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INTER-SOCIETY COLOR COUNCIL

NEWS LETTER NO. 28

MARCH 1940

I. H. Godlove, Editor-in-Chief
Charles Bittinger, Editor for Art
C. E. Foss, Editor for Industry
D. B. Judd, Editor for Science

NEW MEMBERS — We are glad to welcome the following persons as individual members of the Council, their applications having been passed by the Executive Committee at its meeting on February 20:

Herbert Kaufman, General Printing Ink Corp., 100 Sixth Ave., New York City;
W. D. Wright, Imperial College of Science, London S. W. 7, England;
James J. Glenn, Sidney Blumenthal & Co., Shelton, Conn.;
Genevieve Reimann, 3427 University Place, Baltimore, Md. (Cordage Institute);
Helen Harrington Boyd, Talon Inc., 71 West 35th St., New York City;
Rose A. Baird, McDowell School of Costume Design, 71 West 45th St., New York City;
Egbert G. Jacobson, Container Corp. of America, Chicago, Ill.;
Carolyn L. Dewing, Modern School of Applied Art, 687 Boylston St., Boston, Mass.;
S. Q. Duntley, Massachusetts Inst. of Technology, Cambridge, Mass.

ANNUAL MEETING — The Ninth Annual Meeting of the Inter-Society Color Council has come and gone. At the Technical Session held on the program of the Technical Association of the Pulp and Paper Industry, the Hendrick Hudson Room at the Hotel Roosevelt was well filled. The papers of this session will be published as a unit and furnished to all delegates and members. The Popular Session, held in the Auditorium of the Electrical and Gas Association of New York, was attended by about 275 people, including representatives from many of our member bodies. The discussion program on Thursday morning in the Hendrick Hudson Room was well attended by the delegates and members, the attendance ranging from 30 at 9:30 A. M., when the meeting opened, to about 75 at 1:00 P. M. Because of difficulties regarding more formal arrangements, luncheon groups met informally. The business session held Thursday afternoon was attended by about 50 delegates and members, although there were not many there to answer the roll call at 2:30 P. M.

A new departure in Council activity was made this year by divorcing the technical program from the annual meeting program. This seemed very successful, and will be followed hereafter, the next two technical sessions having been already announced: one on the program of the 1940 annual meeting of the Illuminating Engineering Society, to be held in September at Spring Lake, New Jersey; and the other on the program of the 1941 Spring Meeting of the American Society for Testing Materials, to be held in Washington, D. C., March 1941. Details will be given later.

WASHINGTON COLORISTS

The Washington Colorists held a "Munsell Meeting" at the Arts Club on February 5, about forty guests being present for dinner. Mr. Arthur S. Allen and Miss Lorain Fawcett were present from New York, and Dr. I. H. Godlove from Wilmington. Mr. A. E. O. Munsell, Mr. F. A. Carlson, Mrs. Blanch Bellamy, Dr. Louise Sloan, Dr. S. M. Newhall, Mr. and Mrs. S. Beck and Mr. M. Miller were there from Baltimore. Also present were Mr. Prentice Reeves, Dr. W. M. Scott and Dr. F. G. Brickwedde, the latter no longer in color work but who worked as a Munsell Research Associate with the late Mr. I. G. Priest during the study which resulted in the Priest-Brickwedde purity data. On the general program each of those who had ever been connected with the Munsell Color Company or Research Laboratory, in Baltimore or at the National Bureau of Standards, gave a brief account of his own part in their color work. Mr. Allen and Mr. Carlson were guests of honor, for each had known Professor A. H. Munsell; and each told something of early contacts with him. Mr. A. E. O. Munsell gave an excellent picture of the early development of the Munsell system by his father, and certain highlights of the Company's work during his own connection with it as active head during the years 1921-34.

After the general program, Mr. Bittinger produced a real surprise in introducing a guest, Mrs. Safford, who had listened to the evening's program with attention and interest. She had been a student of Professor A. H. Munsell's at the Normal Art School in Boston; and to the group she presented a very different picture of him -- as a teacher of anatomy. For although the Munsell system was taught at the Normal Art School, Professor Munsell never taught color! Mrs. Safford gave an enthusiastic word picture of Mr. Munsell as a teacher well loved by all of his students. By letter, many others were heard from: the Milton Bonds, Miriam O'Brien Underhill, Harriet J. Taylor of Chicago, W. L. Valentine, Casper L. Cottrell and Royal B. Farnum. The next meeting is planned for sometime in April.

ASSOCIATION FOR COLOR RESEARCH

The meeting of this group which was held on March 6th at the Art Center, 410 South Michigan Avenue, Chicago, had the general theme "Color in Merchandise". It was copiously illustrated with merchandise. The speakers and subjects were: Mrs. Ruth W. Lee, Importer and Promotion Consultant, "The Influence of Color from the Decorative Arts of Mexico"; Mrs. Louise T. Bolender, Merchandise Co-ordinator of Home Furnishings, Carson Pirie Scott and Company, "Color Trends in Home Furnishings"; Miss Esmerelda Mayes, Mademoiselle Magazine, "Spring 1940 Color Trend in Fashions." This meeting followed a delightful buffet supper, which was an innovation in the Association's meetings.

THE BOSTON COLOR GROUP

The March meeting of the Boston Color Group was held on Tuesday, March 19 at the usual place, Madame Burguet's, 45 St. Botolph St., Boston. The speaker was Professor Michael J. Zigler, well-known psychologist member of the Council, who spoke on the subject "Color Theory." In collaboration with Dr. A. H. Holway, of Harvard University, Professor Zigler has recently reviewed all of the various theories of color vision in the light of present-day knowledge. A popular summary of this study was the substance of his talk, which proved very interesting to the members of the group.

HOW MANY REDS CAN HE SEE WHEN THE MAN BITES THE DOG

Our title flows from the journalists' definition of "News" and our memory of a June, 1939, item involving New York and Washington, which we labeled "When is Red not Red." The present note likewise concerns these two metropolises. Some one was impressed by the fact that colors by the millions can be distinguished by the normal human eye,

as it transpired at our annual meeting; and so a neat little boxed item to that effect appeared on the Front Page of the New York Times of February 23. (The Editor of this sheet learned ten years ago in New York that anything which tells the average human something about himself is sure-fire front-page stuff.) The note, incidentally, mentioned that a joint meeting of the Inter-Society Color Council, the Optical Society of America, and the American Physical Society was being held in the metropolis. Strange to say -- or perhaps not strange, since the New York Times is known as a conservative paper -- and they could just not believe in such big numbers, only two million colors were suggested. We would like to tell the Times, but for our respect for the ancient English language, that it "ain't heard nothing yet"; for the National Bureau of Standards, also conservative (even during the present administration) has stated that at least ten million colors can be discriminated by the normal, not color-blind, human being.

MEETING OF PRINTING AND ADVERTISING CLINIC

The first of a series of Printing and Advertising Clinics, sponsored by General Printing Ink Corporation, was held on Wednesday evening, March 20, in the Galleries of G. P. I. in New York. Three members of the I. S. C. C., well-known associated colorists of New York, spoke on the subject: "Color Comes of Age".

FABER BIRREN stated that, to industry, knowledge of people and their color reactions is more valuable than knowledge of physical and chemical phenomena. So considered, color is not a complex art. That people in general have primitive rather than subtle tastes in color is shown by their use of relatively few color names. Birren gave examples from his experience in the functional use of color, citing Mickey Mouse's red pants as an identifying symbol, the color treatment of meat coolers to enhance the appearance of meat on sale and the styling of billiard tables for the home in order to remove the stigma of poolroom associations. He finished with a demonstration of a washing powder which changes color according to the saturation of its solution and thereby indicates the proper proportion to be used.

FREDERIC H. RAHR dealt with the public acceptance of color as determined by consumer research. He pointed out the danger of manufacturers basing their production plans on information as to what has sold well in the past, rather than upon research concerning what the consumer will want in the near future. He outlined a procedure of sampling the public's desires in color and noted the necessity for carefully adjusting cross-sections of people for sampling to various factors of geographical location, income, race, buying habits and so on. He sketched the history of color styling and its present-day results in offering too many colors, increased manufacturing and selling problems, and general confusion. The public taste in color is becoming constantly more selective; and correct styling is a necessity for all industries which are to survive. As examples he mentioned such nationally distributed products as asphalt shingles, furnaces for the home, paints, programs, ladies' wear, floor and wall coverings and the new yellow baseball. Mr. Rahr also noted that well-considered styling in color has profitable by-products in lowered manufacturing costs, due to fewer color runs of machinery, decreased losses from mis-styled goods and better production at piece rates. In addition, he said, higher production by personnel, decreased accident rates, better public relations and better labor relations may be achieved by functional uses of color on interior and exterior surfaces of plants and equipment.

JULIAN GARNSEY, color consultant to the Board of Design, New York World's Fair, described the methods whereby the color effects of the Fair were obtained. He said

that the same principles of functional adaptation were applied to the spreading of 200 tons of paint over 1200 acres as would be used for determining the correct color for floor covering or for a can of beans. To sell the fair to its customers an atmosphere of gaiety, happiness and holiday was needed. It was attained by using tints, not shades, in an arrangement based on the spectrum and by closely-stepped progressions from white to strong saturations. Mr. Garnsey explained the technical procedure of deciding upon the color scheme in model form and then translating the effects wanted to the full size of the Fair. He concluded with an expression of the hope that the Fair might be one of the influences which will in time change the drab cities of today by means of happier color into lovlier and better places in which to live.

After the formal speeches, an hour of questions brought forward ideas and problems from members of the audience for comment by the three speakers. The exchange of ideas was spirited and interesting.

WHAT'S IN A NAME

At the recent meeting of the Washington Colorists, we were reminded of the following lines penned with a delightful cartoon by Mr. F. G. Cooper showing an artist, a physicist, a psychologist and one of the uninitiated, gazing rapturously at a mystic symbol (two opposed apostrophies) done in red and blue-green -- or were they (?).

The artist claims the one's blue-green, the other is vermillion;
The physicist explains them both in microns by the million;
The psychologist says it's a passionate red, and a cold and colorless green;
The layman, all confused, exclaims: "Now just what do they mean?"

(The Editor wonders whether that red must be classed as "photogenic", or whether we must look into the future and call it "chromogenic.")

ISCC-NBS DESIGNATIONS

At the present annual TAPPI meeting, our chairman described the ISCC-NBS system of color designations to the paper group, showing examples of certain difficulties that might be met in applying these names to paper, but suggesting that the paper group study the method and make appropriate applications of the system to their problems. At the Spring Meeting of D-13 (Textiles) of the ASTM, our secretary described this method before the general session. At their business session D-13 voted to publish its approval of this method of designating colors and to encourage its use in textile problems to which it is applicable. The paper describing the method has been multilithed for distribution by the U. S. Department of Agriculture, and a copy is being sent to each of you with this issue of the News Letter. It shows the ISCC-NBS system of designation on a series of name charts, as differentiated from the boundary charts in the Judd-Kelly paper which appeared in the September number of the National Bureau of Standards Journal of Research, reprints of which each of you has received. Should any of you find use for extra copies of this D-13 paper, they will be supplied on request made to the Agricultural Marketing Service, Washington, D. C.

NEW STANDARD CARD OF THE TCCA OF U. S.

At the Annual Meeting we heard from Mrs. Margaret Hayden Rorke, Managing Director of the Textile Color Card Association of the United States, Inc., that her association is about to issue a new edition of their Standard Card. In this edition there will be a

change in form, larger samples of silk, showing satin and crepe finishes for each color, to be substituted for the ribbons now used. Her announcement that she intended to ask her directors to establish a temporary fellowship at the National Bureau of Standards to obtain color measurements of these new standard colors was received with enthusiasm. Details will have to be worked out later, but it is expected that spectrophotometric curves will be made, and ICI tristimulus values, as well as the ISCC-NBS designations will be supplied in joint reports of the Textile Color Card Association and the National Bureau of Standards. This will be the first large series of fundamental measurements sponsored by a group producing color standards, if we except the unpublished measurements, made a number of years ago at the Bureau under the direction of Dr. K. S. Gibson, on the original colors of the old Munsell Color Atlas. Other series of measurements on color standards have had to be made by "consumer" groups. Mrs. Rorke and her association are to be congratulated on recognizing the advantages of sponsoring this important work.

1940-42 COMMITTEE APPOINTMENTS

The secretary's report of the annual meeting, recently sent to each of you, contained a list of committee appointments announced by Dr. Judd at the annual meeting. In addition, he has appointed a committee on Production and Specification of Central Samples for the ISCC-NBS Color Designations: Nickerson, chairman; Bellamy, Foss, Granville, Newhall. Dr. Dimmick, as chairman of the Problems Committee, announces the following subcommittee appointments: To recommend Suitable Names for Designation of Liquids in Achromatic Series: Kelly, chairman; Gage, Foss. Color Terms: Paul for ASTM, D-1, Hunter for ACS, Evans for SMPE, Taylor for IES, Draves for AATCC, Hardy (LeG.) for ophthalmology, Farnsworth for general. Preparation of Color Aptitude Test: Foss and Dimmick, co-chairmen; Hardy (LeG.), Draves, Murray, Balinkin, Parsons, Taylor, Granville and Helson. Definitions of Terms Used in Color Matching, as "trace," "slight", "noticeable" etc.: Draves, chairman; Appel, Scott, Hunter. Extension of ISCC Theatrical Gelatine Designation to Dyes: Godlove, chairman; Foss and Draves.

DR. BRICE AND OTHERS AT REGIONAL LABORATORIES

Dr. Brooks A. Brice, formerly with the Food & Drug Administration of the United States Department of Agriculture, well known in color fields for his work on rosin standards, and for the development of an photoelectric spectrophotometer for use in color standardization and inspection work on rosin and other products with which he dealt, has recently become associated with the regional laboratories of the same department, where he will be in charge of physical research. Dr. Brice's new address is: Eastern Regional Research Laboratory, 18 W. Chelton Avenue, Philadelphia, Pa.

In connection with these Regional Laboratories, four of which are in process of establishment under recent Congressional action, it is of interest to note that several individuals, well known in the color field, are now associated with these laboratories. The chief of all four laboratories, with headquarters in Washington, is H. T. Herrick, at one time connected with the U. S. Department of Agriculture's color certification laboratories, which passed on food dyes. In charge of chemical engineering work for all four of the regional laboratories is W. B. VanArsdel, who became interested in problems of color measurement while connected with the Brown Company, manufacturers of pulp and paper. Mr. VanArsdel is a member of the Colorimetry Committee of the Optical Society of America. Dr. Walter M. Scott, whose connection with the Regional Laboratories was announced in the last News Letter, will be at the New Orleans laboratory. And now we find that Dr. Brice, long an OSA member, is to be at the Eastern Regional Laboratory. The Eastern Laboratory already has a

recording spectrophotometer as a part of their equipment, and the Southern laboratory will undoubtedly need one. We have not yet heard of color plans for the Central and Western laboratories.

DR. GAGE TO ADDRESS S. M. P. E.

At the invitation of the Society of Motion Picture Engineers, Dr. H. P. Gage will report to that society regarding the Inter-Society Color Council and its functions.

1924 COLOR NEWS ON BIBLIOFILM

In 1924, during the period of greatest activity of the Munsell Research Laboratory, four issues of its periodical COLOR NEWS were published. It was a very well presented 10 to 30 page journal in which the covers and certain of the articles were illustrated in color. COLOR NEWS contained two series of continued articles, namely:

The History and Development of Color;
1. To the Dawn of Man's Aesthetic Appreciation;
2. Primitive and Savage Art;
3. In the Ancient World;
4. In the Classical Period; and

Creative Color;
1. Introduction;
2. The Physical Basis of Color;
3. The Physical Basis of Color, continued;
4. The Physiological Basis of Color.

Included also were book notes, a Color Forum, color notes and announcements. Because this volume is of interest to color workers, but is unobtainable because now out of print, the Council, through the courtesy of Mr. A. E. O. Munsell, has deposited a bibliofilm negative with the American Documentation Institute so that copies may be obtained by application for No. 1330, at 50 cents each. Payment should accompany your order if you wish prompt service. In answer to the question that many may wish to ask, we may say that succeeding numbers of COLOR NEWS were issued, but only as four-page leaflets for two or three years during the time when the Munsell Research Laboratory was most active.

GARDNER LABORATORY PUBLISHES NINTH EDITION

We refer to "Physical and Chemical Examination of Paints, Varnishes, Lacquers and Colors", by H. A. Gardner, assisted in this revision by G. G. Sward; Ninth Edition, May 1939; published by the Henry A. Gardner Laboratory, Institute of Paint and Varnish Research, Washington, D. C. The entire format of this valuable reference book has been altered. It is now about 14 x 11" in size and contains 578 pages, fully illustrated. The following items, indexed under "Color analyzers, charts, systems (see also colorimeters)" will give the reader some idea of the scope of this volume:

Adam Hilger Ltd., 51
American Photoelectric, 53
Appel-Hickerson, 54
Army-Navy, 65
Bausch & Lomb, 57
Bawtree, 58
Blancometer, 54
Book of, 62
Hardy, 52
Hess-Ives, 54
Howland, 59
Hunter Multipurpose, 41, 57
Hunter Visual, 40
Ives, 58
Jones, 58
Keuffel & Esser, 51
Nickerson, 60
Nutting, 57
Ostwald, 62
Pfund, 53
Priest-Lange, 41
Razek-Mulder, 52
Recording, 52
Ridgway, 62

BOOKS AVAILABLE

Through Mr. M. Rea Paul, co-editor with Mr. A. Maerz of the "Dictionary of Color", we have received word that Mr. Maerz is offering for sale the "Colour Index", published by the Society of Dyers and Colourists (British). This book is not readily available usually. The offered copy is described as about five years old and in a condition equal to new. A price of $30 has been placed on it, the original price being $45. Mr. Maerz also has available a copy of Chevreul's "Laws of Contrast of Colour", with color plates, being of the 1859 edition which is very scarce. The price placed on this is $8. Anyone interested should get in touch with Mr. Maerz at 170 Parkside Avenue, Brooklyn, N. Y.

AMERICAN COLORIST

We have recently received announcement of the publication of "The American Colorist; a Practical Guide to Color Harmony and Color Identification", by Faber Birren, well-known Council member and author. This book is published by The Crimson Press, 40 Gorham Avenue, Westport, Conn., the price being $1. It is stated that over 500 different colors are exhibited in a series of 12 charts. The prospectus reproduces the chart of one hue, called Magenta, showing 45 colors ranging from "full color" to white, gray and black.

A COLOR ATLAS FOR FIBER IDENTIFICATION

At the recent TAPPI meeting there were exhibited charts from the work of this title by John H. Graff, published by the Institute of Paper Chemistry, Appleton, Wisc. These charts show the colors that are obtained from the reactions of the important stains with those fibers most commonly used in the papermaking industry. There are 21 pages of text and five color charts, the latter showing the reactions obtained with the Herzberg Stain, the "A" (Modified Sutermeister) Stain, the "C" Stain, the Bright Stain, the Cooking or Bleachability Stain, the Bleach Stain, and the Loftin and Merritt or the Pulp Purity Stain. Included in each volume is an extra set of charts which can be used in the laboratory, a feature which commends itself very highly to us. The price of the Atlas is $12.50.

LOVIBOND COLORIMETRY PAMPHLET

We have recently received from the Colour Laboratory of The Tintometer, Ltd., Milford, Salisbury, England, a pamphlet entitled "Colorimetry", which is divided into two parts: (1) the Lovibond System; and (2) the Lovibond-Schofield System. Particular attention is called to the latter part, which describes the Lovibond-Schofield apparatus. This is of interest to color workers in this country because the instrumental readings obtained with this apparatus can be readily converted into a specification in terms of the I. C. I. colorimetric system, which was practically impossible with the older Lovibond system. It may be assumed that copies of this pamphlet may be obtained from the above address by anyone interested.

PAPERS BY DR. HELSON AND DR. JUDD

Two papers by these authors, who have frequently collaborated, appeared almost simultaneously, and have such similar subjects that we here consider them together. These papers are, respectively, "Hue, Lightness and Saturation of Selective Samples in Chromatic Illumination", by Harry Helson and Virginia Balough Jeffers; J. Exp. Psychology 26, 1-27 (Jan. 1940); and "Hue, Saturation and Lightness of Surface Colors with Chromatic Illumination", by Deane B. Judd; J. Opt. Soc. Amer. 30, 2-32 (Jan. 1940). The former is the second of the series entitled: "Fundamental Problems in Color Vision", begun by the senior author, the first of which was reviewed by us under the title A New General Principle in Color Science, in the April, 1939, News Letter. Helson's former paper dealt with experiments using non-selective samples; the present work extends the experiments and theoretical results to selective samples. Judd reports experiments of his own and also makes use of Helson's results to develop formulas for the computation of hue, saturation and lightness of surface colors when given the radiant energy of the illuminant as a function of wave-length and the spectral apparent reflectances of the surfaces in the field of view. Both Helson and Judd consider the relation of their results to theories of color vision, but neither formulates a new theory; both to a certain extent point the direction in which we must go to formulate an adequate one. An interesting point in Helson's paper is the contrast, given to assist orientation (pp. 4-5), between the general characteristics of colors in strongly chromatic illuminants and in relatively achromatic illumination from continuous sources. Special points in Judd's paper worth mentioning include careful definition of terms and symbols and statement of assumptions (some frequently made tacitly without explicit statement), a bibliography of 95 items, and sections on the Influence of Light-Scattering Elements Between Sample, and Retina and Bezold-Bruecke Phenomenon and the Hue Change by Admixture of Achromatic Light.

The two present papers are too long to review in full. We shall, however, conclude our review by reproducing Helson's Summary and Judd's abstract in full. Helson's summary: Experiments involving stimulation of the whole retina with homogeneous and near-homogeneous illuminants and differential intensities in various parts of the field show that certain hitherto neglected factors profoundly influence hue, lightness, and saturation in predictable ways. We can summarize briefly: (1) Hue, lightness, and saturation depend not only upon the composition and intensity of light from an object but fully as much upon the reflectance of the background and other objects in the field of vision. (2) Through its effect on adaptation level the background may induce the illuminant hue or the after-image hue on the sample, depending upon the reflectance of the sample. Effects of backgrounds differing only in lightness are thus seen to be wider than classic laws imply, for hue and saturation are affected by reflectance of background as well as lightness. (3) Selective samples have greater constancy in chromatic illuminants than non-selective samples as the latter tend to be tinged more easily either with the hue of the illuminant or its complementary while the former tend to keep their daylight hue if their dominant wave-length is present even as a minor component in the illuminant. (4) The hue of selective samples in strongly chromatic illuminants which are not homogeneous tends to be a mixture of daylight hue and the hue resulting from conversion in homogeneous illuminants. (5) The effects of chromatic illuminants depend upon the distances of the illuminant points in the color mixture diagram from the white point. Illuminants having hues characteristic of the ends of the spectrum (red and blue-violet) give the greatest chromatic effects and after-effects. (6) Constancy of object color or tolerance to chromatic illumination is not predictable from the hues of sample and illuminant alone. It depends chiefly upon reflectance of sample and background, dominant wave-length of the illuminant, and attitude of the observer. (7) A revised formula was

found necessary for adaptation reflectance to meet the conditions in the present study. It yields values of adaptation lightness in good agreement with observation. (8) The bearing of certain results in this study on previous work and theories has been pointed out and the importance of the eye as an organ that responds primarily to differential stimulation receives new confirmation. Judd's abstract: The visual mechanism of a normal observer is so constructed that objects keep nearly their daylight colors even when the illuminant departs markedly from average daylight. The processes by means of which the observer adapts to the illuminant or discounts most of the effect of a nondaylight illuminant are complicated; they are known to be partly retinal and partly cortical. By taking into account the various fragments of both qualitative and quantitative information to be found in the literature, relations have been formulated by means of which it is possible to compute approximately the hue, saturation, and lightness (tint, value) of a surface color from the tristimulus specifications of the light reflected from the background against which it is viewed. Preliminary observations of 15 surfaces under each of 5 different illuminants have demonstrated the adequacy of the formulation and have led to an approximate evaluation of the constants appearing in it. More detailed and extensive observations have been carried out in the psychological laboratories of Bryn Mawr College and these observations have resulted in an improved formulation.