INTER-SOCIETY COLOR COUNCIL

NEWS LETTER

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FROM THE EDITOR'S DESK

This issue of the News Letter combines No. 137 (September-October) and No. 138 (November-December).

The Annual Report issue of the News Letter was mailed at the time when No. 137 would normally have been published. This News Letter is late because I bought and am remodeling an old house. To those who have had the same experience, this will be explanation enough.

With this issue, we bring 1958 to a close and look ahead to 1959. Looking forward in ISCC is always pleasant: the Annual Meeting and the satisfaction of working with industrious people.

What I hope to accomplish with the News Letter in 1959 is to teach, to inform, to amuse, to satisfy, and to irritate. It is my sincere wish that if I accomplish any of these, I will know. May 1959 be satisfying and rewarding for all of us.

Ed.

NEW MEMBERS

The following applications for individual membership were accepted at the last Board of Directors' meeting held on November 5, 6, 1958.

Associate Individual Members	Particular Interests:
Miss Irma A. Dutrieux c/o The O'Brien Corporation 2001 West Washington Avenue South Bend, Indiana	Theoretical, technical, educational selection of standard colors for interior and exterior paint and stain lines.
Mr. Alexander Obidzinski 3370 Daremus Street Detroit 12, Michigan	R-O-P color, three - color process printing and photography
Mr. Eugene Ostroff 330 East 63rd Street New York 21, New York	Theory of both photosensitive materials and optics as related to color photography. Also problems regarding presentation and interpretation of information in color.
Mr. Daniel Smith 455 Henry Hudson Parkway Riverdale 71, New York	Graphic arts, photography, color matching techniques, color standards.
Mr. Walter R. Surgeon General Printing Ink Company 6556 South Melvina Avenue Chicago 38, Illinois	Tests for color blindness and aptitude. Science of color matching, reproduction by means of the graphic arts.
Mr. Kenneth C. Welch 924 Granville, S. W. Grand Rapids 9, Michigan	Educational, theoretical, technical, physical and creative; descriptive charts used in economic and planning fields.

Affiliate Individual Members	Particular Interests:
Mr. Carl L. Hill 4400 East Washington Blvd. Los Angeles 23, California	Research in the values of additive color methods in dispersions in surface coatings, using the aggregate method of 25 micron minimum size for Poly Chromatic interfused coatings.
Mr. William A. Howard 46 Chine Drive Toronto 13, Ontario, Canada	Lighting, painting and furnishings for large institutions such as hospitals, community homes, hotels, etc.

REPORT OF ISCC SUB-COMMITTEE ON PROBLEM 19

The report of the Subcommittee, entitled "Description and Measurement of White Surfaces," was published in the Journal of the Optical Society, Vol. 48, No. 9, pages 597-605, September, 1958.

A reprint of the article which was written by Richard S. Hunter, Chairman, is included with this News Letter.

Members of the ISCC Subcommittee on Problem 19, "A Study of White Surfaces," are: Richard S. Hunter, Chairman, Hunter Associates Laboratory, McLean, Virginia; Douglas Hamly, Industrial Cellulose Research, Ltd., Hawkesbury, Ontario, Canada; Eugene Allen, American Cyanamid Company, Bound Brook, New Jersey; Henry Hemmendinger, Davidson and Hemmendinger, Easton, Pennsylvania; Deane B. Judd, National Bureau of Standards, Washington 25, D. C.; David L. MacAdam, Eastman Kodak Company, Rochester, New York; Robert F. Patrick, Pemco Corporation, Baltimore 18, Maryland; Robert B. Hobbs, National Bureau of Standards, Washington 25, D. C.; W. J. Goodwin, Bakelite Company, Bound Brook, New Jersey; Harold E. Crosier, Colgate Palmolive Company, Jersey City 2, New Jersey; Paul M. Fisher, American Viscose Corporation, Marcus Hook, Pennsylvania; Norman R. Pugh, Sears Roebuck and Company, Chicago, Illinois.

This report summarizes the experience and practices of many diverse fields of commerce. It again emphasizes that there are common problems of color among the membership of ISCC and that a joint attack on such common problems is ordinarily more effective than the individual attacks. The report concluded with this statement, "It is hoped that further work with direct reading whiteness instruments like the Cotton Colorimeter and with whiteness formulas like those by MacAdam, Judd and others will lead to a more widespread familiarity with an acceptance of single number whiteness rankings derived from tristimulus data."

I feel sure that the work of Subcommittee on Problem 19 accomplished this, at least, and probably more.

Ed.

ISCC PRESIDENT CHANGES ADDRESS

Walter C. Granville's new mailing address is P. O. Box 188, Libertyville, Illinois. The street address is 312 Elm Court and the telephone number is Libertyville 2-4646.

THIRD INTERNATIONAL COLOR DAYS

Announcement is made in "Couleurs" of the "Third International Color Days" to be held in Brussels on June 25 and 26, 1959 for the purpose of promoting color and its applications and of exchanging color ideas on an international basis. The Centre d'Information de la Couleur in Paris, which has sponsored the first two annual events, will combine with l'Association Belge des Techniciens de l'Industrie des Peintures et des Industries Connexes (A.T.I.-P.I.C.) as joint sponsors of this third congress. Information can be obtained from:

Centre d'Information de la Couleur
23 rue Notre-Dame-des-Victoires
Paris 2e, France

Robert W. Burnham

COLOUR COUNCIL OF CANADA

In describing the October 14th meeting plans, the Colour Council announcement which I received read "During the summer, Mr. Charles R. Conquergood

visited the Worlds Fair at Brussels and the British Colour Council office in London. He has been a member for many years of the Inter-Society Color Council of the U. S. A. and was largely responsible for the starting of our organization in 1952, and was its first president."

The topic of Mr. Conquergood's lecture at the October 14th meeting was "The Objects and Objectives of Colour Councils and Associations."

The Council has adopted a crest which was designed by R. C. Allison. To me, the symbolism is very interesting. The Colour Council of Canada is symbolized by a circle of never ending activity. A palette in the background symbolizes the foundation of man's culture--art. In the middle foreground is science symbolized by the alchemist's retort. In the foreground is industry.

"Color is the common denominator of our visual world, color is everywhere in art, science, and industry."

Ed.

PHYSICAL SOCIETY COLOR GROUP

The 107th Science Meeting of the Group was held at the Imperial College, October 8th at 3:00 p.m. Mr. J. W. Perry (Group Chairman) was in the Chair. Over 50 members and guests were present.

Professor H. Munro Fox (Queen Mary College) delivered a fascinating talk on "The nature of animal colours". He listed examples of most of the physical effects which produced colours in the animal kingdom and illustrated them with striking colour slides and a stuffed Australian starling. Drs. Crawford, Duncan, Pirenne and Wilmer took part in the subsequent discussion.

In the second part of the meeting, Dr. M. H. Pirenne (Physiological Laboratory, Oxford) gave a detailed illustrated account of the study and understanding of perspective in a talk entitled "Colour and perspective in painting." He traced the history of the problem from Euclid's time and finished with an analysis of Seurat's work who, Dr. Pirenne believes, must have been profoundly influenced by the writings of Helmholtz.

The meeting closed after tea at 5:45 p.m.

The 108th meeting was held November 5th at 3:30 p.m. The speaker, Mr. F. S. Said discussed "The Transmissivity of the Living Human Crystalline Lens."

Photography of the third and the fourth Purkinje images with various monochromatic lights makes it possible to measure the transmissivity of the lens. The amount of light transmitted varies with wavelength, age and possibly, general body pigmentation. The results can be applied to allow for the variation with age of spectral visibility curves. The dominant wavelength of the lens has been calculated by determining its effect on the white point.

At this meeting, the Group also saw the IPI films "This is Color" and "Color Magic."

SCOPE AND LIMITS OF COLOUR MEASUREMENT

The Physical Society Colour Group held a symposium on the present state of progress in the application of tolerances to colour measurement. J. W. Perry reported the symposium in Nature, June 21, 1958.

The topics discussed and speakers introducing them were as follows:

Mr. J. W. Perry	A Survey of Colour Tolerance Formulation
Mr. A. D. Lott	Colour Tolerance of Printing Inks
Mr. J. S. Mudd	Colour Tolerance in the Leather Industry
Mr. F. L. Warburton	Colour Tolerance and Textiles
Mr. P. S. Williams	Colour Tolerance in Paints
Mr. J. M. Adams	Colour Tolerance in the Paper Industry
Mr. D. L. Medd	Colour Tolerance and Architecture
Dr. J. W. Strange	Colour Tolerance and Lighting
Dr. R. W. G. Hunt	Colour Tolerance in Colour Reproduction Systems

According to Mr. Perry "As colour measurement has been in use for more than a quarter of a century, the onlooker versed in normal techniques of measurement might be excused for thinking that the application of tolerances to measurement of colour is long overdue."

Eight different formulations of colour tolerance, all of which have their supporters in various applications and laboratories of the world, were described by Mr. Perry in the introductory paper at the symposium.

There appears to be considerable scope for a more general realization of the value of measurement of colour and assessment of tolerance in industry at large. Much waste of effort results from numercus suppliers attempting to match colours absolutely in the absence of a stated tolerance.

Several specific examples were cited: Excessive variation in textiles becomes apparent when the extremes of variation occur at a garment seam. Motor car body parts made at different times or locations from different batches of paint may not match. P. S. Williams states that rejections take place if these differences exceed 0.5-1.0 MacAdam units (1942/3 standard deviation ellipses).

According to J. S. Mudd the Society of Leather Trades' chemists base their chromaticity specifications on the system of Breckenridge and Schaub and their luminance specification on an adaptation of Nickerson's observations on luminance factor discrimination. It was repeatedly found that near the limit of discrimination, when individual judgments were variable and observers disagreed, that a single instrumental test gave a result which agreed with the average result of ten observers.

Hughes and Lott said that colour control was difficult in the printing industry because the resulting accuracy is limited by the errors in ink manufacture. Paper colour is easy to control according to J. M. Adams because variation occurs in one parameter only--absorption in the blue region. Moreover, the eye is able to compensate for a loss in colorimetric purity by an increase in luminance factor.

Mr. Perry states that the fluorescent lamp industry in Britain is fortunate because it has virtually no problem concerning tolerance on colour identity.

The accuracy of colour photography for documentary and scientific record is not to be reckoned with in discrimination limens. Dr. R. G. W. Hunt presented a tentative theory of colour tolerances for pictorial similitude under varying conditions of adaptation which, subject to the validity of some doubtful assumptions, appeared to provide the basis for a theoretical criterion for the further refinement of the process.

The Newsletter has a few reprints of Mr. Perry's article which will be sent to readers who request them.

Ed.

A.I.A. FILE NO. 25-B-21
COLOR IN RELATION TO ILLUMINATION LEVELS

Our ISCC President and Industrial Color Consultant, Walter C. Granville, has prepared this practical manual for the American-Marietta Company. The manual, complete with color card chips excellently color spaced will be an invaluable tool for architects, decorators and illuminating engineers.

This sixteen page manual contains semi-technical discussions and recommendations easily understood by laymen for interior application of color. In this category, the simple explanation of why certain tints, such as yellow, as compared with gray of the same integrated luminous reflectance, will produce more light by inter-reflectance is explained. Foot candle levels for areas of low illumination can be improved with the suggested application of specific tints, other than buff or gray. The color chips presented, and all colors throughout the manual, are paints regularly available at stores selling American-Marietta products. Removable palettes of the colors shown are collated and included.

High illumination is the new and severe problem. Both natural illumination in new buildings and artificial illumination in new and old buildings are the factors here. Color palettes are suggested for wall areas adjacent to windows, and to wall areas opposite windows. Likewise, a solution is suggested for walls perpendicular to the axis of a troffer of fluorescent lights where the illumination is lower than where the wall is parallel to the axis of the fluorescent troffer.

Another matter explained is the relationship between illumination and paint - color appearance.

The members and delegates of the Inter-Society Color Council will be pleased to learn that the American-Marietta Company is making a sufficient number of these manuals available so that all will receive a copy.

It is the reviewer's personal opinion, and that of others who have seen this manual, that it represents an excellent example of how the science and knowledge of color can be applied to practical, everyday problems and serve as an easily understood guide for those not well acquainted with the interrelation of color and illumination.

Norman Macbeth

THE AMERICAN INSTITUTE OF DECORATORS

I continue to be amazed by the quality of publication which the Southern California District Chapter of AID manages to publish. The magazine is an exceptionally well printed, high-quality publication.

In the October 1958 issue the education chairman literally took over the entire magazine to dedicate it to education. It consists of reports from several leaders in education including Calvin S. Hathaway, Director, Cooper Union Museum and Design Institute.

The AID published a six year plan for a proposed professional degree course in interior design and decoration. The thing that surprised me most about this curriculum is that it includes virtually no organized course on color. I expected that the curriculum would be literally filled with color because of its importance.

Ed.

THE FEDERATION OF PAINT AND VARNISH PRODUCTION CLUBS

The Federation held their 36th Annual Meeting, October 5th-8th at the Cleveland Public Auditorium.

Ninety-six exhibitors joined with the Federation to conduct the 23rd Paint Industries Show. At this meeting the Federation announced the formation of a paint research institute. The objectives of the Institute are "To promote research and application of the sciences in the manufacture and use of paints, varnishes, lacquers, related protective coatings and printing inks."

Dr. J. Scott Long was appointed executive director; Dr. Fred C. Weber, Jr., president; Malcolm Glaser, vice-president; Dr. Newell P. Beckwith, secretary; and Robert W. Matlack, treasurer.

The first three objectives laid down by the founders are:

1. To develop or provide practical and technical facts, data, and standards fundamental to the manufacture and the use of paints, varnishes, lacquers, related protective coatings and printing inks.

2. To promote the investigation in interchange of ideas among its members and to promote research and application of the sciences to the manufacture and use of paints, varnishes, lacquers, related protective coatings and printing inks.

3. To arrange for the collection and dissemination of information pertinent to the industries served by the Federation for the presentation, discussion and publication of papers and other contributions.

Dr. Joseph W. Tomecko, President of the Federation, listed the highlights of the accomplishments of the Federation since 1922.

1922 - The first project of its members--the drawing up of a specification for China Wood Oil.

1922 - The Official Digest--internationally recognized technical publication of the decorative and protective coatings industry.

1922 - The Annual Meeting, with its technical and practical program of outstanding presentations.

1932 - The Paint Industries' Show--the only national exhibit of equipment and materials for the industry.

1935 - The first of many applied research projects supported in universities in the United States and Canada.

1941 - The Exposure Standards Manual--a book of photographic standards which portrays the various degrees of failure evidenced in exterior exposure.

1944 - Establishment of international contacts with the Oil and Colour Chemists Association of the British Commonwealth and the Federation D'Associations de Techniciens des Industries des Peintures, Vernis, Emaux et Encres D'Imprimerie de L'Europe Continentale.

1946 - The "Film Formation, Film Properties, and Film Deterioration" Research Program which culminated with the publication of this work in book form in 1958.

1949 - The Joseph J. Mattiello Memorial Lecture--the outstanding technical lecture of our industry.

1953 - The Color Aptitude Test Set--a specifically designed test to determine the aptitude of persons to distinguish fine color differences.

1956 - The sponsorship of the Paint Short Course for High School Chemistry Teachers.

"And now--1958--the Paint Research Institute. This Institute, we are convinced, will help to show us the way into new fields of paint technology that is bound to reflect in advancement for our industry."

Congratulations to the Federation for this decisive step in establishing the Paint Research Institute.

Ed.

43RD ANNUAL MEETING, OPTICAL SOCIETY OF AMERICA

The annual meeting of the Optical Society at the Statler-Hilton Hotel, Detroit, Michigan, October 9th, 10th, and 11th was noteworthy for the Inter-Society Color Council. The meeting was worthwhile because of its contents and because of the very important part played by ISCC members.

I sincerely regret having to miss this meeting. I should like to have been there to applaud Dr. Deane B. Judd, National Bureal of Standards as he received the Frederick Ives Medal for 1958 and I should have liked very much to have seen "Some Demonstrations I have Shown," the Frederick Ives Medal address by Dr. Judd.

According to the program, "The following demonstrations were presented: blue arcs of the retina, Maxwell's spot shown with Miles filter (macular pigment as an entoptic phenomenon), attributes of color perception (Desert Island experiment with Priest charts), color perceptions of protanopes and deuteranopes, metamerism (Stearns textiles, Granville grays), chromatic adaptation (simultaneous and successive contrast), and color rendition of light sources (illuminant color as a reference point, object-color perception as the projection of the after-image of the background onto the object)."

Dr. W. D. Wright, Imperial College of Science and Technology, London, was first on the program with his paper "Color Standards in Commerce and Industry."

ISCC President Walter Granville was chairman of the Thursday morning session which covered many topics of color but was weighted heavily on the mechanization for converting colorimetric data to Munsell renotations. Dr. Judd introduced Edwin H. Land, president of the Polaroid Corporation, who spoke on the Nature of Color in the Image Situation. Dr. S. Q. Duntley presided over the afternoon session on Thursday. The papers under his chairmanship included color vision phenomena, color television systems, visual considerations in photogrammetric map compiling, and the development of special lenses.

These very interesting trips were included on the program: Phoenix Memorial Laboratory, University of Michigan; The Ford Motor Company Scientific Laboratory and Rouge Plant; and General Motors Technical Center Research Laboratories.

ISCC members who participated in the program as speakers or discussion leaders were: Seibert Q. Duntley, Leo M. Hurvic, Dorothea Jameson, Deane B. Judd, H. J. Keegan, Günter Wyszecki, and Walter Granville.

WILFRED SEYMOUR CONROW 1880-1957

An important part of a sentence was omitted from Dr. Fischer's memorable tribute to Mr. Conrow in the July issue of the News Letter. The paragraph should have read, "When this century opened the Impressionists had taken over, by adding color to their antecedent nut-browns. The beauty of their pictures made the artists and the buyers thrill, but it also made them increasingly careless of the composition and the nature of the chemicals they handled as paint to accomplish their ends. Böcklin summed up what was the matter: 'Modern pictures have not lasted as many decades as those of the old masters have lasted centuries. To these old masters we must therefore return.'"

My apologies for this unfortunate omission.

Ed.

CUSTOMER PREFERENCE CLINICS BY JOHN W. WINGATE

From The New York Retailer, a publication of the Bernard M. Baruch School of Business and Public Administration the City College of New York. Date of issue: June 1958. (Summarized by ISCC News Letter Editor.)

One of the methods used to forecast fashion by direct consumer research is the Customer Preference Clinics, Inc., conceived and directed by Frederick Rahr. Mr. Rahr became convinced that, if an adequate sample were tapped, consumers would accurately forecast their preferences for color. He developed a standardized grouping of 150 colors--all the color variations of commercial significance. These are arranged on a large chart from which customers can select their preferences for items of apparel, home furnishing, automotive, appliances or other consumer goods. Mr. Rahr found that five other basic factors in fashion merchandize could be analyzed and predicted: Price, size, style, type, material, as well as color. In fabric items such as dresses, pattern was added.

Collecting Data: Customer interviewing centers are set up in key stores adjoining departments carrying the merchandise to be studied. The center consists of an interrogator and a chart of the 150 colors. Passing customers are invited to report their preferences. About 80% of the customers do so.

Each customer is interviewed, and her answers are recorded on a mark-sensed card. The interrogator asks questions about: (1) the details of price, size, style, type and material that the customer would like to buy in a season ahead and (2) the last purchase made in the past corresponding season. In forecasting fashions for the spring of 1957, the research takes place in early fall of 1956. In August and September of 1956, customers were asked to express preferences (dresses for example) for the spring of 1957. They were also asked questions about purchases made in the spring of 1956. For dresses, three seasons - spring, summer and fall - are analyzed; for other merchandise two seasons - spring and fall.

After the interviewer has marked the card, the customer is asked to deposit it in a slot under one of the 150 colors on the chart. Thus, the color preference is determined by an actual selective process.

Analysis of Data: The cards are marked for identification. Punch cards are made from them and run through sorting and tabulating equipment. (Figure A) Each cooperating store is provided a confidential report on the preferences of its own customers. The clinic combines the data from the various stores into a composite report which normally summarizes the opinion of 4,500 to 6,000 customers.

Charts are prepared to show customer demand in relation to merchandise supply. For example, charts of what colors customers had recently purchased compared with those they wanted to purchase showed that in the fall of 1953, only 4% of the customers indicated that their last spring 1953 dress purchase was in light peacock blue. But 21% of the customers indicated they would like to buy a dress in this color in the spring of 1954. Peacock blues had not been previously promoted by the primary Fashion promotion sources in Paris or U.S.A. for spring 1954. Nevertheless, this large demand was discoverable by this method and was reported.

On the other hand, 36% of the customers indicated that their last purchases had been in Navy; yet only 23% of the customers reported the probable preferences for navy in the spring of 1954. Navy was heavily touted in the fall of 1953 for the spring of 1954 by the traditional fashion sources who said, "It will be the biggest Navy Spring in years!" Thus, this market had become somewhat saturated and stores might be well advised to carry even a smaller percentage of navy dresses than spring 1953 sales would indicate. Navy was reported as heavily oversold for the spring of 1954, and has continued to decline since in favor of Peacock and other colors which are brighter and fresher in feeling.

Validating the Results: The value of this method can only be measured by correlating the forecasts with actual purchases. (Chart B) This may be done (1) by means of customers interviews a year hence, (2) by a study of actual store sales, and (3) by developing items that incorporate all the most wanted features.

In Chart "B" the first of the two figure columns is based on data gathered in the fall of 1955 when customers reported in detail their preferences in Misses dresses for the spring of 1956. The second column, from data obtained in the fall 1956, shows the details of the last dress purchased in the spring of 1956 (this is the newest spring dress the customer will have in the spring of 1957 before adding to her wardrobe). A comparison of these two columns reveal the degree to which customers as a group actually acted in line with pronouncements of their intentions the year before. Note that in 1955, 58% wanted to buy a casual type dress in the spring of 1956. Actually, 52% did buy such a dress in the spring of 1956 - and would probably have it as a part of their wardrobe in the spring of 1957.

The overall coefficient of correlation for type, price, fabric, pattern and material was .972 against a perfect correlation of 1.00. The color coefficient is slightly lower - .939 for data obtained in a single store and .893 for the combined data from all the cooperating stores in which customers' preference information was collected.

The rather marked difference at some points between what the customers wanted for the spring of 1956 and what they actually bought does not necessarily mean that customers' opinions are unreliable as an index to future action. In the color analysis of coats, for example, 1% of the customers wanted, for spring 1956, peacock blue, in one of the four hues provided on the color chart but less than half of one per cent reported making such a purchase that spring. But the fact is that the market provided virtually no dresses in this color and few store buyers had enough faith in this color to insist that it be made up for them. As a result, the would-be peacock blue customer has to buy some other color or go without.

Another way to test the forecasts is to compare them with actual sales. Table C gives such a comparison for a large mid-western store that operates a unit of the Customer Preference Clinic consistently. Again, lack of correlation seems to be more the result of shortcomings in the store assortment than of the unreliability of customers' opinions.

There have been a number of cases where buyers have either found in the market or developed with a manufacturer a garment that incorporated all the features of price, size, type, color and material for which customers had expressed their top preferences. In one case in the 1956 fall season, 2700 dresses were sold in one store in one day against a typical sales on a style number of about 400. The sale of one dress incorporating all the features was seven times that of the typical style. See Table D for the details of a misses dress report in the spring of 1958.

Statistical Considerations: On an individual customer basis, it is questionable whether a preference expressed in the summer of any year is likely to find fruition in a purchase made some 6 to 9 months later. But when the sample is large enough, a composite opinion is developed that has a high degree of reliability. The communication among customers and their exposure to much the same conditioning environment leads to group opinion that is remarkably stable. One customer may buy a gray rather than the beige for which she had expressed preference, but another customer in all probability switches from a gray preference to a beige purchase - so that the overall results are not seriously distorted by individual deviations.

Values to the Retailer: The major values to be gained from consumer research, of the type discussed above are (1) greater sales volume as customers find stocks closer to their ideas of desirability, (2) lower markdowns and (3) lower costs incident to customer returns. Markdowns and handling costs on returns average about 10% of sales of dresses, for example. Probably the major cause is the failure to carry the right merchandise. Buyers are guided by market developments, past sales, based often on inadequate past assortments - and by hunches in their buying - rather than by the customer herself. As a result, there are many failures to match store purchases with actual demand. If markdowns and return costs could be brought down by more scientific buying from 10% to even 7%, the gross margin of the typical department store apparel operation could be increased nearly 2%, providing an increase in profit of 50% to 100%.

Values to the Manufacturer:

Manufacturers are finding the consumer preference approach of value in planning their lines. While they tend to rely on consumer panels, a number have subscribed to the service of the Customer Preference Clinic. For example, the General Electric Company in 1951 provided an electric blanket in three sizes and four colors. GE policy restricted assortment in small appliances to alleviate dealers' inventory problem. The Clinic's research, however, indicated a strong customer preference for six colors. In 1952 the new colors were introduced. There was a 10% decline in the total sales of small appliances, but blanket sales shot ahead 30%.

Stores have been very slow to accept the service. This is partly because of cost, but the chief opposition is the store buyer who is jealous of his prerogatives, and fearful that he will be found wanting. The typical apparel buyer is an artist not a scientist. He is guided by intuitive rather than objective measurable facts. He often makes brilliant guesses and achieves great success, but he also makes catastrophic mistakes. He has not yet learned to use statistical data nor to recognize the fallibility of his immediate outlook. Manufacturers, as a group, are more willing to accept the validity of such studies.

(Charts follow on the next pages)

CUSTOMER PREFERENCE CLINICS, INC.

MISSES DRESS REPORT - FALL 1957

COMPOSITE - STYLE PREFERENCES BY PRICE CLASSIFICATIONS - Budget $17 or less - 8%; Moderate $13.01 to $40 - 74%; Better $23.01 and more - 77%. (Upper half of longer table).

CPC TYPE DRESS	Budget	Mod.	Better
Casual	65*	56*	50*
Business/Street	23	28	29
Afternoon	9	13*	17*
Cocktail/Dinner	2	2	3
Evening	1	1	1
Other Types	-	-	-
STYLE DRESS			
One-Piece	77	73*	69*
Two-Piece	19	18	18
Ensemble	4	9*	13*
Other Styles	-	-	-
IF 2-PC. DRESS STYLE			
A Two-Piece Suit	Vote too small	73	74
A Regular Dress		21	20
A Middy Dress		6	6
Other Styles	-	-	-
IF ENSEMBLE STYLE (Indicate)			
Dress & Jacket	Vote too small	66	65
Dress & Coat		24	26
Dress & Sweater		6	5
Dress & Cape	-	4	4
Other Type Ensembles	-	-	-
STYLE NECKLINE (Indicate)			
High	29	32	31
Medium	66	64	62
Low	5	4	6
Other	-	-	1
COLLAR (Indicate)			
Yes	75	67	61
No	25	33	39
STYLE BODICE (Indicate)			
Fitted	50	56	58
Semi-Fitted	40	38	36
Loose	10	6	6
Other Bodices	-	-	-

SKIRT PLAIN OR PLEATED (All Styles (Ind.) Combined)	Budget	Mod.	Better
Plain (1 pleat or slit	49	55*	59*
Plain (no pleat or "	40	37*	32*
Several Pleats (2-6)	5	4	5
Pleated All Around	4	2	2
Other Type Pleating	2	2	2
SKIRT STYLE	(Ind.)		
Slim	50*	58*	63*
Mod. Full	37	34*	30*
Very Full	13	8	7
IF SLIM			
Plain (1 pleat or slit)	Vote too small	87	86
Plain (no " " ")		10	11
Several Pleats (2-6)		3	3
Pleated All Around	-	-	-
Other Type Pleating	-	-	-
IF MOD. FULL			
Plain (1 pleat or slit)	Vote too small	11	16
Plain (no " " ")		75	70
Several Pleats (2-6)		8	8
Pleated All Around		2	2
Other Type Pleating		4	4
IF VERY FULL		(Ind.)	
Plain (1 pleat or slit)	Vote too small	-	Vote too small
Plain (no " " ")		72	
Several Pleats (2-6)		2	
Pleated All Around		15	
Other Type Pleating		11	
FABRIC (PLAIN OR PATTERNED)			
Plain - Solid Colors	68	69	71
Plain Tweeds-Solid Colors	10	12	11
Mixed Tweeds - 2 or more colors	6	9	10
Small Patterns	12	8	6
Medium Size Patterns	3	2	2
Large Patterns	-	-	-
Pattern but Undecided on Type of Pattern	1	-	-

(Table A)

CUSTOMER PREFERENCE CLINICS, INC.

MISSES DRESS REPORT: COMPOSITE - All Prices Combined - Budget, Moderate, Better.

COEFFICIENT OF CORRELATION .972

CPC

TYPE DRESS	Spring 1956 Want %	Spring 1957 Have %
Casual	58	52
Business/Street	23	24
Dressy Afternoon	16	18
Cocktail/Dinner	3	6
STYLE DRESS		
One-Piece	65	72
Two-Piece	24	18
Ensemble	11	10
PRICE RANGES		
$ 9.00 or less	1	2
9.01 to $ 13.00	6	7
13.01 to 17.00	14	16
17.01 to 23.00	19	23
23.01 to 30.00	25	24
30.01 to 40.00	16	14
40.01 to 50.00	10	7
50.01 to 75.00	5	4
75.01 to 100.00	3	2
100.01 to 150.00	1	1
150.01 and more	-	-
FABRIC PLAIN/PATT.		
Plain (No Pattern)	75	70
Small Pattern	25	26
Large Pattern	-	4

FABRIC IF PATT. - DESIGN	Spring 1956 Want %	Spring 1957 Have %
Floral	39	43
Polka Dot	17	15
Geometric	22	12
Plaid/Tartan	6	12
Check	10	12
Stripe	6	6
Other Designs	-	-
TYPE OF FABRIC		
Smooth	39	38
Textured	25	22
Cotton Type	13	24
Linen Type	15	11
Wool Type	2	2
Sheer	5	1
Knitted Type	1	1
Fancy Types	-	-
Velvet, etc.	-	1
Other Types	-	-
FIBER		
Wool	7	3
Cotton	32	42
Linen	13	11
Blends	12	13
Silk	21	18
Rayon	3	3
Miracle	12	10
Other Fibers	-	-

 (Table B)

EVALUATION OF CUSTOMER PREFERENCE CLINICS FORECAST FOR UPHOLSTERED LIVING ROOM FURNITURE

(Forecast based on Survey in April and May) (Table C)

NOTE: For the columns captioned Forecast, "Agree"(A) indicates that the CPC Forecast held up reasonably well and was comparable to the Client Store Fall Test Survey made in October and November. "Disagree" (D) indicates that the findings were different for the two surveys.

Under the Stock columns "A" indicates that the buyer followed the Forecast to a meaningful degree. Otherwise a "Disagree" (D) listing is shown. Likewise, if sales supported the Forecasts this is indicated by "Agree" (A) under the Sales columns, and by "Disagree" (D) if they did not.

Merchandise Factor	MODERN			REGULAR			PERIOD			Comments
	F'cast.	Stock	Sales	F'cast.	Stock	Sales	F'cast.	Stock	Sales	
Furniture Styles	-	-	-	-	-	-	-	-	-	A
Periods	-	-	-	-	-	-	A	-	-	
Pieces	A	-	-	A	-	-	A	-	-	
Sleeper Pieces	-	-	-	-	-	-	-	-	-	
Chair, Types	A	-	-	A	-	-	A	-	-	
Arms, Style	A	-	-	D	D	D	D	-	-	Difficult to use
Height	A	A	D	A	A	D	A	D	D	
Width	D	D	D	D	D	D	D	D	D	
Frame Showing	A	A	A	A	D	D	A	A	A	
Grain Showing	A	A	A	A	-	-	A	A	A	
Wood Shade	-	A	A	D	-	-	A	D	D	
Front, Legs Showing	A	D	D	A	A	D	A	A	A	
Back	A	A	A	A	D	D	A	D	D	
Cushioning	A	D	D	A	A	D	A	D	D	
Cushion-Upholstery	A	D	D	A	D	D	D	D	D	
Tufting	A	D	D	A	A	D	A	D	D	
Plain/Print	A	D	D	A	D	D	A	D	D	
Pattern Size	A	-	-	A	-	-	A	-	-	
Pattern Period	-	-	-		-	-	-	-	-	
Kind of Pattern	-	-	-	-	-	-	-	-	-	
Color Contrast	D	-	-	A	-	-	A	-	-	
Fabric Appearance	A	-	-	A	-	-	A	D	D	Difficult to use
Fiber	A	D	D	A	D	D	A	D	D	Difficult to use
Metallic Treatment	A	D	D	A	A	A	A	D	D	
Metallic Color	A	-	-	A	-	-	-	-	-	
Price	A	D	D	A	D	D	A	A	A	
Color	-	-	-	-	-	-	-	-	-	

CUSTOMER PREFERENCE CLINICS, INC.

MISSES DRESS REPORT - SPRING 1958

P R O M O T I O N S P E C I A L

A MISSES STREET DRESS WANTED BY 81% OF YOUR MISSES CUSTOMERS

THIS IS THE ONE STREET DRESS THAT COMBINES THE IMPORTANT PREFERENCES OF THE MAJORITY OF YOUR CUSTOMERS. MORE THAN HALF OF ALL OF YOUR MISSES CUSTOMERS WILL BE LOOKING FOR THESE FEATURES IN THEIR SPRING 1958 DRESS. (See Report For Other Demands)

* * * * * * *

COLORS - ALL STYLES AND SIZES COMBINED - TOTAL DRESS VOTE

"Good" Colors - more wanted than yet owned.

Medium Blue	17% want; 5% have	Light Green	7% want; 0% have
Royal Blue	13% want; 6% have	Peacock	7% want; 0% have
Blue Purple	7% want; 0% have	Medium Green	3% want; 0% have

"Borderline" Colors - about equally wanted and already owned.

Light Blue	17% want; 16% have	Medium Red	5% want; 4% have
		Beige	3% want; 3% have

"Fair" Colors - more owned than wanted.

Navy	12% want; 18% have	Black	9% want; 23% have

See Color Section in Merchandise Managers' copy for specific Street Dress Colors and also Colors preferred by Misses. Composites only.

% STREET DRESS DEMAND

Style -	One-Piece Dress	82%	Price Ranges -	Four	77%
Skirt -	Slim	64%	$13.01 to $17.00	14%	
			17.01 to 23.00	29%	
Fabric -	Plain (Solid Colors)	80%	23.01 to 30.00	22%	
			30.01 to 40.00	12%	
Fiber -	Two	55%	Purchase Months -	Two	66%
Cotton	38%		February	22%	
Silk	17%		March	44%	

 (Table D)

RAPID GRAPHICAL COMPUTATION OF SMALL COLOR DIFFERENCES

Several months ago I received a folder entitled "Rapid Graphical Computation of Small Color Differences," by F. T. Simons and W. J. Goodwin. The article and its accompanying graphs were so interesting to me that I wanted to include them in the News Letter. The method looked to me as though it was unusually simple and straightforward. The thoroughness of the instructions make it possible for even the dullest to perform the operations. The kit includes the article, instructions, and charts needed for plotting the control and sample. Frederick T. Simon in his letter to me emphasized that the packet including charts was available at no cost from the Circulation Section, Advertising and Public Relations Department, Bakelite Company, Division of Union Carbide Corporation, 420 Lexington Avenue, New York 17, New York.

Although I was enthusiastic about the method, I did not feel qualified to comment on it. As a result I asked George W. Ingle if he would review it. The following are his comments:

Ed.

Whether one has labored with the computation of many or a very few color differences, he will welcome the carefully planned contribution of Simon and Goodwin, evident in their "Rapid Graphical Computation of Small Color Differences." Originally published in the American Dyestuff Reporter for February, 1958, this work has now been made freely available by the Advertising and Public Relations Department of the Bakelite Company. A kit may be obtained which contains the original publication plus enlarged workcharts, punched for insertion in a looseleaf notebook for most effective use.

The method is based on MacAdam's well known data for the standard deviation of color match for a variety of chromaticities. To this Simon and Goodwin have added the Davidson-Hemmendinger correction of chromaticity as determined by lightness level. The lightness scale employs 0.04 Munsell Vy unit taken equal to one Just Noticeable Difference Unit. Though slightly smaller than that earlier recommended by Davidson-Hemmendinger, no major difference can result.

Combining these improvements into a set of well-engineered nomographic charts is a real step forward in making reliable color-difference calculations readily available. After one has obtained the necessary chromaticity coordinates, for both control and sample colors, nothing more is required than a pencil, a scale-ruler on which 1/2" is equal to 1 JND, and respect for persistent attention to detail.

Longer range, this contribution must be viewed against the spectrum of progress made in recent years, from the work of Adams and MacAdam and colleagues to the presently available semi-automatic color difference computers. As this writer observed at the Perkin Centennial, in reviewing the work of ASTM Committee D-1 in color difference measurements for the last several years, real acceptance of color difference, as a dimension of industrial importance,

will occur only when the cost of calculation has been greatly reduced. The current Instrument Development Laboratories Color Tolerance computer, based on the NBS color difference unit, and the Color Difference Computer of Davidson and Hemmendinger, based on MacAdam data, typify more recent progress towards this ultimate goal. Several individual automations via IBM computing machines are known to be in highly effective use, but the cost of this equipment is nearly always justified for other business purposes.

What is needed is a comprehensive analysis of the accuracy, precision and speed of these semi-automatic and the nomographic methods, in relation to their respective costs per color difference computation, as the number of such computations is increased. Once this is done, and considered as a part of the entire process from spectrophotometric measurement to final color difference, it will be possible to show industries their best justified routes to routine use of reliable color difference calculations. One would expect that in many situations, the nomographic approach of Simon and Goodwin will compete favorably with more sophisticated semi-automatic instrumental computation.

George W. Ingle

F. BRAUN, NOUVELLES TABLES DE LA COLORIMETRIE

The office of the Executive Secretary of the Federation of Paint and Varnish Production Clubs recently received a publication entitled "Nouvelles Tables de la Colorimetrie, Appliquees a la Physiologie de la Couleur" written by Franz Braun, of the University Catholique de Louvain. Dr. Braun is an associate of the late Professor O. Peeters of Louvain who was a major force behind the organization of the 1955 F.A.T.I.P.E.C. Congress III at Spa, Belgium on "The Practical and Theoretical Aspects of Color Matching." A report of this Congress was made in your News Letter No. 119 for July 1955.

The publications of the F.A.T.I.P.E.C. group, the Continental counterpart of our Federation, have been followed with considerable interest. This group is strongly dedicated to the idea that all aspects of color technology be highly standardized and uniformly applied within the paint industry. While the advantages of standardization are equally tempting domestically, we are far less optimistic that the state of knowledge on these matters can be so rigidly applied. In News Letter No. 131 of September 1957, Dr. Judd reviewed a report of the Belgian Committee on Colorimetry which defines in some detail the progress of this group on their standardization program. The recent submission "Nouvelles Tables de la Colorimetrie," is interpreted as a proposal of this group for a new system of uniform color scales. While it did not appear to the writer that color scales or the methods proposed for handling data would be of particular domestic interest, Dr. Judd has provided a review which clearly describes the relation of Dr. Braun's system to those with which we are more familiar. Publication of this review may serve to inform those who may be exposed to the system in international contacts as well as provide interest to individuals concerned with color order systems.

Dr. Judd writes: "Dr. Braun has outlined a sampling of the color solid based on differences of 10 NBS units along the scales of reflectance, metric purity, and hue angle. Since the NBS unit of color difference defined by Hunter in NBS Circular C429 in 1942 (wrongly ascribed to me by Dr. Braun) corresponds to a good approximation to the same degree of perceptibility regardless of the colors chosen, I presume that this sampling of the color solid might be of some

industrial use. Its chief advantage is its precise and relatively simple relation to tristimulus values. The scales of metric purity, for example, are linearly related to the Hunter (α, β)-diagram, which in turn are the result of simple projective transformations of the CIE (x , y)-diagram. A rather serious omission is that the equations for this projective transformation are not given; so the reader gets the impression that these tables are quite independent of the CIE system."

A rather large part of the tables is devoted to the computation of the chromaticity coordinates and luminous reflectance of a color which is complementary to any given first color similarly specified. The interest in finding such values derives from a "law" of color harmony quoted from Maxwell as "In order that a complementary harmony be correct, it is necessary that the additive mixture of the colored surfaces give white or gray." A. H. Munsell held this same view and in the 1915 Atlas of the Munsell Color System we find statements such as the following: "Any chosen steps of red and blue-green upon this chart may be balanced by noting their symbols: Thus light blue-green (BG 8/3) balances dark red (R 2/3) when the areas are inversely as the product of the symbols, vix. - six parts of light blue-green and twenty-four parts of dark red." Subsequent study of the original Munsell system by K. S. Gibson and D. Nickerson (JOSA, 30, 591: 1940) showed that the actual chips in the Atlas obeyed this law only approximately. In the case of the present tables by Dr. Braun, the complementary is computed on the assumption that a color differing from a gray of the same luminous reflectance by say 10 NBS units will exactly cancel a color of the complementary hue angle and same luminous reflectance provided it, too, departs from the gray by 10 NBS units. The computation is quite simple: the algebraic signs of the chromaticity coordinates α , β, are simply reversed. This assumption, unfortunately, is only approximately correct; though, to be sure, it may be a sufficiently good approximation for color harmony purposes.

"I would say that Dr. Braun's organization of colors is closely allied to the original Munsell system, and if chips were painted to sample this organization at regular intervals, inspection of these chips would show constancy of hue and saturation somewhat inferior to those of the present Munsell book. The value scale ($V = 10\ Y^{\frac{1}{2}}$) is identically that used in the original Munsell system; but Dr. Braun has chosen to designate the steps in the scale backwards, that is, I_0 corresponds to V = 10, and I_{10} corresponds to V = 0. The resemblance to the Ostwald system is rather remote. The only point of resemblance that I note is the use of dominant wavelength as an index of hue. The limiting triangles suggest an analogy to the Ostwald system, but there seems to be no intention to place any meaning on these triangles except to indicate limits beyond which no sampling is possible. The proposed sampling is at constant luminous reflectance (intensite, so-called)."

Ralph E. Pike

NEW TYPE COLOR AND GLOSS METERS FROM JAPAN

By Takashi Azuma, Hideo Ishizaki, Leo Mori, and Isamu Niikura (Matsuda Research Laboratory, Tokyo-Shibaura Electric Co., Ltd., Kawasaki).

In this paper are described the two types of color and gloss meter which have newly been developed with fundamental improvements on the older type. The principal points of improvements lie in the fact that two types, the one precision type and the other simple type, are developed instead of one older type.

Though the precision type is operated in somewhat more complicated way than the older type, it has many advantages as follows:

1. Tristimulus values of reflecting or transmitting colored objects can be measured directly by use of four filters which satisfy Luther condition. Therefore, they are not subjected to Van den Akker's theoretical errors, as those measured by three filter colorimeters.

2. Gloss is indicated in 45°-45° or 60°-60° specular reflectance, which is substracted by diffuse reflectance automatically. In this measurement angular apertures of the measuring beams can be adjusted on occasion at ± 1.5° or ± 7.5°, so that gloss intensity and distinctness of image, which represent two aspects of gloss, are separated numerically.

3. The performance of the instrument is improved by making use of embedded selenium photocells.

4. Values of color and gloss are measured to three decimal places by the modified Campbell-Freeth circuit.

5. The photo-electric AC voltage stabilizer in the instrument supplies the lamps with constant voltage independent on the line voltage and frequency.

The simple type is composed of a search unit of only 650 gr. and an electric measuring instrument. It can measure 0°-45° (red, green, blue and luminous) reflectances and 45°-45° specular reflectance.

IMPROVED COLOR AND COLOR-DIFFERENCE METER

A precise, digital-dial Color and Color-Difference meter has just been developed by the Hunter Associates Laboratory, McLean, Virginia. The new instrument is intended primarily for small color differences found in the paint, paper, plastics, textile, soap, ceramics, and food industries. It employs tristimulus filters and vacuum phototubes which are thermostatted for maximum stability. The analog scales of the instrument have nearly the uniform visual spacing of the Munsell Color System:

1. L measures lightness and varies from 100 for perfect white to zero for black,

2. a measures redness when plus, gray when zero, and greenness when minus,

3. b measures yellowness when plus, gray when zero, and blueness when minus.

With a ceramic hitching-post color standard close to the color of a product, accurate color measurements of this product can be made.

A new color-difference attachment gives components of color difference between sample and standard and then total color difference using an equation in which weighting factors may be adjusted to conform to visual grading practices for the product under study. Noteworthy features of the new instrument are:

1. Digital dials which have separate plus and minus windows for the a and b scales,

2. Zero centered a and b potentiometers which eliminate polarity switches,

3. Electrical rather than mechanical adjustments to standards,

4. Vacuum-tube galvanometer with rugged microammeter not disturbed by building vibration,

5. Uniform indication of direction of rotation for all dials and scale knobs.

A detailed description of the new apparatus appears in the December 1958 issue of the Journal of the Optical Society of America.

Hunter Associates Laboratory, Inc.
5421 Brier Ridge Road
McLean, Virginia

NEW WHITENESS REFLECTOMETER

A new instrument has been designed by the Hunter Associates Laboratory of McLean, Virginia to measure the whiteness, reflectance, yellowness, and opacity of white and near-white paints, papers, textiles, ceramics, foods, plastics, and soap products. It can be equipped with an ultraviolet absorbing filter which may be alternated between the incident and viewing light beams to measure directly the contribution of the widely used fluorescent brightener to specimen whiteness. The instrument uses paired vacuum tubes in a null Wheatstone bridge circuit. It employs a 45°-0° geometry and has green and blue tristumulus filters each with a separate pair of phototubes.

The instrument is built in two sections identical in size and shape so that when bolted together they form a small compact unit. On the left side are the light source, phototubes and 2-1/4" round specimen viewing area. On the right side are the measuring circuit, vacuum-tube galvanometer and digital dial. When desired, these two sections can be separated by the cable length between them for convenience of sample presentation. An attachment is available with which to reduce the 2-1/4" round specimen area to 3/8".

Hunter Associates Laboratory, Inc.
5421 Brier Ridge Road
McLean, Virginia

ATLAS OF COLOR - BY E. B. RABKIN (IN RUSSIAN)

Members of the ISCC might wish to know how a review of this obscure (to us) color atlas came to be prepared by this writer. Cdr. Dean Farnsworth, presently sojourning in London, England, wrote, in part to Dr. Judd that he was sending his copy "...for possible review in the Inter-Society Color Council, 'Hands Across the Caucasus' sort of thing." Somehow, I haven't recovered sufficiently to say how, Dr. Judd managed to shunt the task of reviewing this work to me.

The text portion of the Atlas of Color, published in 1956, Medgiz, Moscow, contains a review of color dictionaries and atlases from the 18th century to the present and a review of color spaces and color circles from 1680 to the Rabkin color circle of 1950. Professor Rabkin, who in an earlier work has produced some of the best polychromatic plates for color blindness tests, describes the space of this color atlas as a double cone (two right circular cones joined at their bases) whose axis is the axis of neutral colors with white (belyi) and black (chernyi) at the apexes. The portion of the atlas that contains the color charts consists of 1 achromatic chart and 36 chromatic charts of colors having selected dominant wavelengths. Each of the first twelve charts, for which there are tables of the CIE (MKO) chromaticity coordinates x and y, luminous reflectance ρ (%), dominant wavelength λ (mμ), and colorimetric purity P (%), consist of 55 printed circular chips arranged in an equilateral triangular formation similar to the Ostwald system. Each equilateral triangle is one half of a section containing the axis of the double cone. One side of the triangle consists of neutral chips arranged from black (1/19) to white (1/1); the second side consists of chips of the selected colors arranged from white to the most saturated chip of the dominant wavelength of the selected colors (10/10); the third side consists of colored chips arranged from the most saturated chip to black. Each of the second twelve charts consists of semicircular-chip replicates of the first twelve charts juxtaposed by semicircular holes for the purpose of underlaying a chart with a test color so that visual comparisons can be made readily. The names given to the colors of the twelve dominant wavelengths chosen to make these charts are: red (krasnyy), red-orange (krasno-oranzhevyy), orange (oranzheyy), orange-yellow (oranzhevo-sheltyy), yellow-green (zhelto-zelenyy), green (zelenyy), green-blue (zeleno-goluboy), cyan (siniy), cyan-violet (sine-fioletovyy), violet (fioletovyy), purple (purpurnyy).

To show the spacing of the color charts selected by Rabkin, we list his CIE chromaticity coordinates and the luminous reflectance of the most saturated chip of each chart. Two masks with circular holes are provided to permit comparison of a test color with chart color against either a light or a dark neutral background.

(See chart on following page.)

The next chart consists of a series of 36 neutrals, arranged in six rows of six square chips with a rectangular cutout between alternate rows so that comparison with samples can be made readily. The reflectance of these neutral chips form a series spaced approximately along a scale of square root of percent reflectance. The next twelve charts each consist of a series of the square chips of colors nominally of each of the twelve selected dominant wavelengths of the first twelve charts, arranged in the same manner as the neutrals. The reflectances of these chips follow the same square root scale as the achromatic series. These chips are prepared so that for a particular reflectance level each has the maximum attainable saturation with the pigments used.

Comparison of the Coordinates of Rabkin's Atlas for the 10.10 Chips with the Atlas' Realization as Evaluated by Means of Munsell Color Chips.

Color Names	Coordinates of Rabkin's Aims			Coordinates of the Atlas' Realization		
	x	y	p (%)	x	y	p (%)
Red	0.565	0.310	20.	.521	.318	19.8
Red-Orange	.550	.345	18.5	.527	.339	12.0
Orange	.546	.389	37.	.517	.392	32.5
Orange-Yellow	.525	.412	39.	.496	.423	44.5
Yellow	.494	.452	54.	.490	.448	43.1
Yellow-Green	.460	.477	63.	.424	.469	66.5
Green	.287	.480	17.5	.254	.402	10.1
Green-Blue	.279	.377	12.	.253	.355	10.7
Cyan	.208	.189	21.5	.193	.171	14.1
Cyan-Violet	.254	.219	18.	.240	.201	6.6
Violet	.304	.239	14.5	.292	.242	12.0
Purple	.421	.295	14.	.396	.275	7.5

There are, regrettably, several faults to the color atlas. The printing of the color chips is not of high quality so that the authors plans are not fully realized. This failure is shown in the table by the lack of agreement between the Rabkin data for the most saturated chips of each chart of the copy we reviewed and the data obtained by means of visual comparison with Munsell chips. The spacing of the atlas is not good although the intended spacing may be satisfactory. There are also instances in which adjacent chips appear to be spaced in reverse order. On each of the first twelve charts near the corner of the triangle containing the darkest chips, there are some ten chips that have little or no departure from neutral. On each of the triangular color charts the chips in the neutral row are designated from white to black as /1 to /19, while in the tables that describe the color coordinates these chips are designated as 1/1 to 1/19. In the first twelve triangular color charts the chips that are designated as 8/10, 8/12, and 8/14 should have been designated as 8/8, 8/10, and 8/12, respectively. The text refers to charts numbered 25 to 36, whereas the charts are numbered 26

to 37. Any of these difficulties would prove troublesome to a novice who might wish to use this color atlas. The work, however, shows that a serious attempt has been made to devise a simple color atlas that permits the making of comparisons between specimen colors and chart colors that are in contact with each other.

I. Nimeroff

LAST MINUTE NOTE ABOUT MR. EVANS

Just as the News Letter was going to press we learned that Mr. Furman Fink of the Salmagundi Club presented Mr. Evans with the proposed American Flag. Mr. Evans received the flag following his lecture at the Club, November 6. The new flag, which has fifty stars, was designed to be used when Hawaii eventually becomes the fiftieth state.

Ed.

SEARS ROEBUCK & COMPANY SEMINAR ON COLOR CONTROL

In a letter to the News Letter Norman Pugh of Sears Roebuck, sent a copy of the outline of the seminar which was conducted by Sears.

Invitations were issued to paint suppliers of the factories which produce Sears appliances and cabinets. The Seminar emphasized the fundamentals of colorimetry as applied to industrial paint problems. Although Sears produces kitchen appliances in pastel colors, more emphasis was placed on selection, standardization and control of their standard white.

The following is an outline of that seminar:

I. General Discussion

- A. How we see color
- B. Description of color (color space)

II. Defects of Color Vision

- A. Types
- B. Tests
- C. Recommendations for industrial testing practice

III. Illumination

- A. Color temperature
- B. Adaption
- C. Metamerism
- D. Standard illuminants

IV. Suggestions for Industrial Color Matching Practice

V. Standards for Color Matching - Requirements and Considerations

VI. Color Charts and Color Systems - Types and Examples

VII. The C.I.E. System

A. Additive and Subtractive considerations
B. Primaries
C. C.I.E. Calculations

VIII. Visual Methods for Color Control

A. Advantages and disadvantages of visual evaluation
B. Requirements for visual systems
C. Recommendations for visual color evaluation system

IX. Instrumental Color Control

A. Advantages and disadvantages of instrumentation
B. Comparison of available color measuring instruments
C. Recommendations for instrumental control procedures

X. Implications of Color Control Relating to Other Paint Characteristics

A. Gloss
B. Film thickness

XI. Sears Laboratory Procedures

A. Jury system for determining tolerances
B. Visual procedures
C. Instrumental procedures

In addition, there were two special presentations. One, on "Quality Control Concepts" by Mr. H. Wise, Sears Laboratory Quality Control Division. He discussed sampling, limitations of small samples, and emphasized that regular and frequent production checks are necessary for effective control.

The other presentation described a technique for control of color even with (unavoidable) variation in film thickness. This involves specifying limits for reflectance of a paint formula as a function of film thickness.

The Color Laboratory supplied the following:

1. A computation illustration showing the procedure for measurement and evaluation of Standard White.

2. A recommended guide to visual control practices.

COLOR PLANNING FOR BUSINESS AND INDUSTRY - A NEW BOOK BY HOWARD KETCHAM

Harper & Brothers announced a new book on color. According to the circular, "Now, America's outstanding authority on color and lighting shows you how the proper color strategy in your business can help you Increase sales, Improve morale and efficiency, and Attract greater attention to your products."

The following chapter headings are also taken from the folder.

How Color Sells
The Uses of Color Through the Ages
How You Can Benefit from Color Research
What You Can Learn About Color from Supermarkets
Color and Lighting in the Display Window
Color: Supersalesman for Your Package
Color and Light in the Factory
Color in Transportation: Safety and Sales
How to Plan the Colors for Your Product
Color and Light in the Modern Office
Color: Key to Successful Advertising
How to Get Your Advertising Ready for Color TV
Color in Direct-Mail Advertising
Color in Make-Up
Color in Women's Wear
Color in Men's Wear
Color Sells Today's Homes
Color for Interior Decoration
Color in National Defense - Camouflage

PREFERENTIAL CHROMOTROPISMS AND THE VISCERAL ACTIVITIES OF CONSCIOUSNESS

Interesting if true, but highly questionable as verified (or verifiable) scientific fact, is a report from "Couleurs" on the "metrology of preferential chromotropisms" or "studies of the visceral activities of consciousness by chromophysiogenesis." The author, who ought to remain anonymous, but who proudly signs his name, J. R. Blin, starts with what he calls primary and binary colors which are further defined in terms of their "purity" on a scale running from black to pure color to white. When an individual's order of preference for the basic colors has been established, the author can make an analysis based, he says, on the theories of Dr. Alexis Carrel. A graphic profile is produced which delineates the visceral activities of consciousness. These activities give us a synoptic view of the physiological terrain of the ambient moment, a first measure of the fourth human dimension. There's more, too, and here is a sample literal translation:

"To conclude our expose, we shall take a particular example of preferred colors, and interpret the synoptic view of the physiological terrain of an artist (painter):

"Example - epicenter: strong blue 25% pure
1st dominant: very clear yellow 75% pure
2nd dominant: pure red 100% pure
3rd dominant: clear orange 50% pure
4th dominant: very clear green 75% pure
5th dominant: strong violet 50% pure

"Synoptic view of physiological terrain:

- Presence of toxins in hepato-renal organs
- Bad renal filtration
- Slowing up of generative functions
- Deficiency of gonadotropic hormones
- (in the anterior lobe of the pituitary gland)
- Slowing down of parathyroid glands
- Tendency to trouble of phosphocalcic metabolism

- Suprarenal deficiency (adynamism)
- Deficient nutrition, but normal
- Toxins in the blood (presence) due to bad renal filtration.

"There is clearly a reduction of natural immunities provoked by the 2nd and 4th preferential chromotropisms--yellow, orange..... determining a humoral eddy of the flow of the heterogeneous mass of the internal milieu due to the deficiency of the suprarenals and of the gonadotropic hormones of the anterior pituitary gland.

"There in a few expressions is the synoptic view of the artist's physiological terrain."

This reviewer feels that a full analysis for any observer would be more frightening than a trip to the doctor. He feels also that a full literal translataion would be so far beyond his comprehension that he recommends Balzac or de Maupassant in the original French for light reading. To conclude, in the vernacular of today's 'teenagers, "Man, he's real gone."

Robert W. Burnham

MISCELLANY How Green is Your Reading? More and more schools have replaced blackboards with greenboards and tinted chalks--the theory being that use of color can reduce eye fatigue and make for better vision. Now for the first time books are being published with printed pages to make your reading easier.

Green are the pages of Robert Carse's interesting book "Blockade, The Civil War at Sea." The pastel shaded green is used throughout the book. Colothon, on the last page of this volume explains, "This addition was printed on Impact Brook Paper with the colors of paper and ink styled by Faber Birren for better vision."

Another volume printed on mint green paper has recently made its appearance. It is a novel titled "Phoenix Island," author Felix Waller. Selected as the book's locale, a sun-drenched sand and surf summer resort. Promotion is tied in with the fact that the color of the paper relieves eye strain and that the book has its own "built-in sun glasses."

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Here is a colorful way to go! After long research to improve the appearance of hand grenades, a company in Rome sells them wrapped in a cellophane bag tied with skyblue ribbon (according to La Stampa of Turin, Italy).

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For Once Color is a Dry Subject. Dorothy Nickerson came across this booklet at the Museum Store of the fascinating colonial village restored at Sturbridge, Massachusetts, and thought it might be of interest to other ISCC

members. It seems most unlikely that the booklet is widely known or available, although it is well written and seems very practical for anyone interested in flower arrangements or in color. Title of the book is "Drying Flowers for Color," by Sarah Witlock and Martha Rankin. A practical guide to a fascinating hobby for home decorations, 19 pages, $1.25, obtainable direct from the authors, 3 Gildersleeve Wood, Charlottsville, Virginia.

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The Color of Eggs. Why is a robin's egg blue? Why isn't it white, like the hen's egg? Why is the thrush's egg speckled? David Lack, the noted University of Oxford ornithologist, was so intrigued by these almost-too-obvious questions that he went on a field hunt for the answers. He thinks he has succeeded in unscrambling the egg-color code.

The coloring, he found, tends to be associated with the nesting site. Birds that lay their eggs in a shallow nest or a niche produce speckled or blue eggs which blend into the surroundings. Similarly, the eggs of species that next in bushes are blotched, often with shadow-marks. Eggs laid on the ground or on ledges tend to be brown, gray or olive. White eggs usually belong to species that deposit their eggs in deep holes, where concealment is unnecessary and the white color helps the parents find the eggs in dim light.

Lack found no evidence for the notion that eggs are sometimes conspicuously colored as a warning of bad flavor. The palatability of eggs is associated with their size rather than with their coloring.

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A New Mauve Decade Moves Into the Atomic Age: A wave of purples has swept the country. This is a hue that has been badly used and abused in our times.

Its sporadic revivals have had little success because it has appeared only in small segments of our markets and there have not been enough items to build up any volume. . . but trials and errors, dummy runs, experiments and seasonal trials finally crystallized in a loveliness and excitement that is right for this age.

The violets popped up everywhere . . .

the ultra violet four cent stamp
violet gasolene pumps
fluorescent violets in advertising and display
violet cosmetic and hair colorings
"The Purple People Eaters"
violet fabrics . . . mauve mohair and wool blends
mauve flecked violet tweeds
wild violet cashmeres
a splash of violet in prints, in plaids and checks
and stripes (silks and cottons)

violet fashions . . . violet sweaters and skirts
mauve mohair dresses
violet coats
violet hats and gloves and veils
violet and grape and pansy purple for leathers for footwear and handbags and belts

The violets are best used in several values (light to dark) and in several hues, such as a reddish violet Fuschia . . . a true Parma or wild violet . . . a blue violet such as Grape.

In the Color Harmony Manual Hue 10 covers the Fuschias
Hue 11 covers the violets
Hue 12 covers the grape tones

Cerise and shocking pink, mauve pink and white are the best accents.

Helen Taylor

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Eiffel Tower Illumination. "Couleurs" contained an interesting description of the new lighting of the Eiffel Tower. Originally in 1889 it was illuminated by gas lamps, shortly thereafter by 4,200 lamps of 10 candlepower each, and in 1937 by 80 Mazda projector lamps. In 1957, on the occasion of a visit by Queen Elizabeth of England, provisional new lighting was installed. In May, 1958, however, a veritable tour de force installation was completed that comprised 170 Mazda lamps. The total installation consumes over 500,000 watts. The projector lamps are divided into seven groups dispersed among the surrounding gardens. The lamps in five of these groups are concealed from view in specially devised depressions. The sixth group is located in a large clump of green shrubs, and the seventh group along the parapet of the Quai Branly, downstream from the Pont d'Iena. The depressions are one meter deep, and vary in surface area from 12 to 45 square meters, depending on the number of lamps used in each which varies from 10 to 30. Thus, the tower remains a prestigious torch rising above Paris as a monumental profile of steel and light.

Robert W. Burnham

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