INTER-SOCIETY COLOR COUNCIL

NEWS LETTER NO. 38

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ISCC OFFICERS FOR 1942-3

Results of the recent biennial election show that the officers have been elected in accordance with the nominations reported in News Letter No. 37.

ANNUAL MEETING TO BE HELD IN NEW YORK CITY

The 1942 annual meeting of the Council will be held in New York City on February 26 and 27, at the Metropolitan Museum of Art. The Technical Session will be concerned with color in art education. Mr. Royal B. Farnum and Mr. E. Blanchard Brown of the Rhode Island School of Design, Mr. James C. Boudreau of Pratt Institute, Mr. Milton E. Bond and Mr. Byron G. Culver of the Rochester Athenaeum and Mechanics Institute are active in arranging the program for this meeting. On the committee also are Mr. Frank L. Allen, Massachusetts School of Art; Mrs. Elizabeth Burris-Meyer, School of Fashion Careers; and Mr. Harold C. Parks, chairman of the American Artists Professional League delegation to the ISCC.

STANDARDS FOR ARTISTS' OIL PAINTS

Ballots sent out on August 28 re the adoption by the Inter-Society Color Council of endorsement in principle of the Commercial Standard for Artists' Oil Paints (Ts-3116) were counted on September 30. Out of a possible 42 ballots, 31 were received, all in the affirmative. There was at least one vote from each member body, with the exception of the S.M.P.E. Three votes were received from seven member bodies. An itemized statement of the vote is given below:

	Votes in affirmative		Votes in affirmative
AAPL	1*	N.F. AmPhA	2
AATCC	2	OSA	3
AmCerSoc	3	SMPE	0
APA	3	TAPPI	2
ASTM	3	TCCA	3
FPVPClubs	1	USPConv.	3
IES	3	IMG	2

The resolution was therefore declared adopted, and the Chairman has notified the Division of Trade Standards of the National Bureau of Standards.

*A second affirmative vote was received a few days after the ballots were counted. The delay was caused by an accident (fractured skull) to the chairman of the AAPL delegation, who was unable for some time to attend to his mail. We are glad to report that Mr. Parks is now back at work.

NEW I.E.S. REPORT

A report on Illuminating Engineering Nomenclature and Photometric Standards, submitted to the American Standards Association to supersede American Standard No. Z7, approved December 19, 1932, has been published in Illuminating Engineering, September 1941, pp. 813-852.

WASHINGTON COLORISTS

Francis Scofield, Sidney M. Newhall, and Richard S. Hunter are arranging the programs for the 1941-42 season of the Washington and Baltimore Colorists. Mr. H. A. Reddy of the Krebs Pigment Department of E. I. duPont de Nemours and Co. was the speaker on November 10. On January 12, a dinner meeting will be held at the Arts Club. In February the meeting will be held in Baltimore; and in April the group will hear about theories of color vision from Dr. Michael J. Zigler of Wellesley College. Anyone interested is welcome at these meetings.

CHICAGO ASSOCIATION FOR COLOR RESEARCH

The Chicago Association for Color Research has announced that four related, informal lectures, to be followed by open forum discussions are being arranged for this season. Membership in the Chicago group includes membership in the Art Center, and members therefore receive announcements of Art Center exhibits, meetings, and classes. The first color meeting, October 1, at Art Center, was to be addressed by Christian A. Ruckmick of the C. H. Stoelting Company. Other color dates are November 5, December 3, January 7, February 4, April 1, and May 6.

BOSTON COLOR GROUP

The first meeting of the Boston Color Group was announced for November 5: dinner at the Emma Rogers Room, after which the group was to hear Mr. Dard Hunter, of the Dard Hunter Paper Museum, of M.I.T., speak on the Oriental Origins of Paper and Printing. Under the chairmanship of Dr. Michael J. Zigler there will be six meetings this year, all but the first to be held on the first Tuesday of each month. The success of the group for the past three years has been made possible by the advance sale of season tickets, $6.00 for the six meetings. Guests are very welcome, and anyone who wishes to attend should get in touch with Dr. S. Q. Duntley, Kirkland 69, Extension 829.

NEW YORK COLOR ASSOCIATES

On November 9, the newly formed New York Color Associates met for dinner at London Terrace, 405 West 23rd Street. Dr. Katherine Blodgett of the General Electric Laboratories, Schenectady, spoke on "Color of Interference Films". Anyone interested in announcements of the New York meetings should get in touch with Walter Granville, Interchemical Corporation Laboratories.

BRITISH COLOUR GROUP MEETING

At Bradford, England, Wednesday, July 25, the Physical Society Colour Group held their third meeting. It was announced that a Subcommittee on Colour Terminology had been formed "to report about the possibility of coordinating the terms having an accepted significance amongst any important group of colour workers." The subcommittee members are Messrs. Guild, Murray, White, Lawrance, Harrison, and Schofield. A paper on "Problems of Colour Mixing in the Dyeing Industry" was read by Mr. J. G. Grundy with discussion following. The fourth meeting of the colour group was called for September 24 in the Physics Department of the Imperial College in London. The program as announced was to consist of three papers on Whiteness: The Nature and Measurement of Whiteness by J. G. Holmes; The Measurement of Near-White in the Paper Industry by V. G. W. Harrison; and The Apparent Whiteness of Cinema Screens by C. G. Heys-Hallett.

TIME KEEPS UP WITH COLOR

For those who have not seen TIME'S recent rhyme which accompanied a half-column explanation of the change in color in autumn foliage, we give it to you:

From hedgerow, lawn and wooded hill
Departs the summer's chlorophyll;
The elms and hickories lose their green
And glow instead with carotene,
While sumacs, maples redden in
A burst of anthocyanin--
And TIME is moved to tell its client's
The reason why in terms of science.

ISCC-NBS NAMES FOR SOLUTIONS

In the September-October 1941 Bulletin of the National Formulary Committee, Kenneth L. Kelly reports the result of certain check work to indicate how successfully the ISCC-NBS system of color-names might be applied to the problem of specifying the colors of transparent and translucent media. It was found generally successful, but recommendations have been noted concerning a few of the tests. Included in the report is a table which gives ISCC-NBS names for 89 chemical tests. In a letter to the secretary, Mr. Kelly says "I feel that these results indicate that the system is successful for describing the colors of solutions as well as the colors of powdered and crude drugs."

SOIL-COLOR STANDARDS AVAILABLE

The Council committee on Production and Specification of Central Samples for the ISCC-NBS Color Designations reports further progress. Central notations were published in the September Journal of the Optical Society of America. Since that time the first 56 colors have been made available on color charts. They were prepared to accompany U. S. Department of Agriculture Misc. Pub. No. 425, Preliminary Color Standards and color names for soils. This report was made available in time for the meeting of the Soil Science Society, November 12-14, and copies may be obtained from the Superintendent of Documents, Washington, D. C., at three dollars each.

ARTHUR S. ALLEN COLOR CLASSES

Under the supervision of Arthur S. Allen, a third color class is being conducted in New York City by Lorain Fawcett. This class applies the Munsell system of color to industrial and everyday use. There are ten sessions in each course, five of lectures and five devoted exclusively to workshop. The student is taught to read and notate color, develop a visual knowledge of color; and in the workshop actually to match samples, and make tinting and toleration steppings. The class work is of a practical nature and is designed for those using color in their work and desirous of developing a better understanding of the subject. The present class meets every Tuesday evening from 6:00 to 7:30 p.m., October 14 through December 16, at the studios of Arthur S. Allen, 527 Fifth Avenue. It is expected that the course will be repeated in the spring. Similar courses were given last season.

BRITISH STANDARD FOR ARTIFICIAL DAYLIGHTING

The British Standards Institute published, on March 24, 1941, a standard specification for Artificial Daylight Fittings for Colour Matching, their specification No. 950 (1941). Copies may be obtained, at 75¢ each, from the Canadian Engineering Standards Association, Room 3010, National Research Building, Ottowa, Canada. The foreword states that it is clearly desirable that

one or another of the ICI standard illuminants B or C should be adopted in colorimetry for colour matching, and that in order to insure the minimum inconvenience in industrial practice the second of these, ICI "C", has been chosen; and the tolerances of this specification are given in relation to "C" illuminant. The specification requires that the color of the light from the artificial source shall fall within limits illustrated by lines drawn on an ICI diagram; and that the difference between the spectral energy distribution of the light and of the standard shall be within limits determined by an approximate filter method defined in clause 7 of the specification. Trilinear coordinates for corner points of the limits illustrated appear to be about: x = 32.5, y = 32.6; x = 31.2, y = 34.75; x = 29.05, y = 32.6; x = 30.3, y = 30.4. The space enclosed by lines connecting these points extends from 6000°K to 7500°K on the Planckian locus, and about twice as far on the green side of the locus as on the purple side.

The approximate filter method for determining the spectral energy distribution requires a photometric bench, standard illuminant "C", and nine filters for which spectral transmission values at certain wavelengths are defined in Appendix C. With the lamp and standard illuminant "C" on the photometric bench, each filter is in turn "held in front of the eye and the distance of the standard is adjusted until a brightness match is obtained." A method of computing the values is given; also the tolerances within which the values must lie. In Appendix B, a method for obtaining color temperatures 6000°K and 7500°K is given.

The British specification, although it allows quite a range in color temperature and has a rather wide tolerance for spectral distributions, is reasonably strict. In a very general way the spectral distribution tolerance limits may be approximated by drawing a curve for "C" illuminant, and on the basis of that curve drawing two others that are about 25% above and 20% below the "C" curve from 400 to 600 mu; and about 35% above and 25% below in the red. On such a basis of comparison, only a few of the daylight standards and illuminants studied in relation to artificial daylighting at the United States Department of Agriculture laboratories (J.O.S.A., 29, 1, 1939, Trans. I.E.S., 34, 12, 1939; Ill. Eng. 36, 3, 1941) would qualify for acceptance: Abbot daylight, carbon arc of high color temperature, Macbeth Daylite 6800°K and 7500°K and Planckian 6000-7500°K. Colorimetric limits on the ICI diagram were included in the specification because it is conceivable that an illuminant might pass the filter test for spectral energy distribution and yet fall outside the color limits desired.

COLOR PAPERS AT I.E.S. MEETING

Color is becoming increasingly important in illumination problems. Two papers on the 1941 annual I.E.S. program were entirely devoted to color: one a simplified interpretation of spectral distribution data, by R. L. Oetting and C. L. Amick, Nela Park; the other (presented as a moving picture complete with sound and color) a discussion of improved vision in machine tool operation by color contrast, by A. A. Brainerd, Philadelphia Electric Company and M. Denning, of the duPont company. The paper by Oetting and Amick is an excellent presentation, simplified for general consumption. It was accompanied by a color chart of a variety of paint colors, with reflection factors given for the colors as seen under tungsten and under fluorescent illumination. The study by Brainerd and Denning started with specifications for improving office and factory illumination. The average office was likened to the great American desert, rather than to a peaceful countryside in which nature uses a variety of hue and brightness to add interest. The average factory was likened to the deep woods, in which accurate seeing is difficult unless the colors of the various machine surfaces have been carefully selected to place the least burden on the eyes. Two machines and their

operations were studied when painted with a number of different colors and combinations of colors, The talking picture was a practical method of presentation. The authors concluded that insofar as the colors they had used were concerned, light buff seemed the most suitable, with light gray a close second. Because it was not thought practical from a maintenance angle to paint machines such a radical color as light buff, the machines were painted a medium gray with light buff around the working area, and this combination seemed to perform better than any of the solid colors. This color arrangement has been in use since September 1939 and during the period of operation mechanics became so convinced of its benefits that they keep the light area clean without any supervision. All paints were tried under both incandescent and mercury light. Of the colors tried out yellow and aluminum were least liked.

It occurred to your reporter, in listening to the results, that light colors of low chromas, in a matt or semi-matt finish, were really the answer, the lightness of colors to provide increased illumination at the working surface; and the low chrome in order to supply some, but not too much color contrast. Such contrast as is necessary could probably best be obtained by varying the lightness of the colors, rather than the hue or chroma. The authors indicated that such studies are in their infancy, but they point the way to an excellent partnership between the paint and lighting industries. Meanwhile they call it "Three Dimensional Seeing" and E. I. DuPont de Nemours and Company (Finishes Division, Wilmington) has published a booklet under that title to describe popularly the material presented in the Brainerd-Denning paper.

There were several other papers of interest to color-minded individuals: one by Preston S. Millar which outlined the development of lighting practices in the twentieth century; one by H. L. Logan on the anatomy of visual efficiency, and one by Ward Harrison and Matthew Luckiesh on comfortable lighting.

On Wednesday morning there was a report of recent lighting tests made by Army engineers in cooperation with Nela Park engineers regarding the levels of illumination for the development of visual aids to traffic movement under blackouts. All papers, with the exception of the one on blackout lighting, will appear in Illuminating Engineering during the coming months.

ARTIST'S HANDBOOK

Ralph Mayer; The Artist's Handbook of Materials and Techniques; The Viking Press, New York; 1940; 561 pp. This book is one of the newer ones, and said to be one of the best on the subject that is available. Certainly it is an easy book to read. The introductory notes contain much general information, a discussion of home-made materials, of quality in ready-made artists' supplies, and a history of early practices and materials. The chapter on pigments includes 37 pages listing pigments, their definitions and synonyms. There are chapters on oil painting, tempera, grounds for oil and tempora, water colors, pastel, and one on mural painting. The chapter on miscellaneous materials discusses and describes the various solvents and their use by the artist. There is a chapter on chemistry, divided into two parts: definitions and theory, and practical applications which includes discussion of drying rates, oil index of pigments, driers, resins, etc. The chapter on Conservation of Pictures gives the young artist many hints useful in selecting methods of handling his canvases, as well as in restoring. The final chapter, Miscellaneous Notes, contains in its more than 100 pages, much information useful to the artist: names and addresses of supply houses, a glossary of terms, and the proposed Commercial Standards for Artists' Oil Paints, which "if approved by the trade and artists' organizations according to the procedure of the National Bureau of Standards.... will be promulgated as a regular commercial standard." A bibliography, giving a representative and annotated list of books on selected subjects, completes this handbook.

Other books on the same subject, not so new perhaps, but well known in the field have been written by Dr. Maximilian Toch, president of Toch Brothers, artist's supplies, under whom, Dr. Mayer says in his preface, "much of my early training and disciplined experience was received."--- D. N.

PERMANENT PALETTE

Martin Fischer; The Permanent Palette; published 1930, 2nd printing 1930; 134 pp. (Bridgman Publishers, Pelham, N. Y., may have copies, though your secretary has had no reply from them to a request.) Dr. Fischer, physiologist and chemist at the School of Medicine of the University of Cincinnati, a delegate to the Council from the American Artists Professional League, published in 1930 a book which, although it is now out of print, should be brought to the attention of Council members. He starts out by saying that the modern artist thinks he is interested only in results and that methods mean nothing to him. But Dr. Fischer points out that such an artist has the old master against him -- a craftsman, not ashamed of it, who began his apprenticeship at the hard labor of grinding pigments, sunning oils and painting grounds, so that when he was finally admitted to the guild "it was not because he knew what, but because he knew, with conscience, how!" To the artist who believes he has something worth saying, the technique of his art is of importance if he wishes to appear to succeeding generations as he intended it.

Usually an artist thinks of permanence in regard to light; but permanence to air, to intermixture with other pigments, to reaction with his medium and his ground, to cold and warmth, should also be considered. Each of these is discussed in Chapter II, with two colored plates for illustration. In several brief and clearly stated chapters various pigments are discussed; types of paints, whites, blacks, colored pigments, transparent pigments, "earth colors" to avoid, natural and synthetic lakes. The chapter on light and pigment mixture is brief and well put except for the statement that light mixture and pigment mixture have nothing in common, that the laws of each are different, should be learned as such, and kept apart. (Of course, the color of a pigment mixture in daylight bears a different relation to the colors of the pigment primaries than the color of a light mixture does to the colors of the light primaries. But it is wrong to say that they have nothing in common. The colors of both kinds of mixtures depend equally on the light reaching the eye from them. It is rather too bad that the word color is used by artists in two senses. Color has come to mean not only an aspect of the appearance of paint, but also the paint itself. This double meaning has led some art students to think of color and paint as one and the same. Musical terminology is much less confusing; a musician never confuses his violin string with sound, although he vibrates the violin string to produce sounds in much the same manner that an artist in oil paints applies a colorant to canvas in order to produce a given color effect. Perhaps if paints, pigments, dyes, etc., could be thought of as colorants instead of color, it might help.)

Painting foundations and grounds media are discussed in short chapters, as are several types of palette. The book includes a bibliography and glossary of painters' terms. While the book is not as complete as some others, it is one that would interest equally the technical person interested in knowing something about paints and the artist's troubles, and the artist interested in the whys and wherefors of his materials. After reading it, and others of its kind, one wonders why standards for artists' pigments have not been set long before now! -- D. N.

LIGHT VS. PIGMENT MIXTURE

Because one of the editors thought the parenthetical statement in the above review might be too strong, it was sent for check to Mr. Milton E. Bond, at the Rochester Athenaeum & Mechanics Institute. We thought our readers might like to share his reply with us. With Mr. Bond's permission we quote parts of his reply.

"I have read the reviews you sent and find them interesting; and the statement in question seems to me quite truthful. I certainly do not think that it can be overstated that the laws of pigment, or subtractive mixture, and of light, or additive mixture, are different and that an artist needs to know both and use both. They are different, but I should not say they have nothing in common. An artist just can't throw one away and use only the other even if he thinks he can. If one says he uses light only, independent of subtraction, he must use only white light! Even if he uses a prism to obtain chromatic colors he is using some magic material which refracts, reflects, absorbs, etc. -- and what more or less is a pigment? So everybody uses 'pigment' (or similar materials). If he says he uses paints and dyes and has no interest in the laws of light he is just kidding himself because of course he couldn't even see the pigment except for reflected or transmitted light; and the emotional and physiological effects on him and his admirers are caused directly by the light from his precious pigments. But most artists don't know this, and many will not admit what they can't help but know if they think about it! In a lecture on this subject I use this example: 'If you get mercuric sulfide (vermilion) in your eye, it is uncomfortable and dangerous; if you get vermilion red in your eye, it may be pleasing and thrilling! You say you use paint only -- be awfully careful! -- I'd rather receive the light from your paint.'

"I use the permanent palette suggested by Dr. Fischer. I have not the book but I have had excerpts from it from the Artists Professional League. Very good."

"May I call attention to one word in the second paragraph? '...types of paints, whites, blacks, colored pigments, ... etc.' This use of colored suggests the old meaning of color, excluding achromatic colors. I would suggest, instead, using the term chromatic pigments because black and white are also colors, or colored pigments! Munsell books themselves make this mistake. One instance is the persistent definition of 'Hue' -- the name of a color; as if the achromatics, which possess no hue, were not also named. Well, it will take years to straighten it all out!!! We all make plenty of mistakes.'

"I think your idea of calling paints 'Colorants' excellent!"

STATUS OF COLOR APTITUDE TEST

Up to the first of June, the co-chairmen of the ISCC Color Aptitude Test Committee had received 65 complete sets of data on the Preliminary Form (hereafter called "P") of the test, which consisted of 80 color-matching judgements. There were also another 60 cases in which 40 judgements were taken, and a special set of 40 tests on 2 subjects from a study of the effects of illumination and of retesting. During the two months preceding the date of the chairmen's report (October 25, 1941), additional results have come in, raising the total to 261. In the report, 8 figures and 3 tables are shown; but our available space does not permit their full reproduction. For an analysis of set P, at first a mis-match of 1 place in the series of 80 was scored 1 error; a mis-match by two places was scored 2 errors; and so on. The number of errors that should be obtained by a haphazard shuffling of the two sets of chips would be 532. A rough reading of the curve of frequency distribution of errors shows one case of 95 errors, 2 of 85 errors, 14 (the maximum) of 55 errors, none of less than 5 errors. Expressed as a percentile distribution we find 95% showing 11 errors, 80% showing 32 errors, 60% showing 43 errors, 20% showing 65 errors, 5% showing 90 errors. The average time required was 1.16 minutes per match, and the extreme range .23 min. to 4.68 min.

A revision of the test was planned, reducing the total time for administering it and eliminating some of the tedium and loss of interest in a long test. Abbreviation consisted in using alternate chips in the test set but retaining the full matching field of 80 chips. Statistical examination of the correlations of 40 judgements with the full 80 judgements gave a coefficient of correlation .882; while the coefficient for 20 with 80 judgements was .75. The corresponding probable errors were .016 and .036. These coefficients were so high that it was decided that a part of the test can safely be substituted for the whole test; and the 40-match test was substituted for the original 80-match test. The score of a portion of the YR series correlated less well (.52) with those of a corresponding portion of the PR series; so an equal number of each was included in the 40 revised judgments. Dividing the chips into 8 groups of 10 each, the errors of set P varied from 447 and 457 for the end groups to 336 and 332 for the middle groups, the totals for the two halves being nearly equal. That is, the YR and PR series were of about equal difficulty, while the more saturated parts gave more errors than the less saturated parts.

To determine the effects of illumination intensity and practice, Dean Farnsworth tested two subjects 16 and 21 times, respectively, using three levels of intensity. The results are given in two figures, which show that except for a minor trend, there is no evidence that practice will materially affect individual scores; also that there is little or no effect of intensity of illumination within the range 25 to 100 f.c.

Because of the disadvantages of an inverse score such as the number of errors, C. E. Foss worked out a method of converting errors into "percent correct". For 80 matches, a correct match is scored 1.25, an error of one place 0.5; and all other mis-matches scored zero. The arbitrariness thus introduced warps the distribution and percentile curves (modified forms shown in two figures); but the advantages outweigh this disadvantage. The modified method of scoring was applied to the results of 196 cases of 40 matches each (of course now using 2.5 for correct score, etc.) The mode and median for the 196 cases were slightly lowered; the average time increased from 1.16 to 2.03 min., while the range was slightly decreased. The greater number of high scores found in the 196 cases may indicate the effect of the shorter task; but it may also be due partly to more freedom allowed the subjects. Since it is desirable to avoid bunching of scores in the higher region, the conditions of the test were made somewhat more rigid and uniform by fastening the "field chips" to a gray background in a fixed arrangement. Because of the wide range of times per match taken by various subjects, it was decided that this factor must be controlled. A limit of 80 minutes for 40 matches has been tentatively adopted; and the subject is to be instructed that the time consumed influences the score. A weighting formula for incorporating the time factor in the score has been devised. Another modification may permit better correlation of total test scores with the rating of experience as a color matcher, independently judged by a competent scorer and recorded on the scoring forms. It is believed that judgments of match in terms of hue and lightness, which it is hoped to study later, would not differ much from the judgments here recorded, where the principal variable is saturation.

COLOR AS A SALES-GETTER

We have only recently received a copy of the weekly News Bulletin of the Sales Executives Club of New York, which announced a talk and demonstration entitled: "Taking the Mystery out of Color as a Sales-Getter," by Mr. Arthur S. Allen, well known consulting colorist and popularizer of the Munsell system. This talk was given by Mr. Allen on June 10 at Hotel Roosevelt. Kodachromes were shown by Mr. Karl Fink and exhibits by Miss Lorain Pawcett. The colorful announcement shows on the front page an excellent reproduction of Charles Bittinger's painting of the normal solar spectrum; on the last page a

representation of a constant-hue chart of the Munsell type, a "value" scale, a circle of 10 hues, a color tree in an interesting arrangement, and two applications of color principles to design. A list of 19 firms for whom Mr. Allen has designed successful packages is given. Among the questions his presentation is said to answer are the following. What color combinations can always be counted upon to boost sales? How can better use of color help you? How to command the "Three Musketeers" of color design: Balance, Harmony, Contrast. How can you avoid pitfalls in the use of color? What are the chief "Do's" and "Don'ts" in handling color? What part does color play in the United States Government?

AVERY COLOR SYMPOSIUM

We recently received invitation (with program) and press notice of the Color Symposium at the Avery Memorial jointly sponsored by the Wadsworth Atheneum and Trinity College with the assistance of Wesleyan University and the Connecticut Horticultural Society at Hartford in six sessions from November 7 to 9. There was also a Preview and Color Organ Demonstration on November 1, and a special exhibition, "Color in Commerce," from November 2 to 16 in the Avery and Morgan Memorials. On the first day the afternoon session included: "Color in Commerce," by Faber Birren, color consultant, and "Unique Applications of Color in Lighting," by S. G. Hibben, Westinghouse Electric & Manufacturing Company. The evening session included: "The Physics of Color," by Prof. H. A. Perkins, Trinity College; "The Chemistry of Color," by Dr. V. K. Krieble, Trinity College; "Color in Flowers and Vegetables," by Prof. G. A. Hill, Wesleyan University, Middletown, Conn.; "Flowers and Trees," the first (1932) Disney Silly Symphony in color; and "Doing the Lambeth Walk" and "Musical Poster No. 1," the latter being used in England to caution against the passing of information which might be helpful to the enemy.

On the second day the morning session included "Reasons for Color Preferences," by Prof. G. R. Wendt, Wesleyan University; "A Discussion and Demonstration of some Color Phenomena," by Prof. R. B. W. Hutt, Trinity College; "The Psychological Analysis of Light and Color," by Dr. B. D. Prescott, Neuro-Psychiatric Department of the Hartford Retreat; and "Color Blindness," by Dr. H. L. Birge, ophthalmologist. The afternoon session included: "Color in Cooking," by Mrs. Arra S. Mixter, Director of Home Economics for the Hartford Gas Company; "Color by Interference," by Miss Katherine B. Blodgett, research expert of the General Electric Company (whose picture was reproduced in the press notice); "Color and Reproduction," by Prof. T. H. Bissonnette, Trinity College; and "Color in War," by S. W. Hayter, British camouflage expert and member of the staff of the New School for Social Research. In the evening there was a Color Organ demonstration by Prof. Glenn A. Shook of Wheaton College, Norton, Mass., and a showing of the first (1926) two-color technicolor film, featuring Douglas Fairbanks in the "Black Pirate." On Sunday, November 9, all the films were again shown. The "Color in Commerce" exhibition was arranged to show the influence of artists on the commercial use of color, some aspects of color in painting, and the invasion of color into commerce and industry. The colorful objects and exhibits were assembled by the cooperation of G. Fox & Company, the Hartford Electric Light Company, the plastics division of the Colt Patent Fire Arms Mfg. Company, Monsanto Chemical Corporation (plastics), "Modern Plastics"; Strathmore Paper Company (color in paper); General Printing Ink Corporation and Inter-Chemical Corporation (color in printing). Faber Birren & Company displayed drawings and sketches showing experiments in commercial color design. Other firms cooperating were the Southern New England Telephone Company, the Hartford Engraving Company, the Rourke-Eno Paper Company, and the Case, Lockwood & Brainard Company. Aspects of color in painting were illustrated by abstract water-colors of Claude Bragdon and the oil paintings of Jessie Drew-Bear. The announcement, incidentally, was printed in red grading through gray to blue-green, on a yellow stock.

PROPOSED A. S. A. STANDARD

In July 1941 the Standards Division of the General Electric Company prepared a statement on color standardization (OSD-17). Following an inter-company conference at Schenectady in early October, they adopted for their own use in color specification "The Coordinated Munsell-Spectrophotometric System." This method uses Munsell notations either directly as compared to the charts or by conversion to Munsell notation from fundamental spectrophotometric data (by means of ICI standard data and conditions). The conference agreed to call the attention of other industrial groups to their action, in order that this color terminology and notation might become more useful by wider acceptance. Early in October, after consultation with ISCC officers, and with a number of large industrial groups, a request was made of the American Standards Association that they take the matter under consideration, with a view towards making the method standard.

As most ISCC members know, much basic work has been done in recent years that has prepared the way for such a step as the one now under consideration. Each ISCC delegate and individual member has received a copy of the December 1940 J.O.S.A. In that journal there appeared five papers on various phases of the Munsell system. Each of you received copies of reports on ISCC-NBS color designations, and with this News Letter will receive a copy of the report on Central Notations for these designations. This ISCC-NBS work was practical only because the boundaries could be set and reported in Munsell notations. In addition to this material, a copy of a paper containing working charts of preliminary smoothed curves for use in converting from spectrophotometric data, through ICI standard data to Munsell notations will soon be sent you. These charts, published first in 1938, are based on preliminary observational data obtained by the Newhall subcommittee, smoothed in relation to the Glenn-Killian data for the Munsell system. Many of you have already been consulted, by General Electric or the American Standards Association, either as individuals with technical knowledge or as representatives of interested commercial or technical groups, concerning the proposed A.S.A. standard. As consideration of this matter develops, the News Letter will keep you informed.

POWER OF COLOR

The editor has received from Mr. Faber Birren copy of an article by him, entitled: "A Review of Color, its Uses and Powers," published in "Tomorrow," volume 1, no. 2 pp. 7-11 (October 1941). A cursory reading of this article proves it to be very interesting; but the editor regrets that he has not had time to abstract or review it for your benefit, and hopes to do so in time for the next issue. In the letter of transmission Mr. Birren writes: "I trust my enthusiasm for the therapeutic benefits of color will not make too many members of the Council too mad." Since the editor, at a recent Council meeting, cited possible scientific bases for certain phenomena in this field, he risks endorsement of Mr. Birren's sentiments.

COLOR IN PAINTING THROUGH THE AGES XI.

Balkan Cultures. Toward the end of the period we have been discussing, the earliest European neolithic culture which spread from Thessaly and Macedonia up the Vardar valley and across the Balkans, had further extension up the valley of the Morava in the direction of the Danube. It is argued by authorities whether the Anatolians pushed the Vardar folk northward, or whether they were met by southward-pushing Danubian peasants; but the connections of the whole were close enough to speak of a Vardar-Morava complex of cultures. Typical sites are at Vinca, on the Danube below Belgrade, at Tordos in western Roumania, and at Olynthus in Greece. Here the people lived in pit-dwellings half sunk in the loess and in wattle-and-daub houses. They caught fish with harpoons and nets provided with clay sinkers. The typical carpenter's tool was the "shoe-last" adze of stone; weapons were

rare. The pottery was extremely varied: (1) "rusticated" or "barbotine" coarse brownish ware, made by roughening the surface, usually covered with a thick slip, by pinching with the fingers or by brushing; (2) gray and black to red wares, polished or incised, pedestalled and carinated bowls, lugs imitating animal heads; designs of punctured ribbons including spirals and meanders); (3) anthropomorphic or "face urn" lids; (4) "red-slipped" wares, often black inside and around the rim; and (5) wares painted with spiral designs in black or white on a red ground. The last type was found both at Olynthus and on the middle Danube; while these wares in general were like those of the central Anatolian plateau. But the face-urns, hollow lids moulded and incised in the form of a horned and owl-like human face, were found in the second city of Troy, which was a western Anatolian city of a later period. Beyond the Danube, the Balkan culture extended to sites on the Körös River in Hungary, where it is known by that name. Pot decoration here was normally by rustication, though there were also red-slipped pots sometimes painted with white designs; and vases adorned with figures of men and animals in low relief, the figures being strikingly like Early Bronze Age vases from Alisar. Much further west, there are mesolithic sites of this general period, in Kent and Surrey and on the Seine; but they have no interest for our color story.

Third-Millenium Near East. The period beginning at 3000 B. C. may be introduced by reference to the site at Tell Chagar Bazar, whose Tell Halaf painted pottery stratum has already been mentioned. Here were tombs containing bronze daggers and silver beads which showed trade with far away Ur. Meanwhile Alisar in the Anatolian plateau reached its second phase, but still a copper-age stage, which lasted for a thousand years, and had five building layers. Ruins at a site near Ankara were also of the Copper Age; at Mersin, a black pottery ware with white decoration belongs to its late Copper Age. But bronze made its appearance (about 2800 B. C.) in Sumeria and in the second city of Thermi, and perhaps at Jericho. Of the many dynasties of the land around the "Two Rivers" (Tigris and Euphrates), several, as Erech II, Fara II, Kish II and III, Awan, Hamasi, Adab, Maer, Lagash, Akshak and Ur II, have mainly only political interest, and we shall content ourselves with only a general description of Sumerian culture. In article VII of this series we indicated that, very broadly speaking, the Near East cultures were in the order: (1) Samarra; (2) Tell Halaf; (3) El Obeid and Susa I; and after the Great Flood: (4) Early Sumerian, Kish I and Erech I; (5) Jemdet Nasr (polychrome pottery); and (6) Ur I and Troy I. Parallel to these were culture levels at Mersin, Kusuro, Serkeli, Tepe Gawra, Ras Shamra and other sites. A table of chronology was given, and some of the elements of several of the cultures, including the pottery wares, were described. Something had to be said of the troubled political history of the Sumerian city-states and their relations with the Elamites and the Semites. The Elamites were the pre-Sumerian population of Sumer (Babylonia); the rather similar round-headed Hurrians were the substratum farther north in Assyria and in the horse-breeding Mitanni kingdom nearer the Mediterranean; and they may have been in Palestine and Syria before the Semites. The First Copper Age civilization around the Two Rivers was supplanted by the Sumerians; simultaneously, the Hurrians from the west brought to Elam and Akkad (farther north) the Second Copper Age culture, while the Semites reached Akkad from the west. About 3000 B. C., the Sumerians extended their influence from the Persian Gulf northward to Akkad also, only to be eventually stopped by the Semites at the time of the great Sargon. Biblical references to the "Hittites" refer really to the Hurrians, the error being due to the political supremacy of the later Hittites in Hurrian country after they captured the Mitanni. Hurrians and Semites were long in contact. The sculptural representations of the Ancient Assyrians (Hurrians) show physical features that are Armenoid (Anatolian) in the ethnic sense; they did not look like the Arabs, typical "Semites". The same is true of the Aramaeans (now Syrians) and the Jews. In each case, Semitic

speech was acquired by a people racially different; but the physical characteristics retained were those of the original inhabitants; witness the "Jewish nose", which is really that of the Armenoid round-heads, not Semitic long-heads.

In contrast to the pottery of the Sumerians, that of the Elamites, their predecessors in Sumeria, was painted and polychrome. Its varieties have been described. In the early ware, the geometric and stylized natural forms of plants, dogs, and especially birds were in purplish red, black, brown or yellow on a buff ground. There was greater refinement of color, shape, and technique than in the famous geometric ware of Greece. There was delicacy of pattern arising from good combination of curved and straight lines; and there was very clever adaptation of design to space. The pottery colors of the First Copper Age broadly (Susa I abstract black-on-light-buff; Eridu, Tell el Obeid, etc.) have been described. So also the beautiful Second Copper Age wares (Susa II realistic polychrome; Jemdet Nasr polychrome, Kish); and there was also a black monochrome ware. Sumerian pottery, we have said, was unpainted and undecorated. But we have some idea of the colors used in tapestry and architectural decoration from remains at Erech and elsewhere. Probably the interior walls were left in the crude colors of the bricks and covered with tapestries and mats. Excavated brick homes show horizontal bands of red and white, or these along with black. This three-color scheme was characteristic of early Sumerian art. The cones on a wall of terra cotta at Erech were yellow, forming a sort of mosaic, and had their ends dipped in red or black paint and arranged in various geometric patterns, as zigzags, diamonds, triangles and lozenges. Sumerian paintings, if they existed, have perished. Our knowledge of the culture comes from sculptural reliefs, tablets and seals, statues in the round, pottery and metal work. Reliefs are often crude and barbaric but vigorous; they show the people with large noses, shaven heads and flounced skirts. A convention used colossal size to represent power, as in kings; another showed a king's sons in an upper panel larger as they receded from him. The famous Stele of the Vultures shows the gruesomeness of battle, much freedom of drawing, and some advance in composition, but no mastery of perspective. The engraving of a silver vase exhibits great artistic power. It makes use of the guilloche pattern, which later appeared in Oriental, Ionic and Greek art. Also the two-headed eagle, which became familiar in Hittite, Persian and Byzantine art and the coats of arms of Russia and the Hapsburgs. From Sumeria, too, came other fantastic and hybrid monsters: the gryphon, the centaur and the chimera. Another invention of a lively imagination was the composite animal. There was also very early a tendency to indicate landscape in monuments which was very interesting. But our subject is color, and only incidentally art and its backgrounds; so in the next issue we must pass along the chronological scale.

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