Inter-Society Color Council *News*

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FROM THE EDITOR

Good-bye!

After 6 years as your editor, I have many emotions about leaving the editorship. There have been relationships developed with a number of you and you have contributed to the growth and success of the ISCCNews. You have given of your time to assist, and all of the ISCC membership have enjoyed your comments, thoughts and articles. To you - those that have given - I say Thank you! To those that have as of now not, I would ask that you think about it, and when you see something of interest that you feel might be of value to the readership, PLEASE send it to the editor.

With respect to those contributors, I could name names, but the list is long and it would take up too much copy space. There is however, one person in particular that has helped me beyond the call.

Harry Hammond has, for 6 years, helped support this newsletter (not to mention the many years prior) without regard for his own schedule (which is a hectic one)! I have received literally hundereds of calls from Harry asking "what do you need? - What can I do for you - I'm sending you something, can we get it in on time"?

Harry — Thank you for your support!!

Your new editor, Gultekin Celikiz will be taking over effective the next issue. Please support him, as you have me. Make his job as easy as you can (if that's possible).

Oh, one last thing. The electronic world is upon us. We can not avoid it. You can support ISCC's move toward the Internet. If you have knowledge of the Internet, and/or the WWW, please contact Mr. Rich Riffel (see his request elsewhere in this issue) and give your support - we are doing this for you.

Remember:

The ISCCNews is everything it appears to be, and more!

TTFN

DESIGNER'S NOTE

I would like to say a special good-bye to Mike Hammel as Editor of the ISCC News. For six years I have worked with him every other month to create this newsletter. I have found Mike to be a truly great Editor. When we started designing this news letter almost eight years ago, there was not much in the way of a schedule. It happened when it happened. Mike put this newsletter on a regular schedule and made it happen on time. He has worked very hard these six years, and I think this newsletter has greatly benefitted from his efforts. He is a very no-nonsense person who digs right in, but also is easy to work with and has a wonderful sense of humor. Mike, you have been a joy to work with, and I am going to miss you.

I hope everyone will agree with me when I say **Thank You** for all you have done for this newsletter!

Jensen Kvarnes
Small Fry Graphics

ISCC THINKING ON-LINE

The ISCC is investigating going "On-Line" with a Web-Page.

The purpose is to give society information, allow more "direct" access to the staff administrator, Board of Directors, etc. As part of this work, an ad-hoc committee has been formed to gather information. We would like to solicit ideas from the membership concerning what they might like to see, as well as see if any members might be interested in either setting up or maintaining this "Page".

If you consider yourself "on the Information Superhighway" and would be interested in either assisting in the setup of the web page or the maintenance of it, please let us know! You can reach the chairman of the group, Rich Riffel, via E-Mail at 73441.512@COMPUSERVE.COM, or via the low-tech phone method at (716) 381-1480.

COMING-ISCC 1996 ANNUAL MEETING

Orlando, Florida
May 5 -7, 1996

The ISCC Annual meeting will be held in Orlando, Florida, May 5-7. An ASTM symposium and E-12 meetings will follow on May 7 and May 8-10, respectively.

The Doubletree Guest Suites resort at the Walt Disney World Village is the meeting hotel.

Please call the hotel directly at 407- 934-1000 to reserve your accommodations at the special ISCC/ASTM rate. The hotel provides complimentary transportation to all Disney Theme Parks. Please note however the cut-off date is April 3, 1996. Don't delay.

Make your reservations early!

There will be a Polynesian Luau at Disney World and special priced tickets for the theme parks will be available to attendees.

Romesh Kumar
Arrangements Chair

NICK HALE RECOGNIZED BY USNC

William N. (Nick) Hale, Jr., has been recognized for his many contributions to the work of the United States National Committee (USNC) of the International Commission on Illumination (CIE). At the 1994 annual meeting, the Committee elected him a Member For Life.

Harry K. Hammond III

THIRD COLOR IMAGING CONFERENCE TO FEATURE STEPHEN JOHNSON — THE "DIGITAL ANSEL ADAMS"

The Third Color Imaging Conference, to be held November 7-10 at The Radisson Resort, Scottsdale, Arizona, will feature a special event on the evening of Thursday, November 9. Stephen Johnson, a professional photographer who is photographing the United States National Parks with a 4x5 Dicomed digital camera, will speak on "Digital Photography in the Landscape," present his spectacular images, and lead an open discussion about his work and the technology of high-quality digital photography. The Dicomed camera acquires a 6000x7520-pixel image in about three minutes, and produces images that have better resolution and more delicate color rendition than film, says Johnson, who adds that the technology allows him to make "the first archival color photographs of my career."

The Color Imaging Conference, jointly sponsored by the Society for Information Display (SID) and the Society for Imaging Science & Technology (IS&T), "brings together all the disciplines concerned with the creation, transmission, reproduction, and display of color images — both traditional and digital," said Louis Silverstein, President of VCD Sciences in Scottsdale and conference co-chair for SID.

The conference will kick off with half-day tutorials that introduce essential topics, including fundamentals of colorimetry, color measurement and instrumentation, color management systems, color in electronic displays,

color in hardcopy, digital half- toning, and color image compression. Three days of presentations follow the tutorials, and the presentations will be in a single track to encourage each registrant to participate in all aspects of the conference. More time is being allocated for discussions.

An enhanced focus for the meeting is the interaction between color imaging and electronic display technology. L.C. Chien of Kent State University will speak on "Color Pixelization of Cholesteric Materials" and a team from the University of Rochester and Reveo, Inc. will discuss "Colorimetry of Fractured Cholesteric Textures." "Cholesteric liquid-crystal displays (Ch LCDs) are generating lots of excitement because they can produce bright, contrast images by reflecting ambient light and therefore don't require expensive, power-hungry backlights. For these reasons, the displays are leading candidates for the large-size, very-low-power 'document readers' that may allow electronic media to compete directly with paper media for the first time," explained Ken Werner, editor of Information *Display Magazine*. Existing Ch LCD prototypes are monochrome, so the papers on color being presented at CIC could be a significant step for the color-imaging and color-display communities.

Predicting the printed appearance of computer-generated colors is a perennial problem in color imaging. P. Emmel and his colleagues from the Ecole Polytechnique Fédérale de Lausanne will address the problem in "A Grid-Based Method for Predicting the Behavior of Colour Printers." In the poster session, Alan J. Herbert of 3M Company will present an illustrated history of computer output images.

For registration and hotel information, contact Pam Forness, Society for Imaging Science & Technology, 7003 Kilworth Lane, Springfield, Virginia, USA 22151. Phone (703) 642-9090; fax (703) 642-9094.

OBITUARY

JOZEF B. COHEN

1921-1995

Jozef B. Cohen, a long time member of the ISCC, and the 1992 winner of the ISCC Macbeth Award died of heart related illness in Urbana, Illinois on August 18th, 1995. Cohen was 74 at the time of his death. He had been a professor of psychology at the University of Illinois for forty-five years prior to his retirement to emeritus status in 1991. He earned his undergraduate degree at the University of Chicago and his doctorate in psychology at Cornell. He was a research staff psychologist at Harvard before coming to Illinois.

Cohen is best known in the color community for his development of what has come to be known as "Matrix R Theory", named for the theory's most powerful matrix. This matrix multiplied into any spectrum results in a spectral power distribution which is fundamental to the tristimulus values of that color. All spectra with the same color, as represented by their tristimulus values, have the same fundamental spectrum. Therefore, the fundamental is the additive complement to Wyszecki's metameric black. Together the two add to the spectrum itself.

In the early days of Matrix R, colorists were largely disinterested. Cohen quoted critics of his journal articles in the early days as saying things like "much ado about nothing", "mere mathematical manipulation", and "of absolutely no interest to anybody." By 1986 his discoveries were published in two issues of the American Journal of Psychology, and Rochester Institute of Technology's Munsell Color Science Laboratory held a rare one-day conference to examine the work of one scientist: Dr. Jozef Cohen. Publication of a long article on Matrix R in Color Research and Application followed. By 1992 the ISCC had awarded Cohen its Munsell Award for the discovery and publication of what had by now become Cohen's life work.

The early days had however left their mark. Last year Jozef Cohen and his wife Huguette made a significant gift to the University of Illinois to support the efforts of selected researchers as they explore ideas that may be so innovative that it is difficult for them to obtain funding from traditional sources. Grants from the Jozef and Huguette Cohen Innovation Fund will be made to University of Illinois researchers in all fields, including arts and letters, as well as science and technology.

In his speech of acceptance of the ISCC Macbeth Award at the Awards Luncheon in Princeton, Cohen commented on the early uncertain fate of Matrix R.

"I was constantly asked the question: 'What good is it?' I could only recall that Gladstone, Prime Minister of England during the nineteenth century under Queen Victoria, had once visited Faraday to observe simple manifestations of electrical currents. Gladstone, as might be expected, asked 'What good is this electricity?' and Faraday responded: 'Sir, one day you will tax it.'"

Hugh Fairman

REPORT OF THE IRGCVD, PAU 95 MEETING

The XIII Symposium of the International Research Group on Colour Vision Deficiencies (IRGCVD) was held in Pau, France from July 27-30, 1995. The presentations at the meeting, as usual, covered a wide range of applied, clinical and basic topics related not just to deficient color vision but to normal color vision, as well. Over the four days of the meeting, there were nearly 90 communications, either oral or poster in format.

The meeting was opened with the presentation of the Verriest Medal to Drs. Vivianne Smith and Joël Pokorny of the University of Chicago. The medal is given in honor of the founder of the society, Dr. Guy Verriest. Dr. Pokorny presented the Verriest Lecture in which he detailed what is known about the factors that limit how much light reaches the retina. According to analyses performed in his laboratory, the transmission of the crystalline lens can be factored into two components, only one of which depends on age. Subsequently, he and his co-workers have verified this proposal using data gathered from reflectometric and psychophysical methods. In addition, Dr. Pokorny examined the multifarious difficulties inherent in incorporating the influence of pupil size in calculations of retinal illuminance.

Three areas were designated as special topics for the meeting:

1) Color Vision and Field Defects: Dr. Hermann Krastel (University of Heidelberg, Germany) presented an invited address on the marriage of field perimetric techniques to those used in the analysis of color vision mechanisms. He reviewed the differences between methods based on color identification and detection as threshold criteria. He argued that since identification is difficult outside of the central visual field, techniques based on detection are more useful in perimetric applications. The introduction of S-cone perimetry has been of great diagnostic value, also, as this class of cones is affected early in many eye disorders.

2) Dr. Vivianne Smith organized and moderated a series of invited talks and a round table discussion entitled, Variation of Color Vision: Genotypes and Phenotypes. Dr. John Mollon (University of Cambridge, UK) set the stage for subsequent presentations by providing a cogent and clear review of the brief history of the molecular genetics of color vision in which he also revisited his analysis of the 200 year old remains of John Dalton's eyes that revealed Dalton to have had a single L-cone opsin gene on his X-chromasome, consistent with deuteranopia and not protanopia as nearly all researchers previously had claimed. He discussed in some detail what is known about the sites in the photopigment molecule which govern its spectral sensitivity. One of the chief problems that remains in relating the genotype to phenotype in color vision is the presence of an array of multiple copies of genes encoding L-, M- or hybrid M/L photopigment opsins on the X-chromosome. Are these all expressed? If so, what are their consequences for color vision?

Dr. Samir Deeb (University of Washington, USA) and his colleagues proposed that the genes closest to a locus control region at the head of the gene array have the greatest expression and those furthest have the least. In this way, the two nearest (normally an L- and M- cone opsin genes) predominate in the retina. Drs. Maureen and Jay Neitz (Medical College of Wisconsin, USA) defended a different point of view, however. They have analyzed gene expression in small patches of the retina and find evidence that the expression of 3 or 4 different X-linked opsin genes is not uncommon. They proposed that the surfeit of photopigments implied by this finding acts as a buffer to ensure trichromacy in the presence of many possible fusion genes. Nevertheless, the trichromacy of the neural visual system would imply that individuals with more than the normal complement of photopigments would always be trichromatic.

In contrast, Dr. Steven Shevell (University of Chicago, USA) called for a greater emphasis on the definition of the phenotypes of color vision. Phenotype is often but not always defined in terms of behavior on the Rayleigh match. Difficulties that have accrued in relating genes to behavior arise in part because many of the older classification systems with none of the current knowledge of the complexity of the genotype admitted only a few different categories of phenotype. Many factors can affect a color match, not all of which are obviously under the influence of the genes governing the spectral sensitivity of the photopigments on the X-chromosome. Shevell showed that differences in optical density between photopigments with the same absorbance spectrum can just as effectively provide a basis for color discrimination in Rayleigh matches as differences in peak wavelength. To support his calculations, he presented data from an observer with a single photopigment opsin gene on the X-chromosome who, in addition, performed as a trichromat would on Rayleigh matches. When the photopigment concentration was reduced by a bleaching light, the observer performed as a dichromat, as his genotype predicted. During the round table discussion that followed, the possibility was raised that the microenvironment in the local retinal regions around the photoreceptors influences their spectral sensitivities. Also, it was suggested that the brain might be rather opportunistic in interpreting differences presented to it as color signals, for example, whether they arise from photopigments with different spectral sensitivities or the same photopigment present in different photoreceptors in different optical densities.

3) Structure and Function in Primate Retina: Dr. Barry Lee (Max Planck Institute, Göttingen, Germany)

presented results from his collaboration with Dr. Dennis Dacey (University of Washington, USA) of in vitro recordings from ganglion and horizontal cells in primate retinae. Their technique allows visualization of the cells from which they have recorded, thereby facilitating the correlation between physiological and anatomical results. From these recordings, they have proposed specific pathways and substrates for luminance, red-green and blue-yellow signals in the retina. Interestingly, they find that L-on and M-on center (and similarly for the off varieties) form a common mosaic on the retina. This finding is unusual if the L-on and M-on cells are supposed to represent independent pathways since neither would then adequately sample the retinal image. They also reported physiological evidence for only two types of horizontal cell, as some previous anatomical evidence had suggested. Many interesting findings, too numerous to mention here, were presented outside of the domain of the special topics as well. Dr. William Swanson and M. Fiedelman (Retina Foundation of the Southwest, USA) demonstrated that the sensitivity loss shown by females heterozygous for protan defects is limited to visual mechanisms that encode luminance information. Dr. Anthony J. Spalding (Surrey, UK) documented difficulties experienced by medical doctors due to inherited color deficiencies. In the ensuing discussion, it was revealed that at least one ophthalmology department in the United States already excludes protans from being retina specialists. Dr. V. Ionica (Saint Roch Hospital, France) presented a new pseudoisochromatic plate color test of his own design. Ionica's test which excited great interest within the audience allows sensitivity to color differences to be evaluated on a ten point scale along six different axes in color space. Dr. L. Gaudart (Universitie d'Aix-Marseille III, Marseille, France) introduced the use of the wavelet transform and demonstrated how elementary wavelets associated with each class of cones could be combined to yield various chromatic receptive field classes that have been described in the electrophysiological literature. As customary in the meeting of the IRGCVD, there were numerous communications dealing with the varieties of color deficiency that result from clinical conditions, such as macular hole, retinal detachment, diabetes, implantation of intraocular lens, long term usage of anti-malarial drugs, etc.

The quality of the scientific presentations at the meeting was only equaled by the high quality of the gastronomic specialties from the BÈarnaise cuisine that were offered to participants during the course of the meeting. The next meeting, planned in 1997 will coincide with the 25th anniversary of the organization and is appropriately scheduled in Ghent, Belgium, the birthplace of the IRGCVD.

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ISCC 1996 ANNUAL MEETING MAY 5-7 INTEREST GROUP II - INDUSTRIAL APPLICATION OF COLOR CALL FOR PAPERS

Interest Group II's main goal is to provide a forum for the exchange of information highlighting the practical application of Color Science to modern industrial problems. Some of these problems include formulating and controlling production of colored materials, improving customer understanding of color tolerancing and specifications, and incoming certification of colored products.

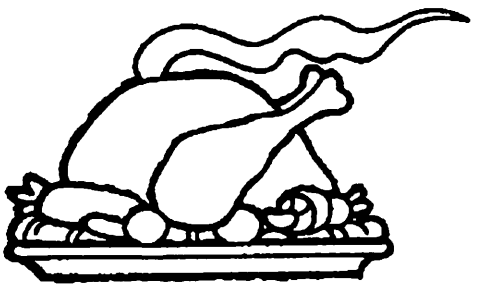
Interest Group II is now soliciting contributed papers for the 1996 Annual Meeting to be held in Orlando, Florida on May 5 - 7 1996. Papers should center around the application of color to an industrial issue in keeping with the goals of the group, and be targeted for approximately 30 minutes in length.

Abstracts should be submitted by January 15 to either of the Co-Chairmen below:

Mr. Bill Tuting
Hunter Associates Laboratory
11491 Sunset Hills Road
Reston VA 22090
(703) 471-6870 (voice)
(703) 471-4237 (fax)

Mr. Richard Riffel
Accuracy Microsensors Inc.
3800 Monroe Avenue
Pittsford NY 14534
(607) 733-0718 (home)
(716) 381-1480 (office)
(716) 381-9801 (fax)

In addition, the Co-Chairmen welcome your questions on either contributing a paper or the Interest Group in general.



NEWS FROM MEMBER BODIES

ASTM MOVES FROM PHILADELPHIA TO WEST CONSHOHOCKEN

ASTM For many years the headquarters of ASTM (American Society for Testing and Materials) has been located at 1916 Race Street in the heart of Philadelphia. As the Society began to outgrow the multi-story building that is built on this site some years ago, plans were formulated to move every thing to a suburban location. The address is 100 Barr Harbor Road, West Conshohocken, Pennsylvania 19428-2959. The move was made at the beginning of October. The old telephone numbers can be used for about a year, but if you have occasion to communicate frequently with ASTM you will want to record the new area code and exchange number as well as the direct dial extension numbers as you learn them. The new phone number for the switchboard is 610-852-9500. A fax number is 610.832.9555. (Use of dashes between phone numbers and periods between fax numbers provides a simple way to differentiate one from the other.) ASTM Standardization News has regularly published a page of most used phone numbers in the January issue each year. A page may have appeared in an earlier issue this year.

Harry K. Hammond III

DETROIT COLOUR COUNCIL SEPTEMBER MEETING

The 17th in a series of annual panel conferences was presented by the DCC on September 11, 1995. Entitled "Globalization of Automotive Color," it addressed the many opportunities, as well as concerns, associated with Globalization of the manufacturer's programs for exterior and interior paint and trim colors. The meeting started with three speakers presenting their views on subjects such as: Implications of Globalization on the pigment manufacturer; Surfing the undercurrents of global design trends: an exploration of diverse influences affecting color and design directions; and, Domestic palettes versus export palettes: cultural differences between countries on the same continent. The speakers were George Patrick, Director Automotive finishes-Ciba; Liza Lamb, Designer; and Marilyn White, Manager Advanced Styling-PPG.

Following the speaker presentations was a Question and Answer session including the speakers and four additional panelists: Janine Schiwier, Color and Trim Design Manager-Ford; Margaret Hackstedde, Chief Designer-Chrysler; Harvey Hug, Manager GM Color Works-GM; and Jim Hothem Color and Trim Consultant-CALTY. The main speaker presentations were interesting, informative and though-provoking and a good lead-in for the panel discussion. From the questions asked, it was apparent that there are some concerns on matching colors in different countries. For instance, can a standard made in the US be matched exactly in Europe? Beside equipment and technology differences, there are also questions around regional pigment availability and preferences. These questions were partially answered, but more work is definitely needed before Globalization is successfully implemented.

Jim R. Keiser

MEETING ANNOUNCEMENT: DETROIT COLOUR COUNCIL - NOVEMBER, 1995

FBI Presentation, "Color Analysis for Criminal Investigation" ,Dearborn Inn, Dearborn, MI. Contact: Dan MacDonald, (216) 656-1600

PRINT ANALYSIS LAB TO BE OPENED AT GATF

GATF A new print analysis lab will open at the Graphic Arts Technical Foundation (GATF) on November 13, 1995.

The lab, formally named The Frank Preucil Print Analysis Lab, is being created to honor Preucil's many contributions to the printing industry. Considered by many to be "the father of densitometry," Preucil pioneered and

promoted the use of color reflection densitometry as a means of controlling and evaluating process color printing in lithography.

The state-of-the-art print analysis lab will contain measuring equipment including scanning densitometers, colorimeters, spectrophotometers, plate measuring instruments, measuring devices, microscopes, computer workstations, print analysis software, and statistical and database software. The lab, which will also be staffed by a full-time technician, will serve as a hub for many of GATF's professional employees.

The goal of the Preucil Print Analysis Lab is to provide a center for research, technical workshops, and print analysis services. The lab will provide a facility for performing research on measuring instruments, print analysis techniques, and process control methods. This research would include the development of print analysis to support revised GATF press test forms.

The analysis lab will also serve as setting for performing print analysis services for GATF members, and it will include a learning center where issues of measurement and control an be taught in an hands-on environment.

Preucil began his long career in color and color reproduction as a photographer in 1923. For 23 years he served as the director of photography for the Gerlach Barklow Company in Joliet, Ill. He then served as research director for the Chicago Rotoprint company. In 1956 he joined the Lithographic Technical Foundation (LTF), which is the predecessor of GATF.

THE PRIMARY COLORS ARE NOT RED, BLUE, AND YELLOW

An article entitled "The Primary Colors Are Not Red, Blue, and Yellow" by Thomas A. Whiteman and Cindy Killeen appears in GATFWorld, Vol. 7, No. 5, September/October 1995, pp. 21-24. The article is actually a concise course in colorimetry. It contains four illustrations in color that clearly illustrate the difference between additive and subtractive color mixtures. We hope that GATF has run many prints of this article. The article includes a short commentary on modern imaging and publishing technologies that is included herewith.

The Primary Colors Are Not Red, Blue, and Yellow
by Thomas A. Whiteman and Cindy Killeen

Today's imaging and publishing technologies have created more opportunities have created more opportunities for color reproduction than ever before. Desktop publishing systems have simplified the technical side, allowing users, whether experienced or not to make color separations, seemingly with the touch of a button, and color monitory can now reproduce about 16 million different colors.

Using color monitors and electronic prepress technologies doesn't mean we can print 16 million colors, however. Today's technologies have certainly extended the gamut of printable colors (between 5,000 and 6,000), but this gamut is still determined by ink and paper combinations, not by prepress equipment.

Even with all of today's technologies, it is still necessary to understand color on its primary level -and to know that the primary colors are not red, blue, and yellow.

—introductory excerpt from GATFWorld September/October 1995, page 21.

LETTER TO IMG MEMBERS:

IMG Hello fellow IMG members. I pleased to say that I have been appointed chairperson for the IMG delegation In all honesty, this was by default however I look forward to the opportunity to serve. My intentions are to act as a lobby for the IMG members of the ISCC.

One thing that I have learned about this organization is the elected officers want the ISCC to service the color community. The ISCC officers will act on information brought to their attention. There are many of our members with interests, concerns, and questions that for one reason or another are never heard by the elected officers. Please write, fax, or phone me with any ideas you have that you would like to share, any questions you would like to ask, or any complaint you would like to make public.

I know from past experience that the ISCC is interested in your involvement in color, no matter how basic or advanced it may be. Give the ISCC an opportunity to learn about your interest in color and the ISCC will let you know of its' interest in you, the IMG member.

Jim Cave
IMG Delegation Chair
Tel (313) 948-2224
Fax (313) 827-2727

OTHER NEWS

AIC INTERIM MEETING PRESENTATION

At the recent AIC Interim Meeting, "Colorimetry" held in Berlin, Germany. ISCC member and Secretary Danny Rich gave a presentation describing a previously proprietary color tolerance metric. This color tolerance metric has more than ten years of successful field application in the now commercially available software. It's structure is very similar to the recent CIE94 tolerance equation, lacking the complex hue weighting of the CMC equation. He also disclosed recent collaborative work between Dr. Ernst Rohner of Datacolor International (DCI) and Dr. Klaus Witt of the BAM in which the DCI equation has been modified in such a way that it provides equal or better results than any of the latest color tolerance equations and projects the Munsell constant value plane as a nearly perfect circle. This new equation describes a true metric for color space that appears to be visually uniform for both small and large color differences. The full article will be published in the next issue of the journal DIE FARBE.

For further information, please contact Dr. Danny Rich at Datacolor International, Lawrenceville, NJ.

AIC INTERIM MEETING - COLORIMETRY '95

A three-day meeting was held September 3-6, 1995 at 32 Mauerstrasse in the center of Berlin, Germany. The program consisted of two invited and 34 contributed papers. A booklet of abstracts was distributed at the meeting. The advance program of title and authors was published in ISCC News No. 356, July/August 1995. One hundred and five participants representing 15 countries attended the meeting. There was also an exhibition of colorimeters.

It would be nice to publish all of the abstracts in the ISCC News, but that is not feasible. The abstract booklet contained 18 pages of single-spaced text, each about 4 x 7 inches. Each invited paper was interesting as were many of the contributed papers. The two invited papers were: "What's New In Material Color Standards!" presented by Dr. Fred Simon and "Colorimetry - Then And Now" presented by Dr. William Thornton. They are reported elsewhere in this issue.

This reporter, like Thornton, is concerned that demonstrated improvements are not being included in CIE documents on colorimetry. Thornton's thesis is that CIE colorimetry as we know it today has been useful in the past, but new lamp lights such as those produced by metal-halide and fluorescent lamps are not properly evaluated by the CIE colorimetry procedures that have been used successfully when incandescent lamps provided most of the light that was not daylight. His abstract is printed below. Eventually has paper and all the others given at AIC 95 will be published in an issue of the German Colorimetry journal, Die Farbe for which Prof. Dr. Ing. Heinz Terstiege now serves as editor.

Harry K. Hammond III

AIC 95 INVITED PAPER

William Thornton: Colorimetry - Then and Now

The colorimetry system of 1931 is based solidly on the experimental visual data gathered by David Wright and John Guild; these data are unchallengeable even today. However, the 1931 Colorimetry system, built on the Wright-Guild data necessarily included unproved assumptions. These assumptions were, at that time., not only essential but even inspired. Yet, in the intervening years, Wright, Guild, Stiles, MacAdam and others have offered warnings concerning these assumptions. Meanwhile, spectroradiometry measurement of spectral power content of visually matching pairs of lights can now be done. With this accuracy, it is now no longer necessary to make any assumptions at all, in forming an improved colorimetry system. Strong metamerism in pairs of visually mating lights became important first in the lighting industry, then in modern transforming of colored images from one medium to another. Our work, using accurate absolute spectral power distributions of strongly metameric visual pairs of lights, shows: (1) the now-traditional maximum-saturation color matching functions do not serve well as weighting functions. Computed chromaticities of visually matching pairs are too often very different (10-60 MacAdam units). This means that the CMFs do not yield correct results for any visually matching pair of lights, even when metamerism is weak. (2) The MacAdam result that "additivity of brightness" is far from valid is confirmed. (3) Transformability of primaries does not seem to hold in the normal human visual system. From a present database of 2000 strongly metameric, visually matching pairs of lights (field sizes 1.3° and 10°, luminances 4 to 100 candela/m2) improved weighting functions are being extracted. Errors in computed tristimulus values of visually matching pairs are, so far, reduced by as much as a factor of 20 from those by the CIE Standard Observers.

AIC 95 INVITED PAPER

Fred Simon: What's new in material color standards

Material color standards have an important place in the scheme of color technology to provide a means for checking the validity of instruments, scaling visual estimate, and to provide a transfer mechanism for measurements made under different conditions. Although many color measurement instruments have been improved over the last several years both for precision and accuracy, the need continues for stable standards to be used to verify the data that are obtained even under the most ideal conditions. Furthermore, there is a continuing requirement for insuring the reliability of the data obtained from one time to another. Material standards are available for color and appearance characteristics that can be measured. The most common standards are the color standards made as ceramic, plastic, or vitreous enamel plaques. These are complemented by glass filters which are used when transmission measurements can be made. Fluorescent white and chromatic standards have an important role in calibration of materials. Haze and translucent standards provide scaling for materials which may not be colored but such appearance characteristics closely interact with color. By definition, color standards for reflection measurement are stable, fairly rugged, and cleanable (or renewable). However, there are several caveats in selection of ideal standards. Matte surface materials are preferred as transfer standards. Since the surface of a matte standard can be altered during continued use, its protection is important to maintain fidelity. A holder that recesses the measurement plane slightly below the mounting on the instrument is helpful. Another problem arises with respect to translucent blurring, especially with white reference materials. The spectral characteristics of most orange, red, and yellow materials change with temperature so precautions must be taken to avoid unreliable data. These problems will be discussed to illustrate possible solutions that make material standards more reliable.

PROFESSOR DR. HEINZ TERSTIEGE - RECIPIENT OF THE JUDD-AIC AWARD 1995

At the 1995 AIC Interim Meeting in Berlin (September 4-6), the 1995 Deane B. Judd-AIC award was given to Professor Dr. Heinz Terstiege. The following is the citation which was written by Frank Rochow, AIC Executive Committee member, read first in German by Professor Dr. Lucia Ronchi, AIC President, and then read in English by Dr. Roy Berns.

The 1995 Deane B. Judd-AIC Award will be conferred on Prof. Dr. Heinz Terstiege in recognition of his extensive contribution to the science and technology of colour.

The Award was instituted in 1975 to honour the memory of scientist Dr. Deane B. Judd. It is presented biennially by the AIC in recognizing and to honour people who have performed work of outstanding merit in colour science. Previous recipients were Miss Dorothy Nickerson, Prof. Dr. William David Wright, Dr. Gunter Wyszecki, Prof. Dr. Manfred Richter, Dr. David Lewis MacAdam, Prof. Dorothea Jameson and Prof. Leo Hurvich, Prof. Dr. Robert W. G. Hunt, Prof. Dr. Tarow Indow, Dr. Hans Vos and Dr. Pieter Walraven, Prof. Dr. Yoshinobu Nayatani.

A Biographical Sketch of Prof. Dr. Ing. Heinz Terstiege follows:

Heinz Terstiege began his scientific career in the field of colour with a Ph.D. thesis "von Kries Persistence and Coefficient Law" under Prof. Manfred Richter, at the Federal Institute for Materials Research and Testing. His major activities, however, were changed from Physiology to Measurement of Colour.

With this scientific background he actively served on various international standardizing committees. His special engagement was in CIE Technical Committees on Signaling Colours, on Colours in Road Traffic and in ISO-Committees of Warning and Safety Colours. Being a recognized expert on colorimetry and colour vision he succeeded in harmonizing international standards on the various aspects of signaling by means of ordinary, retroreflecting and fluorescent colours for traffic, identification, warning and safety. For these activities the Standard Committee for Colour (FNF) of the German Institute for Standardization (DIN) conferred on him the Manfred Richter award: the Golden FNF Pin.

As an expert on photometry his research activities were also devoted to spectral colorimetric properties of light sources with respect to colour matching and to the colorimetry of luminescent materials. After the success of energy saving light sources he showed that the widely used Colour Rendering Index was not advantageous in characterizing the colorimetric quality of multi-band phosphor lamps for visual tasks. The Index of Metamerism is a better choice for characterizing the quality of daylight simulation.

Terstiege passed on his knowledge in the science of colour to more than 2000 students attending the colour seminars in Germany. He has published more than 100 scientific papers. He has been a consultant at universities and institutes in Iran and India. In Argentina, he was made an honorary member of the Grupo Argentina del Color. In China he was a visiting professor at the Zhejiang University in Hangzhou.

Since, 1975, Heinz Terstiege has been co-editor with Manfred Richter of the German Scientific Journal DIE FARBE. When Manfred Richter died in 1990, Terstiege became editor.

He organized the well remembered International Colour Conference AIC Colour 81 in Berlin, the AIC 1987 Stiles-Wyszecki Memorial Symposium on Colour Vision Models in Florence, Italy. He was also responsible for the organization of the AIC 1990 Interim Symposium on Instrumentation for Colour Measurement, in Berlin, Germany, and the AIC 95 Interim Meeting on Colorimetry, also in Berlin.

In 1974 Heinz Terstiege was co-founder and Vice President of the German Scientific Colour Society and has been President since 1982. He was also Vice President of The AIC from 1982 to 1985 and President from 1986 to 1989. He was on the Board of the German National Committee of the International Commission on Illumination (CIE) since 1975 and it President since 1991. From 1979 to 1991 he served as secretary of the International Commission on Illumination. His contributions to the colour standardization in the relevant Committees have earned him the admiration and gratitude of his colleagues and associates throughout the international colour community.

The Executive Community of the AIC is therefor pleased to honour Prof. Dr. Ing. Heinz Terstiege with the 1995 Deane B. Judd-AIC Award.

The award consists of a gold medal with a portrait of Deane B. Judd on one side and on the other side the inscription "To honour Heinz Terstiege 1995 for important work in colour science". AIC President, Prof. Lucia Ronchi, presented the Award to Terstiege at the AIC meeting in Berlin, September 5, 1995.

—condensation of the laudatio of AIC President Prof. Lucia Ronchi

HEINZ TERSTIEGE GAVE A BRIEF SYNOPSIS OF THE PREVIOUS RECIPIENTS OF THE JUDD-AIC AWARD:

Previous Recipients of the Deane B. Judd-AIC Award

He had met Deane B. Judd for the first time when he attended the AIC Color Conference 1969 in Stockholm, Sweden. It was in the evening when he strolled with Manfred Richter through the streets of Stockholm and their paths crossed with Chuck Raleigh and Deane B. Judd. This was just 3 years before he passed away. Judd's name is linked with the Munsell Color Order System, Uniform Color Systems, Color Difference Evaluation and Color Perception. The nearest color temperature lines for light sources in the chromaticity diagram - perpendicular to the loci of Planckian radiators in the UCS diagram - are named after Judd and thus makes this famous color scientist memorable.

After the AC Award was instituted in 1975 to honour the memory of Deane B. Judd, Miss Dorothy Nickerson was the first recipient. She had worked closely together with Judd in the OSA subcommittee on spacing the Munsell colors. Her investigations together with K.F. Stultz resulted in the Nickerson-Stultz color difference formula.

The second Deane B. Judd recipient was William David Wright. He is known for his investigations to establish the CIE color matching functions. While in the US the OSA color matching functions were favored, W.D. Wright combined his experimental results with Guild's color matching functions which are the average of Guild's 7 observers and Wright's 10 observers for a 2° visual field.

The 1979 recipient was Günther Wyszecki. He received his Ph.D. later through Manfred Richter in Berlin. After this he spent one year on a grant with Deane B. Judd at the NBS. From this time the basis for the new edition of Judd's book "Color in Business, Science and Industry" originated. Wyszecki's aim was on standardization of "Reconstituted Daylight". Together with W. Budde he made measurements of daylight distributions which led to the "Eigen-vector Method" for calculating spectral power distributions for daylight of different color temperatures. He became CIE President in 1989.

Manfred Richter was the next recipient in 1981. He was the father of the DIN Color Order System which used ideas from the Oswald color order system. Compared with the Munsell color order system the DIN system had straight hue lines and used the saturation as color notation instead of chroma. The advantage was that the lines of saturation could be drawn in the chromaticity diagram independent of the value (or Dunkelstufe).

David MacAdam received the award in 1983. His name stands for chromatic adaptation, uv-diagram 1937 and color difference evaluation. Every colorimetrist knows the MacAdam Ellipses for color difference evaluation.

The 1985 recipients Leo Hurvich and Dorothea Jameson worked together on the opponent color perception. With the opponent color theory they could explain better the psychological color effects than with the three component theory.

Bob Hunt, the recipient from 1987 also worked on physiologic and psychologic effects in color vision and proposed a color vision model to explain chromatic adaptation for color rendering purposes.

Tarow Indow received the award in 1989. He was extensively involved in multidimensional scaling of psychological aspects in color vision.

Jan Vos and Peter Walraven, who were awarded the medal in 1991, also worked together on a color vision model to explain physiological phenomena in color vision.

The work of the 1993 recipient, Yoshinobu Nayatani, was also devoted to chromatic adaptation. He proposed a formula for describing the effect of chromatic adaptation which is competition to the Hunt adaptation formula. As the CIE could not agree to propose only one formula CIE diplomatically recommended both formulae, Hunt's and Nayatani's.

After this short summary of the former recipients, Heinz Terstiege said, that he would rather join the later group of colour physiologists as he began his career with a PH.D. thesis on the von Kries persistence and coefficient law. However, his later field of interest changed to measurement and evaluation of radiometric and colorimetric quantities.

— condensation of Heinz Terstiege's acceptance speech

COLOR RESEARCH AND APPLICATION

IN THIS ISSUE, December 1995

The C. James Bartleson Award Trust was instituted by his wife Trudy Bartleson in 1988 through the Colour Group of Great Britain to recognize significant work in color science and to encourage excellence in this field with priority given to young researchers. Mark D. Fairchild was selected as the fourth recipient of the Bartleson Award, following Steven Shevell, Anya Hurlbert, and M. Ronnier Luo. The presentation was made at the banquet of the ISCC Panchromatic Conference in Williamsburg, Virginia in February of this year. Dr. Fairchild chose "Considering the Surround in Device-Independent Color Imaging" as the topic of his Bartleson

Lecture in part because it represents a portion of his research that was greatly influenced by the earlier research of color perception in complex fields in photography by James Bartleson. The lecture is printed in this issue.

In 1969, Brent Berlin and Paul Kay first published the book, Basic Color Terms Their Universality and Evolution which indicated that color space was partitioned naturally into a maximum of eleven basic color categories. The impact of this anthropological research has been extensive and is the foundation of extensive additional research. Boynton and Olson investigated the positioning of the eleven basic color categories in the OSA-UCS space (the Optical Society of America -Uniform Chromaticity Space). Although the OSA-UCS space has much to commend it, it is not as widely used or known as the Munsell System. The next article in this issue seeks to extend the work of Boynton and Olson by defining the location of the eleven basic surface colors within the Munsell space. In "Locating Basic Colours in the Munsell System," Julia Sturges and T. W. Allan Whitfield describe their research that confirms the eleven basic color categories and locates them in the Munsell Color Space. However, it finds a majority of the focal samples are higher in chroma than the OSA equivalents.

For the next article we move to the field of color displays, specifically CRT displays. Increasingly vision researchers are using CRT color displays in their experiments. For this work it is absolutely necessary to control the stimulus colors colorimetrically. This in turn requires the calibration of the CRT. In most CRT calibration the luminance of the background screen must be zero or should be adjusted to be zero. However, this is not always possible, and the assumption that it is zero is inappropriate. In "Consideration on the Calibration of Color Displays Assuming Constant Channel Chromaticity," Luis Jinez del Barco and his co-workers J. A. Díaz, J. R. Jiméñez, and M. Rubíño describe a method of CRT calibration that takes into account the spatial summation of the phosphors affecting the relation of the chromaticity coordinates of the RGB channels as a function of the stimulation level. In addition they propose a method for updating the CRT calibration with a few measurements.

The last article in this issue comes from The Netherlands. Jean-Paul Claessen, C. J. Overbeeke, and G. J. F. Smets examine the effects of hue and lightness on perceived size in actual and simulated tasks with and without feedback. It is generally known that hue and lightness affect the judgment of perceived size. That is, red stimuli appear larger than blue ones, or lighter ones appear larger than dark ones. However, the carry-over from these generalized perceptions to performance on actual tasks has not been studied. In "Puzzling Colors" the authors asked the subjects to fit pegs into a puzzle and measured the errors in terms of hue and lightness.

The question for this month's Color Forum is what is it about gloss that makes it important and desirable in colored materials. The father and son team of Juergen and Stephen Braun write "Speculations about the Value of Gloss." It is the authors' contention that the observer's attention, which is attracted by gloss, has much deeper roots than color perception.

Therefore, it is much stronger and more basic.

The Communications and Comments section of the journal includes the "CIE Guidelines for Coordinated Future Work on Industrial Colour-Difference Evaluation" written by Klaus Witt. The CIE has the long standing goal to develop an international standard on color-difference evaluation that provides a global description of color difference

appropriate for most industrial applications. In steps toward that goal the former CIE color difference committee published "CIE guidelines for coordinated research on colour-difference evaluation" in 1978. Later several technical committees relating to color difference evaluation were formed and disbanded once their reports were complete. However, knowledge about the quantitative relations between perceived color differences and the chromatic descriptions of these differences is not yet complete, and more research is needed. The new guidelines published in this issue areintended to stimulate further coordinated studies, retaining the earlier guidelines, yet updating the objectives and methods for reporting the results. A reporter has been established to review progress every year and recommend new committees at the appropriate time.

Readers are aware that we usually publish an annual index in the last issue for the year. However, examining numerous annual indices to find the desired reference becomes more difficult and time consuming as the number of volumes increases. Since this issue marks the last issue of the twentieth volume, space has been set aside in this issue for a very

special index...a twenty year index. In other words a complete index for Color Research and Application from its inception up to this date. We hope that the readers will find this index especially useful and handy.

Ellen C. Carter
Color Research and Application
(703) 527-6003

C A L E N D A R

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

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

1995

IS&T 11th ANNUAL INTERNATIONAL CONGRESS
Oct. 28 - Nov. 3
Advances In Non-Impact Printing Technology
Hyatt Regency Hilton Head
Hilton Head Island, SC
Information: IS&T
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094
email: imagesoc@us.net

CIE 23rd QUADRENNIAL MEETING
Nov. 1 - 3 Division Meetings: Nov. 6 - 8
International Commission on Illumination
Vigyan Bhavan Conference Complex
New Delhi, India
Information: Jonathan Hardis
Secretary USNC/CIE
Phone: (301) 975-2373
Fax: (301) 840-8551
E-mail: hardis@onyx.nist.gov

CMG FALL CONFERENCE
Nov. 5 - 7
Color Marketing Group International Color Directions Conference
The Pointe Hilton Resort at Squaw Peak
Phoenix, AZ
Information: Katie Register
Phone: (703) 329-8500
Fax: (703) 329-0155

IS&T & SID 3rd COLOR IMAGING CONFERENCE
Nov. 7 - 10
Color Science, Systems, and Applications
Radisson Resort
Scottsdale, AZ
Information: IS&T
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094
email: imagesoc@us.net

ASTM COMMITTEE D-20 ON PLASTICS
Nov. 13 - 16
Norfolk, VA
Information: Mrs. Katherine Morgan
Phone: (610) 852-9500
Fax: (610) 832-9555

1996

ASTM COMMITTEE D-1 ON PAINT
Jan. 21 - 24
Fort Lauderdale, FL
Embassy Suites Hotel
Information: Scott Orthey
Phone: (610) 832-9717
Fax: (610) 832-9555

ASTM COMMITTEE E-12 ON APPEARANCE
Jan. 22 - 24
Fort Lauderdale, FL
Embassy Hotel Suites
Information: Bode Buckley
Phone: (610) 832-9740
Fax: (610) 832-9555

USNC/CIE "1995" ANNUAL MEETING
Jan. 27-29
United States National Committee of CIE
Orlando, FL
Information: Jonathan Hardis
Secretary USNC/CIE
Phone: (301) 975-2373
Fax: (301) 840-8551
E-mail: hardis@onyx.nist.gov

IS&T/SPIE
Jan. 28 - Feb. 2
Electronic Imaging: Science and Technology
San Jose Convention Center
San Jose, CA
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094
email: imagesoc@us.net

IS&T 9th INTERNATIONAL SYMPOSIUM
Feb. 18 - 21
Photofinishing Technology
Co-located with PMA Show (Feb. 22 - 25)
Las Vegas, NV
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094

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

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

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

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

ASTM COMMITTEE E-12 ON APPEARANCE
May 8 - 10
Orlando, FL
Information: Bode Buckley
Phone: (610) 832-9740
Fax: (610) 832-9555

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

(Continued→)

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

IS&T 49th ANNUAL CONFERENCE
May 19 - 24
Minneapolis Marriott City Center
Minneapolis, MN
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094

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

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

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

ASTM COMMITTEE E-12 ON APPEARANCE
June 24 - 26
San Francisco, CA
Information: Bode Buckley
Phone: (610) 832-9740
Fax: (610) 832-9555

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

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

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

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

IS&T FOURTH COLOR IMAGING CONFERENCE
Nov. 17 - 20
Color Science, Systems & Applications
Radisson Resort
Scottsdale, AZ
Information: IS&T Conference Manager
7003 Kilworth Lane
Springfield, VA 22151
Phone: (703) 642-9090
Fax: (703) 642-9094

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

1997

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

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

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

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

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

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

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

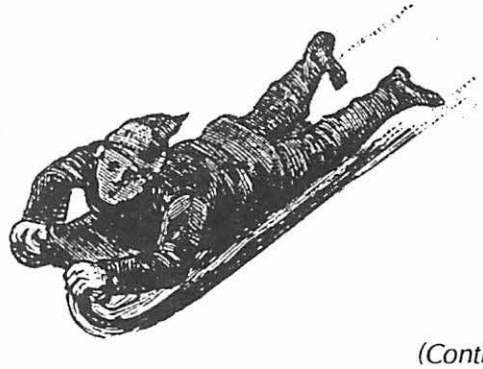
1998

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

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

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

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



(Continued→)

1999

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

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

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

2000

SID 2000
May
Toronto, Ontario
Canada
Information: Lauren Kinsey
SID
1526 Brookhollow Drive
Suite 82
Santa Ana, CA 92705
Phone: (714) 545-1526
Fax: (714) 545-1547
email: socforinfodisplay@mcimail.com

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

2001

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

MEMBERSHIP APPLICATION

INTER-SOCIETY COLOR COUNCIL APPLICATION FOR INDIVIDUAL MEMBERSHIP

Name _____ Date _____

❒ Dr. ❒ Mr. ❒ Ms.

Company/Affiliation _____

Street _____

City, State, Zip _____

Telephone (____) _____ ❒ Home

Fax (____) _____ ❒ Business

E-mail Address _____

_____

Signature

My chief interests in color are:

❒ Fundamental and Applied Research
❒ Industrial Application of Color
❒ Art, Design and Psychology

_____

Name other interests

My work relates to the following products and services:

_____

_____

_____

My present and past business, professional or educational connections with color are: _____

_____

_____

_____

My particular interests in color are: _____

_____

_____

_____

I belong to the following national organizations or associations: _____

_____

_____

_____

I learned about ISCC from: ❒ ISCC Newsletter ❒ Other source: _____

Please tell us the individual or organization that interested you in ISCC

ISCC dues are shown on the reverse side. Applications for membership dated prior to July 1 should be accompanied by full annual dues; those dated July 1 and later should be accompanied by 50% of annual dues. You have the option of subscribing to Color Research & Application at special membership rates. If you wish to do so, please Contact John Wiley & Sons, Inc. Directly. John Wiley & Sons, Inc. Attn. M Fellin, 10th Floor, 605 Third Avenue, NY, NY 10158-0012

This application and remittance should be sent to

Inter-Society Color Council, ATTN: Membership
11491 Sunset Hills Rd., Suite 301, Reston, VA 22090 Telephone (703) 318-0263

ISCC BY-LAWS

EXCERPT FROM THE BY-LAWS OF THE INTER-SOCIETY COLOR COUNCIL, INC.

Constitution, Article II — Aims and Purposes

The Council shall operate solely and exclusively as a non-profit organization with the aims and purposes:

A. To stimulate and coordinate the work being done by the various members leading to the description and specification of color by these members.
B. To promote the practical application of this work to the color problems arising in science, art, and industry, for the benefit of the public at large.
C. To promote communications between technically oriented specialists in color and creative workers in art, design, and education, so as to facilitate more effective use of color by the public through dissemination of information about color in both scientific and artistic applications.
D. To promote educational activities and the interchange of ideas on the subject of color and appearance among its members and the public generally.
E. To cooperate with other organizations, both public and private, to accomplish these objectives for the direct and indirect enjoyment and benefit of the public at large.

Council Activities

The ISCC is the principal professional society on the field of color in the United States, encompassing the arts, sciences and industry, pursuant to the Aims and Purposes described above. Other national organizations with an interest in color are Member-Bodies of the Council and appoint delegations to participate in the Council's work. Individual members are the largest single group. The Annual Meeting, usually held in April, includes meetings of the Project Committees and sessions of three Interest Groups: Fundamental & Applied Color Research; Industrial Application of Color: and Art, Design & Psychology. There is also a main program devoted to a specific aspect of color plus a Poster Paper session. Joint programs with one of the Council's Member-Bodies are interesting and educational.

In most years there is a separate topical Williamsburg Conference, often in February, where a single color subject is explored in depth with participants from all over the world providing state-of-the art information. Attendance at these conferences is usually smaller than at Annual Meetings, reflecting their topical nature and permitting interaction between speakers and participants.

The ISCC is the U.S. Member of the Association Internationale de la Coulour (AIC), which holds general meetings quadrennially and topical meetings annually. Color Research & Application, published bimonthly in English, is the principal international journal in this field; it is endorsed by ISCC. It reports recent research and opinions of colorists, review books and reports on national and international color meetings. Membership in ISCC permits subscription at more than a 50% discount.
The ISCC News, a bimonthly newsletter, reports the color activities of the Council, its members, Member-Bodies and international color organizations. Members receive the ISCC News at no cost. Member-Bodies and Sustaining Members receive 10 copies of the ISCC News.

Categories of Membership	Annual Dues
Individual Member. Any person interested in color and desirous of participating in the activities of the Council.	$45.00
Student Member. Full time students.	$10.00
Member-Body. Any non-profit national organization interested in color and desirous of participating in the activities of the Council.	$100.00
Sustaining Member. Any organization not eligible as a Member-Body, or any individual, interested in color and wishing to support the work of the Council. Receives 10 copies of ISCC News.	$500.00
Retired. Treasurer must be notified, in writing, of retirement before dues have been billed.	$10.00
Library Subscriptions. Receives all ISCC mailings, including ISCC News.	$60.00
Overseas Member. A surcharge of $20 is added to $45 dues to cover additional mailing costs.	$65.00

Revised 9/94

JOBS WANTED!

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 servce. However the restrictions are as follows:

1. This service is for ISCC members' use only.
2. No more than 50 words may be used to describe yourself.
   (Not including name address and/or telephone number).
3. If you are using a P.O. Box, you must supply a complete address.
4. No Agency representing member(s) is allowed.
5. Neither the ISCC News nor the editors are responsible for any errors.
6. You must advise us in writing when you have obtained employment.

We hope this new section will be of value to you, the ISCC member. If you have any suggestions/criticisms, please send them to the editor. Let's make this work!

JOB WANTED:

Prof. Dr. Todor Kehlibarov
P.O. Box 1089
Sofia, BG-1000 Bulgaria
Ph/fax: 011 359 2 880597
US Contact: Dr. F.W. Billmeyer,
Ph/fax: 518 377 9511

Senior color and light scientist seeking short or long term position in the West. Speaks English, French, several Eouopean languates. More than 30 years experience in instrumental and visual color measurement of wide variety natural and synthetic materials. Can perform research, establish laboratories, teach courses, supervise quality control, much more.

JOB WANTED

Huanzhao Zeng
4 Silver Drive, Apt. 11, Nashua, NH 03060
Tel/Fax: (603)888-2475
email: hxz1536@vaxa.isc.rit.edu

M.S. Imaging Science (1995), M.S. Color Science (1990). Interested in obtaining a responsible position related to color/imaging science applications and software development. Experienced in color management system, color reproduction software development, digital color halftoning, printer model, scanner and CRT color reproduction, C/C++, UNIX, Dos, color/image processing software, and mathematics/statistics software.

ISCC NEWS EDITOR: Gultekin (Tek) Celikiz

meeting reports

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

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photos

contributions from members

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

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

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