Inter-Society Color Council *News*

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IN THIS ISSUE 360

FROM THE PRESIDENT

This has been an exciting two years for me as president of the ISCC. It seems like only yesterday that Paula Alessi passed the gavel to me. I will be passing it on to Ellen Carter in May at the Annual Meeting in Orlando. I want to thank both of them, serving as past president and as president elect respectively, for the tremendous help they have been. I have had the good fortune of working with an outstanding board of directors and committee members who have been hard workers and have shown a deep devotion to the goals of the ISCC.

I would like to mention some of the things that have happened over the past two years.

There have been the usual "discussions" during meetings that are expected when groups of strong minded individuals gather.

The annual meeting last year in Greensboro was a real success. Thanks to Ms Ann Laidlaw for organizing the meeting and Romesh Kumar for handling the arrangements.

A major change for the organization was the opening of an office and the hiring a staff person. We have had some difficulty in filling the staff position, but the office is working. Thanks are due to HunterLab for supplying the office space, to DataColor for supplying the computer and to SheLyn for assistance in setting up the office. The secretary, membership secretary and treasurer are all very happy that the administrative assistance has taken over some of their duties. I know that having a central location will improve our ability to coordinate the various activities of the organization and will help with our growth in the future.

The Interest Groups have become very active and are developing strong, exciting programs. The programs for the annual meeting in Orlando promise to be outstanding.

We have set a course for the ISCC to become an active player on the Internet. We will be having a page on the World Wide Web by the annual meeting time.

The Newsletter has blossomed into a very good publication. Mike Hammel performed an outstanding job as editor. Tek Celikiz, the new editor, has some big shoes to fill, but I'm sure he will continue the excellent work of the past several years.

We have started two student chapters, one at Rochester Institute of Technology and one at the University of Chicago. My thanks to professors Bob Chung and Joel Pokorny for their efforts. We hope to develop more chapters in the near future.

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On a sad note, we lost an energetic young board member in Ron Oldchurch.

The future of the ISCC is, as it has always been, in the diversity of its members. I want to challenge the new officers and directors to continue with the growth of the organization and to extend the transfer of knowledge about COLOR to young artists and engineers.

Roland L. Connelly
President
ISCC

COMING ISCC 1996 ANNUAL MEETING

Orlando, Florida
May 5-7 1996

The 56th annual meeting of ISCC will take place in Orlando, Florida, May 5-7, 1996.

With your Jan-Feb.1996 issue of ISCC News you have received the announcement of the most important meeting of the year, ISCC 65th Annual Meeting cosponsored with ASTM Committee E-12. ASTM symposium and E-12 meeting will follow on May 7 and May 8-10. As we have noted in the last ISCC News you have to make the hotel reservation yourself by calling the Doubletree Guest Suites resort hotel directly at 407/934-1000 at the special ISCC/ASTM rate. The rate is **$115** a night and **NOT $100** as was reported in the last issue. The hotel provides complimentary transportation to all Disney Theme Parks. Please note that the cut -off date is April 3, 1996.

Interest Groups I, II, and III along with Project Committees are going to meet Sunday and Monday followed by ISCC-ASTM symposium on the Measurement of Appearance. There will be a Polynesian Luau at Disney World and special priced tickets for the theme parks will be available to attendees.

HURRY, get your hotel reservations early!

STUDENT PARTICIPATION IN ISCC MEETINGS

The ISCC Board of Directors have authorized support for student participation in the Annual Meeting. Any student or postdoctoral fellow presenting a paper or poster is eligible to apply for a $600 award. Additionally, each successful candidate will receive a certificate acknowledging receipt of the Award. Up to two students may receive Awards each year. Submission details will appear in a future ISCC News.

Joel Pokorny

EDUCATION COMMITTEE

The Education Committee is planning a morning program to be held at the ISCC annual meeting in Orlando, FL. The program will take place on Sunday, May 5th, 1996 at 9.30am. Speakers will include Alan Robertson of Interest Group I, Rich Riffel of Interest Group II and Shashi Caan of Interest Group III. Each will give a presentation on the vocabulary relevant to their Interest Group. The talks will be followed by a Round Table discussion. A feature of the program will be the circulation of Cross Words designed especially to feature some of the terms and vocabulary discussed and explained in the talks. The Cross Words are designed by Hugh Fairman. We thank The Interest Groups and Hugh for participating in our program and we hope to see you there.

Vivianne C. Smith, PhD.
University of Chicago

ISCC 1996 ANNUAL MEETING MAY 5-7

INTEREST GROUP I : Basic and Applied Color Research LAST CALL FOR PAPERS

ISCC Interest Group I, Basic and Applied Color Research, serves to bring together researchers in the field of color science, color measurement, color technology, vision, design, education and psychology, to discuss topics of mutual interest. For the 1996 Annual Meeting to be held in Orlando, Florida, May 5-7, 1996, the topic of discussion is color order systems. The session will include an invited tutorial lecture (approximately 1 hour in length) followed by several contributed papers (approximately 20-30 minutes in length).

Dr. Gunilla Derefeldt, of the Swedish Institute for the National Defence in Linkoping, an internationally-recognized expert on color order systems, will present the introductory tutorial lecture.

Interest Group I is now soliciting contributed papers on any aspect of basic and applied research in the field of color order systems. Please submit by March 1,1996 a title and an abstract of no more than 200 words to either of the Co-Chairmen below:

Dr. Joanne Zwinkels
National Research Council of Canada
Institute for National Measurement Standards
M-36 Montreal Road
Ottawa, Ontario
K1A 0R6 CANADA
613/993-9363
613/952-1394 (fax)
email: joanne.zwinkels@nrc.ca

Dr. Michael Brill
David Sarnoff Research Center CN5300
Princeton, NJ 08543-5300, USA
609/734-3037 (Office)
609/734-2662 (fax)
email:michael_brill@maca.sarnoff.com

INTEREST GROUP III -ART, DESIGN AND PSYCHOLOGY PLANS DIVERSIFIED PROGRAM FOR 65TH ANNUAL MEETING IN ORLANDO

Art, Design and Psychology Interest Group III will again be presenting a program which encompasses a wide range of color interests and professional activities. As in the past, the goal of Interest Group III is to provide a forum for presentation and discussion of current research and creative topics relative to the concerns and interests of its members. The speakers which will be involved in the Interest Group III program will be available for discussion after their presentations and the audience is strongly encouraged to become involved and participate in the program. The following are two of the speakers which will participate in the Art, Design and Psychology program.

Mr. Richard Stoyles, FCSD, Director of Creative Design Services at Milliken Carpets, will be discussing trends within international color forecasting. Mr. Stoyles is a panel member of the International Colour Authority, a fellow of the Textile Institute and a fellow of the Chartered Society of Designers. Mr. Stoyles has more than 30 years of experience in designing carpets and fabrics and has served as Director of Milliken's United States design team. In 1988 he won top honors from the Institute of Business Designers and was responsible for winning a gold award from the Interior Design Exposition in Canada in 1989 and a "Best of NEOCON" gold award from the International Facility Management Association in 1989 for two of his collections. Exhibitions demonstrating his design techniques have been held in more than 18 different countries. He has authored numerous articles which have appeared in publications such as Design Journal.

Dr. David Burton, an Associate Professor in the School of Art at Virginia Commonwealth University, will present "Sychromism: A (Musical) Key to Color." Dr. Burton will discuss Morgan Russell and Stanton MacDonald-Wright who, working in Paris early in this century, conceived a method for relating colors based on an analogy to musical chords. They "composed" some of the first non-objective paintings at the same time Picasso and Kandinsky were inventing other forms of abstraction and influenced mainly American artists of the '20's and '30's. Dr. Burton holds a BFA from Syracuse University, an MA from New York University and a PhD from Penn State University. Dr. Burton has presented over 50 papers at international, national and state professional conferences and has published numerous articles in professional journals on color, aesthetics and children's art. He is currently the Demographic Research Task Force leader for the National Art Education Association. Research Commission.

Prof. Wade Thompson, Chair
Ms Shashi Caan , Vice-Chair
Art, Design and Psychology
Interest Group III

ISCC PROJECT COMMITTEE 51 FORMED

At the ISCC Board of Directors meeting Jan 21, 1996, at Ft. Lauderdale, FL, the Board authorized a new collection of the current information on availability of material standards for color and appearance measurement, their characteristics and source of supply. The project will also include the collection of recent references to literature on measurement, calibration and standardization of color measurement instrumentation. The project is expected to result in a revision of TR 89-1, Guide to Material Standards and Their Use In Color Measurement. New terms will be collected for the glossary, and their consistency with current terms, such as ASTM E284 and CIE Publication 17.1. The text of TR 89-1 will be revised.

All users of calibration standards are invited to submit materials to the project committee chairperson:

Mr. Jack A. Ladson
BYK-Gardner USA
2435 Linden Lane
Silver Spring, MD 20910

THE 1997 ISCC GODLOVE AWARD

The Godlove award is the most prestigious award bestowed by the Inter-Society Color Council to honor long-term contributions in the field of color. The Godlove Award was established in 1955 in memory of Dr. I. H. Godlove and is presented biannually, in odd numbered years, with the next award scheduled for presentation at the 1997 Inter-Society Color Council Annual Meeting.

Nominations for the 1997 Godlove Award are now being solicited.

Candidates will be judged by their contribution to any field of interest related to color whether or not it is represented by an ISCC Member-Body. The candidate's contribution may be direct, it may be in the active practical stimulation of the application of color, or it may be an outstanding dissemination of knowledge of color by writing or lecturing, based on original contributions by the nominee. Candidates need not have been active in the affairs of the ISCC but they must either be a current or former member of the ISCC. All candidates must have at least five (5) years of experience in the particular field of color.

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A Godlove Award Nomination Form is enclosed with this mailing of the ISCC News. The past and present membership of the ISCC boasts a number of individuals deserving of such recognition but such an award requires your participation in the process. Please take the time to consider and to nominate a worthy candidate for this honor.

Feel free to copy the enclosed nomination form, if necessary. Requests for additional nomination forms may be directed to:

Michael H. Brill
Godlove Award Committee Chairman
David Sarnoff Research Center
CN 5300
Princeton, NJ 08543-5300
Phone: 609/ 734-3037
FAX : 609/ 734-2662
e-mail: mbrill@sarnoff.com

Macbeth Award

Every two years the ISCC is honored to be able to present the Macbeth Award. This award was established in 1970 by Mr. Norman Macbeth, Jr., in honor of the memory of his father, Norman Macbeth, a founding member of the ISCC and founder of Macbeth Daylighting Corporation, now a part of Kollmorgen. It is presented every second year for oustanding recent contributions to the field of color.

This year ISCC is honored to give this award to Dr. Michael Brill for his singular contribution to the understanding of color constancy.

A remarkable fact of human color vision is that a surface's color appearance is stable under conditions of varying illumination. This phenomenon of color constancy has prompted the development of algorithms to estimate the spectral properties of a scene's illuminant and its surfaces. Starting in 1978, Dr. Brill has developed a model which employed a different, ingenious strategy. Brill's volumetric model does not estimate the illuminant spectral power distribution, but makes use of illuminant invariances to estimate surface reflectances directly. A series of papers have elaborated on the original hypothesis. This modeling strategy has been adopted by others (e.g. Finlayson, G.D., Drew, M.S., and Funt, B.V.: Spectral sharpening: Sensor Transformations For Improved Color Constancy. J. Opt. Soc. Am. A, 11, 1553-1563, 1994). Dr. Brill's theoretical work has been at the forefront of the modern development of color constancy models.

Dr. Michael H. Brill is a member of the Technical Staff at the David Sarnoff Research Center in Princetone, NJ ,where he is involved in developing a model for color video-image quality for video encoding.

He received a BA in physics at Case Western Reserve University, and an MS and PhD in physics at Syracuse University. He has published many articles on the mathematical basis of machine and human color constancy, and also in color reproduction, color rendering, and other topics in computational colorimetry. In addition, he has contributed extensively to the use of geometric invariants in machine vision.

Dr. Brill has chaired/co-chaired three conferences with the SPIE, and also co-chaired the 1995 ISCC Pan-Chromatic Conference in Williamsburg, Virginia. He has been a positive force within the ISCC. He was a member of the Board of Directors (1992-1995). Dr. Brill continues to serve on the Editorial Board of Color Research and Application, and was recently appointed an Associate Editor for *Physics Essays.*

Joel Pokorny

NICK HALE HONORED

The Executive Committee of USNC has honored the long-standing contributions of W. Calvin Gungle and William N. Hale Jr. by electing them Members for Life of the U.S. National Committee of CIE.

William N. Hale, Jr. received a BA degree in Psychology from The University of Maryland and spent 22 years with the Munsell Color Co. before becoming a color consultant to industry. He is a long time member of the ISCC and ASTM, where he has served four tems as chair of Committee E-12 on Appearance. His current interests are in high visibility materials such as fluorescents and retroreflectors, and the colorimetry of gemstones.

We congratulate Nick on being elected a life member of USNC/CIE.

Ellen Carter
President elect
ISCC

COLOR RESEARCH AND APPLICATION

IN THIS ISSUE, April 1996 [Vol. 21, #2, 1996]

This issue contains eight articles based on presentations given during the ISCC's First Pan-Chromatic Conference, Williamsburg, VA in February 1995. This issue begins with a Preface by the co-chairs of the meeting, Michael H. Brill and Steven Shafer. The article that follow are selected from the areas of human color vision, machine color vision, color computer graphics, with a Color Forum from colorimetry. A detailed meeting report describing all the presentations was written by James A. Worthey and published in this journal in August, 1995 [Vol. 20, 271-3].

In the last couple of years we have been again reminded that rod intrusion is an important consideration when we are doing color matching work. The

CIE colorimetry was first developed for a 2 degree field to keep the matches in the fovea where we deal with only the three cone-type receptors, thus avoiding the effect of rods. Later when colorimetry was extended to larger visual fields (10 degree) in the 1964 supplementary standard observer, the scope was still limited to conditions in which the rod receptors were not expected to participate because, as the CIE warned, "rod intrusion" could upset the predictions of the standard observer. However, the CIE recommendations do not give specific numerical limits to avoid rod intrusion. Stiles developed a method for estimating whether rod-photoreceptor activity contributed to color-matching data that required knowledge of the rod threshold at the illuminance levels of the lights being viewed. He suggested that the Aguilar and Stiles scotopic threshold-versus-illuminance curve could be used as an approximation of the threshold. Is this true? Do the experimental conditions have to match? In the first article, "An Investigation of Scotopic Threshold-versus-Illuminance Curves for the Analysis of Color-Matching Data," Arthur G. Shapiro, Joel Pokorny, and Vivianne C. Smith compare rod-sensitivity in detection and side-by-side adjustment tasks.

Graham D. Finlayson recently finished a PhD thesis working under Brain V. Funt. His thesis examined the coefficient (or von Kries) model of color constancy and, in particular, asked if it could be improved by incorporating a cone transformation into the problem formulation.

Indeed a large improvement was shown to be possible: the von Kries coefficient rule is an excellent vehicle for color constancy so long as cone responses are transformed to the appropriate 'coefficient basis'. One derivation (there are several) of the coefficient basis is presented by Finlayson and Funt in "Coefficient Channels: Derivation and Relationship to Other Theoretical Studies" in this issue.

As we go from humans and their color vision to machine vision, we realize that there is much we take for granted when we look at a scene. Generally we can easily discern objects from other objects or from shadows even if there are variations of coloration on the object. However, this is a very complicated task for machines. In approaching this problem Dr. A. P. Petrov's recent research has the aim of distinguishing between an image of a uniformly colored surface with intensity gradients due to shadows and an image of a non-uniformly colored surface. In "Resolving Color Image Irradiance Equation," Petrov and his co-auther G. N. Antonova report on their progress.

Continuing with visual problems that are much harder for machines than humans, Dr. Shoji Tominaga has been examining diffuse reflections, specular reflections, and interreflections between objects. Often when we look at an object, we discount highlights from a light source and even reflections of other objects that we perceive to be surface reflections. However, the radiation hitting our eye (or the machine's receptor) is composed of all these reflections, as well as the body reflection from the object itself. In "Surface Reflectance Estimation by the Dichromatic Model," Dr. Tominaga describes a method for estimating the surface-spectral reflectances of glossy objects when the color signal is a mixture of reflections.

The next article, "Segmentation of Map Image Using Opponent Color Dimensions," describes an application of machine vision in which a computer can extract and recognize the text and graphic contents of a map in much the same way as a person would. This task is not as easy as one might think at first, since letters in any language or orientation must be distinguished from map lines like rivers or topography. The computer process is broken into four steps. First the map is digitized with a scanner, then there are segmentation, analysis, and recognition phases. In this research Liu, Yau, and Martin use a map segmentation based on the color opponent representation, much like that the human visual system. They show this segmentation method to be a useful basis for chromatic description and discrimination, and which may also have practical applications in color object extraction and edge detection.

The next two articles are from the field of computer color graphics. Computer graphics have been developing from simple color cartoon-like images to those that appear much more real. Just as the specular reflections and shadows make it more difficult for machines to analyze visual elements of a scene, the addition of these same attributes greatly enhances the appearance of reality of computer-generated images. Current state of the art allows excellent images to be synthesized; however, this can take large computing capacity and relatively long calculation times. The problem becomes even more difficult when one attempts to produce video that represents real-time images as an observer moves through or looks around a scene. In "Color Representation in Virtual Environments," Robert Geist, Oliver Heim, and Steven Junkins suggest a new technique for adding dynamic highlights, the appearance of translucency, and subtle reflections to computation of real-time scenes.

Our second color computer graphics article, "Linear Color Representations for Efficient Image Synthesis," by Mark S. Peercy, Daniel R. Baum, and Benjamin M. Zhu. Imagine for a minute, an automobile designer being able to walk around a car, open its doors, sit inside and look around, all before a model is built. Or on a larger scale, how about an architect being able to walk through a building, observing how the rooms change from daylight to indoor lighting, or with different color schemes. Designers and architects are two professionals groups who will benefit from dynamic image synthesis. However, how much they will benefit depends on how accurately the images reflect reality. In this article the authors review current computer hardware architecture used for color image synthesis, then discuss and show a prototype system that provides interactive rendering rates with accurate

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color computations.

This month's Color Forum is also from the Pan-Chromatic conference. Henry Hemmendinger asks the question, in"Industrial Applications of Formulation Computations; Is the Computer the Enemy?" Has the increased use of preprogrammed computers attached to instrumentation for colorimetric measurements and computations hampered the further development of color science? It does make it possible for relatively untrained technicians to produce color measurements and even formulations, but it often leads to an absence of someone capable of making a critical evaluation of performance on site. Does anyone know exactly what algorithms are used in the software? What are the relevant published references? Has something new been added? If there are short comings, how can we develop improvements? Dr. Hemmendinger proposes that disclosure of references, detailed equations, and specific methodology, unless proprietary, is an important first step.

There should be special note of three other items in this issue. First is a lengthy and detailed report of the 1995 AIC Meeting on Colorimetry held in Berlin, Germany. The report is written by Paula J. Alessi and summarizes the activities and discussions occuring during the meeting as well as each of the 34 presentations. These summaries are based on notes taken during the presentations and do not repeat either the prepublished abstracts or the later to-be-published articles. Finally, this issue closes with two errata: a portion of a table from the article by Hung and Berns [Vol. 20, 291 (1995)] and a clarification of the title and column headings of the table, "Conversion into Munsell Color Space" in "The British Building Colour Standards: Conversion to the Notations of Munsell, NCS, DIN, Coloroid, Colorcurve, and OSA-UCS," by A. A. Hamie, T. J. Wiltshire, and T. W. A. Whitfield Vol. 20, 328-340, (1995).

Ellen C. Carter
Editor
Color Research and Application

USNC/CIE DIVISION ONE REPORT ON TECHNICAL COUNCIL; MEETING IN ORLANDO, FL.

A SUMMARY REPORT

The United States National Committee of the CIE (USNC/CIE) held a meeting in Orlando, FL from January 27-29, 1996. There were 40 participants in attendance. The primary purpose of the meeting was to summarize events occuring at the 23rd Quadrennial Session held in New Delhi, India from November 1-8, 1995.

The meeting consisted of the Technical Council and Executive Council Meetings on Saturday, Jan. 27th. Then a technical session was held on Jan. 28th. Two speakers were featured. The first speaker was Dr. William A. Thornton and his talk was entitled,"Colorimetry, Then and Now." This was an excellent four hour tutorial - type presentation that sparked a great deal of interest and discussion from participants. The second speaker was Dr. Alan Lewis and his talk was entitled,"Relative Visibility Under Commonly Used Outdoor Lighting Sources." This talk provided a very enlightening discussion of the pros and cons of using photopically weighted units of light in conditions of low luminance.

The final day, Jan. 29th, featured the business meeting. Here we heard from the Executive Officers of the USNC/CIE, the seven Division representatives summarized New Delhi events, and Phil Wychorski on progress in the ISO/CIE Standards arena.

One of the most exciting tidbits learned from the meeting was that John Kaufman has set up a Web page on the Internet for USNC/CIE. You can get to it by typing "http://chelsea.ios.com/~kdtjek/cieusa.html". A highlight of the meeting was a demo of how it works. Listing of CIE Publications, USNC Technical and Executive Council members are available as well as pictures of currently being sought for this Web page. John Kaufman is to be congratulated for a job very well done.

Respectfully submitted,

Paula J. Alessi
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E-mail: pjalessi@kodak.com

A complete report of the meeting in Orlando, FL follows next:

USNC/CIE TECHNICAL COUNCIL MEETING

Orlando, Florida
January 27, 1996
USA Division One Member:
Paula J. Alessi

Contents:

This report covers activities within Division 1 that occurred at the CIE Quadrennial Meeting (23rd Session) in New Delhi, India from November 1-8, 1995.

I. New Division 1 Officers

The new CIE Division 1 Officers were approved as follows:

Director	Ken Sagawa (Japan)
Associate Director for vision section	Francoise Vienot (France)
Associate Director for color section	Michael Pointer (United Kingdom)
Associate Director for visual ergonomics	Siegfried Kokoschka (Germany)
Secretary	Francois Denner (South Africa)
Editor	Paula Alessi (United States)

II. Technical Committee (TC) Status

The following is a status report summarizing TC activities to date. TC members from the USA are listed, when appropriate.

A. Vision Section

TC 1-21 Testing of Supplementary System of Photometry
Chairman: K. Sagawa (JPN)
USA members: C. Howard and J. A. S. Kinney

Terms of Reference: To test existing methods of photometry to evaluate lights for assessing comparative brightness relationships.

Status: Ten different systems have been tested. Unfortunately, the results are inconclusive. No one system had been proven to be best. Selection of a system will have to be based on qualitative aspects. Equivalent luminance will be calculated from photopic luminance, chromaticity and scotopic luminance. The committee agreed that the reference light should be a monochromatic wavelength of 555nm. The third draft of their report is completed.

TC 1-23 Visual Acuity
Chairman: P. L. Walraven (NLD)
USA members: E. Sheedy

Terms of Reference: To write a technical report to investigate the possibilities to standardize a visual acuity function.

Status: A draft report has been circulated among TC members. TC members cannot agree on the contents. Therefore this TC will be disbanded and replaced by a reporter.

TC 1-26 Individual Variation of Heterochromatic Brightness Matching
Chairman: H. Yaguchi (JPN)
USA Member: Dr. Allen L. Nagy

Terms of Reference:

1. To analyze existing data on heterochromatic brightness matching in terms of individual variation.

2. To develop a simple set of individual characteristics for brightness matching.

Status: Data has been collected by the chairman. The variations between observers can be described by a model using only two eigenvectors. It is not clear what the physiological basis is for the variations. Differences in absorption within each observer's lens is a most likely cause. The first draft is nearing completion. Some new experiments have been proposed.

TC 1-30 Luminous Efficiency Functions
Chairman: M. Ikeda (JPN)
USA Members: J. A. S. Kinney

Terms of Reference: To prepare an ISO/CIE Standard on luminous efficiency functions which classifies and specifies the existing functions, Vp(l), Vb(l), Vm(l), and Vb,10 (l), and the color-matching function, y10 (l), if appropriate, in their photometric use.

Status: LaGrange interpolation of the data was examined, but it gave oscillations. Therefore, 1-nm tables have been produced by spline interpolation. TC 1-38 is considering recommending the use of LaGrange interpolation but with change of form for the first and last intervals. Dr. Schanda said he would arrange for this method to be checked.

TC 1-36 Fundamental Chromaticity Diagram with Physiologically Significant Axes.
Chairman: F. Vienot (France)
USA Members: P. Lennie, D. Macleod, J. Pokorny, V. Smith, A. Stockman

Terms of Reference: Establish a chromaticity diagram of which the coordinates correspond to physiologically significant axes.

Status: Work is ongoing to derive a continuous observer with 2 degree and 10 degree as special cases. The approach starts from the CIE 1964 observer and involves the continuous addition of varying parameters, such as field size taking into account the macular pigment, the ocular media, and the photopigment optical densities. Therefore the CIE 1931 color matching functions will not be used.

The procedure to be followed for the derivation of fundamental curves as a function of field size is:

1. Start with the CIE 1964 supplementary standard colorimetric observer color matching functions.

2. Derive 100 fundamental curves at the corneal level - accepting König hypothesis and accepting no short wave contribution to luminance.

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3. Transform into the absorption curves of the photopigments.

4. Do the reverse computation of final fundamental curves at the corneal level for another field diameter.

An LMS space will be developed, but the corresponding XYZ space could be offered for people who were used to it. Procedures for numerical implementation are now ready. Experiments to obtain new empirical determinations of tritan copunctal points in normals have not yet been done. Collecting interocular data for transforming 100 fundamentals to other field sizes has not been completed yet. The observer age and macular pigment density should also be specified.

TC 1-37 Supplementary System of Photometry
Chairman: K. Sagawa (JPN)
USA members: C. Howard and J. A. S. Kinney

Terms of reference: To recommend a system of photometry to assess lights in terms of their comparative brightness relationships

Working Program: 1. To list items on which photometric systems based on brightness matching are evaluated, such as the reference stimulus, linkage to the current CIE photometric and colorimetric systems, practical simplicity and the physiological basis of the system structure, etc. The numerical testing results from TC 1-21 will be included. 2. To evaluate the proposed systems according to the items listed above. 3. To find a system for recommendation by selection from the proposed systems, or by some combination of them. Status: This TC will follow from the completion of TC 1-21 work. They are considering the requirements for a CIE model for a supplementary system of photometry. An outline drafted by the Chair is under discussion.

TC 1-40, Critical Flicker Fusion Frequency
Chairman: K. H. Ruddock (GB)
USA members: None appointed at this time

Terms of Reference: To investigate fundamental parameters affecting critical flicker fusion frequency (CFF) for the evaluation of flicker in CRT displays.

Status: No progress because the Chair is still collecting committee members.

TC 1-41, Extension of Vm(l) Beyond 830nm
Chairman: P. L. Walraven (NLD)
USA members: D. H. Sliney

Terms of Reference: To write a report on the feasibility of extending the Vm(l) function beyond 830nm.

Status: The report has been ready for some time and will be forwarded for voting in the near future.

TC 1-42, Color Appearance in Peripheral Vision
Chairman: M. Takase (JPN)
USA members: I. Abramov, H. Chan, J. Gordan

Terms of Reference: To prepare a technical report on color appearance zones for colored lights in terms of unique hues in peripheral vision.

Status: The first meeting was held in Tsukuba, Japan in July, 1994 with three members attending. The experimental conditions and the extent of the application were discussed with the following conclusions:

1. The test and surround should have photopic levels of over 2000 equivalent scotopic trolands in order to saturate the rods completely.
2. About eight spectral test lights will be used,
3. The color naming method will be used.
4. Maximum eccentricity of the field size is to be 70 degrees.

B. Color Section

TC 1-24 Field Trials of Television Illumination Consistency Index
Chairman: R. White (GBR)
USA member: J. C. Gates

Terms of Reference: To carry out field trials of the television illuminant consistency index and to collect data from practical installations.

Status: This TC disbanded due to lack of activity.

TC 1-27 Specification of Color Appearance for Reflective Media and Self-Luminous Display Comparisons
Chairman: P. J. Alessi (USA)
USA members: M. Fairchild, D. Rich

Terms of Reference: To study and make recommendations for the specification of a color appearance match between a reflective image and a self-luminous display image

Status: Six research groups have responded to the published guidelines (CIE Publication No. 118 Paper No. 4) by submitting results. These will be collated and analyzed within the year.

TC 1-29 Industrial Color Difference Evaluation
Chairman: D. H. Alman (USA)
USA members: R. Berns, T. Maier, C. Reilly

Terms of Reference: To study existing metrics used in industry to evaluate color differences between object colors in daylight illumination and to develop a recommendation on this subject.

Status: The work of this TC has been published in CIE Publication No. 116 "Industrial Color-Difference Evaluation". Another report "CIE Guidelines for Coordinated Future Work on Industrial Color-Difference Evaluation" (CIE Publication

No. 118 Paper No. 7) has been published in Color Research and Application. This report is based on the future work sections of CIE Publication No. 101 developed by TC 1-28 Parameters Affecting Color-Difference Evaluation and this TC. The report discusses methods and objectives for coordinated research in color-difference perception and recommends communication of results to the CIE Reporter (R1-04) for color-difference evaluation. Hence this TC has disbanded after completing its work.

TC 1-31 Color Notations - Color Order Systems
Chairman: C. McCamy, USA
USA Members: F. W. Billmeyer, Jr. and W. Granville

Terms of Reference: To study and report on color order systems in response to a request from ISO for preparatory and background work which must be accomplished before an ISO Standard in the field of color notation can be drafted.

Status: This TC has been having difficulties getting agreement on a report. Five draft reports have been written and all have met with some opposition. Alan Robertson, former Associate Director for Color, has prepared a sixth draft report that is acceptable to the TC Chair and to J. A. Bristow (spokesman for the minority). It will now be circulated to all TC members for approval.

TC 1-32, Prediction of Corresponding Colors.
TC Chairman: Y. Nayatani (JPN)
USA Members: R. Berns (USA)

Terms of Reference: To write a technical report describing the chromatic adaptation transform previously proposed for study (CIE Journal 5-1,pp. 16-18, 1986) together with subsequent modifications.

Status: This TC has disbanded after producing CIE Publication No. 109 "A Method of Predicting Corresponding Colors under Different Chromatic and Illuminance Adaptations".

TC 1-33 Color Rendering
Chairman:W. Walter, USA

Terms of Reference: 1) Study indices for the evaluation of color rendering properties of light sources based on a color appearance model, 2) Prepare a report on a proposed method that will replace CIE Publication No. 13.2 (this report has the potential to become a standard).

Status: Wolfgang Walter resigned as Chair due to a job change. Janos Schanda has been appointed as the new Chair. They will use the Macbeth ColorChecker for samples and CIELAB for a color space. They have not decided on which reference illuminants, but there will probably be six. They expect to produce a final report in 1996.

TC 1-34 Testing of Color Appearance Models.
Chairman: Dr. Mark Fairchild, USA

Terms of Reference: Investigate the performance of models based on their ability to predict the color appearance of surface colors in simple and complex scenes under various illumination conditions.

Status: Based on existing data, the Chair drafted a first report that is currently being reviewed by TC members. Guidelines for coordinated research on color appearance models have been published in Color Research and Application.

TC 1-35, Selection of Light Sources for Color Vision Examination.
TC Chairman: S. Dain, Australia
USA Members: J. Pokorny (USA), A. Lewis (USA)

Terms of Reference: To provide a procedure and criteria for the identification of appropriate light sources for color vision examination using reflecting samples.

Status: Unknown

TC 1-38, Compatibility of Tabular Data for Computational Purposes
TC Chairman: C. McCamy (USA)

Terms of Reference: To prepare guidelines for tabulating CIE spectral data to provide compatibility of sets of data for computational purposes, considering such factors as spectral range, spectral interval, bandpass function, truncations, interpolation, extrapolation and number of digits.

Status: A second draft set of guidelines for tabulating CIE spectral data has been prepared. All other CIE divisions will be kept informed of their work.

TC 1-43, Rod Intrusion in Metameric Matches
Chairman: R. S. Berns (US)
USA members: H. Fairman, V. Smith

Terms of Reference: 1. To write a report giving a step by step procedure for calculating the effect of rod intrusion on trichromatic color matches; 2. To use the procedure to calculate the effect of rod intrusion on typical industrial color matches

Status: A method for calculating the rod intrusion effect has been agreed upon, except for calculation of pupil diameter. Metamers have been generated to use the method to evaluate the rod intrusion effect in practice.

C. Visual Ergonomics Section

TC 1-14 Lighting Effects on Vision
Chairman: P. R. Boyce (USA)

(Continued→)

USA members: A. P. Ginsburg, M. S. Rea

Terms of Reference: To produce a report, usable by intelligent laymen, describing the effects of lighting conditions on visual capabilities and demonstrating how this knowledge can be used to determine appropriate lighting conditions for the performance of specific tasks.

Status: This TC was disbanded at the Division 1 meeting held in Japan in July, 1994. The material collected is archived at the CIE Central Bureau.

TC 1-16 Lighting Needs for the Partially Sighted
Chairman: W. G. Julian (AUS)
USA members: L. Bailey, P. R. Boyce, E. E. Faye, G. E. Fonda, S. C. Miller

Terms of Reference: To try to determine lighting needs for the partially sighted not only at the individual level by causal or functional subdivision, but also as a group with the view to accommodating public buildings, nursing homes, schools, etc. As the individually needed or preferred (il)luminances are very variable among the partially sighted, emphasis will be put on quality, flexibility, and safety aspects of lighting rather than on quantitative ones.

Status: The Chair hopes to publish the very long report in 1996. A disk version will be used for voting to avoid expensive printing and mailing of the text.

TC 1-18 Disability Glare
Chairman: J. J. Vos (NLD)
USA members: H. R. Blackwell, G. A. Fry

Terms of Reference:
1. To recommend a revised Stiles-Holliday formula which could be named the CIE Standard Disability Glare Formula.
2. To recommend a study on the relationship between disability glare and age.

Status: There is strong disagreement within the TC. One last attempt will be made at getting agreement. If compromise/ agreement is not possible, the TC will be disbanded and replaced by a reporter.

TC 1-19 Specification of Visibility for Real Tasks
Chairman: W. K. Adrian (CAN)
USA members: H. R. Blackwell, P. R. Boyce

Terms of Reference: To prepare a review of all methodologies for evaluating the visibility (threshold or suprathreshold) of real tasks.

Status: The committee's first meeting was held in Budapest. The TC has gone beyond its terms of reference and would like to go even further. It was agreed to concentrate on producing a report that would satisfy the original terms and then a new TC could form to go further.

TC 1-25 Fundamentals of Discomfort Glare
Chairman: M. J. Perry (GBR)
USA members: S. M. Berman, A. L. Lewis

Terms of Reference: To define discomfort glare, to identify the origins of discomfort glare, and to develop and assess methods of measuring discomfort glare.

Status: This TC has been disbanded.

TC 1-39, Discomfort Glare Experienced by Elderly People
Chairman: S. Kanaya (JPN)
USA members: P. R. Boyce (Consultant)

Terms of Reference: To survey published data on discomfort glare and to recommend standards for maximum tolerable levels of discomfort glare for elderly people.

Working Program: 1. Survey the recent data concerning discomfort glare for elderly people, 2. Analysis in order to propose recommendations concerning discomfort glare for elderly people, 3. Write a report on the study.

Status: The Chair has been appointed Associate Director of CIE Division 3 so she must resign from Chair of this TC. M. Perry of the United Kingdom has been appointed the new Chair.

III. New Technical Committee (TC) Proposals

A. The following new TC proposal came about after Dr. Zwinkels report on Practical Daylight Sources, which stated that it is possible to recommend a practical means for simulating daylight.

Title: Practical Daylight Sources of Colorimetry

Terms of Reference: 1. To intercompare existing daylight simulators for color measuring instruments and color matching booths; 2. On the basis of this intercomparison, to recommend practical methods for simulating daylight sources.

Chairman: Dr. R. Hirschler (Brazil)

The title, terms of reference and Chairman were approved by unanimous vote. It was given a number of TC 1-44.

B. The following new TC proposal was put forth by Cal McCamy because D50 is required for the ISO standard on viewing conditions for graphic arts.

Title: Revision of CIE Publication 51 to include D50 simulators

Terms of Reference: To prepare a revision of CIE Publication 51-1981 "Method of Assessing Daylight Simulators for Colorimetry" to include assessment of D50 simulators

Chairman: Mr. Calvin McCamy (USA)

The title, terms of reference and Chairman were approved by unanimous vote. It was given a number of TC 1-45. Van Kemmende agreed to join the committee. Cal will approach Dr. Nayatani and Dr. Hirschler to join the TC as well.

C. The following new TC proposal was put forth because the official CIE definition of equivalent luminance was changed to:

Equivalent luminance (of a field of a given size and shape, for a radiation of arbitrary relative spectral distribution) (Leq) is luminance of a comparison field in which *monochromatic radiation of frequency* 540×10^{12} *Hz* has the same brightness as the field considered under the specified photometric conditions of measurement; the comparison field must have a specified size and shape which may be different from that of the field considered.

unit: candela per square meter cd/m^2

Note 1: Radiation at a frequency of 540×10^{12} *Hz has a wavelength in standard air of 555.016nm.*

Note 2: A comparison field may be used, in which the radiation has a relative spectral distribution different from that of a Planckian radiator at the temperature of freezing platinum (T = 2042K), if equivalent luminance of this field is known under the same conditions of measurement.

The new TC proposal was as follows:

Title: Concept and Application of Equivalent Luminance

Terms of Reference: To write a technical report describing the fundamental concept of equivalent luminance and provide guidelines on how to apply these concepts

Chairman: Dr. S. Kokoschka (GER)

The title, terms of reference and Chairman were approved by unanimous vote. It was given a number of TC 1-46. Dr. Sagawa agreed to join the committee.

IV. Reporter Status

A. Vision Section

Brightness-Luminance Relation:F. J. Blommaert (NLD) Reporter - R-02

Status: A report has been submitted covering research in this area over the last two years. Thirteen references are cited and subjects include reconceptions of brightness and lightness, factors influencing lightness and brightness perceptions, and luminance processing

B. Color Section

Color Difference Evaluation: T. O. Maier (USA), Reporter, R-04.

Status: Dr. Maier resigned as Reporter, but has said that publication of the report of TC 1-29, Industrial Color Difference Evaluation, has stimulated interest in the subject. Dr. Klaus Witt (GER) was proposed as the best candidate to assume this Reporter. His appointment was unanimously approved.

Practical Daylight Sources: J. C. Zwinkels (CAN), Reporter, R-09.

Status: Dr. Zwinkels produced a report stating that a xenon source plus a 4 filter combination can give publication 51 indices A,A for both the uv and visible regions. A quartz halogen lamp with a 4 filter combination can give an A index for the visible region. Thus Dr. Zwinkels expressed the view that it is possible for the CIE to recommend a practical means of simulating daylight. Hence the proposal for CIE TC 1-44 began.

Observer Metamerism: Y. Nayatani (JPN), Reporter, R-10.

Status: Dr. Nayatani advised that there is no need to revise CIE Publication No. 80 though a paper by Fairchild and North and Fairchild and Alfvin suggested the need. No formal proposal for revision was received from anyone. Dr. Nayatani's assessment was accepted and the Reporter was closed.

Cognitive Aspects of Color: Dr. G. Derefeldt (SE), Reporter, R-11.

Status: Dr. Derefeldt has completed a study which has been published in SPIE proceedings. It will also be published in the CIE Collection. It is still not time to form a TC. Dr. Derefeldt will continue as Reporter.

C. Visual Ergonomics Section

Engineering Applications of Brightness Scales: T. Takeuchi (JPN), Reporter,
R-03

Status: Mr. Takeuchi has used brightness scales in a study of lighting in tunnels and the problem of traffic jams. He has presented a paper on the subject.

Transient Adaptation: S. Kokoschka (GER), Reporter, R-06.

Status: Dr. Kokoschka has studied loss of visibility following a sudden change in the luminance of the field. He found insufficient research being carried out to justify the formation of a TC. Therefore he will complete a report.

Visual Fatigue: E. Megaw (GBR), Reporter, R-07.

(Continued→)

Status: Unknown

V. New Reporter Proposals

A. It had been suggested at previous Division 1 meetings that a revision of Wyszecki and Stiles, "Color Science" book was needed. The editor and authors of chapters should be drawn from Division 1 members. Wiley has responded enthusiastically to the prospect. Thus the following Reporter proposal was put forth:

Title: Revision of Wyszecki and Stiles, "Color Science"

Terms of Reference: To report on the need and possible mechanisms for revising the book "Color Science" by Wyszecki and Stiles by considering which parts need updating, what is available in other books and who might contribute to the work.

Reporter: Dr. P. Walraven (NLD)

The title, terms of reference and Chairman were approved by unanimous vote. It was given a number of R 1-13.

B. Professor Julian reported that some fluorescent lamps have a red phosphor band that is very narrow and not located at wavelengths coinciding with the red reflectance of hemoglobin. Such lamps could fail to distinguish the bluish appearance of patients with low blood oxygen levels from those with normal levels. Good color rendering is essential for such clinical observations. Thus the following Reporter proposal was put forth:

Title: Visual Observations of Blood Oxygen Levels

Terms of Reference: To report on problems associated with the use of narrow band phosphors in high efficiency discharge lamps for clinical observations including visual assessment of a patient, based on rapid changes in blood oxygen levels, and whether this may require one or more additional test colors to be used for a special CRI or for inclusion in a new general CRI.

Reporter: W. Julian (AUS)

The title, terms of reference and Chairman were approved by unanimous vote. It was given a number of R 1-14. Professor Julian is expected to complete the report within two years.

VI. Proposal for New Work

Revision of CIE Publication 15.2, Colorimetry

Professor Morren had written the Division proposing that such a revision was necessary. Dr. Pointer will seek a Reporter to identify those parts of 15.2 which need updating and changing. Such a revision should also take into account the applicable work of other TCs in other CIE Divisions. It is likely that following an initial report from the Reporter, a small editorial committee would be needed.

VII. CIE Expert Symposium '96 on Color Standards for Image Technology

An overview of this symposium was given in the January/February 1996 ISCC News No. 359. The following speakers and topics will be featured at the symposium, which will be held from March 25-27, 1996 at CIE Central Bureau in Vienna, Austria:

David McDowell - ISO/IEC JTAG2 - What It Is and How It Works
Jack Holm - ISO TC42 (Photography)
David McDowell - TC 130 (Graphic Arts)
David Wood - ITU Working Party 11A (Television Systems and Data Broadcasting
Roy Berns - Review of Colorimetry in Image Technology
Francoise Vienot - CIE TC 1-36
Robert Hunt - The Function, Evolution, and Future Color Appearance Models
Mark Fairchild - CIE TC 1-34
Michael Stokes & Ricardo Motta (HP) - A Single RGB Monitor Space
Andrew Hanson - CIE TC 2-26 - The Relationship Between Digital and Colorimetric Data for Computer-Controlled Color CRT Displays and CIE TC 2-42 - The Colorimetry of Visual Displays
Lindsay MacDonald (Cheltenham & Gloucester College) - Color Management and Display Calibration
Chris Summers (Phosphor Technology of Excellence) - Emissive Displays
Paula Alessi - CIE TC 1-27
Tony Johnson - Viewing Conditions Standards
Michael Has - International Color Consortium
Ed Giorgianni & John Setchell (Kodak) - Color Encoding for Color Management
Daniel Lee - ITU-T SG8 and ISO/IEC JTC1 SC 29 - Color Facsimile

There will be four roundtable discussions:
1. Color Spaces and Color Appearance Systems
2. Calibration, Characterization, and Test Targets
3. Cross-Media Comparisons, Viewing Conditions, and Gamut Mapping
4. Color Profiles, File Compression, and Color Management

VIII. Meeting Schedule

The next Division One meeting will be held in Goteburg, Sweden in conjunction with the AIC meeting on Color and

Psychology from June 13-14, 1996.

Respectfully Submitted,
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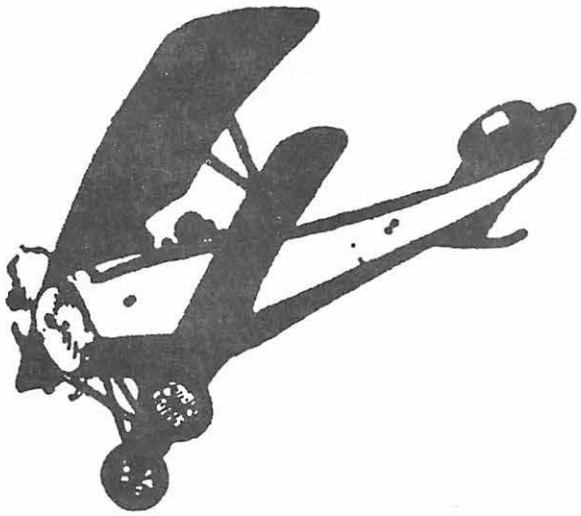

Hammonds Reach A 50 Milestone

How often does an active ISCC member celebrate a 50th wedding anniversary? Many of us know Pauline and Harry Hammond. If you do not recognize the name, you certainly will have seen Harry as the unofficial roaming photographer of most ISCC, CIE, ASTM and other meetings and functions along with his contributions at committee meetings. He is also a regular contributor/editor to this publication after spending 38 years at the National Bureau of Standards (NIST today) and then joining Gardner Laboratory where today he is still an active consultant. Perhaps what is more interesting about this anniversary is that it is an indirect result of Harry's Color and Appearance involvement and a most unusual and unique story!

In 1939 Harry joined NBS and began work with Richard Hunter , Dean Judd and others. His initial work was on the measurement, standardization and requirements for aircraft lighting and airport landing systems. He recognized a major limitation to this research was that no one in the group was a pilot. His solution was to learn to fly, which he did over the next year and a half. In April of 1942 The US Army activated Harry where he reported to Fort Monmouth, NJ at Signal Corp. headquarters. The Signal Corp was also the branch which founded The Army Air Corp which later became The Air Force, so there were lots of planes at Monmouth. Pauline lived and worked near the base and was herself dating a pilot at the time. After a double date in April of '42 Harry decided to give Pauline a thrill for her birthday and take her up for a few spins and a loop. However, the flight became more memorable when the engine died at 2000 ft. Luckily Pauline spotted the field and Harry was able to make a dead stick landing. Pauline would certainly remember Harry!!!

In August Harry shipped out first to England and eventually to France and Germany. The two love birds corresponded until his return in February 1946. They were married on May 4th 1946.

I am sure you will join us in wishing them a most HAPPY 50th.

G. Celikiz and Krew Hammond

NEWS FROM MEMBER BODIES

FEDERATION OF SOCIETIES FOR COATINGS TECHNOLOGY

Darlene R. Brezinsky, President, Consolidated Research, Mount Prospect, IL became the 74th President of the FSCT on October 11, at the Federation Annual Meeting, in St. Louis, MO. Jay Austin was named President-Elect and Thomas E. Hill was elected Secretary-Treasurer.

Dr. Brezinski previously served as President-Elect of the FSCT and is a member of the FSCT Executive Committere. Her many contributions to the Federation as a member of its Board of Directors, Publications Committee, Editorial Review Board of the JCT, a Co-Editor of the Federation Series on Coatings Technology , and Editor of An Infrared Spectroscopy Atlas for the Coatings Industry (4th Edition). She also has served as Chair of the Annual Meeting Program, George Baugh Heckel, Mattiello Lecture, and in 1991, she received the Union Carbide Award. Dr. Brezinski also is a member of the Gallow's Birds.

As chair of the Chicago Society's Technical Committee, she was instrumental in the development of the FSCT Panorama™ Coatings MSDS System. This year Dr. Brezinski received the Chicago Society Outstanding Service Award and the Cleveland Society Symposium Best Speaker Award.

Dr. Brezinski was graduared from Mundelein College, Chicago, IL, and received the MS and PhD Degrees in Chemistry from Iowa State University. She had served as Chair of the Chemistry Dept. at Mundelein, prior to becoming a contributor to the coatings industry 23 years ago. Dr. Brezinski is an Expert Witness, and a Board Certified Forensic Examiner and a Fellow of the American Board of Forensic Examiners.

Mr. Austin was a Trustee of the Coatings Industry Education Foundation (CIEF) and a member of the Executive and Finance Committees. He served as Chair of the FSCT Corrosion Committee for six years (1986-92), was a member of Corrosion Committee, and served on the Editorial Review Board of the JOURNAL OF COATINGS TECHNOLOGY. As well as being active in the Federation, Mr. Austin is a member of the Steel Structures Painting Council Association of Corrosion Engineers, and American Society of Testing and Materials. Mr. Austin studied Chemistry at Purdue University and has worked in the coatings indutry for 20 years.

Mr. Hill, a member of the FSCT Executive Committee, was the Western New York Society Representative to the Federation Board of Directors from 1983-90. In addition, he served on the Program, Investment, and Paint Show Exhibits Committees. He also served on the Program and Educational Committees of the Western New York Society. A member of the coatings industry for 25 years, Mr. Hill was educated at West Virginia University and the State University of New York at Buffalo.

FSCT ANNOUNCES THE MEETING IN MEXICO

The FSCT is pleased to announce the first Pan-American Coatings Expo, to be held at the Sheraton Maria Isabel Hotel & Towers, Mexico City, Mexico on August 15-17, 1996. Co- sponsored by the Associacion Nacional de Fabricantes de Pinturas y Tintas, A .C. (ANAFAPYT) the Instituto Mexicano de Tecnicos en Pinturas y Tintas (IMTPYT), and FSCT. The Pan-American Coatings Expo is an exhibition focused on the manufacturing, environmetal, and formulating needs of the Latin American coatings market. The event will be held in conjunction with the Annual Convention of ANAFAPYT and the Technical Conference of the Mexico Technical Institute.

Product categories to be represented include: additives; resins; pigments; solvents; plasticizers; emulsions; colorants; extenders and fillers; laboratory and testing instruments; measurement instrumentation; container filling equipment; production equipment; application equipment; consulting services; and all other raw materials, services, and equipment for the formulation, testing manufacture and application of paints, inks, and powder and high-solids coatings.

The Expo is expected to attract management representatives including managing directors, purchasing managers, and plant managers; technical personnel, such as technical directors, chemists and technologists, and those involved in research and development; as well as industrial users and applicators.

The geographical areas covered by the Pan-American Expo are Mexico, Central America, including Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, and Belize; South America, including Argentina, Brazil, Colombia, Ecuador, Bolivia, Venezuela, Paraguay, Uruguay, Chile, and Peru; and the West Indies.

For additional information on exhibiting at or attending the Pan-American Coatings Expo, contact Robert Ziegler, FSCT, 492 Norristown Rd., Blue Bell, PA 19422-2350; (610)940-0777; FAX: (610)940-0292.

THE SOCIETY FOR IMAGING SCIENCE AND TECHNOLOGY

IS&T is sponsoring The Twelfth International Congress on Advances in Non-Impact Printing Technologies in The Hyatt Regency Hotel, San Antonio, TX, Oct. 27-Nov. 1, 1996 Dr. Andrew Melnyk of Xerox Corp. is the General Chair. Program Chairs are Jeff Anderson, Tektronix (US/Canada); Shigenori Otsuka, Mitsubishi Kagaku (Japan/Asia); and Pirkko Oittinen, Helsinki Univ. (Europe). The scientific and technical program will include sessions related to the following topics:

Ink Jet Printing
Fabric Printing
Thermal Printing
Color Science & Standard
Electrostatic Marking Processes
Print & Image Quality
Electrostatic Marking Materials
Image Acquisition & Processing
Photoreceptors
Halftone Imaging
Media for NIP
Printing Electronics & Software
Input-Output Scanners
NIP Material Manufacturing
Magnetography
Electrography & Ionography
Novel Printing Technologies
New Application of NIP Technology
Advanced Printing Systems & New Products

Those wishing to present a paper are requested to send a 200 word abstract and a short biographical sketch of the author(s) before April 1, 1996 to the Publications Chair:

Dr. Michael Hopper, Xerox Research Center of Canada
2660 Speakman Drive, Mississauga, Ont., Canada L5K2L1
Tel: (905)823-7091 Ext.304
Fax: (905)822-7022;
E-mail: hopper@xrcc.xerox.com

Please designate from the list of Proposed Program Topics the topic that is most descriptive of your presentation. Authors will be notified of the acceptance of their paper in May and then must submit the full paper for publication in the Proceedings. Papers may be submitted in either electronic form or hardcopy. Additionally an "Author's Form" that will be provided by IS&T , must be completed and returned. The deadline for submitting the full paper is July 12, 1996 for hardcopy form, or July 26, 1996 if submission is electronic.

In addition to contributed papers, attendees will have the opportunity to hear talks with a broader perspective. Keynote Addresses will be given each day on a topic of general interest. Furthermore, Focal Papers at the beginning of each session will provide a more in-depth overview of report on a major advance.

A full session will provide a more in-depth overview of report on a major advance. A full program of tutorials in areas of major interest, a Gallery of Prints, and an Exhibition of Products are also planned.

For further information or to receive the preliminary program contact:
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E-mail: info@imaging.org.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS & COLORISTS

Activities of the Research Committee on Color Measurement (RA36): -TEST METHODS:

Evaluation Procedure 6, Instrumental Color Measurement was completed and approved by committee and by Technical Committee on Research (TCR) letter ballot. The new procedure replaces Test Method 153, and appears in the 1996 AATCC Technical Manual. Test Method 110, Whiteness of Textiles, was amended to incorporate Tint Value in accordance with CIE 15.2 (1986), and definitions of several terms consistent with ASTM. RA36 is recommending withdrawal of Test Method 145 BlueWool Lightfastness Standards, since Evaluation Procedure 6 includes relevant text on sample presentation and calculations for these samples.

OTHER SUBCOMMITTEES: The publications subcommittee of RA36 is in the process of issuing a new , revised second edition of the Color Technology in the Textile Industry book. The first edition has long been sold out. A subcommittee of AATCC is developing a videotape demonstrating proper use of the Gray Scale and The Chromatic Transference Scale. RA36 is continuing investigation of re-issuing Glenn Color Rule, with either existing or new fabrics.

ISO REPORT: Couple of members of RA36 have attended the ISO meeting in St . Gallens, Switzerland in June 1995 as delegates from USA. Activity at the meeting included:

1) Approval of ISO 105-J03 (CMC method) as an official publication.

2) Submission of ISO 105-J01 (similar to Evaluation Procedure 6, but excluding description of transmittance) as committee draft document.

(Continued→)

3) Submission of ISO 105-J02 (relative whiteness) as draft international standards. It is similar to Method 110, except title is changed to "Relative Whiteness".

OTHER BUSINESS:

1) Committee discussed problem of replacement lamps for CWF. New, low-energy lamps may become widely used in retail and manufacturing environments, but they introduce significant metamerism for many color difference comparisons. Spectral Power Distribution (SPD) data are not yet available for these new lamps. RA36 is to pursue publication and implementation of data to support use of these new lamps which do not conform to CIE illuminants.

2)RA36 members hosted two succesful sessions of the popular Color Measurement Workshop at the AATCC Technical Center one on September 27-28, 1995 and a second one on January 9-10, 1996.

1996 MEETINGS: RA36 meets three times a year. This year the meetings are scheduled for Wednesday, February 14, 1996 in Charlotte, NC; Thursday, May 9 in Baltimore, MD, and November 19-21 in Research Triangle Park, NC. For meeting inquiry, please contact AATCC at 919/ 549-8141.

Respectfully submitted,
Ann Campbell Laidlaw
Chair, RA36

COLOR MARKETING GROUP COLORS THAT WILL SELL IN 1997

COLOR MARKETING GROUP
THE ASSOCIATION FOR INTERNATIONAL COLOR DIRECTIONS

ALEXANDRIA, VA. - Although the average consumer may not be thinking of what products he or she will purchase in 1997, the members of CMG, have already forecast what colors those products will be. According to Susan Iverson, CMG*, Midwest of Cannon Falls, Inc. co-chairman of CMG's Consumer Color Directions committee, "Consumers can expect colors in 1997 to become lighter and softer in response to the continuing desire for more comfortable and relaxed environments. Red will have an impact as it moves from warm to cool."

As we move toward the end of the decade, says Michelle Lamb, CMG, Marketing Directions, Inc., Iverson's co-chair, "Color will shift from masculine darks to lighter, more feminine influences. There will be a complex grayed influence in the mid-range to dark colors, and clean/clear influences with the lighter colors. New technologies, new textures and new finishes are also adding layers of possibilities with regard to how color can be used."

CMG's 1997 Consumer Color Directions palette shows that, while the environment still plays an important role, there will be a gradual move away from greens as they become softer, almost neutral. There will be an increasing impact of browns as another strong natural/neutral influence, grays will turn cooler, which means they will shift from brown to blue-cast colors.

The 1997 Consumer Palette includes 13 colors listed below, which are forecast to appear in the marker in 1997:

Lime Light : A veiled yellow-green that is softened and sophisticated.

Texas Gold : A metallic, muted gold, as it is found in its natural state.

Longhorn : Representative of the new redder browns, Longhorn is at the deeper end of the spectrum.

Stetson : A grayish, red-cast brown.

Mediterraneo : This aquatic hue is bright, energetic and fun.

Clementine : A mid-tone orange that cannot be ignored!

Silver Spur : A metallic color that is the neutral palette's techno-color, mineral gray.

Canyon Cloud : An ethereal, metallic color, reminiscent of a morning mist.

Anemone : An evolution of purple-violets toward pink.

Vinaigrette : Red-blues and blue-purples are current. Orange-cast purples will be fresh.

Miss Ellie : A powdery pink that is directional as an indication of the shades of colors to come.

Red Snapper : A deep, gender-neutral direction for coral.

Sangria : Burgundy goes bright with Sangria.

These Forecast Colors are part of CMG's 1997 Consumer Color Directions palette, which was developed during CMG's May 1995 International Conference held in Dallas, Texas. Over 650 CMG members from around the world attended. In formulating the 1997 palette, CMG members draw on their own color experience, but at the same time, look at trends they see in consumer behavior and in economic and political climates. Some of the themes and influences that CMG Members at the Conference saw affecting the direction of color are:

- An increase in emotional response to environmental issues.
- The acknowledgement of a more assertive buying role for women in high-ticket items.
- An increasing emphasis placed on function and practicality as opposed to image.
- New technologies, which provide fresh options for using color, less costly ways to produce colors and a variety of special effects.
- A desire for more complex color, which adds to the perceived value of the product.
- Special effects as a more common element of product assortments.
- The new interest in Metallic or Burnished colors, which is part of the trend toward luster and away from gloss.
- Veiled colors and treatments resulting in a sophisticated look for products.
- The critical role of Neutrals as a bridge between masculine and feminine colors.

Color Designers are professionals who enhance the function, saleability and/or quality of a product through their knowledge and appropriate application of color.

For more information, please call 703/329-8500 or write: Color Marketing Group, 5904 Richmond Hwy., Suite 408, Alexandria, VA 22303 USA.

COLOR MARKETING GROUP INTERNATIONAL COLORLINK AWARD PRESENTED

Merritt Whitman Seymour, ISDA, CMG*, of USG Interiors, Iinc., has been awarded the prestigious Color Marketing Group (CMG) International ColorLink™ Award to recognize his efforts in promoting an awareness of the importance of the international aspects of color marketing.

Seymour, currently director of product design and development for USG Interiors, Inc. in Chicago, has been an active member of CMG since 1978. He has served on CMG's Board of Directors and was president of CMG from 1989 to 1990. Through Seymour's efforts during his presidency, major strides, including the adoption of the term "ColorLink," were made to establish links with a broad base of diverse cultures. CMG president Laraine Turner, The Jolly/Turner Group, Inc., Long Beach, CA said,"Merritt Seymour recognized the need to gather and exchange information from around the world so that CMG would truly be "The Association for International Color Directions™." His insight brought CMG into the forefront as the word and the spirit of 'international' became an integral part of CMG's direction."

CMG established the International ColorLink Award in 1991 to recognize extraordinary accomplishments that improve CMG's ability to provide international color marketing information and that increase the exchange of information between CMG members and like-minded organizations or individuals on an international level.

At CMG's Fall 1995 International Conference in Phoenix, Ariz., the Board of Directors awarded Lifetime Membership to Carol Forbes, CMG*, of C. Forbes Designs in Dalton, GA., and Ross Snodgrass, CMG, of American Paint Journal Co. in Wheeling, IL.

Life Membership is awarded to long-time members who have made outstanding contributions toward the advancement of professionalism in color marketing.

Carol Forbes, CMG, joined CMG in 1976. Since then, she has served on the Board of Directors and as Secretary of the CMG Executive Committee. Forbes attended over 30 CMG conferences and has often served as workshop captain or co-captain. She was also chairman of several committees, including Color Directions™ and Creative Fest '85. In 1984, Forbes was awarded the CMG President's Award.

Ross Snodgrass, CMG, joined CMG in 1971. He has served on CMG's Board of Directors and on the Executive Committee as Treasurer. Snodgrass was captain or co-captain of numerous CMG workshops and chairman of several CMG committees, including Technical Directions and Creative Fest '85. In 1986, Snodgrass received the CMG Service Award.

*The "CMG" appellation after a member's name indicates they have earned "Chairholder" status in Color Marketing Group, recognizing their achievement and leadership in the profession of Color Group.

ASTM NEWS

W. Conshohocken, PA., Jan. 3,1996 - Alfred C. Webber, retired from E. I. duPont de Nemours & Co., has been named the 1995 recipient of the ASTM's Award of Merit. The title of fellow accompanies the award. Weber was nominated by Committee D-20 on Plastics, and was cited for his outstanding service and sustained leadership in developing standards in Committee D-20 and for his services to the entire Society.

A native of Lisbon Falls, ME, Webber earned a BS degree in physics from Bates College in 1928 and an AM degree in physics from Boston University in 1940. Until his retirement in 1972, Webber was with DuPont serving in positions of supervisor, senior supervisor and research associate in the Plastics Research Divison.

The Chadds Ford, PA resident has been active in ASTM since 1945. He served on the ASTM Board of Directors from 1958 to 1966, serving as ASTM president from 1962-1963 and vice president from 1961-1962. Webber has participated on numerous subcommittees within Committee D-20 as well as Committees E-1 on methods of Testing and E-12 on Appearance. In addition to chairing Committee E-1 and serving as vice chairman for D-20, Webber also chaired the ISO Technical Committee 61 on Plastics Technical Advisory Group for eight years and served as a member for 17 years.

In 1985, Committee D-20 presented Webber with its first Award of Excellence recognizing the member who has contributed the most toward the development and use of consensus standards or who has fostered competency and proficiency in the plastic field.

Carla M. Juliani
610/832-9605

HFES - THE HUMAN FACTORS & ERGONOMICS SOCIETY

HFES IS ON THE Web AT

http://www.hfes.vt.edu/HFES/

Santa Monica, CA - On December 1, 1995 the Human Factors and Ergonomics Society (HFES) established a World Wide Web site to promote Society activities, services, and publications.

The HFES Web site contains 123 pages of information, providing a comprehensive information resource about the Society, its membership, and services for convenient public perusal. Visitors to the Web site can submit online applications for membership and other publications, read up-to-date Society news, submit their own news items for instant publication. The Web site also offers electronic mail connections between the members and the Society and, in particular, with its key officers, member representatives, and staff members.

The HFES Web site has four main sections and three supplemental sections, as shown below. Sections are designed for quick access through graphical and text hyperlinks, as well as through a site index.

Main Sections
1. Overview of the Society
   - The Society's History
   - Organizational Structure
   - Membership Data
   - Membership Services
   - Recent Activities in the Society
2. News Bulletin Board
3. Member Desk
   - Membership Applications
   - User Comments Forms
4. HFES Store
   - Publications
   - Collectibles
   - Supplemental Sections

1.Help using the Web site
2.Search the Web site
3.Great Escapes from the HFES site

OVERVIEW presents backgroud information on the Society, such as its history and organizational structure, descriptions of technical groups, regional chapters, and student chapters; and the full text of the Society's Bylaws, Articles of Incorporation, and Code of Ethics.

THE NEWS BULLETING BOARD allows users to post and read news articles of interest to members. Several news categoiries are available for quick access to the items: General Interest, People News, Upcoming Meetings, Technical Groups, Local Chapters,Student Chapters, and News in Academia, News in Industry, and News for Practitioners.

At the MEMBER DESK, users can complete and submit on-line application forms for membership in the Society and for changing their membership status. Users can also select several e-mail forms for sending messages directly to the Society's president, executive director, Publications Department, Placement Service, and Membership Services Department.

The HFES STORE is a cybermarket where shoppers can fill their virtual shopping carts with the Society's publications and collectible products. The store accepts credit card orders through a secure interface that protects personal information sent over the internet.

A HELP section provides information on basic Web browsing techniques, as well as hints on Web browser programs and computer configurations. The SEARCH page allows for rapidly locating information, by word or phrases, on any page in the site. The GREAT ESCAPES section provides links to other Web sites that provide information on human factors and ergonomics.

As of late January 1996, the home (main) page was downloaded about 3000 times by users in more than 25 countries. The most popular sections

of the site have been the News Bulletin Board, HFES Store, and Great Escapes.

Considerations for future additions to the site include searchable lists of publications and directories, on-line manuscript submissions, and multiuser conferencing.

Visit HFES today at http://www.hfes.vt.edu/HFES/.

The HUMAN FACTORS AND ERGONOMICS SOCIETY is a multidisiciplinary professional association of more than 5200 persons throughout the world. Members include psychologists, engineers, designers, and scientists, all of whom have a common interest in designing systems, tools, products, and equipment to be safe and effective for the people who operate and maintain them.

CONTACT HFES AT (310) 394-1811.

MEETING REPORT FOR THE IS&T/SID 3RD ANNUAL COLOR IMAGING CONFERENCE - SCOTTSDALE, AZ, NOVEMBER 7-10, 1995

Conference Summary

The society for Imaging Science and Technology and the Society for Information Display (SID) held their 3rd Color Imaging Conference at the Radisson Resort in Scottsdale, AZ. The conference chairs, Michael Stokes (Hewlett Packard) and Louis Silverstain (VCD Sciences, Inc.), along with Technical Chairs Joyce Farrell (Hewlett Packard) and Jim Sullivan (Eastman Kodak) put together a dynamic and thought provoking meeting. The technical program consisted of 33 presented papers, 18 poster papers plus an invited evening presentation and discussion. Prior to the conference, a day of tutorials was offered to assist newcomers in coming up to speed and to provide in depth technical review for anyone interested in a refresher or in delving into a topic in more detail. The format for these tutorials was different from those held in prior years, consisting of topical reviews which were 90 minutes in length. This gave attendees the opportunity to cover more topics in a shorter span of time.

The Color Imaging Conference is relatively new to the professional conference scene, but in the space of three short years, it has grown in terms of its content and prominence among imaging professionals. The theme of this year's gathering, Color Science, Systems, and Applications, attracted participants in a variety of disciplines and served as a forum to share and discuss the latest results and emerging new trends in color imaging.

The conference began with two Keynote Addresses. First Robert W.G.Hunt, have a retrospective of "Color Reproduction - Past, Present and Future" in which he drew upon facets of his 36 year career with Eastman Kodak. In his presentation. Dr. Hunt contrasted technology quality with consumer acceptance and gave a number of examples of exceptional technologies that were failures within the consumer market, including technology such as Lippman's photographic emulsions (capable of colorimetric reproduction). The bulk of the presentation elaborated on the advantages, disadvantages, and suitable markets for a variety of technologies designed for image capture, generation of printed copy, and electronic image display. An important prediction that he made was that further technology developments in areas such as electrophotography hinge on a few far reaching inventions - in much the same way that visionaries such as Ralph Evans contributed to the field of photography.

In the second keynote, David Brainard (UC Santa Barbara) detailed work in the area of "Reconstructing Images from Trichromatic Samples." This work was stimulated by an observation that humans process color images through three types of cones in the eye arranged in interleaved mosaics, and that in order to perceive images that are consistently free of artifacts, the human visual system utilizes a complex means of compensating for cones that are missing in any given retinal locale. A number of trichromatic reconstruction techniques were discussed as was the context in which this beginnning development is directly aimed at using an understanding of the human visual process to directly improve display devices.

The remainder of the Papers Program consisted of a variety of sessions, including Color Matching and Appearance, Linear Methods on Spectra and Geometry, Color Display Technology and Application, Color Printers and Scanners, Color Image Processing, Color Management, Color Communication Systems, and Color Imaging in Medicine, Image Restoration and the Arts.

Leading off the session on Color Matching and Appearance, Qui Jin discussed ongoing work at the University of Chicago examining "Effects of Spatial Frequency on Chromatic Induction." Utilizing a haploscopic viewing technique, an experiment was detailed which explored the function of spatial frequency in the mechanisms of chromatic induction. It was demostrated that stimulus spatial frequency was extremely important in the transition between contrast and assimilation. Mark Fairchild (RIT) followed this presentation with and examination of the "Precision of Color Matches and Accuracy of Color-Matching in Cross-Media Color Reproduction." This paper examined the ways in which observers differ with respect to the CIE Standard Observer

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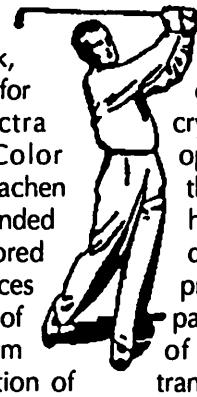
and detailed an experimental approach which was aimed at quantifying the uncertainties in intra- and inter-observer variability in cross-media color reproduction. It was shown that the variability of inter-observer color matches were twice as large as the variability of intra-observer matches but results pointed to the CIE Standard Colorimetric Observer as being a reasonably good model describing the visual capabilities of normal trichromates. The final paper of this session by Naoya Katoh (Sony Corp.), discussed the "Appearance Match Between Soft Copy and Hard Copy under Mixed Chromatic Adaptation." This paper built on results shown at last year's conference and detailed further experiments to determine the role of ambient light in the perception of self-luminous colors. The experiment concluded that preferred adaptation uses 60% monitor output and 40% ambient. The monitor/ambient ratio was found to be independent of luminance level, however it is dependent on screen size, distance from the monitor and adaptation time.

The session on Linear Methods Based on Spectra and Geometry, started off with a G-rated strip tease by Brian Funt (Simon Fraser University, Vancouver,BC), who peeled off a succession of similarly pattered shirts all varying slightly in color as a means of underscoring the problem of color constancy. He traced the role that finite-dimensional models have played in the development of recent color theories but contrasted that with the fact that they are likely not needed. He demonstrated that for common 3-D applications, conversion of cone responses to a refined sensor basis function is appropriate and finite dimensional analysis of full spectral data is unnecessary. Next, Shoji Tominaga (Osaka Electro-Communication University), discussed three types of dichromatic reflection models useful for describing surface spectral reflectance characteristics of a variety of materials in his paper entitled "Using Reflectance Models for Surface Estimation." This work detailed a variety of linear models for describing light reflectance and spectral functions like surface reflectance and illumination in three broad categories found within images. These include both dichromatic and linear techniques. David Slater (UC Irvine) followed with a presentation on "Illuminant-Invarient Recognition of Color Distributions Using Linear Models for Spectral Reflectance." He elaborated on an experimental implementation of an object recognition system which assigns color descriptors to an object based not on the illumination but on the distribution of spectral reflectances found across the object. It assumes a three-dimensional linear model for surface spectral reflection and results in the ability to recognize elements, even within the confines of a cluttered scene. In the next talk, "Optimizing Basis Functions for Coding Reflectance Spectra Minimizing the Visual Color Difference," Werner Praefcke (Aachen University of Technology), contended that the reproduction of colored objects under different light sources requires the reflectance data of each. Through the use of transform coding, which permits distillation of spectral data to linear combinations of an orthonormal basis vector set, minimization of color deviations is the goal. Two improvements to include threshold accepting and The Great Deluge algorithm (a great name!) Building upon some earlier work. David H. Marimont's (Xerox Corp.) talk,"Chromatic Aberration, Linear Models and Matching Color Images," discussed how the Optical Transfer Function (OTF) of the eye quantifies the interaction between spatial patterns and wavelength in images upon the retina. A finite dimensional linear model for surface and illuminant spectral functions which greatly simplifies OTF calculations for some case, was discussed in detail. "Color Angle Invariants for Object Recognition," was presented by G. D. Finlayson (Simon Fraser) and detailed another approach to objects under varying illumination using a fast, color-based algorithm. The color angle described is not a CIE -based hue angle but an angle-indexing derived from treating image bands as vectors in a 3-D space. Good recognition ability was found for a series of synthetic and real images. The final paper by Karsten-Schlüns (Technical University of Berlin), detailed "Fast Separation of Reflection Components and Its Application in 3-D Shape Recovery," which discussed a 2-Dimensional chromaticity-based color representation in a fast, robust method to separate reflection components.



The second conference day was begun with a session on Color Display Technology and Application. The first presentation, "Reflective Color Displays for Imaging Applications," by Gregory Crawford (Xerox Corp.), discussed an evaluation of a number of current liquid crystal (LC) technologies and the optical configurations that hold the most promise for delivering high quality reflective color displays. His talk ended with the prediction that the next major paradigm shift in the development of display technology is the transition to reflective displays. L.C. Chien (Kent State University), spoke next on "Color Pixelization of Cholesteric Materials." He discussed the development of a bi-stable color reflective cholesteric display (RCD) which uses a tunable chiralic material (TCM). Different color reflectances are achieved by tuning the pitch length of the LC material and its chirality is modified via phototuned lithography. The "Colorimetry of Fractured Cholesteric Liquid Crystal Polymers," was enumerated by Eileen Korenic (University of Rochester). She detailed the production of cholestric LC flakes created by thermal fracturing of polymeric LC's. The use of atomic force microscopy shows that the flake has a periodic structure that is consistent with optical characterization of the LC's pitch. In addition, these materials maintain the selective wavelength reflective properties and selective polarization properties of the original

when examined using circularly polarized light. If linearly polarized light is used, the properties are not consistent between fractured and unfractured LC's. By mixing the LC's then fracturing or vice versa, and using them with a host vehicle (in this case, a paint), the gamut can be expanded. The final paper of the session, "Factors Influencing the Appearance of CRT Colors," was presented by David Brainard (UC Santa Barbara). The results of three experiments demonstrated that the monitor context or illumination context can effect the appearance of colors on a CRT and suggest that CRT color stimuli are processed by the same visual mechanism as reflective color samples. This leads as a preliminary hypothesis that a single model of color appearance prediction can be used for both types of color stimuli and that such a model must incorporate both local and global context effect. There are still some questions related to the true effects of immediate surround. This experimentation shows large effects imparted by the immediate surround of monitor test patches and previous work has shown this effect to be minimal for reflective sample patches. As a result, more experimentation is required to determine the reason for this disparity and to determine if a single model is, in fact, applicable.

The morning was rounded out with a session devoted to Color Printers and Scanners. Paul Chen (NC State Univ.), discussed a series of design experiments to examine "Color Filter Design for Multiple Illuminants and Detectors." In these investigations, it was demonstrated that by making measurements with different combinations of internal illuminants, optical detectors and optimized color filters, can increase the number and accuracy of useful measurements. A radiometric, photometric, and combination colorimeter were described and compared. Next, P. Emmel (Ecole Polytechnique Fédéral de Lausanne), discussed "A Grid-based Method for Predicting the Behaviour of Color Printers." In this method, a single printed dot is not modeled as a single dot of fixed colorimetry but instead using a set of "equivalent" colorimetric values based on both the printed dot and the surrounding white area. The method, while not sufficient for accurate color prediction, is felt to be a preliminary step in developing a predictive, dot model-based method which would eliminate the need for table-based printer characterization/ calibration methods. The final paper of the session was presented by Patrick Herzog (Aachen University of Technology), and discussed a "New Approach to the Representation of Color Gamut." He proposed a new, computationally compact method for analytical representation of color gamuts. It is best suited for storage and transmission of color gamuts and is proposed as an appropriate tool for use in the context of color management systems. The system is based on 3 color process and assumes that the CMY surface 6 faceted. Forty parameters are used for the scaling function but the feeling is that this could be reduced. This method represents only the surface of the gamut and there are still questions as to how well the interior of the gamut solid (e.g. gray scale) would track.

A single afternoon session on Color Image Processing was led off by Hubert Konik (GIAT Industries), discussing "Multi-Resolution Color Image Analysis." This work detailed the use of a color pyramid. Historically such techniques have only been utilized for gray scale, however, this work takes the traditional approach and defines gaussian pyramids for each of the three color dimensions (in this case, RGB), This data is then used in image segmentation. Next, Hiroaki Kotera (Matsushita Research Institute), discussed "Color Dithering back to the Robert's Modulation." This investigation showed that through a relatively simple modification to Robert's modulation, a marked improvement in visible noise can be achieved. To round out this session, Chae Soo Lee (Kyungpook National University), presented work on "Color Quantization and Dithering Method based on HVS Characteristics." In this case HVS is the Human Visual System, not a variant on the HSV (Hue, Saturation and Value) color model. This work outlines a method using nonlinear quantization and modified dot diffusion to help in the production of high quality images from low-bit color devices.

This year's Poster Session, coordinated by Ron Gentile (Adobe Systems), was quite successful and provided a great forum for presenters and other attendees to learn and exchange ideas in a more informal setting. There were 18 poster presentations and a number of vendors showing the latest in color instrumentation. Conference attendees voted Karen Braun's (RIT) "Evaluation of Five Color-Appearance Transforms Across Changes in Viewing Conditions and Media" as the best paper. This year's Conference featured a special evening speaker, Stephen Johnson, who presented ,"Digital Photography in the Landscape." His talk detailed his special project photographing scenes at selected national parks. This was a welcome break from the technical aspect of the conference and opportunity to hear the perspective of a professional who looks at color imaging in a much more creative and artistic light. A vast array of images captured with a specialty high-resolution digital camera were shown and particular attention paid to areas of fine detailed not as readily seen with other imaging systems. Stephen does not see this technique as a replacement for traditional photography but views it as a new media that permits the viewer to obtain new perspectives, and gives the creative artist a new window on their craft.

The last day of the conference kicked off with a session on Color Management (CM). The first speakers were Steve Viggiano (RIT) and Nathan Moroney (Hewlett Packard), speaking on isssues related to "Color Reproduction Algorithms and Intent." They reviewed basic concepts and assumptions made by general color algorithms. Discussed four basic color image intents -

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Absolute, Relative, Raster , and Business Graphics. There was also some discussion on color image data flow and the handling of out-of-gamut colors. The conclusion was that the color reproduction algorithm chosen depends upon the type of image and the intended mode of viewing. Next, Michael Stokes (Hewlett Packard), discussed "Limitations in Communicating Color Appearance with the ICC Profile Format." He was very careful to point out his overall support for the ICC work but wanted to enumerate on a number of unresolved issues that should be the basis of further refinements. This talk covered a number of important points, including the expectation that the ICC profile provide a more straightforward "recipe" for profile building. The broadening of the ICC Profile Connection Spaces (PCS) and the implications related to interoperability were discussed extensively. This paper concluded that a number of additional issues, including the marked differences between graphic art and photography-based color management, plus a lack of well defined methodology in the areas of color measurement and rendering intent need to be addressed to broaden the scope of ICC specification and further strengthen it.

Next, George Pawle, (Eastman Kodak), took a look "Inside the ICC Color Device Profile." This presentation took a general look at how to develop a device ICC Profile, the structure, data types, and the processing models that are utilized in the building of color tables. (For anyone interested in obtaining a copy of the ICC Profile Specification, it can be acquired via anonymous ftp at: sgigate@sgi.com - the actual file may be found at: ~ftp/pub/icc). The "Aesthetic Considerations in Tone and Color Management" were then discussed by Robert Poe (Eastman Kodak) and in keeping with Michael Stoke's earlier presentation, also echoed concerns with unresolved ICC issues. He took the audience back to the "old" days of color management (1990...) and emphasized the need to clearly formulate the goals associated with CM. Current PCS's represent "desired" color appearances but it is imperative to have a better overall strategy to define PCS interfaces, create device profiles, and interpret results - primarily because the job is more complicated than just maintaining color appearance. A variety of aesthetic effects need to be considered and accommodated in the overall CM approach.

The session on Color Communication Systems was led off by Peter H. Smith (Univ. of Arizona), who gave back-to-back papers discussing "The Imager for Mars Pathfinder (IMP) Experiment" and "Calibration of the Imager for the Mars Pathfinder." The first paper discussed more of the general properties of the IMP and the imaging system, utilizing a stereo multi-spectral CCD camera, that will be used to send data back from the Ares Valley on the geologic and atmospheric properties present. The details of characterization and calibration of this necessarily compact device were discussed in detail. The next paper in the session was presented by Makoto Matsuki (NTT Printec) and discussed "Soft Copy and Palette-Color Extension for Color Facsimile Standards."He discussed ongoing work by the International Telecommunication Union - Telecommunications Standard Sector (ITU-T) in the area of bringing soft-copy and palette-color image extensions to ITU-T Rec. T.42. The final paper of the session was presented by Hitoshi Urabe (Fuji Photo Film) discussing "Image-designing and Color Camera Management for Digital Still Camera and Printer System." This was a review of the tone-reproduction and color reproduction capabilities of the new DS-505 and Pictography 3000 Systems.

The conference concluded with a set of diverse papers in the areas of Medicine, Image Restoration, and the Arts. The first paper, "Color Imaging in Telemedicine: Current Trends and Future Needs," was presented by yours truly , Joann Taylor (Color Technology Solutions). For those of you that missed it last year, I had the dubious distinction of showing slides of a variety of gastrointestinal anomalies right before everyone scattered out to their airline dinners. Needless to say, MANY folks remembered this. To be sure that all of my friends didn't rush out and eat salads for a week, I presented a tamer medical application this year. Telemedicine, which is the application of telecommunication and imaging technology to the practice of medicine, is an area of great interest to the healthcare community . The paper reviewed many of the color-related issues that the imaging community can help address in this developing area. The next paper discussed "Improving Color Reproduction of Electronic Endoscopes," and was presented by Yoichi Miyake (Chiba University). This paper detailed a method for better quantification of the spectral reflectances within the body through the use of an endoscopic spectrophotometer and a principal component analysis approach. Shifting to the topic of image restoration, Robert Johnston (RIT) discussed "Digital Image Restoration Technology as Applied to Ancient Degraded Textual Material Using Color Imaging Systems." He detailed a cooperative effort between RIT and Xerox Corporation aimed at enhancing images of the Dead Sea Scrolls. Since written characters are interpreted based on the surrounding characters and overall context, missing or unreadable passages result in larger portions of the scrolls being hard or impossible to interpret. A variety of enhancement techniques including color space transformations were discussed and imaging results with accompanying histograms shown. The final paper, by Lindsay MacDonald (Crosfield Electronics) discussed an application in the arts entitled, "Assessing the Effects of Gamut Compression in The Reproduction of Fine Art Paintings." This paper detailed experiments carried out at the National Gallery in London where comparisons were made between original works of art and printed color reproductions of captured digital images of the art work. Three paintings, differing significantly in their image, tone and color content

were evaluated using a paired-comparison technique. A number of methods were utilized to map out-of-gamut colors for all of the reproductions. The results show that no single gamut mapping technique is optimal for all types of images. Optimum image reproduction requires different gamut mapping techniques for different types of images.

This is a brief summary of the 3rd Annual Color Imaging Conference. On the whole, the collection of papers provided a high level of technical information and stimulated discussion across a number of topical areas. Proceedings for the Conference may be obtained directly from IS&T. Color imaging brings together a diverse group of scientists, engineers, and other professionals. Many perspectives and a great deal of insight can be obtained from the work and the outlook of others. If you have an interest in color imaging, then you should plan to attend or, better yet, participate in the next conference scheduled for November, 1996.

Joann M. Taylor
Color Technology Solutions
e-mail (joannt @teleport.com)

SCI*QUEST*, COATINGS TUTORIAL FOR CD-ROM PRODUCED

Offering comprehensive instructions on a wide range of subjects central to the coatings industry, the FSCT has announced the release of Sci*Quest*, the first in a series of CD-ROM tutorials.

Developed for the FSCT by Consolidated Research Inc. and ITE Consultants, Sci*Quest* is a convenient reference source on the varied and often complex aspects of coatings technology.

The program combines one of the most powerful instructional tools today — CD-ROM technology — with industry expertise to cover all of the essential areas needed to comprehend the world of coatings.

Introduction is effective for every level of experience - as a refresher for seasoned professionals and senior management staff, as well as an introductory source for those new in the field. Sci*Quest* is designed for marketing personnel, sales representatives for paint companies, raw materials and equipment suppliers, and coatings end users.

State-of-the-art multimedia, such as high resolution graphics and video, are used to demonstrate the concepts and techniques described in the computer text. "First-hand" experience is given as Sci*Quest* takes users on a visual tour of production lines and manufacturing plants. In addition, users can learn at their own pace, and able to return to a particular concept as often as needed to fully comprehend the information.

System requirements include IBM PC or compatible, 386 or greater, Microsoft Windows with 8 MB of RAM, VGA monitor, 265 color recommended, and a CD-ROM drive.

Sci*Quest* is available to FSCT members for $750. List price is $800. To order, contact Meryl Simon, FSCT, 492 Norristown Rd., Blue Bell, PA 19422-2350.

Phone: (610) 940-0777 or FAX: (610) 940-0292.

ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA

IESNA The most comprehensive educational forum for all industry professionals involving in manufacturing , research, government, design specification, maintenance, service and applications in lighting is the three day annual conference offering seminars, covering timely topics on lighting installations, codes, and the latest in design technology and application.

Author-presented paper sessions cover calculations, photometry, measurements and controls, energy and the environment, color, light sources and design theory. New products and services are featured in an in-depth progress report presentation followed by a tabletop session of products and services offered by leading manufacturers. Networking opportunities abound in sponsored social events and activities. The Annual Conference is sponsored by IESNA and attended by its membership and allied professionals in the lighting industry from North America and around the world.

The conference will be in Cleveland, Ohio, USA August 5-7, 1996.

For further information contact :
Valerie Landers, IESNA
Phone: 212/ 248-5000 ext 117;
FAX: 212/248-5017

SID '96

SID An aggressive mood in the electronic information display industry and an attractive host city in hi-tech California promise to make the 1996 edition of The Society for Information Display's annual International Symposium, Seminar, and Exhibition (SID '96) the largest ever. To be held this year from May 12 to May 17 in San Diego, CA, SID '96 will feature over 180 exhibitors displaying their wares in over 300 booths - 33 % more than last year.

San Diego's new convention center on San Diego Bay will provide the facilities for this 27th edition of North America's only professional conference and trade show devoted exclusively to display technology, components, products, systems, and manufacturing. The headquarters hotel is the Hyatt Regency San Diego.

SID '96 will include keynote

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addresses, Sunday short courses, Monday and Friday seminars, applications seminars, more than 60 technical sessions, over 300 exhibit booths, 2 receptors, an evening panel session, and the Wednesday Luncheon, which for the first time will include the formal presentation of Information Display Magazine's Display of the Year Awards.

In the first keynote address, "Telecommunications Networks: Can Screen Displays Unlock the Capabilities Inside," Frank Gratzer of Beecore will describe the need for telephone displays and their huge potential. Then, in "Automotive Display Directions," Cary Wilson of Delco Electronics will discuss the potentially enormous automative display market, together with the technical and marketing challenges that have limited the market to date.

The technical sessions will include coverage of low-power reflective-mode AMLCDs, projection AMLCDs, in-process inspection and repair, automotive display systems, organic luminescent materials, color facsimile, and light sources for projection displays.

In the invited paper, "Cost issues of a-Si TFT-LCDs for OA Applications," Toshiba's Yasuhisa Oana will assert that "the only big issue for a-Si TFT-LCD panels is price!" His paper will analyze the cost structure of TFT-LCDs and explain the technological issues involved in decreasing the production cost.

For SID '96 registration and hotel information, contact Mark Goldfarb, Palisades Institute for Research Services, 1745 Jefferson Davis Highway, Suite 500, Arlington, VA 22202. Phone 703/413-3891; fax 703/413-1315.

SID Press Release
Karen M. Braun

THE COLOR ASSOCIATION OF THE UNITED STATES

Excerpts from Monika Tilley's Report on Paris' Première for Fall 1996. The news starts with a concentrated push in fibers. DuPont is launching a program with IWS for wool/Lycra® blends. Courtaulds is reinventing the world of denim with Tencel®.

Colors are shown in tonalities:

- The grays are neutrals with with more color
- The greens, from acid anise to bronze, are the fashion direction. Petrol is the bridge to:
- The blue violets, which are warm shades and
- The red/browns, which are accepted autumnal shades.

The predominant sample colors were reds for women and greens for men.

Texitalia on Europe's Best-Selling Fabrics

The Italian Trade Commission, the Centre Textile de Lyon et Region and Consejo Intertextile Espanol all emphasize that blends of natural and synthetic materials will be the best-selling fabrics for the Fall and Winter 1996 and 1997.

Key color groupings were: red and orange tones; grays, light and dark; and a few vivid touches of kiwi and celadon greens. Compactness, richness and technology are guiding concepts of the season.

Trading Colors by Caryl Baron: "On a recent trip to Chicago, I was eagerly anticipating touring the Frank Lloyd Wright sites in Oak Park and immersing myself in Monet's revelations of reflected light. I never expected to be enthralled by the fashion micro-trends at the Chicago Board of Trade where, in a 1930 art deco landmark building, billions of dollars of bonds and commodity futures are traded daily. We think of computers taking over so many tasks, but at the source is a busy jumble of humans doing what they've done since agriculture began: trading face to face. This is serious business and the dress code reflects this: a collared shirt, jacket and tie are required; jeans are not allowed. Communication is by hand signals and shouting. In the heat of the action, they also chew gum, blow bubbles and throw wads of paper.

With jeans proscribed, they wear khakis. The collared shirt requirement is fulfilled with a knitted golf (or polo) shirt. Fun printed ties by the American designer Nicole Miller appear frequently. But the real fashion story is in the jackets which are based on the traditional business suit, but coded for easy visual identification and recognition from a distance. Today, each firm has its own bright color and design, replacements to ho-hum burgundies, greens and navy blues. A few years ago, a woman from Bankers Trust quit her job and started designing jackets. Now everyone is running around in colors like fluorescent yellows, fuchsias, reds and turquoises. Or stripes. Or prints or printed lapels with patch pockets. Team colors. Sort of like jockeys' silks or Henley Regatta blazers. But the final touch conjures up associations with the basketball court: the uniforms backs and sleeves are nylon athletic mesh! And , for absolutely certain identification, they wear plastic badges with two inch high numbers and letters."

Varying degrees of colorfulness are forecasted for Fall 1996 and through the Winter of 1997. Predictably, the CAUS children's projection is brightest of all, and the women's forecast is slightly brighter than the men's. Both the men and women's forecasts project evolutionary darks, colorized replacements to black and autumnal-styled colors.

Book Review: "When Blue Meant Yellow, How Colors Got Their Names" by Jeanne Heifetz, Henry Holt

and Co., New York, 1994, pp. 171. Hidden stories behind color names are examined in twenty-six chapters, one for each letter of the alphabet; in all, over 300 entries.

THE FEDERATION OF SOCIETIES FOR COATINGS TECHNOLOGY

The Federation is pleased to announce the publication of its much anticipated Coatings Encyclopedic Dictionary. Edited by Stanley LeSota, formerly of Rohm and Haas Co. and a Past-President of the Philadelphia Society, the Dictionary defines the terms of the coatings industry and its interfacing technologies.

The Coatings Encyclopedic Dictionary is an updated and expanded edition of the FSCT's very successful Paint / Coatings Dictionary, first published in 1978. The current Dictionary reflects the many changes experienced by the paint and coatings industry over the past 17 years and is based, in part, on the definitions contained in the previous edition.

Over 6000 definitions, including state-of-technologies and regulatory terminology, are presented in the 392-page publication. Encyclopedic discussions supplement the definitions for many of the terms provided. These succinct paragraphs relay significant information that the reader should know about the term defined. In many cases, ASTM Test Method references are provided, enhancing the usefulness of the Dictionary.

Consensus dictated the choice of terms and their definitions. Close liaison was maintained with groups such as the definitions subcommittee of the ASTM Committee D-1 on Paints and Related Coatings, the National Coil Coaters Association, the National Association of Corrosion Engineers, and the FSCT's Inter-Society Color Council Committee. Most definitions were reviewed and approved by knowledgeable people in the industry.

The broad scope of terms included reveals the usefulness of this volume to a wide audience, from chemists to managers, students to technicians. Those involved in allied fields, such as art, architecture, decorating, furniture finishing, metal preparation, as well as the manufacture of shellacs, printing inks, waxes and polishes, can benefit from the publication.

A unique feature is the classification of all terms into one or more of 80 categories (such as color, pigments, additives, methods of applications, etc.) This categorical listing of terms serves as a check list for key words, which assist in the preparation of research papers and literature searches. In addition there is a considerable amount of cross-referencing that refers to reader to other similar significant terms that may help in the understanding of definitions.

Included in this publication are the definitions for over 400 color terms detailing color difference equations, optical phenomena, gloss, hiding, color instrumentation, etc. Pigment terms are classified by the Colour Index Number which follows each common name of the defined pigment.

Complementing the text, the Appendix of the Dictionary contains a listing of industry-related associations and organizations, standard abbreviations, metric conversions charts, SI Units, a temperature conversion chart and the Periodic Table of the Elements.

The Coatings Encyclopedic Dictionary is available in a casebound version (member cost - $105, list price - $135); or in soft cover (member cost - $80 and list price - $105).

For ordering information, contact Meryl Simon, FSCT, 492 Norristown Rd., Blue Bell, PA 19422. Phone 610/ 940-0777; Fax: 610/940-0292.

OTHER NEWS

THE INTERNATIONAL CONFERENCE ON IMAGE PROCESSING

The International Conference on Image Processing (ICIP) will be held in Lausanne, Switzerland, September 16-19, 1996. We have agreed to organize a special session on Image Quality Assessment. We would like to invite vision scientists to contribute to this important and rapidly developing area of modern technology. Interested individuals should submit a 300 word email abstract by March 15 to either farrell@hpl.hp.com or beau@vision.arc.nasa.gov. If accepted, a camera-ready paper would be required by May 31, 1996.

Further information on ICIP 96 can be obtained at:
http://www.tele.ucl.ac.be/ICIP96/

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http://vision.arc.nasa.gov/

Andrew B. Watson
Ames Research Center
Moffett Field CA 94035-1000
415/ 604-5419 -3323 fax
farrell@hpl.hp.com

CORM '96

The 1996 annual meeting and conference of the Council for Optical Radiator measurements (CORM96) will be held at the Gaithersburg Marriot Washingtonian Center, Gaithersburg, Maryland, Tuesday, 21 May through Thursday 23 May.

The conference will consist of technical sessions on photometry and spectrophotometry, including a session of photometric and radiometric measurements on flat panel displays. The conference will begin with an all-day workshop on design and application of integrating spheres. The traditional Franc Grum Memorial Lecture will be given by Dr. Lawrence Kazmerski, distinguished scientist and manager of the Photovoltaic Measurements and Characterization Branch at the National Renewable Energy Laboratory, Golden Colorado; his subject: Direct Conversion of Sunlight into Electricity.

Harry Hammond III

RIT'S MUNSELL COLOR SCIENCE LABORATORY OFFERS INDUSTRIAL SHORT COURSES IN COLOR IMAGING

Rochester Institute of Technology's Munsell Color Science Laboratory will present two industrial courses in color science for electronic imaging systems.

"Device-Independent Color Imaging," will be held on June 10-12, 1996. This is a three-day, intensive short course designed to teach methods of achieving high-accuracy color for electronic imaging peripherals, so called device-independent color. Color peripherals such as scanners, CRT displays, and thermal, ink-jet, electrophotographic and direct-digital printers, are an integral part of today's document processing and publishing and scientific visualization. In order to integrate these devices and achieve acceptable color fidelity, an understanding is required of the visual system (colorimetry), metrology (spectrophotometry, photometry, spectroradiometry), image formation principles (color modeling), and the interaction between observers and the colored image (color appearance). This understanding is incorporated into color management systems providing "plug and play" capabilities. These topics will be covered in this course. After taking this course, participants should have a better understanding of methods to colorimetrically calibrate and characterize scanners, displays, and printers; build device profiles; and use these results to improve the color fidelity of these peripherals through software development and color management systems. This course will be taught by Dr. Roy S. Berns.

The second advanced course, "Color-Appearance Models: Theory and Practice," will be held June 13-14, 1996. This two-day course intensive short course designed for scientists and engineers working in the fields of color science, color reproduction, and electronic imaging. Color-appearance models extend basic colorimetry, as typified by CIE tristimulus values, to the prediction of color matches and color appearance across widely varying viewing conditions. Tristimulus values can only predict color matches for identical viewing conditions. Recent advances in open systems for electronic image reproduction have accented the need for accurate and efficient color-appearance models. For example, the only way to equate the colors an observer sees on a computer monitor when creating or editing an image with those that will be produced when a print is made is to use a color-appearance model. This is because the original computer display is self-luminous and typically viewed in dim

surroundings while the print is reflective and viewed in light surroundings with a particular light source. Color-appearance models can account for these changes in viewing conditions while basic colorimetry cannot. Color-appearance models are also used to evaluate the color rendering of light sources to compare how colored objects will appear under various sources. The aim of this course is to introduce scientists and engineers in the fields of color science, imaging science, and other related disciplines to the fundamental phenomena, techniques, and models of color appearance. Students should have a better understanding of current color-appearance models and their application after taking this course. This course will be taught by Dr. Mark D. Fairchild.

The courses will consist of classroom lectures, demonstrations, laboratory sessions, and social times for informal interaction with other students and staff. Early registration is recommended.

For further information, contact Colleen M. Desimone, Munsell Color Science Laboratory, Rochester Institute of Technology, Chester F. Carlson Center for Imaging Science, 54 Lomb Memorial Drive, Rochester, NY 14623-5604; Telephone (716) 475-7189, FAX (716) 475-5988, E-mail: CMD9553@rit.edu

MEASUREMENT OF COLOUR IN IMAGING

A TWO DAY COURSE AT CITY UNIVERSITY, LONDON

April 18 and 19, 1996 INTRODUCTION Colour images are being used in ever increasing numbers in photography, television and printing. With the advent of Photo CD, desktop publishing and other means of transferring images from one medium to another, it has become more and more important to be able to make measurements of colour at the various stages of reproduction systems. The Colour Management System so essential for controlling quality in images also depend on colour measurements. The course is designed to give a systematic overview of colorimetry in imaging, starting with relatively simple techniques such as densitometry, and finishing with the application of advanced procedures such as those involving models of colour vision. The course consists of 12 lectures spread over two days. The lectures are copiously illustrated with slides and demonstrations. PROGRAMME DAY ONE; Densitometry, CIE Standard Illuminants and Standard Colorimetric Observers, Chromaticity diagrams, uniform colour spaces and colour difference formulae, Colour temperature, colour rendering indices, Precision and Accuracy in colorimetry, Colour order systems. DAY TWO: Adaptation visual mechanisms, limitations, colour constancy, A model for colour vision, A Colour Reproduction Index, Colour Management Systems, device dependency, gamut mapping, future technologies for cameras, reflection displays etc. LECTURER:

Prof. Robert W.G. Hunt, visiting professor of Physiological Optics, Department of Optometry and Visual Science, City University of London, Formerly Assistant Director of Research, Kodak Limited. COURSE ORGANISER: Dr. David Thomson, Department of Optometry and Visual Science, City University.

For further information contact: Mrs. Eileen McCann
Department of Optometry
Dame Alice Owen Building 311-321
Goswell Road
City University
London EC1V 7DD
Tel: 0171-477-8000 Ext. 4336
E-mail: W.D.Thomson@city.ac.uk

Ellen C. Carter
pres. elect, ISCC

WAS MY FACE RED!

In the last issue of ISCC News , Roy Berns name was misspelled by mistake. My apologies to Dr. Roy Berns. Ed.

INTERNATIONAL ASSOC. OF COLOUR CONSULTANTS/ DESIGNERS

IACC and the North American Association of Color Consultants/Designers of the IACC in cooperation with American Information Center for Color and Environment announces the IACC Seminars for Color and Environment for April 1996. The IACC Seminars made their debut in the United States in 1991, and are the counterpart of the Salzburg Seminars of the IACC for Color and Environment that have successfully trained and accredited individuals to be professional color consultants/designers since 1957.

IACC Seminar 1 (Introductory Seminar): Color-Environment- Human Reaction (importance of Coorect Color Specifications in the Environment, Analyzing the Environment,Pscho-Physiological Effects of Color, Characteristics of Major Hues, etc.) will be held Friday 19, Saturday 20 and Sunday 21, April 1996.

IACC Seminar 3 (ofthe seminar series): Color in the Architectural Space (Medical and Psychiatric Hospitals, Officessss, Schoold, Industry, Restaur ants etc.) will be conducted Monday 22, Tuesday 23, Wednesday 24 and Thursday 25, April 1996.

The lectures will be conducted by the President of IACC, Frank H. Mahnke. For further information, registration, and informatiom regarding hotel

(Continued→)

accomodations at a reduced rate for seminar participants (at the Holiday Inn, San Diego, CA) contact:

The American Information Center for Color and Environment
3621 Alexia Place
San Diego, CA 92216
ATTN: Erna Haynes
Tel: 610/283- 0062
Fax:610/283-3300

Registration: To insure the reduced rate for hotel accomodation and seminar participation (there is an attendance limit) please register ASAP.

(NOTE: Participation in Seminar 3 requires attending Seminar 1.)

C A L E N D A R

Please send information on Member Body and other organization meetings involving color and appearance functions with dates, places, and information source to:

Harry K. Hammond, III
or
John Peterson
BYK-Gardner, USA
2435 Linden Lane
Silver Spring, MD 20910
Phone: 301-495-7150
Fax: 301-585-4067

1996

ASTM COMMITTEE D-20 ON PLASTICS
Mar. 18 - 21
Orlando, FL
Information: Mrs. Katherine Morgan
Phone: (610) 852-9500
Fax: (610) 832-9555

TAGA ANNUAL CONFERENCE
Apr. 28 - May 1
Technical Association of the Graphic Arts Annual Technical Conference
Dallas, TX
Information: Karen Lawrence
Phone: (716) 475-7470

ISCC ANNUAL MEETING WITH ASTM
May 5 - 7
Orlando, FL
Information: Danny Rich
Phone: (609) 895-7427
Fax: (609) 895-7461

CMG SPRING CONFERENCE
May 5 - 7
Color Marketing Group Conference
Sheraton New Orleans Hotel & Towers
New Orleans, LA
Information: Katie Register
Phone: (703) 329-8500
Fax: (703) 329-0155

EXPO 96
May 11 - Oct. 4
Color and Light in Communication
Information: Gabor David
3 Tukory u.
Budapest
H-1054
Hungary

SID '96
May 13 - 17
San Diego, CA
Information: Lauren Kinsey
SID
1526 Brookhollow Drive
Suite 82
Santa Ana, CA 92705
Phone: (714) 545-1526
Fax: (714) 545-1547
email: socforinfodisplay@mcimail.com

IS&T 49th ANNUAL CONFERENCE
May 18 - 24
Minneapolis Marriott City Center
Minneapolis, MN
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094

CORM 96
May 21-23
Marriott Washingtonian Center
Gaithersburg, Maryland
Information: Ted. W. Cannon
Tel: 303-384-6763
Fax: 303-384-6790
e-mail: cannon@tcplik.nrel.gov

GATF COLOR MEASUREMENT WORKSHOP
May 30 - 31
Graphic Arts Technical Foundation
4615 Forbes Ave
Pittsburgh, PA 15213
Information: Amy Mangis
Phone: (412) 621-6941
Fax: (412) 621-3049

AIC - '96 INTERIM MEETING
June 16 - 18
Color Psychology Beyond Psychophysics
Gothenburg, Sweden
Information: Lars Sivik
Kullaviks Skogsväg 4
S-429 35 Kullavik, Sweden
Phone: (011) 46-31-933347
Fax: (011) 46-31-431012
email: sivik@psy.gu.se

ASTM COMMITTEE D-1 ON PAINT
June 23 - 26
San Francisco, CA
Information: Scott Orthey
Phone: (610) 832-9717
Fax: (610) 832-9555

IESNA Annual Conference
Aug. 5 - 7
Renaissance Cleveland Hotel
Cleveland, OH
Information: IESNA Headquarters
Phone: (212) 248-5010

GATF COLOR MEASUREMENT WORKSHOP
Aug. 8 - 9
Graphic Arts Technical Foundation
4615 Forbes Ave
Pittsburgh, PA 15213
Information: Amy Mangis
Phone: (412) 621-6941
Fax: (412) 621-3049

AATCC CONFERENCE AND EXHIBITION
Sept. 15-18
American Association of Textile Chemists and Colorists
Opryland Hotel
Nashville, TN
Information: AATCC
Phone: (919) 549-8141

SPIE / IS&T
Sept. 24 - 26
Advanced Imaging Networks
Berlin, Germany
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094
email: imagesoc@us.net

IS&T / OSA
Oct. 20 - 25
Conference on Optics & Imaging in the Information Age
Rochester Riverside Convention Center
Rochester, NY
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094
email: imagesoc@us.net

IS&T 12th INTERNATIONAL CONGRESS
Oct. 27 - Nov. 1
Advances In Non-Impact Printing Technologies
Hyatt Regency San Antonio
San Antonio, TX
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094
email: imagesoc@us.net

CMG FALL CONFERENCE
Nov. 3 - 5
Color Marketing Group Conference
Sheraton Seattle Hotel & Towers
Seattle, WA
Information: Katie Register
Phone: (703) 329-8500
Fax: (703) 329-0155

IS&T / SID's FOURTH COLOR IMAGING CONFERENCE
Nov. 17 - 20
Color Science, Systems & Applications
Radisson Resort
Scottsdale, AZ
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094

(Continued→)

ASTM COMMITTEE D-20 ON PLASTICS
Nov. 18 - 21
New Orleans, LA
Information: Mrs. Katherine Morgan
Phone: (610) 852-9500
Fax: (610) 832-9555

1997

ASTM COMMITTEE D-1 ON PAINT
Jan. 26 - 29
Fort Lauderdale, FL
Information: Scott Orthey
Phone: (610) 832-9717
Fax: (610) 832-9555

ASTM COMMITTEE E-12 ON APPEARANCE
Jan. 26 - 29
Fort Lauderdale, Florida
Information: Bode Buckley
Phone: (610) 832-9740
Fax: (610) 832-9555

IS&T / SPIE
Feb. 9 - 14
Electronic Imaging: Science and Technology
San Jose Convention Center
San Jose, CA
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094
email: imagesoc@us.net

TAGA ANNUAL CONFERENCE
May 4 - 7
Technical Association of the Graphic Arts Annual Technical Conference
Montreal or Quebec City, Canada
Information: Karen Lawrence
Phone: (716) 475-7470

SID '97
May 12 - 16
Boston, MA
Information: Lauren Kinsey
SID
1526 Brookhollow Drive
Suite 82
Santa Ana, CA 92705
Phone: (714) 545-1526
Fax: (714) 545-1547
email: socforinfodisplay@mcimail.com

IS&T 50th ANNUAL CONFERENCE
May 18 - 23
Hyatt Regency Cambridge Hotel
Cambridge, MA
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094

COLOUR '97
May 26 - 30
8th AIC Quadrennial Meeting
Colour '97 Executive Committee Meeting
May 25
Kyoto International Conference Hall (KICH)
Kyoto, Japan

ISCC ANNUAL MEETING
Sep. 14 - 17
Inter-Society Color Council Annual Meeting with Color and Appearance Division of Society of Plastics Engineers
Newport, RI
Information: Gary Beebe
Phone: (215) 785-8497

AATCC CONFERENCE AND EXHIBITION
Sep. 28 - Oct. 1
American Association of Textile Chemists and Colorists
Marriot Marquis
Atlanta, GA
Information: AATCC
Phone: (919) 549-8141

IS&T 13th INTERNATIONAL CONGRESS
Nov. 2 - 7
Advances In Non-Impact Printing Technologies
Sheraton Seattle Hotel
Seattle, WA
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094
email: imagesoc@us.net

IS&T / SID's FIFTH COLOR IMAGING CONFERENCE
Nov. 16 - 19
Transforms and Transportability of Color
Radisson Resort
Scottsdale, AZ
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094

1998

TAGA ANNUAL CONFERENCE
May 3 - 6
Technical Association of the Graphic Arts Annual Technical Conference
Chicago, IL
Information: Karen Lawrence
Phone: (716) 475-7470

SID '98
May 17 - 22
Anaheim, CA
Information: Lauren Kinsey
SID
1526 Brookhollow Drive
Suite 82
Santa Ana, CA 92705
Phone: (714) 545-1526
Fax: (714) 545-1547
email: socforinfodisplay@mcimail.com

ASTM COMMITTEE E-12 ON APPEARANCE
Jun. 16 - 18
Saint Louis, MO
Information: Bode Buckley
Phone: (610) 832-9740
Fax: (610) 832-9555

AATCC CONFERENCE AND EXHIBITION
Sept. 22-25
American Association of Textile Chemists and Colorists
Convention Center
Philadelphia, PA
Information: AATCC
Phone: (919) 549-8141

1999

TAGA ANNUAL CONFERENCE
May 2 - 5
Technical Association of the Graphic Arts Annual Technical Conference
Philadelphia, PA
Information: Karen Lawrence
Phone: (716) 475-7470

SID '99
May
California
Information: Lauren Kinsey
SID
1526 Brookhollow Drive
Suite 82
Santa Ana, CA 92705
Phone: (714) 545-1526
Fax: (714) 545-1547
email: socforinfodisplay@mcimail.com

AATCC CONFERENCE AND EXHIBITION
Oct. 12 - 15
American Association of Textile Chemists and Colorists
Convention Center
Charlotte, NC
Information: AATCC
Phone: (919) 549-8141

2000

SID 2000
May
Torronto, Ontario
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email: socforinfodisplay@mcimail.com

AATCC CONFERENCE AND EXHIBITION
Oct. 1-4
American Association of Textile Chemists and Colorists
Marriott World Center
Orlando, FL
Information: AATCC
Phone: (919) 549-8141

2001

AATCC CONFERENCE AND EXHIBITION
Oct. 7-10
American Association of Textile Chemists and Colorists
Sheraton Hotel
Boston, MA
Information: AATCC
Phone: (919) 549-8141

ISCC NEWS EDITOR: Gultekin (Tek) Celikiz

Send photo material (black and white if possible) to:

Editor, ISCC News • Gultekin Celikiz •1309 Paper Mill Rd, Erdenheim, PA 19038-7025

Please send all other materials on diskette as follows to the above address:

MS DOS-ASCII, (3.5"- 1.44 Meg); MACINTOSH– (Most formats)
(3.5"–1.44 Meg, 800K or 400K).

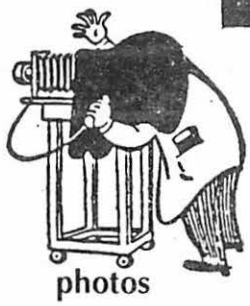
E-mail: celikizg@hardy.texsci.edu

If necessary, fax material to (215) 836-0448

Please note: the deadline for submission of material is the 1st of each even numbered month. Material received after the 1st will not be printed until the following issue.

All submissions must be in English.

meeting reports



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contributions from members

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Pres. Elect	Dr. Ellen C. Carter	2509 N. Utah Street, Arlington, VA 22207	ecarter@capaccess.org	(703) 527-6003	
Secretary	Dr. Danny C. Rich	Datacolor International, 5 Princess Rd., Lawrenceville, NJ 08648	73700.3514@compuserve.com	(609) 895-7427	(609) 895-7461
Treasurer	Mr. Daniel S. Walton	Color and Appearance Technology P.O. Box 3709, Princeton, NJ 08543		(609) 734–0300	(609) 734–0245
Past-Pres.	Ms. Paula J. Alessi	Eastman Kodak Company, Rochester, NY 14650	pjalessi@kodak.com	(716) 477-7673	(716) 722-1116

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1994-1997				
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Mr. William S. Vogel	10013 Sagefield Dr., Baton Rouge, LA 70818		(504) 261-7107	
1995-1998				
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Dr. Mark Fairchild	RIT Munsell C.S. Lab., P.O. Box 9887 Rochester, NY 14623	mdfpph@grace.rit.edu	(716) 475-2784	(716) 475-5988
Prof. Wade Thompson	1910 East Cardinal St., Springfield, MO 65804		(417) 882-2553	(417) 883-5830

ISCC MEMBER-BODIES

American Association of Textile Chemists and Colorists (AATCC)
American College of Prosthodontists (ACP)
American Society for Testing and Materials (ASTM)
American Society of Interior Designers (ASID)
American Society for Photogrammetry and Remote Sensing (ASPRS)
The Color Association of the United States, Inc. (CAUS)
Color Marketing Group (CMG)
Color Pigments Manufacturers Association (CPMA)
Detroit Colour Council (DCC)
Federation of Societies for Coatings Technology (FSCT)
Gemological Institute of America (GIA)
Graphic Arts Technical Foundation (GATF)
The Human Factors & Ergonomics Society
Illuminating Engineering Society of North America (IESNA)
National Artists Equity Association (NAEA)
National Association of Printing Ink Manufacturers (NAPIM)
Optical Society of America (OSA)
Society for Information Display (SID)
Society of Plastics Engineers, Color & Appearance Division
Society for Imaging Science and Technology (IS&T)
Technical Association of the Graphic Arts (TAGA)
Technical Association of the Pulp and Paper Industry (TAPPI)

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Color and Appearan e Technology
BYK-Gardner
Labsphere