INTER SOCIETY COLOR COUNCIL

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NEXT ANNUAL MEETING The next annual meeting of the Inter-Society Color Council will consist of a Discussion Session of problems under study by subcommittees of the Council and a Business Session on Wednesday, March 9, 1949, the day prior to the spring meetings of the Optical Society of America, at New York City in Hotel Pennsylvania. While there is no Technical Session planned for this meeting, it is expected that there will be a full program of contributed papers on color at the OSA meetings to which all Council delegates and Individual members are invited.

NEW INDIVIDUAL MEMBERS We welcome the following persons to Individual membership in the I-S.C.C. They were elected at the October 19 meeting of the Executive Committee:

J. Ross Blackford of San Antonio, Texas, interested in color and its use in direct mail advertising;

Morton C. Bradley, Jr., connected with the Department of Conservation, Fogg Museum of Art, Cambridge, Mass., whose studies of color in connection with the fine arts are well known to many of us. He is interested in problems of color terminology, color standards, correct spacing of the color solid, color harmony, color relations in nature and in painting, color problems in the conservation and restoration of paintings;

Alan R. Cripe, who worked on the National Homes Corporation color project with Dr. Balinkin, now with the Chesapeake and Ohio Railroad, interested in problems relating to planned color harmony and color harmony for interiors where various illuminants are used;

Donald Campbell Corse, of Container Corporation of America in Boston, interested in individual color-tolerance work, correctness of color matching, development of specifications for printing inks and paper stocks;

Willard P. Greenwood, of the Forbes Lithograph Manufacturing Company, Boston, active in the Boston Color Group, interested in problems of color tolerance and matching and photographic color separation;

Charles W. Fletcher, of Brooklyn, New York, an artist with Visual Methods, Inc., interested in the practical application of color knowledge in commercial art, sales promotion and sales training programs, and in particular the design of a combination color-tree-reference book for use in educational work.

LOCAL COLORISTS MEET

The first meeting of the sixteenth season of the Washington and Baltimore Colorists was a dinner meeting held at 6:30 on October 25 at the Y.W.C.A. in Washington, Chairman Bittinger presiding. Guests present from other color groups included Dr. T. Vickerstaff of the (British) Physical Society Color Group and Mr. Guy Brink of the California Color Society. Dr. K. S. Gibson, Chairman of the I.C.I. Secretariat Committee on Color and Artificial Daylight was present; and Dr. D. B. Judd, who attended the I.C.I. Paris conference this summer, reported briefly on this meeting.

The subject for the evening's discussion was the selection of color and materials in the design of a hospital. Mr. Brink discussed the planning done under his direction for the recently remodeled wing of the Pasadena Memorial Hospital; and Mr. Waldron Faulkner, member of the Washington group, described the color planning for the recently completed George Washington University Hospital in Washington, for which his firm, Faulkner and Kingsbury, were the architects. Because the meeting was a small one, there was more discussion than usual. Among those present were two members of the color-planning unit for hospitals of the Veterans Administration, also a representative of the Food and Drug Administration. The discussion ranged from suitable colors for general hospital interiors to those for surgeries, for towels and sheets for surgeries, and finally to so-called "color cures," as the recently much publicized Spectrochrome.

COLOR AT OSA DETROIT MEETING

The first day of the Optical Society of America's fall meeting, October 21-23, in Detroit, Michigan, included a morning session devoted to papers on color, with an afternoon session in which the papers were chiefly concerned with problems of color vision. At the general session on Friday afternoon, held in the Rackham Auditorium, Mr. Ralph Evans, former Chairman of the ISCC, gave the opening lecture, Seeing Light and Color. This was followed by a paper from the McMath Observatory and then the first public demonstration of Xerography, newly developed method of dry printing (for description, see, e.g., Time, November 1, 1948, page 82, which fails to mention that the first demonstration was before the O.S.A.).

During the O.S.A. meetings, there were two well attended sessions, Friday and Saturday mornings, of the newly formed I.E.S. Color Committee, Dean Farnsworth, chairman.

COLOUR GROUP MEETS

Notice has been received of a joint science meeting of the Colour and Optical Groups in London at 3:30 on Wednesday, October 13. Five papers were listed for the program:

General Phenomena Associated with Scattering of Light, by E. W. H. Selwyn (Kodak Ltd.);

Atmospheric Haze Factors, by W. S. Stiles (National Physical Laboratory);

The Effect of Haze on Photography from the Air at Night, by G. B. Harrison (Ilford, Ltd.);

Scattering of Light in Photographic Materials, by D.T.R. Dighton (Kodak Ltd.); and

The Scattering and Absorption of Light in Coloured Paper, by F. North (Imperial Chemical Industries).

NBS TEXTILES CONFERENCE

At 2:00 on Monday, October 25, a meeting was called by Mr. William D. Appel, Chief of the Textiles Section of the National Bureau of Standards, to meet Dr. T. Vickerstaff, Chief of the Dyeing Research Laboratories of Imperial Chemical Industries, Hexagon House, Blackley, Manchester, England, and to hear about recent work in the latter's laboratory. Dr. Vickerstaff and his co-workers have published many excellent studies of the application of dyes to wool, nylon and other fibers. They are interested in the fundamentals of the dyeing process, the mechanism of fading of dyed materials and all problems of color measurement and color science generally. (At the moment of writing the Editor, who remembers with much pleasure many of the papers of the Vickerstaff group, is anticipating a visit by Dr. Vickerstaff to his own Laboratory, and hopes to report interesting gleanings to you later.)

PHILADELPHIA-WILMINGTON COLOR GROUP

The second dinner and lecture meeting of this group was held at the Philadelphia Textile Institute on Tuesday, October 4 at 8:15 P.M. We regret that at the time of writing we have the information only that the speaker was Mr. George H. Schuler, Director of the Technical Laboratory of E. I. DuPont de Nemours & Co. and that his subject was "Colorants." But having known Mr. Schuler for many years as a man of outstanding ability with rare speaking presence and always present wit, we are sure the members of the group were treated to an altogether delectable evening.

LETTER FROM DR. MIDDLETON

We regret that a letter from Dr. W. E. K. Middleton of the Optics Section of the National Research Council of Canada, dated 27 August at Ottawa, was accidentally mislaid. In it he reported that he "amused himself" this past summer by matching the 1248 colors of the Plochere Color System with the Munsell Book of Color. He says that "some rather interesting things emerged from this" and that he is preparing a paper to be submitted to the Canadian Journal of Research in this connection. We will await the appearance of this paper with much interest (and many thanks, Dr. Middleton.) A paper of Dr. Middleton's (with A. R. Ramsey) which recently appeared in Canadian J. Res. 26, 23-8 (March 1948) was entitled, Approximate Measurement of Color Temperature with a Barrier-Layer Photocell; another recent paper of his, The Measurement of Strongly Reflecting Transmission Samples with the Commercial Recording Spectrophotometer, appeared in J. Opt. Soc. Amer. 38, 74 Jan. 1948).

WIDOW OF A. H. MUNSELL DIES

Juliet Ector Orr Munsell, wife of the late Albert H. Munsell, died quietly at her home in Carmel, California, in late August. Her burial was on September 1 from Christ Church in Brooklyn, N.Y., the city in which she was born on April 7, 1865.

Mrs. Munsell's contribution to the advancement of color knowledge was very considerable. Next to her devotion to her four children, Alex. E. O., Margaret M., Juliet D., and Elizabeth C., came her deep and penetrating interest in the work of her husband in the notation and measurement of color. She followed closely the development of the Munsell system, reading and advising on the manuscript of A Color Notation, and compiling the Index. Together with a group of artists, art teachers, scientists, businessmen and plain citizens (including her eight-year-old son) she served as an observer on the original Munsell daylight photometer, proving that this instrument

though simple in design could be used with good precision even by those not directly trained in scientific work. From the beginning in 1905, but particularly during the years of standardization and development (1918-33), she generously supported the continued development and improvement of her husband's scientific work. From her son, A. E. O. Munsell, we learn that only last Christmas she herself made two copies of a 20-hue, 5/-value color chart, out to /6 chroma, duplicating from memory the first Munsell color chart painted 44 years ago by a student under Mr. Munsell's direction.

We believe it of interest to note that it was her love and interest in flowers that led her to contribute sufficient financial support in the 1930's to provide for 40 instead of 20 hues in the Munsell Book of Color. At Carmel Highlands she cherished a beautiful, multi-colored, California wild-flower garden. In identifying the color of certain of these flowers she found that to have samples of more than 20 hues would make it easier to provide adequately close Munsell notations to identify and distinguish her flowers. Interpolations and extrapolations of notations on the basis of visual comparison to samples of 40 hues is easier than using only 20 hues. It was this personal interest on the part of a flower lover that makes the 40-hue book available to color workers today. It was also her generosity and understanding that led to the establishment in 1942 of the Munsell Color Foundation, for at that time she turned over to the Trustees of the Foundation, as a gift in behalf of her son, the common stock of the Munsell Color Company, Inc.

Mrs. Munsell attended Packar Institute in Brooklyn, the nearest equivalent to college available to her in 1885. She deeply loved music and singing, and played the piano and cello. She achieved a working knowledge of six foreign languages, including Hebrew, Greek, Japanese and Russian. She sought to put her knowledge to practical use as in teaching Sunday School, using scientific principles in planning her household, and personally supervising a ten-acre war-garden at Carmel. She had travelled in Europe and paid brief visits to Japan and Russia. What she saw in Russia in 1932 resulted in a keen and sympathetic interest in what her son calls the vital socio-scientific experiment being carried on there. He adds that, like her father, a successful and well known business man in Brooklyn, she had the keenest interest in progressive politics, particularly in the period following 1932. Indeed, during her more than 83 years, Mrs. Munsell entered warmly and vigorously into life, seeking at all times to advance human progress and happiness.

While not many of us in the color field were privileged to know her intimately, yet many will sincerely mourn Mrs. Munsell and feel the loss to color of a devoted friend.

B.R.B. and D.N.

WILLIAM H. BECK DIES

On Sunday, October 10, 1948, in Baltimore, Maryland, death came unexpectedly to William H. Beck, aged 61. The immediate cause was acute coronary occlusion, due to arteriosclerotic heart disease. He leaves a son, Wm. H. Beck, Jr., and a daughter, Ruth A. Krapp, both of Baltimore.

Mr. Beck, an active individual member of the Council since 1936, was a very unusual and quite remarkable person. As a philatelist he became interested years ago in color measurement and specification of stamp color. Because of color certain stamps are held to have more value than the same stamp with a more usual color. Mr. Beck set out to find out why. He delved into the subject so thoroughly that color-in-stamps became his life's hobby, and as an amateur he went into the subject so completely that in many phases of color work he was better informed than many a

professional. He studied inks, paper, color reflection and transmission, and was finally able to tell without question whether a peculiar or odd stamp color was in reality as unusual or valuable as it seemed by a dealer's offer for sale, or whether the color fitted into a definite pattern of change due to fully explainable causes, and which often provided a very wide color variation for a single stamp. His studies of the color variation in a few single stamp issues, for example the U.S. 3¢ "pink" of the 1861 issue, led to the development of exhibits on color in stamps. His research earned awards for him in 1933 and 1936 at the Baltimore Philatelic Society's exhibits and at the Tipex show in 1936.

At the Centenary International Philatelic Exhibit, held in New York May 17-25, 1947, Mr. Beck organized and supervised a very extensive Color Research Exhibit, asking for and receiving the cooperation of a great many delegates and members of the I-S.C.C. Indeed, the exhibit sign read Color Exhibit "arranged by Wm. H. Beck with the cooperation of a committee of the Inter-Society Color Council." The exhibit included mounted pages of stamps to show the many types of color problems of which a stamp collector should be aware, books and charts regarding color and exhibits of instruments, lamps, etc. He even got the International Business Machines Company to prepare a large exhibit panel to show how IBM machines could be used to obtain I.C.I. data from tables of spectrophotometric measurements.

Until 1947 Mr. Beck worked in various phases of engineering, electrical and automotive, but in 1947 he became color consultant for National Plastics Company, and during 1947-48 was color analyst for the Koppers Company, which took over the plant with which he had been working at Berkeley Heights, N.J. It was not his purpose to continue on this work himself, but because of the needs of the field he felt impelled to work on the color in plastics problem long enough to show how important a good color research program could be. One of his conditions when he went into the plastics work was that a younger man be suitably trained by him so as to avoid loss to the program if he should step out. Shortly before his death, in the midst of plastics color research that pleased him greatly, he indicated a desire to get back to stamp-color work and be free to return to his major color interest.

As a member of Dr. Judd's committee on revision of the ISCC-NBS color names report, Mr. Beck at the time of his death was nearing completion of a study of stamp-color names. He had spent many of his week ends this summer working on a card index which only a few weeks before he had taken to Washington to discuss with the writer, coming over later to go over the work with Dr. Judd. In April, 1946, he prepared a six-page outline of his experience in color research. It began in 1916 with problems of color appearance for printed inks for the Crown Cork and Seal Company in Baltimore. In 1936 he was awarded a Silver-gold medal at the Third International Philatelic Exhibition in New York for his exhibit on "Color Research in Philately"; and in that same year contributed a chapter on color to "The Stamp Collector's Round Table" published by Stokes (1937). He soon began his long series of spectrophotometric I.C.I. specifications of stamps, their inks and papers, and small differences calculated spectrophotometrically, many of them made for him at the Electrical Testing Laboratories. In 1941 he arranged an exhibit for the American Philatelic Society in Baltimore. In 1943 he wrote an article for the "Stamp Specialist" Brown issue on the Color Analysis of the 1861 3¢ U.S. stamp. In 1945 came an analysis of color differences of the U.S. 6¢ air-mail stamp for the August Stamps Magazine; and in May, 1947, he arranged a color exhibit for the Centenary Exhibit described above. Altogether he had prepared examples of his work in some 32 volumes, 11 x 14", about 90 pages per volume. These are very remarkable volumes, several of them devoted almost completely to explaining and demonstrating technical phases of color work.

Mr. Beck was educated in the public schools of Baltimore. While his study of college level was limited to evening courses chiefly in electrical engineering, his self-education was so thorough that he would search into the most highly scientific German as well as English literature when he needed the answer to a problem. Those of us who knew him best can say with his son that "he applied his searching zeal to all the problems he encountered in his work, his hobbies, as he did to the color work; he was a student of the science that encompassed the problem at hand." Color in stamps was not his only avocation. He was interested in radio construction, crystallography and models to illustrate atomic structure. He was a book collector, particularly of the classics, sciences, engineering, psychology, and was a member of his local Orators Club.

It is to be hoped that much of the color information and material assembled during his lifetime can be kept together and made available for future work in color. Certainly his stamp-color names work will be completed and used in the ISCC-NBS revision, and it may be that other unpublished material can also be put on record. That is what he would have wished. Mr. Beck leaves behind many friends in the color field whose appreciation of his interest, enthusiasm and ability to delve soundly to the bottom of any problem grew with the years. We shall miss him at meetings and in dropping in now and then when he needed help or when his enthusiasm for a project had reached a point where he had to share it with an understanding color friend.

D.N.

HISTORICAL NOTE ON RIDGWAY COLOR CHARTS

The June 11th issue of Science carried a report by W. I. Illman and D. H. Hamly of the Department of Botany, University of Toronto, on the Ridgway Color Standards, recording visual differences among several Ridgway chips having the same color name. An answering comment in the October 1 Science from J. T. Zimmer of the American Museum of Natural History suggests that if references were restricted to the original work, such differences would not be found.

The one person from whom the facts can best be obtained regarding the questions raised about various editions, etc., of Ridgway is Mr. A. B. Hoen of the A. Hoen and Company of Baltimore which printed the 1912 edition for Ridgway and took over the expense of publication when Ridgway found that he could not take care of it. The A. Hoen and Company, lithographers, have a world-wide reputation for fine color work (being particularly well known for their maps, printing all of the National Geographical Society's maps). Mr. A. B. Hoen was personally connected with the very considerable amount of careful color-matching work that went into production of the 1912 Ridgway charts.

Your Secretary therefore wrote to Mr. Hoen following publication of the recent Science items to ask if he would not set the record straight. In 1942, in answer to a letter on the same general subject, Mr. Hoen had indicated then that the 1912 edition of the Ridgway Color Standards was to have been 5,000 copies but that through difficulties in handling several of the color sheets, this number was not completed before distribution began. Subsequently, however, new color sheets were made; and by 1942 when the letter was written, those that were missing had been bound up into complete sets to satisfy the demands of the public. Mr. Hoen replied to the Secretary's letter by coming in to visit her the very next week (October 12) while in Washington on an unusual and very interesting color-reproduction job for the Library of Congress. Although his personal interest in the Ridgway work is still keen, most of the work handled by his company is on such a volume basis that their interest in the production of color charts (for they lost money on the Ridgway even at $25.00 per copy) is very low.

With the 1886 edition of the Ridgway book the Hoen company had nothing to do; but they produced the 1912 edition. They matched the color pages they prepared (on sheets about 17 x 22") and checked them after the sheets were dry both against samples supplied by Ridgway and by disk mixtures. But the disk mixtures sometimes looked gray, which they attributed to imperfect cutting of disk edges; and while the hue and intensity of the colors were kept, they used the "cleanest" or "clearest" color they could get in each series. Their Mr. Portugal, a proved and expert color man, did the matching. The yellows caused the most trouble; also some reds. Perhaps some of the mixtures of colorants may not have stood up as well as those colors in which single or stable combinations of colorants were used, but there was no way of foretelling this at the time. Great care was taken in the preparation of the colorants. In fact, they were first ground in oil; but the hues were too much changed by the vehicle. So linseed oil was abandoned, and the colorants mixed with starch. The colors were prepared on large sheets and these were cut to the chip size used in the books.

The glue used on the samples was stamped on in an automatic machine. This adhesive was some usual fluid glue, and Mr. Hoen thought it possible that it may have been responsible for some of the color changes. In mounting the first charts too much glue was used, and many of these first charts therefore had to be discarded. After the samples, with glue on the back, were dropped in place on the proper sheets, their positions were adjusted by girls using needles to push each sample accurately into place.

The books originally bound were not as many as intended since the supply of color chips for some of the first charts was decreased by spoilage in mounting. When the supply of bound copies ran out, the call for more books was so great that a new supply of the few missing colors was made. These were made to match the original colors, not more than about 25 colors being involved. No new printing was necessary, and these few replacing colors were used to complete the binding of more charts. The stock is now exhausted, the Hoen Company themselves having only four copies put away for reference.

Thus there has been only one edition of the Ridgway charts that were first made by Hoen in 1912, the original binding in 1912, and another later binding. It is of historical interest to know also that a series of what looks like half of the original series used as a basis for Ridgway's 1912 edition is on deposit at the National Bureau of Standards. The charts in the 1912 edition differ completely from the hand-painted water-color charts of the original edition of Ridgway published in 1886 by Little, Brown & Co., Boston, under the title: Nomenclature of Color for Naturalists. The early book contained ten color plates with 186 samples of named colors. The 1912 edition, supervised by Ridgway and prepared by Hoen, was a complete revision and enlargement of this earlier book, containing 53 plates and 1115 named colors.

We believe it important to make the above information available to color workers, and wish to thank Mr. Hoen for supplying it. It will also be of interest to all workers who use Ridgway to know that Prof. Hamly has made a Ridgway-Munsell conversion that he expects to have ready for presentation at the spring meeting of the Optical Society of America.

SO ALSO A NOTED PHILOSOPHER

In News Letter No. 51, pages 4-5 (Jan. 1944), the Editor quoted from his letter to Dr. Albert C. Barnes, noted art critic, collector and chemist, acknowledging his debt of gratitude to Dr. Barnes for his fine work, "The Art in Painting." That his humble opinion is shared

in illustrious circles may be gathered from the following quotation from the pen of John Dewey answering, in J. Aesthetics & Art Criticism 6, 208 (No. 3, March 1948), Benedetto Croce's criticism of Dewey's "Art as Experience" (1934). The great philosopher wrote: "I do not think I exaggerate in saying that I owe more to the books on the plastic arts written by the man to whom my book is dedicated, Albert C. Barnes, than to all the official treatises on art composed by philosophers." On page 209 is more in explanation. And, by the way, since we published a note about the organization of the American Society of Aesthetics, we note that John Dewey is a member.

RECENT ARTICLES BY FABER BIRREN

Two articles by Faber Birren, very different in nature from one another, have appeared recently. One appeared in the American Magazine for September, "What's Your Color?" It is in a light vein, the sort of thing Birren does very well. The other is entirely serious in nature, a report to a scientific group on industrial ophthalmology, the Ophthalmic Aspects of Illumination, Brightness and Color, reprinted from the Transactions of the American Academy of Ophthalmology and Otolaryngology, May-June 1948, pp. 566-84.

Without doubt Mr. Birren's practical experience with industry's problems in color and illumination is such that he is able to speak with authority in this field. Moreover he has been thinking seriously for some time of the many and sometimes conflicting principles laid down regarding good lighting practice. In 1945, his Color in the Plant appeared in Fact and Management (February); in 1946, Color and Psychotherapy in Modern Hospital (Aug.-Sept.); in 1947, Functionalism with Color in Nation's Schools (May); The Specification of Illumination and Color in Industry in Trans. Amer. Acad. Ophthal. (Jan.-Feb.), and in 1948, On Understanding Color in Illuminating Engineering (July).

While we do not find that Mr. Birren is unequivocal in his conclusions (nor can we agree with some of his proposals) we believe it is a good thing to get this entire subject out in the open, with an opportunity for full discussion. Therefore, while we shall not here review the report, we do wish to call it to the attention of those who may be interested.

PRESENT-DAY LIGHTING PRINCIPLES DISCUSSED

In connection with the preceding item attention should be called to several articles in the September 1948 number of Illuminating Engineering. First there is a 73-page report on American Standard Practice for School Lighting. Following this is a critical discussion by Miles A. Tinker of the University of Minnesota on Trends in Illumination Standards, with discussion which includes an extensive reply by Matthew Luckiesh. The issue concludes with a very useful report by M. E. Bitterman, of the Department of Psychology of Cornell University, on Lighting and Visual Efficiency: The Present Status of Research, also followed by extensive discussion by Dr. Luckiesh. The somewhat heated discussion, particularly in the Tinker-Luckiesh exchange, probably presents this controversial subject in the best sort of way for the uninitiated observer to understand most easily the general principles involved. Illumination engineering, like applied colorimetry, is still in its infancy, and reports of this sort can help to clear away some of the cobwebs.

CH'ING

Since in a previous issue and elsewhere in this issue we discuss a Chinese color term, we thought it worth while to discuss here the term Ch'ing, taking our information chiefly from an article by

Helen E. Fernald in Art and Archaeology 34, 93-8 (1934). The article deals with the "Hsiang Album," a 16th-century manuscript by the Ming dynasty scholar, Hsiang Yüan-pien (1525-90). After an earlier edition of the work edited by a certain S. Bushell, whom Miss Fernald thought saw greens as blue and faded and therefore might have been "color-blind," there appeared an edition revised and annotated by Kuo Pao-ch'ang and J. C. Ferguson. It contained 85 color plates, sold for $300.00 and was published in 1931 by the Chi Chai Publishing Co. of Peiping. The title was "Noted Porcelains of Successive Dynasties, with comments and illustrations by Hsiang Yüan-pien." The manuscript, not the 1934 article, has a table of color terms with English translations. But Miss Fernald thought that the question of the meaning of Ch'ing had not been settled. For Fên Ch'ing was called a pale greenish blue, though illustrations and original specimens appeared bluish green to her. Some Ch'ings were yellowish enough to be described as yellow-green. Fên Ch'ing was meant to be "the color of the sky after rain in the process of clearing," that is, "delicate greenish blue very close to the border of green and blue" (Fernald). But in the early days the potters were unable to follow the formulas closely enough to obtain the indicated color. After reading the article the Editor still had some doubts as to the exact meaning of Ch'ing, except to believe that the best Ch'ings varied from greenish blue to bluish green, with the former preferred by Miss Fernald. Since she recommends the Munsell system as the only satisfactory one for studying pottery colors, it should be mentioned that the Munsell blue is much greener than that used by most people, so that her "greenish blue" might be a decidedly greenish one. On the other hand, the description related to the sky does not suggest this, so we are still left somewhat mystified and appeal to any of our readers who may have information on this subject to set us straight. The modern American textile Ch'ing does not help, for it is a very saturated blue, near the Munsell purple-blue, which in hue is not, however, too far from the blue of others.

"REPORT ON COLOUR TERMINOLOGY"

Since its inception in 1940, the British Physical Society Colour Group has been facilitating progress and understanding in the scientific and technical aspects of various significant color problems. The present Committee of the Colour Group provides in its recent report on color terminology, a triple achievement, viz., (1) a record of the contemporary usages of various important groups of color workers, (2) a correlation with respect to meaning of the most commonly used color terms, and (3) tentative recommendation of a list of self-consistent terms and definitions for all color workers.

The record of contemporary usages was assembled by cooperative effort of individual committee members covering their respective fields of specialization. They received assistance in drafting their list of terms and definitions by the societies and organizations of various color groups, some of whom are represented on the Committee.

This basic information is classified in the Report into six main categories as follows: (1) Terms used in Colour Physics including General Terms, Photometric Terms, Subjective Colour Terms, and Colorimetric Terms; (2) Terms used in Colour Vision, (3) Terms used in the Munsell and Ostwald Systems, (4) Terms used in Ordinary Speech, (5) Terms used in Industry including the Dyeing Industry, the Paint and Pigments Industries, Colour Photography, the Glass Industry, and the Decorating Trade, (6) Terms used by Contemporary Artists. A valuable and unusual feature running through the 35 pages of this portion of the Report is the interspersing of the definitions with numerous orienting and explanatory passages. Student and expert alike are benefited by this feature.

The second main problem, that of the correlation of color terms, is of course of

paramount importance and has its analog in nearly every branch of scientific or technical knowledge. In the present instance the approach was by way of an attempt to work out a really self-consistent list of color terms. As one might expect, there were various difficulties; some terms have more than one meaning in a given field or industry as well as different meanings in different fields. The guiding principle here was to choose the term entailing the fewest changes but to give weight to terms most used with a single meaning, and to conform as closely as might be to the usages of ordinary speech. When terms were found to be redundant, the practice was to adopt one term to the exclusion of others. When the adopted term replaced different terms in different industries, the result was an increase in unification of terminology. Very few new terms seemed necessary.

As a device for determining the suitability of particular terms for inclusion in the self-consistent list, a general correlation table was prepared. This table, which appears on pages 42 and 43 of the Report, provides a general view of equivalent terms of the various color groups with respect to various color concepts. Terms were separately tested and assigned or rejected by reference to this table. The term shade proved to be difficult and the term brightness was the most difficult of all.

An interesting view of the Committee which may be noted here is that whereas "the causes of confusion in colour terminology are the multiplicity of meanings given to the same term and the multiplicity of terms used to cover the same meaning," there are only seven terms which cause this confusion (brightness, dominant hue, shade, tone, deep, dull, pure).

The third main problem, that of the recommendation of a self-consistent list of color terms, is answered specifically by means of the list which was worked out with the aid of the correlation table and is presented on page 45 of the Report. This list included 35 univocal terms with brief definitions which are regarded as suitable for use by all color workers. A following table shows the changes in present usage which would be required of each group of users, in case the self-consistent list were adopted.

The Committee is familiar with the Colorimetry Report of the Optical Society of America and professes general agreement with its terms and recommendations. There are, however, a number of specific disagreements and preferences which are pointed out, e.g., illumination is preferred over (American) illuminance, direct is preferred over specular, matching stimuli is preferred over instrumental stimuli, reference stimuli is preferred over unitary stimuli, defective colour vision is preferred over color blindness. Important definitions which differ are those for light, color and luminosity.

Though American usages are taken into account to some extent, as indicated above, the chief limitation of the Report (for American users) remains its limitation of scope; it is essentially a treatment of British usages, which is of course what it set out to be.

It may be said in general that serious work on terms and definitions is not particularly appealing to most members of technical and scientific groups, and as a consequence comparatively little has been done where much needs to be done. The present Committee is to be congratulated on carrying through its project and getting out its Report on Colour Terminology which is a valuable, constructive contribution to this difficult and important problem. Some idea of the consideration and care which went into this project can be gained from the fact that 21 full meetings and many smaller

meetings were held during the six years of effort involved. The work was under the guidance of Mr. H. D. Murray who was Secretary during the first five meetings and Mr. R. G. Horner who was Secretary for the remainder of the project. The other Committee members were: Dr. R. K. Schofield (Chairman), Major A. Cornwell-Clyne, Mr. H. W. Ellis, Dr. E. J. Gooding, Mr. J. Guild, Dr. V. G. W. Harrison, Prof. H. Hartridge, Mr. J. G. Holmes, Mr. J. Lawrance, Mr. E. R. Wells, Mr. G. S. J. White, Mr. G. T. Winch and Dr. W. D. Wright.

(Ed. Note: The Report on Colour Terminology by a Committee of the Colour Group of the Physical Society, 1 Lowther Gardens, Prince Consort Road, London S.W. 7; pp.56; 1948; was priced at 7s, net, to non-members.)

It seems of interest to add here that the work of the above Committee of the Colour Group of the Physical Society is closely related to that of the I-S.C.C. Problem Committee 6, "Color Terms." The latter committee has recently completed a Comparative List of Color Terms covering the usages of 14 technical and scientific groups in the United States and including the terms defined by the Colour Group of the Physical Society. The first stage in the work of both committees was essentially identical, viz., to collect the current terms and definitions. The second stage in the work of both committees was essentially similar; the British committee worked out a general correlation table of the meaningful relations between terms of different user-groups, while the American committee prepared a detailed comparative list showing identical, similar and different usages of different user-groups. The recommended self-consistent list of terms which climaxed the work of the British committee has no parallel in the American work. It seems fair to say, however, that both committees are making significant contributions in reducing confusion and increasing unification in color terminology. Both are contributing to increased international understanding.

(Ed.- See also article "Dyer's Brightness" in News Letter No. 78, pp. 11-14; Sept. 1948)

S. M. Newhall

OSTWALD SYSTEM

Recently there came to our attention an article entitled "Color Organization in the Ostwald System," written by Walter C. Granville, I-S.C.C. Counsellor and representative from two of its member-bodies. It is a five-page article which appeared in the American Ink Maker issue of June and August, 1948, and can be highly recommended as a very straightforward, lucid and well illustrated exposition of the Ostwald System. The six figures clearly present the Ostwald analysis into contents of white, full-color and black, the meaning of the shadow series and such others as the "light clear" and "dark Clear" series and the color solid arranged along Ostwald lines. The two "clear" series and the typical Ostwald triangle (with red the full color), as well as a diagram showing how color harmonies are suggested by the Ostwald arrangement, are well presented by using red ink along with the black ink.

Pointing out that color harmony is not achieved merely by selecting colors that look well together by themselves, he quotes Harry V. Marshall as follows (E.C.Andrews, "Color Secrets," Philip Buxton, Inc., A Division of The International Printing Ink Corp.; 1930): "In merchandising, the selection of suitable colors should be regulated by three considerations -- the article we are selling -- safety pins or steamships, tomato soup or cosmetics; to whom we appeal -- men or women, children or corporations; and the manner of presentation -- posters or periodicals, catalogs or containers." From this he reasons that rules for color harmony can only suggest

colors that are related to one another in an orderly way which is applicable to our special needs and problems; and of course assumes, with Ostwald and Munsell, that easily sensed order leads to improved harmony. But he adds sensibly that, if one doesn't want to follow any rules at all, the removable and easily movable chips of the Color Harmony Manual sold by his company (Container Corporation of America) provide exemplars for trying out one's own selections.

GARDNER-HUNTER INSTRUMENTS

During September and October we received two bulletins on these instruments which may be of interest to any of our readers who may not have received copies. One describes the New Low-Cost Portable Instruments made by the Laboratory, the New 60° Glossmeter and the New 45°- 0° Reflectometer. The other is an eight-page bulletin entitled "Instruments for Measuring Appearance and Other Optical Factors." Besides the foregoing instruments and the Multipurpose Reflectometer, as well as photometric unit and exposure heads and continuous recorders and controllers, the bulletin describes the Photoelectric Color and Color Difference Meter, which was described by R. S. Hunter at a recent Optical Society of America meeting, and which has evoked much interest then and since, especially because of its direct-reading color-difference features. These bulletins may be obtained by writing to the Henry A. Gardner Laboratory, Inc., 4723 Elm Street, Bethesda 14, Maryland.

COLOR IN "FOUNDATIONS OF PSYCHOLOGY"

The recently published work of the quoted title has been brought to our attention because it includes a chapter on color written by Dr. Forrest L. Dimmick, former chairman of the ISCC and professor of phychology at Hobart College and now at the U. S. Naval Medical Research Laboratory at New London, Conn. Dr. Dimmick has here undertaken an extremely difficult task, that of condensing into 27 pages a very complex field which embraces contributions from many of the common divisions of knowledge: physiology, psychology, physics and even chemistry and esthetics. He proceeds from his own method of analysis of colors to the relations of color and its stimulus, thence to color mixture. From here, where there is an excellent statement of the laws of mixture, he skips lightly (and wisely, we think) through colorimetry on to color phenomena (adaptation, afterimages, etc.) to color blindness, where, as everyone knows, the author is very much at home, ending with a necessarily brief section on physiology. Dr. Dimmick has also written a chapter on Visual Space Perception; and there is included also a chapter on Perception, embracing such subjects as whiteness constancy, by E. B. Newman.

Dr. Dimmick has made his task slightly harder by using a tenth of his total space plugging for his own mode of analyzing and specifying colors in terms of seven "unique" colors, including gray among these. He regards the more orthodox "color equation," including only the pairs red or green, blue or yellow and black or white, as rather outmoded because of his experimental researches in this field. While the reviewer regards as rather refreshing any new and alternative analysis of colors, and can see no objection to the Dimmick method of specification for those who regard gray as unique and who are unable to see in all grays much resemblance to black or white (or both), the reviewer cannot easily go the whole way in regarding the Dimmick analysis as inherent in our mode of perception nor more useful than the orthodox way. Gray seems to the reviewer as something resulting from blends, not of the stuff out of which blends are made; but he sees no serious objection to the newer analysis if others find it more convenient to think that way. It is perhaps worth mentioning that gray has no complement, while all of Dimmick's (and others') unique colors do. One sense in which gray is unique, however, is found on page 283 under the heading Adaptation. Here the general law of color adaptation is stated as: "With continued duration all colors tend toward gray."

Given the Dimmick mode of analysis, a lucid section flows smoothly here from his first and very interesting section on Color Names. Here seven figures constitute a useful aid to clarity. In all of the solid figures and their sections, gray occupies the central position; in this geometrical sense, gray is unique. In the author's Figure 113, exhibiting the "Dimensions of the Color Figure Showing Hue, Saturation and Brightness," the reviewer sees pictured relations which do some violence to his own preconceived notions, though these may consist largely of crystallized (and rather set) orthodox representations. Here gray is put centrally along the white-black axis, with yellow opposite it and equally distant from black and white, implying (to most people) equal resemblances to these. For the reviewer, yellow ceases to be characteristically yellow when it does not more or less resemble white and begins to resemble black even slightly. Also, red is put in the figure near white and green near black. To us, the typical reds and greens seem to be about equal in their resemblances to black and white, though perhaps slightly different in a direction reversed from the author's representation.

Though a student finds little in the chapter to help in the understanding of saturation, a difficult concept for a beginner (if not for many experts), at other points one finds such illustrations of Dimmick's special talents as his representation of the color solid as a double hedgehog bristling with saturation lines. From this point on the treatment is more conventional and handled with the author's usual carefulness of statement.

In view of the brevity of the chapter, one who knows the capabilities of the author as well as this reviewer does, is visited with a feeling of regret, as when he sees a thoroughbred horse held too completely under wraps. One is inclined to hope the editors will devote more pages to that colorful subject color -- Dimmick once said that magenta as a stimulus is equivalent to two cocktails -- in future revisions, for we are sure there will be further editions of so fine a volume. The editors are Professor E. G. Boring of Harvard, Dr. H. S. Langfeld of Princeton and Dr. H. P. Weld of Cornell; and there were 18 collaborators. The composing skill of the publishers, John Wiley and Sons, is evident throughout the book's 632 large pages and 248 figures. The cost is only four dollars.

I. H. G.

MORE ON CELADONS AND COLOR

Miss Nickerson's note on celadons in News Letter No. 78, stimulated by the work of the King's seen in California, caused the Editor to dig in the shadowy depths of his memory and unearth the following quotations from Benjamin March's interesting "Standards of Pottery Description." This is Occasional Contribution No. 3 from the Museum of Anthropology of the University of Michigan (1934), chapter IV of which is wholly on color. The author was working in Washington and Ann Arbor under the provisions of C. L. Freer's bequest to the university for research in Oriental art; and he began his monograph with the question: "How may the University of Michigan's Chinese celadons from the Philippines be compared with the fine examples of the ware that are preserved in the Freer Collection (of the Freer Gallery of Art in Washington, D. C.)?

The chapter on color (page 23) begins: "Of all the attributes of pottery none is more impressive than color." The author then goes on to say: "While a connoisseur will assay the aesthetic merits of a vase primarily on the basis of its shape, the decorative value of ceramic vessels is generally conceived almost wholly in terms of color. Color is a primary criterion for ready identification, and consequently it is the most available characteristic for general classification. Thus we speak of red

ware and buff ware.... among the potteries of the American Indians, and of .... celadon and other wares among more highly advanced potters such as the Chinese. It is especially unfortunate, then, that there is among students of ceramics no accepted standard of color nomenclature which would insure a positive and permanent interpretation for each color term used in the description of a piece of pottery."

On page 24 is found the following paragraph. "The peculiar gray-green glazes known as celadons present complications that are similarly difficult. In China celadon glaze has been applied to porcelains and fine stonewares since the ninth century at least, reaching the peak so far as aesthetic quality is concerned probably in the thirteenth century. Distinctions have been drawn between the colors of several different kilns in the thirteenth century, and between Chinese, Japanese, Korean, and Siamese celadons, as well as between the celadons of different periods in China, but no description has yet proved really adequate. The Chinese have typically compared the celadon color to the tint of young onions, but they never mention how young the onions should be, and the color mutations through a few days of growth may be very noticeable. Grass is a very unstable basis for exact comparison, and when one observer calls celadons grass- or onion-green, and another refers to them as olive in hue it is apparent that confusion must arise."

The author then goes on to say that color analysis by means of Maxwell disks "or some other laboratory device" is rather too complicated to be generally applied, discusses the Ridgway (1912) book of color standards, and recommends the use of the "Dictionary of Color" (McGraw-Hill, 1930), by A. Maerz and M. Rea Paul, the latter a repeat Chairman of the ISCC, pointing out that the latter work reproduced the color standards of the former work. In this connection it may be mentioned that the M & P Dictionary's "celadon green," sample 21 B 4, has the Munsell notation 5 GY 5.6/2.4, according to the averaged comparisons with three copies of the M & P work made by Mrs. Genevieve Reimann and the Editor. Grass green, 21 L 5, was 4.5 GY 5.6/5.7; pea green, 20 G 6, was 6.5 GY 5.6/4.5; and olive green, 15 L 4, was 9.5 Y 3.8/3.8, the hue varying in the three copies from 7.5 to 10 Y. These are so-called "book notations," not "re-notations." No "onion green" is listed or described in Maerz and Paul. According to a proposed revision of the ISCC-NBS color-name descriptions, celadon green of M & P would be a "grayish yellow green." The Editor, in Webster's New International Dictionary, translating M & P, described the color as "greenish-yellow in hue, of low saturation and medium brilliance (lightness)."

March devotes three pages to the method of using M & P to determine pottery colors. He then goes on (p. 29-30) to say: "In the study of celadons the general range of the term is fairly well understood, but we find a wide range of gray-green and blue-green tints included in the classification. The differentiation of Lung-ch'uan celadons in general from the specialized Chang yao, and both from the later products of Chingtechen will necessitate exact color definition of known or reasonably certain examples. As yet no adequate study has been made, but it is hoped that the extensive celadon collection of the Museum of Anthropology will yield some valuable information on type ranges and the relation of color to other attributes. Certain examples of celadons may be cited from specimens in the Freer Gallery of Art in Washington, D.C., a collection noted for the superior quality of its contents. The standard celadon of Maerz and Paul is 21 B 4, in the yellow to green group. A bowl regarded as of Lung-ch'uan type but later than Sung (960-1280 A.D.) in the Freer collection has a glaze 21 B 5, almost the standard. A vase of what is generally known as Sung dynasty Lung-ch'uan type, however, has a glaze of 26 C 5, in the green to blue-green group. A small bowl described as "late Sung, Lung-ch'uan type" has a glaze of 28 D 5 approximating French gray. A Korean celadon bowl is glaze 30 A 3, in the green to blue-

green group, and two bowls of Northern celadon type fall into the orange to yellow group, 14 I 2 and 14 J 3, approximating silver fern."

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