



Inter-Society Color Council News



IN THIS ISSUE

373

Obituary: David L. MacAdam	1
CR&A In This Issue June 1998	2
ISCC 1998 67th Annual Meeting	3
ISCC Officers/Director Candidates Biographies	4
CORM	5
Perception Day at Nat'l Gallery, London Sept.'98	7
CIE Division 1 Meeting Sept.'98 Notice	7
Dr. David Alman to Receive 1998 Macbeth Award ..	8
Call for Papers, Interest Group II	8
Call for Papers, Interest Group I	8
Review of 1998 Williamsburg Conference	9
Detroit Colour Council (DCC)	10
Munsell Color Science Lab (MCSL)	10
Obituary: John E. Kaufman	11
AATCC	11
ASPRS	12
News from Members:	
The New Munsell Student Color Set	12
Call for Nominations: 1998 Verriest Medal	12
CAUS	13
Book Review:	
Color Appearance Models by Mark D. Fairchild	13
Center for Visual Science 21st Symposium	14
Note from ISCC Office	15
News from Members	15
Special Sale! Color & Light, Billmeyer & Hammond	16
Calendar	17
Jobs Wanted	19
Sustaining Members, ISCC Office	Back Page

Number 373

May/June

1998

WORLD LOSES A GREAT COLOR SCIENTIST



Dr. David L. MacAdam with a model of the "Uniform Color Scale"

David L. MacAdam (1910-1998), died at the Fairport Baptist Homes in Rochester, NY on March 9, 1998. Born in Philadelphia, Dr. MacAdam attended Lehigh University and graduated *Magna Cum Laude* and *Phi Beta Kappa*. He entered MIT in 1932 and studied for his doctorate under Prof. George R. Harrison. He was a charter member of *Sigma Xi* and a teaching fellow. Under Prof. Arthur C. Hardy, he originated the first course in color measurement and assisted Prof. Hardy in the preparation of "Handbook of Colorimetry". Upon graduating from MIT in 1936, Dr. MacAdam joined the Research Laboratories of the Eastman Kodak Company. He retired from Eastman Kodak as a Senior Research Associate in 1975 and served as Adjunct Professor at the University of

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Rochester, Institute of Optics until 1995.

Dr. MacAdam was instrumental in establishing the theoretical basis for color photography, including color masking as compensation for unwanted dye layer absorptions, (JOSA, Vol. 28, 1938, p466).

Dr. MacAdam single-handedly opened up the field of color difference measurement. He is often remembered for the work he did that resulted in the now famous MacAdam ellipses, published in the Journal of the Optical Society of America under the title, "Visual Sensitivities to Color Differences in Daylight" (JOSA, Vol. 32, May 1942, p247). It is easy in retrospect to forget the prodigious amount of work that went into that paper, which reported color tolerances in many directions from 25 target chromaticities at the same luminance. In 1949, Dr. MacAdam co-authored another paper adding many target chromaticities at different luminances.

With Deane Judd and Günter Wyszecki, Dr. MacAdam performed the first principal-component analysis of daylight (JOSA, Vol. 54, 1964, p1031). By showing that daylights are effectively linear combinations of only a few basic spectra, Dr. MacAdam opened the way to the algorithms that now are being proposed in computer vision to perform robotic object-color recognition independently of illumination.

Dr. MacAdam proposed several color spaces based on his color-difference ellipses as a metric, one of which was the 1960 Uniform Color Space. He has developed equations for evaluation of color differences as a basis for standardization by the CIE, (e.g., FMC Color Difference Equation). This was adopted by the CIE and accepted as an industrial standard for several years before it was refined to produce the CIELUV and CIELAB uniform color spaces that are in use today.

Another color-space contribution by Dr. MacAdam is the OSA Color Order System, replete with its own color atlas samples according to crystallographic principles.

Dr. MacAdam has also made many contributions to the fields of colorimetry, color photography, color television, camouflage detection, and color standardization. He established the reliability of the automatic recording spectrophotometry and initiated the use of computers in 1946 for research in colorimetric studies of dye mixtures in color photography. He invented a tristimulus integrator for colorimetry and developed a geodesic chromaticity diagram to facilitate determinations of hue and saturation in evaluation of fidelity of color reproduction in color photography and color television.

He was a leader of Great Books discussion group and his interest in the classics inspired him to write a book in 1970: *Sources in Color Science*, (The MIT Press, 1970). MacAdam collected portions of articles from Plato's *Timaeus* 68, Thomas Young, Erwin Schrödinger, John Guild and Stephen Polyak to Sir Wilfred E. Le Gros Clark.

He has written numerous articles on color. Some of the articles have become classics in their field. Several of his papers contained materials that were subsequently named for the author, a rare honor. Examples are the MacAdam limits for the maximum possible luminous transmittance or reflectance at a given chromaticity, and the MacAdam ellipses for color discrimination as a function of CIE coordinates. Dr. MacAdam was the first recipient of the Adolph Lomb Award from the Optical Society of America. This award is given biannually to the most outstanding contributor in the fields of optics, under thirty years of age. Dr. MacAdam became a Fellow of the Optical Society of America. He was the President of the Optical Society of America in 1963 and editor of its Journal from 1964 to 1975.

Dr. MacAdam was an honorary member of Inter-Society Color Council and recipient of the Godlove Award of the Society in 1963. In 1966 he received the Mattiello Award of the Federation of Societies for Paint Technology and Hunter and Driffield Medal from the Royal Photographic Society. In 1974 he received the highest award of the

Optical Society of America, the Frederic Ives Medal for his contributions to color and optics. In 1983 he received the Judd Medal from Association Internationale de la Couleur (AIC) and in 1985 Newton Medal from the Colour Group of Great Britain.

Dr. MacAdam was a hiker with the Genesee Valley Hiking Club and a member of the Immanuel Baptist Church. His wife of 58 years, Muriel Faulkner MacAdam died in 1996. Survivors include their four children; David Pearce MacAdam (Chatham, MA), Keith Bradford MacAdam (Lexington, KY), Lewis Kempton MacAdam (Shrewsbury, MA), Muriel Susan MacAdam (Rochester, NY), and seven grandchildren. Contributions in his memory may be made to the Institute of Optics, University of Rochester.

Michael H. Brill,

President-Elect ISCC

Gultekin Celikiz, Editor, ISCC News

COLOR RESEARCH AND APPLICATION IN THIS ISSUE, JUNE 1998

With a large number of computer applications, there has been an increase in concern about the color match between what is seen on the computer display and printed images. A technical committee of the Commission Internationale de L'Éclairage (CIE) has been involved with the evaluation of images in different media. In 1990, CIE TC 1-27 issued guidelines to encourage research studies that could then be used by the committee in their work. In "Cross-Media Performance Evaluation of Color Models for Unequal Luminance Levels and Dim Surround" by Tung-Chang Hseue, Yu-Chuan Shen, Po-Chi Chen, Wen-Hsing Hsu, and Yuan-Te Liu report on their research which followed the TC 1-27 guidelines and should add to the body of data available for study.

Another technical committee of the CIE (1-34) has been examining color

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appearance models. In 1996 they decided to try to combine the best features of the current models into one high performance model. It was also agreed that the model should have two versions, a comprehensive version for general use and a simple version for use in specified limited conditions. At the CIE Division 1 meeting in Kyoto, Japan in May 1997, TC 1-34 on Colour Appearance Models adopted the simplified version as an interim model (CIECAM97s). The three articles in this issue are related to this new color appearance model.

The first two articles describe the model and the verification of its performance. In the first article Drs. M. Ronnier Luo and Robert Hunt present the components of the CIE 1997 Colour Appearance Model and describe the steps needed to implement the model in both the forward and reverse models. In the second article, "Testing Colour Appearance Models using Corresponding-Color and Magnitude-Estimation Data Sets," the same authors report on comparisons of CIECAM97s with six other models.

The third article is "A Chromatic Adaptation Transform and a Colour Inconstancy Index." When an observer looks at a sample under one illuminant, then looks at the sample under another illuminant and judges the color appearance to be unchanged, we say that color constancy has occurred. However, in most situations some changes in color appearance occur. One of the components of CIECAM97s is a chromatic adaptation transform which was originally developed as part of the work of the Colour Measurement Committee of the Society of Dyers and Colourists. What are the corresponding colors? A pair of corresponding colors consists of a color observed under one set of conditions and another color that has the same appearance as the first when observed under another set of conditions (such as viewed under a different illuminant). It is difficult for observers to make such matches because the observer must first look at one color, then time must be allowed for the observer to adapt to the new

viewing conditions before looking at the second color and still hold in memory the first color. For accuracy and consistency, it is important that the observer be adapted to the illuminant under which the observations occur. In this article M. Ronnier Luo and Robert W. G. Hunt describe an index which would provide a numerical method that could replace the difficult visual observations of the amount color samples change in appearance when the illuminant changes.

For the next article we move from color inconstancy to observers judgments relating to color constancy. Now, in "Perceived Illumination Measured," A. P. Petrov, C. Y. Kim, I. S. Kweon, and Y. S. Seo seek to address a different but related capability of human vision: the estimation of illuminant properties from a reflected-light image. If certain color relationships exist among the parts in a scene, a human viewer sees these parts as being reflecting objects under a single illumination – the perceived (inferred) illumination of the scene. However, if an object is brighter than would be permitted by ordinary reflectances under the inferred illumination, such an object is seen as self-luminous or fluorescent. Experiments performed by Petrov, *et. al.* examine some properties of the perceived illumination, revealed by the conditions under which patches in a scene do or do not appear fluorescent. Their approach is almost unique (but see Speigle and Brainard, *J. Opt. Soc. Am. A*, 13, 436-451 (1996) for a related approach). Future work will reveal more about how the visual system infers illuminant from a reflected-light scene.

The final article in this issue describes a unique new industrial application involving the use of color indices in quality control. In "Whiteness of Talcum Powders as a Quality Index for Pharmaceutical Uses," M. Soriano, M. Melgosa, M. Sánchez-Marañón, G. Delgado, E. Gámiz, and R. Delgado describe research that analyzed the correlation between pharmacopoeia tests of industrial talcum powder and the color of the talcum powder. The

relationships found were so strong that they suggest that the instrumental measurement of color and the establishment of color limits could be useful as an indicator of purity and suitability of talc.

Ellen C. Carter
Editor

Color, Research and Application

1998 ISCC 67TH ANNUAL MEETING

The Inter-Society Color Council (ISCC) will hold its 67th Annual Meeting October 2-4, 1998 in conjunction with the Optical Society of America (OSA) Annual Meeting at the Marriott Inner Harbor, Baltimore, MD.

The ISCC Annual Meeting will consist of sessions organized by its three Interest Groups (Basic and Applied Color Research; Industrial Applications of Color; Art, Design and Psychology) and its Education Committee. There will also be a meeting of Project Committee #51, Material Standards and Their Use in Calibration and Verification; a Newcomers Meeting, and Individual Members Group Meeting. Other events will include a wine and cheese reception together with a contributed posters session, the business and awards luncheon featuring the presentation of the Macbeth Award, and a crab fest on Saturday.

The final day of the meeting will feature a joint ISCC/OSA Symposium on "Color Discrimination and Color Differences: Perception and Prediction" that will include eight distinguished invited speakers and several contributed presentations. Information about the preliminary meeting schedule and program for the joint symposium can be obtained from the ISCC office or by visiting the ISCC web site at <<http://www.iscc.org>> or the OSA web site at <<http://www.osa.org>>

Dr. Mark. D. Fairchild
Chair

1998 ISCC Annual Meeting

BIOGRAPHIES FOR ISCC OFFICERS & DIRECTOR CANDIDATES

Officers - Term is two years 1998-2000

President Elect - Jack Ladson

Jack A. Ladson currently serves as Director of Color Technology for the Estee Lauder Companies. Ladson has been working in the field of color and appearance technology for twenty years. His current interests are in digital color technology, spectrophotometry and colorimetry, and global color control. He has had extensive experience at high levels in many business operations including; R&D, Operations, Sales and Marketing.

Ladson studied Optics at the University of Rochester and Mathematics at the Massachusetts Institute of Technology.

As a Director of the Inter-Society Color Council, Ladson has been actively involved for the last two years. He is an active member of the Appearance Committee of the American Society for Testing and Materials. He chairs the sub-committee ASTM E12.02 on Colorimetry and Spectrophotometry, is task group chairman of Effect Coatings (Metallic and Mica Flake), member of the newly formed group on Multidimensional Characterization of Appearance and is a representative on Optical Properties of Plastics to the International Standards Organization. He is a member of The United States National Committee - Commission Internationale de l'Eclairage, the Council on Optical Radiation Measurement, the American Statistical Association, and the American Society for Quality.

Treasurer - Hugh S. Fairman

Hugh joined Henry Hemmendinger as a partner in HCL in 1994. Hugh is a graduate of Princeton University, where he majored in analytical chemistry. During the early part of his career in the coating industry, Hugh specialized in exterior exposure, corrosion control, and accelerated weathering. While in the coating industry, he obtained expertise in color and appearance science. Hugh's current interests include metamerism, tristimulus integration, scotopic vision, and the study of error detections and correction in spectrophotometry, as well as in colorimetry. Hugh has been very active in the Inter-Society Color Council (ISCC), serving as President from 1990-1992, and now as Treasurer. He has also served as chairperson on numerous problem and standing committees. He was the United States representative to the AIC from 1988 to 1992. Also, he is active in the American Society for Testing and Materials (ASTM), serving on committees D-1 on Paint and Related Coating Materials, and E-12 on Appearance. Currently, he is chairperson of subcommittee E-12.04 Data Architecture.

Secretary - Richard W. Riffel

Rich Riffel joined the ISCC as a student member while studying under Dr. Franc Grum at the Rochester Institute of Technology in 1984. Rich subsequently graduated with an MS in Imaging Sciences from RIT in 1992 under the direction of Dr. Roy Berns.

Rich is currently Product Manager - Low Cost Products and Color Vision Systems at Hunter Associates Laboratories where he is involved in low-cost spectrophotometric instrument systems and applications. He was previously associated with Accuracy Microsensors, Inc. where he helped develop low-cost instrumentation using LED's as primary light sources. Prior to this, he was a Research Specialist with Monsanto Chemical Company (now Solutia, Inc.) in the

Resins Division. In this position, Rich was responsible for color formulation and color quality control of transparent plastics encapsulated in glass for the automotive and building industries, supporting several world-wide manufacturing and research sites. He was also Color Products Manager for the former Diano Color Products business of Milton Roy Company.

Rich has served on the Finance Committee and Board of Directors of the ISCC and has also been a member of CIE and the Detroit Color Council. He lives in Herndon VA with his wife and 4 children.

Board of Directors - Term is three years 1998-2001

Ms. Charla S. Haley

Currently, Charla is Color/Sample Development Manager for Techmer PM, LLC in Clinton, TN.

She is involved in color matching and product development for plastic applications. She has been with Techmer PM since the joint venture in November 1997. Prior to that, Charla was QC Manager for the Fiber Service Center of Hanna Color in Buford, GA for two years. She has a total of 6 years of experience in polypropylene fiber color matching and 3 years experience in pigment dispersions for fiber-grade concentrates.

Prior to joining Hanna/Techmer PM, Charla had 13 years with Hercules Incorporated in the fiber division in Covington, GA. She has worked in all areas of polypropylene textile fiber development, from color matching and plant support for color start-ups to evaluation of new pigments. Charla was also responsible for projects involving product development of thermal and light stabilization, flame retardant fiber, and BCF and staple fiber extrusion and processing.

Charla received her BS in Chemical Engineering from Georgia Tech in 1983. She has several publications and a US patent on Flame Retardant, Light Stable Composition.

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Mr. Craig Johnson

Craig is currently Product Manager for Color Products/Market Segment Manager for the plastics Industry at BYK-Gardner USA. His responsibilities include determination of product line mix for the plastic industry as well as product marketing for all industries for color products. Additional duties include development and implementation of regional and corporate seminar programs, program management for in-store point of sales color matching projects and directing various software and hardware projects.

Craig has been with the BYK-Gardner organization since 1980. He was previously employed with Pacific Scientific color products division which later became BYK-Gardner USA. Craig has been with the Color Products Division for 15 years, serving in various capacities including materials management, applications support, sales and product marketing. He has been employed by Colorgen Inc. and Milton Roy, Diano Color Products Division.

Craig has practical theoretical knowledge and training in color and gloss applications as well as computer color matching in industrial and retail environments. In addition to applications knowledge, he has been a direct sales representative in the mid-Atlantic states covering Virginia to New York state and Pennsylvania.

Craig is a graduate of Boston University and holds a BA in Economics. He has attended and presented at numerous training symposia on a wide range of color, appearance and physical test applications. He is a member of ISCC, ASTM, SPE, and TAGA.

Craig is married, resides in Gaithersburg, MD., is the father of two sons and an avid golfer.

Mr. Yan Liu

Yan Liu is a Research Associate with the Research Department, Gemological Institute of America. He received a B.S. degree in Physics from Shandong University, Jinan, China in 1982. He

studied color optics as a graduate student in the Institute of Color Optics, Shandong College of Textile Engineering, Qingdao, China; and received an M.S. degree in Optics from the Changchun Institute of Optics and Fine Mechanics, Chinese Academy of Sciences in 1985. From 1985 to 1988 he was a lecturer with the Institute of Color Optics, Shandong College of Textile Engineering where he taught "Applications of Color Technology to the Textile Industry" and was involved in many color related research projects. He came to the Munsell Color Science Laboratory of the Rochester Institute of Technology to study in 1988, and obtained an M.S. in Color Science in 1991.

Yan has been actively involved in research in the areas of simulating CIE standard illuminants, computer color matching, color measurement, instrumentation for color measurement, color vision, color modeling for digital imaging systems, and spectral matching for color reproduction. He has proposed a systematic color vision model, and has thoroughly studied the alexandrite effect in gemstones. He and his colleagues in GIA have found out that the alexandrite effect is a non-color-constancy phenomenon. They proved that the former theories explaining the alexandrite effect are not correct, and proposed a new theory for this color change phenomenon. His current research interests include color measurement of gemstones, instrumentation for color measurement, visual color grading of faceted gemstones, standard light sources, origin of color in gemstones, color vision, and gemological optics. He has published over 10 refereed journal publications, given many conference presentations, and contributed one book chapter. Currently he is co-authoring a book entitled "Optics for Gemologist."

Yan has participated in ISCC meetings and given 6 presentations since 1990. He is a GIA voting delegate to the ISCC. In addition to being a member of ISCC, he is a member of the Optical Society of America (OSA).

COUNCIL FOR OPTICAL RADIATION MEASUREMENT (CORM)

Council for Optical Radiation Measurement (CORM) and the UltraViolet Spectrometry Group (UVSG) invite you to a three day conference focusing on Optical Spectrometry to be held at Royal Holloway, University of London, Egham, Surrey from 28 June - 2 July 1998.

THE CONFERENCE

The Conference will address optical spectrometry in the UV, visible, NIR and IR regions of the spectrum and will include reflectance, colour, transmittance, fluorescence and luminescence techniques. Particular emphasis will be placed on analytical applications, instrumentation, validation and standards.

International speakers working in a wide range of Optical Spectrometry have been invited to give lectures throughout the three main sessions of:

- Measurement Standards and Validations

- Reflectance and Colour

- Instrumentation and Applications

Keynote speakers currently include:

Dr. M. Cox (NPL)

Mr. D.H. Nettleton (NPL)

Dr. O. Wolfbeis (University of Regensburg)

Mr. P. Wychorski (Eastman Kodak)

Dr. A. Springsteen (Labsphere Inc.)

Submitted papers and posters will be presented throughout the conference.

There will be a series of early evening
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open discussions organized together with a trade exhibition. A visit to the National Physical Laboratory (NPL) will be arranged for the 2 July 1998 following the conference.

VENUE

The Conference will be held at Royal Holloway University of London, at Egham near Windsor. Royal Holloway, established in 1886, is set in 100 acres of wooded parkland centered around the impressive Founder's Building. The lecture theatre, refreshment areas and accommodations are all within easy walking distance. The conference dinner will be held in a magnificent Picture Gallery, housing masterpieces from the Victorian Age.

The College has good public transport facilities to nearby Windsor, Eton and Central London and is easily accessible from Heathrow and Gatwick airports.

SOCIAL PROGRAMME

The social programme will include a conference dinner in the Picture Gallery and an evening river boat trip along the Thames.

TENTATIVE PROGRAM

Monday, 29th June 1998

Welcome from Mr. P. Wychorski, President of CORM and Mr. T. Frost, Chairman of UVSG.

MEASUREMENT STANDARDS AND VALIDATION

1. Accreditation, Calibration and Traceability (ACT) with Known Uncertainty, P. F. Wychorski, Eastman Kodak Co.

2. Challenges in Providing Standard Reference Materials for Chemical and Pharmaceutical Process Analysis, J. C. Travis, *et. al.* NIST.

3. Accreditation of Absorbance Standards for UV/Visible Spectrometry, D. Irish, Unicam Ltd.

4. The Absolute Calibration of Mid-IR Transmittance Standards, F.J.J. Clarke, NPL.

5. New NIST Transmission Density Instrument, E. A. Early, *et. al.* NIST

6. Diffuse Reflectance and Transmittance Measurements and their Relation to Solar Protection Factor (SPF), Art Springsteen, Labsphere, Inc., USA.

7. The Establishment of Absolute Diffuse Reflectance Scales using NPL Reference Reflectometer, David Williams, NPL.

8. Tea, Exhibition and Poster.

9. Gonio-spectrophotometric Reflected Light Distributions of Reference Materials, Gorow Baba, Murakami Color Research Laboratory, Tokyo.

10. Quality Systems and Their Impact on the Laboratory of the Next Millennium, John Hammond, Unicam Ltd., Cambridge.

Tuesday, 30th June, 1998

11. Tests of an Omnipresent Standard for Absolute Spectral Radiance Measurements, A. Migdall, *et. al.*

12. High-Accuracy Measurement of Regular Spectral Transmittance and Reflectance in UV-Visible-NIR, F. Manoochetri, *et. al.*

13. The Design and Use of Reference Data Sets for Testing Scientific Software, M. Cox, *et. al.* NPL.

14. Comparison of Infrared, Raman and NIR Spectra for Information Content using Chemometric Data Augmentation, Net Signal and Multivariate Limits of Detection, J. Workman, Kimberly-Clark Corp.

15. An Introduction to Bispectral Fluorescence Measurements, Art Springsteen, Labsphere, Inc.

16. Instrumentation, Standards and Procedures used at the National Research Council of Canada for High-Accuracy Fluorescence Measurements, J. C. Zwinkels, *et. al.* NRC of Canada.

17. The NPL Reference Spectrofluorimeter, David Williams, NPL.

18. Problems of Colour Measurement of Fluorescent Paper Grades, Tarja and John Shakespeare Valmet, Automation, Inc.

19. A Novel Spectrophotometer for the Measurement of Colour and Appearance, Perry Palumbo, *et. al.* GretagMacbeth.

20. Bispectral Fluorescence Colorimetry, J. E. Leland, Labsphere, Inc.

Wednesday, 1st July, 1998

21. Metrology of Fluorescent Retrospective Material and its Relationship to Material Visibility, David M. Burns, *et. al.*, 3M Company.

22. Fluorescence Spectroscopy of Biological Systems, Prof. O. Wolfbeis, University of Regensburg, Germany.

23. An Improved Model for Improving the Inter-Instrument Agreement of Spectrocolorimeters, D. C. Rich, *et. al.*, Datacolor International.

24. The Determination of Colorimetric Uncertainties in the Spectrophotometric Measurement of Colour, P. J. Clarke, *et. al.*, NPL.

25. Comparison of CIE Chromaticity Values, N. van Tonder, *et. al.*, National Metrology Laboratory, CSIR, Pretoria, South Africa.

26. Scattering Properties of Diffuse Reflectance Materials, P. Y. Barnes, NIST.

27. Laser Based Techniques in Spectrometry, N. P. Fox, *et. al.*, NPL.

28. Diagnostics of Optical and Electronic Properties of Thin Layer Structures of Metal Transition Region-Semiconductor Type by Spectroscopic Techniques, O. V. Pirsenko, *et. al.*

29. Use of FT Spectrometry for Radiometric Applications, C. Chunnilali, *et. al.*

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PERCEPTION DAY AT THE NATIONAL GALLERY, LONDON 23 SEPTEMBER 1998

The National Gallery Education Department is tailoring a course of interest to readers of 'Perception' to coincide with the opening of a new exhibition at the Gallery, "Mirror Image: Jonathan Miller on Reflection". The exhibition is curated by Jonathan Miller, and is on view in the Sainsbury Wing of the National Gallery from 23 September to 13 December 1998. It is the 1998 Esso Exhibition at the National Gallery.

This will be an opportunity for researchers in visual perception to learn about art from experts, and engage in discussion about how art may relate to their area of interest. The programme will include discussions and viewings of paintings selected to be of particular interest.

The provisional programme will be as follows:

10.30-11.00 Registration and Coffee

11.00-11.30 Welcome; Refreshing the Memory: The National Gallery and its Organisation.

11.30-12.15 Points of View. One painting examined from the point of view of an art historian, a restorer and an education officer.

12.15-1.00 Tours of the Gallery. In groups of about 20, we get taken around about 4 paintings which are examined in more detail.

1.00-2.00 Sandwich lunch (provided)

2.00-3.00 Themed tours. Tours which look at several pictures with a theme. 3 themes are proposed:

perspective, colour, faces. Please indicate your first choice of themed tour when booking.

3.00-3.45 Reflections -a talk by Jonathan Miller. We hope that Jonathan Miller will be with us for at least a part of the day.

3.45-4.00 Tea

4.00-4.30 Discussion led by Richard Gregory and others.

4.30-6.30 A chance to visit the exhibition "Mirror Image: Jonathan Miller on Reflection" in the Sainsbury Wing.

6.30-7.30 Public Lecture by Jonathan Miller.

The cost of the day will be 65 pounds to include a ticket to the special exhibition and a ticket for the evening public lecture as well as coffee, lunch and tea.

There is a strict limit of 70 places. These will be allocated on a first come first served basis.

The journal 'Perception' has generously agreed to provide some financial support for a limited number of post-graduate students. Application for support should be accompanied by a letter of support from your supervisor.

Any enquiries should be made to:

Dr Peter Thompson,
Editor, Perception
Department of Psychology
University of York
York YO1 5DD

or preferably : pt2@york.ac.uk

The application form can be found at:
<http://www.pion.co.uk/perception/perday98/>

Applications should be made to:

Ticket Sales (OB)
The National Gallery
Trafalgar Square
London WC2N 5DN

CIE-DIVISION 1 MEETING NOTICE

The third meeting of the Sagawa term of Division 1 will be held in Baltimore, MD, USA, on Monday 28 September to Wednesday 30 September 1998.

This will be a three day meeting and TC Chairmen are encouraged to have TC meetings during these three days. Those intending to do so are requested to promptly contact the Division Secretary and the Division Editor, so as to allow for the planning of meeting rooms.

More details on hotels and other arrangements will follow as soon as these are available from the hosts.

ISCC 67th Annual Meeting (2-4 Oct. 1998) will follow the Division 1 meeting and will be held at the Marriot Inner Harbor Hotel in Baltimore. The meeting will include sessions organized by each of the three interest groups, the education committee and any active project committees. In addition there will be an ISCC/OSA Joint Symposium on Colour Difference and Colour Discrimination. Significant contributions to this symposium are expected from researchers in colorimetry, vision science and industry.

DAVID H. ALMAN TO RECEIVE ISCC MACBETH AWARD

The Inter-Society Color Council (ISCC) will honor Dr. David H. Alman with the presentation of the Macbeth Award during its Annual Meeting to be held in Baltimore, MD on October 2-4, 1998. The Macbeth Award was established in 1970 in memory of Norman Macbeth. It is presented biannually to a member, or former member, of the ISCC for recent important contributions in the field of color. Dr. Alman, a Research Fellow at the E. I. duPont de Nemours and Co. in Troy, MI is being recognized for his outstanding contributions to the advancement of industrial color difference metrics.

During the middle 1980's, Dr. Alman recognized a need for an improved color difference equation in comparison to then widely used equations such as FMCI, HunterLab, and CIELAB. The CIELAB equation is currently recommended for use by the International Commission on Illumination (CIE). Weighted CIELAB color difference equations, including JPC79 and CMC, provided further evidence of the inadequacy of CIELAB, especially for setting color differences and tolerances. Both the JPC79 and CMC equations were based on textile data and might not be appropriate for the automotive coatings manufactured by DuPont. Accordingly, Alman obtained funding and began a research initiative with RIT's Munsell Color Science Laboratory (MCSL). Dr. Alman was largely responsible for designing the visual experiments, introducing probit analysis at MCSL, and managing the DuPont technicians in the considerable amount of sample preparation. This relationship lasted for six years and led to the RIT-DuPont dataset.

In 1989, Dr. Alman agreed to chair the CIE Technical Committee TC 1-29, which is concerned with developing an improved color difference equation. Dr. Alman defined a set of guid-

ing principles for the committee including statistical validation, defining a set of reference conditions, not over-modeling the data during equation development, and continuous improvement. Through his leadership, the improved CIE94 equation was developed and announced in 1994. CIE94 is the first major step taken by the CIE in the area of industrial color differences and tolerances since 1976.

The introduction of CIE94 has led to many new studies and re-examinations of the data leading to the CIE94 and CMC equations. The result has been the formation of a color difference consortium at the MCSL with broad industrial support, activities at the National Research Council (NRC) in Canada, the Bundesanstalt für Materialforschung und -prüfung (BAM) in Germany, and several universities around the world.

In 1997, the CIE called upon Dr. Alman to chair CIE Technical Committee TC 1-47. The goal of TC 1-47 is to improve CIE94. Alman has garnered enthusiastic participation, including scientists responsible for the CIE equation.

Because of Dr. David H. Alman's vision, leadership, and technical expertise, the industrial community has a clear path to continued improvements in automated tolerance metrics.

Dr. Robert Marcus



Dr. David Alman

CALL FOR PAPERS INTEREST GROUP II

ISCC Interest Group II, "Industrial Application of Color", serves to present the technical challenges and solutions that industry encounters in commercial color applications. The range of issues can include, but are not limited to, color measurement techniques, colorant production, color tolerance, color matching, continuous color monitoring, relationships between color and other physical characteristics or any other color related industrial application.

For the Annual Meeting to be held in Baltimore, MD, October 2 - 4, 1998, Interest Group II is soliciting contributed papers on the many industrial aspects and uses of color. To present, please submit by June 15, 1998 a title and an abstract of no more than 200 words to

Mr. Arnold M. Service
DuPont
3115 River Road
Buffalo, NY 14207
Tel: 716-879-4586
Fax: 716-879-4568
email:
arnold.m.service@usa.dupont.com

ISCC 1998 ANNUAL MEETING OCTOBER 2-4 INTEREST GROUP I

Basic and Applied Color Research CALL FOR PAPERS

ISCC Interest Group I, Basic and Applied Color Research, serves to bring together researchers in the fields of color science, color measurement, color technology, vision, education and psychology, to discuss topics of mutual interest. For the Annual Meeting to be held in

(Continued→)

Baltimore, MD, October 2-4, 1998, the topic of discussion is "Color Difference and Color Appearance". The keynote speaker will be Mark Fairchild (RIT). Rolf G. Kuehni (DyStar) and Laurance Hardin (Syracuse Univ.) are two of the invited speakers. The session will also contain contributed papers (each approximately 20-30 minutes in length).

Color appearance models are particularly timely now, because of the need for a universal color-management standard on the Internet and in digital television. The CIE has a very active technical committee dealing with this topic. A CIE model called CIECAM97s is a candidate for a universal color-appearance space to be recommended as a substrate for color-management systems. CIE Division I will hold a meeting in Baltimore, MD just prior to the Inter-Society Color Council Annual Meeting, and we anticipate that some of the participants will share their research and views with us at the Interest Group I session.

Interest Group I is now soliciting contributed papers on any aspect of basic and applied research in the field of color appearance and color difference. Please submit by June 1, 1998 a title and an abstract of no more than 200 words to either the Chair or Vice-Chair:

Dr. Michael H. Brill
Sarnoff Corporation
CN 5300
Princeton, NJ 08543-5300
USA
Tel: 609-734-3037
Fax: 609-734-2662
email: mbrill@sarnoff.com

Dr. Helen H. Epps
University of Georgia
300 Dawson Hall
Athens, GA 30602
USA
Tel: 706-542-4913
Fax: 706-542-4862
email: hepps@fcs.uga.edu

REVIEW OF THE ISCC 1998 WILLIAMSBURG CONFERENCE

The 1998 Williamsburg Conference was not only a conference but a complete experience for me since I've never been to Williamsburg or an ISCC Conference. Upon my arrival to the Williamsburg Lodge, I enjoyed absorbing the eighteen-century historic sites. Prior to the conference, I had an opportunity to get a feel for the day in



Prof. Wade Thompson with two of the speakers, Harold Cohen and Hilary Dalke

which people lived a simpler life and had more time to be creative without support from technology. It seemed to be an appropriate location for this special conference on *Color and Design: 21st Century Technology and Creativity*. There were nearly sixty people in attendance. Approximately half the participants had technical backgrounds and the other half had creative backgrounds. It was a good combination and it made for a variety of topics during the open discussion time. All of the presentations were informative, educational, and exciting. They have given

me a renewed appreciation and a better understanding of the unlimited knowledge there is to be gained in the areas of art, design, industry, and education. Although I enjoyed the extensive exchange of information from each of the presentations, below I will discuss a few which I found particularly interesting.

The keynote speaker, **Donna Cox**, Director, Center for Graphic Technologies, University of Illinois, did a wonderful job encompassing the wide range of topics for this conference. Her title was *Visualization and Virtual Reality*. She briefly reviewed the historical scientific methodologies, then gently brought the audience up to

speed and into the supercomputer age. She explained that scientists still use the same methodology, but are now using the computer as a tool to assist. One of her many examples included a computer generated movie, "Venus and Milo." She demonstrated how different computer graphics techniques such as applying different colors, applying different shading, and changing the perspective can change the overall perception of the movie. Her presentation was a perfect introduction for this conference.

On the technical side, it was encouraging to hear **Jim King**, Adobe
(Continued→)



Cynthia Sturke, ISCC Office Manager taking a break with Tien-Rein Lee

Systems, give his talk on *Yet Another Revolution of the Publishing Industry*. He enthusiastically spoke about the revolutionary ways in which technology is affecting the work place and how he foresees the future of publication. The technology that is available in today's workplace is assisting in the formation of an extremely efficient end-to-end digital publishing system. This end-to-end path to finished products will have a clear break in the middle creating two rather separated work groups. At this break the work passes from a creative design through a "digital master" and then to the production side. Theoretically, the digital master will have the appropriate amount of information to complete the process, thereby acting as a go-between for the two sides. There are still some hurdles to get over before this process will become reality. It was exciting to hear this presentation, as my position at Munsell Color Science Laboratory may eventually fit into a similar digital master system.

On the creative side, I enjoyed listening to **Moritz Zwimpfer**, Professor, Graphic Designer, Switzerland. His title was *Experience in Color: Methods to Develop a Personal Understanding of Color*. He spoke of how fundamentals and stable design experiences are the building blocks for young designers.

He discussed how today's technology has set the speed of learning and how there is a contradiction of time demands vs. time needed to learn. Early in his lectures, he teaches the importance of color relationships through traditional techniques; no computers are used. He also takes time to study reactions and emotions evoked prior to relying on theories. He said "just because you have eyes, doesn't mean you'll make the right choice." His presentation has given me new light on the importance of time and taking time to learn the "right" choices.

Overall the conference was very well organized and professional. I would like to thank Wade Thompson for having the insight to bring together both technical and creative people. It was a great opportunity for the presentation of current research, creative activities, and exchange of information between specialists in color, design, art and technology. I would also like to thank Mark Fairchild and Roy Berns for giving me the opportunity to enhance my education in color and design by attending this conference.

*Colleen Desimone
Munsell Color Science Laboratory
Rochester Institute of Technology*

DETROIT COLOUR COUNCIL

**MARCH 28, 1998
Meeting**

Our first presentation of the year was given by George "Ted" Moon, an Independent Design Consultant based in the Detroit area. Prior to retirement, Ted worked for 35 years at GM in various jobs, including executive in charge of all product, exhibit, and graphic design.

Ted shared his insight and experiences in the automotive industry. He showed a video of the Geneva Auto Show and highlighted the bright, saturated colors that are popular in Europe. A common thread throughout his talk was that North American Auto manufacturers need to take the cue from Europe and offer Bright Blues, Greens, Yellows and Oranges. Ted ended his talk by mentioning the influence that architecture had on his career.

Jim Keiser

DCC Future Meetings

June 2: "Environmental Issues for Organic Pigments" Contact: Jim King, 248-583-8276

June 23 Annual Golf Outing. Contact: Terry Pickard, 248-583-8347

Sept. 17 Panel Discussion on Coloring Different Materials. Contact: Jim Keiser, 248-583-8345

MUNSELL COLOR SCIENCE LABORATORY (MCSL)

1997 Annual Report

This Annual Report is a thirty-page document containing information on many aspects of MCSL operation during the past year as well as indications of what its leaders expect to accomplish in 1998. Most interesting

(Continued→)

OBITUARY

John E. Kaufman, 71, a noted lighting engineer, long time member of Inter-Society Color Council, and a long-time resident of Stamford, died at home Monday morning, March 16. The cause of death was cardiac arrest. Mr. Kaufman, who retired in 1992, was formerly technical director of the Illuminating Engineering Society of North America, and editor of "The Lighting Handbook". During his lengthy service to the IESNA, he was the recipient of many society awards including: Marks, Fellow, Distinguished Service, and Presidential Award. He was also an elected officer of the Commission Internationale de L'Eclairage (CIE) and a member of the New York Academy of Science. Mr. Kaufman graduated from Cornell University in 1949. He was a director of Camillus Cutlery Co., a member of ZBT fraternity, the Cornell Society of Engineers, the Senior Man's Association of Stamford, and the Retired Men's Club at the JJC. His wife, Betsy B. Kaufman, Stamford, died in 1986. He is survived by his mother, Fannye G. Kaufman, Briarcliff, NY, his brother, Harold B. Kaufman, Jr., Somers, NY, his daughter, Gail K. Furgal, New York City; his son J. Gilbert of Coral Gables, FL. and three grandchildren. In lieu of flowers, donations may be made to Stanford Hospital and Memorial Sloan-Kettering Hospital, New York City.

MCSL, continued from pg 6

to this reviewer is the report of Laboratory Director, Mark Fairchild.

Laboratory Director Fairchild reports no faculty or staff departure during 1997. Francisco Imai joined MCSL as a post-doctoral fellow working with Roy Berns. Regrettably, the Xerox Professorship in Color Imaging Systems remains unfilled. In September 1997, astronomer Ian Gatley joined RIT as Director of Center for Imaging Science, of which MCSL is a part. In November Gatley took time to attend the IS&T/SID Color Imaging Conference, Scottsdale, AZ.

Five students completed their degrees in 1997 and two new graduate students joined MCSL. Five visiting industrial scientists spent time at MCSL; two others completed their stays and returned to the place from whence they came. MCSL continues to plan for controlled growth and provision of the highest quality experience for graduate students.

Fairchild reports that he is on sabbatical leave, first half of year at RIT, second half as Visiting Associate Professor, Cornell University. His book, *Color Appearance Models*, was published by Addison-Wesley,

November 1997. During the last half of 1997, Fairchild has been working on development of color appearance software, spectral image synthesis for image systems evaluation and color science education, reflectance measurement for material modeling and image synthesis, development of a model of spatial vision and adaptation for image reproduction applications.

Note that Fairchild report has been abstracted and edited by Harry K. Hammond III.

AATCC

Research Committee RA36 on Color Measurement Test Methods

AATCC Research Committee RA36 met on Wednesday, February 25 in Charlotte, NC. Items of current activity include:

1. The Lighting Communications subcommittee reported on plans to collect radiometric data in retail establishments using equipment on loan from the supplier. In addition, a

demonstration light box will be displayed at AATCC functions. This box includes several different commercially-available fixtures, and displays the problem of unexpected color changes for samples due to differences between lamps. The subcommittee's Lamp Survey was published in the February, 1998 issue of *Textile Chemist and Colorist*.

2. A draft was submitted for a new evaluation procedure for visual assessment of color difference. A draft will be submitted to committee letter ballot.

3. The Committee discussed a plan for a certification program for users of Gray Scale evaluation procedures, using prepared samples, and tabulating the person's performance on a computer program.

4. Work has been completed on a new test method on *Relative Color Strength of Dyes in Solution* and on existing procedures *Evaluation Procedure 6: Instrumental Color Measurement* and *Evaluation Procedure 7: Instrumental Assessment of the Change in Color of a Test Specimen*.

5. Three evaluation procedures will require reaffirmation or revision this year: (1) EP1: *Gray Scale for Color Change*; (2) EP2: *Gray Scale for Staining*; (3) EP4: *Standard Depth Scales for Depth Determination*.

The next meeting of RA36 will be Wednesday, May 20, 1998 at 4PM in Baltimore, MD. Please contact AATCC at 919-549-8141 for more information.

*Ann C. Laidlaw,
Manager, Color Application
ShelYn Corp.*

AMERICAN SOCIETY FOR PHOTOGRAMMETRY AND REMOTE SENSING (ASPRS)

After 20 years of service, William D. (Bill) French, CAE, left the ASPRS on September 8, 1997. "Bill French's long service to the Society is appreciated by the membership," said ASPRS President Roger Crystal. ASPRS has named James R. Plasker as the organization's new Executive Director. Plasker began serving as Executive Director at the ASPRS at the ASPRS-RTI Annual Conference in Tampa, FL, March 30—April 3, 1998. In announcing the appointment, ASPRS President Roger Crystal stated that "ASPRS is extremely pleased to select an individual of Mr. Plasker's professional and managerial stature. Jim has served in government, coordinated major cooperative government/private sector mapping programs, and has been actively engaged in the accreditation of academic programs in the geospatial information sciences." This breadth of experience parallels the balanced membership in ASPRS among the governmental, commercial, and academic sectors.

With its focus on the future, ASPRS will restructure to better serve its membership and maintain its preeminence as a leading scientific and professional organization in the rapidly changing world of geospatial information. Currently in mid-stream of a major reassessment, the Society is reviewing its mission, focus, structure, and level of service to its members and to the public at large. This new vision for the Society is being fashioned in close cooperation with its members and will likely result in several other changes in the not too distant future. In fact, "A New Vision" was adopted as the theme for the Society's Annual Conference held with Resource

Technology Institute March 30 - April 4, 1998 in Tampa, FL.

Founded in 1934, ASPRS is the largest free-standing organization in the world with a focus on remote sensing, geographic information systems, photogrammetry, and related geospatial information technology and its applications. It has both individual and corporate members and a balance among professionals and scientists from the private, government, and academic sectors. With more than 7,000 members ASPRS is among the world's largest professional and scientific organizations specially focused on geospatial imaging and information—emphasizing photogrammetry, remote sensing, geographic information systems (GIS), and kindred geospatial information technologies. In addition to technical conferences, it maintains major programs in technical publications, professional certification, and has an active scholarship program for students interested in the field of geospatial information management. The Society publishes the monthly journal *Photogrammetric Engineering and Remote Sensing (PE&RS)*. ASPRS has headquarters in Bethesda, MD and is an ISCC Member-Body. (www.asprs.org).

Mike Brill

NEWS FROM MEMBER

The New Munsell Student Color Set

The Munsell Color System is still a very useful system of color communication introduced by Albert Munsell with the publication of his "Atlas" in 1915. Student introductory packets have been available for 25 years, but in 1997, Fairchild Publications produced "The New Munsell Color Set" with an introduction and eleven packets of color chips. The text "The Munsell Color System: A Language for Color"

was written by **Joy Turner Luke**, a professional artist and President of ISCC 1988-1990. Information about the 127 page text of this paperbound book is contained in a comprehensive review in the April 1998 issue of CR&A. Information may also be obtained from Publisher Wiley, Book Division, tel: 800-247-6622, in New York, 212 630-3880.

Harry K. Hammond III

CALL FOR NOMINATIONS FOR THE VERRIEST MEDALLIST

The Verriest Medal is bestowed by the International Colour Vision Society (ICVS) to honour long-term contributions to the knowledge of colour vision. The Medal was established in 1991 in memory of Dr. Guy Verriest, and is presented at the ICVS biannual Symposium.

Previous recipients have been Harry Sperling (1991), Marrion Marre (1993), Vivianne Smith and Joel Pokorny (1995) and Jack Moreland (1997).

Candidates need not have been active in the affairs of the ICVS, but they must be either current or former ICVS members. The past and present membership of the ICVS boasts a number of individuals deserving of such recognition but choosing a candidate requires participation of the vision community.

Nominations for the 1999 Verriest Medal are now being solicited. Submitted materials should include a letter of nomination and, if possible, the candidate's curriculum vitae. Please take the time to consider and to nominate a worthy candidate for the honour.

Jack Moreland,
999 Verriest Medal Chair
CNS Department, Keele University,
Staffordshire ST5 5BG, UK
Fax: + (0) 1782 583055
email: coa09@keele.ac.uk

THE COLOR ASSOCIATION OF THE UNITED STATES (CAUS)

Fall 1999 and Winter 2000 Colors:

The CAUS Women's Committee projection includes soft dawn-like colors, daybreak's toned brights (including an orange, an aqua and a fuchsia), midday neutrals with a splash of lipstick red, and night's blackened hues. Fall 1999 will be lighter and more playful and colorful than Fall 1998. There are many denim friendly shades such as grayed lilac.

Shown on the Fall 1999 Forecast are four metallic papers. These indicate the strong interest in finishing as we enter the next century. Coating, beading, embroidery, and embellishments are some of the many treatments that will be seen on fabric surfaces. The emphasis on surface embellishments will impart an artisan feel to this season.

The CAUS Men's Fall and Winter Forecast presents tonal color groupings of trios in grays, blues, greens, whites, yellows, purples, and oranges. Most directional are the grays and blues. Colors are shown abutting each other. Each color of a tonal pairing alters the adjacent ones slightly. Sometimes, the proximity within a hue—as in the case of blue—is so close that it is difficult to tell one shade from the other.

The CAUS Children's Forecast for Fall 1999 shows the following groupings: Illuminations of soft whitened pastels; Majestic brights of the most favored purples and greens; Shock Waves of intense brights; Industrials of blue and green tones; Night Shift darks, and Funky Fifties pastels. As we approach the next century, it is clear that those born into a Technicolor world have a high

receptivity to all manner of color concepts and color styling. Boys and girls will share equally in the color revolution.

The Association is proud to announce that it will distribute two new color cards.

CAUS is acting as the distributor of a first-ever athletic card that shows two seasons at once. The card highlights the colors of Spring and Summer 1999 and Fall and Winter 1999/2000 on one chart. The two forecasts are shown in colored papers and include a group of core colors applicable for each season. The card was assembled by a committee of fiber and styling professionals — Roseann Forde, *Du Pont*; James Siewert, *Celanese*; Phil Shroff, *Solutia* (formerly *Monsanto*); and Monika Tilley of *Monika Tilley Ltd*, and chair of the *Activewear Colors Card Committee*. Members price: \$25.00; non-members price \$40.00. Cards can be ordered by calling or writing the CAUS office.

The second new card is the 1998 edition of *The Standard Army Color Card*, completed in conjunction with *The Institute of Heraldry*. The card features 7 colored silk swatches and is available at the special price of \$75. Among the US Army shades shown are Ultramarine Blue, Buff, Bluebird and Orange. The date of the last edition was 1981. The card was originally issued during World War II in 1943.

BOOK REVIEW:

Color Appearance Models, Mark D. Fairchild, Addison-Wesley, Reading, 1998, 448 pp., \$96.79 hardback

Color appearance models and the related issues of compensating for viewing conditions has recently become a critical piece in solving the puzzle of color management in open systems. Several recent products, standards and industrial collaborations have rediscovered the uncomfortable fact that one cannot simply mix and match chromatic adaptation models or color appearance models together and produce acceptable results. With the dramatic improvement in image quality of recent color products, customers expect these same products to not only produce photographic quality results, but to work well with each other. It is a rare occurrence to have a book published in a timely manner that fundamentally and directly addresses a critical concern of the many industries associated with color reproduction. This book has not only accomplished this feat, but has done so with a conversational style that makes reading it pleasant and refreshing.

The first three chapters cover the basics in color vision, psychophysics and colorimetry. While this has been done almost countless before, the many well done illustrations and examples make these topics interesting and educational even for an experienced reader.

Chapters four through six cover an eclectic collection of material which later proves necessary in understanding the many intricacies of color appearance models. I found these sections a bit out of place at first, but in the later chapters of the book, I was grateful that I didn't skip them. The chapter on terminology of color appearance is a good example of issues that at first seemed quite simple, only to take on a profound significance later in the book. The discussion on color-

(Continued→)

appearance phenomena was quite entertaining, especially in trying to replicate them using the many example illustrations provided. One of my favorite aspects of reading this book was the many discussions on indirect, but related topics scattered throughout the text. An excellent example of this is at the end of chapter six where color constancy is discussed and shown clearly to be non-existent in humans.

Chapter seven and eight provide the final foundation for the later discussions of chromatic adaptation and color appearance models. Chapter seven provides the terminology of viewing conditions and chapter eight provides a clear discussion and definition of chromatic adaptation model.

Detailed reviews of five different and popular chromatic adaptation models are contained in chapter nine. Each model is discussed objectively with its strengths and weaknesses clearly explained. The appropriate applicability and limitations of chromatic adaptation models are explicitly addressed.

Chapter ten through fourteen provide an unparalleled discussion of the most common color appearance models today, including CIELAB, CIELUV, Nayatani, Hunt, RLAB, ATD and LLAB. Each model discussed simply and unambiguously. Each chapter concludes with a section summarizing the model by asking why shouldn't this model be used. I found these discussions invaluable. Another related topical discussion is found in the chapter on CIELAB where the "Wrong von Kries Transform" is discussed along with the consequences of making this common mistake in chromatic adaptation. These section concluded with a chapter on how researchers are able to quantitatively compare these different models to each other.

I found the next three chapters much less fulfilling than the rest of the book. The previous chapters provided a concise overview of a single topic.

These final chapters on traditional colorimetric applications, device-independent color imaging and the future only provide a very general and superficial overview of these topics. While the information is still clear, it could not compare in depth to the rest of the book.

The book concludes with an appendix that I believe makes the book a requirement for any color library all on its own. Over two decades ago, the CIE met and agreed upon two uniform colors spaces, CIELAB and CIELUV. The impact of this agreement has affected the entire field of color reproduction today for the better. In May of 1997, the CIE met again and agreed upon a single color appearance model (CIECAM97s). It is my belief that this agreement will have more impact upon the various color reproduction industries than the 1976 agreement. The book provides an excellent, detailed discussion of this new model.

Finally, the author has graciously provide a web site where implementations of the models and additional information is freely available. Given the fast pace of recent development in this field, this web site provides an invaluable complement to the book. This book has made an incredible addition to my color library and I have found myself referencing it routinely in my day-to-day work.

Michael Stokes
Hewlett-Packard Co.

CENTER FOR VISUAL SCIENCE 21ST SYMPOSIUM: ENVIRONMENTAL STRUCTURE, STATISTICAL LEARNING AND VISUAL PERCEPTION

**June 4-6, 1998; University of
Rochester, Rochester, NY.**

The Center for Visual Science at the University of Rochester is proud to host the 21st Symposium, "Environmental Structure, Statistical Learning and Visual Perception." The three day symposium will consist of five sessions plus an open house with lab tours wrapping things up on the final day.

The meeting will begin with a Reception/Buffer on Wednesday evening, June 3. Formal sessions start Thursday morning, June 4, and end at noon on Saturday June 6. There will be optional dinner banquets held on Thursday and Friday evenings, and a cookout lunch on Saturday. Informal discussion gatherings will follow the banquets.

PROPOSED PROGRAM
Wednesday, June 3
Registration, Reception/Buffer, CVS
Lab Tours

Thursday, June 4
SESSION I: IMAGE STATISTICS
Eero Simoncelli, Center for Neural
Science, New York University
Charles Chubb, Dept. of Cognitive
Sciences, UC-Irvine
Daniel Ruderman, The Salk Institute,
La Jolla, CA

SESSION II: COLOR CONSTANCY
David Brainard, Dept. of Psychology,
UC-Santa Barbara

(Continued→)

Steven. Shevell, Visual Sciences
Center, University of Chicago
Anya Hurlbert, Dept. of Physiology,
University of Newcastle, England

Friday, June 5

SESSION III: SURFACE
PERCEPTION

Ted Adelson, Dept. of Brain and
Cognitive Science, MIT

Laurence Maloney, Dept. of
Psychology, New York University

Daphna Weinshall, Hebrew
University of Jerusalem, Israel

SESSION IV: OBJECT PERCEPTION

David Knill, Dept. of Psychology,
University of Pennsylvania

Ken Nakayama, Dept. of Psychology,
Harvard University

Philip Kellman, Dept. of Psychology,
UCLA

Saturday, June 6

SESSION V: NEURAL CODING
AND PLASTICITY

Wilson Geislar, Dept. of Psychology,
University of Texas at Austin

Nikos Logothetis, Max-Planck
Institute, Tuebingen, Germany

Mriganka Sur, Dept. of Brain and
Cognitive Science, MIT

Picnic lunch, CVS Lab Tours

VISIT OUR WEB SITE

Check our home page for further
updates on the 21st CVS Symposium
at:

<http://www.cvs.rochester.edu/>

Eventually all of the abstracts will be
posted at this location and you will find
a complete preregistration form that
can be downloaded to your computer
and printed out.

FURTHER INFORMATION

contact one of the following:

Richard Aslin, Ph.D., Symposium
CO-Director
aslin@cvs.rochester.edu

Robert Jacobs, Ph.D., Symposium
CO-Director
robbie@bcs.rochester.edu

Barbara Arnold, Symposium
Administrator
barba@cvs.rochester.edu

NOTE

The second set of invoices for 1998 ISCC membership dues has been mailed. If you have already paid, please disregard the invoice and let me know so that I can update your record. If you have not paid yet, please do so in a timely fashion. The membership database will be purged before the next newsletter is mailed.

Cynthia Sturke
ISCC Office Manager

NEWS FROM MEMBERS

San Luis Obispo - **Gary Field**, a Cal Poly graphic communication professor and recognized expert in the field of color reproduction and print quality, has won the 1997 gold and silver medals from Britain's Institute of Printing.

The gold medal is awarded for outstanding research in any field of printing or its associated technologies. Because the institute maintains the very highest standards for the prize, the gold medal is not always given. For example, in 1996, none of the nominations was considered to be of a high enough standard to merit the award.

Field won the silver medal for two papers he wrote that were published in the journal *Professional Printer*. "Managing Print Quality" appeared in the July/August issue, and "Process Quality Control — Printing and Finishing" was included in the September/October issue. The papers attracted equal commendation from the institute's panel members.

Field, whose career in the printing industry has spanned almost 40 years, has held production, research and teaching positions in his native Australia, as well as Great Britain and the United States. His Book, "Color and Its Reproduction", is a highly regarded and widely used reference in the industry. He is certified as an accredited senior imaging scientist and is a fellow of both the Institute of Printing and the Royal Photographic Society. Field has taught at Cal Poly since 1984.

Britain's Institute of Printing is an international professional society established to promote and encourage research and education in the sciences and arts of printing, graphic design and graphic communication.

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!!!SPECIAL SALE!!!

**Reprints of “Color and Light”
by Fred W. Billmeyer Jr., and Harry K. Hammond, III,
Chapter 40 of ASTM Paint Manual, 23 pages
\$5 each or 20 copies \$50 ...
available only while current supply lasts.**

This is an authorized reprint from ASTM Manual 17, Copyright 1996.
American Society for Testing and Materials, 100 Bar Harbor Drive,
West Conshohocken, PA 19428-2959

**Demystifying Color
Special Price - \$5 each or 20 copies for \$50.
11 pages color (\$15 each when current supply runs out)**

This technical report, produced by Bob Chung of Rochester Institute of Technology when he was ISCC Education Committee Chair, discusses and explains ten myths about color.

Either of these publications can be obtained by contacting Cynthia Sturke at the ISCC Office, 11491 Sunset Hills Rd, Reston, VA 20190
tel: 703-318-0263, fax:703-318-0514, email: iscc@compuserve.com

GENTLE REMINDER!

All appropriate information submitted to this *NEWS* publication is the full and complete responsibility of the sender.

This publication and the ISCC assumes no responsibility for information changes and inaccuracies.

Thanks,
The Editor

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:

Cynthia Sturke
ISCC Office Manager
11491 Sunset Hills Rd.
Reston, VA 20190
tel: 703-318-0263
fax: 703-318-0514
email: iscc@compuserve.com

1998

TAPPI, May 4-6, *Technical Association of the Pulp and Paper Industry*; Sheraton New Orleans, LA, info: Lisa Archer; el: 800-332-8686, ext:225

CORM 98, May 17-21, *Council for Optical Radiation Measurements*, Annual Conference and Business Meeting with Joint CIE Division II, at NIST Optoelectronics Division, Boulder CO info: N.L Johnson, tel: 612-733-5939, email: nljohnson@mmm.com.

CIE Division II, May 18-19, *Commission internationale de l'Éclairage*, Boulder, CO, see CORM 98 meeting, Info: email: ciecb@ping.at

SID 98, *Society for Information Display*, May 17-22, Anaheim Convention Center, Anaheim, CA info: Lauren Kinsey, SID, 1526 Brookhollow Drive, Suite 82, Santa Ana, CA 92705
tel: 714-545-1526; fax: 714-545-1547;
email: socforinfodisplay@mcimail.com

ASTM, COMMITTEE D-1, Paint, and Related Coatings, Materials and Applications, Omni Inner Harbor, Baltimore, MD, Info: Scott Orthey, tel 610-832-9717; fax: 610-832-9666

ASTM, Committee E-12 ON APPEARANCE, June 17-19, Atlanta Hilton, Atlanta, GA, info: Bode Buckley, tel: 610-832-9740; fax: 610-832-1547.

Argencolor 1998 - The 4th Argentine Congress on Color, August 3-6, School of Fine Arts, Misiones University, Misiones, Argentina, info: Prof. Mirta Rossetti, email: <rossetti@obernet.com.ar> or <jcaivano@fadu.uba.ar>.

AATCC International Conference and Exhibition, Sept. 22-25, *American Association of Textile Chemists and Colorists*, Marriott, Philadelphia, PA info: Shirley Clifton, tel: 919-549-8141; fax: 919-549-8933.

CAD Annual Conference (RETEC), Color and Appearance Division, Society of Plastics Engineers, "Riding the Wavelengths of Color", Cleveland Downtown Marriott, Sept. 27-29, 1998.

ISCC ANNUAL MEETING (Oct. 2-4); *Inter-Society Color Council*, Marriott Inner Harbor Hotel, Baltimore, MD; info: ISCC office, tel: 703-318-0263 and *OSA ANNUAL MEETING*, Oct. 4-8; *Optical Society of America*; Baltimore Convention Center, Baltimore, MD info: OSA, tel: 202-223-0920; fax: 202-416-6100.

COLOR MARKETING GROUP (CMG), Fall International, Conference, Oct.4-6, Le Centre Sheraton Hotel, Montreal, Canada, Info: CMG, 5904 Richmond Hwy, Suite 408, Alexandria, VA 22303

AIC INTERIM MEETING, OSLO, Norway, Oct.10-11, Association Internationale de la Colour, Info: Prof. Mitsuo Ikeda, fax: +81-775-61 26 63, email: miked@bkc.ritsumei.ac.jp.

TAPPI Conference, Oct 18-23, Technical Association of the Pulp and Paper Industry, Milwaukee Hilton, Milwaukee, WI

IS&T/SID, Sixth Color Imaging Conference, Nov 16-19, Society for Imaging Science and Technology/Society for Information Display, Sunburst Hotel, Scottsdale, AZ, info: IS&T Conference Manager, 7003 Kilworth Lane, Springfield, VA 22151, tel: 703-642-9090; fax: 703-642-9094; email: info@imaging.org; internet: http://www.imaging.org.

1999

ASTM COMMITTEE D-1, Paint and Related Coatings, Materials and Applications, Jan. 24-27, The Peabody Memphis, Memphis, TN, info: Scott Orthey, tel: 610-832-9717; fax: 610-832-9666

ASTM COMMITTEE E-12 ON APPEARANCE, Jan 24-26, The Peabody Memphis, Memphis, TN, info: Bode Buckley, tel: 610-832-9740; fax: 610-832-1547

(Continued→)

ISCC & TAGA ANNUAL MEETINGS May 5-7, Inter-Society Color Council and May 2-5, Technical Association of the Graphic Arts Tech. Conf. Westin Bayshore Hotel, Vancouver, British Columbia, Canada; info Prof. Bob Chung; tel: 716-475-2722

SID 99, May 16-21, Society for Information Display info: SID tel: 714-545-1526, email: socinfodisplay@mcimail.com.

ASTM COMMITTEE D-1, Paint and Related Coatings, Materials and Applications, June 13-16, Omni Rosen Hotel, Orlando, FL ; info: Scott Orthey, tel: 610-832-9717; fax: 610-832-9666.

TAPPI, Oct. 17-22, Technical Association of the Pulp and Paper Industry ; Conference, Omni Durham Hotel, Durham, NC, info: Lisa Archer, tel: 800-332-8686, ext: 225

OSA ANNUAL MEETING, Optical Society of America, Santa Clara, CA, info: OSA, tel: 202-223-0920, fax: 202-416-6100

AATCC, INTERNATIONAL CONFERENCE AND EXHIBITION, Oct. 12-15, American Association of Textile Chemists and Colorists , Convention Center, Charlotte, NC, info: Shirley Clifton, tel: 919-549-8141; fax: 919-549-8933

2000

ASTM COMMITTEE D-1, Paint, and Related Coatings, Materials and Applications, Jan 23-26, Hyatt Regency, New Orleans, LA info: Scott Orthey; tel: 610-832-9717; fax: 610-832-9666.

ASTM COMMITTEE E12 on APPEARANCE, Jan 24-26, Hyatt Regency, New Orleans, LA, info: Bode Buckley; tel: 610-832-9740; fax: 610-832-1547.

ISCC WILLIAMSBURG CONFERENCE, Feb 20, 2nd Panchromatic Conference, Color in Its Surround; info: Dr. Cynthia Brewer, tel: 814-865-5072

ISCC & CPMA ANNUAL MEETINGS; April, Inter-Society Color Council and Color Pigments Manufacturers Association, Charlotte, NC., info: Dr. Romesh Kumar, tel: 410-823-2161

SID 2000, May 14-19, Society for Information Display, Long Beach CA, Info: tel: 714-545-1526; fax: 714-545-1547; email: socforinfodisplay@mcimail.com home page: <http://www.sid.org>.

AATCC INTERNATIONAL CONFERENCE AND EXHIBITION, Oct. 15-18, American Association of Textile Chemists and Colorists, Benton Convention Center, Winston-Salem, SC, info: Shirley Clifton, tel: 919-549-8141; fax: 919-549-8141

2001

ISCC / AIC MEETING, June 24-29, Inter-Society Color Council and Association Internationale de la Couleur, Rochester Riverside Convention Center, Rochester, NY; info: Paula J. Alessi, tel: 716-477-7673; fax: 716-722-1116

J O B S W A N T E D !



This Section is intended to help ISCC members that are in need of, and are looking for employment. Here is an opportunity to use the resources at hand.

There is no charge for this service, however, the restrictions are as follows:

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5. Neither the ISCC News nor the editors are responsible for any errors.
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regarding the application of Color Trends as well as the psychological use of color. Educational background: Studied color and design at Philadelphia College of Textiles & Science, Kutztown University; PA School of Art and Design; Eisemann Institute in Seattle, WA; North American Association of Color Consultants in San Diego, CA; Gale Laurence Studios in San Francisco; active member of Color Marketing Group and Inter-Society Color Council.

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All submissions must be in English.

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