

Inter-Society Color Council *News*

"COLOR: THEN AND NOW"

The Inter-Society Color Council announces its thirteenth annual Conference to be held at Colonial Williamsburg, Va., February 10 to 13, 1985. The theme of the meeting is Color: Then and Now. Invited speakers will trace the evolving concepts of color from the speculations of the ancient Greeks to the present. Faber Birren will speak on, "Color, Mysticism, and Mythology," and Dorothy Nickerson on, "Color History: Remembered Highlights." Others will review the ideas of Bacon, Newton, and Charles Henry. Papers will cover color vision, aesthetics, marketing, and style. Kurt Nassau of Bell Labs will describe, "The Fifteen Causes of Color," Franc Grum of Rochester Institute of Technology, "New Developments in Color Science."

The conference is informal, allowing ample time for questions and discussion. Because ISCC members represent various color disciplines, from art to TV, there is much opportunity for cross-fertilization.

The Conference will begin with registration and a reception on Sunday, February 10 and continue through Wednesday noon, February 13. All meetings and housing are in the Williamsburg Lodge. Rates are based upon American Plan for which meals may be taken either in the Lodge or in one of the well-known colonial taverns. After a group luncheon on Tuesday the afternoon is free for sightseeing. Colonial Williamsburg is within easy walking distance; Yorktown and Jamestown are nearby. Many airlines reduce fares for those away on Saturday night. Conference rates apply to either a three- or four-day stay.

Single registration is \$460 for three days, \$575 for four. Reductions are available for double occupancy and for students. Further details and registration forms may be obtained from Mrs. Bonnie K. Swenholt, 5717 Gulick Drive, Honeoye, NY 14471.

PUBLICITY CHAIRMAN — BILLMEYER TO WEBBER

With his retirement from teaching, Dr. Fred W. Billmeyer, Jr. has concluded a 14 year term as Publicity Chairman. He developed the function during his 12 years as Secretary of the Council. Starting with the membership roster, he then culled a long list of organizations, selecting those having an interest in color. This became the publicity mailing, to be sent out four or five months prior to an event. A third list, no longer available, was made up of those who had taken summer courses in color under Fred's direction at Rensselaer Polytechnic Institute. Printing and mailing facilities were at hand.

ISCC President Joyce Davenport has said, "Fred Billmeyer's long term service for Publicity is just one of the outstanding

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things he has done for the Council over the years. He richly deserved our first Service Award in 1982."

Tom Webber has also retired and has completed a term on the Board of Directors. He has already handled the publicity for Williamsburg '85 and is working on the Annual Meeting.

ISCC AND SCAI MEETINGS — "COLOR: THE END USER"

The 54th Annual Meeting of the Inter-Society Color Council will be held in Pittsburgh, April 14 to 16, 1985 at the Sheraton Station Hotel. It will be followed on April 17 and 18 by a Symposium on Color Appearance Instrumentation jointly sponsored by the Federation of Societies for Coating Technology and the Manufacturers Council on Color and Appearance. The theme of both events is "Color: The End User."

ISCC will have committee meetings starting on Sunday the 14th. Workshops will include "A Survey of Color Systems" by Dr. Fred W. Billmeyer, Jr. and "Metamerism, from Strict Definition to Real Samples, Observers, and Illuminants" by Henry Hemmendinger. There will be a business luncheon on Monday and awards on Tuesday.

The Tuesday afternoon session is designed as a bridge between ISCC and SCAI. Topics include Ruth M. Johnston-Feller on "The Many Facets of Pigment Tinting Strength," Dr. Robert Feller of Carnegie-Mellon on "Recollections of Pigments Past," Walter C. Granville on "Color Harmony: What Is It?," and Dr. Robert M. Boynton of California on "A Proposal

for an Alternative System of Colorimetry and Photometry.”

On Monday evening there will be a cruise, dinner, and dance on the ship Liberty Bell affording views of Pittsburgh's Golden Triangle from the Monongahela River.

Joy Turner Luke is the program chairman for ISCC. Further details may be obtained from the Secretary, Miss Therese R. Commerford, US Army Natick R & D Center, ATTN: STRNC-ITC, Natick, MA 01760.

The SCAI meeting will have a comprehensive display of color measuring instruments assembled by Charles G. Leete of MCCA. Registrants may operate much of this equipment and are urged to bring samples for evaluation.

The panel of speakers has been arranged by Jacki Welker of PPG Industries. Subjects for discussion will include color sampling, measurement, specification, confidence limits and tolerances, weathering, and lighting. Six of the speakers will be Europeans.

Mr. Thomas Kocis, Federation of Societies for Coating Technology, 1315 Walnut Street, Suite 830, Philadelphia, PA 19107 can supply further information.

Thomas Webber

Papers Planned for 1985 ISCC Annual Meeting

The abstracts for the papers Robert Feller and Ruth Johnston-Feller are to present on Tuesday, April 16 at the ISCC Annual Meeting in Pittsburgh were given in the July-August ISCC News. The abstracts for Robert Boynton's and Walter Granville's important papers are given below along with a brief biographical sketch.

“Proposal for an alternative system of photometry and colorimetry,” Robert M. Boynton

Abstract: In the half-century since the establishment of the CIE system of colorimetry, much has been learned about the physiology of human color vision. The notion that initial trichromacy depends upon the relative excitations of three classes of cones, though not new, is now thoroughly documented and the action spectra of these cones are essentially known. A system of colorimetry that begins with these action spectra is easier to understand and to teach than one that begins with the CIE X, Y, and Z functions.

The initial trichromacy is quickly converted to a new form, involving a luminance channel and two opponent-color channels. At equal luminance, the latter carry information about red-green exchange and the level of blue-cone excitation. On the assumption that luminance depends upon an additive sum of excitations of red and green cones, it is possible to develop a chromaticity diagram in which, because these two dimensions of color preprocessing plot on orthogonal axes, equal changes in cone excitations are represented by equal distances everywhere in the chart.

Within the framework of the CIE, this new system is being proposed as a supplement to the existing system, to be used mainly for scientific and pedagogical purposes.

Biographical Data

Dr. Boynton received his Ph.D. in Experimental Psychology from Brown University in 1952. After 22 years at the Univer-

sity of Rochester, where he founded the Center for Visual Science in 1963, he moved to the University of California, San Diego, as Professor of Psychology. Dr. Boynton has been particularly active in the Optical Society of America, having terms as a Director, as Chairman of the Color Technical Group, and as Topical Editor for Color and Vision. He is currently Chairman of the Board of Editors of VISION RESEARCH, a Pergamon Press journal. Most of his publications in recent years have been concerned with color vision, including “Human Color Vision,” published by Holt, Rinehart, and Winston in 1979. He received the Tillyer Medal from OSA in 1971, and in 1981 he received the Godlove Award from ISCC and was elected to the National Academy of Sciences.

Color Harmony – What's That?, Walter Granville

Is color harmony in the mind of the beholder or a function of the colors? What other criteria may influence color usage? Answers to these questions are obscure, controversial and a matter of opinion. From a half-century of experience Granville will give his views.

Biographical data.

Walter C. Granville has worked with color since 1930, first with printing inks and coatings, then in research with a GE spectrophotometer, later in the corporate design department of Container Corporation of America. Since 1957 he has been an independent color consultant doing color styling of consumer products, color plans for schools, hospitals and commercial buildings, and paint color systems. He has been an ISCC member for a half-century, is a past president and has served on many committees.

Annual Meeting Workshop

One of the three workshops to be presented on Sunday and Monday, April 15 and 16 will be one by Dr. Fred W. Billmeyer, Jr. Fred, who is one of the best known and most active ISCC members is also a valued member of the U.S. Delegation to the Association Internationale de la Couleur. This workshop will be based on research Fred was asked to do in order to recommend whether the AIC should promote one color order system as an international standard.

“Survey of Color Order Systems” will survey the major color order systems that are accompanied by physical exemplifications and that are now (or were until recently) available for purchase in the United States. These include the Munsell, Natural Color, Optical Society of America, and Ostwald systems, and several variations of the Munsell system sold in the U.S. (Scot-Munsell) or in Japan (Chroma Cosmos 5000, Chromaton 707). Examples of these will be on display. A few others, including the DIN and Coloroid systems, will be included in the discussion.

The discussion will include comparisons of the purposes, spacing, variables and parameters, and interrelations of the systems. It is assumed that all color order systems represent sampling of the same underlying color space differing in one or more of the above ways. The differences seem at present to be so great that it is unlikely that any compromise system could be constructed that would satisfy the proponents of the ex-

isting systems. The properties and purposes of the various systems are so widely different that there is no basis for selecting any one of them for recommendation as an international standard color order system.

NEWS OF MEMBERS



Ken Kelly Honored

In its February meeting at Williamsburg, the ISCC Board of Directors voted to elect Kenneth L. Kelly as an Honorary Member of your Inter-Society Color Council. This award was announced at the annual meeting in April, 1984, and recently Louis Graham, past President, and his wife, Jean, traveled to Ken Kelly's home at Southern Pines to make the official presentation. Ken and Helen are now living in Southern Pines in retirement, and to coin a new phrase, they look "like a million dollars – in fact, two million dollars!". Ken is still active in the field of color everytime the opportunity permits, and also even more active in his favorite hobby, genealogy. Ken has promised us a biography and a complete bibliography. When these are available, an announcement will be made in your ISCC newsletter.

Ken Kelly was known for his long years of association with Dr. Deane B. Judd at the National Bureau of Standards. Ken collaborated with Dr. Judd on the method of designating colors and a dictionary of color names, circular #553 of the U. S. Department of Commerce, NBS. When subsequently supplemented with the color centroid chips, this became the basis of the Universal Color Language which Ken Kelly and the Color Marketing Group have supported so strongly. An additional comment on UCL will be made in a forthcoming ISCC newsletter correspondence covering a special contribution by Ken Kelly not previously published.

Approval of Applications for Individual Membership

The following fifteen applications for individual membership were approved at the June 9, 1984 meeting of the Board of Directors:

Mr. John Anderson c/o Boris Kroll Fabrics 41 State Street Paterson, N.J. 07501-3597	Mr. William S. Laycock EM Chemicals 5 Skyline Drive Hawthorne, NY 10532
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Mr. Walter G. Ball
1812 Sherwood Street
Allentown, PA 18103

Mr. Joseph J. Benenate
83 Burlington Street
Woburn, MA 01801

Mr. Thayer A. Brown, Jr.
433 Building, Dow
Chemical Co.
Midland, MI 48640

Mr. Stephen B. Daniel
Decorative Products Division
3M
P.O. Box 2600
Farmington Hills, MI 48018

Miss Judith Ann Frost
Box 279
4201 Henry Ave.
Philadelphia, PA 19144

Mr. William Dean Jackson
P.O. Box 1551
Bainbridge, GA 31717

Mr. David M. Johnson
491 Columbia Ave.
Holland, MI 49423

Miss Judy A. Manuel
11820 N.W. 37th St.
Coral Springs, FL 33065

Mr. Matthew J. Plaza
5423 Hauser Way
West Bloomfield, MI 48033

Mr. Edward N. Thomas
3900 South West Murray Blvd.
Beaverton, Oregon 97005

Mrs. Barbara Tiffany
323 Spruce St.
Philadelphia, PA 19106

Mrs. Amparo R. de Torres
310 S. Easton Rd. A302
Glenside, PA 19038

Mr. Dennis L. Williams
Mead Central Research
8th & Hickory
Chillicothe, Ohio 45601

NEWS OF MEMBER BODIES

Color Marketing Group

One of the younger ISCC member-bodies the Color Marketing Group, referred to as CMG, has been in existence since 1962. Befitting a youthful image, CMG is a dynamic group with imaginative approaches in new directions. With the purpose of providing mechanisms for the exchange of ideas in color marketing between its members, CMG has been constantly changing so as to keep its membership challenged and involved. If membership figures are any gauge, they have succeeded well as the group has grown steadily from 155 members in 1977 to 778 in 1984. Its members come predominantly from the U.S. and Canada and are a diverse group of color professionals ranging from stylists to scientists coming from management and technical ranks – and representing both large corporations and independent individuals.

Of CMG's many programs, a most interesting one is "Color Directions" which is designed to identify colors expected to influence the market two years hence. Each year members participate in a personal worksheet survey identifying forecast colors (new on the horizon), ascending colors (expected to increase in importance), and established colors. From these worksheets, a color palette is selected during in depth discussions at industry related workshops in the spring meeting. The final palette is then published and made available to members and, for a fee, nonmembers.

CMG holds a spring and fall national meeting and periodically presents one-day regional meetings. This year a Northeast Regional Meeting was held in Rhode Island and "The Neocon Connection" was presented in Chicago — intended to show what's new in color and design for the contract market. Another regional meeting in High Point, N.C. looked at the total home furnishings concept. A newsletter, "Color Chips" is also published.

CMG is headquartered in Washington, D.C. with Everett Call, a co-founder, as full time Executive Secretary and Janine Carey as Administrative Assistant. Jim Brown, Applied Color Systems, is the current president and Sharon de Leon, Design Portfolio, is vice president. Four others round out the executive committee who with a Board of Directors establish the operating policy. Membership is on an individual basis only and is open to all qualified persons approved by the Board of Directors. CMG members are also active with the ISCC, among them Ralph Besnoy, Ann Dillon, Anna Campbell Bliss, Barbara Schermeister and Dorothy Tricarico.

Edward L. Cairns

Detroit Colour Council

The fall program featured two unusual presentations. In September, Special Agent Jim Corby of the FBI described their techniques for identification of hit-and-run perpetrators by analysis of paint and other materials left at the scene. Both visual and instrumental analyses are utilized to identify the vehicle color and model.

In November, Matt Plaza of PPG coordinated a multi-media presentation of themes designed to stimulate color styling. Living Color, Color In Motion and Indy Car Series were three diverse viewpoints, professionally produced.

The Color Difference Committee maintained an intense schedule of meetings aimed toward recommending a test method for numerical color difference determination. The DCC plans a program meeting for early March, 1985 to report committee progress and solicit viewpoints from the public.

W. V. Longley

Dry Color Manufacturers' Association

Justin B. Arnold, Paul Uhlich & Co., Inc. Hastings-on-Hudson, NY was elected President of the Dry Color Manufacturers' Association at that organization's June 17-20, 1984 Annual Meeting at The Greenbrier, White Sulphur Springs, West Virginia. He succeeds Allan Weissglass, Magruder Color Co., Inc., Elizabeth, NJ, who will serve on its Board of Governors as Immediate Past President.

S. Paul Malchick, BASF Wyandotte Corporation, Parsipanny, NJ, and John Boehle, Ciba-Geigy Corporation, Hawthorne, NY, were elected First Vice President and Second Vice President, respectively. J. Lawrence Robinson (delegation chairman to ISCC) was re-elected as Executive Vice President and Secretary-Treasurer, and Pamela Lehr was appointed Assistant Secretary.

The Annual Meeting was highlighted by educational sessions on the 1984 election scene and a forum on trends af-

fecting color in the automotive, printing and ceramics industries.

IESNA Mission to China

The People to People Citizen Ambassador Program, inaugurated by President Eisenhower when he was in office, received a request this spring from the Peoples Republic of China to send a delegation of illuminating engineers to China this fall. The Illuminating Engineering Society of North America (IESNA) responded to the request by assembling a group of 32 engineers and 18 accompanying persons, mostly wives. The delegation left Seattle, Washington, October 26. It made an overnight stop at Narita, Japan, the new airport near Tokyo, before going on to Beijing.

Under the auspices of the China Association for Science and Technology (CAST), the group will visit with delegates from the Chinese lighting industry in five cities in China, namely Beijing (Oct 28-Nov 2), Nanjing (Nov 2-5), Shanghai (Nov 5-8), Fuzhou (Nov 8-10), and Guangzhou (Nov 10-13). The delegation will spend Nov 13-15 in Hong Kong before returning to USA.

Among the group are two ISCC members. John Kaufman, Technical Director of IESNA, headquartered in New York, is the leader of the delegation. Harry Hammond, longtime member of IES and former staff member of the Photometry and Colorimetry Section at the National Bureau of Standards, is currently Senior Scientist and Consultant to the Gardner/Neotec Instrument Division of Pacific Scientific Company, Silver Spring, Maryland, and a frequent ISCC NEWS reporter. Pauline Hammond, a cooking consultant, is accompanying Harry; so you may find a new flavor to the NEWS on their return.

The expense of citizen ambassador missions is borne by the individual participants. Since the program was founded by President Eisenhower in 1956, People to People International has assembled hundreds of missions of all kinds of citizen ambassadors to go to many parts of the world. In the past 3 years they have organized 150 missions to China alone.

If you are interested in obtaining more information about the Citizen Ambassador Program, write People to People International, Dwight D. Eisenhower Building, Spokane, Washington 99203.

TO THE EDITOR

Lightfastness?

A note to Mr. Melse, who responded to Mr. Fletcher in the July/August Newsletter about colorschemes and artists mixing paints. Mr. Melse points out that r-y-b "should be replaced by magentared-citron yellow-cyanblue. . . . but, one should take care that these colors are mostly very sensitive to light and they will lose in a short time their colors."

That may be true, but only if one refers to a specific colorant which makes those hues (right, Max?). In my own work, which involves much glazing and scumbling sometimes, I have found

that using a quinacridone red, an arylide (Hansa) yellow, and a phthalocyanine blue (green shade) applied transparently against a white ground, can produce a startling range of hues, values, and chromas. Some varieties of these colorants have been demonstrated to have very good-to-excellent lightfastness by Henry Levison for the ASTM and ISCC committees on artists' materials. See ASTM D 4302 for the list of suitably lightfast artists' colorants.

Mr. Fletcher also might check out the paintings of the Pre-Raphaelites, for a demonstration of the uses of a high-chroma, limited palette.

Whew, this is fun.

Mark David Gottsegen
Assistant Professor of Art
(ISCC 37)

Color-Matching Aptitude Test

In the recently-received summer issue of *ISCC News* is a story (on page 9) which states that "the Education Council of the Graphic Arts Industry has introduced the Color Aptitude Test for measuring color-matching ability."

Some readers, will no doubt, think this is a new development.

Actually, the instrument is the ISCC Color-matching Aptitude Test Set which the Federation has produced since the mid 50's, in cooperation with ISCC.

The Education Council of the GA Industry is one of our best customers and they recently asked us for a price discount for quantity purchase.

Frank J. Borrelle
Executive Vice-President

AIC

In 1985 the AIC will have its quadrennial meeting in Monaco. At that meeting an election will take place to constitute a new Executive Committee. The rules for that are set by the attached Art. 7 of our Statutes.

According to these rules dr. Terstiege, the present Vice-president, will succeed dr. Hunt as President. All other positions are open, however, since the Secretary/Treasurer has let it be known that he will not be able to serve another term. On the other hand, none of the other present members has made known so far a non-willingness to continue.

The Nominating Committee, in charge of preparing a proposal, invites you to nominate candidates. For your convenience I mention the constituency of the present Executive Committee:

Dr. R.W.G. Hunt – President
Prof. Dr.-Ing. H. Terstiege – Vice President
Dr. J.J. Vos – Secretary/Treasurer
Dr. F. Parra – member
Mr. U. Willumsen – member
Prof. Dr. P.K. Kaiser – member

Please, write suggestions, either from your own or from another country, before December 15th to me in my function as Secretary of the Nominating Committee.

On behalf of the Nominating Committee,
J.J. Vos,
Secretary

Article 7. Executive Committee

The executive committee shall consist of a president, a vice-president, a secretary-treasurer, and four ordinary members.

One member of the executive committee shall always belong to the member organization in whose country the next congress is to take place; the others shall each belong to one of the other national member organizations.

The executive committee shall be elected for a 4-year term commencing from the end of each congress year. The 4 ordinary members of the executive committee shall retire at the end of the 4-year period. The retiring vice-president shall automatically continue as president of the executive committee for an additional 4-year term, after which he shall retire. The secretary-treasurer shall be eligible for a re-appointment. If a vacancy occurs during the tenure of office a by-election shall be held for the remainder of the tenure.

The executive committee shall be responsible for the administration of the AIC, the preparation and execution of resolutions, elections and meetings of delegates and shall represent the AIC in any discussions or negotiations with other bodies.

MEETINGS

USNC/CIE Annual Meeting

The United States National Committee (USNC) of the Commission International de l'Eclairage – International Commission on Illumination (CIE) held its annual meeting at the Holiday Inn, Gaithersburg, Maryland, Sunday, October 21 through Tuesday, October 23, 1984. If you are not familiar with the activities of the CIE, you may not be aware that it does not publish standards as such, but the recommendations adopted by this august body in the fields of light and color measurement have been incorporated into National Standards throughout the world for the past half century.

Fifty USNC members attended the three-day meeting. The Technical Council met on Sunday morning and the Executive Committee on Sunday afternoon. Monday morning was devoted to reports of USNC officers, reports of delegates from eleven Constituent Societies and reports of Administrative Committees.

Constituent Societies presently represented in the USNC are:

American Association of Textile Chemists and Colorists
American Society for Testing and Materials
Association of Edison Illuminating Companies
Illuminating Engineering Society of North America
Institute of Electrical and Electronic Engineers
International Association of Lighting Designers
Optical Society of America
Society of Automotive Engineers
Society of Motion Picture and Television Engineers
Society of Photographic Scientists and Engineers

Society for Information Display

At the Monday afternoon session, USNC Division Members reported on the activities of each CIE division during the past year as well as proposed projects scheduled for completion before the CIE meets again in June 1987 in Venice, Italy.

Upon the close of its meeting last year in Amsterdam, The Netherlands the CIE decided to reorganize so that all its many activities would be carried on in one of seven divisions. The USNC is now similarly organized, and one USNC member officially represents the USNC on each division. The seven divisions and the USNC member of each are as follows:

Division Number	Division Name	USNC Member	Business Affiliation
1	Vision and Color	C. James Bartleson*	Kodak Res. Lab, Rochester, NY
2	Physical Measurement of Light and Radiation	Klaus Mielenz*	NBS, Gaithersburg, MD
3	Interior Environment and Lighting Design	Will S. Fisher	General Electric Cleveland, OH
4	Lighting and Signalling for Transport	Richard N. Schwab	US Dept. Transp'tn Washington, DC
5	Exterior and Other Lighting Applications	John J. Curtis	Bovay Engineers Houston, TX
6	Photobiology and Photochemistry	Paul C. Hughes	Duro Test Corp. North Bergen, NJ
7	General Aspects of Lighting	John E. Kaufman*	Illuminating Eng Soc of N. Am. New York, NY

*ISCC Members

The Monday evening dinner at the Holiday Inn was followed by an interesting illustrated lecture titled "Minimizing the Destructive Effects of Light on Museum Objects," by Edwin K. Robinson, Lighting Engineer, National Museum of American History, Smithsonian Institution. The talk was mildly technical, but it was of interest to everyone, both USNC members and wives, because the same considerations required to minimize destructive effects in a museum also apply to the home.

The constituent Society members held a breakfast meeting on Tuesday morning at which they discussed ways of increasing communication between USNC and CIE with each Constituent Society.

At the USNC meeting Tuesday morning, two new members for Life were elected, namely O. Mortenson Blackwell and George Clark. Eleven other Members for Life were present; Louis Barbrow, Fred Billmeyer, Frances Clark, Cash L. Crouch,

Charles Douglas, Warren H. Edman, Glen Fry, Franc Grum, Sylvester K. Guth, Henry Hemmendinger and Dorothy Nickerson. The 1984-85 budget was adopted and the proposed location of the 1985 meeting (State College, PA) was approved. The meeting will be held in October, the exact date to be determined later.

Membership in the USNC is open to persons working in the fields of light and color who are interested in taking an active part in the activities of the USNC and CIE. The USNC already has many members who are also ISCC members. If you are interested in becoming a member or in having your company become a contributing member, contact Dr. Klaus D. Mielenz, Secretary USNC, Radiometric Physics Division, National Bureau of Standards, Gaithersburg, MD 20899, 301/921-3864.

Harry K. Hammond III

NEW BOOKS

Theory and Practice of Color, 2nd Ed., by Frans Gerritson, Van Nostrand Reinhold Co., New York, 1983; 179 pp. Price \$40.00.

This is a handsome book, one to be studied and enjoyed. The author is a well-known Dutch designer and teacher. The subtitle is, "A Color Theory Based on the Laws of Perception." The first edition was translated into seven languages. It was extensively reviewed by David L. MacAdam in *Color research and application*, vol. 1 pg. 212, 1976. The comments of that review were evidently in the author's mind as the revision was made.

The book contains no references or footnotes nor are the concepts discussed in the light of the work of others. The translation into English is good with a few exceptions; use of the word *remission* for *reflection* is simply not proper.

The history of color theories is traced from Democritus in 440 BC through da Vinci, Newton, Young, Helmholtz, Maxwell, Hering, and Planck, to Wright and Guild. From this Gerritson has developed his own concept: the eye sees three colors, blue, green, and red. Combinations of two of these gives "special eye secondaries," cyan, yellow, and magenta. All three primaries together give white. There are not two but three modes of color combination. *Subtractive* colors are paints, overlapping four-color prints, layers of colored film, and stained glass; the mixture is always darker than the components. *Additive* colors are typically lights and TV and the resultant is of course brighter. *Partitive* colors average their brightness by optical mixing. Examples are mosaics, spots next to each other as in three-color printing, carpets, and flowers.

A color circle is constructed from transparent overlays on a white background. Starting with yellow, a layer of magenta produces red. When cyan is added ultramarine blue appears over magenta, green over yellow. The result is a circle with six segments. Complementary colors are opposite — yellow vs ultramarine, red vs cyan, green vs magenta.

Similar effects are obtained when the three "eye primaries," blue, green, and red are painted on discs which are then rotated (Maxwell discs).

A color solid is constructed using the three dimensions hue, value, and saturation. Value is lightness, in the center core, from white to black in steps of A to J. Saturation is rated from 0 to 100 outward from the center. Hue is in a conventional circle. Every hue at 100 is at its maximum saturation and all are equidistant from the center. However, since values vary up and down, the periphery of the maximum saturation circle is at different heights – it is a bowed line, highest at yellow, lowest at ultramarine blue.

It would be interesting to learn what virtues the author feels this system has over Munsell or CIE other than its basis on "Eye primaries." There is no hint as to assigning numbers to any specific shade or location. He does believe that a total of nine million colors are possible.

There are a number of overlays and illustrations showing the effects of nearby colors upon a shade. Depending upon the circumstances, the apparent value, saturation, or hue may be changed. Even the shape of a figure may seem to be altered by its surroundings. These considerations are important to painters and designers. After-images also receive attention; surgeons dress in green to neutralize the after-image of blood.

Night lighting as on a ship's bridge or air control tower should be at the long wave lengths (red) to minimize the difference in eye adaptation between inside and outside viewing.

A number of other color concepts are named but not discussed: successive contrast, fluorescence, metamerism, texture, and reflections.

The subject matter of this book is well supplemented by color illustrations. In addition there are reproductions of works of art. The collection starts with the Altamira cave painting, 32 millenia old, includes Etruscan and Greek mosaics, and brings us up to date with paintings by van Gogh, Dufy, Signac, and Chagal. One feels that the author likes to be surrounded by beauty.

Thomas G. Webber

Vision and the Visual Display Unit Work Station (CIE Publication No. 60)

A Report, in English, concerning "Vision and the Visual Display Unit Work Station" has been published by the Commission International de l'Eclairage (CIE Publication No. 60). The report examines the nature of work using visual display units (VDUs) and offers guidances on the most suitable visual conditions for such work. The report is divided into three parts as follows:

The first part of the report examines the nature of VDU work. It is concluded that the visual task undertaken by VDU operations are essentially similar to conventional office work. However, the quality of the VDU display and the interaction of the display with the keyboard and any source documents, and with the visual environment in which the VDU is placed, can have important effects on the visual difficulty and hence performance of the task.

The second part of the report discusses the health aspects of VDU work. It is concluded that the most commonly occurring health aspects are some form of eyestrain and occasional aches

and pains. The possibility that electromagnetic radiation emitted from VDUs may cause cataracts is dismissed.

The third part of the report considers the visual requirements of VDU work on three sections: the VDU itself, the visual environment in which it is placed and the visual capabilities required of a VDU operator. Detailed advice is given on suitable display and keyboard characteristics, on overcoming the problems of luminance imbalance and high luminance reflections in interiors and on such visual capabilities as the distances over which accommodations is necessary. The report is completed by a checklist which can be used to assess VDU installations.

Copies of this document, CIE Publication No. 60, may be obtained at \$25.00 each, or \$20.00 each for USNC members from:

Dr. Klaus D. Mielenz
Secretary, U.S. National Committee, CIE
Room B-306, Metrology Building
National Bureau of Standards
Gaithersburg, MD 20899

Payment should accompany the order and be made payable to "U.S. National Committee, CIE." Canadians may obtain copies by sending a check payable to "The Receiver General of Canada, Credit National Research Council" with their order to "Publications Distribution Office, National Research Council of Canada, Ottawa, Ontario, K1A 0R6".

PRINCIPLES OF COLOR TECHNOLOGY

The Philadelphia College of Textiles and Science will hold a course March 11-15, 1985, in Philadelphia covering the principles of color technology. The course is designed to be an introduction to the elements of color technology and color matching necessary in current industrial applications. It is oriented toward people involved in the design, development, manufacture, production and quality control of products of which color is a vital component.

The course will include various demonstrations, problem sessions and "hands-on" use of modern colorimetric instrumentation. Completion of this course should give individuals a working knowledge of color science and aid them in solving problems that arise in many industrial situations.

The instructors for the various topics to be covered are all experts in their respective areas. Included among the speakers are Mr. Ralph Stanziola (Applied Color Systems, Inc.), Dr. Henry Hemmendinger (Color Laboratory), Mr. Roland Connelly (Burlington Industries, Inc.), Dr. Nancy Howard (PCT&S) and Dr. Mendel Trachtman (PCT&S).

To register for the course and for further information please contact Principles of Color Technology, Dept. of Chemistry & Physical Science, Philadelphia College of Textiles and Science, Philadelphia, PA 19144.

EXHIBITIONS AT THE ART INSTITUTE OF CHICAGO

DEGAS'S CONTEMPORARIES AND FRIENDS displays approximately 120 prints and drawings by 19th-century French

artists.

STEBEN GLASS: THE CARDER YEARS. A Chicago Collection features examples of gold Aurene and Verre de Soie glass, invented by the founder of the Steuben Glass Works, Frederick Carder, September 8-December 2.

CALENDAR

AATCC

Color Symposium, March 20-21, 1985, Charlotte, NC

AIC

International Congress Colour 85, June 16-22, 1985, Monte Carlo

CANADIAN SOCIETY FOR COLOR

Annual Conference, May 23-24, 1985, Niagara-on-the-Lake, Ontario

ISCC 1985 ANNUAL MEETING

April 14-16, Sheraton Station Square Hotel, Pittsburgh, PA

ISCC 1985 WILLIAMSBURG CONFERENCE

"Color: Then and Now," February 11-13, 1985

SOCIETY FOR INFORMATION DISPLAY

Conference on Colour in Information Technology, March 26-29, 1985, University of Surrey, Guildford, Surrey

MERRY CHRISTMAS & HAPPY NEW YEAR from Mary Ellen Zuyus, Ye Editor, and Mimeoform Service, Inc., Ye Printer, to all the Member-Bodies and individual members of the ISCC!

PANTONE, INC. COLORS NEWSLETTER

A very generous donation of paper and color printing from Pantone, Inc. has restored the color spectrum to the front page of the NewsLetter. The ISCC Board of Directors wishes to express its thanks to Pantone, Inc. for this tangible expression of support and help.

1. Any person interested in color and desirous of participating in the activities of the Council for the furtherance of its aims and purposes . . . shall be eligible for individual membership (By-Laws, Article I, Section 2). Application forms for individual membership may be obtained from the Secretary (address given above).
2. The Council promotes color education by its association with the Cooper-Hewitt Museum. It recommends that intended gifts of historical significance, past or present, related to the artistic or scientific usage of color be brought to the attention of Cooper-Hewitt Museum, 9 East 90th Street, New York 10028.

Deadlines for submitting items to be included in the NewsLetter are: February 15, April 15, June 15, August 15, October 15, and December 15; in other words, the fifteenth of the even-numbered months.

Send newsletter items to:

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