Inter-Society Color Council Newsletter

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CANDIDATES FOR ELECTION AS DIRECTORS FOR THE 1977-1980 TERM

According to the By-Laws, Art. IV, Sec. 3-5, and Art. III, Sec. 3, the ISCC will elect three Directors to take office at the 1977 Annual Meeting for a term of three years. The Nominating Committee, with Dr. Roland E. Derby, Jr. presiding, has nominated the following:

Therese R. Commerford, AATCC. Terry is employed by Nyanza, Inc., in Ashland, Mass. She is active in the application of color measurement to textile problems and has contributed to the work of several Problems Subcommittees in this area, notably No. 16, "Standard Methods for Mounting Textile Samples for Colorimetric Measurements," which completed its work in 1968, and No. 25D, "Determination of the Strength of Colorants" (Dyes Section), for which she contributed a paper "Difficulties in Preparing Dye Solutions for Accurate Strength Measurements," which appeared in Textile Chem. Colorist *6*, p. 14 (1974).

Karl Fink, CAUS. Karl was associated with the Council as Chairman of the Delegation from the Package Designer's Council until it ceased to be a Member-Body a few years ago. The fruits of his work as designer are familiar to all ISCC members, for he contributed substantially to the design of the *Newsletter* at various times and was responsible for the uniquely beautiful design of the present Godlove Award.

Alan R. Robertson, OSA. Alan received his Ph.D. degree with W. D. Wright in England and is currently working with Dr. Wyszecki's group at the National Research Council of Canada. He has been active on several Problems Subcommittees of the ISCC. He is currently a director-at-large for the Canadian Society for Color, and the Nominating Committee considers it most appropriate that he stand for election at this time because of the joint sponsorship of the third AIC congress, COLOR 77, by the ISCC and the Canadian Society.

Each of these candidates has agreed to stand for election, and their candidacy has been approved by the Board of Directors. As stipulated in the By-Laws, additional nominations may be made at the request of five voting delegates, provided they are forwarded to the Secretary within twenty days of the receipt of this *Newsletter*. The election will take place not less than 30 days after receipt of this *Newsletter* and not less than 10 days after the voting delegates are notified of any additional nominees.

SURVEY ON ANNUAL MEETING LOCATION

An Ad-Hoc Committee, consisting of R. Hoban, R. Kuehni, C. Jerome, G. Gardner, and F. Grum, composed a questionnaire to be sent to all the membership, in regard to relocation of the Annual Meeting. There were 287 responses to the survey for the possible relocation of the Annual Meeting from the general mailing to over 800 ISCC members. It is rather difficult to come to definite conclusions since the results have a number of ambiguities.

The most important results of the survey are as follows:

1. Sixty-three per cent of those responding said they would *not* like to see the meeting continued to be held in New York City. The reasons most often cited were high prices and poor accommodations.
2. Only 33% said they would attend more frequently if the meeting were held in another city; 34% said no, and 33% were undecided.
3. When asked if they would attend more frequently if the meeting were held in another hotel in New York City, 66% said no, and only 8% yes.
4. When asked to indicate a preferred location for the 1978 Annual Meeting, the largest specific recommendation was for the Statler-Hilton in New York. This was followed by preferences, all of about the same magnitude, for another New York hotel, Williamsburg, Washington, Boston, and Rochester.
5. To questions concerning the duration of the meeting and the specific arrangements of the business and social aspects, 80% responded that they are presently satisfactory. For those 20% who would like to see changes in program and social format the most frequent comments were:

   a. Banquet dinner should not be held on the final night, if at all,
   b. A campus environment, with less big-city rush, would be desirable,
   c. Make the business meeting more lively and meaningful.

Another factor that should not be overlooked is the geographical distribution of the membership and the percentage of registrations from each of these areas. It would seem from these data that the largest population of members and registrants centers in and around New York City, Philadelphia, and Washington, D.C.

Finally, considerations of cost and space requirements are important. For example, Williamsburg would probably be ruled out as a site for the Annual Meeting since the combination of the hotel accommodations and the numbers and sizes of meeting rooms required are unlikely to be available for such a short meeting. The cost of accommodations in any first-class hotel in a major city is likely to be as much as that of the Statler-Hilton. In addition, for a meeting of the size of the Council's, additional charges for meeting rooms, which the Statler-Hilton has not levied because of the Council's long association, may be incurred. This means a higher registration fee.

As a result of the findings of this survey, the Ad Hoc Committee makes the following recommendations:

1. Have the meeting in New York City every other year. Hotels other than the Statler Hilton should be explored.
2. In the alternate years, rotate the meeting among other cities and, when possible, make it coincident with or adjacent in time to the annual meeting of a member-body society.
3. Redesign some features of the program concerning the business meeting and banquet so that maximum communication between members and societies may be achieved in the available time.

RECENT DELEGATION CHANGES

Even since the new membership roster was printed, there have been several changes in Member-Body delegations. These are listed here, as of November 1, for your convenience.

AIA. Change Counselor from Edward G. Petrazio to Robert A. Class. Add Edward Brodzinski and Harvey P. Clark as delegates, and delete Eric Pawley.

APA. Delete Harry Helson as delegate.

ASTM. Change Editor, *Standardization News,* from Samuel F. Etris to Robert L. Meltzer.

CAUS. Add Karl Fink as delegate.

IES. Change Editor (both journals) from Charles W. Beardsley to Clifford Forbes. W. A. Thornton replaces C. W. Jerome as chairman of the delegation, Mr. Jerome becoming a fourth voting delegate *ex officio.*

SPSE. By a misprint, Howard J. Hall was listed as Hale.

BOARD OF DIRECTORS TAKES IMPORTANT ACTIONS AT FALL MEETING

A new format for the Annual Meeting, the possibility of future Annual Meetings in other locations, and a new membership classification were among the items acted upon at the ISCC Board of Directors meeting in Pittsburgh on September 16. A further important decision was that highlights of each Board meeting will be published in the *Newsletter* as soon as possible. This article was prepared by Franc Grum, President-Elect.

Mr. Grum reported on the results of a membership survey on possible relocation of the Annual Meeting. Details are given in an article elsewhere in this issue. The Board will implement the findings of this survey by giving consideration to rotating the location of the meeting. First consideration for a meeting away from New York will be given to Washington, D. C., the most popular choice reported in the survey.

The Board approved a significantly different format for the 1977 Annual Meeting, to be held as usual at the Statler-Hilton in New York on April 18-19, 1977:

On Monday, April 18, the Problems Subcommittee meetings will be held in five 1½ hour time blocks, in order to allow participants an opportunity to attend more sessions by reducing the number of concurrent meetings.

On Tuesday morning, April 19, there will be a symposium on the "Color System of the OSA Committee on Uniform Color Scales," with five short talks scheduled. This will be followed by a talk by Mr. Viktor Scheckengost, the Director of Industrial Design at the Cleveland Museum of Art.

In place of the traditional banquet, a formal luncheon will be held on Tuesday. The Godlove Award will be presented, and the luncheon speaker will be Dr. John Spencer of the National Endowment for the Arts. His topic will be "Federal Funding of the Arts."

Immediately after the luncheon the Annual Business Meeting will be held, and the meeting will adjourn in mid-afternoon.

Mr. S. L. Davidson, Treasurer, announced that the Council will activate the new category of Retired Member, with annual dues set at $7.00, at the beginning of the year. Details are given in an article elsewhere in this issue. Individual member dues remain at $15.00 per year. Mr. Davidson's Treasurer's Report showed that the Council is still solvent, as expected.

Important progress was made on the problem of long concern of providing adequate representation of the individual members in Council affairs. It is hoped that specific action can be taken at the next Board meeting.

President-Elect Franc Grum reported that a communication had been sent to all Delegation Chairmen and to the Executive Secretary of each Member Body, stressing the importance of open and free communications of needs and ideas between the ISCC and its Member Bodies.

On behalf of your Editor, Dr. Benson, Secretary Fred Billmeyer raised the question of delaying the press time for the Annual Report Issue of the *Newsletter* while awaiting reports from all delegations and committees. The Board decided that the *Newsletter* should be printed on schedule with only the reports that have been promptly submitted included.

Other items of business transacted by the Board were the following:

The Board of Directors accepted the Gemological Institute of America, 580 Fifth Ave., New York, N. Y., 10036, as a new member body, and also 29 new individual members. Congratulations!

The 1978 Williamsburg Conference will be entitled, "The Second Conference on Optimum Pictorial Color Reproduction." Also discussed were the preliminary plans for the 1979 Williamsburg Conference.

Henry Hemmendinger was appointed Chairman of the Macbeth Award Committee for 1978.

COLOR 77 planning is going very well with 250 preliminary registrations and nearly 100 papers proposed.

The Problems Committee reported on the possibility of forming a Color Interest Discussion Group and an Education Group. These will be studied further.

So that the Board can continue to cover these many items, and more, it was voted that attendance at Board Meetings will be restricted to Directors and Board Members, except by specific invitation of the President for specific subjects. All council members, however, are encouraged to write to the President concerning any matters which they would like to have discussed by the Board. Suggestions for discussion at the January 1977 Board Meeting should be received by the President *not later* than December 1, 1976. They should be sent to Mr. Charles W. Jerome, President, ISCC, 92 Nanepashemet Street, Marblehead, Massachusetts 01945.

APPLICATIONS APPROVED FOR INDIVIDUAL MEMBERSHIP

Applicant	*Member-Bodies and Interests*
Mr. David P. Bash 19 Millcreek Road New City, New York 10956	Colorants for PP, PES and PA fibers. New pigments for automotive paint styling. Ampacet Corporation, Mt. Vernon, N. Y.

Dr. Andreas Brockes
c/o Bayer AG; IN-AP-CP5
5090 Leverkusen
F. R. GERMANY

International secretary of the AIC and well known for work in colorimetry and textile dyeing for many years.

Ms. Lucia Childs
Creative Services – Celanese
Celanese Bldg., 1211 Ave. of the Americas
New York, New York 10022

CAUS, Fashion Group of New York. Men's and women's apparel and home furnishing.

Mrs. Susan Colby
101 Oldney Street
Nyack, New York 10960

CAUS. As it contributes to my avocation as a painter and an educator concerned with aspects of development that vision – i.e. color is vital contributor. Also within the dimensions of my professional business role. Associated Merchandising Corp., Fashion Coordinator for Men's Division.

Mr. John V. Culver, Jr.
I. B. M.
D/926, P. O. Box 950
Poughkeepsie, New York 12602

OSA, new instruments, illumination and detection systems as related to optics.

Mr. Anthony A. Foust
John Hilberry & Associates
1455 Centre
Detroit, Michigan 48226

AIA. I am an architect and interior designer, dealing with color and color related problems as they apply to spaces.

Mr. Jerry A. Foute
Exxon Chemicals Co.
Route 22 and Oakwood Drive
Lake Zurich, Illinois 60047

SPE. Control and styling of color in plastics.

Mrs. Marjorie Ingalls
E. 1104 57th Ave.
Spokane, Washington 99203

Presently owner of Tourmap Company, publisher of four-color maps. My interest in color stems from a long time involvement in art and physics and its relationship to our need to produce pure and accurate colors in our publications.

Mr. Thomas J. Keane
Gardner Lab. Inc.
5521 Landy Lane
Bethesda, Md. 20014

ASTM. Color Theory Instrument Development, Color Measurement Application.

Mr. John R. Landis
c/o Reichard-Coulston, Inc.
Mauch Chunk Road
Bethlehem, Pa. 18018

ASTM, FSCT. Quality control, color matching, color development, testing of color. Iron oxide pigments.

Dr. John W. Long
Senior Research Chemist
Photo Prod. Dept.
E. I. DuPont
Parlin, New Jersey 08859

ASTM, FSCT. Application of spectrophotometry and colorimetry to establishing manufacturing limits and color matching in the printing industry. Iron oxide pigments.

Mr. George A. Luers
Corning Glass Works
Sullivan Park DB-2
Painted Post, New York 14870

OSA, American Physical Society. Coloration and Color Perception of Glass Products.

Mr. Harold Marcus
Munsell Color Products
P. O. Drawer 950
Newburgh, New York 12550

Furthering the use and understanding of the Munsell Color Order System. Color measurement and computer color matching.

Miss Karyn L. Martin
Box BB
Truro, Mass. 02666

Utilization of principles of color in the healing arts; the study of the relationship of health, physically, mentally, spiritually to cosmic color, light rays, direct application of the healing influence of color in homes, school, industry, etc.

Mr. Steven Nelson Morgan
516-52-0661, TUSLOG Det 150
APO New York 09324

Primarily to determine the specification of color and to discover the practical application to color problems in science, art, and industry. I am especially interested in color preferences and the related character traits and if these can be scientifically verified. Also cross-cultural studies as they relate with colors.

Mr. Charles Nichols
Yarntex Corp. Ltd.
550 Beaumont
Montreal, Quebec H3N 1V3 CANADA

CAUS. Textile design (yarns).

Mr. William C. Nichols, Jr.
1201 Maple St.
Greensboro, N. C. 27405

Perception of color, computer color matching and color sorting in the textile industry.

Mr. Richard Okragly
Valspar Corporation
202 Jacobs Avenue
Fort Wayne, Indiana 46801

FSCT. Instrumental measurements and computer matching of metallic paints – someday, styling of color with computerization.

Mr. L. Bruce Quinn
27 Louise Place
Staatsburg, New York 12580

Color matching, color difference, metamerism. IBM.

Dr. Treva Pamer
Chemistry Department
Jersey City State College
Jersey City, N.J. 07305

AChS. Chemistry of art materials, including color theory, and colors of ceramic glazes. Member of International Institute for Conservation.

Dr. Emil B. Rauch GAF Corporation Technical Director Photo R & D Binghamton, New York 13902	AChS, SPSE. Research and development of competitive color photographic products in both consumer and professional fields.
Mr. Danny C. Rich 6-4 Edgehill Terrace Troy, New York 12180	OSA. Fundamental properties of color space, metamerism, education for industrial applications.
Mrs. Carrington Ruppe Box 262 Brookhaven, N. Y. 11719	ASID (applying). Interior designer – fabric, paints, wall coverings.
Mr. Stephen R. Schultz 811 No. Oak Nevada, Missouri 64772	Color matching and control; computer applications, plastic coatings. 3M Decorative Products Division.
Mr. Charles J. Sherman Sherwin-Williams Co. 601 Canal Road Cleveland, Ohio 44113	FSCT. All aspects of color matching in paint.
Mr. Ronald Stevenson Carolina Color Corporation P. O. Box 489 Salisbury, N. C. 28144	SPE. Colorants for the plastics industry.
Mr. James Tai IBM Dept. Q26, Bldg. 906 Poughkeepsie, N. Y. 12602	Research on color measurement of textiles.
Mrs. Linda Lewis Taylor 2410 S. Inge Street Arlington, Va. 22202	I study with Joy Luke. I work out specific color problems with acrylic paint on paper and/or canvas (art and education).
Mr. F. Eugene Welsh Owens Illinois P. O. Box 1035 Toledo, Ohio 43666	AChS. Determining color of plastic containers, preforms, and resins; setting specifications, and understanding any relation of color to material quality.

For Information only: New Delegates

Mr. A. Duncan Hannah G.A.T.F. Canadian Mgr. 2 Toronto St., Suite 303 Toronto, Ontario, CANADA M5C 2B5	Delegate from GATF. Printing technology; purity reproducibility and predictability of printed colour; standardization of printed colour etc.
Dr. Dietrich Schultze 275 North St. Teterboro, N. J. 07608	Delegate from SPSE. ASP, OSA, SMPTE. Color photography – all aspects.

ROLAND DERBY REPRESENTS ISCC AT INAUGURATION OF RENSSELAER'S PRESIDENT

On October 8, 1976, Rensselaer Polytechnic Institute inaugurated George M. Low, former Deputy Director of NASA, as its fourteenth president. In the academic procession were 31 delegates from the Learned and Professional Societies. The ISCC was represented by Dr. Roland E. Derby, Jr., immediate past president. Dr. Derby wore the traditional doctoral academic cap and gown, and the hood indicative of his degree in science from the Massachusetts Institute of Technology. Three ISCC member-bodies (APA, ACerS, and OSA) were also represented in the procession.

Rensselaer Polytechnic Institute, the oldest engineering school in the U.S., was founded in 1824. George M. Low, its new president, received degrees in aeronautical engineering from Rensselaer before joining NASA at its inception. He was responsible for the Mercury and Gemini programs, directed the last five Apollo manned flights including the first moon landing, and led the negotiations resulting in the joint Apollo-Soyuz space flight with the Soviet Union.

An appropriate scroll of greetings and felicitations from the ISCC was presented to Rensselaer on the occasion of the inauguration.

NOTE TO RETIRED MEMBERS

When the Board of Directors adopted the new By-Laws, it set separate dues for individual members who have retired. The cost membership for retired members is $7.00 per year. Retired members who wish the *Newsletter* and other correspondence mailed to an overseas address will also have to pay the overseas mailing charge of $5.00.

However, the Treasurer must know that you are retired so that he can put you in that dues-category. Therefore, you must write to the Treasurer (address given on back inside cover of the *Newsletter)* requesting that you be classified as a retired member. The Treasurer must receive your request by January 15, 1977 so that he will have enough time to change your dues category before the bills are mailed on February 1, 1977.

NEWS OF MEMBERS

PEARSON APPOINTED TC-2.3 SECRETARY

Milton Pearson, Senior Technologist at Graphic Arts Research Center, has been appointed to serve as the secretary of the Technical Committee on Materials (TC-2.3) of the CIE. The invitation to serve was received from Franc Grum of Eastman Kodak, now serving as chairman of the committee.

The International Commission on Illumination (abbreviation CIE from the French "Commission Internationale de L'Eclairage") is an autonomous organization, recognized worldwide as representing the best authority on its subject. The task of TC-2.3 is to develop and recommend methods for evaluation of photometric and radiometric characteristics of materials. The committee is composed of the expert representatives from 28 countries around the world. Its working program is carried out by six subcommittees dealing with gloss, luminescence, polarization, reflectance, transmittance and turbid media.

As secretary of this organization, it will be Milton's job to facilitate the work of the committee, take on the responsibility for assisting the chairman in organizing the meetings and perform various correspondence duties.

Reprinted from *GARC Newsletter*, April 1976.

ABRUZZI DESIGN ACCEPTED IN EXHIBIT

The design for a new entrance for the Geisinger Medical Center in Danville, Pa., was accepted in the 1976 American Hospital Association Convention Exhibit, Dallas, Texas.

The main entrance concept was addressed to developing a focal point for the complexity of traffic and location identification of immediate areas – Registration Desk, Pharmacy, Cashiers, Financial Screening, Admitting, Orthopedics, Elevator Banks and Lounges to a homogeneous design AND lead to 8 buildings servicing outpatients, inpatients, business services, educational facilities, etc. The design utilized a pentagonal kiosk information and directory center at entrance doors, from which all traffic paths radiate.

El Abruzzi has redesigned the interiors of the 700,000 sq. ft. medical facility for the past 3 years with color as the most effective tool.

NEWS OF MEMBER-BODIES

Graphic Arts Technical Foundation (GATF)

GATF REQUIRES OUTSIDE TALENT

In cooperation with GATF, individuals interested in assisting in the development of education materials are asked to contact GATF. If you are interested in writing books, chapters of books, audio-visual scripts, bulletins, etc., please obtain further information through GATF. All work will be compensated.

The Graphic Arts Technical Foundation is seeking industry and education specialists in the areas as listed below:

Press, especially offset
Ink and Ink problems
Paper and paper handling
Binding
Art and Copy preparation
Color reproduction
Platemaking
Screen Printing
Gravure Printing
Letterpress Printing
Flexographic Printing
Camera

For more information regarding this opportunity, contact Raymond N. Blair, Publications Editor, GATF, 4615 Forbes Avenue, Pittsburgh, Penn., 15213 (412-621-6941).

Reprinted from *GARC Newsletter*, October 1976.

J. TOM MORGAN IS 1976 TECHNOLOGY AWARD RECIPIENT

PITTSBURGH, Pa., Sept. 29 – J. Tom Morgan Jr., president, Litho-Krome Company, Columbus, Ga., was the 1976 recipient of the Robert F. Reed Technology Award.

Mr. Morgan received the Reed Technology Medal on October 15 in Colorado Springs, Colo., during the 53rd annual meeting of the GATF, an international research, education, and technical organization based in Pittsburgh, Pa.

Mr. Morgan was clearly ahead of his time when he demonstrated more than 25 years ago that four-color process reproduction by lithography could equal or better the results of letterpress. He accomplished this by successfully adapting the technique of photographic masking to color reproduction by the lithographic process. Morgan's technological genius made it possible for him to produce his most significant accomplishment, the world-famous reproduction of Victor Keppler's photograph of 'wine and cheeses'. The original was made for Harris Corporation, formerly Harris-Intertype, in 1949, won the New York Art Directors Award in the same year, and is prominently displayed in the Smithsonian Institute alongside the first Harris offset press. According to Harris Corporation, Mr. Morgan did more than any other individual to demonstrate that high-quality, four-color process lithography was possible and practical.

In 1960, Mr. Morgan introduced another revolutionary development in printing techniques. At the convention of the National Association of Printers and Lithographers (NAPL), he revealed that he had developed a technique of printing black and white illustrations, using two black plates, which came closer to reproducing a photograph than any other process known at that time, including conventional gravure.

He has gone on to develop one of the most highly regarded color charts in the industry and continues to work on technological developments.

Mr. Morgan has been active in many industry organizations. In addition to serving as chief executive officer of his own company, Mr. Morgan has been a member of the board of directors of GATF and southern regional vice-president of GATF. He has served as president of the Southern Graphic Arts Association and president of NAPL.

Among the many honors bestowed upon him, Morgan has received the Benjamin Franklin Award, the Printing House Craftsmen Award, the NAPL Soderstrom Award, and the Elmer Voigt Graphic Arts Education Award.

Mr. Morgan is the second recipient of the Reed Medal. Established in 1974 on the occasion of GATF's 50th Anniversary, the Reed Medal was first presented to Michael H. Bruno, another lithographic pioneer and the second research director of the Lithographic Technical Foundation. No award was made in 1975.

The Reed Award is sponsored and presented by the GATF Society of Fellows, an honorary group formed in 1969 to recognize graphic communications leaders who have made "outstanding or unusual contributions to GATF's research, education, and technological work and to the graphic communications industries."

The Reed Technology Medal is named in honor of the late Robert F. Reed, first research director of the Lithographic Technical Foundation predecessor of GATF. Mr. Reed made major contributions to the development of the lithographic process and was often referred to as the "Dean of Lithography."

The Reed Medal is given to an individual who has an "outstanding record of technological and scientific accomplishment which has measurably aided the scientific development of the graphic communications industries."

Announcement of the Reed Award winner is made by Paul Lyle, chairman of the GATF Society of Fellows.

American Society for Testing and Materials (ASTM)

For the next two years, Committee E-12 on Appearance of Materials will function under the leadership of four ISCC members: Richard S. Hunter, Chairman; William N. (Nick) Hale, Jr., Vice-Chairman; Raymond A. Kinmonth, Jr., Secretary; Duane H. Wahl, Assistant Secretary. The work of the Committee is carried on in three Subcommittees – Editorial and Definitions, Spectrophotometry and Color, and Geometric Characteristics.

A task group of the Subcommittee on Definitions headed by Calvin McCamy (including Isadore Nimeroff, Harry Hammond, Charles Ray, and Alfred Webber) met at NBS on October 29, 1976, to formulate policy for revision of ASTM E 284, Definitions of Terms Relating to Appearance of Materials. This compilation of several hundred terms resulted ten years ago from the need for an ASTM collection of appearance-related terms and their definitions. Most of these terms are used in ASTM methods; however, additional terms have been added from CIE (International Commission on Illumination) and from other Member-Bodies of the ISCC, such as OSA. The original 1966 compilation was revised somewhat in 1971. Mr. McCamy now plans a thorough review of the completeness of the list of terms and the adequacy of each definition. He pointed out to the task group that definitions can be written to be either descriptive or prescriptive. Definitions of the type found in Webster's dictionary are *descriptive*, that is they report the meanings of words as currently used. ASTM definitions on the other hand should be *prescriptive*; that is, we should invite people to use each word in a certain way. Nevertheless, the definition should be an accepted one rather than a radical variant, for we do not want to create a new language. If the same word is commonly used in more than one sense, more than one definition will be given. The task group will not include words that are adequately defined in Webster's unabridged dictionary. It will endeavor to follow the concepts set forth by the CIE in the International Lighting Vocabulary. It will also follow the policy guide of ASTM Committee E-8 on Definitions.

Before ending its four-hour session, the task group began to wrestle with specific definitions. The first term appearing in E 284, "absorbance," caused considerable discussion. It is really not an appearance term, but it is used by chemists who deal with solutions and their appearance. It is not defined by CIE. Engineering groups dealing with sheet materials prefer the term "optical density," which is based on the same measurement parameters as absorbance (negative logarithm of internal transmittance). The close connection to appearance-related measurements will probably require keeping "absorbance" in the E284 list.

Suggestions for addition or deletion of terms, for the definitions of terms to be added, or for revisions of currently published definitions should be sent to the task group chairman, Calvin S. McCamy, Macbeth Division, Kollmorgen Corporation, P.O. Drawer 950, Newburgh, N.Y. 12550.

Harry K. Hammond III
ASTM

Color and Appearance Division (CAD)
Society of Plastics Engineers (SPE)

RETC 1976
THE COLORING OF PLASTICS X
SEPTEMBER 21 AND 22

RETC 1976 has come and gone, but a general idea of what went on at the meeting can be conveyed by an annotated list of the papers given at the meeting.

How to Interpret Photometric Color Curves Using the Maxwell Color Triangle, D. A. Popielski, Monsanto.

Describes utility of the Maxwell Triangle in preference to the Dominant Wavelength and CIE Chromaticity Diagram for interpreting photometric color curves.

How to Specify Color Differences, A. R. Robertson, National Research Council of Canada. Describes applicability of two approximately uniform color spaces and associated color-difference formulae recommended by CIE to promote uniformity of practice.

Color Measurement Workshop – How to choose a Color Measurement System.

A discussion panel comprised of: R. A. Charvat, Harshaw Chemical (Moderator); S. L. Davidson, NL Industries; W. S. Laycock, Color Technology; C. G. Leete, MCCA; W. V. Longley, Ford Motor.

How to get Along with Your Environmental Enforcement Officer, J. J. Ott, Eyelett Specialty.

Describes an evaluation of methods available for complying with air pollution laws and experiences in implementing them.

How to Determine Colorant Strength and Money Value: A Layman's Guide to K/S, D. A. Popielski, Monsanto.

Develops an experimental approach to correlating color concentration with reflectance, relates this to K/S and color strength, and demonstrates the calculation of colorant money value.

How to Recognize Variables in the Measurement of Color Samples, A. M. Keay, Allied Chemical.

Describes approaches to determining the magnitude of experimental error that must be considered in setting color tolerances.

How to Select Colorants for Acrylics, A. J. Pentz and R. R. Steeper, Rohm & Haas.

Bases for colorant selection and methods of testing are reviewed.

How Color Computing is Utilized in Textiles, Gene Stutz, IBM.

Describes a computer system for quickly providing alternative matching formulas for comparison of cost and quality.

How to Select Colorants and Predict their Behavior in Plastic Systems, S. S. Parikh, Wilson Products.

(No annotation available)

How to Save Costs by In-House Coloring, S. J. Chen & R. G. Stanburg, Kenics Corp.

A post-extruder mixing device with no moving parts that is effective in producing high-quality extruded sheet from masterbatch color is described.

How to Decorate Structural Foams, C. G. Storms, Red Spot Paint & Varnish.

Silver reduction versus vacuum metallizing for the closure industry is reviewed, including specifications and problems of each.

How to Use Vacuum Metallizing as a Solution to Polution, J. A. West, Stokes Pennwalt.

Describes methods, economics and pollution control advantages of vacuum metallizing versus electroplating plastic substrates.

How to Control the Color of Pigmented Melt-Spun Polypropylene Fibers, S. Commandy, Phillips Fibers.

A control system based on computer analysis of reflectance data is described.

ANTEC 1976

The CAD held one session of general papers and a panel discussion on "How To Get An Education In Color." The papers were:

Painting High Density Polyethylene, R. L. Ayres and D. L. Shofner, Phillips Petroleum Co.

Discoloration of Pigmented Polyolefins, D. A. Holtzen, Du Pont.

Compounding Fluorescent Rigid PVC for Improved Exterior Color Stability, R. T. Hickcox, Hercules, Inc.

Ultraviolet Screening Properties of Transparent Pigments for Plastic Beverage and Packaging Applications, P. Marvuglio, The Hilton-Davis Chem. Co.

Practical Use of Inexpensive Pigments for Coloring Plastics, S. L. Handen and R. A. Hochwald, Hercules, Inc.

Extension of Conventional Computer Color Matching to Include Special Problems*, R. M. Johnston-Feller and D. Osmer, Ciba-Geigy.

Panel members and their particular educational representations were:

Education Through the Professional Society, S. L. Davidson, NL Industries.

Education Through Industry*, W. A. Coppock, Jr., Dyano Corp.

Education Through Academia*, F. T. Simon, Clemson University.

Education From the Point of View of the Consultant, H. Hemmendinger, Consultant.

Reprints of papers for the entire Conference may be obtained from the SPE national headquarters; however, copies of the above starred papers are available from the authors only.

The CAD also sponsored a color seminar at Antec entitled "Fundamentals of Coloring Plastics." This differed from the annual Fall seminar given in different areas of the country in that this one concentrated more on the mechanics of coloring plastics, eg.:

How to deal with in-plant color matching problems.
Bases for selecting colorants.
Elements of pigment dispersion.
Pros and cons of various predispersed colorant forms.

The lecturing chores were shared by Tom Reeve (Du Pont), Dan Popielski, (Monsanto), and Bob Swain (Chroma Corp.). We had a class of 15 students representing a wide range of backgrounds and interests. The Division has been asked to sponsor another such session at Antec '77 in Montreal.

Reprinted from the SPE-CAD newsletter, September 1976.

Society of Photographic Scientists and Engineers (SPSE)

SYMPOSIUM ON PHOTOGRAPHIC TECHNOLOGY
AT THE
INSTITUTE FOR DEFENSE ANALYSES
WASHINGTON, D.C.
THURSDAY AND FRIDAY, DECEMBER 9 & 10, 1976

OVERVIEW. An overview of photographic science and engineering activities, programs, and techniques, being used, under development, planned, and future requirements.

Advanced Research Project Agency
Army
Navy
Air Force
Foreign Technology

PROGRAM, SYSTEMS, TECHNIQUES. Examples of application of photographic technology.

Satellite
Airborne
Surface
Underwater
Image & Data Reduction

PROGRAM FORMAT. In response to proposals from government, the academic community and industry, the Society of Photographic Scientists and Engineers (SPSE) has agreed to arrange and administrate this Symposium. The format will be similar to the highly successful sessions held in November, 1975.

The program outline includes an overview of photographic science and engineering activities, programs, and techniques being used, under development, and planned for future requirements. The classification of these presentations will be Secret.

Limited time is available for further participation in the program such as appropriate specific overview or application topics. Because of the nature of the meeting, no written paper is required in conjunction with the presentations.

Attendance will be available to U.S. Citizens and immigrant aliens. Persons attending must possess DOD secret or higher clearances.

For further information write: Mr. Robert H. Wood, Society of Photographic Scientists and Engineers, 1330 Massachusetts Avenue, N.W., Washington, D.C. 20005, (202) 347-1140.

ARTICLE NOTED

Roses are Red, White, Yellow, Pink . . . (sic), PATRICIA W. SPENCER, NATURAL HISTORY, LXXXV, 6, 78-85, 1976.

The author is not a member of the Color Council. She is a plant physiologist in the Department of Horticulture, University of Illinois. The article is concerned with plant pigments and the colors they produce in many kinds of fruits and vegetables. As Dorothy Nickerson has expressed it "The subject is so much color – yet so far from color as most ISCC members think of it . . . ." We think you should be apprised of its availability. The illustrations in color are simply beautiful.

R. W. Burnham

MEETINGS REPORTS

Background. The Council for Optical Radiation Measurements (CORM) was organized in 1972 in response to a growing concern within the electro-optics community in the United States. This concern centered on the serious inadequacy of existing optical radiometric and photometric standards and associated measurement techniques.

In its first action CORM published a report in 1973 which presented the consensus of the participants regarding the most urgent problems and their relative priority at that time. CORM strongly recommended that the National Bureau of Standards, as the primary source of standards in the U.S., assume the responsibility for the solution of these problems. CORM committed itself to continue to work with NBS to meet the urgent needs defined in the report. A second CORM report (1975) reflected the progress which had occurred during the intervening period and updated the problem areas.

Annual meetings of CORM, which now has more than 250 participants, are held at NBS, Gaithersburg, Maryland. In addition, Workshops are held to promote CORM-NBS interaction in which a specific problem area can be presented and discussed.

Latest meeting. The fifth Annual Meeting of CORM was held at NBS, Gaithersburg, on June 2nd. The morning program consisted of reports on the NBS project status and programs in radiometry, photometry and spectrophotometry as well as visits to several related laboratories. In the afternoon informative talks were presented by J. M. Coakley of the Bureau of Radiological Health on BRH non-coherent radiation activities, and by L. Thorington, Chairman of CIE TC 1.7 on photobiological effects of radiation. Lively discussions followed both speakers.

On June 3rd, in conjunction with the Annual Meeting, a CORM-NBS Workshop on silicon detector measurement problems was conducted. The scope and origins of problems associated with the use of silicon detectors were reviewed in detail by several speakers. After lunch new directions in the design and characterization of silicon detectors were presented. The Workshop concluded with a panel discussion covering various aspects of silicon detector measurements.

A Workshop on chemical and electronic flash radiometry problems will be held in Rochester, N.Y. in November.

LETTERS TO THE EDITOR

Dear Sir:

Throughout my undergraduate and graduate work in psychology I have been interested in color selection as it

relates to personality assessment. I have been using the Luscher Test for some time and am always looking for any current research which relates to the Luscher and color psychology. A friend of mine gave me your address and suggested I contact you regarding your *newsletter.* I am interested in your publication and, if you would, please send me some information concerning it.

Sincerely,
Alan Orvis
1931 New York Drive
Altadena, California 91001

Perhaps some of you who are interested in the Luscher Test would be interested in corresponding with Mr. Orvis.

Editor

SOME PSYCHOLOGICAL RESEARCH IN JAPAN

In 1972 the writer visited a number of universities in Japan and issued a report covering research in psychology at those institutions. This article is written to provide a brief overview of on-going work at some additional schools and an update on some revisited. An omission from this review should not be taken to mean that the research is not of a calibre worthy of coverage, but rather that it probably has not been reviewed. The intent here is to give a flavor of the work underway in Japan and a general idea of its diversity. Some of the departments will likely be covered in much greater depth in subsequent issues. The order of reporting corresponds roughly to the date of visit.

Kyoto Institute of Technology

The final visit in Kyoto was to the Kyoto Institute of Technology, largely dedicated to the education of engineers and students of fine arts. Munehira Akita, who studied with Graham at Columbia, heads a two-man Department of Psychology, emphasizing color visions and studying such things as color contrast, adaptation, after-effects of light levels, and spectral sensitivity in the human retina. (It turned out that while a graduate student he was supported by an ONR contract.) Color vision is his area of primary activity. He feels that the color curve cannot predict the color sensitivity in usual situations, and what is needed is a different kind of photopic curve, as well as information processing models. In his studies of the basic mechanism in the retina using monochromatic light, he has found that the eyes react differently than would be predicted. He reasons that Japanese may have different color concepts because it is an emotional sense based upon physical attributes, and this makes it differ in Japanese eyes from those of Westerners. He also argues that environment is a factor. It appears that the ultimate course of his color research will be the study of behavioral aspects. Finally, he harbors an interest in sensory information processing of humans.

University of Nagoya

In the physiology group we met with Genyo Mitarai, who gave us a tour of his very well-equipped laboratory, where he spoke of the work which he has been following for many years. He described it as the study of the organization and arrangement of the different kinds of horizontal cells and the correlation existing between different cell types and S-potential types in the carp retina. It was during this research that he first discovered the Y-B type of S-potential. Working with Mitarai is Takuo Goto, who stressed the importance of this research and its implications for theory. When asked to abstract their joint work briefly, Goto said that "the response characteristics of ganglion cells in the carp retina were investigated to construct the receptive field in relation to color and form information. The inference in the experimentation was that modifications of receptive field-organizations indicate a process to elevate the receptivity for peculiar spectral and spatial stimuli in the advance of light adaptation." Goto asserted that this "would be suggestive in considering the integration of field-theoretical effects generated by the figures in the color and space perception."

Goto also described joint work being carried out at the University of Nagoya by tracing investigations on responses of the retina to form and color stimuli. Work by Zensho Yokose and Michiaki Uchiyama done in 1951 "measured the field-forces of figures through the stimulus threshold of light-spot projected at various positions around the figures." In follow-up work they sought to identify the physiological coordinates of the field-force by recording the electroretinogram from the carp retina. In Goto's words "the distributions of the LERG responses represented the properties of contour-potential-lines constructed by Yokose." In later experiments by Yokose, Uchiyama, Goto, and Kohmura, it was found that "the excitation area around the projected figures on the retina shrank in the light adaptation condition. This fact corresponds to the distinct stimulus-differentiation which is characterized as a photic cone vision."

Chukyo University

At Chukyo University in Nagoya I again had the pleasure of meeting an old friend, Kinichi Yuke (see 1972 report for coverage of his work), an elder statesman of Japanese psychology, still going strong. A tour of the laboratories and meeting with the graduate students indicated a growing diversification of work. Students are working in such areas as color preference, space perception, afterimage, alcohol and saccharine preference levels, play therapy, developmental research, sound localization, size estimation, short term memory, and peripheral vision. Yuki has been engaging in some new studies with blind subjects comparing their sensitivity to cues as compared to seeing persons. To this point he has determined that the blind need less cues, but that they are generally the essential cues. He has also found that practice is an important factor.

National Industrial Products Research Institute

Back in Tokyo, I spent a day at the National Industrial Products Research Institute, a government laboratory established for the purpose of testing consumer products and investigating areas of industrial and consumer control. It does research in such areas as habitability, traffic, pollution, and a wide spectrum of related problems. The locus of my interest was the Human Factors Section where I met with all the members of the staff, as well as the staffs of the other sections. One, Akihira Yagi, a physiological psychologist, had spent a year at Langley Porter working with Enoch Callaway on an ONR project. I observed research dealing with bionics, McCollough effect, dark adaptation (physical effects), optics, environmental effects of heat and humidity on clothing, effects of temperature and humidity on humans, effects of variable lighting and room conditions on color recognition, noise pollution, microminiaturization of equipment, habitability, tactile sensor for the blind, human attention, visual information processing, and crowd behavior. In this latter study they are interested in the passage of pedestrians through congested areas. This is a critical problem, particularly in tunnel areas where numerous passageways converge.

Keio University

We learned that Keio University had instituted several academic reforms, including elimination of the chair system and the admission of some students based upon high school records and recommendations. Keio has its own elementary and high schools and it appears that only those moving up through this system are eligible for the non-examination program. The selection is made from the top level students, who have already been through the examination procedures of the lower schools. We were told that Keio, one of the most prestigious of the private schools, is the oldest university in Japan. It has a number of different campuses linked by a master computer which allows for interdisciplinary research and communication. Tarow Indow provided a tour and series of demonstrations in his laboratories. Despite the fact that it was vacation time, graduate students and professors were on hand to operate the labs, which are among the best equipped that I have seen, Indow's work falls into three categories: the study of the geometric structure of Munsell color space providing a microscopic point of view and incorporating psychophysics, colorimetry, and applied optics; study of the geometrical structure of binocular visual space; and the quantitative analysis of human information processing at various levels in the area of memory, concept development, scanning strategy, problem solving, and the retrieval process of long term memory.

Morton A. Bertin

Reprinted from the *ONR Tokyo Scientific Bulletin*, Volume 1, Number 1, June-September 1976.

PRODUCTS AND SERVICES

GRAPHIC ARTS RESEARCH CENTER (GARC) ROCHESTER INSTITUTE OF TECHNOLOGY (RIT)

GAMIS and GARC. The Graphic Arts Marketing Information Service (GAMIS), a division of the Printing Industries of America, was instigated to develop information reports pertinent to the industry's marketing and planning needs. Research studies are implemented to secure new data and validate or expand existing data relating to conditions and trends in all fields of communications.

GARC members and selected RIT faculty members from the College of Photographic Science and Graphic Arts have joined forces with GAMIS in producing three major research papers. The first two, *Statistics in the Graphic Arts,* and *Information Sources for the Graphic Arts,* have already been published. The third report, entitled *The Future of Process Color* will be completed for presentation at the September GAMIS meeting.

Reports such as these provide an accurate up-date on the important trends of our ever-changing industry.

It's a Tie! GARC's colorful Printing Ink Gamut (PIG) Chart has proven to be a great pattern for sublimation heat transfer. The Process Chart is composed of systematically arranged color patches of maximum color saturation for various levels of darkness. The patches represent the surface of a three-dimensional color space and show the gamut of colors that are possible in three and four color reproduction systems. The test system is used internationally in the graphic arts industry.

In experimentation in the Research Center's web offset and sheetfed press laboratory, the PIG chart was printed with sublimation inks and transferred onto ready made neckties. The finished product caused such an uproar among RIT employees and industry personnel that GARC has decided to mass produce the neck ornaments and make them available to all of industry. The transfer paper was printed at GARC, sublimated onto DuPont's Qiana fabric, and sewn into neckties by a New York tie maker.

The tie is currently part of the Print-world exhibit at Franklin Institute Science Museum, Philadelphia, illustrating the results of recent printing technology. The ties look splendid and are available from GARC at $10.00 each, payment with order. (Quantity discounts available.)

HUNTERLAB

Area Seminars and Mini-Shows. The first day of this two-day event is a seminar conducted by Mr. Richard Hunter and his staff on the subject of appearance measurement. Lectures and discussions are supplemented by visual aids, demonstration and hands-on use of the instruments for color, gloss, haze, whiteness, etc. The charge for this one-day course is $75.00, which includes lunch, coffee breaks and a copy of Mr. Hunter's recently published book, "The Measurement of Appearance," which is used as reference material in the seminar.

On the second day, the Hunterlab instruments and personnel are available in an informal day-long mini-show exhibit. This affords a no-cost opportunity for interested individuals to discuss their problems with Mr. Hunter or a member of his staff and to measure their products on Hunterlab instruments. Specific appointments can be made ahead of time to assure a conference with Mr. Hunter during this day.

Tentative locations and dates:

Detroit, Michigan	September 14-15, 1976
Los Angeles, California	October 13-14, 1976
Palo Alto, California	October 18, 1976 (Seminar only)
Minneapolis, Minnesota	November 1-2, 1976
Appleton, Wisconsin	November 4-5, 1976
Columbus, Ohio	November 17-18, 1976
Philadelphia, Pennsylvania	January 12-13, 1977
Chicago, Illinois	January 26-27, 1977
Youngstown, Ohio	Febraury 2-3, 1977
Knoxville, Tennessee	February 23-24, 1977
Dallas/Ft. Worth, Texas	March 9-10, 1977
Saddlebrook, New Jersey	March 30-31, 1977
Toronto, Canada	April 13-14, 1977
Boston, Massachusetts	May 25-26, 1977

Contact Hunterlab for more information and application form.

Workshop with a New Twist. Hunterlab will conduct its annual 2½ day Workshop on November 9-11, 1976 at the Tyson's Corner Holiday Inn in McLean, Virginia. The presentations this year will reflect the result of Hunterlab's entry into the field of spectrophotometry with the NEW HUNTERLAB AUTOMATIC D54P-5 SPECTROPHOTOMETER. The basics of the nature of appearance and methods by which it can be measured will be covered as usual, as will the subjects of color differences, whiteness and gloss. Discussion of instrumentation and the applications for color measurements, however, will be expanded to include not only tristimulus colorimetry, but spectrophotometry, and the uses properly made of these two color measuring techniques.

The Workshop provides an opportunity to present the science of color measurement in greater depth than is possible in one day area seminars. Laboratory exercises help to acquaint the student with actual applications and instrumentation. The $200 fee covers Richard S. Hunter's book "The Measurement of Appearance," the text used for the Workshop, as well as lunches and coffee breaks.

For more detailed information about the November Workshop, contact Hunterlab.

POLYCAST TECHNOLOGY CORPORATION

Color List, a marketing brochure. According to a Polycast spokesman, they have assigned designations for color from the Centroid Color Charts (SRM 2106). While they have never seen similar references to the charts in advertising or promotional literature, they are almost certain that this is the first time a manufacturing firm in the plastics (cast acrylic) field has ever utilized the charts for description of apparent color to the buying public.

They are also certain that this is a portent of things to come, and that soon more and more firms will begin publicizing their color capabilities with references to the charts. (Please note also the incorporation into the brochure of NBS as the source for purchases).

They have found this to be a most efficient and money-saving means of conveying color descriptions to field personnel and larger customers, many of whom have already purchased the charts for their own use. Additionally, the charts afford salespeople the advantage of having fingertip access to our entire color capability file without having to lug around several hundred chips. The charts have also been invaluable in making initial match determinations over the telephone when the salesman/customer has an ISCC/NBS description of the color he is seeking.

For more information, write to N. Wayne Gowdy, Polycast Technology Corporation, 69 Southfield Avenue, Stamford, Connecticut 06902.

GRAPHIC TECHNOLOGY INTRODUCES INTEGRATED COLOR VIEWING STATION

GTI Graphic Technology, Inc., Newburgh, New York announces a complete, self-contained color viewing environment – the GRAPHICLITE Model CVS-1 Color Viewing Station. The CVS-1 is a controlled, standardized color inspection area for the color appraisal of proofs, press sheets, art work or packaging, under lighting conditions specified for the graphic arts by ANSI Standard PH2.32.

Composed of a welded tubular steel frame, adjustable light source, neutral grey surround panels and a 32" x 52" Formica inspection table, the CVS-1 can be assembled by two people in less than an hour and it plugs into a standard 115V outlet.

The CVS-1 provides ample viewing room for up to four persons and its tilted viewing table presents the copy at a comfortable viewing angle. The GRAPHICLITE light source is available in color temperatures of 5000K or 7500K or both, and the adjustable luminaire provides even illumination with minimum glare. A front-mounted control panel switches the overhead luminaire, transparency viewer or densitometer.

For full details contact GTI Graphic Technology, Inc., P.O. Box 3138, Newburgh, New York 12550.

DIANO CORPORATION

Diano Corporation announces the introduction of new color programs for incorporation in Match-Mate computer color matching systems.

One new program allows the scatter values for pigments to be defined in absolute terms so that the optimum loadings for required opacity in resin systems may be generated during the initial formulation routine. Thus computer predicted recipe costs may now be compared directly in

terms of an equal and specified opacity rather than just at equal loadings.

A second new program allows the "forcing" of a colorant into a match at any specified weight or percentage loading. Thus the maximum economic work-off rate of waste or inventory materials may be easily calculated.

Finally new techniques of primary data generation have been designed to improve the formulation and correction of metallic finishes.

For more information, contact: Optical Products Sales Manager, DIANO Corporation, 8 Commonwealth Avenue, Woburn, Massachusetts 01801.

MACBETH, KOLLORGEN CORPORATION

MACBETH INTRODUCES STUDENT SPECTROPHOTOMETER

A new, low cost spectrophotometer designed as a student or trainee teaching aid has been introduced by Macbeth, a division of the Kollmorgen spectrum. The unique feature of the instrument is its simultaneous display of the transmission spectrum of a transparent liquid, gas or solid and the measurement of the percent transmittance or absorbance of the object at any selected wavelength from 400 to 700 nm.

The new spectrophotometer and workbooks provide an inexpensive means of comprehensive self-study or group instruction in the basic principles of absorption spectroscopy and color technology.

Called the "Macbeth Student Spectrophotometer" (MSS-100), this device can be used at many educational levels: high school, vocational-technical schools and community or four-year colleges. Its analytical capabilities also allow the use of the unit in chemical or clinical laboratories and on-the-job training.

MACBETH INTRODUCES MACBETH COLORCHECKER COLOR RENDITION CHART

A new system of standards has been developed by Macbeth to be used by photographers and cameramen when comparing the color rendition of films, light conditions, cameras and lenses.

It is an array of 24 colored squares. The colors include spectral simulations of light and dark skin, foliage, blue sky, and a blue flower, additive and subtractive primaries, a six-step neutral scale and other colors to fill a wide gamut. Any given system of reproduction can be evaluated simply by comparing the rendition with the ColorChecker chart itself. This can be done either visually or by measuring optical densities with a densitometer.

The Macbeth ColorChecker chart is *sold through photo dealers*, and is priced at $19.95. It is 9" X 13" in size, proportioned to fill a 35mm frame or TV screen, and packaged with an instruction booklet in a protective sleeve. The Munsell notations, CIE notations, and ISCC-NBS names are given for each color.

For more information, write to: Dr. J. G. Davidson.

LUMINANCE – BRIGHTNESS COMPARISONS

NBS and NRC-Canada are involved in a cooperative effort to compare photometric luminance with perceived brightness. The objective is to demonstrate that there can be substantial differences between photometric luminance based on the $V(\lambda)$ function and brightness as perceived visually.

In the NRC experiments using indirectly viewed sources, a variety of white and colored sources will rear-illuminate the test side of a 2° bipartite viewing field at various known luminances.

In the NBS experiments, three types of directly viewed, real-life sources of various colors will be used. They are: commercially produced 7-segment LED alpha-numeric displays, incandescent alpha-numeric displays, and signal lights. All sources will subtend a visual angle of 2°, while the signal lights will also subtend a range of smaller angles.

In both the NRC and NBS experiments, the subject will adjust the luminance of a 2856 K reference source to obtain a brightness match with the test source.

Reprinted from *Optical Radiation News*, National Bureau of Standards, Number 15, May 1976.

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1. Any person interested in color and desirous of participating in the activities of the Council for the furtherance of its aims and purposes . . . shall be eligible for individual membership (By-Laws, Article III, Section 2). Application forms for individual membership may be obtained from the Secretary (address given above).

2. The Council re-affirms its community of interest and cooperation with the Munsell Color Foundation, a tax exempt organization set up to acquire and use its funds to further aims and purposes very similar to those of the ISCC: to further the scientific and practical advancement of color knowledge relating to standardization, nomenclature and specification of color, and to promote the practical application of these results to color problems arising in science, art and industry. The Council recommends and encourages contributions for the advancement of these purposes to the Munsell Color Foundation. For information, write S.L. Davidson, NL Industries, P.O. Box 700, Hightstown, N.J. 08520.

3. The Council promotes color education by its association with the Cooper-Hewitt Museum. It recommends that intended gifts of historical significance, past or present, related to the artistic or scientific usage of color be brought to the attention of Christian Rohlfing, Cooper-Hewitt Museum, 9 East 90th Street, New York, New York 10028.