



Inter-Society Color Council News

Issue 395 Contents

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January/February 2002

ISCC President's Report

Welcome to the second year of the new millennium. Here in the Northeast the weather is anomalously warm and sunny-great for morale, but bad for water supplies and rainfall. The water level in the Delaware and Raritan Canal is down about two feet, revealing the detailed shoring that was done by itinerant laborers more than a century ago. Next year's growing season will be a challenge here, but the vintners are not worried: dry seasons produce the best wine.

The economy has also suffered a nasty drought lately, and we have seen the effect in layoffs and reduced attendance at meetings. However, we have not stopped sowing in the ISCC. The wine we harvest from this drought will be very good. I am sure of this because the ISCC was born during such a drought-in 1931, as the U.S. was slipping into the Great Depression. Yet, together with a lively and resilient professional organization (the ISCC), 1931 also brought the CIE Standard Colorimetric Observer. Soon afterward, color photography became a commercial success. Yes, for us 1931 was a very good year. In addition, 2002 can be a very good year as well, so long as we keep planting even in the face of adversity and a reduced harvest.

In this new millennium, we are beginning to understand what is survivable and what is transitory. September 11 and its grave sequelae could stop us from advancing toward our more substantial goals, but I hope we do not allow this to happen. Our civilization (and civilized behavior therein) is facilitated and made more pleasant by control of color. Color-especially on the Internet-still needs management and young people need to learn what we know so they can be even more successful in their ventures than we have been. Our mission remains what it



Keep Warm!

ISCC Executive Officers

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|------------------------|--|
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ISCC Board of Directors**1999-2002**

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2000-2003

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|-----------------------------|---|
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always was-to make life a little better in the civilized world, through innovation and education.

Although we had to cancel one topical meeting and postpone another, the last year has brought us an excellent AIC Congress, and this spring will bring us the Detroit meeting (April 20-23), to be held jointly with the Detroit Colour Council. No matter how many attend this meeting, it will be a great success because of the spirit of the people who attend and those who contribute. I look forward to working with all of you who want to volunteer. Remember my challenge—"Become involved, make a difference and have the time of your life". It is a dry season, but it will yield a magnificent wine. *Jack A. Ladson, 5 January 2002*

From the ISCC Office.....

The 2002 membership dues invoices have gone out. Please check your contact information and make sure that it is current. This information will be published in the 2002 Membership Directory. Enclosed in this newsletter are also some very important inserts.

1. Your voting ballot for the new Officers and Board of Directors for 2002.
2. An ISCC envelope is included. You may also fax in your ballot to the office at (703-318-0514.)
3. April 2002 DCC/ISCC Meeting Program Announcement.
4. Registration form for DCC/ISCC Meeting.
5. A membership form to pass along to a prospective new ISCC member.

And to make sure your day is filled with a smile...
Do you know what a cat's favorite color is?

!pTTTTTTTTT!e

Be of good cheer!
Cynthia Sturke, ISCC Office Manager

Blues Dominate 2003 Consumer Color Directions

Color Marketing Group:— Special color effects and technology reign supreme as primary influences on color. Metal colorations add new direction. The newness of liquid Silver and its techno influence when married to Gold or to White is equally important to the shimmering elegance of golden tones and the opulent impact of Silver. The search for the perfect Blue yields four perfect directions for blues. Whether safe and grounded, watery or atmospheric, Forecast Blues invigorate and enliven consumer products while providing steadfast assurance and stability during cloudy economic times. This is what will influence color in Consumer Industries for 2003, according to **Color Marketing Group** (www.colormarketing.org).

Workshop participants agreed that the ailing economy is the primary influence on the 2003 Consumer Color Directions Palette. According to Color Marketing Group, Consumer Color Directions are being impacted by the following emerging trends: “Commercialized” nature colors will dominate new product and the desire for natural bright on Action/Recreation products. The influence of energy-boosting, saturated chromatics from the 60’s on color for these products will be evident by 2003. A more energized dusty rose form of Mauve will return as well as Violet. Fashion forecasts two Blues for 2003, one a turquoise and the other is “Deep Arctic” which appears on CMG’s 2003 Consumer Color Directions Palette.

Technology will open doors to new colors and to special color effects, which allow old colors to look new. The 2003 Consumer Color Directions are:

Currant Brown veils Violet with sophistication.

Pinkle Non-gender specific, this aged Pink depicts vintage velvets and Victorian rose gardens.

Sweetheart Romance of the 40’s moves vintage Red to the Blue side. Lighter values translate to Fashionable Pinks.

Cheeky Recalls the blushing bride of the glamorous Art Deco era. Cosmetic based, it celebrates the marriage of Pink and Peach.

Red Satin Future vehicles sport a revved-up Red. Old World opulence enhances this conservative communicator.

Iron Ore-ange The influence of copper on orange creates a sophisticated and mature background with ethnic undertones.

Lemon Meringue Silver flirts with Gold in this zesty confection reminiscent of the Great Gatsby and vintage roadsters.

Shimma A shimmer, a shake, a little golden flake, this pearlized metallic adds new sophistication for corporate communicators.

Lion King Regal Gold crowns the king of the jungle and recalls Moroccan Markets.

Exploring Khaki Borrowed from the animal kingdom, this safari Green recalls rain forest moss and buried treasure.

FronD Natural chroma takes a commercial turn in this tropical Green.

Soda Green Effervescent, this soothing Green quenches our thirst for serenity and illuminates from within.

Cinder Blue Silver sideswipes this mechanical Blue driving it into the cool Grays.

Blue Aire Technology melts retro Blue in this freshened breeze from the 60’s classic cars.

Deep Arctic Seriously conservative, this dusty navy anchors our sprit in a safe harbor.

Ocean Cruise Tropical waters purify and energize Blue while technology adds a sporty edge.

Root Beer Copper-based, this rich Brown pops.

Champagne Bubble Celebrates the marriage of Silver to Gold with Art Deco glamour.

Newtral Bisque ware, unglazed ceramics and raw plaster inspire this softened matte gray that offers a lower contrast alternative to dark and white combinations.

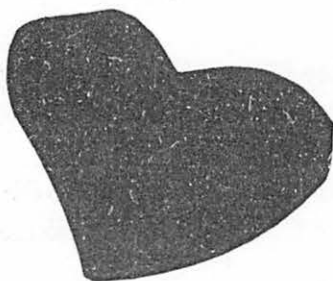
Gargoyle Burnished Gold, Pewter and Silver fuse to form this complex alloy.

Silger Technology's influence on Fashion, Silger is a Gold overlay over Silver. It functions as a warm "newtral" as background or foreground to prints and can stand alone. For more information contact: CMG, 703-329 8500 Fax: 703-329 0155 jpeck@colormarketing.org www.colormarketing.org

F.I.T. Museum Seeing Red

The Fashion Institute of Technology Museum will be launching a new show entitled RED.

While the official opening is on a traditionally RED holiday St. Valentine's Day, February 14th, the gala is scheduled for the night before. This will be followed with a panel discussion on the evening of February 20th. Prof. Meg Miele, (ISCC Board of Director and Interest Group III Chair) will be a presenter along with Valerie Steele, author of THE RED DRESS. A third speaker is still unnamed.



F.I.T. Color Psychology Course

On March 5, F.I.T. will implement a non-credit certificate program of study in Color. The first course will be a six week workshop on Color Psychology, which will be taught by Prof. Miele. For further information, please contact: Joan Volpe, The Center for Professional Studies. 212-217-7715.

Spectroradiometry Short Course

**National Institute of Standards
and Technology (NIST)
Gaithersburg, MD March 19-22, 2002**

The course will cover the fundamentals of spectroradiometry with classroom lectures and three afternoons of hands-on laboratory experiments. Instructors for the course will be radiometric experts from the Optical Technology Division. course contents includes lectures on fundamentals of radiometry, radiometric properties of sources and detectors, understanding and using spectroradiometric technique, reflectance properties of materials, handling and determination of measurement uncertainties, and an overview of calibration services and implementation of the quality system at NIST. Laboratory sessions will include measurements of spectral radiance and spectral irradiance sources using spectroradiometers and discussions of uncertainties.

The registration fee is \$1,775 and includes coffee breaks, lunches, a dinner, and course materials. Pre-registration is required and attendance is limited to 15 on a first-come, first-served basis. Payment must be received by March 5, 2002. You can also register online at www.nist.gov/conferences. Accommodations have been reserved at the Gaithersburg Marriott Washingtonian Center (1-800-228-9290) with a special rate of \$119, single, plus 12% tax. Please call the hotel directly no later than February 18, 2002 and mention this course. Roundtrip bus transportation will be provided between the hotel and NIST each day.

Contacts: Teresa Vicente NIST
301-975-3883 fax301-948-2067
teresa.vocemte@nist.gov

or

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ISCC Board of Directors Candidate Biographies for 2002

Please fill out your enclosed ballot and return to the ISCC Office by February 15th.

Karen Braun

Karen Braun received her B.S. degree in physics from Canisius College in 1991 and her Ph.D. in imaging science from Rochester Institute of Technology in 1996. Since then, she has worked in the Digital Imaging Technology Center at Xerox Corporation, focusing on color reproduction, gamut mapping, and color perception. Karen has published numerous journal articles on color appearance modeling and gamut mapping, presented her work at conferences, and co-authored *Recent Progress in Color Science* in 1997.

Karen has been an active member of ISCC for ten years. She helped create the first student chapter of the ISCC at RIT in March 1993, and served as its first president. She was associate editor of *ISCC News*, a voting delegate of the ISCC for three years, and chairman of the Individual Member Group (IMG).

Karen recently served on the steering committee for the 9th Congress of the International Colour Association, AIC 01, in Rochester, NY, chairing the Student Paper Award selection committee and the Congress poster design team.

Karen is an active member of IS&T. She has served on the Technical Committee of the IS&T/SID Color Imaging Conference for the past five years, and served as Poster Chair for three years.

David Q. McDowell

David Q. McDowell, a 1957 graduate of the University of Rhode Island with a B.Sc. degree in Engineering Physics, is retired from the Professional Imaging Division of Eastman Kodak Company where he worked for 42 years. As a Senior Technical Associate, he represented Kodak in a variety of standards and industry activities, and within Kodak provided broad technical support to product development activities that involved or impacted the graphic arts market.

In retirement, he is continuing his involvement with Kodak in the area of color and imaging standards, on a part time basis. He is also continuing his work in graphic arts standards development as a volunteer working with NPES, the graphic arts trade association that provides coordination of all United States graphic arts accredited standards activities.

McDowell is the Chairman of ISO Steering Committee for Image Technology (SCIT), Chairman of the US Technical Advisory Group (USTAG) to ISO/TC 130 (Graphic technology), Chair of TC130/WG2 (Prepress Data Exchange), Chair of ISO/TC41/JWG21 (Revision of ISO 5 Densitometry Standards), Chairman of CGATS/SC8 (Color Data Definition), and Secretary of CIE Division 8 (Image Technology). He is also the IS&T Standards Chair and Standards Editor of the *IS&T Newsletter*.

He is a longtime member of both the Technical Association of the Graphic Arts and the Society for Imaging Science and Technology. He is a past president of the Technical Association of the Graphic Arts. He has been the editor/co-editor of more than twenty ISO standards and is the author of more than 200 technical papers, presentations, and articles. He is the recipient of a number of industry awards recognizing his technical contributions and his efforts relating to standards on behalf of the graphic arts and photographic industries.

ISCC Board of Directors and Officers Biographies for 2002 (cont.)

Please fill out your enclosed ballot and return to the ISCC Office by February 15th.

Lisa Thieme

Lisa F. Thieme is Vice President of Technical Coordination/Research & Development for Colwell Industries, Inc. in Kendallville, Indiana. She received a Bachelor of Science degree from Indiana University, with a major in Business Management and minors in Psychology and Organizational Leadership and Supervision. She has held a variety of positions relating to color science and color control at Colwell Industries, Inc. over the past 17 years. Lisa is a member of ISCC, CORM, IMC, DCC and BPW.

Lisa's interest in color began as a laboratory technician in the Colwell Color Laboratory where she formulated paint for color cards and color system merchandising tools. She was involved in the research and development of the Colorcurve® System with Ralph Stanziola and Don Woelfel and later managed the production of the system tools. Lisa managed the Colorcurve® Laboratory and the Colorcurve® Division of Colwell Industries including sales and marketing responsibilities.

She currently provides the technical coordination for Colwell Industries, manages the research & development department, color theory education, as well as the Colorcurve® product line. Lisa is actively involved in the Marketing Committee, Automotive Committee, and Creative Team for Colwell Industries. She has been married for 15 years and has a daughter, Karah, age 11.

James F. Roberts

James F. Roberts, CMG: Graduated 1975 from Worcester Polytechnic Institute with an Interdisciplinary BS in Life Sciences and Chemical Engineering. Worked 1975 to 1983 as a Formulation Chemist for Cabot Stains. 1984 to 1988 as a Chemist for Sportec International, a manufacturer of sports surfaces. 1988 to 1994 as a Formulation Chemist for Duron, Inc, then from 1994 to 2000 as the Director of Color Systems for Duron. Currently employed by BYK-Gardner as the Director of Retail Color Systems, dealing with software and hardware for custom color matching in retail paint stores.

Jim is a member of the Federation of Coatings Technology and has served as Networking Vice-Chair for Color Marketing Group from 1997-1998 and Co-Chair of that same Committee from 1999-2000. His hobbies include indoor and outdoor gardening and photography.

Richard Fisch

Richard (Dick) Fisch is a Corporate Research Fellow at Imation (the Color Technologies and Data Storage spin-off of 3M Company). He was formerly a Corporate Scientist in the Printing and Publishing Systems Div. of the 3M Company, where he was employed for 35 years, in Color and Materials Science Research. He organized and managed 3M's Color and Image reproduction center. Prior to 3M, Mr. Fisch was at the Research Laboratories of Technicolor.

He recently received the GATF Robert Reed Technology Medal. He is also an Honors Member of TAGA (the Technical Association of the Graphic Arts). He has served on the Board of TAGA in several capacities, including as President. He has served on the Annual Technical Conference Papers Committee 10 years, for 8 of those years he was responsible for the Technical Program of their Annual Conference.

He has over 55 publications on imaging science, the editor of the soon-to-be released TAGA Monograph, "Non Periodic Screening in the Graphic Arts", the author of the definitive works on Gray Component Replacement (GCR), the editor of the TAGA Video Training program "Imagesetting, Calibration and Control", and author and editor of the TAGA Training Video "Understanding Color".

Dick is a long time member of the ISCC. He served as one of the liaisons, author and Proceedings Editor for the Joint ISCC-TAGA 1992 Williamsburg Conference on the "Comparison of Color Images Presented in Different Media." He is a Fellow and Senior Member of IS&T [Society for Imaging Science and Technology], founded the "IS&T" Twin Cities Chapter, and has served as President, Vice President, Treasurer and Secretary. Dick also served on the IS&T Board and has been the Editor of the Special Graphic Arts Issues of their Journal of Imaging Technology. This past year, he has been the Interest Group and Project Committee Coordinator for the ISCC. Dick is a Fellow of the Royal Photographic Society, Fellow of the Institute of Printing, Fellow and Senior Member of the IS&T. Dick has worked to guarantee Color and Imaging Standards for the photographic and graphic arts industries. He has served on many American National Standards Institute "ANSI" and other industry standards groups, and is Co Founder and Past Chair of "CGATS". He has served on the ANSI Image Technology Standards Board ("ITSB") as well as international standards organizations TC130, and TC42. Dick received the American Standards Institute "Leadership Award" for his work in establishing a US Standards Organization ANSI/ CGATS, and the resurrection of ISO TC130, Graphic Technology Standards groups.

Johnny Suthers

Johnny Suthers currently is a Principal Chemist in the Color Technology Development Group at Eastman Chemical Company located in Kingsport, Tennessee. He graduated from East Tennessee State University in 1969 with a BS degree in chemistry. He has worked in the area of color science for 32+ years. Johnny is a 21+ year senior member of the Society of Plastics Engineers, a 37-year member of the American Chemical Society, and a 19+-year member of the Inter-Society Color Council. He is past Chairman of the Holston Valley Section of Society of Plastic Engineers. He holds the 1997 Outstanding Achievement Award from his local section. He is also active in SPE 's Color and Appearance Division. He has held several positions in the C&A division and currently is the Division's Chair Elect. He was Co-Chair for the Technical Program of the 1995 SPE Conference "Coloring Plastics for Performance", Co-Chair for the 1997 SPE Conference "Color Quantifications: Adding Value with Instruments" with the InterSociety Colour Council, 2000 Chair for the Technical Program for the joint CAD-PMAD RETEC, "Your Ticket to Outstanding Color and Additives", and 2001 Co-Chair for the Technical Program for the SPE RETEC, "Hot Plastics, Cool Colors. He has presented papers at the SPE RETEC, SPE ANTEC, TAPPI and an ISCC joint meeting with the Detroit Colour Council.

Executive Officers Biographies For 2002

President-Elect 2002 - Joanne C. Zwinkels

Joanne Zwinkels is a Senior Research Officer and Head of the Photometry and Radiometry Group with the Institute for National Measurement Standards, National Research Council of Canada (NRC). She obtained her B.Sc. Honours in Chemistry from the University of Victoria (1977) and her Ph.D. in Physical Chemistry from the University of Alberta (1983) with specialization in the infrared optical properties of solids. Following an NSERC Postdoctoral position with the Department of Energy, Mines and Resources, Dr. Zwinkels joined the NRC Division of Physics in 1984 to work in the field of spectrophotometry. In 1991, she became the head of the Photometry and Radiometry Group.

Dr. Zwinkels is active in the International Commission on Illumination (CIE), the International Organization for Standardization (ISO) and the Inter-Society Color Council (ISCC). She is Canadian member of CIE Division 2, the chair of a CIE technical committee on calibration methods and standards for photoluminescent measurements, a member of CIE and ISO technical committees on the characterization of spectrophotometers, geometric tolerances for colorimetry, practical daylight simulators, and optical properties of paper, past Vice-Chair of ISCC Interest Group on Fundamental and Applied Colour Science, past member of the ISCC Board of Directors, and NRC liaison to CORM. Dr. Zwinkels' own research involves the development of instrumentation and reference materials for high accuracy spectrophotometry, spectrofluorimetry and gloss. She has designed, constructed and tested a high-accuracy spectrophotometer which defines the NRC scale of regular transmittance and a two-monochromator reference spectrofluorimeter which is used for high-accuracy total radiance factor measurements of fluorescent standards. Her current research involves the development of a one-monochromator spectrofluorimeter for routine calibrations of fluorescent materials and a reference goniospectrophotometer to extend the range of NRC specular gloss calibration services.

Treasurer - Hugh Fairman

Hugh joined Henry Hemmendinger as a partner in the Hemmendinger Color Laboratory 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 detection 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. He is also active in the American Society for Testing and Materials (ASTM), serving on committee E-12 on Color and Appearance. Currently, he is chairperson of Project Committee 54, Colors of Maximum Contrast. Hugh was awarded the Nickerson Service Award in 2000.

Secretary - John McCann

John McCann is a consultant on color and image processing. He graduated from Harvard in 1964 with a degree in Biology. He had been working part-time for Polaroid as an undergraduate. In 1964, under the direction of Edwin Land, he became the manager of the Vision Research Laboratory where his work on human psychophysics has included research on rods as color receptors, low-spatial-frequency vision, mathematical models of color vision and quantitative tests of Retinex theory. As Senior Manager in the Research Division of Polaroid, he directed the Vision Research Laboratory until retiring from Polaroid in 1996. From 1979 to 1996 he managed research on very-large format Polaroid photography, which includes the 20-24 cameras, the Museum Camera and Polaroid Replicas. Since 1974 he has been studying vision with electronic imaging techniques. This basic research has concentrated on techniques for calculating color sensations and developing film recorders that control film exposures so that the photographic image is a record of color sensations rather than the record of light coming from the scene. His work has led to 81 publications and 12 patents.

In 1984 he was elected a Fellow of the SPSE. He has served as Vice President, President and Past-President of the Society of Imaging Science and Technology. He has also served as Trustee and President of the Artists Foundation, Boston, and as Chairman of the Cultural Committee of the Polaroid Foundation. He is completing the vacated term as ISCC Secretary (Ref: ISCC Newsletter #391, pg. 5.)

Book Review

Color Science in the Examination of Museum Objects Nondestructive Procedures

Ruth Johnston-Feller, 385 pages. The Getty Conservation Institute, 1200 Getty Center Drive, Los Angeles, CA, 90049-1682. \$80.00

Color Science in the Examination of Museum Objects is a book created and written as a monograph, on the subject of non-destructive measurement of surface color for museum objects and artifacts. It covers a wide range of subjects in eleven chapters that deals with instrumentation, colorants, effect pigments, reflection phenomena, fluorescence, and data analysis. This book is a well-written monograph, which makes it a valuable resource for those interested in historical color science or those involved in conservancy. This book will appeal to conservators, conservation scientists, those having an interest in understanding application of color science to solving practical problems, color scientists, and all those who have a burning passion for our world of color. The book features an overview of theoretical concepts (more on this later) and provides hands-on guidance on the practical issues of the measurement of object color. I was particularly impressed to note that her life long dream is today becoming a reality, and I took a moment to reflect and look upon my own dreams. There are many other excellent texts on some of the subjects that are in the form of chapters presented in this book; particularly Chapter 1, Spectrophotometry; Chapter 2, Colorimetry; and Chapter 5, Colors in Spectral Reflection. However, the aforementioned chapters describe fundamental principles of color measurement very well. The insights that Ms. Nickerson-Feller acquired over a lifetime provide powerful and useful tools in the hands of a reader. One will understand how to approach a wide range of color measurement related problems. Chapter 3 deals with the optical behavior of pigments, including scattering and absorption, and the effect of pigment particle size. The next chapter on Colorant Mixture completely deals with absorption, K , and scattering, S , as it relates to colorants. This is by far the largest chapter in the book. It contains 95 pages, 35 spectral graphs, 8 full-page color plates and diagrams. The text begins with Bourguier's contribution in 1729 stating that absorption of a non-scattering material is proportional to its thickness. This is the backdrop for a discourse on qualitative and quantitative applications of the Kubelka-Munk equations. These equations relate reflectance to the concentration of pig-

ments. Descriptions with examples of changes in colorant behavior over time are of particular importance to the conservator and conservation scientists. Understanding of the presented materials allows; development of new materials, analysis of materials used to make a work of art, and understanding prior restorations. The exposition and description of these topics are excellent. Chapter 6 on Special Topics deals with the effects of gloss on surface reflection, a primer in fluorescence pigments and some difficulties that one would expect to encounter when measuring these types of materials. The next chapter provides spectral curves for multiple pigments that constitute primary colors; reds, yellows, and blues; and secondary colors; oranges, greens, and purples. The accompanying text identifies salient features of those pigment curves and what distinguishes one from the other. This information assists in identifying pigments, especially those no longer in production. Conservators are frequently presented with challenges such as these during the process of restoration. In addition, this information is useful in determining if materials used in an artwork are consistent with an object's presumed date of creation or attribution. Chapter 8, Measured-Data Analysis & Special Measurement Problems, suggests that there are graphical methods to select a measured sample that is representative of a manufacturing process. This is a new technique to the reviewer, as I use statistics for this purpose. However, the quoted admonition given by Billmeyer and Saltzman to "Look & Think" is still very appropriate. ASTM is currently wrestling with the issue of applying statistical analysis to a measurement whose errors are non-normally distributed. This treatment will augment the normally distributed statistics provided by Johnston-Feller. Chapter 9 deals with an overview of instrumentation and a description of parameters that effect measurement. Chapter 10 deals with parameters necessary to establish a data measurement protocol and data reporting. Chapter 11 provides the Summary, Conclusions, and Recommendations and a dream that is fast becoming a reality. Ruth Johnston-Feller envisioned files of spectral data available that could be used to identify colorants. Today, the

national standardization laboratories are assembling goniospectrophotometric data for hundreds of thousands of objects including colorants and pigments. The availability of this resource along with recent developments in technology will greatly assist conservators in overcoming their color challenges. The five appendices present pigment curves in terms of reflectance and K/S, a color name index, a compilation of spectral curves, and a list of recommended reading materials for further study.

Regrettably, Ruth Johnston-Feller died in April of 2000, but fortunately this book carries on the legacy of her life's work. The Getty Conservatory Institute is committed to understanding and advancing the state of the art in applying scientific principles to study and care for museum collections. This is the third book published in a series to provide scientific procedures and methodologies used in the practice of conservancy. These vehicles provide much needed communication between scientists, conservators, and art historians and curators to preserve art. They are to be applauded for permanently documenting the work of Ruth Johnston-Feller and her husband, Robert L. Feller, adding an invaluable resource to their collection.

*Jack A. Ladson
Integrated Color Systems*

The Taste of Color

There has been an overwhelming deluge of oddly colored foods appearing on the shelves of the supermarkets of the nation, from green ketchup to colored chips and drinks. Last July 9, 2001 Heinz North America announced the soon to be unveiled new color in its EZ Squirt ketchup product line.

Among those giving "two bottles up" to the idea is Color Marketing Group, CMG, the "Who's Who of Hues," which believes the company's move to infuse more color into its squeeze bottle aimed primarily at children, "is a great marketing move."

Jay de Sibour, president of CMG remarked: "It is a stroke of genius supported by the success of Heinz EZ Squirt Blastin' Green, released last year. Adding more color to what has been a category with a singular shade brings a fresh, new perspective to ketchup—and gives children ownership of a product category that was chromatically one dimensional since its introduction. We would compare it to what Apple Computer's use of color did for the iMac."

Number 1 ketchup maker H. J. Heinz Co. on July 31, 2001 unveiled the latest gimmick designed to keep kids amused at the dinner table—purple ketchup. More than 10 million bottles of green ketchup were sold in its first seven months.

"The tremendous success of Heinz EZ Squirt Blastin' Green showed us that kids love decorating their food with colors that are bright, wild, even a little funky," said Casey Keller, head of Heinz's condiments business. Children are the largest users of ketchup, consuming about 5 billion ounces a year.

With sales over US \$9 billion, H.J.Heinz Company is one of the world's leading marketers of branded foods to consumers everywhere, whether in supermarkets, restaurants or on the go. More information about Heinz is available at www.heinz.com.

Frito-Lay celebrated April Fool's day with new Cheetos mystery color snacks, a cheesy new product that magically turns color in your mouth. The neon orange colored snacks will turn your tongue either blue or green. The true color of the mystery colored snack will not appear until the snack is eaten. Activated by the person's saliva, the tongue will change color. The product was in the stores last April through last June. Cheetos cheese flavored snacks were first made by Frito-Lay in 1948 and are available in 36 countries. More than 15 million pounds of cheese is used in the manufacture of Cheetos worldwide. Frito-Lay, Inc, headquartered in Plano, TX, is the \$11 billion snack food division of PepsiCo, Inc, which is based in Purchase, NY. Frito-Lay is the market leader in half of the world's top 10 snack chip markets with operations in 40 countries.

Con Agra Foods of Omaha, NE brought out a squeeze bottle of hot pink and bright blue Parkay margarine. The Crosse & Blackwell Div. of Nestle followed it with a bubble gum flavored blue margarine. This product, so far, is marketed only in South Africa. Nabisco put out Milk Changer blue or orange Oreos on the store shelves for about six weeks last summer. These colored condiments are designed to make the food fun for kids. If these products make the kids eat more variety of nutritious food, so be it. More colored foods are on the way.

Portions excerpted from the Philadelphia Inquirer, Jan.2, 2002 and the Washington Post, May 2, 2001.

Gultekin Celikiz and Cynthia Sturke

COLOR RESEARCH AND APPLICATION

In This Issue, February 2002

We open the first issue of 2002 with a look back into history. We find out more about three very special people who chose as part of their interests, though not their central profession, to investigate color. By chosen profession, Francis Glisson (~1597-1677) was a physician and professor of physics; Michel-Eugène Chevreul (1786-1889) was a chemist; and Albert Henry Munsell (1858-1918) an artist. Yet they all contributed richly to the understanding of color.

Having studied chemistry and having made his reputation as a fine chemist, Chevreul began working in textiles with the task was to improve tapestry production. This led to the study color. In 1839, Chevreul published *"The Principles of Harmony and Contrast of Color"*. In 1864, he produced a three-dimensional color classification system as well as manufacturing an atlas. Later in 1879, he reported on the perception of colors in a circular motion around an axis perpendicular to their plane. Of particular interest are the color plates contained in these books. Dr. Françoise Viénot presents data from recent measurements of Chevreul's atlas circles and plates taken at the Muséum National d'Histoire Naturelle. In "Michel-Eugène Chevreul, From Laws and Principles to the Production of Colour Plates," she reviews many of the accomplishments in his 103-year life. Dr. Viénot also examines three significant vision studies on color concerned with simultaneous contrast, chromatic circles, and complementary studies about relative contrast. In later articles in this issue, you will see that these issues are still relevant today.

For our next article we jump even further into the past to what is perhaps the first color specification system. Francis Glisson was a member of the Royal College of Physicians and was well known for his books on rickets and the functioning of the liver. His final medical work *Tractatus de ventriculo et intestinis*, covers a wide-ranging assortment of subjects including skin, hair, muscles, and digestion among others. In chapter 9, which pertains to hair color, he suddenly launches into a detailed description of a color specification system. As part of this he presents two tables: one describing a gray scale and the other a red-to-white scale in quantitative detail. Glisson's aim was not to develop a color order system, but rather to develop a means of unambiguously speci-

fying the color of hair. However, his system is sufficiently general to specify any object color. In "Francis Glisson's Color Specification System of 1677," Rolf Kuehni and Ralph Stanziola examine these two scales gray and red-to white in detail.

Much has already been written on the Albert Munsell and his color system. However, it would be very interesting to put the development of the Munsell system in the historical context of what had preceded it? Often it is not possible to know for sure what a person was thinking or to what he had been exposed. However between 1899 and 1918, Munsell kept a handwritten notebook on color, so in this case it is quite possible. In "Early Development of the Munsell System," Rolf Kuehni examines how Munsell's ideas of color order were first formed, and how they relate to the historical development of that subject.

In our next article, Kenneth Burchett grapples with the concept of "Color Harmony." While we all know that certain colors seen together produce a pleasing response and are said to be harmonious, just what makes colors harmonize and the attributes of harmony are unclear. The goal of the article is to clarify the various attributes of color harmony, to identify the associated vocabulary, to determine the relative emphasis on each attribute, and to establish a basis for a color harmony conceptual learning model. To achieve these goals, Dr. Burchett analyzes the content of 12 books by Albers, Arnheim, Chevreul, Goethe, Helmholtz, Itten, Judd and Wyszecki, Kandinsky, Katz, Munsell, Pope, and Wright.

Several years ago Yoshinobu Nayatani developed a simple equation for predicting the brightness/luminance ratio effect based on the variable chromatic color method. This equation was derived from the Nayatani color appearance model. In 2000, the theoretical prediction was compared to the experimental results of direct brightness matching. However, the matching data used included only one observer. In "Prediction of Additivity Law Failures in the Cases of Unequal Mixing Ratios in Two Chromatic Colors," Drs. Nayatani and Sobagaki extend this analysis to two other sets of brightness-matching data encompassing 19 different subjects.

For our next article, we move into a realm outside of human vision. Having machines have vision presents real challenges to our understanding of human vision. A number of color-constancy algorithms

have been developed, but they all depend on the assumption that illuminants vary more smoothly in space than reflectances. In other words, different objects can have different reflectance functions, but we expect the typical illumination of adjoining objects to be from the same source. In "Illuminant Invariance from a Single Reflected Light" the authors show it is possible to extract from a single reflected-light tristimulus vector a number that depends only on the reflectance spectrum and not on the illuminant spectral power distribution. Michael H. Brill and Graham Finlayson derive this for two different regimes to show its robustness.

Understanding how we see color and how the color will be different as we look at objects under different sources or in different viewing conditions, is very important. Colors are constantly changing from images on a monitor, to real objects in room light, or from a scene to printed images in a reproduction. How we adjust the numbers used to express the colors to reflect the new situation is key to the success of much of commerce. Theoretically some type of chromatic adaptation transform is used to change from one illumination to another in all the color-appearance models. Our final article this issue is about a new chromatic adaptation transform recommended as a replacement to the chromatic adaptation transform that is included in CIECAM97s. This transform is significantly simpler and is reversible, it also gives more accurate predictions to almost all the experimental data sets examined. For details, see "CMC2000 Chromatic Adaptation Transform: CMCCAT2000" by Changjun Li, M. Ronnier Luo, B. Rigg, and R. W. G. Hunt.

Ellen Carter, CR&A Editor

AIC Color 01 Update

If you would like to order a copy of the AIC Color 01 Symposia that took place in Rochester, NY an order form will be available on the ISCC website soon. You will have a choice of which video you would like, such as "What is Color?, The Artist and Digital Media, The State of the Art and Future of Color Management, What is Color For?, Color Issues for Digital Archives, How is CIE Helping Us Make Color Work?, Environmental Color Design, How Should We Teach Color?, or The Role of Color in the 3-D World. You will have your choice of VHS or CD-rom. Videos will be formatted for both Mac and PC users and a QuickTime player will be provided with CD. For complete information go to: iscc@compuserve.com. or contact Christian Bruncsak at cdb8647@rit.edu.

IS&T's PICS Conference

The Society for Imaging Science and Technology will hold the annual PICS Conference, April 7 to 10, 2002 at the Portland Marriott Downtown Hotel in Portland, Oregon. This international technical conference focuses on Image Processing, Image Quality, Image Capture, and Systems Issues in the broad areas of Digital Image Capture and Associated Systems, Reproduction and Image Quality Technologies. The PICS conference series is the continuing technical forum for the presentation of advances in digital image capture, quality, processing and systems development. This year's conference will include over 60 oral and poster presentations, and 10 tutorial classes.

Five of the technical sessions will include extended **key-note talks by experts**. In the Applied Vision session; Jeff Mulligan of NASA, who will present, Vision-Based Approaches to Digital Halftoning. Albert Theuwissen of Delft Univ. will discuss limitations to advances in electronic detector design. Hiroaki Kotera of Chiba Univ. will present Image-Dependent Quality and Preference Control, which will open the session on Image Quality Modeling and Psychophysics. On Tuesday afternoon, Toshihiko Inagaki of Fuji Xerox will discuss Challenges in International Standardization of Image Quality Evaluation. The Optics and Photonics in Digital Imaging session begins with Thomas Cathey of Univ. of Colorado presenting A New Paradigm for Imaging Systems, followed by Univ. of Rochester Prof. Nicholas George's talk on the application of novel optical elements in advanced digital cameras. The final day will begin with Peter Barten presenting Nonlinear Effect of Modulation on Image Quality.

The informal conference format and timing of all presentations will provide ample opportunity for technical discussions of the various subjects of interest to attendees. The **technical sessions (Mon-Wed)**, are limited to two simultaneous tracks. Educational short courses will be offered by various experts in the imaging field.

This year PICS will also include a **Student Poster Contest**, in conjunction with a workshop for high school science teachers. Both of these events will be organized by the Center for Image Processing in Education (CIPE). For further information or to register on line: <http://www.imaging.org>. Abstracts are available at www.imaging.org/conferences/pics2002. Contact: Pamela Forness, Program Mgr.; 703-642-9090; Fax: 703-642-9094 Springfield, VA.

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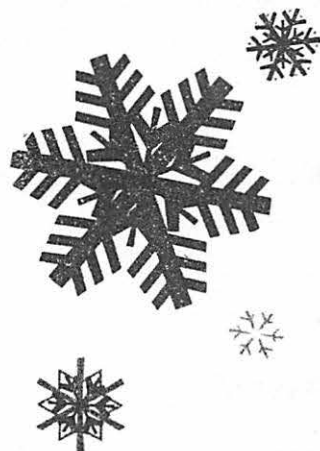
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- Aug 29-31** Interim Meeting: AIC Color 2002, "Color & Textiles" Maribor, Slovenia
Contact: *vanja.kokol@uni-mb.si* or *www.dks-drustvo.si*
- Oct 1-4** AATCC International Conference and Exhibition, Charlotte Convention Ctr, Charlotte, NC Contact: Shirley Clifton 919-549-8141 919-549-8933 fax
- Oct 13-15** CMG's Fall International Conference, San Diego, CA, USA *www.colormarketing.org*
703.329.8500 Fax 703.329.0155 *jhood@colormarketing.org*
- Nov 8-15** Integrating Remote Sensing at the Global, Regional and Local Scale. The 15th William T. Pecora Memorial Remote Sensing Symposium/Land Satellite Information IV Conference and ISPRS Commission I (Platforms and Sensors) Symposium, Denver, CO
www.isprs.org/Pecora-ISPRS-2002. For ISPRS information: *www.isprs.org*
- ISCC 2003
- March** ISCC Williamsburg Conference, Solutions for Industrial Color Problems,
Chair: Ralph Stanziola, *rascolor@juno.com* Philadelphia (exact date TBD)
- May 3-9** ASPRS Annual Conference, Anchorage, AK, .
- Aug 4-6** Midterm Meeting: AIC Color 2003, "Color Communication & Management"
Bangkok, Thailand Contact: *aran@sc.chula.ac.th*

"Color and Light"

by Fred W. Billmeyer Jr. & Harry K. Hammond, III.

ASTM Paint Manual
Chapter 40, 23 pages \$5 ea.
or 20 copies \$50.00
Authorized reprint from:

ASTM Manual 17, Copyright 1996
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100 Bar Harbor Dr., W. Conshahocken, PA 19428

"Demystifying Color"

by Bob Chung
11 pages (color)
\$5 each or 20 copies/\$50.00

Discusses and explains ten myths about color.

Either publication can be ordered by contacting the ISCC office (if pre-paid, s&h will be included):

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The ISCC advertising policy for the Inter-Society Color Council News is as follows Pre-paid color-related advertising will be accepted thirty days in advance of the publishing date. The rates are:

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