

M. Balcon

# INTER-SOCIETY COLOR COUNCIL

## NEWS LETTER

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NUMBER 186

January-February 1967

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### INVITATION TO C.I.E. DELEGATES

The following invitation has been extended by  
W. L. ("Dusty") Rhodes for the ISCC.

Delegates of C.I.E. attending the 1967 Meeting in the U.S. are invited to also attend the Annual Meeting of the Inter-Society Color Council. The Meeting will be held at the Statler Hilton Hotel in New York City, June 12, 13, 1967.

These dates were selected to make it convenient for foreign visitors who will participate in the C.I.E. to also attend the ISCC Meeting.

The subjects and speakers for the Meeting were specifically selected to interest you and your associates.

In a few weeks we shall send you more complete program and an application.

The program will include these events:

Monday, June 12, 1967

Problems Subcommittee Meetings

(Interested individuals invited to attend)

Tuesday, 9:30 a.m., June 13, 1967

Short Business Meeting

Invited Lecture, 11:00 a.m. The Perception of Color

Mr. Ralph Evans

Tuesday, P.M.

Seminar on Metamerism: Chairman, Gunter Wyszecki

Dr. Eugene Allen

Mr. Isadore Nimeroff

Dr. A. Brookes

Mr. ^Walter Granville

Tuesday Evening - Reception and Banquet

Banquet Speaker, Dr. W. D. Wright

We invite you to join ISCC Members in this social and intellectual event. We look forward to meeting you.

REPRINTS ENCLOSED  
WITH THIS ISSUE

"Methods of computing ink amounts to produce a scale of neutrals for photomechanical reproduction", by Irving Pobboravsky.

"Precision, accuracy, and validity of instrumental color measurement", by Fred W. Billmeyer, Jr.

DAVIDSON AND HEMMENDINGER  
RECEIVE BRUNING AWARD

The many friends of Hugh Davidson and Henry Hemmendinger were pleased to hear that they jointly received the Armin J. Bruning Award by the Federation of Societies for Paint Technology at its annual meeting in November, 1966 in Washington, D. C.

The Bruning Award "for the most outstanding contribution to the science of color in the field of coatings technology" was established in 1962 by John W. Masury and Sons of Baltimore, Maryland. The Award was given to Davidson and Hemmendinger as a team effort in this field.

The inscription on the Award read, "For their untiring effort in the education of those concerned with the practical application of the principles of colorimetry".

All those who have had the pleasure of associating with Hugh and Henry, who have been active for a long time in ISCC affairs, will agree that the inscription on the Award was most fitting.

SJH

J. P. GUILFORD RECEIVES  
CREATIVITY AWARD

The American Psychological Association recently presented its first Richardson Foundation creativity award and a \$5000 honorarium to J. P. Guilford, a professor in the psychology department at the University of Southern California and a past president of APA. The award cites him "for stimulating, revitalizing, and facilitating psychological research on creativity" through his research on measurement of personality traits and intellect basic to originality.

The award was created last year when the Richardson Foundation gave APA a grant to provide a prize for the next five years for "the most outstanding contribution during the preceding year or recent years toward improving the means of identifying creative and innovative talent or developing or utilizing such talent".

Prof. Guilford formerly served as an APA delegate to the ISCC and was a pioneer in the psychometrics of color.

HOWARD KETCHAM AWARDED  
HONORARY DEGREE

In awarding a Master of Science degree to Howard Ketchum, President Charles W. Cole, of Amherst College, made the following citation.

"Howard Ketcham, graduate of Amherst in the reduced but distinguished class of 1925, you carried your studies further at the New York School of Design and at Columbia University. Your college contemporaries so enjoyed your cartoons in the Lord Jeff that they would have expected you to exploit your artistic talents, but they could scarcely have predicted that you would originate the profession of color engineer, first in the employ of the

Dupont Company and then as an independent consultant. During World War II you put your skills to military use by creating for the Navy camouflage colors for advanced bases. To you we owe colored telephones as well as more attractive automobiles, boats, prefabricated houses, airplanes, railway cars, blankets, tooth-brushes and a hundred other products. You achieved the seemingly impossible when you invented a technique for transmitting colors by cable or wireless. In your books you have shared your vision of a brighter world with both homeowners and businessmen. It is no exaggeration to say that through your knowledge and your research you have made American life more cheerful, more tasteful, and by a wide margin more colorful."

EWENS ELECTED NATIONAL  
COUNCILLOR FOR IES

Miss Gwenyth Ewens, ISCC member from Australia, has just been elected a National Councillor for the IES. She is the only qualified female

illuminating engineer in Australia.

ALLIED CHEMICAL RECEIVES  
FLYNN AWARD

Allied Chemical Corporation has received the C. Homer Flynn Memorial Award from the Federation of Societies for Paint Technology

for its exhibit at the Paint Industries Show in Washington, D.C., Nov. 2-5, 1966.

The annual award, presented to the company having the show's best exhibit from the standpoint of technical excellence, education value and appearance, was given to Allied's Industrial Chemicals Division at the Federation's annual luncheon meeting by Frank Liebold, chairman of the awards committee. William C. Parle, general manager of Allied's Harmon Colors department, accepted the plaque in behalf of the corporation.

Allied's exhibit demonstrated its future computer color-matching service for the coatings industry. With a direct hook-up to an IBM computer located in New York's Time-Life Building, the company performed the first public demonstration of computer-controlled matching of pigment colors in the United States. This preview, representing the beginnings of a general program for colorant formulation, was limited to a small group of colorants used in a latex paint vehicle.

Booth visitors could select pre-measured samples or could supply their own samples or measurements from their own laboratories for demonstrations of the color-matching service. On-the-spot measurements were made using an IDL "Signature" Model D-1 "Color-Eye" colorimeter-abridged spectrophotometer. Entry into the color-matching program was made through spectrophotometric data at 16 wavelengths, entered onto punched cards and transmitted to a central computer by means of a remote access unit located at the booth.

The exhibit was supervised and coordinated by ISCC Director Max Saltzman, who described the performance of the color-matching service, in preliminary tests, to your reporter as follows:

Starting formulations are computed to be within 1 Adams color-difference unit of the data entered. If the appropriate colorants to make a spectrophotometric (invariant) match are in the "library" of the computer, spectrophotometric

curve shape is quite good and metamerism is low. If the right colorants are not available, the computer reports no match possible with available colorants.

Tests of the computed formulations have shown them to lead directly to a satisfactory match in some cases, with only one further adjustment required in others.

F. W. B.

#### IDS A ELECTS OFFICERS

Robert Hose, Consulting Designer, Robert Hose Associates, Summit, New Jersey, was elected President of the Industrial Designers Society of America, for a two-year term. The outgoing President, Joseph M. Parriott, Chairman, Department of Industrial Design, Pratt Institute, New York, became the Chairman of the Board.

Three members of ISCC were also elected to office: Olle Haggstrom, Manager, Industrial Design, General Electric, Bridgeport, Connecticut, was re-elected as Treasurer; Benjamin Werremeyer of Chicago, and Robert Redmann, University of Bridgeport, Bridgeport, Connecticut, were chosen as two of five Regional Vice-Presidents.

#### FLIGHT FROM COLOR?

The following article is reprinted with permission from the July 4, 1966, issue of Advertising Age. Copyright 1966 by Advertising Publications, Inc.

#### More About the Flight from Color

By E. B. Weiss

My Advertising Age column for April 18 was entitled "A Flight from Color," and had as its basic premises:

1. When a fashion trend cannot continue to move dynamically in the direction it has been following-because it has about reached the end of the line-then that fashion trend will be reversed.

2. I discern a trend away from color because color, in some of its applications, may be close to the end of the line. We've been on a color rampage for some years. Now that just about everything is colorful, including television, it seems to me that a "no color," or, more likely, a subdued color trend is entirely probable-not necessarily in all merchandise lines, but certainly in some, and perhaps in many.

I pointed out that one of the more visible indications of this trend is the developing importance of white shades in women's hosiery. Even lipstick and certain eye makeup have been tending toward white. Equally important-and maybe more important-Tiffany is going all out in its development of white and "non-colors." For example, in its current table settings, Tiffany is showing pristine white china, crystal clear table and glassware, and monochromatic color schemes in which color, obviously, plays a subdued role. Clearly, Tiffany is moving away from color. Tiffany now believes that "white is right."

I note also that Jensen's, in its merchandise displays, seems to be leaning more emphatically in the direction of white and black.

Then I raised the question: Are we witnessing something of a small, but perhaps growing revolt against the fantastic proliferation of color, and especially strong and even violent color, in every conceivable item of merchandise, in packaging, etc.? I say "yes."

About two months after that column appeared, the Wall Street Journal published a news roundup entitled: "Color It Colorless: Black and White Gain in Fashions and Homes."

Said the Wall Street Journal, ". . . the days of the chartreuse refrigerator, shocking pink convertible and apple green bungalow may be numbered. Already, there is strong evidence that many people are getting bored with bright colors. Du Pont says that in both its Lucite wall paints and house paints, the leading seller is World's Fair White. 'White to beige now is most popular in ready-to-wear for women,' says a fashion expert, and a stylist for J. P. Stevens & Co. says that 'light and off-white hose now are the most popular'."

Another noticeable retreat from brightness has occurred in women's cosmetics. "Pale, pale colors are 'in' with lipstick and nail colors very light," says Lorein Irely of Revlon Inc. Revlon has introduced several grayed-down eye shadows that it calls "no-color colors." Robert Kingsley, president of Lilly Dache Cosmetics, calls the move toward colorless cosmetics the "blah" look, and executives of Clairol term it the "pale, silver look."

The home, too, is becoming starker. Builders say home buyers no longer are very interested in brightly colored bathrooms, and a color consultant for Du Pont claims "appliance manufacturers are ditching yellows, pinks and blues." He adds: "For interiors, the use of pastels—a trend that got its impetus in 1954 and peaked a few years later—will continue to dwindle."

And this month Bigelow-Sanford, the carpet company, is introducing a black-and-white carpeting that it calls Domino. A Bigelow spokesman says that "darker colors are tops in fashions and home furnishings."

I'd be the first to admit that these examples could wind up as merely a few accidental straws in the wind. However, logic seems to suggest the conclusion that, at least for the time being, color has been over-emphasized and over-used—and, in the world of fashion and design, that which is over-emphasized and over-used invariably tends to become passé.

I believe, therefore, that we are now beginning to witness a move away from color. Obviously, this trend will not be equally evident in all merchandise lines. In fact, in some merchandise lines, color may be more emphatically used over the next year or two than ever before. However, on balance, there is solid reason to conclude that color will be used less extravagantly, less violently, and that the "in" group both in the fashion-design world and among smarter shoppers will tend away from color in its current manifestations and will tend toward white, black and the more subdued colors. #

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In Color Cogitations, news letter of The Color Association of the United States, Inc., Midge Wilson, executive director of the Color Association and chairman of its delegation to the ISCC, reports:

"The other day someone wrote a piece about the revival of black and white as a retreat from color. It was interesting reading, but failed to grasp the tenor of the times. It is true that white and black combinations are prevalent--offshoots of the OP ART influence, but we've had black and white for ages. They make an impact now because they are

seen in a setting of vivid color. In the days of our dreary, neutral world they scarcely caused a murmur!

"There are even more potent reasons for the strength of white with black. It is part of the whole color picture and what is occurring. It is related to our consuming passion for more and more; bigger and bigger; faster and faster! White (the presence of all colors) is perfectly balanced by black (the absence of all colors)--marking the extremities of all of the colors that are or ever shall be."

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In an article in American Builder, August 1966, Beatrice West, chairman of the AIID delegation, made some comments about color trends that are also apropos. She reported that in 1946 the reaction to color was spectacular, that deep and vivid colors became prominent. This era was followed, in 1952, by a "pastel era", which lasted until 1963. The use of pastels has now diminished, and the use of strong colors is increasing, "with off-white spreading into every field".

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Perhaps the whole subject matter can be clarified by recent findings at Yale University. (Our source is an article by John E. Gibson in Today's Health, March 1967, via W. C. Kiernan.) The tests at Yale are reported to show that "bright" colors dull one's wits. Mental activity from the highest to the lowest levels--problem-solving, decision-making, or "scintillating" at a party --are all said to be affected. Red was found to be the biggest villian, with green next. The more these colors predominated in a room, the greater was the emotional stimulation and hence, presumably, the greater the interference with reason and memory.

PDC TO AID GOVERNMENT  
IN FAIR PACKAGING AND  
LABELING

(News release from PDC) Marked by an atmosphere of cordiality and optimism, representatives of the Food & Drug Administration and the Federal Trade Commission met with a Package Designers

Council delegation, headed by Karl Fink, President, for a seven-hour session in New York on Thursday, February 16th.

Shouldered with the responsibility of writing workable regulations for the administration of the recently enacted Fair Packaging & Labeling Act, the FDA invited PDC, the nation's professional society of industrial designers specializing in package design, to share its expertise with the government.

Because the Act becomes effective July 1st, and because its ramifications will have a considerable affect on a majority of consumer goods, both agencies and the professional designers are anxious to come up with regulations that will truly help the public obtain the best value for its shopping money.

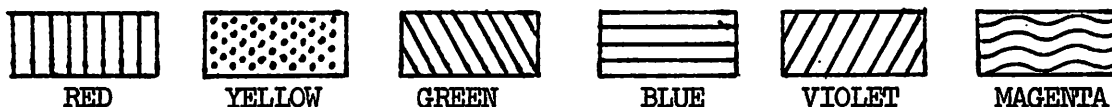
Representing PDC were: Royal Dadmun, Robert Sidney Dickens, Karl Fink, William N. Gunn, Seymour Murray Kent, Russell Sandgren, Norman A. Schoelles, Walter Stern, and Walter J. Young, Jr.

**COLOR IN BLACK  
AND WHITE**

A black and white coding system for colors has been invented by Don F. Hill, Individual Member from California. According to Mr. Hill, whose interests embrace "visual music" and color science, the code of only six symbols can be used effectively to describe at least 200 colors. Several ISCC members have found the system interesting and potentially useful. Mr. Hill's description of his system follows.

"The following is a system of six code symbols which enable at least 200 colors to be represented in black and white, and is the inspired invention of Don F. Hill.

"Five of the symbols are the familiar ones of medieval heraldry; namely, red, yellow, green, blue, and violet. The symbol for orange was dropped and a new one for magenta was added to give the six hues used in modern color-printing and color photography: magenta, yellow, and blue primaries; red, green, and violet secondaries. (For easy memorizing, in spectrum order the two symbols with diagonals toe in to the blue symbol for memorizing.)



"The medieval symbols were a collection without system. Heraldry Orange, for example, contained horizontal lines hatched with diagonal lines. This would be read as a mixture of blue and green if the lines really meant anything individually, but the symbols of heraldry were not meant to be mixed; hence, each new symbol had a meaning of its own without regard for previous symbols. This hampered modern additions.

"By dropping orange, we may still obtain it by mixing the red and yellow symbols. Heraldry called its symbol purple instead of violet, but this minor change of names is of little consequence in view of their similarity. However, violet and magenta will make purple, so their symbols can be combined if we must definitely have purple, too.

"With the six basic symbols above we have a means of mixing symbols the way we mix colors in paints. Only one new addition (magenta) makes them easily learned without confusion.

"By using the six symbols with more widely spaced lines or dispersed dots, we can indicate pastel hues. Using broken lines and fewer dots, we obtain pale tints. This enables us to indicate proportionate amounts of hues so that we may make several intermediate mixtures between red and yellow, for example, having greater or less amounts of one or the other. By this process, a hue wheel of 24 pure hues can be created.

"By using heavy lines or dots, wide spacing will produce deep hues, and regular spacing with heavy lines will produce dark shades.

"For gray, we need only remember that a scarlet red and cyan blue in paints will mix to a neutral gray. When we combine the red and blue symbols we obtain a cross-hatching of vertical lines with horizontal ones. Wider spacing with heavier lines will indicate a darker gray. Regular spacing with heavy lines will provide a darker gray yet. Still

heavier lines, so that the white square spaces become tiny dots, will show a very dark gray. Black is blacked in solid, of course.

"Gray is made lighter by wider spacing; lighter still by breaks in the lines so that they look like crosses alternating by rows. Fewer crosses indicate light gray tints. White is a black, of course. Visually, these give a nice value scale of 9 steps.

"These crosses of gray can be interspersed between the lines and dots of hues, tints and shades to indicate toned hues, toned tints, toned shades, and neutral tones.

"The best feature of this system is being able to read and analyze any new symbol."

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Mr. Hill, will, I'm sure, welcome comments. (Ed.)

CLEMSON ANNOUNCES COLOR  
MEASUREMENT SEMINARS

The following news release has been received  
from the Clemson University News Bureau:

Two color measurement seminars, featuring scientists from the nation's leading research laboratories, will be held at Clemson University in the spring and summer of 1967.

The duplicate seminars, sponsored by the School of Industrial Management and Textile Science, will be conducted May 8-12 and July 31-August 4 in Sirrine Auditorium.

Outstanding authorities in the field of color and colorants will lecture on the physics and chemistry of color measurement and color control by means of spectrophotometers, colorimeters and computers for use in the research laboratory and the plant.

The lecturers are scientists representing such companies as Allied Chemical Corp., American Cyanamid Co., Union Carbide Corp., Derby Co., Instrument Development Laboratory, and Davidson and Hemmendinger.

When Clemson University initiated its opening color measurement seminar in the summer of 1965, it was the first of its kind supported by leaders in the field in 20 years. Another seminar was conducted last summer, with a limit of 35 participants attending each event.

The 1967 seminars will be limited to 40 participants each session.

The seminars are primarily designed for dye chemists in the textile field. However, the principles involved pertain to any colored material, including pigments, plastics, paints, paper, and wood.

Harry J. Keegan, J. E. Sirrine visiting lecturer in textile science at Clemson University, is seminar coordinator. Mr. Keegan, noted authority in the field of color measurement, was a physicist with the National Bureau of Standards prior to coming to Clemson.

Detailed information and application forms may be obtained by addressing:  
Color Measurement Seminar, School of Industrial Management and Textile Science,



Clemson University, Clemson, S. C. 29631.

(Ed. Note: a brochure is enclosed with this issue of the N.L.)

FOURTH ANNUAL CVS  
SYMPOSIUM AT ROCHESTER

The Fourth Annual Symposium of the Center for Visual Science will be held in Rochester, New York, on Friday, June 9 and Saturday, June 10.

The symposium will be concerned with "Centers for Visual Research in the United States of America". Representatives from a number of major centers will describe their physical facilities, the kind of research done there, who does it, and will include some mention of the administrative arrangements that make the research possible. They have been instructed to give a talk "profusely illustrated with color slides to give a rich visual impression of what the facility looks like". They will also report on one or two of the most important research results to come from their laboratories in the past year or two.

This will be an open meeting which will not be restricted to those who take the CIE Vision Research Tour. The facilities of the Center for Visual Science at the University of Rochester will be open for inspection during the time of this meeting.

PROGRAM ON FORM  
AND COLOR AT M.I.T.

This Special Summer Program on Form and Color will be held July 17-28, 1967. It is described as follows in the announcement received by your editor.

"This Program is based on the idea that color is the ultimate means of achieving visual synthesis of form. Understanding color relationships in both two and three-dimensional form has in the past been largely intuitive in approach. Now, analytical methods of relating color to form are necessary in resolving ever increasing complex form problems. Form and Color is in essence an analytical approach to the use of color in the ultimate clarification and refinement of form, both at the object and the architectonic scale.

"The Program material will be presented through lectures and color diagrams and will explain the influence of color on proportions, transitional effects, color and surface--depth, influence of color on periodic patterns, color and natural form, effect of color upon specific quantities, influence of color on inherent geometric relationships of volumes, the role of color in structures and spatial organizations, color relationships of object to environment, and the study of black and white vibrancy through a systematic method.

"This Special Summer Program is offered to members of the product design and architectural design professions. It will be under the direction of Professor Richard Filipowski, Visual Design, M.I.T. Department of Architecture."

THE COLOUR GROUP  
(GREAT BRITAIN)

As reported in the preceding issue of the ISCC N.L., a symposium is to be held on April 6th and 7th at Imperial College, London. The symposium will cover such aspects as "Instrumentation and Working Standards", "Illuminants and Effects of Colour Vision", and "Colour Difference Specification, Formulae, and Tolerances". Also included in the symposium will be an exhibition of colourimetric apparatus.

A course on Colour Measurement is to be given at Paisley College of Technology on 11th - 13th April 1967. The course is designed as an introduction to the use of colour measurement in industry.

A new publication, called Colour, by the British Colour Council was announced for January. A controlled circulation journal, it will be published quarterly and will deal with the application, technology, and psychology of colour. The annual subscription rate is 25/.

Meetings of the Group not previously noted in the ISCC N.L. are as follows:

Dec. 7, 1966 -- "The Quantitative Assessment of Apparent Brightness" --  
Dr. C. A. Padgham.

"Measurement of Colour Appearance" -- Dr. R.W.G. Hunt.

Jan. 4, 1967 -- "Damage by Light in Museums" -- G. Thomson and  
N. S. Bromelle.

Feb. 1, 1967 -- "Colour Match Prediction" -- (speakers to be arranged).

Mar. 16, 1967 -- "Aesthetics of Colour" -- R. W. Pickford.  
(In Scotland) "After-Images and Colour" -- J.R.H. Smith.

"Colour and Design" -- I. McIntosh.

THE COLOUR COUNCIL OF  
CANADA (TORONTO REGION)

Leonard A. Wheeler, editor of Colour Comments,  
reports that the January meeting featured  
"Kaleidoscope" by Morley Markson and

Associates, "who created and designed this most unusual pavilion for Expo '67. ....the presentation was made with transparencies and full colour movies and easily demonstrated how the reviewer of this unique exhibit will become involved environmentally and emotionally. The presentation convinced most of the audience that a trip to Expo '67 will be well worthwhile, even if only to see this one exhibit."

Subjects and speakers for February and March were reported as:

Feb.: Color Filters, by Frank Royal

Mar.: Macbeth Light, by J. E. McCutcheon

#### BOOK REVIEW

#### OPTICAL MEASUREMENTS IN THE PRINTING INDUSTRY

by J. M. Adams, Pergamon Press, New York, N.Y. Pp. VII  
plus 167 - Price \$3.95.

This is a paperback, 5" x 8", volume in the Commonwealth and International Library Series. Its author is the Head of Optics at the Printing, Packaging, and Allied Trades Research Association (England).

The contents and objectives for this book are well described by its back-cover story: "Describing the measurements that might be considered by the printer concerning the materials with which he works, this book is intended to be complementary to an intermediate level text book on geometrical and physical optics. While a chapter is devoted to measurements of depth and smoothness,

the main body of the book is concerned with measurements designed to correlate the visual characteristics of materials; their color, gloss, and opacity. There is greater stress on the psychophysical aspects of optics than in most books written at this level. The special features of the book are those sections dealing with the magnitude and causes of errors in colorimetry and the colorimetry of fluorescent materials. Also, the correlation of optic measurements with visual assessments of appearance is described. This book will be invaluable for those working in printing departments of Arts Schools, and Technical Colleges; also it would be most useful as a reference work in all printing firms."

The author has come very close to meeting these objectives. The topics selected give a good representation of optical measurements in the printing industry. The book is concise and well illustrated (about every other page). Each of the 12 chapters contains references and bibliographies for further reading. A small but adequate index is contained in the back of the book.

As might be expected in a somewhat popular treatment of the optical properties of printer's materials, brevity and oversimplification could, in some instances, cause confusion to a reader who does not have access to the reference materials. The following are some of the items where confusion might easily arise:

Page 9 -- The first formula represents the actual distance of the light path; the second formula applies a correction for refractive index without mentioning this difference.

Page 24 -- This formula is oversimplified: multiple, internal reflections and increased path length due to angle of incidence have been disregarded. Their effects are not negligible.

The definition of transparent as given is incorrect. The accepted meaning, and also Figure 3.3 do not imply absence of first surface reflection. This has led to misleading statements about the opacity of litho and letterpress on Page 26. Ink opacity implies that scattering of light takes place in the body of the material.

Page 25 -- Density is linear with visual appearance only over a short range.

Page 26 -- Fresnel reflection from the upper surface is always appreciable.

Page 27 -- Metallic luster is due to high directional reflectance, not to opacity. A black enamel doesn't look metallic, but a pile of thin sheets of clear plastic does.

Page 29 -- There should be an infinity sign subscript to the first R on the right hand side of the Kubelka-Munk equation.

Page 51 -- In practical work, the densitometer is usually zeroed on either the emulsion base plus fog or with no film in the instrument.

Page 86 -- The supplementary beam on the right hand side of Figure 7.2 should be added to the light reflected from the sample, not to the light incident on it.

Page 112 -- The statement that the DIN color solid uses spherical coordinates is incorrect.

Page 123 -- The conclusion that magenta ink densities should be measured with blue light is due to the use of reflectance rather than density spectrophotometric curves, and to neglect of the fact that the function of the ink is to absorb green light.

The above faults are quite minor and do not seriously detract from the value of this book. The reviewer feels that this volume will be of particular value to engineers and technologists new to a printing plant. It will give them a brief, yet understandable, introduction to the optical properties of materials used in the plant.

This volume should also be of use to anyone interested in being quickly apprised of the general types of optical measurements in the printing industry and for such use can be highly recommended.

George Jorgensen

COLOR IMPACT IN  
ADVERTISEMENTS

Frank C. Wright, Executive Vice President of the American Artists Professional League and chairman of its delegation to the ISCC, has provided the following interesting statistics on color impact in advertisements. The data are from recent work of the Daniel Starch organization, as reported in the Wall Street Journal.

In newspapers, one-color readership was 22% higher than black and white, while three-color ads were 68% higher. In magazines, readership of four-color ads was greater than that of black and white by about 50% to 85%, depending upon size. Inquiries produced by four-color ads were 45% higher.

FRANK J. REILLY DIES

The following fine tribute to Frank J. Reilly was provided by Henderson Wolfe in a letter to your editor.

"As I sit here, staring sadly at my typewriter, I wonder how, in a few sentences, I can possibly express my sorrow at the passing of my good friend of many years, Frank J. Reilly (New York City, January 15, 1967).

"The long list of the societies he served so well simply adds to my grief. I know too well with what competence he would have served the ISCC, which he recently joined.

"Of his achievements as an art teacher, I can write more assuredly, for I was one of his pupils. During the years when the art world was treated to a curious extravaganza called 'abstract expressionism' he continued to teach, with his unique mixture of science and humanity, the truths of nature and familiar appearances.

"He taught drawing and painting, and values and color, for 28 years, at the Art Students' League of New York, the largest independent art school in the world. His classrooms were always jammed to the doors; it is said that, in all, he had more pupils than any art teacher in history.

"Asked how many of them became professional artists, he replied, 'about one in ten thousand'. The truth is, however, that a complete list of his students would comprise a blue-book of American commercial art.

"His humor never failed him. Of the abstract painters, whom he inspired to new heights of abuse, he said, 'I notice they're always first in line on payday'.

"He taught the Munsell system of colors, recognizing in the old master the taste and integrity that he himself possessed.

"If these qualities are immortal, then Frank Reilly is immortal, too. May his great soul rest in peace."

Dorothy Nickerson, who also knew Mr. Reilly, has provided additional interesting information about his career and accomplishments:

"In his early teaching days he developed a series of color charts for use in teaching color order and color scaling. He even developed a notation so similar to the Munsell that when he first ran into the Munsell system he could hardly believe it, for he had been working so closely along the same lines. Since the Munsell system and charts already were available, and were being studied colorimetrically and improved at the time, he gave up all thought of publishing the so-similar method he had developed on his own, and expressed enthusiasm for the fact that they were already available. I remember a meeting with him in his studio, to which several members of the ISCC Executive Committee had been invited, perhaps others -- I believe Deane Judd, Ralph Evans, and Blanche Bellamy were present. He showed us many of his early charts, and we discussed methods of studying and demonstrating value -- in charcoal studies, with use of shadows. Many things about teaching color were discussed, for he had been invited to open the color session of the February 22, 1947 meeting of the Optical Society with a paper which he gave under the title: Light and Shadow and Its Representation.

"(In going back to check on this meeting, and its subject, I came across references to another meeting -- this time of the full Executive Committee of the ISCC -- held in Boston, June 29, 1945, in order to accept an invitation of Prof. Arthur Pope to meet with him at the Fogg Museum in order to hear and see something of the methods used in teaching at the Fogg Museum School. The conference was most successful in giving the committee the picture of a very clear and useful course on color, including several ideas new to most of the group, yet nevertheless very well accepted. A report of the substance of Prof. Pope's presentation was prepared for News Letter No. 60 by Dr. Godlove, and a further item about concepts and discussions presented by Morton C. Bradley were written up in some detail for No. 61. We were trying in those days -- and trying very hard -- to bridge the gap in color thinking between the esthetic and scientific fields, and in such men as Pope, Bradley, and Reilly -- all in the art and art teaching field -- we had high hopes, for we found communication quite direct and satisfactory. It is my hope that we shall have much more of this in the future.)"

WALT DISNEY:  
ENTERTAINER NONPAREIL

The encyclopedia and other biographical sources list Walter E. Disney as a producer, but he produced entertainment--delightful entertainment

in unparalleled amounts. It is true that his entertainment was often beautiful and frequently informative, but colorful, lively fun for all was Walt Disney's forte.

In spite of the fact that I thoroughly enjoyed Walt Disney's work for nearly forty years and knew, of course, that he made very effective use of color in

most of it, I must confess that I had no thoughts of a tribute to him in the pages of the N.L. After all, he was not a member of ISCC and, to my knowledge, had written no learned papers on the subject of color. It took a letter from a long-time ISCC member (H. S. Busby), via Dorothy Nickerson, to set me straight. Mr. Busby wrote:

"I think that the impact that Walt Disney's work has made in the application of light, shade, color and its relationship to life should be recognized, appropriately, by the ISCC. From 'Snow White', through 'Fantasia', down to 'Mary Poppins', and all his other works, no one has done as much to reveal the meaning of color as he has, even though much wordy theory has been written about it.

"It is, I think, significant, that such well-known newspapers as the New York Times, the Christian Science Monitor, and the Wall Street Journal found space to comment on it, at length. Can we do less? I think we should do more--get out a genuine and appreciative 'memorial' for him and his works."

While this article is probably nothing like the memorial that Mr. Busby had in mind, it will, I hope, provide some insights into Disney and his work, for some readers, at least. Since biographical data are readily available, I have selected only a few items that were interesting to me. His many awards and decorations (more than 800, according to Who's Who in America) are far too numerous to list in these pages and are already well documented. His many wonderful films and characters are well-known, I believe, to everyone, but if there are readers to whom they are not familiar, a listing here would be of little consequence. Therefore, with only a brief biographical sketch intervening, I have devoted the rest of this article to relevant selections from The Art of Animation, which provides an intimate picture of Disney and his artists at work.

Walter E. Disney was born in Chicago in 1901, but grew up on a Missouri farm. His formal art instruction comprised only brief courses at the Chicago Art Academy and at a Kansas City Art School. After serving as an ambulance driver in World War I, he worked briefly as a commercial artist before becoming a cartoonist. He turned to producing in 1923 with a series of Alice Comedies. He formed and became president of Walt Disney Productions, Limited, in 1928. Then followed Mickey Mouse, the Silly Symphonies, Donald Duck, and myriad other Disney films and characters.

In The Art of Animation\*, author Bob Thomas writes as follows about the introduction and use of color.

"If there was any medium that cried out for color, it was animation. Here was opportunity for unlimited use of color in dramatic and artistic terms. But color in animation had to wait until science made it possible.

"Early attempts at color in cartoons were meager. Although some live-action films in silent days were laboriously tinted by hand on the

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\*The Art of Animation, by Bob Thomas with the Staff of the Walt Disney Studio. Golden Press. Excerpts by permission of Walt Disney Productions.

actual film, this was economically unfeasible with cartoons. They were still program fillers that had to be turned out in black and white as cheaply as possible.

"A suggestion of color was sometimes used by employing tinted film stock. Blue film might be used for a night scene, red for a big fire.

"Walt was half-way through a new Silly Symphony called 'Flowers and Trees' when he saw tests of Technicolor's new three-color process. 'That was what we'd been waiting for', he comments. 'When I saw those three colors all on one film, I wanted to cheer.'

"'Flowers and Trees' was a natural for starting the new color process. He wanted to junk what had been done in black and white and start anew. The story was a springtime scene with plenty of flowers, trees, birds, and sky to provide color appeal. Walt convinced Roy they should make a two-year exclusive deal for the use of the Technicolor process in cartoons.

"The studio was pioneering all the way through 'Flowers and Trees'. Color had been used to give more tone to the black and white shorts, but its extensive use on celluloid had never been attempted in animated films.

"The colors of 'Flowers and Trees' may seem crude by today's standards, but they were immensely effective in 1932 when the impact of color was first being felt by movie audiences.

"'We had no choice in those days', recalls Wilfred Jackson. 'We were pioneering. Nowadays we have our own standard mixes at the studio. But then we had to use commercial poster paint or whatever we could find. Some of it faded, some fell off the celluloid. We had to feel our way along.'

"The advent of color brought a new dimension to animation--and also many problems. It was simple to make characters legible in cartoons before color--the outlined figures would naturally 'read well' before a white background. The use of color required close coordination between the animated characters and the background.

"A red character against a purple background might induce biliousness. A green figure standing before a green tree might disappear into the background foliage.

"The issue is often met by keeping the characters in lively colors and graying out the backgrounds.

"'Look out the window and you will find there is gray in everything--the trees, the sky, the mountains', points out Art Riley. 'By painting our backgrounds with overtones of gray, we can make the scenes look natural and allow the animated figures to be legible.'

"Gray need not be a somber color, he adds. Warmth can be found in the gray-violets and gray-greens.

"Sometimes the formula can be reversed. An effective scene in 'Snow White' was created when the dwarfs were portrayed marching home from the mine. Their small figures were pictured in gray silhouette against a brilliant sky.

"And, when a low-key dramatic effect is desired, grayed characters might play against a grayed background.

"'Absorbing color is like eating a steak', observes Riley. 'The first few bites of it may seem wonderful. But too much steak can make you tired of it. So can too much color.'

"Color was not so much a problem in the shorts, in which a few minutes of bright eye-appeal could be a delight. Features were another matter. Eighty minutes of rampaging color would be more than an audience could take. So with the advent of 'Snow White', Disney artists had to pace themselves on color and learn to use it for the most effective dramatic purpose.

"'Snow White' was done in muted colors, yet the coloring was extremely successful. The triumph was in the interiors, which were underpainted in gray tones to give the woodwork a rich, fairy-tale quality.

"With 'Pinocchio', the studio became a little bolder with colors, realizing the public could accept brighter tones, but still hesitated to use the more garish hues.

"'Some critics accuse us of using color to create penny postcard kind of pictures', says Walt. 'Maybe they are right. But I'm glad that ninety percent of the people don't agree with them.'

"Colors in Disney features are not chosen with the simple ease of merchandising a postcard. They are the result of much study and discussion. Usually, between two and six combinations of colors are prepared for each sequence. The final decision is made by a group consisting of the director, layout man, background artist and color model supervisor. The latter is a girl from the Ink and Paint Department who acts as liaison between the production unit and Ink and Paint.

"The subject of a feature often keys the colors, just as it supplies the style of backgrounds. 'Bambi', for example, immediately suggests the uses of greens and browns for the forest scenes. The colors were often muted, as they would be in a real woodland setting.

"'Dumbo', with its circus background, called for the use of gay splashes of color. Yet great quantities of reds, yellows and greens would be too much for the eye and would lose their effect by being overdone. So contrasts had to be made.

"One very effective scene was done entirely in silhouette. It pictured the shadows of the clowns against the canvas wall of the tent as they removed their makeup and costumes.

"Another sequence showed the elephants and roustabouts struggling in the rain to set up the circus. All was gray and murky.

"But then the sun came out and the midway became alive with bright colors, the bustling of ticket-buyers, the sounds of calliopes and barkers. The sun-drenched colors were enormously appealing after the grayness of the rain scene.

"The Disney artists have even employed the absolute absence of color for startling contrast. That was done in 'The Sorcerer's Apprentice', when Mickey first got into trouble over the misuse of magic powers.



"After a fierce struggle, he finally hacks up the broom that has been persistently fetching pails of water. The scene turns a deathly black and white, which in Technicolor has overtones of dark brown.

"Mickey shuts the door with great relief. But then the music begins to thump, like the sound of a revived heartbeat. When the door opens, a bright yellow shaft of light cuts through the gloom, signifying that life remains in the broken broom. And each tiny particle becomes a new broom, marching forward in a sunshiny glow.

"One of the joys in using color in animation lies in the fact that you need not stick to reality. Striving for an other-worldly effect of mythology, the artists of the 'Pastoral' sequence in 'Fantasia' painted trees, mountains and skies in any color except what they would normally be.

"A rare use of raw color was in 'Saludos Amigos'. The fiesta spirit of Latin America was achieved by the basic shades of red, yellow and green.

"Through experience and study, the Disney artists have discovered which colors are most effective for certain uses. Blue is a restful color; it can be used in large amounts without displeasing. It is cool to the eye.

"Red suggests strong emotion--blood, battle, fire. Coupled with black, it can have an impact of violence. This combination was used to great effect in the wartime feature, 'Victory Through Air Power'.

"Purple is a symbol of royalty. Green denotes growth. The light, fresh green is useful for portraying spring, the warm, darker green for summer. The golden hues suggest autumn. Yellow brings to mind sunshine and life. And so on through the chromatic scale. Each color has a vital role to play, adding up to the dramatic whole."

Fortunately, the colors and characters live on. So, therefore, does Walt Disney. (Ed.)

#### MISCELLANY

ISCC member H. D. Eaton, Jr., noted the following entry in a Newcomen Society report of an address by Arthur L. Lewis.

"Speaking of measurements, I hope not all of you have heard of the two Moron brothers, each of whom owned a saddle horse. They couldn't get straightened out as to which horse belonged to which Moron brother. They tried cutting the mane of one horse shorter than the other, but of course the mane grew out and they still couldn't tell. Then they cut the tail of one horse shorter, but the tail grew out, and again they couldn't tell. So they decided to measure height, length of back, etc., of each horse, to see if there were not differences in measurement. The results this time were very satisfactory, and thereafter they could distinguish which horse belonged to which brother, because they discovered the white horse to be larger than the black one!"

The following "Peanuts" strip was drawn for Louis A. Graham (Individual Member of ISCC) after correspondence with Charles M. Schulz, and is reproduced here with the permission of the creator of "Peanuts".



LIST OF ARTICLES ON  
COLOR RECEIVED BY  
NEWS LETTER

"Nonlinear Relations of Psychometric Scale Values to Chromaticity Differences," David L. MacAdam, J. Opt. Soc. Amer., 53, No. 6, pp. 754-757 (June 1963).

"Note on the Photometry of Fluorescent Materials," N. Ooba, J. Opt. Soc. Amer., 53, No. 7, pp. 879-880 (July 1963).

"Numerical Evaluation of Color Employing Suitable Instrumentation," Leonard R. Dearth, TAPPI, 46, No. 10, pp. 146A-151A (October 1963).

"An Objective Approach to Coloring," Fred W. Billmeyer Jr., Color Engineering, 1, No. 3, pp. 10-14 (September 1963).

"Objective Colour Measurement," Ulrich Gugerli, Palette, No. 10, pp. 22-29 (Summer 1962).

"Objectivity from Subjectivity. 2," H. R. Touchin, Paint Tech., 28, No. 30-32 (September 1964).

"On the Bezold-Brücke Phenomenon," P. L. Walraven, J. Opt. Soc. Amer., 51, No. 10, pp. 1113-1116 (October 1961).

"On the Etymology of Some English Color Terms," C. J. Bartleson, Color Engineering, 4, No. 2, pp. 14-18 (March-April 1966).

"On the Preferred Reproduction of Flesh, Blue-Sky, and Green-Grass Colors," C. J. Bartleson and C. P. Bray, J. Photo. Sci. & Eng., 6, No. 1, pp. 19-25 (January-February 1962).

"Opacity Measurement of Paint Films by Contrast Ratio," Cooperative Research Subcommittee of the Manchester Section, Oil and Colour Chemists' Assoc., J. Oil & Colour Chem. Assoc., 47, No. 1, pp. 19-30 (January 1964).

"Opponent Chromatic Induction: Experimental Evaluation and Theoretical Account," Dorothea Jameson and Leo M. Hurvich, J. Opt. Soc. Amer., 51, No. 1, pp. 46-53 (January 1961).

"Optical Studies. Part III: Fluorescent Brightening Agents on Textiles: Elementary Optical Theory and its Practical Implications," T. H. Morton, J. S. D. C., 79, p. 238 (1963).

"Outdoor Durability, Gloss Retention and Synthetic Enamels to I. S. 520 (1954)," R. K. Sud, Paintindia, 12, No. 11, pp. 14-17 (February 1963).

"Painting Technique and Style," Dr. Hermann Kühn, Ciba Review, No. 1, pp. 23-37 (1963).

"Paired Comparisons of Color Differences," Y. Sugiyama and Hilton Wright, J. Opt. Soc. Amer., 53, No. 10, pp. 1214-1222 (October 1963).

"Pantone Matching System," Lawrence Herbert, American Ink Maker, XLII, No. 4, pp. 22-24, 61-62 (April 1964).

"The Performance of Artists' Pigments," H. Hartridge, Paint Tech., 26, No. 1, pp. 34-35 (1962).

"The Persistent Blue," G. J. Liddell, Color Engineering, 1, No. 4, pp. 8-11 (December 1963).

"The Phenomenon of the Coloured Shadows and its Significance for Colour Perception," Michael H. Wilson and R. W. Brocklebank, Die Farbe, 11, Nr. 1/6, pp. 143-146 (1962).

"Photo Methods for Tomorrow," Lloyd E. Varden, Photo Methods for Industry, 7, No. 3, pp. 28, 30, 32 (March 1964).

"Physical Approximation of Color-Mixture Functions," W. E. R. Davies and G. Wyszecski, J. Opt. Soc. Amer., 52, No. 6, pp. 679-685 (June 1962).

"Pigment Color for Use in Paint," T. B. Reeve, Am. Paint J., 47, No. 51, pp. 90-91, 94, 96-97, 100, 104-105, 108-109 (June 17, 1963).

"Pigment Optics," Am. Chem. Soc., Div. Organic Coatings and Plastics Chem., Abs. of Papers, 145th Meeting, New York, 1963; BPV, 38, No. 271, p. 11 (January 1965).

"Pigment Optics," J. R. DeVore, Off. Digest, 36, No. 471, pp. 336-342 (April 1964).

"Pigments," Ciba Review, No. 1, pp. 11-22 (1963).

"Pigments, Color and Paint," S. H. Bell, J. Soc. Dyers and Colourists, 77, p. 678 (1961).

"Pitfalls of Color Densitometry," Stanley A. Powers and Oran E. Miller, Photo. Sci. & Eng., 53, No. 1, pp. 59-67 (January-February 1963).

"Pitfalls in Color Specifications," R. M. Johnston, Off. Digest, 35, No. 458, pp. 259-274 (March 1963).

"Poussin Versus Rubens--The Conflict between Design and Colour in France," Arsene Soreil, Palette, No. 12, pp. 2-12 (Spring 1963).

"Practical Instrumental Color Matching in Production," Hugh W. Lowrey, Off. Digest, 37, No. 481, pp. 156-170 (February 1965).

"Practical Problems of Specifying and Measuring Colour-Rendering Properties," G. T. Winch, Transactions of the Illuminating Engineering Society, 28, No. 2, pp. 66-73 (1963).

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