INTER-SOCIETY COLOR COUNCIL

NEWS LETTER NO. 23

FEBRUARY 1939

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

BOSTON COLOR GROUP

The first meeting of the group for the current season was held on November 29 at Mme. Burguet's, 45 St. Botolph Street, Boston. Dr. Walter M. Scott spoke on the subject: "The Development and Use of the Munsell System of Color Notation." Plans and a program were developed on the basis of suggestions from the members responding to a letter sent out in the fall. It was decided to hold all meetings on the last Tuesday of each month at Mme. Burguet's, and that season tickets for the five meetings planned for the spring would be priced at $6.00. The first dinner meeting of 1939 was held on the last day of January. Mr. S. Q. Duntley spoke on "The Color of the Human Skin." This topic has been the subject of a research program which has been carried on jointly by the Harvard Medical School and Massachusetts Institute of Technology during the past two years. The relation between these studies and the fields of painting and cosmetics was discussed. The remainder of the spring program has been announced as follows:

February	Colored Lighting, General Electric Company
March	Polaroid Colors with Demonstrations
April	Color Photography, Professor Arthur C. Hardy
May	Stained Glass, The Connick Studios

CHICAGO PLEASE NOTE

The Editor has not received any notices of the activities of the Chicago Association for Color Research since its Bulletin No. 19 which announced a meeting for September 14. We assume that the organization is as active as ever and will hope to hear from it before our next issue.

DELEGATES PLEASE NOTE

Since our budget is rather limited we have recently been printing the News Letter on both sides of the sheet. A preliminary trial looked all right to the editors; but we have reserved judgment on the possibility of using only one side. We would therefore like your opinion. Does the two-side mimeographing look satisfactory to you? If not, do you think the possible improvement would be worth a materially increased budget?

NEW INDIVIDUAL MEMBERS

We are glad to welcome to our individual membership the following who have joined the Council since publication of our November News Letter:

Charles G. Ferrari, General Mills, Incorporated, 2010 East Hennepin Avenue, Minneapolis, Minnesota. Dr. Ferrari states that he is intensely interested in color measurements of all kinds.

G. S. Fawcett, The Tintometer Ltd., The Colour Laboratory, Milford, Salisbury, England. As is well known, the Tintometer, Ltd. is the organization which handles the Lovibond system of glasses for color specification.

THE COLORQUERY AND VISIONNAIRE

Question No. 13. How are green, hazel and brown eyes related to gray and blue ones? See the answer on the last page.

COPIES OF THE I.C.I. MIXTURE DIAGRAM

Over a thousand copies of the large I.C.I. color-stimulus mixture diagram, discussed in our November News Letter, were made in answer to requests of Council members. When we were last informed, seven persons had already put in orders. The Secretary writes that "Forms for computing I.C.I. values, using (illuminants) A, B, C, 3000°, or 8000° could also be made available in mimeographed (or multilithed) form if enough people wish to have them. Let the secretary know your needs. If enough others have the same needs something could be done about it at a reasonable price." The secretary's address is: Miss Dorothy Nickerson, Bureau of Agricultural Economics, Washington, D. C.

U.S.P. AND N.F. DELEGATES

The list of delegates to represent the United States Pharmacopoeia and the National Formulary on the Inter-Society Color Council has been announced, and follows. The starred delegates are the voting delegates; and the last two are those of the N. F.

*H. C. Muldoon, Duquesne University, Pittsburgh, Pa. (Chairman).
H. V. Arny, College of Pharmacy, Columbia University, New York City.
*B. V. Christensen, School of Pharmacy, Florida University, Gainsville, Florida.
E. Fullerton Cook, 43rd and Woodland Ave., Philadelphia, Pa.
L. D. Hiner, School of Pharmacy, South Dakota University, Brookings, S. Dakota.
K. L. Kelly, National Bureau of Standards, Washington, D. C.
A. Osol, 43rd and Woodland Avenue, Philadelphia, Pa.
A. Taub, 115 W. 68th Street, New York City
*H. W. Youngken, 179 Longwood Avenue, Boston, Massachusetts
R. R. Foran, Merck and Company, Rahway, New Jersey
F. D. Smith, Monsanto Chemical Company, St. Louis, Missouri

COUNCIL COMMITTEES

At the meeting of the Executive Committee of the Council held on December 3, 1938, the following two committees were appointed by Chairman Dimmick:

Committee on Revision of the Articles of Organization and Procedure:
M. Rea Paul, Chairman Dorothy Nickerson

Committee to Review the Revisions of the Color Names Charts Prepared under the direction of Dr. Judd:

I. H. Godlove, Chairman H. P. Gage
Dorothy Nickerson F. L. Dimmick
Wm. D. Appel Elsie Murray
C. E. Foss

THE MAGIC TOUCH OF LIGHT

We have been informed of a lecture with the interesting title "The Magic Touch of Light" given by Mr. R. G. Slauer, District Engineer of the Westinghouse Lamp Division of the Westinghouse Electric and Manufacturing Company, at the National Arts Club, New York City, on a Club Night, December 7. Mr. Slauer is a well-known member of the Council. We take the liberty of copying the following notice from the December Bulletin of the National Arts Club. "The problems of lighting are so important to the artist that we feel fortunate in scheduling for our December 7th Club Night a lecture on the subject The Magic Touch of Light by

Mr. Richard G. Slauer, of the Westinghouse Lamp Co. Mr. Slauer will discuss artificial lighting with special reference to color and intensity. So many new products have recently evolved from the laboratories of the lighting industry that an evening will be well spent in learning recent trends.

"Mr. Slauer, a graduate of Stevens Institute of Technology, has been engaged in research and educational studies of all phases of illuminating engineering for the past twelve years. He has been much in demand as a consultant on various projects of the forthcoming World's Fair, especially in regard to the possible applications of new light sources.

"Mr. Slauer is a member of the Illuminating Engineering Society and of the Inter-Society Color Council. Although an engineer, his work in these two groups, especially the latter, has given him an insight to the need of cooperation between the color and seeing problems of the artist, the architect, the psychologist, the decorator and the engineer.

"Mr. Slauer's speaking program was so crowded that it was difficult for the Club to secure him, and the Arts Committee is confident that a rare treat is in store for the Club members on that evening."

COLOR STYLISTS AND COLOR ENGINEERS

Mrs. Elizabeth Burris-Meyer reports that she has received an additional suggestion, other than those reported in the November News Letter, from an individual member of the Council. This was that the Council give consideration to ways and means of recognition for Color Stylists and Color Engineers, for as this comparatively new profession attracts new members there will be a need for some standards of qualifications. Have any of our members any comments on such a suggestion? If so, please send them to our Chairman, Dr. Forrest Lee Dimmick, Hobart College, Geneva, New York.

EIGHTH ANNUAL MEETING

Since the printed program, with abstracts of all papers, has already been mailed to delegates and members, we state here only that the Eighth Annual Meeting of the Council will be held in the auditorium of the Electrical and Gas Association of New York, 480 Lexington Avenue, New York City, on Thursday, February 23. There will be a morning Business Session at 9:30 A. M.; an afternoon Technical Session, with the papers all hinging around the subject of Color Tolerances, at 2:00 P. M., this session being sponsored jointly by the American Psychological Association and the Inter-Society Color Council; and an evening Popular Session, the "parade of Color", at 8 P. M. The meeting will be followed on the next two days by a joint meeting of the American Physical Society and the Optical Society of America, with a joint meeting on Television to be held on Saturday morning. There will be many papers of interest to color workers at the Friday afternoon session of the Optical Society of America. It should also be mentioned that the Technical Association of the Pulp and Paper Industry, a member body of the Color Council, is holding its annual meeting in New York the early part of the same week, February 20 - 23.

The COMMITTEE ON ARRANGEMENTS for the meeting includes M. Rea Paul, Chairman; William F. Little; S. M. Newhall, afternoon program; R. G. Slauer, evening program; and Carl E. Foss, exhibits. Since the majority of this committee appears actively on the fine program, while your Editor's meager contribution will be a mere formal report, considerations of modesty do not forbid us, after reading the abstracts of

the papers listed, from congratulating the committee in advance for the excellence of the program; but the Editor is constrained to condition his felicitations by saying that it is only what he expected when he recalled the splendid goal set last year by Mr. Little, a member of the present committee.

COLOR NAMES IN BOTANICAL MONOGRAPHS

In a recent issue of Chronica Botanica, IV, 432 (1938), called the International Plant Science news Magazine, which covers the fields of agronomy, botany, horticulture and silviculture -- yes, this means the care of forests, not just silver maples --, there was published an abstract entitled "Color Names for Use in the Botanical Monographs." This abstract was prepared by Mr. Kenneth L. Kelly, Research Associate of the American Pharmaceutical Association at the Bureau of Standards, at the request of Dr. Franz Verdoorn, Editor, who stated: "This is a matter of great practical and international interest." For lack of space we are slightly abbreviating Mr. Kelly's abstract which follows: "In 1921 Dr. E. N. Gathercoal became convinced of the necessity for standardization of the color terms used in pharmacopoeial literature; and as an outgrowth of his activity there was formed in 1931 the I.S.C.C., whose first problem was the development of a system of naming colors in pharmacy. The original system has been developed by Mr. Kelly and Dr. Judd at the Bureau until it now comprises 320 simple, accurately defined color names each corresponding, in regular sequence, to a block in the color solid whose dimensions are hue, lightness (value) and saturation (chroma). The names are of the nature of "dark red," "light red," and so on, precision in specification being obtained by relating the terms to the standards of the Munsell system, and by relation to the 1931 I.C.I. colorimetric system. Techniques for applying the names to the colors of crude and powdered drugs and their chemical tests, have been worked out. A committee of pharmacognosists was appointed to apply the system to the color naming of the drugs in the U. S. Pharmacopoeia and the National Formulary. The Inter-Society Color Council has approved the principle of the changes in the original system with a view to official adoption; and it is hoped that the system will be found useful in fields other than pharmacy so that thereby a more common and universally used color nomenclature will result in science, art and industry."

The Editor wishes to add that the ISCC plan has been worked on by Dr. Judd intensively for three years, with Mr. Kelly's full time having been given to the problem during much of that time, during which there have occurred 21 minor revisions. During 1938, name charts were sent to members for Council help in revising the boundaries of the color blocks of the 21st revision. The 22nd revision, intended for application to the pharmaceutical problem, within the last few days has been mailed to members for their comments before voting on its adoption.

MR. WALTER T. SPRY

The Editor undertakes with profound humility to record the passing, on December 11th, 1938, of a cherished friend and fellow Council member, feeling himself wholly inadequate to express the deep feeling of loss and shock which he is sure is echoed by every one who knew Walter Spry. Mr. Spry was Manager of Munsell Color Company; but he was more than that: he was a vital force in the color field whose potency was belied by his characteristic modesty. Well do we remember the unfailing help and inspiration of his practical clear-headedness during the years when he was a business associate and later the uncomplaining object of our sporadic visits to the Munsell emporium, which he ruled with quiet but pervasive humor. It is but a slight consolation to recall that Mr. Spry told us, only too short a time ago, that he would wish to go as he did go, suddenly and in harness. He was one of those rare

individuals who hide a lot of doing with an atmosphere of near-idleness, as he cloaked his inner gentleness in a mildly brusque exterior. We may say with the poet Campbell: To live in hearts we leave behind, is not to die.

BIBLIOGRAPHY

We have received a considerable amount of bibliographical material since November; but, since this issue is already so full, we are planning to devote your next News Letter to reviews and abstracts. It is hoped to send it to you early in March.

AUTHORS OF PAPERS

The Editor will be happy to receive reprints of papers of color interest for review and publication in the News Letter, and will undertake to see that all submitted articles are reviewed by some one, though perhaps not as completely as several reviewed in this issue. The editors reserve the right, however, to pass on the question of how directly the paper bears on color, and to omit the review if thought somewhat too far afield. Please address I. H. Godlove, Box 386, Wilmington, Del. if you have a paper you wish reviewed.

ISCC COLOR NAMES FOR TCCA SAMPLES

In News Letter No. 22, page 5, we discussed some difficulties arising in the determination of the Munsell equivalents of the colors of the Textile Color Card Association of the United States, Inc., and through these the ISCC color names. The difficulties were most acute when working with satin-finish ribbons; and the Editor, perhaps unnecessarily stressing the difficulty of eliminating the gloss of the satin finish, sent to the Bureau of Standards the results of determinations on the creped or ribbed portion of the ribbons. The average of two determinations, with the ribbons turned through 90° in their own plane, was taken as the correct determination. Since then the Editor has received from Dr. Judd a number of determinations by himself and Mr. Kelly, taken under two conditions for both the satin and ribbed parts of the ribbon. The Editor believes that the subject is of sufficient importance to give the various determinations in full; also to quote Dr. Judd's letter. However, since a different page size has required a different arrangement of the tables, the Editor is taking the liberty of rephrasing the letter accordingly (of date Nov. 25, 1938). The rephrased letter follows:

"Mr. Kelly and I have finished our observations on the 15 TCCA samples specified by you in your letter of September 7th; these results are given in the enclosed table. Results are given for both the ribbed and the satin portion of the samples. The first column gives the TCCA name; the second gives first my determination of the Munsell equivalent for the ribbed part with the threads in the plane of the illuminating beam and the normal to the sample (ribs perpendicular to this plane), followed below it by the determination for the ribbed part with the sample rotated through 90° in its own plane, the order vertically being Judd, Kelly and Godlove. These serve to compare results by Godlove, Judd and Kelly for this condition of illumination which you adopted as most representative of the sample for average illuminating and viewing conditions. The third column gives the results analogous to those in the second column, but for the satin finish, the order vertically being Judd for threads toward light, Judd for threads perpendicular to light and Kelly for threads perpendicular to light; that is, the latter (lower) two compare my determinations with those by Kelly for the threads perpendicular to the plane containing the main illuminating beam and the normal to the surface. The final column gives the corresponding ISCC tentative color names. It is to be noted that the uncertainty of determining the Munsell equivalent of these (ribbed) samples is

sufficient to cause considerable trouble. In only two cases did all three observers obtain the same ISCC name. This is probably to be ascribed chiefly to variations in angular distribution of incident light and to variation in angle of view, possibly combined in the case of your results compared to ours with failure of all TCCA samples bearing the same name to have the same colors (we used different samples). It is undoubtedly significant that in 13 of the 15 determinations, your determination of value is the highest of the three. Either your samples were lighter than ours or else a considerable amount of light was incident upon the samples in the plane perpendicular to that of the main beam which makes them tend toward my results given in colume 2." (A check of the lighting conditions of our laboratory proves the latter explanation to be undoubtedly true. Dr. Judd next gives in two further columns the following figures which he comments on as follows:) These "compare the change in Munsell value introduced in my determinations by rotation of the sample 90° in its own plane. It may be seen that the same rotation which makes the satin-finished samples increase by about 2.5 value steps also makes the ribbed samples decrease by about one value step. In the similar comparison for hue, it is seen that the satin-finish samples undergo on the average greater hue changes on rotation through 90° than do the ribbed samples. These results are justification for your decision to view the ribbed portion of the samples rather than the satin-finished portion." The successive value differences, perpendicular minus parallel lighting, for the 15 samples except Admiralty and Baby Blue, as seen below, are: Satin (all plus): 2.4, 2.5, 1.0, 2.2, 2.8, 2.0, 2.2, 2.1, 1.4, 2.8, 2.2, 2.4, 3.0; ribbed (all minus): 0.5, 0.6, 0.4, 0.6, 0.6, 1.2, 1.6, 0.4, 0.8, 1.0, 0.9, 1.8, 0.8. The successive hue differences corresponding are: Satin (plus except as indicated): 1, 0, -5, -5, 4, 0, 1, -8, 2, -3, 1, 0, 0; ribbed: 0, 1, 2, 3, -2, -1, -5, 0, -1, 0, 0, 0, 2.

ISCC COLOR NAMES FOR TCCA SAMPLES

TCCA Color Name		Ribbed Part	Satin Finish	ISCC Color Name (Ribbed part) (22nd Revision)
Admiralty	J*	----------	----------	
F. '30	J	9PB 1.8/2.0		Dusky purple blue
	K	7PB 1.1/4.5		Dusky purple blue
	G	5PB 2.5/4.5		Weak to dusky purple blue
Almond	T-J*	5G 5.7/2.0	4G 3.6/2.5	
Green	P-J	5G 5.2/2.0	5G 6.0/2.0	Weak green
8th Std.	P-K	5G 5.5/2.5	5G 5.6/2.0	Pale to weak green
	P-G	5G 5.7/2.5		Pale green
Amber	T-J	9YR 5.6/7.5	9YR 3.3/6.5	
F. '20	P-J	10YR 5.0/8.0	9YR 5.8/8.5	Strong yellow brown
	P-K	10YR 5.3/10.0	10YR 5.5/;0.0	" " "
	P-G	9.5YR 5.7/8.5		Dark yellow orange
American	T-J	9RP 3.3/10.0	4R 2.0/8.0	
Beauty	P-J	IR 2.9/10.0	9RP 3.0/10.5	Deep purplish red
8th Std.	P-K	IR 3.3/12.0	10RP 3.2/12.0	" " "
	P-G	9RP 3.7/11.0		Strong purplish red
Amethyst	T-J	6P 4.0/4.5	IRP 1.8/2.2	
8th Std.	P-J	9P 3.4/3.5	6P 4.0/6.0	Dusky reddish purple
	P-K	6P 3.7/6.5	6P 4.3/6.3	~~Medium~~ purple
	P-G	5.5P 3.8/6.0		" "

Apricot	T-J	9YR 7.4/4.5	5YR 5.2/5.5	
8th Std.	P-J	7YR 6.8/6.0	9YR 8.0/6.0	Weak orange
	P-K	7YR 7.3/4.7	7YR 7.4/4.7	" "
	P-G	5.7YR 7.1/5.5		" "
Aqua Green	T-J	1G 8.0/5.5	1G 6.0/5.5	
8th Std.	P-J	10GY 6.8/4.5	1G 8.0/4.5	Pale yellow green
	P-K	10GY 6.6/4.5	10G 7.3/3.5	" " "
	P-G	0.7G 7.7/4.5		" " "
Aquamarine	T-J	10B 7.4/3.5	5B 4.8/2.0	
Sp. '20	P-J	5B 5.8/2.5	6B 7.0/2.5	Pale blue
	P-K	5B 6.2/2.3	5B 6.6/2.3	" "
	P-G	5B 8.0/2.0		Very pale blue
Ashes of	T-J	7RP 5.4/4.0	3R 3.7/4.0	
Rose #	P-J	7RP 5.0/4.5	5RP 5.8/6.0	Weak red purple
7th Std.	P-K	5RP 4.9/4.7	5RP 5.6/6.0	" " "
	P-G	6.5RP 5.7/6.0		Light red purple
Autumn	T-J	9YR 3.0/4.0	7YR 1.8/2.2	
8th Std.	P-J	10YR 2.2/3.5	9YR 3.2/3.8	Dark yellow brown
	P-K	9YR 1.9/4.0	8YR 3.2/4.0	" " "
	P-G	5.7YR 3.6/2.5		Weak brown
Baby Blue	T-J	----------	----------	
Su. '30	P-J	7BG 7.0/2.5		Pale blue green
	P-K	8BG 7.0/2.7		Pale blue green ~~to pale blue~~
	P-G	1B 7.3/3.0		Pale blue to light Greenish blue
Baby Pink	T-J	10R 9.0/4.0	2YR 6.2/4.0	
8th Std.	P-J	10R 8.0/4.0	9R 9.0/3.8	Medium orange pink
	P-K	8R 8.2/4.0	8R 9.3/4.0	Medium pink
	P-G	4.3R 7.9/4.0		" " "
Beaver	T-J	7YR 5.2/1.8	6YR 3.0/2.0	
8th Std.	P-J	7YR 4.3/2.0	7YR 5.2/2.0	Weak brown
	P-K	8YR 4.7/2.3	7YR 5.2/2.5	Pale brown
	P-G	5.5YR 5.1/2.5		" "
Beige	T-J	7YR 7.8/2.8	8YR 4.6/2.5	
8th Std.	P-J	8YR 6.0/2.5	8YR 7.0/2.5	Pale brown
	P-K	8YR 5.9/2.8	8YR 6.8/3.3	" "
	P-G	6.5YR 7.2/2.5		Very pale brown
Belleek #	T-J	8YR 7.8/2.5	9YR 5.0/3.2	
Sp. '28	P-J	10YR 7.0/2.0	9YR 8.0/2.0	Very pale brown
	P-K	1.5Y 7.8/2.7	9YR 8.8/2.5	Very pale orange
	P-G	9YR 8.1/2.5		" " "

Checked & Reported Feb. 7/2/39

Notes. * In the combinations such as T-J, T means threads toward the light; P means threads perpendicular to the light; J means by the observer Judd; K means by the observer Kelly; and G means by the observer Godlove.

Since the determinations were made, the Textile Color Card Assoc. of the U. S., Inc. has removed these from the list of most important colors; however, they were included because of the value of the comparative determinations by different observers under different conditions.

Finally, it may be noted that certain changes in the ISCC name would result if the satin finish color were accepted as standard. The following changes would occur: Almond green, Judd, weak green, and Kelly, pale to weak green, become for both pale green; Amber, Judd, strong yellow brown becomes dark yellow orange; Kelly, becomes strong yellow brown to dark yellow orange; Amethyst, Judd, dusky reddish purple becomes medium purple; Apricot, Judd, weak orange becomes weak yellow orange; Ashes of Rose, weak red purple becomes for both light red purple; Autumn, Kelly, dark yellow brown becomes medium brown; Baby Pink, Judd, medium orange pink and Kelly, medium pink, becomes for both very light pink; Beaver, Judd, weak brown becomes pale brown; Beige, pale brown becomes very pale brown for both Judd and weak orange for Kelly; Belleek, Judd, very pale brown becomes very pale orange.

THE COLORQUERY AND VISIONNAIRE

Question No. 13. How are green, hazel and brown eyes related to gray and blue ones?

Answer. Our question is somewhat ambiguous, and the way we answer it depends on what we had in mind. Eye color is to some extent a criterion of race, but not a sufficiently distinctive one to relate all dark-eyed people, for example, to each other ethnologically. It is true, however, that blue eyes are almost confined, among Europeans, to the blond, fair-skinned people of the Baltic area, who are largely Nordic, and to the people who have mixed with them. The brunet white races and all non-European races have brown or black eyes, except in cases of hybrids with Europeans or in partial albinism. In asking the question, we had in mind physico-chemical relationships. We have already discussed the blue eyes of the Irish colleen, and attributed the blue to scattering of light, not to a pigment. Dark eyes, on the other hand, are due to the presence of a melanotic pigment, a chemical substance. Eye pigment is found in the conjunctiva, the sclera, the iris, the choroid and the retina. Retinal pigment does not enter appreciably into eye color, except slightly in Negroids and Mongoloids, where it is denser than in Whites. It is the pigment of the iris which is mainly responsible for eye color. Varying reflection from the layer of flattened varyingly pigmented cells, and perhaps to a slight extent from the stroma back of them, is responsible for the eye-color variations. Blue eyes have no pigment, the scattered light of the posterior layer showing through. Depending on the density of melanin in the outer and middle layers, the eyes are gray, yellow, brown or black. Hazel and "green" eyes are due to some scattered light showing through a thin layer of yellow pigment, which may be even brown near the pupil. In Negroes, the pigment of the outer layer is so dense that the stroma affects the color little; in Mongoloids, Indians and some Europeans it is not so dense. The iris is not homogeneous, but composed of ridges and furrows radiating from the pupil and unequally pigmented, so in some cases, especially of mixed ancestry, some of the retinal pigment shows between, giving a mixed appearance. A more interesting case is that of Alexander the Great, who, along with his fair skin, aquiline nose and curling, light hair had his left eye blue and his right eye very black. There is little doubt that his blood was Nordic mixed with Asiatic or African. Some people who have a teleological conception of nature, regard the pigment as present to protect the eye from destructive ultra-violet light. If so, the Nordic eye is badly protected; which is too bad, for their eyes may degenerate to the point where they may not appreciate the eyes of the Irish lassie.