

M. Balokin

INTER-SOCIETY COLOR COUNCIL

NEWS LETTER

NUMBER 163

January-February 1963

32ND ANNUAL MEETING

The 32nd Annual Meeting of the Inter-Society Color Council will be held at the Statler Hilton Hotel, New York, New York on Monday and Tuesday, March 11 and 12, 1963. The main events will include another of Professor Isay Balinkin's famous lectures (or famous Professor Balinkin's lectures); symposium lecturers, Max Saltzman, Lew Wurzburg, Norm Pugh, and Carleton Spencer; guided tours to lithographic plant and the Design Center, and the interesting Problems Subcommittee meetings. The symposium topic, Color Measurement - From Design to Production. Mail your advance registrations early. This promises to be one of the best annual meetings in a long history of excellent ISCC meetings.

On Monday, March 11, the entire day will be devoted to subcommittee meetings of The Problems Committee. A brief history of the origin and objectives of the subcommittees currently active on ISCC problems are included in this issue of the Newsletter. Members and friends of the council are encouraged to attend this Monday session. The following active subcommittees have scheduled meetings for Monday. Times and room locations will be posted in the lobby of the Statler Hilton Hotel.

Room	Subcommittee No.	Subject	Time
A	Problem 21	Standard Practice for Visual Examination of Small Color Differences Norman R. Pugh, Chairman	9:30 a.m. - 12:00 p.m.
B	Problems 2 & 23	Color Names Kenneth L. Kelly, Chairman Expression of Historical Color Usage Everett R. Call, Chairman	9:30 a.m. - 12:00 p.m.
A	Problem 22	Material Standards for Colorimetry of Opaque, Translucent, and Transparent Materials Fred W. Billmeyer, Jr., Chairman	2:30 p.m. - 4:30 p.m.

<u>Room</u>	<u>Subcommittee No.</u>	<u>Subject</u>	<u>Time</u>
C	Problem 18	Colorimetry of Fluorescent Materials Eugene Allen, Chairman	9:30 a.m. - 12:00 p.m.
D	Problem 10	Color Aptitude Test Forrest L. Dimmick, Chairman	9:30 a.m. - 12:00 p.m.
D	Problem 14	The Colorimetry of Transparent Materials R. C. Stillman, Chairman	2:30 p.m. - 4:30 p.m.
C	Problem 16	Standard Methods for Mounting Textile Samples for Colori- metric Measurement J. R. L. Landry, Chairman	2:30 p.m. - 4:30 p.m.
B	Problem 17	Color in the Building Industry Waldron Faulkner, Chairman	2:30 p.m. - 4:30 p.m.
E	Problem 7	Color Specifications Francis Scofield, Chairman	9:30 a.m. - 12:00 p.m.
E	New Problems	Open meeting for discussion of ideas on new problems and problems procedures Roland E. Derby, Jr., Chairman	2:30 p.m. - 4:30 p.m.

On Monday evening, the Program Committee has made arrangements for guided tours at 7 and 8 p.m. (limited to 15 people each tour) through the Peter S. Mallon lithographic plant, Long Island City. Anyone interested may sign up for these tours at the registration desk on the 1st floor of the hotel on Monday. Also, the Design Center for Interiors, 415 East 53rd Street will remain open until 8 p.m. for those wishing to visit the displays there.

The session on Tuesday, March 12, will start with registration at 8:30 a.m. This will be followed at 9:00 a.m. by reports of the chairmen of the delegations from the twenty-nine member-bodies and of the various subcommittees that are now active as well as the Annual Business Session.

On Tuesday afternoon, Dr. Fred W. Billmeyer, Jr., E. I. du Pont de Nemours & Company, Wilmington, Delaware, program chairman for this year's meeting, has arranged a symposium under the general title of Color Measurement - From Design to Production. The speakers are:

Mr. Max Saltzman
National Aniline Division
Allied Chemical Corporation
New York, New York

-- "Color Measurement with the
Eye and Other Instruments"

Mr. Francis L. Wurzburg, Jr.
Interchemical Corporation
Printing Ink Division
New York, New York

-- "Instrumental Color Specifications"

Mr. Norman R. Pugh
Electronics-Physics Division
Sears Roebuck & Company
Chicago, Illinois

-- "Measuring Communication Effectiveness in Industrial Color Control"

Mr. Carleton B. Spencer
Color & Materials Styling Consultant
Orchard Lake, Michigan

-- "Automotive and Architectural Color Production from Premise to Product"

The reception and banquet at which the presentation of the Godlove Award will be featured, will be held on Tuesday evening in the Gold Ballroom of the Statler Hilton. The banquet speaker will be Professor Isay Balinkin, University of Cincinnati, Cincinnati, Ohio, who will present a lecture demonstration entitled, "Light Interaction with Light, Matter, and Consciousness." The reception is scheduled for 6:00 p.m., with dinner at 7:00 p.m. and the program at 8:00 p.m.

PROBLEMS COMMITTEE MEETING
PROGRAM AND AGENDA
FOR MEETINGS

Due primarily to the energetic endeavors of Ralph Pike, the meetings of the various subcommittees on the day before the annual meeting have become one of the highlights of an ISCC program.

One of the most valuable functions of the ISCC is the publishing from time to time of reports by various subcommittees. These reports represent the distilled ideas of many meetings. They are put into their final form by hard, not infrequently unrewarding, work of the chairman. In order that these reports remain as authoritative and useful as they have been in the past it is necessary to maintain an infusion of new ideas. We strongly urge that anyone interested in a problem attend the subcommittee meeting and participate in the discussions.

Those with new problems or new approaches to old problems will find a ready forum at the meeting on "New Problems."

Roland E. Derby, Jr.
Problems Committee Chairman

STATEMENT FROM REPORT OF EXECUTIVE
COMMITTEE, 1944, COVERING ISCC
ORGANIZATION AND FUNCTIONS

From time to time various inquiries on color problems come to the attention of the council.

(Revised 1954)*

Problems germane to a particular society are referred to the delegation chairman of that society. Problems capable of immediate answer or solution by a recognized authority are so referred. Frequently problems have broad aspects which concern many member-bodies requiring a coordinated effort for their solution.

Other problems are referred to the chairman of the Problems Committee. If the chairman of the committee feels that the problem warrants study by a special subcommittee, he recommends appropriate action to the Board of Directors. Usually the chairman of the Problems Committee serves as a committee of one, but this is not necessary. Whenever possible, opportunity is provided the member-bodies to comment, through their delegation chairman, on establishing the proposed subcommittee. An affirmative vote by the Board of Directors establishes the problem. Members of the subcommittee may be selected from member-bodies, individual member list, or any other competent person chosen by the chairman of the subcommittee or suggested by the Board of Directors. The subcommittee is expected to solve the assigned problem and to present written reports on progress at the annual meeting. In recent years the chairman of the Problems Committee presides at the meeting at which the reports of the Problems Committee Subcommittees' reports are presented.

PROBLEM NO. 2 Color Names

Committee Membership:

Kenneth L. Kelly, Chairman
Room 305 East Building
National Bureau of Standards
Washington 25, D. C.

Deane B. Judd
Kenneth L. Kelly
Dorothy Nickerson

Activity of ISCC Subcommittee on Problem 2, Color Names, has been limited to the chairman's assistance in developing the ISCC-NBS centroid colors by Tobey Color Card Company. All samples submitted have been measured. Production of the centroid-color charts has been delayed but it is hoped that they will be available later this year. Production has begun on the 161 centroid colors which have met the specifications. An NBS Technical Note, "Coordinated Color Identification for Industry," involving the ISCC-NBS method of designating colors has been published (November 1962), and a paper entitled "The Development and Applications of the ISCC-NBS Centroid Colors" is being prepared for presentation before the Symposium on Dyes and Pigments in Coatings and Plastics of the ACS in September. The subcommittee has continued to act in an advisory capacity to ISCC Subcommittees 23 and 17. A hand-made set of the ISCC-NBS centroid color charts is being used in a study of the colors of the giant mollusks in the Marshall Islands in the South Pacific. There will be a joint meeting of Problems Subcommittees 2 and 23.

PROBLEM NO. 23 Expression of Historical Color Usage

Committee Membership:

Everett R. Call, Chairman
Call Marketing Services, Inc.
1000 Vermont Avenue, N. W.
Washington 5, D. C.

Elizabeth Burris-Meyer
Walter C. Granville
Elschen Hood

Martha Jungerman
Kenneth L. Kelly
Frederic H. Rahr
Mary J. Shannon
William M. Stuart
Ouida M. Wessman
Beatrice West
Midge Wilson

When Problem 23 was accepted by the ISCC in late 1957, the objectives were "to derive compatible methods for recording historical consumer color preferences for products in individual industries, to publicize these methods and encourage all industries to adopt them so that (1) useful historical records of consumer preference trends of their products may be available within individual industries, and (2) the interrelationship of consumer color preference of one product upon the choice of another product may be established among industries."

In November 1960, the Board of Directors of the ISCC approved the interim report developed by this subcommittee.

The subcommittee will meet at 9:30 a.m. on March 11 at the Annual Meeting of the Inter-Society Color Council. Application of the method developed by the subcommittee will be explored. All who have or are utilizing this method in any manner are invited to attend this meeting and to discuss their application. It is also urged that examples of application be brought wherever possible, so that all present can comment. As always, the meeting of this subcommittee is open to all and all are not only urged to attend but to participate in the discussion.

PROBLEM NO. 7 Color Specifications

Committee Membership:

Francis Scofield, Standing Committee Chairman
National Paint, Varnish and Lacquer Association
1500 Rhode Island Avenue, N. W.
Washington, D. C.

After several years of investigation, under the chairmanship of Walter C. Granville, this subcommittee published a report in 1955 providing lists "of current color systems, reflecting and transmitting standards, instruments, specifications, methods of test and color codes intended for public use." This report entitled "Survey of American Color Specifications (1955)" was published first as a technical bulletin of the National Paint, Varnish and Lacquer Association and copies distributed to the ISCC membership with the ISCC Newsletter #120. The report was also reprinted in the October 1956 issue of the Official Digest of the Federation of Paint and Varnish Production Clubs.

Recognizing that the report was issued at the threshold of a period of expanding applications of colorimetry, the Board of Directors reactivated the committee by resolution in June 1958. Mr. Scofield was designated chairman of a standing committee.

Group 7 is engaged in a revision of the report on color specifications published some years ago, and the chairman hopes to have a draft in the hands of the subcommittee members before the March 11 meeting. The agenda of this meeting will be devoted to a discussion of the revision of that draft.

PROBLEM NO. 10 Color Aptitude Test

Committee Membership:

Forrest L. Dimmick, Chairman
U. S. Naval Submarine Base
P. O. Box 400
New London, Connecticut

Paul Blackmore
Robert Hefner
Ralph Pike

Carl Foss, Co-Chairman
72 Elm Road
Princeton, New Jersey

C. Homer Flynn
Sidney Newhall
Daniel Smith

The history of Problem 10: The Color Aptitude Test, since its inception in 1940 has been reviewed in some detail in the ISCC Newsletter No. 115. A brief summary appeared in the report of the Problems Committee for 1960. Since 1953 when the present version of the test was put on the market through the cooperation of the Federation of Societies for Paint Technology (FPVPC), activities of the committee have been largely in furnishing advice and information about the details of its application.

The test has found wide acceptance and a large portion of the original production of test materials has been distributed. Some time ago Mr. Homer Flynn informed me that over 300 sets had been sold. In 1958-59, it seemed desirable to consider the possibility of developing additional or alternative series of colors that might expand the utility of the test.

Experimental results on modifications of the Color Aptitude Test will be discussed at this year's meeting.

PROBLEM NO. 14 The Colorimetry of Transparent Materials

Committee Membership:

R. C. Stillman, Chairman
The Procter & Gamble Company
M. A. & R. Building, Ivorydale
Cincinnati 17, Ohio

G. J. Chamberlin

R. S. Hunter
G. W. Ingle
W. B. Reed
Francis Scofield
H. G. Shimp, Jr.
A. J. Werner

The past work of this subcommittee has been concerned largely with a study of single number color systems. This study has been completed and a report covering the work done through 1961 has been prepared and submitted to the Board of Directors. Many problems concerning the colorimetry of transparent materials are still unsolved. The direction that the work of this committee will take in the future will be one of the primary concerns of this committee meeting. We hope that many people will find it possible to be present to assist in this discussion.

PROBLEM NO. 16 Standard Methods for Mounting Textile Samples for Colorimetric Measurement

Committee Membership:

J. L. Richard Landry, Chairman
Davidson and Hemmendinger
2857 Nazareth Road
Easton, Pennsylvania

J. A. Cauataio
Theresa R. Commerford
R. E. Derby, Jr.
C. Douglas
G. Goldwasser

R. W. Graham
Robert Hoban
R. Hunter
W. L. Matthews
Dorothy Nickerson
W. A. O'Brien
N. H. Pulling
F. J. Rizzo
E. Schweizer
C. R. Stock

The scope of the committee is to survey the sample characteristics, both mechanical and optical, of the textile materials which might normally be measured with colorimetric equipment, and to set up standard methods for the preparation of specimens for any instrument which may be used. Reports are being prepared on various methods of preparing textiles including:

1. Felt Pad Method
2. Guillotine Method
3. Wiley Mill Method
4. Staple Behind Glass Method
5. Wound Filament Method (on yarn)
6. Random Matt Method
7. Sample Rotation Techniques
8. Solution Techniques

Progress on these reports will be reviewed at this year's meeting.

PROBLEM NO. 17 Color in the Building Industry

Committee Membership:

Waldron Faulkner, Chairman
1710 "H" Street, N. W.
Washington 6, D. C.

Katherine Chandler
Milo D. Folley

W. C. Granville
R. S. Hunter
K. L. Kelly
Dorothy Nickerson
Francis Scofield
Mildred Trimble

When Subcommittee 17 was organized in 1951, it soon recognized the great diversity of color problems found in the vast array of building products available. The color of some of these had been accurately measured and already specified. But the colors of many others were virtually unknown because they had never been measured with any degree of accuracy.

As a guide to future research the subcommittee decided to undertake a pilot study of the color of limestone, a natural material with a limited color range, which can be controlled only by selection at the quarry. After measuring a large collection of samples, the subcommittee suggested the adoption of six standard colors with appropriate tolerances. This report was presented at the Annual Meeting of the council in 1954.

Later the subcommittee made a study of architectural terra cotta, a manufactured product with a gamut so wide that it can be made in almost any color the consumer desires. In this instance the subcommittee recommended a limited range of standard colors, still making it possible for the manufacturer to produce special colors if he wished to do so.

It was believed that the adoption of standard colors would simplify production, color control and inventory for the producer and would insure ease of duplication and maintenance for the consumer. It also pointed out that producers of the same product could compete if they adopted industry-wide color standards.

However, at some of the recent meetings of the subcommittee the opposite view has been expressed by those who feel that the standardization of colors would limit the designer and would hamper the manufacturer. They believe that a common system of identifying the color of building products would be preferable to the adoption of standard colors.

Future work of the subcommittee will be discussed at this year's meeting.

PROBLEM NO. 18 Colorimetry of Fluorescent Materials

Committee Membership:

Eugene Allen, Chairman
American Cyanamid Company
Bound Brook, New Jersey

Seymour Goldwasser
Henry Hemmendinger
C. W. Jerome

D. B. Judd
Norman Macbeth
W. E. K. Middleton
Dorothy Nickerson
G. H. Patterson
R. A. Ward

In February 1952, Mr. W. E. K. Middleton proposed to the ISCC Board of Directors that a new problem be considered by the council: The Colorimetry of Fluorescent Materials. In a memorandum to the Board, he suggested that the study encompass the measurement and specification of energy sources, and procedures for instrumental and noninstrumental measurement of the color of fluorescent materials produced by irradiation by ultraviolet, fluorescent and incandescent lamps, and by a combination of sun and sky. This suggestion was accepted, and Subcommittee No. 18 was organized under the chairmanship of Dr. S. Goldwasser.

At several preliminary meetings, it was decided that the problem of specifying a suitable source of irradiation should take precedence over the problem of color measurement. It was also decided fairly soon that although the original proposal was intended to encompass only colored fluorescent pigments and dyes,

fluorescent whitening agents should also be studied because of their great commercial importance. This decision made the choice of a light source even more difficult; since fluorescent whitening agents are excited by ultraviolet radiation alone, it was necessary to find a source which approximated daylight in the ultraviolet region very closely.

A study of the usual ultraviolet sources and combinations of these with various sources showed that these did not match daylight too well. The committee has been fortunate in having the cooperation of Macbeth Daylighting Company, who, in cooperation with Sylvania Electric Products, made available an experimental lamp. This is currently undergoing testing.

In 1956, Dean Farnsworth proposed that the committee also consider the extension of the Munsell system to samples of higher chromas than were available at the time of the basic Munsell revision. This would be done through the medium of selected fluorescent samples which would be both measured instrumentally and evaluated visually. Dr. Rita Halsey, in a memorandum to the committee, described a method for visually extrapolating Munsell chroma notations, and the apparatus for doing this was designed.

At the last meeting the progress made to date in the design of a light source to be used for the colorimetry of fluorescent materials was reviewed briefly. It was brought out that the committee does not have the facilities for the construction and testing of lamps.

It was decided to write an interim report on the theoretical work done to date on this problem; the recommendations in this report could then be followed up elsewhere. This report will be discussed at this year's meeting.

PROBLEM NO. 21 Standard Practice for Visual Examination of Small Color Differences

Committee Membership:

Norman R. Pugh, Chairman
Sears Roebuck & Company
3301 West Arthington Street
Chicago 7, Illinois

C. J. Bartleson
M. Bruno
Hugh Campbell
C. E. Foss
K. C. Gale
W. D. Hall
H. K. Hammond
R. M. Hanes
Martha L. Hensley

S. J. Huey
W. J. Kiernan
R. W. McKinley
W. J. Morgan
D. N. Obenshain
Elizabeth D. Quackenbush
W. B. Reese
F. J. Rizzo
R. E. Rossell
Stewart Seass
Francis Scofield
R. C. Stillman
F. L. Wurzburg

Another year has fled by and while your chairman is looking forward to seeing all of you again and participating in our usual very interesting discussion, I am concerned that the session take some steps toward tangible accomplishment.

To date, the sessions have been more of a get acquainted and tutorial nature, in which people with a variety of problems in color have been able to air their problems and obtain advice. In order to make some progress beyond this point, I suggest the first item on our agenda should be a careful review of the Statement of the Problem as was given us by the Problem Committee of the ISCC. Quite frankly, I have not adhered strictly to some of the stated limitations, particularly those relating to "non-metameric materials of similar composition and appearance." I believe that we should go into this pretty carefully and get the group consensus on the statement of the problem, then refer specific points to the Problem Committee.

The original problem was stated as follows:

"In commerce most comparisons of sample and standard for duplication of color are made visually. The conditions under which these visual examinations are made and the skills of the persons making them vary widely.

"It is believed that disagreements between parties interested in such comparisons could be diminished if there existed standard procedures for:

1. Illuminating and viewing specimens and standard
2. Instructions for observers in making panel judgments
3. Rating observers for skill in color matching and/or color vision

NOTE: This problem should be limited initially to comparison of opaque non-metameric materials of similar composition and appearance for the purpose of judging visually whether the observed color difference falls within a pre-established standard or scale of color difference. The object of this restriction is to keep out of the problem the controversial factors of tolerance related to end use and observer experience on degree of acceptability.

"Objectives:

1. To establish illuminating and viewing conditions suitable for judging small color differences of specimen panels for the purpose of determining the adequacy of a color match.
2. To determine whether it is practical to apply existing tests for color perceptibility or aptitude to define the eligibility of individuals to participate in such judgments.
3. To establish written procedures to cover good general practices with respect to viewing conditions, qualifications for observers and specimen preparation for the purpose of establishing uniform conditions for color matching so that unbiased observers, singly or acting as a jury, might examine color differences satisfactorily according to these written procedures (such procedures to be compatible with trade practices).

4. To publish recommendations based on the results of these studies in an authoritative journal in a form that will encourage wide-scale adoption by supplier and consumers of color commodities."

Our second order of business, in my opinion, should be to break the basic objectives down into sub-tasks and get started on achieving something concrete even if it will be only a very minor percentage of the total objective.

We have, in the past, divided up our interests and participation in various ways and in reviewing the record it seems that we have probably exceeded the scope of this problem subcommittee. To come back on track, I would like to suggest three main directions to pursue our activities. Two of them can be put together under the general heading of "In Plant Process Control from Supplier's Point of View." The two sub-headings are:

1. Selecting personnel for making judgements.
2. The mechanics of viewing, judging, and reporting.

The third aspect that I think we should consider is improving communications between production people and the styling and merchandising specialists, whose decisions are many, many times based on approaches very different from the production people.

I would appreciate any comments which members of the problem subcommittee have on this agenda.

N. R. Pugh, Chairman

PROBLEM NO. 22 Material Standards for the Colorimetry of Opaque, Translucent, and Transparent Materials

Committee Membership:

Fred W. Billmeyer, Jr., Chairman
E. I. duPont de Nemours & Co., Inc.
duPont Experimental Station
Wilmington 98, Delaware

Carl E. Foss
Vice-Chairman
72 Elm Lane
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R. G. Alexander
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P. M. Fisher
W. N. Hale
D. R. Hall
H. Hemmendinger
S. J. Huey
R. M. Johnston
W. J. Kiernan
N. M. Komodromos

D. I. Morley
H. F. Parker
R. F. Patrick
S. A. Powers
N. R. Pugh
W. L. Rhodes
J. L. Rood
M. Saltzman
F. Scofield
R. E. Seeber
D. Smith
H. B. Stevenson

Subcommittee No. 22 was established in 1957 to study the types of material most suited for use as colorimetric standards for the instrumental measurement of color, to develop specifications for the preparation of such standards, and to develop and recommend procedures for their care and use. Initial attention has been confined to the selection of materials, with the property of primary interest being long term color stability. Two programs are under way on this objective:

Program No. 1 A round-robin program of instrumental color measurement has been initiated to provide a basis for distinguishing between measurement errors and color changes of the same magnitude in candidate materials. The selection of samples and the establishment of procedures have been completed, and the measurement program is under way.

Program No. 2. Studies of the long term color permanence of several candidate materials are under way in subcommittee members' laboratories. Results covering two to four years' measurements on several materials, including glass, porcelain enamel, ceramic tile, cellulosic plastics, acrylic plastics, acrylic lacquers, amino resins, alkyd enamels, and interference filter coatings have been reported.

Agenda for Meeting, March 11, 1963:

1. Report by the chairman on the results of the first round-robin study of instrumental color measurement.
2. Formulation of plans for second round-robin.
3. Reports by members on continuing programs at measurement of long-term color permanence.
4. Discussion of the nature of desirable types and uses of standards.
5. Consideration of objectives for 1963.

THE COLOUR GROUP
GREAT BRITAIN

The January 16th Science Meeting of the group was held in the New Physics Department, Imperial College, London. Dr. B. H. Crawford, National Physical Laboratory, spoke on the topic, "Some Measurements of the Colour Temperature of Daylight at Teddington." He gave a short account of measurements which were taken three times a day at 9 a.m., noon, and 3 p.m. G.M.T., on working days only. The instrument used was the visual colour temperature meter designed by Harding. The most frequent values found lay between about 5500°K and 7500°K, the median being about 6800°K.

Mr. G. J. Chamberlin, the Tintometer Limited, was the second speaker. His lecture, "Notes on the Related Colour Temperature of North Daylight in Southern England," was a report of measurements of the colour temperature of daylight taken throughout a 12-month period of observation.

The third speaker, Dr. S. T. Henderson, Thorn Electrical Industries Limited, discussed "The Spectrum of Daylight." The new British Standard Specification for artificial daylight is in preparation. An extensive series of measurements has been made to provide information on the spectral energy distribution of natural daylight in Britain. The shape of the spectral curve and the chromaticities calculated from them were discussed, and uses for the data considered. A modified Abbot-Gibson specification for any desired colour temperature within the useful range can be derived.

PALETTE For a number of years the Newsletter has received (as if by magic) copies of Palette, a publication of Sandoz, Ltd., Basel, Switzerland. The magazine is always tastefully edited, beautifully illustrated, and the printing is excellent. The Newsletter has used Palette as a source for several interesting items. According to the title page, Palette is published three times a year in English, French, German, Italian, and Spanish. The editor is F. Störi, D. Phil.

Number 10, Summer 1962, is devoted entirely to color. For a change, articles on color are well illustrated with eight pages of color (plus the cover). The articles are:

"Colour Experience and Colour Occurrence in Chronological Order," Heinrich Frieling, lecturer (advertising and color psychology), Institute for the Profession and Science of Advertising of the City of Munich, Germany; President, German Colour Consultants; Vice-President, International Association of Colour Consultants, Paris.

"Goethe's Colour," Rupprecht Matthael, Professor of Physiology for Psychologists, Erlangen.

"Objective Color Measurement," Ulrich Gugerli, Head, Physicochemical Laboratory of the Dyestuffs Department, Sandoz, Basel.

"The Unsolved Problem of Colour Perception," Deane B. Judd; in charge of research in colorimetry and color vision, National Bureau of Standards; Past President, ISCC; Past President, Optical Society of America; Editor of the Journal of the Optical Society of America.

ISCC President, Bill Kiernan, has made arrangements with Sandoz to provide a limited number of copies of Palette to interested Newsletter readers. For a copy of #10, Summer 1962, write to Mr. D. L. Wardell, Sandoz, Inc., 61 Van Dam Street, New York 13, New York. The Newsletter is very grateful to Mr. Wardell and Sandoz for their generous offer.

LIST OF ARTICLES ON
COLOR RECEIVED BY
NEWSLETTER

"The Visual System: Neurophysiology and Psychophysics," Opponent Chromatic Induction and Wavelength Discrimination, L. M. Hurvich and D. Hurvich-Jameson (eds. Jung and Kornhuber), Springer, Berlin (1961).

"The Visual System: Neurophysiology and Psychophysics," Opponent-Colors Theory and Physiological Mechanisms, D. Hurvich-Jameson and L. M. Hurvich (eds. Jung and Kornhuber), Springer, Berlin (1961).

"Wavelength Discrimination for Point Sources," R. E. Bedford and G. W. Wyszecski, J. Opt. Soc. Amer., 48, No. 2, pp. 129-135 (1958).

"What Color Does for the Graphic Arts Buyer," Howard Ketcham, Graphic Arts Buyer, 5, No. 4, pp. 15-18 (March 1962).

"What Happens When You Sell Color," Faber Birren, Nat'l. Furniture Review, p. 80 (January 1959).

"What Is ASA? A Short History of the American Standards Association," Henry G. Lamb, The Magazine of Standards, pp. 180-181 (June 1962).

"What Is The Color? What Is The Gloss?" C. C. Barbera, Ind. Finishing, 34, No. 6, pp. 46, 50, 52 (1958).

"Where Is Color Heading in the Metal Products Field?" Anon., Nat'l. Paint, Varnish and Lacquer Assn. Inc. Abstract Review No. 245 (May 1958); Metal Prod. Finishing, 15, No. 3, pp. 46-47, 76 (1958).

"Zwei Zusatzgeräte zum Spektralphotometer der General Electric," Andreas Brockes und Otto Koch, Die Farbe, 9, No. 426, pp. 267-272 (December 1960).

"Accuracy of Spectroradiometric Measurements," Harry K. Hammond, III, Annual Meeting Opt. Soc. Amer., Biltmore Hotel, Los Angeles, Calif., 1961. (Abstract in J. Opt. Soc. Amer., 51, No. 12, p. 1470, 1961).

"Achieving Accuracy in Measurements of Textiles for Reflectance and Whiteness," Washington Section, Amer. Dyestuff Reporter, 50, p. 812 (1961).

"The Aesthetic Evaluation of Light Perception," Dr. Sven Hesselgren, the Litho-Printer, 2, pp. 10-16 (November 1959).

"Batch Shading," Harold Gough, Amer. Paint J., 46, No. 50, pp. 87, 90 (1962).

"Brightness of a Field as a Function of Its Area," A. Leonard Diamond, J. Opt. Soc. Amer., 52, No. 6, pp. 700-706 (June 1962).

Newsletter Committee:

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Waldron Faulkner
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William J. Kiernan
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