

Walker }  
Gibson } Note + return  
to Judd

1/27/33  
RMM 10/28/33

INTER-SOCIETY COLOR COUNCIL

NEWS LETTER NO. 1

Notice from the Secretary

Here is the first News Letter issued by the Inter-Society Color Council to its official delegates and cooperating associates. It is, as you will see, very informal, and designed expressly to acquaint our membership with activities that are being carried on in the field of color. No attempt has been made to group the following information under special subjects, or to provide headings for the brief abstracts on each. At the same time, it is your Secretary's wish to present this material in the most convenient and usable form, since some of the members will undoubtedly wish to place on file, certain portions of it. Perhaps subjects carried in future News Letters could be grouped under such headings as Art, Science and Industry, or Reports, Abstracts and Notices. Perhaps the pages should be punched for binding in loose leaf form. We would like your opinion on these points, together with any additional ideas that would increase the value of this communication to you.

The response to the recent request for items of color interest was overwhelmingly gratifying. In fact, it was necessary to hold some of the information for future letters. To be successful in disseminating information, these News Letters must look to you for further contributions from month to month. It will continue to be furnished you as long as you continue to furnish the necessary material of which it is composed.

M. R. P.

E. N. Gathercoal, School of Pharmacy, University of Illinois -

COLOR NOMENCLATURE IN THE UNITED STATES PHARMACOPOEIA. Abstract of paper presented to U. S. P. Revision Committee by E. N. Gathercoal, reporting on findings of the Committee on Measurement and Specification of the Inter-Society Color Council:

Interest developed in the naming of colors in the U. S. Pharmacopoeia in 1922 during the preparation of the Tenth Revision. Certain color names appeared to be incongruous and the entire subject of naming colors in the U. S. P. was on a purely haphazard basis, with no scientific foundation whatever. This led to a rather careful study of the color names in U. S. P. IX. A committee was organized to look into this subject, and a booklet covering its work was presented at Washington, May 1930. The report covering the investigation may be summarized as follows:

First. In no sense of the word have color names ever been really defined. Standard, unabridged dictionaries are practically devoid of definitions of color names.

*Second.* No scientific standards for specifications serve as the basis of color names. All of the color names in use are either historical, dating back through many centuries and through many languages, or have been haphazardly designed without reference to scientific standards, or are purely fanciful conceptions.

*Third.* The physical scientific study of light and color is on a well-established basis and abundant means exist for the physical standardization of colors.

*Fourth.* The psychological study of color sensations as appreciated by the human being has received considerable study and some splendid color charts and other means for making color comparisons have been developed and constant improvement is being made along this line.

*Fifth.* Several means of specifying color in the Pharmacopoeia may be necessary, such as: (a) ordinary color names in English; (b) the use of colored liquids that are prepared according to certain specifications or standards; (c) a very exact specification of the color by means of Angstrom units, or spectrum lines, or spectrophotometric curves.

As a result of the meeting in Washington, a committee was appointed to organize a definite body for the study of color. As a result of its activities, the Inter-Society Color Council was organized. One of its specific purposes was to deal with the problem of color specification in the United States Pharmacopoeia.

The U. S. P. color problem was presented to the Color Council in the following words: *"A means of designating colors in the U. S. Pharmacopoeia, in the National Formulary and in general pharmaceutical literature is desired; such designation is to be sufficiently standardized as to be acceptable to science, sufficiently broad to be appreciated by art and industry, and sufficiently commonplace to be understood, at least in a general way, by the whole public."* A Committee on Measurement and Specification was formed, and accepted the problem as one of designation, but they soon recognized that designation was not the real problem, i.e., not one of defining a name or even finding a name to fit a definition, but one of specification of the corresponding color. To illustrate, it is very simple to designate a color halfway between black and white; call it "mid-gray" or any other name you choose to give it. But the way in which the particular color so named is to be determined is not so simple. There must be specifications as to how the color is obtained and all the conditions for evoking it: the light, the background, who views it, etc.

After careful study, the Committee presented a precise and extensive tabulation showing the different methods of color specification, the peculiar advantages of each and the useful fields of each, and added this statement: In general there are two kinds of color problems: First, those in which our direct and ultimate interest is color itself, regardless of how it is obtained; second, those problems in which color

is only a means to an end, often used to judge the composition and hence the quality of the product. All gradations between the two extremes exist. The more completely the problem lies at the extreme where the color is of direct interest, the methods of the artist and psychologist will be most useful; and on the other hand, the more indirect the color interest, the more likely it is that spectrophotometry, the method par excellence of the physicist, will be most useful. As a corollary it should be stated that in nearly all cases, best results can be obtained by a judicious combination of the two methods.

The question of course arises with the heterogeneous array of a dozen or more methods and their corresponding languages: Is not the situation hopelessly muddled? The answer is unqualifiedly *no!* The untutored linguist entering a foreign country, unequipped, might be somewhat dazed, but with the aid of interpreters, grammars and dictionaries, it is only a question of time for him to become oriented. In the field of color, fortunately, the translations from language to language, and method to method, have been well worked out, though the final steps have been very recently added.

The report of the Committee goes on to indicate that it is possible to name any color on a scientific basis and with the use of 12 ordinary English words, the adverb "very" and the suffix "ish". These words are: *red, orange, yellow, green, blue, purple, light, medium, dark, weak, moderate, strong.* Each of these words has a very definite, positively meaning. Whether the color specification be by spectrophotometry, by monochromatic analysis, by trichromatic analysis, by comparison with color charts, by use of the Lovibond glasses, or by any other standard method, the naming in English words can be scientifically accomplished. Unfortunately, while the number of words in this color vocabulary is so extremely few, yet the color name is sometimes quite long. A solution of Potassium Permanganate, 1 in 100, viewed in a thickness of 25 mm. would be described as "very dark purple", but if viewed in a thickness of 10 mm. its scientific name would be "dark very strong reddish purple". The colors of three samples of powdered aloe were determined by trichromatic analysis and under the recently adopted international requirements, and then were named as follows:

	<i>Scientific Name</i>	<i>Popular Name</i>
Cape Aloe	Strong Orange Yellow	Bronze Yellow
Socotrine Aloe	Dark Strong Yellowish Orange	Cocoa Brown, Coffee Brown, Rust Brown or Russet Brown
Curacao Aloe	Dark Weak Orange	Cocoa Brown, Coffee Brown, Chestnut Brown or Chocolate Brown

In conclusion, it should be pointed out that it would not be difficult to place every color name or other method of color specification in the Pharmacopoeia on a definitely scientific basis. Considerable progress is being made during the present Revision in improving color specifications, but when one recognizes the ultra-conservative character of the Pharmacopoeia, one may reasonably conclude that it will be at least twenty years after many other scientific and commercial bodies have adopted standardized color terms before the Pharmacopoeia does so.

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*H. V. Arny, College of Pharmacy, Columbia University:*

Abstract of paper presented before the Scientific Section of the American Pharmaceutical Association, Madison, Wisconsin, August 28 to September 1, 1933:

*H. V. Arny and A. Taub:- "The Co-Fe-Cu Fluids as Applied to U. S. P. Tests."*

Report of a study carried on at the request of the U.S.P. sub-committee on organic chemicals of the colors produced in performing the test of U.S.P. IX for "readily carbonizable substances." The colors produced by the action of sulphuric acid on 48 official organic chemicals in Lovibond units and matches prepared from Arny's "CO-FE-CU" standardized colored fluids will be reported and demonstrated.

Prior work by Arny and Taub on matching the color of official fixed oils will be reviewed with particular reference to the inclusion of these color comparisons in U.S.P. XI.

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*R. G. Macdonald, Technical Association of the Pulp and Paper Industry:*

At the fall meeting of the Technical Association of the Pulp and Paper Industry, to be held on September 26 - 28, 1933 in Appleton, Wisconsin, the following papers relating to color will be presented:

1. Usefulness of Pulp Color Measurements in Paper Making, by L. C. Lewis of the Mead Corporation.
2. Razek-Mulder Analyzer and Its Use for Measurement of Color in the Pulp and Paper Industry, by R. S. Hatch and H. A. Hauff of the Weyerhaeuser Timber Company.

3. A New Color Comparator, by J. W. Forrest of the Bausch & Lomb Optical Company,
4. Opacifying of Paper by Means of Titanium Pigments, by W. R. Willets of the Titanium Pigment Company,

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*Deane B. Judd, U. S. Bureau of Standards*

The 1931 I.C.I. Standard Observer and Coordinate System for Colorimetry, by Deane B. Judd, U. S. joint representative in Colorimetry for the International Commission on Illumination,

*Abstract:* This report makes available in convenient form the properties of the standard observer recently recommended for colorimetric purposes by the International Commission on Illumination. These data supersede the values published in the 1922 report of the committee on colorimetry known as the O.S.A. excitation data. Forms are given for computing trilinear coordinates (trichromatic coefficients), dominant wave-length, colorimetric purity, and luminous transmission (or reflectance) from spectrophotometric data. Tables of the data needed are included for the 1931 I.C.I. standard illuminants A, B, and C.

These standard data were approved by action of the Inter-Society Color Council in March, 1932 (Bulletin No. 1 of the Inter-Society Color Council, pp. 4 and 6, June 7, 1932). This paper was prepared at the request of the O. S. A. Committee on Colorimetry in order to facilitate by publication in an American journal the application of the new standards in actual practice.

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*Royal B. Farnum, Rhode Island School of Design*

During the past year a very definite attempt has been made, in the School of Architecture at the Massachusetts Institute of Technology, to relate the scientific application of color as expressed in the Munsell System to regular color problems in architectural design.

At the Rhode Island School of Design, beginning steps have been made to introduce the study of color as a separate and special phase of the training of the designer. Previous to this year it has been regularly a part of the design course but lacked the consideration which now will be offered in this specialized field,

During the coming year, considerable time will be devoted to experimenting on the proper approach in presenting color to the artist and designer, emotional reactions will be followed by scientific considerations, and a study of various color systems. This, in turn, will find its direct application in various departmental activities of the school, which include, painting, textiles, jewelry, architecture, graphic arts, interior decoration, teacher training.

A lecture room has been specially fitted up for the utilization of all sorts of color apparatus and for both visual and chemical analysis of color.

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*H. P. Gage, Optical Division, Corning Glass Works:*

The Signal Section Proceedings of the American Railway Association, Vol. XXX No. 2, pp. 385-443, contain a report by Dr. Gibson of the Bureau of Standards on the standardization of new limits for railway signal colored glass. Copies of this report may be obtained from the secretary of the American Railway Association Signal Section - Mr. R.H.C. Balliet, 30 Vesey Street, New York City.

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COMMITTEE APPOINTMENTS

The following committee appointments have been made:

*Committee on Measurement and Specification -*

Faber Birren,  
49 East Elm Street,  
Chicago, Illinois

H. P. Gage,  
Chief, Optical Division,  
Corning Glass Works,  
Corning, New York

M. Luckiesh,  
Director, Lighting Research Laboratory,  
General Electric Company,  
Nela Park, Cleveland, Ohio

M. G. Mellon,  
Professor of Analytical Chemistry,  
Purdue University,  
Lafayette, Indiana

W. B. VanArsdel,  
Research Department,  
Brown Company,  
Berlin, New Hampshire

*Committee on Color Problems -*

Faber Birren,  
49 East Elm Street  
Chicago, Illinois

M. G. Mellon,  
Professor of Analytical Chemistry,  
Purdue University,  
Lafayette, Indiana

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All notices, abstracts, and requests for further information regarding any of the items appearing in this letter, should be addressed to M. Rea Paul, Secretary, 105 York Street, Brooklyn, New York.

October 16th, 1933

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