

INTER-SOCIETY COLOR COUNCIL

NEWS LETTER

NUMBER 164

March-April 1963

32ND ANNUAL MEETING

By whatever criteria one employs, the 32nd Annual Meeting was a success. 178 individuals registered for the regular sessions and the Problems Subcommittee Meetings were well attended. The Subcommittee Meetings, Annual Business Meeting, and the Seminar on Color Measurement were all informative. The program in places was highly entertaining and the hotel arrangements (including the food) were unusually good. Old friends, and new ones, exchanged experiences and enjoyed the variety of activities which only New York can offer. One cannot expect more.

For many ISCC'ers, Dr. Balinkin's lecture was the pièce de resistance. He has extraordinary ability to entertain while informing and a genius for hitting the mark with scientist, artist, novice, and master.

The Council took pleasure in honoring the fourth Godlove Award recipient, Dr. David L. MacAdam. We take pride in adding Dr. MacAdam's name to those already honored for their contributions to the knowledge of color: Ralph Evans, Deane Judd, and Dorothy Nickerson.

REPORT OF THE GODLOVE AWARD COMMITTEE

In 1956 the Inter-Society Color Council accepted a fund established by Mrs. I. H. Godlove to provide a Godlove Award in memory of Dr. I. H. Godlove, Editor of our Newsletter for 16 years, a former chairman (as the president was then called), and one of its early and very active delegates. The Godlove Award is presented biennially to a person selected by the Godlove Award Committee for outstanding contributions to our knowledge of color.

The committee for this, the fourth award, consists of Deane B. Judd and Dorothy Nickerson, with Ralph Evans as chairman.

This committee has decided, unanimously, to recommend that the award be presented to Dr. David L. MacAdam of the Eastman Kodak Company for his substantial contributions to the field of colorimetry.

Dr. MacAdam is the immediate past president of the Optical Society of America, and it seems very fitting and an honor to our own Inter-Society Color Council that two people who have held this office will have received the Godlove Award (he and Dr. Judd). It is fitting because it was a small, very active group from the Optical Society who laid the foundations for the ISCC itself, and shows the extent to which the Optical Society has continued to father the interests of color in this country and to work with us as one of our member bodies.

I shall not attempt to go over with you in any detail the contributions that Dr. MacAdam has made in our field; the attached bibliography of some 70 published articles speaks eloquently for itself. I should like to point out, however, that the volume of a writer's output is not the only criterion by which it should be judged. Some of the articles, perhaps I should say many of them, have become classics in their field. Not only are they the definitive articles on their subjects, but many are also models of experimental procedure. Two of the papers have led to the data themselves being named for the author, a rare honor. They are the MacAdam limits for the maximum possible luminous transmittance or reflectance at a given chromaticity and the MacAdam ellipses for color discrimination as a function of its CIE coordinates. I can summarize his publications with the statement that it is essentially impossible to write an article on colorimetry without referring to at least one and perhaps to a half a dozen of them. It is for some of the earlier parts of this work that he was chosen to be the first recipient of the Adolf Lomb Award from the Optical Society of America. This award is given biennially to the most outstanding contributor under thirty years of age to the field of optics.

There are some other phases of Dr. MacAdam's contributions to his field which may not be as familiar to our delegates and members as his publications, and yet they, by themselves, would justify our honoring him as we are doing tonight.

With some parts of these activities I had some slight contact either direct or indirect, and I hope you will forgive me if I am somewhat more personal in this part of the report.

Dr. MacAdam obtained his B. S. degree at Lehigh and studied for his doctorate at M. I. T. under Professor Arthur C. Hardy. I can remember hearing Professor Hardy say in 1927 or '28 after he had come back from one of the early C. I. E. meetings that someday he was going to do for colorimetry what Marks and Davis had done for steam in their famous book called Steam Tables. The spectrophotometer that later became the General Electric Recording Spectrophotometer had just been invented and he hoped to use it to reduce the whole subject to handbook form.

Dr. MacAdam received his doctorate in 1936 and the famous Hardy Handbook of Colorimetry was published in 1936. The two are not entirely a coincidence. I had it from Hardy himself that MacAdam had made tremendous contributions to it.

After leaving M. I. T. MacAdam came directly to the Eastman Kodak Company Research Laboratories under Loyd A. Jones just as Hardy himself had done a good many years before.

Incidentally, although I did not meet MacAdam for a few years after he came, Professor Hardy was, at that time at least, a staunch nonbeliever in the phenomenon of color adaptation and this may explain why MacAdam and I became so well acquainted with each other in the early 1940's

Since 1933 Jones had been head of the Colorimetry Committee of the Optical Society of America and had been trying to get enough agreement among the members of his committee so that he could write a revision of the Troland Report of 1922.

The report did not finally issue until 1953 and then as the famous book The Science of Color but the tremendous part played in this by Dr. MacAdam is known only to those who were at least close enough to it to hear what was going on. MacAdam contributed the whole of the chapter on Quantitative Data and Methods of Colorimetry as well as the whole chapter on Colorimeters and Color Standards. Other people contributed the early versions of the other chapters but in the long run, as always in such cases, it was Jones with tremendous assistance from MacAdam who finally molded the whole thing into a single meticulously rigorous whole--a monumental task, for which Jones was forever grateful to MacAdam.

During this time also Dr. MacAdam was very actively associated with work of and for the C. I. E., so closely associated with it, in fact, that we used to accuse him of using the word "we" when he referred to it.

During the war he undertook a large-scale investigation of the influence of color contrast on visual detection of targets in which the observers, I was told, were all young ladies. This bothered some of us who had always thought young ladies were more discriminating than young men but he probably proved it wasn't so before he started.

I have not mentioned his activities in many other fields, in color photography, color television, camouflage detection, color standardization for the Company, etc., but I think I have said enough to make it plain why the committee was unanimous in its decision to recommend the presentation of this year's Godlove Award to Dr. David L. MacAdam.

Ralph M. Evans, for the
Godlove Award Committee

David Lewis MacAdam

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NEW MEMBERS

The following applications for individual membership were accepted at the last meeting of the Board of Directors held in New York City on March 10, 1963.

Individual Members

Mr. Ronald G. Bailey
499 High Street
Monroe, New York

Mr. Richard S. Bennett
Bennett's
65 West 1st South
P. O. Box 1320
Salt Lake City 10, Utah

Mr. Sevier Bonnie, Jr.
2276 Ardleigh Drive
Cleveland Heights 6, Ohio

Mr. Kenneth L. Confer
1945 East 97th Street
Cleveland 6, Ohio

Particular Interests

Color measuring instruments and their application.

In the technical and merchandising aspects of the use of paint colorants as a source of multi-color collections for paint consumers.

Pigmentation of paint, ink and plastic materials.

The applications of colored pigments in plastic systems and the use of instrumental techniques in color blending and evaluation.

Individual Members (Cont'd.)Particular Interests

Mr. Ralph L. Conquergood
44 Bywood Drive
Islington, Ontario, Canada

Graphic arts and photography.

Mr. John Dickenson
2894 Fontenay Road
Shaker Heights 20, Ohio

The use of instrumental measurements in establishing color tolerances and in the blending and control of color pigments.

Mr. Archie G. Dillon
1822 Yorkshire Drive
Winter Park, Florida

Related to color reproductions in the printing industry.

Mr. L. R. Easley
Tennessee Eastman Company
Kingsport, Tennessee

Production color control.

Mr. James K. Fogleman
Ciba Corporation
556 Morris Avenue
Summit, New Jersey

Its use in communication.

Dr. Frank W. Goodhart
E. R. Squibb & Sons
North Brunswick, New Jersey

Stability and color matching.

Mr. Robert Griesenbrock
784 Kingston Avenue
Grove City, Ohio

Selection of colors for various applications in the architectural field.

Mr. Barry Innerfield
1850 McDonald Avenue
Brooklyn 23, New York

Technological advances applied to Barry Process Corporation's operation. Learn more about the technical aspects of color and the use of research tools. Possibly set up color laboratory.

Miss Nancy Joy
4A Washington Avenue
Toronto 5, Ontario, Canada

Color as a teaching aid.

Mr. W. Kolanitch
Sherwin Williams Company
P. O. Box 489
Montreal, Quebec, Canada

Maintaining colour standards and establishing colour tolerances for various paint products.

Mr. Gilbert W. Ladd
Allied Chemical Corporation
Plastics Division
2829 Glendale Avenue
Toledo 14, Ohio

Development, formulation and production control of color in plastics.

Individual Members (Cont'd.)Particular Interests

Mr. Carl F. Lyon
4002 Grand Central Avenue
Vienna, West Virginia

Measurement; production color control;
latest developments in color science.

Mr. Frank O'Donnell
Ciba Chemical & Dye Company
Fair Lawn, New Jersey

Promotion, standardization and appli-
cation of color.

Mr. Amancio G. Ribechini
Artes Graficas Grijelmo, S. A.
Uribitarte, 4
Bilbao, Spain

Control of color in photomechanical
color separations and color printing;
teaching of color in school; graphic
arts in general.

Mr. R. H. Scheirer
P. O. Box 1863
Louisville, Kentucky

Analysis of public demands for color
(wall coverings and coatings as well
as paint). Use of color in architec-
ture and interior decoration, in graphic
arts, packages, displays, etc.

Mr. Fernando J. Suarez Smith
P. O. Box 321
Valencia, Venezuela, S. A.

To run a color organization for teaching
color for home, office and industries
color decoration and to research color
for application to increase poultry's
good health and egg production.

Mr. Leonard H. Taylor
2531 Whaley Drive
Cooksville, Ontario, Canada

Related to the fine and commercial art
fields.

Mr. Julius Vago
Metal & Thermit
Carteret, New Jersey

Instrumental methods for matching
colors. Qualitative and quantitative
analysis of colorants in formulations
based on reflectance. Reproducibility
of results on the same and several
different instruments.

Miss Helen D. Vincent
228 West 11th Street
New York 14, New York

Color systems in re: to communication.
Esthetic. Technical, only insofar as
this factor affects designing.

NEWSLETTER
NEEDS HELP

The ISCC Newsletter is intended to help ISCC members keep informed in the complex fields of color. We attempt to do this by calling your attention to books, pamphlets, articles, seminars, lectures, and exhibits wherever they appear. Occasionally information of interest to artists and designers will appear in Official Digest, published by Federation of Societies for Paint Technology. The Journal of the Society of Motion Picture and Television Engineers may publish an article which will interest illuminating engineers. So it is with color. One never knows when an important or interesting bit of information may pop up. It is this that the Newsletter tries to watch for and be alert to.

This job, however, is too big for one individual or even a small committee. We need your help to scan the large scene for sources of information which may be of interest to members representing two or more member bodies in the Council. We need members to review books, call our attention to pamphlets, summarize articles, review seminars and meetings, and alert readers to opportunities. We need people who will volunteer these services to the Newsletter. Whatever your field--television, design, engineering, science, psychology, art, education--you can make a valuable contribution as a member of the Newsletter team.

If you are interested and feel you can make a contribution--no matter how limited--please write to:

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ISCC Newsletter
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Rochester 8, New York

MEETINGS OF MEMBERS
INTER-SOCIETY COLOR COUNCIL

| Member Societies | Date and City |
|--|--|
| American Association of Textile Chemists and Colorists Lowell, Massachusetts | October 30 to November 2, 1963 Boston, Massachusetts September 25 to September 26, 1964 New York, New York October 14 to October 16, 1965 Chicago, Illinois |
| The American Institute of Architects Washington, D. C. | May 5 to May 9, 1963 |
| American Institute of Interior Designers New York, New York | May 25 to May 30, 1963 Philadelphia, Pennsylvania |
| The American Oil Chemists' Society Chicago, Illinois | September 20 to October 2, 1963 Minneapolis, Minnesota |
| American Psychological Association Washington, D. C. | August 29 to September 4, 1963 Philadelphia, Pennsylvania |

| Member Societies | Date and City |
|---|--|
| American Society for Testing and Materials Philadelphia, Pennsylvania | June 23 to June 28, 1963 Atlantic City, New Jersey February 3 to February 7, 1964 Philadelphia, Pennsylvania June 21 to June 26, 1964 Chicago, Illinois |
| Federation of Societies for Paint Technology Philadelphia, Pennsylvania | October 30 to November 2, 1963 Philadelphia, Pennsylvania |
| Illuminating Engineering Society New York, New York | September 8 to September 13, 1963 Detroit, Michigan |
| Industrial Designers Institute New York, New York | October 3 to October 5, 1963 (Undetermined) |
| National Association of Printing Ink Makers, Inc. New York, New York | May 20 to May 22, 1963 Colorado Springs, Colorado |
| National Paint, Varnish and Lacquer Association Washington, D. C. | October 27 to October 29, 1963 New York, New York |
| National Society of Interior Designers, Inc. New York, New York | June 27, 1963 New York, New York |
| Optical Society of America Washington, D. C. | October 23 to October 25, 1963 Chicago, Illinois April 1 to April 3, 1964 Washington, D. C. October 1964 New York, New York |

| Member Societies | Date and City |
|---|---|
| Packaging Institute New York, New York | October 14 to October 16, 1963 New York, New York |
| Research and Engineering Council of the Graphic Arts Industry, Inc. Washington, D. C. | May 20 to May 22, 1963 Chicago, Illinois |
| Society of Motion Picture and Television Engineers New York, New York | October 13 to October 18, 1963 Boston, Massachusetts April 12 to April 17, 1964 Los Angeles, California September 27 to October 2, 1964 New York, New York |
| Society of Plastic Engineers, Inc. Stamford, Connecticut | January 28 to January 31, 1964 Atlantic City, New Jersey March 2 to March 5, 1965 Boston, Massachusetts |
| Society of Photographic Scientists and Engineers Washington, D. C. | October 17 to October 19, 1963 Washington, D. C. April 23 to May 2, 1964 New York, New York May 15 to May 21, 1965 Cleveland, Ohio |
| Technical Association of the Graphic Arts Rochester, New York | June 3 to June 5, 1963 New York, New York |

THE COLOUR COUNCIL OF CANADA

"What does the colour defective person see?" was the topic for the February council meeting. The subject is a follow-up study to the previous studies on the incidence of colour defective vision among the more than 17,000 pupils in Grade 6 of the Toronto schools. The presentation was made jointly by Dr. A. G. S. Heathcote, Dept. of Public Health, Toronto; and Mr. Howard Dierlam, Art Supervisor of the Board of Education, Toronto. Most of the previously tested Grade 6 pupils found with defective colour vision are now in Grade 7. The retesting system involved three short sentences in which each word is done with selected colour crayons. The system was designed especially for retesting. The highlight of the meeting came in the discussions period which followed, sparked by one of our visitors with a rather severe case of colour defective vision.

At the March meeting Professor Richard H. Grooms (School of Architecture, U. of T.) told a story on "Colour & Texture in Japan" with a generous number of beautiful colour slides. "Nothing goes to waste," he said, "and nature is trimmed in every accessible area." The pictures he used were selected from a collection of over 3,000 taken during his travels.

The Annual Meeting of the Colour Council of Canada (Toronto Region) will be held at the Faculty Club, U. of T., 41 Willcocks Street, Toronto, on May 12th, 1963, at 8 p.m. Features of the meeting will be Report of Executives; Election of Officers for 1963-4; an address by Dr. Günter Wyszecki, Department of Applied Physics, National Research Council, Ottawa; and a special report from the Council's Colour Award Committee.

Mr. Chas. R. Conquergood (Hon. Pres. of C. C. O. C.) was made "Dean of Printing for Metropolitan Toronto" by the Toronto Printing Council at the opening dinner of the Council during Printing Week in Toronto on January 14, 1963. This was the first award of its kind in Toronto, by the Toronto Printing Council, sponsored by fifteen associations in the graphic arts in Toronto. The citation consists of an illuminated scroll "for distinguished service to the Printing Industry of Metropolitan Toronto, through the ideals of Craftsmanship, and participation in community activities contributing to the future welfare of the industry." The presentation was made by Mr. Roy Gurney, International President of the Association of Printing House Craftsmen.

Reprints on the report from The Canadian Journal of Public Health in the issue of February 1963, on "The Incidence of Colour Vision Defects in Toronto Grade VI School Children," by A. G. S. Heathcote, MA, MRCS, DPH; and D. S. Macpherson may be obtained by writing to the Department of Public Health, Division of Corporation Medical Services, of the City of Toronto, 465 Bay Street, Toronto 2, Ontario.

The Chinese were the first to wear spectacles. We are not absolutely certain where or when the first glasses were worn. The invention dates back from earliest times. Glass beads, vases, and small figures were mentioned as early as 3300 B. C. But as nearly as we can learn, long before any of the people from Europe first produced and wore spectacles, they were in accepted use in the Orient in 1275 when Marco Polo, the Venetian traveller, visited there. At that time various devices were used for holding "glasses" before the eyes. Most picturesque, perhaps, were the cords which were looped over the ears, and hung to the waist, and upon the ends of which were fastened one's personal trinkets and treasures. (Authors unknown)

(Reprinted in part from "Colour Comments," publication of the Toronto Colour Council of Canada, C. R. Conquergood, Editor.)

"FUNDAMENTALS AND
PROBLEMS OF COLOR"

With this issue of the Newsletter is a reprint from the Official Digest, Volume 35, Number 458, March 1963, published by the Federation of Societies for Paint Technology. This copy of the Digest is particularly interesting to ISCC because it contains an article, "Fundamentals and Problems of Color," a panel discussion presented at the 40th Annual Meeting of the Society in St. Louis, Missouri, October 15, 1962.

Lecturers on the panel were all ISCC members. "The Systematic Description of Color" by Fred Billmeyer, duPont, was the first topic. Max Saltzman, National Aniline, followed with "Colored Organic Pigments: Why So Many?" Ruth Johnston, Pittsburgh Plate Glass, discussed "Pitfalls in Color Specifications." The discussion was moderated by S. Leonard Davidson, National Lead.

S. Leonard Davidson, Chairman of the Federation's delegation to ISCC recommended that reprints be made available, and Frank T. Borrelle, Managing Editor of Official Digest, provided them. We are grateful to these two for this information. Much of it is new; it is authoritative; and it is very useful.
Ed.

NEW I. E. S. PUBLICATION
ON COLOR IN LIGHTING

A new publication, "Color and the Use of Color by the Illuminating Engineer," has been announced by the Illuminating Engineering Society.

Lighting engineers and specialists have known that the selection of the right color or colors for walls, ceilings and furniture is important in creating a harmonious luminous environment. Often poor color selection has spoiled an otherwise good lighting job. To fill this need for color guidance to practicing lighting people, architects, consulting engineers, and many others, the I. E. S. Color Committee with the help of the Colour Council of Canada has produced a "how-to-do-it" report.

The report covers the practical approach to the use of color, but emphasizes that considerations of personal taste and psychological effect cannot be overlooked, suggesting in the introduction a set of simple rules from which to start. A sample section heading, "Dimensions of Color," describes the three appearance dimensions or attributes, hue, value, and chroma, according to the Munsell System. Other headings deal with lighting reflectance values, color schemes, dominant color, texture and other features. The new guide is useful not only in recommending appropriate new colors, but also in evaluating existing color schemes in terms of a relighting job.

In this report are three full-page color chip charts, with 110 paint chips of different colors. Figure 1 explains the Munsell System of Color Notation; Figure 2, a series of neutral grays and chromatic colors used for interior surfaces with their Munsell and reflectance values; Figure 3 is a dominant color diagram, and includes sample color schemes.

"Color and the Use of Color by the Illuminating Engineer" is an attractive spiral-bound 10-page book, and is available at \$1.50 per single copy from Publications Sales Office, Illuminating Engineering Society, 345 East 47 Street, New York 17, New York. Quantity prices on request.

COLOR AND HOW TO USE IT

by members of the National Paint, Varnish & Lacquer Association.

This abbreviated handbook is written as an encouragement and guide by the Association for its members who are without technical or artistic schooling in color usage. The text is clearly and simply written so that it appeals as does a Reader's Digest article. It is profusely illustrated with colored diagrams and sketches showing the problems and solutions of color application.

The book has chapters dealing with information about the sales appeal of color, the functions of color, styling, lighting, and many suggestions on color combinations which the novice may find very helpful. It is hopeful that this taste of the exciting world of color may excite some readers in pursuing a more detailed investigation of color.

Color and How to Use It may be obtained from National Paint, Varnish & Lacquer Association, 1500 Rhode Island Avenue, N. W., Washington 5, D. C. The price is \$3.00 per copy.

Milo D. Folley

OSA SPRING MEETING HELD
AT JACKSONVILLE, FLORIDA

The Optical Society met March 25-27 for the first time in the southeast -- with one of the best attended banquets ever, an audience of over 500 to hear Dr. R. B. Voas, Assistant Director of the Manned Spacecraft Center in Houston, whose job includes selection and training of our astronauts. Dr. Voas replaced astronaut M. Scott Carpenter on the program. His subject, Observations from Space, was a fascinating one, illustrated with many pictures taken by the astronauts. The day following the meetings, many members went on for a guided trip through Cape Canaveral, where they were lucky enough to witness the spectacular launching of a Saturn rocket.

As for color, the sessions on Radiometry, and on Color and Photometry, had many excellent papers. "Determination of Chromaticity Coordinates of Fluorescent Lamps by Spectral Energy Distribution," "Reproducibility of Relative Spectra-Irradiance Data and Chromaticity of Fluorescent Lamps," "New Standard of Spectral-Radiant Intensity," "Relative Spectral Irradiance of Xenon Compact Arcs and Chromaticities Derived Therefrom," "Ultraviolet Spectral Distribution and Aging Characteristics of Xenon Arcs and Filters," were the first five papers on the radiometry program. They were given by Frank Studer of General Electric; Harry Hammond of the National Bureau of Standards; Luke Thorington of Duro-Test; and Mrs. N. Z. Searle of American Cyanamid Laboratories at Stamford, Connecticut. It was good to see this live interest in color measurement problems related to light sources. The rest of the color program included papers by ISCC members Billmeyer, Wyszecki, and Angela Little. The paper by Nayatani and Wyszecki reporting the color of daylight from a near-north sky, in Ottawa, as measured on the Donaldson colorimeter, was of particular interest. Results shown graphically, ranged from about 5500K to infinity and beyond, averaging well on the green side of the Planckian locus.

Other sessions included discussions of atomic spectroscopy and fiber optics, geometric optics and lens design, optical masers, spectra, space optics, thin films, vision and photography, physical optics, and a panel discussion on new optical materials.

One of the meeting's highlights was presentation of the Edgar D. Tillyer Medal of 1963 for "outstanding research in vision" to Dr. Clarence H. Graham, whom we claim also as one of the American Psychological Association's delegates to the ISCC. Dr. Graham discussed "Some Aspects of Real and Apparent Visual Movement" in the Tillyer Medal Address given the next morning.

The meeting covered a wide range of interests. The Hotel Robert Meyer had excellent facilities, with meeting rooms conveniently arranged off the mezzanine. The president, Stanley Ballard, was proud host to this most successful meeting in his present home state, arranged by a very capable and hard-working local committee. They even arranged to have remarkably fine weather--a real boon to many who had left home with snow still on the ground.

Dorothy Nickerson, Ch.
O. S. A. Delegates

PACKAGE DESIGNERS COUNCIL

"Color in Packaging" was the subject of a workshop meeting of the Eastern Chapter of P. D. C., Wednesday, March 20, 1963. The workshop was held at the Research Center of Sun Chemical Corporation. Sun's Vice President in charge of Research and Development, S. B. McFarlane, discussed electrostatic printing; and Weldon R. Coate, Vice President of Marketing for the Graphic Arts Group, reviewed America's color trends, printing processes, color measurement, and the intricacies of color, pigments, and dyes.

FORUM ON AESTHETICS

"Dear Mr. Rhodes: I would like to make a suggestion in regard to the colophon, or origin and date of source material. My ideal of scientific writing is the Journal of the Optical Society of America. The scrupulous reference to researchers enables the reader to consult original material, where experiments are described in detail. This practice is also prevalent, I am happy to say, among art scholars, but a recent development has tended to obscure this fact. Extreme forms of modern art have proved popular with some magazines and newspapers who have neither time nor space for a scholarly approach.

Good faith is not only a necessity, but a privilege, in times like these. As the dying professor said with his last breath: 'Verify your references.'

Henderson Wolfe

P.S. One word description of some letters about art that I receive: 'Nonsense.'

FOLLOW-UP ON KARL FREUND

In Newsletter No. 151 we called attention to a 1960 article in the International Photographer on Karl Freund -- "Mr. Photo Research" -- our outstanding cinematographer member of the ISCC. In the February 1963 number of Films in Review, Herbert G. Luft has a story about him that highlights his part in photographing some of the films that are motion picture milestones.

The article is illustrated with many photographs. It goes back to the pre-Berlin and productive Berlin days just after World War I, and follows with his interest in color photography which brought him to this country in 1929. Since then he has photographed practically all the great and near-great stars, and the article lists his many pictures of this period which ended in 1950 when he established the Photo Research Corporation. In 1951 he got into television; he was photographer for all of the early Desilu pictures.

We note and recommend this article to Karl's Newsletter friends, and congratulate him on his many accomplishments in the art of motion picture photography.

**COLOR MARKETING
GROUP**

The Color Marketing Group (See Newsletter #162, pp. 9-10) has scheduled its second meeting to be held May 14 and 15 at the Sheraton-Atlantic Hotel in New York, starting with lunch on May 14. Workshops will be held during the afternoon, and a social hour and banquet will be held the evening of May 14. The "get together" breakfast May 15 will feature a panel with a designer, architect, psychologist, advertising man, and a manufacturer. Workshop sessions will follow. Throughout both days, the Color Aptitude Test will be given members at no cost. Two movies -- "This Is Color" and "Color Magic" will be shown continuously.

Although this Newsletter announcement will be late for most readers, the treasurer's name and address is included for those who wish to follow up.

Mr. Robert Eppinger, Treasurer
Color Marketing Group
Baumritter Corporation
145 East 32nd Street
New York 16, New York

**COLOR ENGINEERING
PUBLISHED AS QUARTERLY
IN 1963**

The first issue of Color Engineering, a general industrial publication serving the entire field of color, was off press the second week in April.

The following articles appeared in Volume 1, Number 1: "The Three Roles of a Modern Color Laboratory," L. A. Clement; "Specification and Control of Color," Hugh R. Davidson and Henry Hemmendinger; "New Color Effects," Hal-Curtis Felsher and Walter J. Hanau.

This beginning, though a modest one, gives promise of authoritative and interesting stories in future issues. According to Paul Yake, Editor of Color Engineering and President of Kinelow Publishing Company, the magazine's scope will range from "...psychology to organic chemistry, from physics to aesthetics, and finally to market and consumer research, motivational research, and anthropology." All but one of the associate editors are ISCC members and well-known authorities in color.

Color Engineering is not a new name, but it has not been formalized before. Perhaps the appearance of the magazine will lead to a job classification, "color engineer." In any case, many who have worked in this field will be pleased to have a magazine concerned with their occupation.

Mr. Yake reports that Color Engineering will be published as a quarterly in 1963, with issues to appear in April, June, September, and December. The magazine will be on a monthly basis starting with the January 1964 issue. All members of the ISCC will receive the first issue of Color Engineering. Those who are interested may make application for a free subscription. Mr. Yake assures me that the magazine is being distributed free to those who, by reason of job function or professional interest, are concerned with the industrial uses of color on a day-to-day basis. Those who do not qualify to receive a free subscription may purchase subscriptions at \$8.00 per year.

By way of background, Mr. Yake reports Color Engineering was originally scheduled to appear in January of this year, but relocation of the magazine offices from Connecticut to New York and changes in personnel made this impossible.

Readers' comments on the first issue of Color Engineering, particularly as it affects the ISCC, or can be of help to the ISCC, are invited by Mr. Yake, as are suggestions for subsequent articles.

COLOR OF FOODS--by
MACKINNEY AND LITTLE

A Book Review

Editor's Note: The following review is a joint one by Dorothy Nickerson and John N. Yeatman, both of the United States Department of Agriculture. We asked Miss Nickerson to prepare a review. She was preparing one for the Journal of the Optical Society, and asked Mr. Yeatman, food technologist concerned with color, to prepare one for the Newsletter. He has done this but has referenced the first six chapters to Miss Nickerson's JOSA review. By the generous permission of Dr. Judd, JOSA editor, we begin by quoting from the JOSA review, and follow this with the Yeatman review. It looks like an excellent book for any color library! Mrs. Little, by the way, is a new ISCC member. Ed.

Color of Foods by Gordon Mackinney and Angela C. Little, AVI Publishing Co., Westport, Connecticut, 1962, pp. 308 - xiii, 4 plates, 103 figures. Price: domestic \$12.70, foreign \$13.50.

"This book is a significant contribution to colorimetry. Primarily it is not about foods, nor of color in foods, but its aim is to give the food technologist, whether in research, quality control, or inspection, an understanding of the problems involved in determining the color of food and the significance of such color measurements as he may be required to make or use. The book is equally useful for other fields of application, and could well serve as a text for a good, but rather stiff course in colorimetry. It is not easy, but on many of the concepts of modern colorimetry that it discusses, it is thorough. It discusses historical developments, and provides references to much of the work in the field from the days of Newton to 1962. It brings together, and discusses from a very practical point of view, much published information on colorimetry that is widely scattered in the literature.

"In 12 chapters and 4 appendices (3 of which essentially are outlines of chapters not fully developed), only about 20 percent of the text is concerned primarily with food. The heart of the book, about 30 percent of its pages, is in two chapters on evaluation of color differences and color tolerances, both of which are important to the food industry, as they are, indeed, to countless other industries! - - - - -

"The first three chapters review the work that led to the establishment of the CIE and Munsell color spaces. Chapter 4 considers the Lovibond system, then a chapter discusses the bases for various collections of color samples. Chapter 6 discusses reflectance and transmittance data and provides tables necessary for computing CIE data from spectrophotometric curves, for light sources A, B, and C, by either the weighted ordinate method (at 10 mμ intervals), or by the selected ordinate method (for 30 and 10 ordinates). Examples are included for calculating three pea purees by all three methods for each of the standard light sources. - - - - -

"This brings us to chapter 7," - - - - (which includes) - - - - "discussion of a hypothetical uniform color solid - - - - with reference to experimental studies of Wright, MacAdam, Stiles, to the lightness scale, and to uniform chromaticity scales. The work of the OSA committee on Uniform Scales, the close-packing concepts of Foss, and the potentialities of the Munsell color system in evaluating total color differences are all discussed. Most of the well-known color-difference equations are given, and referred to the space upon which each is based. Color differences for three pea purees are calculated for 12 equations, including those based on the graphical methods of Davidson-Hanlon and Simon-Goodwin."

Dorothy Nickerson

From J. N. Yeatman: I concur fully on the JOSA review of this book, and do not feel that I can contribute further to the first six chapters. The authors have brought together an appreciation of the basic concepts and discussion of the various systems of color which, if the food technologist will absorb, will make him capable of handling the many problems which arise in the evaluation of food colors. The details presented in the first six chapters provide the necessary insight into basic concepts in the interrelation of the various systems.

Chapter 7 on the evaluation of color differences is the longest chapter in the book and rightly so, for it develops logically the C. I. E. system and its transformations. This chapter is the workhorse of the book. If a food technologist would apply himself to the complete understanding of this chapter, his work program in getting the most out of color measurements on foods and food products would no longer be the chore that it may seem to have been. The section on validity of color difference evaluations is most informative and provides actual data which one can relate to his own problems of color measurement. With the information provided in this section one can choose with intelligence the system most applicable to the situation confronting the researcher.

Chapter 8 on color tolerances is well developed and, for those particularly concerned in developing color tolerance standards, the material covered is adequate.

Chapter 9 on instrumentation discusses with obvious knowledge the instruments mentioned, their value, and extent of use. With the very good photographs supplied in this chapter, the reader's questions regarding mode of presentation, standardization, etc., are answered, although these facts are not necessarily brought out in the discussion of each instrument. In the discussion of other instruments, particularly the Agtron, the authors might have included a photograph of the Agtron Model E, it being the instrument specified by California state law in their grades and standards for tomato products. It might also have been appropriate in this chapter on instrumentation to have included a discussion, perhaps it needed only to be brief, on the various "color sorting devices which are used extensively in industry. The various models of Electric Sorting Machines, manufactured by Mandrel Industries, Inc., Houston, Texas; Sortex Equipment, manufactured by Sortex Company of North America, Lowell, Michigan; several Food Machinery Corporation instruments for measuring the color of apples and lemons, could be discussed.

In addition a new "color" sorting equipment for tobacco products has been developed by Allied Research Associates, Boston, Massachusetts; and another unique color sorting device is in use for beans and dried pea sorting by Devices Sales, Limited, London, England, a device known as Celectric. Such instruments are widely used in industry and are being expanded in their use to more and more commodities every year. Although they do not measure color in its strictest sense, they control one, two and, in some cases, all three attributes of color. While it is obvious that the authors could not include a discussion of every piece of equipment in use today, nevertheless, because of the wide use of these sorting machines, mention of them might have been appropriate.

Chapter 10 on the natural coloring matters is a real bonus in this book. This chapter provides sufficient detail of the biochemical nature and interrelationship of the natural coloring matters. An error is apparent on page 225 where reference is made to Figure 93 on page 224. The order of the structures of three common carotenoids is listed in the text as (A) lutein, (B) Cryptoxanthin, and (C) lycopene. They do not appear in this order in Figure 93. Lycopene appears first, lutein second, and cryptoxanthin third. On page 225 lycopene is referred to at the bottom of this page as Figure 93c. This is a minor error and the discrepancy is easily overcome by study of Figure 93.

Chapter 11 on color specifications for foods and color standards points out in the first sentence that this is the most critical portion of the book. The authors have done well with this chapter, but have not, however, alluded to the rather important and ever-increasing emphasis being placed upon the color specifications on the raw product and the specifications, therefore, in raw product and grade standards. Most important to all processors, and perhaps even more so to growers of agricultural products, is the knowledge to be gained by specification and control of color of the raw product. From such information prediction of finished product color can be obtained.

Chapter 12 on current problems is one of particular interest to the food technologist. Some of the pitfalls discussed in this chapter, and the comparisons between instruments, is well worth reading and appreciation by those working in this field. The writer must express appreciation to the authors for their remarks regarding the work done on tomato colors by our group. Their discussion of the work of Yeatman, et al, is appreciated, and serves to illustrate the extent to which the authors have gone in their presentation of all phases of this book to explain fully, and to analyze the work which has been accomplished in this very large field of color measurement. The section in this chapter on miscellaneous contributions is very good, and affords the food technologist numerous references for his consideration. Many of the problems which occur in the evaluation of fruit and vegetable commodities, such as geometry, surface aberrations, granulation, particulate matter, etc., are brought out in this chapter. Calling attention to these problems of measurement should perhaps make the reader aware of the complexities of the measurements he may be undertaking.

The four appendices are useful additions to the book, for calling attention to the various diagnostic aptitude tests available for screening observers, and regarding problems of reference standards, sample presentation, etc.

The authors Mackinney and Little have, in this writer's opinion, done a most praiseworthy job of presenting this difficult subject of the color of foods. They show an intelligent understanding of the basic concepts and problems in the applied area. I think this is perhaps the most lucid presentation of the basic concepts that has been presented to date. To the food technologist, it presents a ready reference to aid him in many problems of color measurement. The writer cannot over-emphasize the value to be gained if all persons involved in the food field would read this book in its entirety and continue to use it in their everyday work in color measurement or quality control.

COLOR VISION SCREENING

One of the difficulties identified by those who screen for color deficiency is getting color deficient individuals to take a reasonable attitude toward their condition. Charlatans have promised to "cure" color deficiency. Some people have looked forward to healing or "growing out of it." Many go through life without becoming aware of the deficiency, and some of these have jobs which would seem to require normal color vision.

With early identification color deficient children can be counseled into occupations where the deficiency will not be a serious handicap.

An interesting study in this connection was reported by Mary A. Thompson, Supervisor, Health and Education Services, Board of Education, Prince Georges County, Maryland, in Sight-Saving Review, Winter 1962 (National Society for the Prevention of Blindness). According to Mrs. Thompson, "A considerable number of students and parents are found to be unaware that deficiency in color perception may prove to be a handicap in certain vocations."

"Comments of Students

"Interviews with the boys disclosed that 63 of the 357 found to be deficient in color vision this year knew of the condition. Some of their comments indicate little awareness of any vocational handicap, and the need for counseling. For example:

'I'm not color blind; the test is all wrong.'

'I can see 'em (colors) good enough for me.'

'It doesn't make any difference.'

'It won't show.'

'Only problem is when I look at cars in the distance.'

'I never learned colors.'

"A number of the boys, however, admitted difficulties they had encountered in school and elsewhere; for example, in using crayons and paints, in following colored lines on maps, in working in a pressroom, and, of course, in distinguishing colors in traffic signals. One boy who belongs to the Naval Reserve said: 'They won't let me do any signaling.'

"Reaction of Parents

"Most of the parents on being informed about the color vision deficiency in their children appreciated the value of the test and its relationship to vocational guidance. Some, however, were indifferent to the report, and a few showed resentment. 'Maybe he doesn't see all the colors, but he sees enough,' was the comment of one mother. Another: 'He'll improve as he gets older.' A mother who has three sons who have such deficiency said she was 'glad to know it isn't mental.' One father showed genuine concern that the defect would 'ruin my son for the service.'

"We have found the pamphlet, 'Color Vision,' a reprint from Sight-Saving Review, Winter 1959, to provide excellent background information, including sources of testing equipment. It may be secured from the National Society for the Prevention of Blindness, Pub. No. 283; price 10 cents."

COLOR FORECASTING AND HOUSE AND GARDEN

The ISCC Newsletter, Number 162 (November-December 1962), contained an article on the House and Garden Color Program. The item touches on the highly controversial topic of color trend forecasting.

The Newsletter is ultra conservative in policy (though not necessarily in politics) and tries to publish only factual information. Articles of speculative nature and items expressing opinion are always documented or ascribed to the source. In these cases we try to imply, "Opinions expressed are those of the author and may not represent the opinions of the Newsletter or of the ISCC."

We have received correspondence about the House and Garden article questioning ISCC endorsement of H & G forecast methods. We are red-faced and admit that we did not ascribe the item to its source -- a press release by House and Garden. We wish to inform readers that the above implied reservation applies to this item.

COME CATCH A RAINBOW

Across the desk of the Newsletter Editor pass some of the most interesting documents on color. These are sometimes sent by ISCC members and Newsletter readers. They are too numerous to mention them all. Often a mere word description is inadequate, and an attractive or informative document does not get the attention in the Newsletter it deserves. It is occasionally a deep satisfaction to be able to share these delights with ISCC members by providing reprints.

Such a document is Come Catch a Rainbow, prepared by Pittsburgh Plate Glass Company as part of a program of the General Federation of Women's Clubs. The booklet was prepared by Anne Cain, Pittsburgh Plate Glass Public Relations, who wrote the poems. It was one of the favors which was presented to those who attended the banquet of the Annual Meeting of ISCC, March 12, 1963.

Ruth Johnston, a delegate to ISCC from Pittsburgh Plate Glass, Springdale, Pa., was advisor to the project. She arranged for ISCC members to receive the booklet. Copies are not available to the public from Pittsburgh Plate Glass. Ed.



O'Neal

"YOU CALL THAT RED?"

**WELL DRESSED
DEER HUNTER**

In 1961 the Newsletter listed two articles in the bibliography discussing the use of daylight fluorescent orange clothing for deer hunters. The fluorescent orange is intended to contrast with natural foliage color, making it possible for hunters to easily identify each other. Easy and quick identification should help to prevent hunters from mistaking each other for white-tailed deer.

Oscar Richards, Ralph Woolner, and Jack Panjian conducted a study using seven colors to determine which gave the best protection (visibility). Several hundred observers, normal and deficient, used a number of methods to test the colors.

Blaze orange was selected as the best, though not for all observers or all kinds of terrain. The articles stated, "The recommended color shall have a dominant wave length between .595 and .605 μ , a luminance factor of not less than 50 per cent and an excitation purity of not less than 90 per cent."

According to the Massachusetts Division of Fisheries and Game, in 1959 two hunters were mistaken for game, and one died. Five were injured in the line-of-fire because they were not seen. In 1960 three were injured when mistaken for deer and one in the line-of-fire. In 1961 two were mistaken for game and one died. Five were injured in line-of-fire.

In 1962, after Massachusetts passed a law requiring deer hunters to wear fluorescent orange or red, not one hunter was injured by being mistaken for game or in the line-of-fire.

In Massachusetts or Maine no hunter has ever been injured through "mistaken for game" or "in line-of-fire" accidents while wearing daylight fluorescent garments. The state of Maine now has proposals in its legislature to require the use of fluorescent colors while hunting deer.

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