

INTER-SOCIETY COLOR COUNCIL

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GODLOVE AWARD On January 7, Mrs. I. H. Godlove wrote to the President, with copies to the Secretary and Treasurer, referring to the late Dr. Godlove's wish to establish a fund with ISCC, the interest of which was to be used to buy a modest medal or award for the member who did outstanding work in the field of color over a designated period. Mrs. Godlove stated: "I know I. H. would want a neat and modest medal. I do not know what he might have called the award, but I was thinking that now it might be called the Godlove Medal."

At the April 6 meeting of the Board of Directors, a motion that "the Inter-Society Color Council accept with gratitude the generous proposal for the establishment of an I. H. Godlove award that has been made by Mrs. Godlove" was proposed by Vice President Waldron Faulkner and approved unanimously by the Board. Later in the evening, Mrs. Godlove joined the Board in order to exchange with them any ideas that might be developed concerning this award. Use of glass, either in prism form suitably mounted or inscribed or in some other specially designed form, received favorable comment. The more usual type of engraved medal was also discussed. Several of those present at the meeting were delegated to look into the possibilities of each type of award. At the present writing, a decision on which form the award will take has not yet been reached, but it is expected that this will be settled soon after President Nickerson returns from Europe.

Once the award fund is established, two committees will be appointed, one to set up a statement regarding the establishment of the award and the rules by which recipients are to be selected and the other to work with Mrs. Godlove on matters concerning the design and wording on the medal or award. These committees are to be appointed as soon as possible in the hope that they can report to the Fall meeting of the Board of Directors. Following this, a further committee to select the first recipient will be appointed. It is expected that the first award will be made at the 1956 Annual Meeting. (Abstracted from minutes of April 6 meeting of ISCC Board of Directors, issued by Ralph M. Evans, Secretary.)

NOMINEES FOR
ISCC OFFICES

In a letter dated April 13, we are informed that the following slate of nominees for office has been presented by the Nominating Committee which consisted of Dean Farnsworth, Deane B. Judd and Edwin I. Stearns, Chairman. Each of the members of the slate have indicated their willingness to serve in the indicated capacity for the period 1956-57. Other names, of course, may be presented in accordance with the terms of the By-Laws of the Inter-Society Color Council.

President	-	Waldron Faulkner
Vice-President	-	Walter Granville
Secretary	-	Ralph M. Evans
Treasurer	-	Norman Macbeth
Director	-	Helen D. Taylor
Director	-	Scott Wilson
Director	-	Ralph E. Pike
Director	-	G. L. Erikson

HEIDELBERG
MEETINGS

Ed. Note: Before Dorothy Nickerson left for Europe, we asked her if she would like to write an account of the Heidelberg meetings for the News Letter. She agreed to do so on her return. However, we were surprised to receive in the other day's mail a letter containing the promised report, written during the week of the CIE meetings. The letter came in the envelope pictured here. For those of you who have never seen the CIE symbol, here it is, prominently displayed on the envelope. Miss Nickerson's report follows:



Under the title INTERNATIONAL DISCUSSION OF PROBLEMS IN COLOR METRICS, a conference dealing with three aspects of color problems took place in Heidelberg, Germany, June 8-9, 1955.

The moving spirit of this assembly was Dr. Manfred Richter of the Federal Institute for Testing Materials, Berlin, who, as secretary, brought together a committee consisting of Deane B. Judd, National Bureau of Standards, USA; Dr. Y. Le Grand, Muséum National d'Histoire Naturelle, Paris; and Dr. W. D. Wright of the Imperial College of Science and Industry, London. The presence of such an outstanding group of men on the Committee, plus the selection of such a suitable meeting place as Heidelberg,

served to draw papers of high quality and an attendance of about 150 specialists from the United States, England, France, Sweden, Germany, Holland, Belgium, Canada, South Africa, Switzerland, Spain, and Egypt.

This first international conference on color dealt with three aspects of the subject in separate sessions, one on color adaptation, one on color vision (especially tri-tanopia), and one on color space, color systems, color tolerances. Dr. Le Grand presided at the first meeting which began at 8:30 a.m. Invited papers by Dr. D. L. MacAdam of the United States and Dr. A. A. Kruithof of Holland were followed by several ten-minute papers, and then by rather spirited discussion which lasted until 1:00 p.m. The afternoon session, under the chairmanship of Dr. Wright, opened with invited papers by Commander Farnsworth of the United States and Dr. N. Jaeger of Germany (the University Eye Clinic at Heidelberg, in whose lecture room our meetings were held). Following discussion of these papers, there were presented a number of ten-minute papers by Rushton of Cambridge, Monje from the University of Kiel, Adam from the Ostwald-Archiv at Grossboethen, Fry from Ohio State. The third session opened at 8:30 a.m. of the second day under the chairmanship of Dr. Judd. Because of illness, Dr. Blottow was not present to give his invited paper on the problem of color tolerances. Instead, Dr. Le Grand spoke briefly. Then Dr. Wyszecki (whom many of our News Letter readers met when he was here last year working as a Fulbright Scholar at the National Bureau of Standards) gave the second invited paper on the Metrics of Visual Homogeneous Color Space. After discussion, there were a number of ten-minute papers, which again was followed by open discussion. The question of terminology and the necessity for using color words with exact meanings was pointed out, and caused considerable discussion.

Perhaps the greatest importance of these meetings lay in the opportunity presented for color workers of so many nations to become acquainted with each other. The American delegation was the largest ever to attend color meetings in Europe, and for several, it was the first opportunity to meet many of their co-workers in this field. A social program that started on Tuesday evening with a pre-session reception, a boat excursion on Wednesday evening with supper aboard, and an afternoon and evening excursion through the very beautiful German countryside, ending up with dinner at Ludvigshaven with the Badische Anilin und Soda Fabrik, our host, provided many occasions outside of the meetings to become better acquainted and to discuss, in small groups, subjects of mutual interest.

There were three languages spoken at the conference, and we had all notices and greetings translated. Papers were in one or another of these languages, and it was of interest (to this reporter at least) to see how discussions of some subjects were carried on in several languages, regardless of the language of the original paper.

The North Americans attending were Judd, Balinkin, Nickerson, Farnsworth, MacAdam, Fry, Middleton, Balcom, and many of our old friends who have worked here at one time or another, Dr. Plaza, Dr. Ishak, Dr. Wyszecki, and Mr. Sanders.

It was a fine meeting, one that should be the first of a number to be held in the future. Perhaps scheduling them prior to the CIE meetings, usually held every four years, would be a good objective. Such meetings should be of interest to this Council, and it seems quite probable that the ISCC in this country, together with similar organizations in other countries, might jointly work out a way to see that such meetings are continued. Meanwhile, all praise and thanks to Dr. Richter for arranging so well the Heidelberg meeting so recently concluded.

Dorothy Nickerson

FATIEPEC CONGRESS The 1955 spring and summer season of international color conferences was inaugurated in Spa, Belgium, with the Third FATIEPEC Congress on "Theoretical and Practical Aspects of Color Matching" during the week of May 22-27. Assembled here in the quaint, but historically proud, health resort in the heart of the Ardennes region were about 400 delegates and guests of the continental equivalent of our Federation of Paint and Varnish Production Clubs. This Congress, organized by the Belgian Association of the Paint and Printing Ink Industries (ATIEPEC), was undoubtedly influenced by the forthcoming CIE meeting in selection of this topic. The enthusiastic encouragement of Prof. Ir. O. Peters of the Université Catholique de Louvain, and the confusion in the industry brought about by numerous and divergent approaches to problems of color standardization and measurement, provided even further incentive.

The program was organized in five sections, preceded by a series of plenary lectures which were general in nature. The sections had the following titles: Section I. Scientific and Technical Description of Color and Color Harmony; Section II. Color Measurement: Methods and Instruments; Section III. Color Matching - Scientific Matching and Color Tolerances - Practical Color Matching Maintenance of Color Standards and Reference Samples; Section IV. Standardization and Specification - Terminology for Standardization Purposes - Color Charts and Systems; Section V. Technological Factors Other than Colorimetric to be Considered in Color Measurement. For those who may wish further information, a limited number of abstracts are available. Copies may be obtained by dropping a postcard to R. E. Pike, E. I. du Pont de Nemours & Co., Flint 2, Michigan. A complete set of papers with discussions will be published by FATIEPEC in early fall. Publication details will be reported when they are available.

Approximately 400 delegates representing fifteen nations were in attendance. Representing the ISCC were Deane B. Judd (in the unusual role of observer), P. O. Blackmore, L. G. Glasser, and R. E. Pike.

In view of the diversity of subjects, it is difficult to summarize adequately the conclusions of such a meeting. Personal impressions of the most significant aspects of the meeting were rather elementary. They involve, first, the conviction that the application of basic colorimetry in day-to-day problems in the paint industry is practical, necessary, and useful. This conclusion is essentially independent of the type of instrument used or the system for interpretation of data. Secondly, there exists a serious need for standardization of terms, nomenclature, instrument design, and color order system. The very considerable and growing divergence of viewpoints on all of these items does not make the outlook too bright. Rather, it seems to discourage the needed increased application of colorimetric methods to industrial problems. It is certainly hoped by all that the Zurich meeting will more clearly define the ultimate standards so that application research can be more efficiently directed toward more uniform methods and procedures.

Thirdly, a renewed and broader interest in the application of the Kubelka-Munk two-constant theory to analysis of problems related to hiding power, coloring efficiency, transparency, and color-composition relationships was most evident.

It further appeared that the German Standard DIN-6164 color system of Manfred Richter is being actively investigated and applied to transmission color measurements in Germany and Switzerland. However, the absence of direct comparison of the DIN system with Munsell rennotations, Adams chromatic value scales or other systems more generally used in the paint industry leaves a considerable number of questions unanswered. DIN reflectance standards are currently being prepared by Muster-Schmidt. When these are complete, a comparison with these established methods will be of considerable interest.

Language is a most serious obstacle to international standardization. The confusions brought about by the variety of definitions used by different industries, so clearly illustrated in the Color Terms Dictionary, are greatly compounded in translation. The CIE method for color specification is presently the only generally acceptable color language for international use. The problems of international standardization on a uniformly spaced color scale for specification of tolerances and color differences, and standardization of viewing conditions for color measurement, appeared very great. The fact that these may be more readily resolved on an industry rather than a more basic scientific level is a matter which should be given serious consideration.

R. E. P.

BRITISH PHYSICAL SOCIETY -
COLOUR GROUP

On April 27, this group held its 86th meeting, at which W. S. Stiles, R. W. G. Hunt and R. G. Horner discussed the CIE system and its revision. They pointed out that new measurements on the color-matching and brightness-matching properties of the eye indicate that the CIE standard data should be revised. If such revision is made, the opportunity might well be taken to standardize a chromaticity diagram (based on the new standard observer data) which is more nearly uniform in chromaticity. The MacAdam transformations and their derivatives appear to be promising.

The 88th meeting, held on May 18, was of particular interest because of the participation of Dr. Judd and Dr. MacAdam. Following is an excerpt from the minutes:

"Dr. D. B. Judd gave an address on 'The Contribution of Colorimetric Measurements to Visual Theory,' in which he emphasized that any theory of colour vision must be reducible to a triple matrix: this in turn must be such as to explain metamerism. Again, a comprehensive theory should give an account of various degrees of sensory differences. Illustrating these, Dr. Judd showed correlations between photo-electric measurements and subjective appraisals in terms of Judd units. A lively discussion followed, and the chairman expressed everyone's appreciation and thanks to Dr. Judd.

"After tea, Dr. D. L. MacAdam gave an illustrated introduction to the science of colour. Seventy-two coloured slides and a handful of colour cine-films provided the vehicle on which the audience were carried to as complex a subject as the tabulation of color tolerances. Another spirited discussion followed. The chairman thanked Dr. MacAdam for his interesting paper, the College authorities for the loan of the theater, and closed the meeting at 6:45 p.m."

AMERICAN CERAMIC SOCIETY
MEETINGS

The ACS annual meeting in Cincinnati starting April 25 was interesting to us from several points of view. For one thing, the ACS sponsored an all-day symposium on color as part of the meeting. The Society's delegates to ISCC arranged this symposium, and many ISCC members participated. Dr. R. F. Patrick was the chairman of the Committee which was responsible for the program. We understand from Dr. Patrick that the session was very well attended and there was considerable discussion after many of the papers. Dr. Balinkin, as usual, presented an excellent spectacular demonstration illustrating some of the principles of color. The program of the symposium was published in the March News Letter.

The Color Symposium was cosponsored by several of the ACS divisions. One of these, the Design Division, had a very interesting program of its own, which included talks, exhibits, panel discussions, and tours. This rich bill-of-fare was arranged

by Francis Joseph Von Tury, who, we understand, has just been appointed member of the ACS delegation to ISCC. Several of us met Mr. Von Tury at our annual meeting in April.

The Society's delegation to ISCC held a short meeting on the Sunday evening preceding the annual meeting. In addition to appointing Mr. Von Tury as member, the delegation selected Mr. Tyler Pett to succeed himself as chairman, agreed to publish the papers presented at the Color Symposium in the ACS Bulletin as a unit, and suggested doing some more work on the relationship between acceptability and perceptibility in ceramic products.

TCCA NEW COLORS

In the advance confidential issue of the 1955 Fall and Winter Hosiery Color Card, released by the Textile Color Card Association to its members on May 20, each of the six new shades has been individually styled to key harmoniously with an important fashion color in fall costumes and shoes. The importance of blending hosiery colors closely with the ensemble is visualized by the coordinated fabric samples on each page, which serve as a guide for the sales promotion of the new hosiery tones. As described by Estelle M. Tennis, executive secretary, the hosiery shades in this fall scale run from light to dark, with most falling in the medium register. Toasted Almond, a burnished tan, harmonizes with animated tones of the autumn harvest as amber, copper, spiced pumpkin and gold. Frosted Mocha, a coffee brown, blends well with deep blackish-browns and earth shades, significant in the fall fashion spectrum. Caramel Beige, a warm tone with a rich candy flavor, complements the entire range of fashionable new greens, including bronze, moss and jasper. Blush Amber, a roseglow shade with a subtle blush undertone, tunes in melodiously with garnet and rosy reds, also winter navy. Mist Cloud, an illusive hazy tone with a faint pinkish cast, is flattering with the fashion-favored violine scale, including plum, mulberry, and violet, and is also pleasing with charcoal and other grays. Sunstar is an animated sunlit shade, which is favored with Dulcet winter pastels in the cruise and resort picture, and also serves to provide a glamorous light tone for evening wear.

"Sunglamour shades," rich glowing hues warmed by the sunlight, sound the brilliant note in the Advance Woolen and Worsted Color Collection for Spring and Summer 1956. This bright palette highlights Sparkling Coral, Sunlit Turquoise, Magic Violet, Burnt Ocher, Goldlite, Lustre Green, Redglow and Blue Flair. These gay colors, among other uses, will enliven sports and beechwear. The lighter chromatic scale of this new collection is represented by the "Crayon Pastels," which feature Ivory Pearl, Peach Cream, Blue Chalk, Opal Lavender, Aquadawn, Crushed Lemon, Dulcet Green, and Crayon Rose. The yellow and golden influence rates strong fashion significance in this spring forecast, as expressed in the dulcet Sweet Butter and Golden Caramel. More subtle undecided shades tinged with greenish-yellow are Limegold and Green Brass. Persian Melon and Burnished Spice also belong to the yellow group. Sistine Mauve and Purple Mist have a lavender and violet shade. The mauvish note is also apparent in Hyacinth Blue and Parisian Navy. Grotto Aqua and Tideway Blue are greenish seascape shades. The beige-to-brown scale is represented by Glacé Walnut and Blond Oak. Sandbark, a natural tone, and Santos Coffee are more muted in character. Also among the neutrals are the metallic shades, Platinum Gray and Steelglint. Wild Cherry and Grenadine Pink incline to the bluish cast, while Coral Capucine and Titian Tile have a yellowish undertone. Mint Frappé and Frosted Julep are cool mint-flavored greens. There are forty colors in all.

Fresh young colors with a pretty flower look, captioned "Riviera Pastels," lend a lighthearted air to the Advance 1956 Spring and Summer Color Collection for Man-Made Fibers and Silk. In this springlike range are Orchid Blush, Jasmine White, Riviera

Sky, Mimosa Yellow, Casino Lime, Monaco Pink, Italian Turquoise and French Helio. "Exotic Hues," suggesting the hot vibrant colors of the tropics, feature Tropic Peacock, Aloha Gold, Carib Orange, Indies Blue, Southsea Pink, Tahiti Purple, Hot Green and Exotic Red. Sunlit shades with a soft golden glow are expressed in the burnished Wild Honey and Cornblond, a leghorn yellow. Other colors of this type are Golden Citron and Yellow Plum, with a greenish tinge; also the orange-flavored Burnt Henna and its lighter harmonizing tone, Frosted Apricot. Significant among the high-fashion notes are the soft violet-tinged blues, Blue Lavender and Cloud Sapphire. Heavenblu and Blue Comet are muted greyed blues. The Mauve influence is stressed in Como Lilac and Jewel Violet. Red Camellia and Pink Crystal are reds, while Sorrento Aqua and Seaspray Blue are greenish-sea blues. Among the neutrals are Almond Shell, Glazed Chestnut, Taupedawn, and Nutwood, Inca Silver and Colony Gray. Lime Freeze and Relish Green are shades of yellowish undertone.

On May 19, the TCCA held its annual meeting. We will report on this in the September issue.

DR. JUDD'S RADIO
APPEARANCE

Dr. Deane B. Judd's friends and admirers in the Washington area enjoyed a rare treat on May 7, when he was interviewed for ten minutes or so over Station WGMS. The occasion was one of the regular weekly "Voice of Chemistry" broadcasts produced by the Chemical Society of Washington. Dr. Judd, as guest speaker, told his radio audience about the new Dictionary of Color Names of which he is joint author, soon to be put on sale by the Government Printing Office.

The Dictionary, Dr. Judd said, contains about 13,000 entries culled from many American and British sources. The object was to include all color names defined by a color chip that anyone considered important enough to measure. The Dictionary defines each of these entries by giving its revised ISCC-NBS designation, of which there are 267. Dr. Judd emphasized that the full name of the work is "The ISCC-NBS Method of Designating Colors and a Dictionary of Color Names." He did this to bring out the fact that this work also includes, in chart form, the Munsell hue, value and chroma ranges for each of the ISCC-NBS color designations. (The boundaries of these ranges were revised in 1949 by the reactivated ISCC Subcommittee on Color Names.)

Dr. Judd told something of how the dictionary got started, and mentioned that the senior author is Kenneth L. Kelly. He concluded his informative interview by explaining that the dictionary will be useful to scientists, technologists, and business people who are concerned with color. It will serve as an inter-translation between the color languages used in the various branches of science and industry, and it also will help the merchandiser to select an appealing sales name for the color of his product. (Each ISCC member will receive a copy of the dictionary as soon as it comes out.)

MR. HESSELGREN
REPLIES

Ed. Note: Our readers will remember Dr. Burnham's review of Sven Hesselgren's new color atlas in the March News Letter. We have received a copy of a reply from Mr. Hesselgren to

Dr. Burnham, which we reproduce here:

I beg to thank you for the review in the ISCC News Letter of March, 1955, of my report and my colour atlas. Of course, there are details in my papers and in yours as well that could be of value to discuss but the main point is that phenomenological points of view should be the basis for all colour research and I think we agree in this respect.

You ask why I am not satisfied with Munsell's or Ostwald's colour atlases. The answer simply is: Ostwald's system is not at all based upon phenomenological analysis; Munsell's of course is better but in his atlas you cannot find the unique hues or equality in saturation - both phenomena in the realm of colour which are of great importance from the aesthetic point of view and thus for the architect's practice.

Of course, there is a big step from finding the right principle of making a colour atlas to producing a commercial thing and I know that this first edition has not been what I had hoped and expected. But when this first edition was being made - more than five tons of paint were spurted onto about 35,000 m² of paper - nobody knew anything about spurting paint onto paper. Today, we know a great deal and the existing faults can be corrected and the quality of the spurting will be good. However, I know that it also were most desirable that new judgments get done under better controlled experimental conditions whereby the judgments possibly could be the base of an international colour standardization. Such a work, however, will be very expensive (cost a lot of money that I do not have) and take a very long time to do.

Yours sincerely,
Sven Hesselgren

AN OPEN GATE Ed. Note: "Color in Hooked Rugs" is a new book by Pearl K.
TO COLOR McGowan, published by Pearl K. McGowan, Inc., West Boylston,
 Massachusetts, and selling for \$6.50. We wish to thank Miss
 Martha L. Hensley for the following excellent review of this book, written
 at the request of ISCC President Dorothy Nickerson.

Pearl K. McGowan, a competent and devoted teacher of the art of hooking rugs, is concerned with the day-to-day problems of others in achieving their desire to create color harmony in hooked rugs. She does something about it in an intelligent and simple way.

Her new book, "Color in Hooked Rugs," shows a thorough knowledge of color; an excellent comprehension of the technique of applying it to rugs; and a common sense understanding of human nature. Mrs. McGowan explains the law and order of color, in accordance with the Munsell Color System. Characteristic of a good teacher, she anticipates questions that may arise and answers them by illustrating unfamiliar aspects with familiar ones. For instance, in discussing the hue circuit and the value and chroma charts, she foresees the question, "Brilliant scarlets and Turkey reds! Where do they lie?" She answers the question about these colors, familiar to all rug makers, by using the law and order of color.

Having laid some groundwork for understanding color, she moves on to encourage rug makers to develop their own color equipment. Dye and fabric, the media familiar to all rug makers, are the materials used for the Dye Color Wheel, a wonderful tool for planning color schemes. Preceding the Dye Wheel is a chart containing the names of dyes, their hues, values, and intensities. The chart is a helpful device for associating names of familiar dyes with the orderly arrangement of hue, value, and chroma used in the Dye Color Wheel.

Mrs. McGowan presents some main points to remember and goals to achieve in dyeing materials for definite parts of the design of a rug, such as backgrounds, scrolls, leaves, flowers and geometrics. She seasons the space between the building of the Dye Wheel and the dyeing of parts for the design with timely suggestions and cautions, such as "Be wary of a heavy hand in the use of dye! You will be amazed at how little dye it takes to get the colors you desire, unless you are seeking the heavy rich

shades. It is better to add a tiny bit more dye than to find you have used too much. Be very stingy with it as though each grain was worth a dollar!"

With an unerring eye Mrs. McGowan guides her main course of color development to the color harmonies - monochromatic, analogous, complementary and all-color - all of which have paths through the varied values and intensities of each hue. She carefully illustrates the vertical, horizontal, and diagonal color paths with diagrams and good examples, to help explain the law and order of values and intensities as applied to rugs. For instance, she says "Now let's consider the horizontal path. Again notice in the plate of Red, if you followed the fourth value horizontally away from the neutral pole, all your values would be the same, but your color would change from an extremely grayed shade to a brilliant shade of the same value. There is an ever-increasing intensity in this path without any change in value. This is not the path usually chosen for floral or leaf detail, because as a rule, you need shadow and highlight for them, shadow being a darker value and highlight a lighter value."

Under her chosen title, "Ten Pertinent Points," she considers materials and textures, backgrounds, contrasts of value, balance, repetition, continuity, imagination, exaggeration, and unity, all features of great importance in a good hooked rug. By the time she arrives at "Applying Theory to Practice," Mrs. McGowan has built a firm foundation for using color and is in a position to review and stress important steps in obtaining color harmony in rugs. As she nears the end, she again shows her understanding of human nature by interspersing with theory illustrations with terse and homely bits of conversation such as these: "No, I am making this rug for my granddaughter as a wedding gift, and I don't even know what her home is to be like;" "Now, wait a minute. I am hooking because I love to hook, and I am going to sell my rug. How can I be sure my rug will find a ready market?" and "Mine are not for my home, and are not for anyone in particular. I just love to hook."

When you reach the end of the book and lay it aside you cannot forget that Mrs. McGowan has led you through paths of color development, lined with hundreds of excellent photographs of hooked rugs. She has brought you to an open gate of encouragement to use color. The gate is open, not only to hooked rug craftsmen but to all who are interested in home furnishings.

Martha L. Hensley

NEW HORIZONS IN COLOR

This is the title of a new book by Faber Birren, published by the Reinhold Publishing Corporation. The book contains 200 pages and sells for \$10. There are eighteen chapters, as follows: Fundamentals of Color Conditioning; Dynamics of Seeing; Problems of Illumination; Academic Harmony; Color and Form; The Values of Color; Industrial Plants and Office Buildings; Schools and Hospitals; Building Exteriors; The Effects of Color; The New Psychology; Stores, Hotels and Restaurants; Modern Home Interiors; Traditional Home Interiors; The Story of Color in Architecture; The Nature of Light; Color Vision; Color Organization. In addition, there is an appendix in the form of a glossary, a bibliography, and an index. The book contains a large number of illustrative photographs; four of these are in color, the remainder in black and white. There are also two pages of color chips which represent standards for functional color applications.

Because of the importance of Mr. Birren's work, Dorothy Nickerson suggested a rather unusual type of book review. She thought it might be a good idea to get an expression of opinion from several people working in different fields. Acting on Miss Nickerson's suggestion, we asked Waldron Faulkner if he would review the book from

the point of view of the architect; F. L. Dimmick if he would do the same from the point of view of the psychologist; Gladys Miller if she would comment on the book from the decorator's standpoint; and Walter Granville if he would apply his knowledge of color mixture systems to a discussion of the Birren Color Equation and Color Triangle found in Chapter 18. We also asked Dr. Deane B. Judd if he would take time out from his extremely busy schedule (he had just returned from Europe) and, having read the reviews, add a few comments.

The reviews, presented below, are interesting not only individually but also collectively, since there appears to be some divergence of opinion. We are greatly indebted to the reviewers, each of whom cooperated very willingly in this project.

Incidentally, we wish to thank Mr. Birren for elucidating one error in the book. Facing page 72 is a color photograph of the reception area in the offices of the Container Corporation of America. Mr. Birren informs us that, owing to the fact that book went to press during his absence in Italy, he was incorrectly cited as being the color consultant. Actually, the color scheme is the work of Herbert Bayer, a consultant to Container Corporation.

As a sincere admirer of Faber Birren and of his work, I feel that his latest volume, "New Horizons in Color," will be of special interest to architects.

It is generally agreed that color and architecture lived happily together in ancient times but toward the end of the 18th century they were separated, and architecture led a forlorn existence until fairly recently. The co-respondent in this unhappy divorce was eclecticism, that color-blind counterfeiter of previous architectural styles. He reproduced ancient buildings, or their dead remains, without regard to logic or appropriateness. Dallying with black-and-white drawings, casts or photographs, he had little or no regard for his former rival, Color. The resulting progeny of colorless buildings had persisted, with few exceptions until quite recently. Today the picture has changed. Eclecticism has departed in disgrace. A new architecture has appeared on the scene and Color has regained his rightful place.

Mr. Birren has much to say which is of general interest and specific value to the architect; from the importance of functional color and what it has to offer to detailed advice as to how this may be applied to schools, hospitals, stores, hotels and restaurants. A fine presentation is made of the interdependence of color and light; that neither means much without the other. Clear suggestions are given as to brightness ratios and desirable light levels for various purposes. A stimulating discussion of color harmony is of real value, particularly since the author recognizes the limitations of pure theory!

If any criticism can be found regarding this useful book, it might be in the area of contemporary research which seems at times to reach into the realm of the occult. Although color may affect certain estimates of time, weight and length, for instance, it is perhaps too soon to put much of this theory into practice.

Altogether this book is worthy of the author's previous works and should be a welcome addition to any architects library.

Waldron Faulkner

Once more Faber Birren has presented a detailed summary of his experience with colors and related visual effects. The layman will find many interesting, useful

and suggestive items. The professional colorist must not seek a systematic treatise. This is because the author has extracted items from their original contexts, interpreted and assimilated them and finally set them down as examples of situations for which the originator may or may not find them applicable. Many times the source is cited, so that one can, if he wishes, make his own interpretation. The technique is common enough among consultants; the big difference is that Birren has put his version into book form and thus dared criticism.

Since the discussion revolves about Color, one looks for more illustrations in color. Pictures are profuse and excellent as one would expect, but one must depend upon the verbal text for their significance. Even then, unless one has exceptional projected color imagery, the black and white photographs add little to the discussion of color effects. The four colored plates emphasize this fact by the immediacy with which they make their points about color.

The author has stated and illustrated a rule of "Academic Harmony" that has wide acceptance, namely that "Orderly sequence in color values seems to be most pleasing." Yet in a later illustration either he or his draftsman has violated this orderliness in charting the distribution of sunlight over the United States.

So many effects of color, psychological and otherwise, are cited that it would be pointless to try to evaluate them in detail. Some are based on the date of experiments that are limited in scope and probably have no real significance in this context; others are wonderful conversation pieces; and there are many gradations between. Let the reader pursue the ones that catch his interest, but be not overconfident of whither they will lead him.

Forrest L. Dimmick

If "seeing is believing", neither Faber Birren nor his publisher have met the value test in his new \$10 book, NEW HORIZONS IN COLOR.

At first glance, the makeup of the book seems interesting - convenient size - easy to handle - good paper - excellent printing. Then you see the illustrations - five plates in color do not satisfy - nor does the light reflecting, fatiguing to read glossy paper compensate.

The text offers much to the already knowledgeable student of color. His expression (page 1), "the emphasis has gone from appearance to purpose", should give food for thought to many interested in color usage and clinch some arguments. On page 2, his "Why Functional color?" should be read by all who work with color. As a decorator, I could not agree more than I do with the first sentence on page 6, "illumination is too often given an unwarranted amount of importance in interior design." Good decoration is based on balancing all of the parts into an integrated whole whether it be color, light, form, line, etc.

Mr. Birren gives excellent credence to the fact that colors used in three or four dimensions have weight and should have balance. He pays respect to Dr. Godlove for this principle (page 34), "in combining tints, shades, and tones, the hue normally high in value should have the lighter tint, and the hue normally low in value should have the deeper tint or shade." Mr. Birren belongs to the school that believes in cool and warm colors - in interior use - but has not accepted the "Quantacolor" theory that some cool colors have a warm side and some warm colors a cool side, especially when used with various forms of artificial light.

Mr. Birren is at his best when he explains what has been accomplished in public building, hospitals, schools and stores. His discussion on exterior color considers a large important building and ignores the problem of the individual home and the large real estate developments. Mr. Birren falls short completely when he comes to the home because he offers little help as a color specialist to the architect or the decorator. He has evidently not had access to the unheralded work of excellent interior decorators from coast to coast. If he had known Vera Child of Seattle, Hazel Robb, Lith Kay, Harvey Welch of Portland, Elizabeth Banning, Delcina Bair, Everett Brown, San Francisco, Bob Brown, Florence Hayward, William Haines of Los Angeles, Nita Claiborne, Margaret Sedwick, Helene Sprong of Texas, Mabel Schamberg, Elizabeth G. Hofflin, Ethel Brookfield of Chicago, and James Merrick Smith of Miami, his approach and attitude would have been different.

If Mr. Birren had lived in New York during the late 30's and early 40's when William Pahlmann had Lord & Taylor's Gold Fish Bowl - and challenged the many who flocked to see the use of color, he would not have written his chapters on modern or traditional interiors, illustrating one with interiors featuring stone and wood, and the other with black and white illustrations from the Metropolitan Museum, with the latest dated 1885. Our century has had 55 years of color usage - much good, some poor - but the story has yet to be told, the principles yet to be extracted.

NEW HORIZONS IN COLOR is a book for libraries where students are happy if they find a sentence here, a paragraph there, and an occasional chapter which explains clearly the premise caught but not captured.

Gladys Miller

The Birren color equation is a modification of the one developed by Ostwald to give the proportions of white, full color and black for specifying the variations of a single hue. It is based on additive mixture, and the proportions can be used to specify a constant hue chart made by the halftone process of printing. Color charts produced by this method are probably less expensive than any other with comparable quality. Jacobson used this technique in his book BASIC COLOR.

The equation has two minor limitations. First, the tint series does not have colors with as high a purity as can be made with the same white and full color in intimate mixture (paint). Thus, the color gamut of the chart is restricted, and 5 of the 24 colors in the book's chart of Decorative Colors following page 128 cannot be matched to the accuracy required by interior decorators.

The vertical rows in the chart, which Ostwald called shadow series, show colors of constant purity. These series are especially useful for understanding the color change of a surface under different intensities of illumination. If it is known that one wall has twice as much light on it as another, colors can be selected from a shadow series so that the two walls will either look alike - or have the desired degree of contrast.

The color equation would accurately specify colors of constant purity only if a black with zero reflectance were used. With a black of 5% reflectance, specifications for a shadow series will give purities slightly higher or lower than the mean depending on the reflectance of the color. Since really accurate color scales are almost impossible to mass produce, minor errors should not be allowed to detract from the use of the concepts they illustrate.

Another adaptation of the work of Ostwald made by Birren is his color triangle. Many color scientists do not approve of this concept of color organization because

it does not follow the approach of having the scales correspond to constancy of the basic attributes of color difference, i.e., hue, lightness and saturation. However, with interior decoration one is thinking, at first, not so much of color difference as of color itself. Color differences assume major importance only when colors are intended to match. I doubt if there are many decorators who think in terms of hue, lightness and saturation when they plan an interior color scheme, but I would venture that most of them do think of the sensory or perceptual character of the color.

The color triangle is a simple and useful organization of color sensations in which the end points are white, black and (full or pure) color. Tints and shades, and grays, nicely describe the colors lying between each pair of end points. The colors located within the boundaries of the triangle are called tones which I think is quite adequate for this relatively nondescript region of the color solid. Birren has done much to popularize this concept of organization.

Walter C. Granville

New Horizons in Color, this latest of Faber Birren's impressive series of books, is perhaps the most valuable of all, reflecting as it does his latest views. Nearly every statement in this book is foreshadowed by his previous writings, but here we find the presentation concise and more moderate, free from most of the errors that have marred his previous treatments, and put up in a more appealing package, well calculated to attract the serious attention of specialists who, though they may excel Birren at their own specialties, still have much to learn from him. It may well be true, as suggested by Gladys Miller, that interiors have been created in recent years by unheralded American decorators that transcend any designs derivable from the principles outlined in this book. Maybe some one of these decorators will be able to explain with Birren's clarity how these superior designs are created and so make immortal the thinking behind them. But is it not more likely that Birren, student and scholar as well as practical colorist, will himself react to this criticism, as he always has, by a reappraisal of his own views, and so permit us to read in a subsequent book a concise summary of this thinking?

Deane B. Judd

BALINKIN'S CONFIGURATIONAL COLOR SPACE

Since the subject of color harmony is of great interest to all our members and of great importance to many, we attempted to obtain copies of

the talks by Dr. Judd and Dr. Balinkin on this subject presented at the Texas Conference on Vision, Color and Design (see article in May News Letter). Dr. Balinkin told us that his talk was presented informally and he does not as yet have a copy. However, he has kindly consented to write a short summary of his talk. This summary follows:

A color space was constructed to give a uniform geometric-visual relationship for all three dimensions based upon Munsell concepts. Further, selection of any color or colors in this space could be easily controlled by locating a small ball or balls in a fixed mutual relationship. Such a space is defined as "configurational." The selection of color harmonies could be based, for example, on a simple or a complex geometric lattice with colors placed at the apices. Such space becomes then a tool for selection of configurational color harmonies based on orderly visual relationships.

Isay Balinkin

CLASSIC LAWS OF COLOR HARMONY EXPRESSED IN TERMS OF THE COLOR SOLID

Ed. note: We are greatly privileged to present, in its entirety, the address by Dr. Deane B. Judd on this subject, presented at the recent conference on Vision, Color and Design. Dr.

Judd tells us that this article was originally intended to be part of his

book, "Color in Business, Science and Industry." We have seldom seen a more lucid article in any field, and feel sure that you will enjoy reading it as much as we did.

Color harmony. When two or more colors seen in neighboring areas produce a pleasing effect they are said to produce a color harmony. Scores of books giving the opinions of experts have been written on color harmony. Contradictions in these opinions are frequent. The reasons are not hard to find:

a. Color harmony is a matter of likes and dislikes, and emotional responses vary from one person to another, and from time to time with the same person. We get tired of old color combinations and often welcome any change whatever. On the other hand, we sometimes learn to appreciate a color combination from frequent seeing of it that originally left us cold.

b. Color harmony depends on the absolute angular size of the areas covered by the colors as well as on the design and the colors, themselves. A beautifully designed mosaic pattern magnified by a factor of ten usually produces a garish and unpleasant effect. The individual colors are perceived to have high saturations and to differ greatly. What in miniature was seen as a subdued or even subtle color effect appears on magnification as an overemphasized caricature. We can stand only so much area of bright color. Recall our previous discussion of color blindness from insufficient size. Magnification of a mosaic usually gives too much color perception from too much size. It is part of what makes people back away from a large painting to get a better view.

c. Color harmony depends on the relative sizes of the areas as well as on the colors themselves. A small grayish red area (say $R\ 3/2$) displayed against a vivid red background ($R\ 4/14$) produces an unpleasant effect. At first glance it is seen as grayish red or gray, but after a few seconds it will be seen by contrast as gray or as grayish bluegreen depending on what part of the design is looked at last. Evans (1948) has suggested that instability of the color perception is the cause of many color disharmonies, and this may be a correct explanation. But if the two colors of the design are reversed so that a vivid red spot ($R\ 4/14$) is seen against a grayish red background ($R\ 3/2$), the color effect is much more pleasant. The central spot is always perceived as vivid red.

d. Color harmony depends upon the shape of the elements of the design as well as on the colors themselves. This shape can influence the path taken by our fixation point as we look at the color combination to appraise it and so make it unlikely that the various elements are looked at in an unfavorable sequence.

e. Color harmony depends on the meaning or interpretation of the design as well as on the colors themselves. For example, the pleasantness of the three diamond shaped gray areas in Fig. 10 depends greatly on whether we see these areas as in the same plane or as forming the picture of a cube. (Ed. note: The figure reference is to Dr. Judd's book, "Color in Business, Science and Industry," New York, John Wiley & Sons, and London, Chapman & Hall, 1952.) Color harmony from the standpoint of the portrait painter is quite a different subject from color harmony in abstract design.

We see, therefore, that attempts to give simple rules for the construction of color harmonies are bound to fail to some extent or other. Color harmony is a very complex subject. The half-truths of color harmony, however, are probably of more interest to certain segments of industry than the whole truths of color measurement

because color harmony often has much more to do with whether the goods will sell than all the color control in the world. We give therefore a summary of the generally accepted principles of color harmony. These principles are not scientifically verified but are simply the best guides to the selection of pleasing combinations of colors that have been distilled from imperfect records of the thousands of trials and errors and partial studies so far made.

Principle I. Color harmony results from the juxtaposition of colors selected according to an orderly plan that can be recognized and emotionally appreciated. (Munsell, 1923; Ostwald, 1931). This view of color harmony leads us to think in terms of uniformly scaled color space, - a tridimensional array of points, one for each color perception, so arranged that equally contrasting color pairs are represented by pairs of points equally distant. By this view any three colors chosen from any regular path in the color solid, straight line, circle, ellipse, or curved line, would be selected in accord with an orderly plan and might be harmonious (Moon and Spencer, 1944). Note, however, that the straight-line principle of order requires three colors to make a harmony because two color points are required to define the line. Similarly, the circular principle of order requires four colors to make a harmony because three color points are required to define the circle.

There is also a kind of order to be had by picking all of the colors in a composition from a single surface (plane, cylinder, sphere) of the color solid. This kind of order could not be recognized unless the composition included at least four colors since a plane in the color solid can be passed through the points representing any three colors.

Finally there is a kind of order to be had in the spacing of the color points along the regular locus chosen. For example, three colors representable by equally spaced points on a straight line in the color solid are a more orderly choice than unequally spaced colors and would be expected by the principle of order to yield a more easily appreciable color harmony. Similarly, this principle suggests that a triad each pair of which shows the same contrast would have added merit; this is equivalent to equal spacing on a circular locus.

Viewing in retrospect this most highly respected principle of color harmony, namely: that harmony equals order, one is struck by the lack of restriction engendered by this principle. It brands as inharmonious no pair of colors, and only those triads showing grossly unequal contrasts. One may well ask: How do we know when an orderly principle of selection will be recognized and emotionally appreciated? Are there preferred directions of lines in the color solid, or preferred orientations of planes, or preferred locations of circles and ellipses? This leads directly to the second principle.

Principle II. Of two similar sequences of color, that one will be most harmonious which is most familiar to the observer. In other words, we like what we are used to. The concordance of this principle with the first is apparent. If we do not recognize the plan of selection we are puzzled rather than satisfied by it. It does not seem to make sense. There is a considerable school of thought that holds up nature as the true guide to color harmony. If you want a good sequence of greens, they say, take the play of sunlight and shadow on foliage as your guide. Take your reds and oranges from the sunset or from autumn leaves. Get subtle harmonies in black, white and brown from the winter landscape, or from animals, birds, and insects. By the principle of familiarity this school of thought is on safe ground. We see these color sequences constantly and are almost sure to recognize and get a kick out of them.

By the principle of familiarity there are preferred directions of lines in uniformly scaled color space. The lines fanning out upward from the black point correspond to the colors of constant chromaticity, the so-called shadow series. Color sequences chosen from these lines are sure to be recognized. The central one of these lines, the black-white or neutral axis, is the most easily recognized of all. Any one of the other shadow-series lines together with the neutral axis defines a plane in the color solid. These are the preferred planes, vertical planes intersecting at the neutral axis, planes of approximately constant hue. There are preferred circles and ellipses, too. These are centered on the neutral axis. They are tilted so as to course through the lighter colors in the yellow green, yellow and orange yellow part of the hue circuit, and through the darker colors in the purple and blue part of the hue circuit. Why are they so tilted? Because colors in nature follow this sequence, and everybody has got used to looking for it. This is the so-called natural sequence of hues. Colors spaced out around such an ellipse make stable combinations; no one of them will injure (make gray) any other by contrast.

Principle III. Any group of colors will be harmonious if, and to the degree that, the colors have a common aspect or quality. The principle of order to be recognized here, and emotionally appreciated, is that the colors are more or less alike. A common rule for amateur interior decorators, based on this principle, is that if two paints produce clashing colors, put some of each in the other. The difference between the two colors is thus reduced and if it is recognized that the two colors have a good deal in common, they do not seem to clash anymore. The rule can be extended to a larger group of apparently unrelated colors by adding to each a liberal proportion of some one other color. This gives them all a common quality, and makes them seem to belong together (Pope, 1949). Colors for house furnishings may be made to harmonize by restricting them to moderate departures from middle gray.

This principle explains the preeminence of the constant-hue planes of the color solid for color harmony by saying that the common quality that is emotionally appreciated among two or more colors is that they have the same hue. It is the basis for the common statement that gray harmonizes with any color. Similarly it explains the preeminence of the circles centered on the neutral axis for color harmony by saying that the common quality among two or more colors chosen from this locus is that they have the same saturation. For playrooms this saturation will be high; for funeral parlors, low.

This principle would also single out the horizontal planes of the color solid as having special merit for color harmony. Colors selected from one such plane ought to be harmonious because they would be perceived as having the same lightness. One way to achieve color harmony is to make most of the colors of a design have about the same lightness. A combination of light colors tends to be harmonious from that very fact alone, also a combination of dark colors tends to be harmonious. However, this rule must not be pushed to an extreme. If colors are chosen to have exactly the same lightness, it is hard to see where one stops and the other begins. Our perception of contour is based primarily on lightness differences between the colors separated by the contour. Making all of the colors of a design of exactly the same lightness is akin to making them all of the same color. The design is so harmonious as to be almost invisible. The principle of similarity can be overdone; it may result in monotony.

A more complete statement of the connection of similarity of the colors to the harmony of the combination is sometimes made, thus: harmony results from the perception of unity in diversity. Too little unity is chaos, too little diversity is monotony.

The principle of similarity has given rise to a great deal of controversy as to what are the attributes of color perception pertinent to harmony. It states that colors are harmonious if they are similar in some respect or other. Sometimes the usual attributes, hue, lightness and saturation are taken as these respects. Sometimes the perceptual attributes corresponding to the Ostwald variables, black content and white content, are substituted for lightness and saturation for the purpose of applying the principle of similarity. The designer will use whichever attributes he believes give superior aesthetic results. There is a fairly wide-spread opinion that the Ostwald concepts fit the principle of similarity somewhat better than the more commonly used attributes of color perception: lightness and saturation, because they avoid suggesting the use of colors of constant lightness which, as we have mentioned, harmonize so well that the design fails to stand out. Such color harmonies have only limited application as in wall paper where the elements of the design should be unobtrusive lest they vie for attention with objects in the room.

A fourth well-respected principle of color harmony relates to avoidance of ambiguity or instability.

Principle IV. Color harmony can only be achieved by a combination of colors whose plan of selection is unambiguously evident. This principle is a corollary of the first which already states that the plan of selection shall be recognized and emotionally appreciated. One kind of ambiguity has already been mentioned in connection with relative area. Gray, black and white are often put forward as harmonizing with any other color, but this is not true if the color composition shows small areas of the neutral color against a background of a strongly chromatic color as in printing with black ink on yellow or orange paper. If the ink continued to look black, the harmony would hold good (choice of colors from one plane of constant hue), but after a few seconds looking at the design the inked parts look bluish because of chromatic adaptation and the design is now based on complementary hues. This ambiguity keeps the combination from being aesthetically good. The Optical Society of America has paid tribute to this principle of color harmony for years by using brown ink instead of black on the yellow covers of their Journal. By chromatic adaptation this brown ink often appears almost black, but it never appears bluish. The color combination is unambiguously one of constant hue and produces a pleasing effect.

Another example of ambiguity is in the choice of hue spacing among colors chosen from one of the tilted ellipses centered on the neutral axis (isovalent colors in the Ostwald system). If various elements in the design have hues so nearly identical that they cannot be told apart the plan is unambiguous and the result does not injure the harmony. If they differ by a just perceptible amount, the harmony is largely destroyed because sometimes it seems that the intent was to have the hues different, at other times that they are meant to be the same. The design gives the impression that a mistake has been made. If the different elements of the design show a progression of hues by small but definitely perceptible steps, the result may be a pleasing combination of related hues; but if the hue difference between neighboring elements of the design are about one-fifth of the hue circuit another kind of ambiguity is likely to arise. The observer cannot tell whether the intent was to have definitely contrasting hues or related hues. Evens (1948) has pointed out that the unpleasantness associated with this kind of ambiguity may also be ascribed to instability of the hue perceptions. If the observer has been looking at some other part of the design and then looks at the two neighboring areas of differing hues, they will seem rather related. But if he looks back and forth from one hue to the other, the small hue contrast gradually increases because of chromatic adaptation to their average color until finally they may appear almost complementary. Thus the

type of combination perceived by the observer depends on how he looks at the design, and it is impossible for him to recognize any definite plan of selection. Hues separated by nearly half the hue circuit, or hue triads equally spaced around the hue circuit, however, produce stable combinations. The plan of selection is unambiguous; it may be recognized and appreciated as a color harmony.

This is about as far as it is useful to push the systematic analysis of so subjective a phenomenon as color harmony. This analysis is based upon the idea of representing colors by uniformly spaced points in space, - homogeneous, isotropic color space, - the more easily to describe and understand their relationships. The Munsell Book of Color is very useful to teach what is meant by this space representation of colors. It shows by daylight illumination uniformly spaced scales of hue, lightness and saturation and is a good preparation for the analytical approach to color harmony. The Color Harmony Manual does not serve so well as an introduction to this kind of analysis, but as a practical aid in the engineering of color harmonies it has the important advantage that each chip finds its place in four easily recognized sequences, three corresponding to sloping lines in the constant-hue plane (shadow series, constant black content, constant white content), and one corresponding to the tilted ellipses coursing around the neutral axis (isovalent colors). It also has the advantage of not showing any sequence of colors at constant lightness to waste the time of the unwary designer. Those who choose the colors of a design from the Munsell Book of Color must remember to avoid those of the same Munsell value unless they wish the design to be very inconspicuous.

Deane B. Judd

Owing to space limitations, we were forced this month to omit the second article in the series on our Member-Bodies. However, we shall resume the series in the next issue. - Ed.

COLOR IN DENTISTRY

A brief article on this subject in The Colour Council of Toronto's "Colour Comments" for April, written by Don L. Lawrie, explains in interesting fashion the importance of color and translucency in fillings and denture bases. The predominating color in any tooth is always yellow or gray; however, hue, saturation and lightness as well as translucency must all be considered in choosing a proper filling. Denture bases present a different color problem; here, perhaps, the most important property is translucency. Since it is impossible to manufacture a resin to match every tissue color, denture base colors are usually established as white or medium pink. Translucency permits the natural tissue color to blend in with the denture to eliminate, as much as possible, the old "dead color" which used to be characteristic of the so-called plate.

SCULPTURE IN COLORED CEMENT

We read in the "Washington Post and Times Herald" of April 13, 1955 that Mrs. John Wiley, wife of the United States Ambassador, has recently completed a commission for the Benedictine Monastery in St. Paul, Minnesota, consisting of the Fourteen Stations of the Cross executed in colored cement. The process, evolved by Mrs. Wiley herself, was the result of over two months of experiment to find the right mixture which would combine form and color in a nonperishable medium. A huge block of Mrs. Wiley's colored cement was left in the garden all winter to estimate its durability.

COLORED SQUAD CARS

An article in the "New York World Telegram and Sun" informs us that 107 new squad cars purchased for the Nassau County police will have bright orange roofs and azure blue bodies. The purpose is to make the patrol cars noticeable on the road so that more motorists will tend to obey the laws.