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# INTER-SOCIETY COLOR COUNCIL

## NEWS LETTER No. 34

MARCH 1941

I. H. Godlove, Editor-in-Chief  
Charles Bittinger, Editor for Art

C. E. Foss, Editor for Industry  
D. B. Judd, Editor for Science

**NEW MEMBER** The Federation of Paint and Varnish Production Clubs, G. B. Heckel, Secretary, with headquarters at 220 South 16th Street, Philadelphia, Penna., and the American Artists Professional League, Inc., Milford S. Conrow, Secretary, with headquarters at Carnegie Hall, New York

**BODIES** City, are now members of the Inter-Society Color Council, having been elected at the recent annual meeting. We extend to them a most cordial welcome as they join with the other eleven member bodies and group of individual members in the furtherance of the ideals and interests for which the Council stands. From President R. E. Prince of the former organization we have the following list of delegates: John C. Moore, Sinclair Refining Co., Marcus Hook, Pa., Chairman; M. Rea Paul, National Lead Co., Brooklyn, N. Y.; Bernard Haran, James B. Day & Co., Chicago; J. F. McMenamin, Philadelphia; Joseph Mattiello, Hilo Varnish Co., Brooklyn, N. Y.; Francis Scofield, National Paint, Varnish and Lacquer Assoc., Washington, D.C.; Winship Pierce, Norfolk Paint and Varnish Co., Quincy, Mass.; and Harold Schade, Armstrong Paint Co., Chicago, Ill. We do not yet have a list of delegates from the American Artists Professional League, but hope to announce the delegates in an early issue. F. Ballard Williams is national chairman; Harold C. Parks, consulting chemist working on certain technical problems for the League, made the original contact between the League and the ISCC.

**1941 ANNUAL MEETING** Each of you has received a copy of the recent annual meeting of the Council. But a business report of that kind cannot begin to tell you how successful were the meetings. At the Discussion Session there were 62 persons present, every member-body but one being represented. In addition to delegates, there were 17 individual members and 18 guests. The Business Session was also well attended, as was the dinner meeting on Tuesday evening, when 58 persons sat down to spend a most informal few hours together. On Wednesday evening, the Popular Session attracted such a large group that the meeting had to be moved to the U. S. National Museum. And the guards there told us that more people attended the meeting that evening than had visited the Museum all day!

**ASTM-ISCC SYMPOSIUM** The A.S.T.M. met in Washington for its Spring Regional meeting during the week of March 3. The joint ASTM-ISCC symposium was held on Wednesday afternoon, March 5, which gave ISCC delegates and members an opportunity to attend. Those of you not there missed something, for Dr. Judd outdid himself in the way he gave the introductory paper. And Mr. Gotch, who discussed his paper, could double for Lewis Carroll's Alice in her Alice-in-Wonderland adventures! The following papers were given on this program: Introduction to Color, Deane B. Judd; Color of Transparent Materials, Francis Scofield; Hiding Power and Opacity, R. H. Sawyer; Color Standards for Opaque Materials, I. H. Godlove; The Spectrophotometer in the Determination of the Color of Materials, A. E. Parker; Photoelectric Colorimetry, Richard S. Hunter.

ASTM ACTIVE  
IN COLOR  
AND GLOSS

At a meeting of subcommittee XVIII, ASTM Committee D-1, Chairman M. Rea Paul presiding, it was voted to prepare a tentative standard embodying the use of the ICI standard observer and coordinate system for reduction of spectrophotometric data. It was also voted to revise the present tentative method of test for specular gloss of paint finishes so as to take account of diffusely reflected light which becomes appreciable compared to specularly reflected light for flat and flat-to-eggshell finishes that are not nearly black. Mr. Scofield reported that the committee appointed last June to prepare a review of the method of color designations suggested by him (see News Letter No. 30, July 1940) had completed its task and would publish the review soon in the ASTM Bulletin.

OPTICAL SOCIETY  
HOLDS COLOR SESSION

At the joint session of the Optical Society and Physical Society held February 21-22 in Cambridge, Massachusetts, the invited papers were on color. The program consisted of three papers arranged to cover the general field of colorimetry in accordance with the plan being followed in assembling the Colorimetry Committee's report (see report of the 1941 ISCC annual meeting). This divides the field into three sections: physical, psychophysical, and psychological. The three papers were excellently prepared and well presented. Professor A. C. Hardy discussed the spectrophotometer and its use, pointing out that this instrument does not measure color. Dr. David L. MacAdam had the task of showing how color could be measured on the basis of spectrophotometric measurements, by employing psychophysical data to convert them to color terms. Dr. Deane B. Judd followed with a very clear demonstration of the fact that when one knows the color he is not at all sure what he will see; that is, if color is defined in the psychophysical terms, dominant wave length and purity.

NEW INDIVIDUAL  
MEMBERS

We welcome to individual membership Charles M. Richter, President, Pharma Chemical Corporation, and J. Robert Bonnar, General Dyestuff Corporation. Their applications were approved by the Executive Committee of the ISCC at its meeting on March 3.

APPOINTMENT TO  
COLOR APTITUDE  
TEST COMMITTEE

Captain L. E. Griffis, Medical Division, Office of Chief of Air Corps, War Department, has been added to the committee which has been developing a color aptitude and color blindness test under the co-chairmanship of Dr. Dimnick and Mr. Foss.

AMERICAN CERAMIC  
SOCIETY MEETS IN  
BALTIMORE

A symposium on color, jointly sponsored by the American Ceramic Society and the Inter-Society Color Council, will be part of the Annual Meeting of the Ceramic Society in Baltimore, March 30 to April 3. The symposium, planned by the ISCC delegation of the Society, will be held at the Lord Baltimore Hotel on March 31, at two o'clock. The papers will feature methods of designating and measuring color in the ceramic industry. To focus attention on the practical problems of the industry, a "Mr. Ceramist" will take part in the program by asking the speakers questions about color problems which confront the average ceramist. The speakers and papers follow:

Methods of Designating Color

- Deane B. Judd, National Bureau of Standards, Washington, D.C.

Spectrophotometry of Ceramic Materials	-	F. H. Emery, Harshaw Chemical Co., Cleveland, Ohio
Reflectometer and Filter Photometry of Ceramic Materials	-	Ben Sweo, Ferro Enamel Corp., Cleveland, Ohio
Color Standards for Opaque Ceramic Materials	-	C. Robertson, E. I. duPont de Nemours & Co., Perth Amboy, N.J.
A System for Color Measurement in Readily Visualized Form	-	R. M. Robertson & L. H. Milligan, Norton Co., Worcester, Mass.
The Measurement and Designation of Small Color Differences	-	I. Balinkin, U. of Cincinnati and Cambridge Tile Co., Cincinnati

Other features of the meeting have been mentioned in the notice which was mailed to the delegates of the ISCC on March 12. About 15 non-Ceramic Society members of the Council have signified their intention to attend.

**NEW CHIEF OF OPTICS DIVISION** Mr. Frederick J. Bates has become chief of the Optics division of the National Bureau of Standards, succeeding Dr. C. A. Skinner, retired on January 31, 1941. Mr. Bates became connected with the Bureau in 1903, in connection with control of operation and methods for testing imported sugars. He is the inventor of the Bates saccharimeter and is internationally known in the field of sugar technology and polarized light. He has been president of the International Commission on Uniform Methods of Sugar Analysis since 1932.

**VITAMIN A AND VISION** This was the subject of a talk by Professor Selig Hecht of Columbia University before the Individual Member Group of the ISCC on March 13th at Longchamps Restaurant, Madison Avenue at 49th Street, New York City. The meeting was a dinner meeting. Dr. Hecht, long known as an ingenious research worker in the field of vision, and an excellent speaker, spoke on the relations of Vitamin A to the visual cycle during its depletion and recovery. Vitamin A enters into the chemistry of this cycle and forms a part of the molecule of visual purple, the sensitizing material in the eye. Vitamin A is accordingly needed for the upkeep of the visual purple cycle and it is one of the substances liberated during the visual act. Because of this chemical relation, Vitamin A influences visual capacities, such as brightness discrimination, and particularly dark adaptation. The talk was concerned with such basic relations and the behavior of the visual functions during the cycle. The Group was fortunate to have a man of Dr. Hecht's caliber to expound this important and interesting subject.

**GAILY COLORED SHELLS IN WAR** According to an Associated Press dispatch of January 17 from J. Wes Gallagher, A. P. correspondent with the Greek army, "gaily-colored" ammunition was captured from the Italians by the Greeks. It referred to the "bright red of captured Italian hand grenades." Further, "even the Italian artillery shells are brightly colored, in marked contrast with the gray-green of the Greek-made munitions." Evidently, the Greeks had a color for it. If less saturated and gay than that of the Italians, it was only because they had things other than color to bolster their morale.

**1940 NEWS LETTERS** A few figures from the annual report of the News Letter editors may be of interest to some readers. During 1940, there were issued six News Letters at regular two-month intervals averaging slightly over 12 pages in length. The distribution of types of matter was as follows:

Strictly "news" items	35.5 percent
"Special features" (Color in Painting through the Ages, Color Questions and Answers, Color Names and Terms)	9.3 "
News or special features (Fashion Trends and Report on the Italian Masters Exhibition)	7.2 "
Editorial notes	0.7 "
Abstracts and Reviews of Literature of Color	13.8 "
Abstracts of Patents relating to Color	11.7 "
Color Bibliography (and Index)	21.7 "

It may be pointed out, since abstracts of color literature and patents, as well as reviews and bibliographical references, are in a broad sense "news", 87 to 90 percent of the whole material treated was news. The News Letter therefore does not belie its name.

COLOR AND BUSINESS The December, 1940, number of "More Business" is essentially a color-information issue which outlines a wealth of practical data for the successful application of color to the sale of merchandise. It carries the statement that "This issue of More Business has been designed and written by Faber Birren, eminent American color authority." The cover shows four girls' heads in blue, brown and gray; and so we see that the artist is wise enough to supplement the color appeal by other forms. The brown grades through the orange of the faces to the yellow hands. The caption "More Business" is excellently legible against a dark green rectangle. On the second page, a tie -- or should we call it a cravat, a balloon (suggesting the "lift" of color?) and a dress are shown in red, a hue of great attention-getting value. These are only small accents, however; and the effectiveness of these accents is emphasized by comparison with the frontispiece of the same writer's "The Story of Color," which is entirely in red. The well-known phrase of Amos Parrish is quoted: "As selling as right color!" On page 3, red is called the "impulse color", and it is said that red sells where "impulse factors are vital": in candy bars, program covers of the Madison Square Garden. One is led to wonder whether impulses have nothing to do with the purchase of refrigerators or lingerie. We get the advice: if they want red, don't give them salmon pinks or maroons. Red and white, black and white, green and white ("simple colors all"), rank as tops in preferred color schemes for modern kitchens. A kitchen is shown in red and white. Tan is best (page 5) for printed hard-surface floor coverings, priced low for volume; but taupe, beige and dusty rose are on the ascendency. We learn that tan is a "simple, well defined color"; and so we correct our previously formed inference that the psychologist's unitary hues are the "simple colors." On page 6, we see a dark green roof, a dark green pen and a light green electric stove, all looking most appropriate. We are told that green alone or in combinations is best for the roofs of houses. Fancy plastics bring browns and reds to the forefront, but green still carries a volume load. We are asked: "Why are mail boxes green -- ours or the governments?" On page 7, we learn that "dusty rose" sells the most towels. Blues, reds, yellows and greens remain dependable; but the pinky, peachy tints take the lion's share. Elementary hues whenever preferred, afford minimum risk. Again we wonder what the simple, elementary hues are; we are reasonably sure that orange is not one, except that we speculate about the closeness of the hue of "peachy tints" and dusty rose to orange. On page 8, we see a blond against a blue background, about Munsell 7 B 5/8; and we are told that blonds prefer blue. The explanatory theory of an unnamed psychologist is quoted; we suspect he is E. R. Jaensch. Blonds grew up away from the equator under a blue sky where reflected blue light from the sky is predominant. Such light,

rich in ultra-violet, causes a pigmentation of the retina termed "green-sightedness" and may account for the preference of the average blond for blue. Brunettes descend from ancestors who have dwelt in more tropical climes. Here infra-red and heat rays are predominant and cause a pigmentation of the retina termed "red-sightedness." And brunettes by type prefer red. To complete the explanation, one has to assume (this is not stated) that red-sunlight adaptation causes a depletion of red sensitivity and so a desire to see more red to supply the deficiency. Blue sky adaptation decreases blue sensitivity and so a desire to see more blue. A difficulty of the theory is not mentioned: that the typical Mediterranean brunettes grew up in such climates as that of Egypt, where there is not only more sunlight than in the north but also much more blue sky. Nor the second difficulty, that the very great majority of living people are descended from ancestors of both blond and brunette types. But these are difficulties which must be laid at the door of the psychologist, not at Mr. Birren's. To go on, we read that the two most popular hues are red and blue, the extreme regions of the spectrum. Scandinavian and Nordic types prefer cool hues, people of Latin type, Spanish, Italian and Balkan, prefer warm colors. (Ethnologically, the Mediterranean Latin types and the Dinaric Balkan peoples are about as different as can be imagined.) New Englanders are conservative; they like conventional tans, "suppressed shades" of blue, red, green, and gray -- seldom "intense hues". Metropolitan New Yorkers delight in flashy contrasts. Exciting colors and color schemes, of a "sharp, clean nature" are favored. New Yorkers run the gamut of the spectrum, from the highly styled colors of Fifth Avenue to the "simple, crude palettes" forever preferred by average mortals. "In the south, red is paragon: rich, flashy, burning. In southeastern sections there is a bit of old-fashioned conservatism -- though generally warm in character.... Soft, medium tones, lacking in anything spectacular, are preferred. In the middle west, color choices seem to differ as the nationality of settlers differ. The city folk buy more subdued tones of greens and browns. And again, Nordics will lean toward cool hues, and Latins toward warm. On the Pacific coast there is a definite demand for light pastel tints -- colors away from full intensity, yet clean and luminous in quality."

As to age levels, youngsters favor red, orange and yellow; oldsters, blue and green. Women are far more tolerant of "modified colors" than are men. The male buyer, though conservatively attired, will "raise his hand for bold hues, not colors "sophisticated or subtle." Finally, the less money we have the more we want our purchases to be strong in color -- "perhaps because each investment is significant, and we must have something to show for what we spend." Again we are led to wonder if an alternative explanation is not possible: That merchants will gamble less on stocking up colors other than black and navy in the more expensive articles; and the sale must be largely influenced by the stock on display. In the spring, of course, we delight in "paler tints"; in the autumn there is a greater appreciation of "rich, deeper shades that recall the country landscape in all its kaleidoscopic glory." Color trends are influenced by national states of mind. During the last depression, color went from subtlety to boldness, evidently as an escape. A similar swing should occur today; advertising must compete with patriotic love of the flag colors. On page 9, a brunette, who prefers red, is shown on a background about Munsell 3 YR 7/12. On page 10, we see the human eye, the convolutions of the human brain, and the statement that: "The human eye can see 10,000,000 different colors, but the human brain is interested in only 18." In this connection it is worth recalling, what the reviewer pointed out in 1933, that if we divide the surface-color solid into 600 roughly equal portions, a single one of them will contain the average brown, the colors called "auburn", "chestnut", "chocolate", "raw umber", and in all 18 colors of rather common names shown in Maerz and Paul's Dictionary of Color. Pictures of our brain convolutions flatter us in comparison with those of the apes;

but we wonder how we would feel on seeing those of the Cro-Magnons of the Cave Man days. On this page is a warning to "keep a wary eye on so-called vogueish or high-fashion colors." Fifth Avenue may want these, but the millions follow group patterns, and want "surprisingly few" colors. On page 11, we see a car with three pretty girls; and we learn that cars sell best in black (30 to 1 over any other color). Grays are generally second; then blues, greens, maroons, browns and cream tints. Again a warning; though red stands high in color preferences generally, and we might buy a shovel with a red handle, we shudder to think what would happen to a shovel with a pink handle. On page 12, orange juice and a cut and uncut orange are shown in orange color (is this one of the simple colors?). The shadows are about 7 PB 6/3. A touch of green in two spots balances the color scheme and makes it effective. Here we learn that only certain hues seem edible to us: red, orange, yellow, brown, tan, cream, certain greens; the rest are unsavory. The reviewer has a sneaking liking for purple grapes and prunes; but to mention these is unfair, for on the whole he thinks Mr. Birren is right. He tells us that we would resist blue mashed potatoes, purple bread, and yellow-green steak, no matter how delicious. Packages and printed advertisements should look good enough to eat. So also in attempts to please the other senses. There are right and wrong hues for perfumes. On page 13 is a portion of a blue bedroom in which are used small saturation and value contrasts, and even blue in the "whites", so as to make the whole restful. This is the vogue today; but the swings are slower in home furnishings than in women's apparel. On page 14 are two photographs each of good and bad degrees of exposure, and the caption: "Start with good copy by John T. Wrigley," and "Little lessons in Photo-Engraving." We read: "...perfection is reached when the reproduction is an exact facsimile of the original from which it is made." Since this is immediately under the four photographs, portraits with architectonic backgrounds, we are erroneously led to think there is meant exact reproduction of the original scenes, which Professor Ames, M. Luckiesh and Irwin G. Priest tell us is impossible; but we read more carefully and find that reference is to exact reproduction of the copy of the natural scene. All in all, the issue is an interesting and informative compilation; but it is more than a compilation because it is permeated with the poetic artistry of Faber Birren.

WARMTH AND  
COOLNESS

The following review and criticism of a recent experiment entitled: "Sensation of Warmth as Affected by the Color of the Environment", by F. C. Houghten, H. T. Olson and John Suci, Jr., Illuminating Engineering 35, 908-14 (1940), was written for us by Dr. S. M.

Newhall. The problem of this experiment was to test the hypothesis that an individual feels warmer in an environment in which red predominates, as compared with one in which blue is the prevailing color. If "warm" colors are really perceptually warmer than "cool" colors, there might occur also, it was thought, measurable changes in physiological responses which are known to accompany actual temperature changes. The solution of the problem is considered important for the heating, ventilating, and air-conditioning engineer; and so a preliminary study was authorized. The experimental room was insulated and air-conditioned, and contained a canvas screen, 6 feet square. This was illuminated by a 1000-watt projector, used in conjunction with chromatic filters and reflection screens. Two subjects, fully clothed, sat facing the screen and they were, in different trials, subjected to red, white and blue lights reflected from it at intensities of 9.0, 1.0 and 0.47 foot-lamberts, respectively. Temperature, humidity and air-movement were controlled and in general held within the established ideal comfort range. In some trials the subjects were continuously exposed to a given color for 15 minutes, in others for 40 minutes, and in some the illumination was shifted directly from red to blue and back to red in the effort to secure some recordable effect. Measurements were made of

external skin temperature, oral temperature, and pulse rate, in the effort to detect some physiological influence. The observers were asked to report their feelings of warmth, if any, in terms of a five-point scale which included cool, slightly cool, ideal comfort, slightly warm, and warm. Almost all of these responses indicated "ideal comfort." And in general the results of this preliminary study were negative. No relation was discovered between the color of the surroundings and the sensation of warmth, or any physiological function. It was suggested that more observers and closer controls might, perhaps, reveal some slight relation; but there was little encouragement for the prosecution of another or main study.

The reviewer is not surprised that no effect was observed, for this is one of those experiments whose design flies in the face of almost everything we know regarding the essential conditions to control in subjective judgment situations. The subject faced a chromatic patch which, to be sure, bulked large in the visual field but by no means simulated a complete room finished in a given color scheme. So far as the subject could see (and actually), the only systematic variable was the color of the chromatic patch. Probably the whole background of the individual's experience with traffic lights, and so on, was against belief that color could elicit perceptual warmth. Why should subjects report an uncertain subjective change, even if actually present, when they have every reason to believe that there has been no change which should make them feel warm? Expectation or set can mask positive results as well as manifest them. According to Mr. Ketcham and the Readers Digest for March, 1937, page 49 (or Harper's Bazaar, February, 1937), when in the normal course of events, a certain women's cafeteria was redecorated in light blue, the women began to complain that it was always chilly and that they had to keep their coats on while eating lunch. A heating engineer knew there could have been no change in temperature, for that was held constant by thermostatic control. The complaints continued until orange colors were introduced, whereupon the complaints ceased. This was not an intentional experiment, and possibly the facts can be questioned; but at least the conditions seem to have been natural enough to allow suggestion and subjective judgment the free play they may well have in many everyday situations in which engineers are interested. Once again, the old story bears repetition: Unless the test situation is sufficiently similar to the actual situation, the test results can have no practical value in application to the actual situation. The present problem seems far from settled and of sufficient practical importance to amply justify further investigation.

USE OF COLOR IN CONCRETE ROADS      An article of this title in Highways and Bridges, July 12, 1939, reprinted in the Imp. Chem. Ind. Technical Bulletin No. 18, June 1940, pp. 45-8, describes the use of color to decrease glare by tinting concrete with buff or red; for traffic zoning, to avoid frequent repainting and interference with men painting lines, here using red and yellow or buff; for distinctive zoning in fog; and for marking pedestrian crossings by the use of yellow and white. At danger points, saturated red may be used; at "roundabouts", the lanes of red and yellow may be gradually blended. Considerations of fastness to weather, resistance to alkali (cement), high tinctorial strength and low cost limit the pigments to iron oxides and chromium oxides. The usual amount is five percent of the weight of concrete, sometimes as high as ten percent in pedestrian crossings and special areas.

NUMBERING BY COLOR      An article by Janetta S. Dohan in J. Lab. & Clin. Med. 25, 872 (1940), is entitled "A Numerical System Using Colors for Marking Albino Rats and Mice." The system described is used in the Biochemical Research Foundation of the Franklin Institute. It combines the advantages of numerical system and color. Nine different locations on the animal

represent the digits from 1 to 9; e.g., left ear = 1, right ear = 2. Four colors, yellow, red, green, and purple show whether the digits belong in the ones, tens, hundreds, or thousands column, respectively; and can be produced by painting with solutions of picric acid, carbolfuchsin, malachite green, and gentian violet, none of which has been found poisonous to the animals. Zero is represented by absence of the color. Since numbers like 55 or 1232, in which the same digit occurs more than once, cannot be represented for lack of space on the animal's ear, etc., your Editor wonders, without having tried out the idea, whether chromaticity and brightness discrimination would not be sufficient to allow for use of blends of the four colors to indicate repetition.

**COLOR GROUP IN ENGLAND** In News Letter No. 33 the formation of a Color Group in Great Britain, to provide a meeting ground for those in science and industry who have a common interest in color, was reported. From a letter of February 27, 1941, from Dr. W. D. Wright, first Chairman of this Group, we learn that owing to the blitz their inaugural meeting was not held until February. Now, however, the Group is in formal existence and plans to hold quarterly meetings at a central point, with extra meetings to be planned at other points when feasible. They anticipate that activities during the next year or two will mainly be directed towards learning one another's language and getting the physicist to explain his approach to color to the dyer and vice versa -- all of which is very important. The secretary of the Group is Mr. H. D. Murray who may be reached at the headquarters of the Physical Society, 1 Lowther Gardens, Exhibition Road, London, S.W. 7.

**COLORS OF THE MONTHS AND SEASONS** From the office of Herbert Kaufman, Advertising Manager for the General Printing Ink Company, has come an announcement that their Color Research Laboratory, after checking traditions in birthstones, religious and national holidays, etc., have compiled the following list of colors for the seasons and for the months:

January: Black or white	July: Sky blue	Spring: Pink and green
February: Deep blue (Flag blue)	August: Deep green	Summer: Yellow and blue
March: Gray or silver	September: Orange or gold	Fall: Orange and brown
April: Yellow	October: Brown	Winter: Red and black
May: Lavender (Lilac)	November: Purple	
June: Pink (Rose)	December: Red	

**LOCAL COLOR GROUPS** The Boston Color Group held a meeting on Wednesday, March 19, at M.I.T. It was announced that Mr. Winship Pierce of the Norfolk Paint & Varnish Company, and Professor Frank L. Allen of the Massachusetts School of Art would be the speakers, the subject to be color mixture problems in paint.

The Washington Colorists held their last meeting on March 5, by joining with the Popular Session of the Inter-Society Color Council at the U. S. National Museum.

The New York group of I.S.C.C. individual members met for dinner on March 13. Professor Selig Hecht was the speaker. See item in this issue for comments on his talk.

The last meeting of the Chicago Association for Color Research of which the editor has record, is that of January 22, when Mr. H. T. Johnson of the Martin-Senour paint company, addressed this group on his Color Dictionary. This followed a dinner meeting and exhibit by Henry Harringer. The color charts and models which Mr. Harringer designed to clarify the Ostwald theory were of particular interest.

**CONTRIBUTIONS** Please send any news items you may have to I. H. Godlove, Editor, ISCC News Letter, Box 386, Wilmington, Delaware.



**INDEX OF SPECIAL ARTICLES** Through discussion with several persons, it was learned that there is some interest in a list of the special articles, those not merely of temporary interest, which have appeared in the seven and a half years of existence of the News Letter. Accordingly, we give the list here, using the chronological order. The decision as to what is temporary and what is of permanent interest was necessarily arbitrary.

**No. 1 (OCTOBER 1933)**

COLOR NOMENCLATURE IN THE UNITED STATES PHARMACOPOEIA (GATHERCOAL)  
 THE CO-FE-CU FLUIDS AS APPLIED TO U.S.P. TESTS (ARMY & TAUB)  
 THE 1931 I.C.I. STANDARD OBSERVER AND COORDINATE SYSTEM (JUDD)  
 MUNSELL SYSTEM IN ARCHITECTURAL DESIGN (FARNUM)

**No. 2 (NOVEMBER 1933)**

DEFINITIONS OF THE PERCENTAGES OF "CHARACTERISTIC COLOR" OF ORANGES AND GRAPEFRUIT  
 (BAIER, CALIFORNIA FRUIT GROWERS EXCHANGE)  
 COLORIMETER FOR DETERMINING FOUR PSYCHOLOGICAL COMPONENTS OF COLORS (DIMMICK)  
 COLOR MEASUREMENT IN AGRICULTURE (NICKERSON)  
 COLOR OF MANILA ROPE FIBER; BECKER VALUES (APPEL)  
 ANALYTICAL (CHEMICAL) USES OF COLOR (MELLON, FERNER & MEHLIG)

**No. 3 (JANUARY 1934)**

COLOR IN PAPER PULP AND ITS MEASUREMENT (VANARSDEL; LEWIS)  
 VISIBILITY CURVE OF SINGLE RECEPTOR CELL OF HORSE-SHOE CRAB (GRAHAM)  
 EFFECT OF AREA ON INTENSITY-TIME RETINAL RELATIONS (GRAHAM)  
 FORMATION OF "WASHINGTON COLORISTS" (NICKERSON)

**No. 4 (JUNE 1934)**

STANDARDS OF POTTERY DESCRIPTION (MARCH)  
 BIBLIOGRAPHY OF EXPERIMENTAL AESTHETICS, 1865-1932 (CHANDLER)  
 MAXWELL TRIANGLE YIELDING UNIFORM CHROMATICITY SCALES (JUDD)

**No. 5 (DECEMBER 1934)**

MAGNESIUM-OXIDE REFLECTANCE STANDARD (NATIONAL BUREAU OF STANDARDS)  
 THRESHOLD LIGHT-INTENSITY DETERMINATIONS (GRAHAM)

**No. 6 (FEBRUARY 1935)**

UNIFORMITY OF GRADES OF 1000 LOVIBOND RED GLASSES (WALKER)  
 SCALE OF COLOR TEMPERATURE (WENSEL, JUDD & ROESER)  
 EQUIPMENT FOR MEASURING THE REFLECTIVE AND TRANSMISSIVE PROPERTIES OF DIFFUSING MEDIA (MCNICHOLAS)  
 OPACITY STANDARDS (JUDD)  
 STANDARDIZATION OF LOVIBOND RED GLASSES IN COMBINATION WITH LOVIBOND 35 YELLOW (GIBSON & HAUPT)

**No. 7 (APRIL 1935)**

THE SELECTION OF COLOUR WORKERS (PIERCE)  
 THE PRINTERS ART OF COLOR AND COLOR DIMENSIONS (BIRREN)  
 PROPOSED GLOSS DEFINITIONS (PAUL)

**No. 8 (JUNE 1935)**

SIGNAL GLASSES (GAGE)  
 DEPENDENCE OF REFLECTANCE AND OPACITY ON THICKNESS; RELATION BETWEEN CONTRAST RATIO AND PRINTING OPACITY (JUDD)  
 METHOD FOR DETERMINING WHITENESS OF PAPER (JUDD)  
 DISCUSSION OF GLOSS (JUDD)

**No. 9 (SEPTEMBER 1935)**

COMMERCIAL COLOR STANDARDS  
 THE WORLD OF COLOUR (PSYCHOLOGY OF COLOR) (KATZ)  
 FADING OF DYEINGS IN RADIATIONS OF DIFFERENT INTENSITIES (APPEL)  
 SPECTRAL DISTRIBUTION OF ENERGY IN COMMON ILLUMINANTS (TAYLOR)  
 DISCUSSION OF GLOSS DEFINITIONS (KERR; L.A. JONES)

**No. 10 (SEPTEMBER 1935)**

THREE MONOGRAPHS ON COLOR (FOSS; INTERNATIONAL PRINTING INK CO.)  
 MEASURING VISIBLE AND TOTAL ENERGY TRANSMISSIONS OF HEAT-ABSORBING GLASSES (GAGE)

**No. 11 (NOVEMBER 1935)**

A NEW GLOSS COMPARATOR (HUNTER)  
 A NEW RECORDING SPECTROPHOTOMETER (HARDY)  
 COLOR AND DESIGN IN THE DECORATIVE ARTS (BURRIS-MEYER)  
 EYE STRAIN (DES AUTELS; LUCKIESH; J.E. IVES)

## No. 12 (JANUARY 1936)

SPINNING WEDGE COLORIMETERS (NICKERSON; JUDD)  
 COLOR TESTS (AND EQUIPMENT) FOR WHITE PAPER (SCRIBNER; JUDD)  
 PRIEST-LANGE REFLECTOMETER (PRIEST)  
 THE ADJUSTMENT OF LOVIBOND RED GLASSES (ESTEY)  
 THE CONQUEST OF COLOR (DISCUSSION OF KETCHAM PAPER BY GAGE)  
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## No. 14 (JULY 1936)

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 HANDBOOK OF COLORIMETRY (STAFF OF M.I.T. COLOR MEASUREMENT LABORATORY)  
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 DETECTION OF SMALL COLOR DIFFERENCES IN DYED TEXTILES (NUTTING)  
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## No. 15 (OCTOBER 1936)\*

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 PREVENTION OF RANCIDITY (CRITICISM OF COE REMARKS BY A "RESEARCH WORKER")

## No. 16 (JANUARY 1937)

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 STANDARDIZED (CO-FE-CU) COLORED MATCHING FLUIDS (ARMY; TAUB)  
 RECENT PROGRESS OF COLOR PROBLEMS IN THE PAPER INDUSTRY (LEWIS) (PAPER GIVEN AT M.I.T. CONFERENCE)  
 AN INTRODUCTION TO SPACE PERCEPTION (CARR; REVIEW BY ZIGLER)  
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 EGG COLOR; THE "GOOD EGG" (MANDEVILLE)

## No. 17 (MARCH 1937)

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## No. 18 (JULY 1937)

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## No. 19 (SEPTEMBER 1937)

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## No. 20 (MARCH 1938)

COLOR IN PAINTING THROUGH THE AGES, IV (GODLOVE)  
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\*ALSO: REPORT OF APA DELEGATES FOR 1935-36  
 U.S. GOVERNMENT PUBLICATIONS ON COLOR  
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## No. 21 (SEPTEMBER 1938)

A FROG IMPALED: COLOR OF WATER WAVES (BITTINGER)  
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