club Circle, N.E., Atlanta, GA 30319

HUGH R. MCNAIR, Eastman Kodak Company, 343 State St., Rochester, NY 14650

EDWARD MESSINA, ABC-TV, 67 West 66 St., New York, NY 10023

WILLIAM R. SCHOCK, Mobil Color, Inc., 2500 Farrington, Dallas, TX 75207

JOSEPH A. SEMMELMAYER, Eastman Kodak Co., 3250 Van Ness Avenue, San Francisco, CA 94119

WILLIAM E. YOUNGS, 1436 Mayflower Dr., McLean, VA 22101

Editorial Office

862 Scarsdale Ave., Scarsdale, NY 10583

Editor—VICTOR H. ALLEN

Assistant Editor—THOMAS E. KING

Advertising Manager & Conference Coordinator
JEFFREY B. FRIEDMAN

Engineering

Staff Engineer—ALEX E. ALDEN

Assistant Staff Engineer
PABLO WEINSCHENK-TABERNERO

BOARD OF EDITORS

Chairman—PIERRE MERTZ

Meadow Lakes 901, Eira Rd., Hightstown, NJ 08520

G. W. BALLANTYNE BERNARD D. PLAKUN

MICHAEL BARLOW WALDEMAR J. POCH

C. J. BARTLESON MANFRED G. MICHELSON

HARLAN L. BAUMBACH H. W. PANGBORN

LEO BEISER STANLEY F. QUINN

K. BLAIR BENSON ROXANNE O'MALLEY RAY

GERALD M. BEST RODGER J. ROSS

ELMER A. BOWEN, JR. SIDNEY P. SOLOW

BERLYN BRIXNER ISRAEL SWITZER

J. S. COURTNEY-PRATT WOODLIEF THOMAS, JR.

BERNARD E. DRIMMER PETRO VLAHOS

CARLOS H. ELMER RICHARD A. WALKER

HERBERT E. FARMER PABLO WEINSCHENK-

CHARLES R. FORDYCE TABERNERO

JOHN L. FORREST JOHN W. WENTWORTH

JOHN G. FRAYNE DEANE R. WHITE

A. M. GUNDELFINGER RALPH D. WHITMORE, JR.

STEPHEN A. KALLIS, JR. A. D. WILLIAMS

CLYDE R. KEITH W. T. WINTRINGHAM

DON V. KLOEPFEL HAROLD WRIGHT

GLENN E. MATTHEWS CHARLES W. WYCKOFF

THE SOCIETY today is the result of over fifty-seven years of achievement and leadership. Its members are engineers, scientists and technicians skilled in every branch of motion pictures, television, instrumentation and high-speed photography. Through the Society they are able to keep abreast of current technology and contribute continuously to the technological advances and education in these fields.

Membership is open to any interested person according to his qualifications. The Society's Headquarters welcomes inquiries from individuals who may apply for these grades: Active (annual dues, \$30.00), Associate (annual dues, \$30.00) and Student (annual dues, \$10.00). All members receive the Journal.

Subscriptions to the Journal are available to non-members at \$35.00 a year (outside continental United States, add \$1.00 for postage). Single copies are \$3.00 for one-part issues; \$3.50 for special two-part issues. Journal subscription price to students is \$12.00. A 10% discount is allowed to individual members and accredited agencies on orders for subscription and single copies. Residents in countries that participate in UNESCO may use UNESCO coupons for payment in the event other means for remitting are not available.

In addition to information about membership, subscriptions, technical activities, standards and test films, a list of priced and gratis publications is available from the Society's Headquarters Office, 862 Scarsdale Ave., Scarsdale, NY 10583

SOCIETY of MOTION PICTURE AND TELEVISION ENGINEERS, INC.

862 Scarsdale Ave., Scarsdale, NY 10583 Cables: SOMOPICT SCARSDALE NY Telephone: (914) 472-6606

Executive Director: DENIS A. COURTNEY

Published monthly by the Society of Motion Picture and Television Engineers, Inc. Publication office: 862 Scarsdale Ave., Scarsdale, NY 10583. Second-class postage paid at Scarsdale, NY and at additional mailing office. Copyright © 1974, by the Society of Motion Picture and Television Engineers, Inc. Permission to republish Journal text material must be obtained in writing from the Society's Headquarters Office, 862 Scarsdale Ave., Scarsdale, NY 10583. The Society is not responsible for statements of contributors. Printed by Mack Printing Company, Easton, Pa.