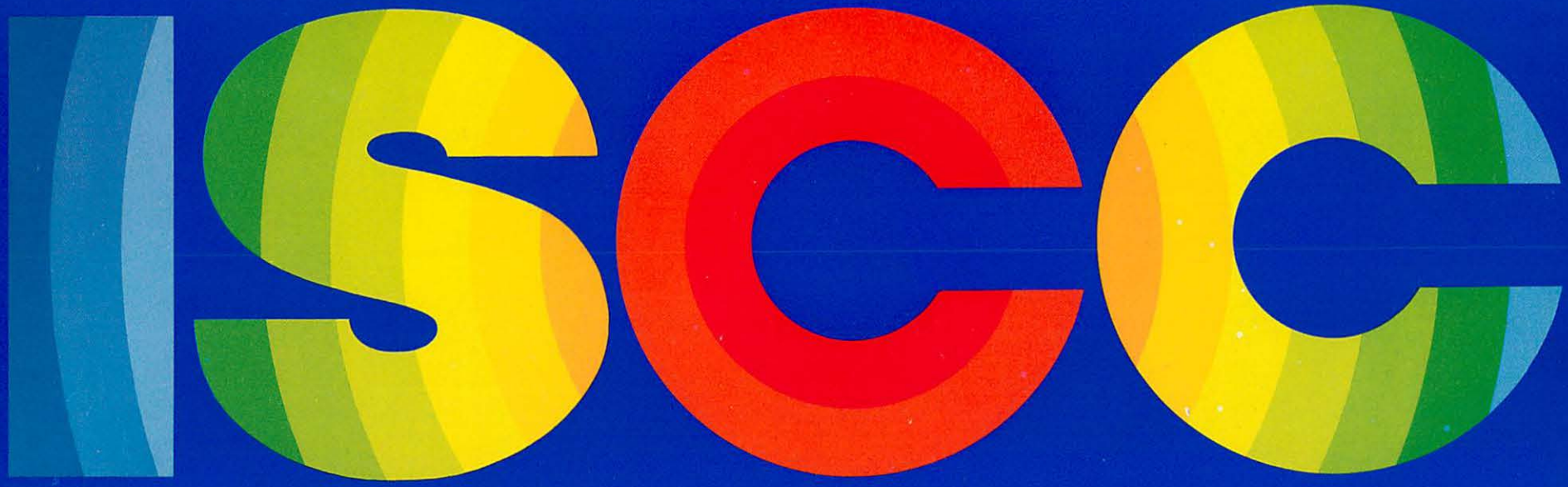


# Inter-Society Color Council Newsletter

ANNUAL REPORT ISSUE

NUMBER 236

May-June 1975

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## Number 236–May-June 1975

## ANNUAL REPORT ISSUE



## COLOR REPRODUCTION

Included with this issue of the ISCC *Newsletter* is reproduction of a 19th Century Russian icon provided by John T. Hastings, President, Ohio Bronze Powder Company, Cleveland, Ohio. To achieve faithful reproduction by offset printing seven colors were used including offset rich pale gold metal pigment and a bronzing grade of gold powder from Ohio Bronze. Other colors include blue, yellow, red, black and dark brown.


COVER DESIGN — DONALD M. GENARO AND VALERIE PETTIS OF HENRY DREYFUSS ASSOCIATES, NEW YORK CITY
COVER PRINTED BY PROGRESSIVE COLOR CORPORATION, ROCKVILLE, MARYLAND
COVER STOCK — OXFORD STARFLEX GLOSS ENAMEL
COURTESY OF OXFORD PAPER CO., DIVISION OF THE ETHYL CORP., RICHMOND, VA.
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# ANNUAL REPORT ISSUE

## REPORT OF THE PRESIDENT
## ROLAND E. DERBY, JR.

The various activities of the Council in the past year will be covered rather completely in the following reports; therefore, I will confine my remarks to the general state of the organization. These remarks are not necessarily in order of importance.

First, let me point out that the actions and directions of the Council are governed by the Officers and the Board of Directors. Having served on the Board and observed, while in other capacities, their actions over a number of years, I feel that their guidance has been excellent.

Since becoming President, I have listened to many points of view regarding what is wrong with the Council and what new directions we should take. Although there is great diversity of opinion, there are certain consistent themes throughout. I have brought all of these ideas before the Board for their consideration.

It is essential for the future of the organization that younger members participate in committee work and other activities of the Council, in order that they become familiar with the problems and diversity of views involved. It is from this group that we expect to select our future officers and board members. It has been stated, somewhat critically, that one must be about ready to retire before he can become a member of the governing body. This view is not correct, but the ability of board members to maintain a broad viewpoint does require some experience. A real problem involves the many young people who enter the field of color and color science to become interested and active in the ISCC. However, a few years or a few months later, they have moved on to greater responsibilities and new fields – this badly affects continuity.

An area of continuing consideration is the presentation of the views and ideas of the individual member group (IMG) that have a potential for influencing directions the Council may take. This problem is not easily solved within the present structure of the ISCC, but is being very actively studied in light of the forthcoming revision of the by-laws.

A brief word about the financial condition of the ISCC. As you will hear in the Treasurer's Report, we are in adequate financial condition. However, the budget is very closely balanced and critically sensitive to any serious distortion of income and expenses.

It is clear that the ISCC must, in general, rely on extensive volunteer work by its members. A very approximate calculation indicates that the efforts of members would cost several hundred thousand dollars if paid for at normal rates. A considerable amount of the Board's time is spent in weighing all aspects of new proposals to insure a minimum risk of upsetting our delicately balanced situation. I would point out that we are not alone in these matters. In my experience, they confront virtually every organization of our type today.

Our Treasurer, S. L. Davidson, is an experienced "watch dog" on these problems, and we are fortunate to have his services available.

The Secretary's office is obviously being very ably run by Dr. Billmeyer. In light of his forthcoming duties as Editor of the new color journal, careful consideration must be given to the burden of these two assignments, since these are in addition to Dr. Billmeyer's rather awesome duties as Professor of Chemistry at Rensselaer Polytechnic Institute.

For some time it has been clear that there was a need for a journal on color and related subjects, in which papers of interest to those concerned with all aspects of color could communicate their experiences. Although several specialized journals are available, no one provides availability for the broad interests of those concerned with all aspects of color. This fact has been a matter of great concern to the Board and many members of the ISCC. It is not appropriate here to detail the frustrations associated with past attempts to provide such a journal. With the endorsement of the Inter-Society Color Council, The Colour Group (Great Britain) and the Canadian Society for Color, Wiley-Interscience, a very broad-based experienced publisher of scientific journals, will publish a journal covering all aspects of color in business, art, design, education, and industry. More details are contained in the January-February issue of the *Newsletter.* I believe this may be one of the most memorable developments of my term in office.

The Problems Committee work has become one of the outstanding areas for fulfillment of the stated goals of the ISCC. I am most delighted with the present organization and imaginative leadership of Ruth Johnston-Feller and Franc Grum in these matters. The details of the various committees' progress, under their direction, will be covered later, hence I will not attempt further compliments – their progress will be obvious.

In the January-February ISCC *Newsletter* you will find an outstanding review of the History of the Munsell Color Foundation by Dorothy Nickerson. Such a detailed documentation of history over a thirty-year period rivals the best of New Yorker magazine. This is particularly timely in light of the important relationship of the Munsell Color Foundation with the ISCC, developed in detail within the last year. For details, please consult the January-February issue of the *Newsletter.*

In addition to all the activities of the Council mentioned above, there are two other very important functions, i.e., the lectures on all aspects of color presented at the Annual Meetings and the special symposia organized or sponsored by the Council.

It is clear that the program at the annual meeting, arranged by Ruth Johnston-Feller and Franc Grum, is an excellent example of the usefulness and quality of such programs.

I would like to announce the presentation of a Symposium on Instrumental Colorant Formulation to be held in

Williamsburg in January, 1976. Details will be published in the *Newsletter,* and brochures regarding registration and other matters will be available shortly. This symposium, with Dr. E. I. Stearns and Dr. Eugene Allen coordinating the technical program, is designed to consider the present status of this subject, ten years after we thoroughly explored its potential and problems at a similar symposium at Williamsburg in 1966.

Looking forward to the 1976 Annual Meeting, we are planning a commemorative program in memory of Ralph Evans, an outstanding color scientist and our secretary for many years. We have already confirmed a presentation by a member of the staff of Polaroid Corp. on Dr. Land's Retinex Theory of Color Perception. Other papers emphasizing the implication of Ralph Evans' observations and theories on color perception will be presented. This is particularly timely since by that time many of those present will have had the opportunity of studying "The Perception of Color," a masterful and thought-provoking book by the late Ralph M. Evans.

The ISCC has taken prime responsibility for the organization of "Color 77," the third quadrennial congress of the International Colour Association (AIC), to be held at Rensselaer Polytechnic Institute in July 1977. This is a very extensive undertaking, involving budgets several times larger than anything we have previously undertaken. We are indeed fortunate to have the aid of the Canadian Society for Color in planning for this event. The basic organizational structure has been in existence for some months. In the next few months preliminary announcements and brochures will be available. Further details on the meeting will appear in the *Newsletter.*

In closing, I would like to reemphasize the unique opportunity of memberhsip in the ISCC to broaden and enhance your knowledge of the diverse problems that are created by the fact that man's evolution provided him with a finely tuned sense of the difference in color and appearance of various objects. This sense probably provided for his survival, since without it, it would have been difficult to tell the difference between a sabre-toothed tiger and the bulrushes.

## REPORT OF THE VICE PRESIDENT
## CHARLES W. JEROME

The Vice President of ISCC has the reponsibility for liaison with the member bodies. Our major contact with these is through the member-body delegations whose operation and activities are dictated by the society that each represents. This is as it should be.

There is a great diversity in the modus operandi of the delegations. Some are very active and make their presence felt in the ISCC operations while others are very inactive and seldom heard from. It has been suggested that a handbook for the effective functioning of the ISCC delegations would be helpful by suggesting means for making these more viable. I plan to contact the several delegations for assistance in putting such a handbook together.

## REPORT OF THE SECRETARY
## FRED W. BILLMEYER, JR.

I am pleased to announce that the new ISCC Membership List is now ready for printing, and should have reached you before the Annual Report issue of the *Newsletter* prints this report. Although it has some obvious disadvantages, the typewritten-plus-computer-printout format of the list should allow it to be updated with minimum cost and effort so that we can get back to the schedule of a new list every second year following the installation of new officers.

Your comments on and corrections to the list are solicited. The number of extra copies has been kept low, but a few are available from my office.

Because of preparation of the membership list, involving careful reconciliation and coalescence into one of the former Secretary's, Treasurer's and mailing lists, no count of members was made on December 31 as in past years. At the end of the annual meeting, however, membership in the Council was 604 individual members, 198 Delegates from 28 member bodies, 50 member-body liaison officers and Editors, 16 Honorary Members, 26 AIC (International Colour Association) member officers and 7 library subscriptions, for a total mailing list of 818.

I regret to announce the death on January 1 of Robert S. Foster, long an active member of the Council and an authority on the coloring of vinyl plastics. Bob had just enthusiastically accepted the chairmanship of a Problems Subcommittee but had no opportunity to start this important work. We shall miss him and his services to the Council very much.

Future meeting dates for the Council have now been set through 1980. Although they are included in the new membership list, I repeat them here.

1976 Williamsburg Conference, January 25-28
1976 Annual Meeting, April 26-27
1977 Annual Meeting, April 18-19
1977 AIC Meeting "Color 77", July 10-15
1978 Annual Meeting, April 3-4
1979 Annual Meeting, April 23-24
1980 Annual Meeting, April 21-22.

The Annual Meetings are planned for the Statler-Hilton Hotel, New York, while "Color 77" will be held on the campus of Rensselaer Polytechnic Institute in Troy, New York.

Finally, as its Editor-in-Chief, I want to bring you a report on progress towards the new journal endorsed by the ISCC, COLOR RESEARCH AND APPLICATION. Although it may sound strange, I hope this will be my last as well as my first report to the ISCC in this capacity for the following reason. This journal will be international in scope and has been endorsed by The Colour Group (Great Britain) and the Canadian Society for Color, as well as the ISCC. I have asked each of the endorsing societies to appoint an Associate Editor to represent that society and to share in the editorial direction of the journal. I am pleased to announce that The Colour Group (Great Britain) has appointed Dr. Michael Pointer of Kodak Ltd. as their Associate Editor, and the Canadian Society for Color has appointed Dr. Gunter Wyszecki. At the time of this oral report, the ISCC has not appointed its Associate Editor,

and it is only in the absence of such an appointment that it is appropriate for me to make this report. [I have since been informed that the Board of Directors has subsequently appointed Mr. Rolf Kuehni as Associate Editor for the Council, and I am pleased to welcome him to this position.]

An Editorial Board will soon be appointed, with representatives from major fields of color including art and design as well as the sciences, and I hope that this journal will prove of interest and value in all aspects of color.

*Newsletter* No. 234 contains a press release announcing the journal, and with *Newsletter* No. 235 you will have received an advertising flyer and subscription order form from the publisher, Wiley-Interscience. Before issuing the press release, I sent it to each Member-body liaison officer, with a copy to the Member-body journal editor, if any, and the Delegation Chairman, emphasizing our intent that COLOR RESEARCH AND APPLICATION complement, not compete with, our Member-bodies and their journals. Only a few replies, all favorable, have been received.

Because of the long lead time in starting a new publication, the content of the first issue of the journal will have been selected before this written report issues. It will contain among other features, the first instalment of a three-part reprinted Report by Dorothy Nickerson on the history of the Munsell Color System, Company, and Foundation; R. W. G. Hunt's 1975 Newton Medal Address of The Colour Group (Great Britain); a paper on colorimetry by Wyszecki and Ohta from the Canadian Society for Color; other papers on art and design as well as the science of color; Notes, Book Reviews, and Letters. Although this will be a refereed journal, the throes of organization have dictated that I make most of the decisions regarding the content of the inaugural issue, and I take full responsibility for it.

As the abovementioned press release stated, the ISCC endorses COLOR RESEARCH AND APPLICATION and urges you to support it through subscription, advertising, and the submission of manuscripts.

## REPORT OF THE TREASURER
## S. LEONARD DAVIDSON

Because of the change in the location of the office of the Treasurer, the firm of Portner and Toscano became the auditors for the Inter-Society Color Council, Inc. As the audited report of the financial transactions will not be available in time for distribution to the Board and Officers for their study prior to the Annual Meeting, I have included the following tables to indicate the financial position of the Council.

It should be noted that income from IMG Dues was much higher than budgeted. This is due to increased interest in the activities of the Council as indicated by the number of new IMG members billed during the year.

While expenses were $1,117.31 greater than income, it was possible to operate the Council without transferring any funds from savings accounts. It was possible, therefore, to transfer $5,000 to a 7.25% 4 year term account and $4,000 to a 6.5% 1 year term account. Combining all funds on hand shows a net gain of $65.06 for the year.

I would like to express my thanks to Mr. R. E. Phipps and his office for performing the accounting work of the Treasurer's Office until the Annual Meeting. I would also like to thank Mr. Phipps for the orderly transition of the records of the Office.

I would like to thank the membership of the Inter-Society Color Council for permitting me to serve them. I would like to thank Miss Gladys Lucent, my secretary, for her cooperation and understanding in assisting me perform my duties as Treasurer.

## INTER-SOCIETY COLOR COUNCIL, INCORPORATED

### REPORT OF THE TREASURER
### YEAR ENDED DEC. 31, 1974

| | | |
|---|---|---|
| Balance in general fund checking account Jan. 1, 1974 | | $ 3,383.60 |
| INCOME: | | |
| Member body dues | $1,800.00 | |
| 1973 IMG dues | 242.00 | |
| 1974 IMG dues (billed $6,222.00) | 5,947.00 | |
| 1975 IMG dues | 89.00 | |
| 1974 Newsletter subscriptions | 95.00 | |
| 1975 Newsletter subscriptions | 20.00 | |
| Reprints and back issues Newsletter | 321.00 | |
| Use of mailing list | 100.00 | |
| Royalties | 263.16 | |
| Annual meeting income | 3,645.00 | |
| Boxes for future Godlove awards | 500.00 | 13,022.16 |
| | | 16,405.76 |
| EXPENSES: | | |
| Secretary's office | 2,400.00 | |
| Treasurer's office | 203.82 | |
| Fidelity bond – three years | 250.00 | |
| Audit | 250.00 | |
| Newsletter | 7,788.32 | |
| Annual meeting expense | 2,705.01 | |
| Dues – International Colour Association | 34.09 | |
| Bank charges – foreign checks | 8.23 | |
| To Godlove fund | 500.00 | 14,139.47 |
| Balance in general fund checking account Dec. 31, 1974 | | $ 2,266.29 |
| Excess – expenses over income | | $ 1,117.31 |

S. Leonard Davidson,
Treasurer

## INTER-SOCIETY COLOR COUNCIL, INCORPORATED

### COMPARISON OF INCOME AND EXPENSES TO THE BUDGET

### YEAR ENDED DEC. 31, 1974

| INCOME: | Budget | Actual | Difference |
|---|---|---|---|
| Annual Meeting (net) | $ 1,000 | $ 939.99 | −$ 60.01 |
| Member body dues | 1,860 | 1,800.00 | − 60.00 |
| IMG dues | 5,000 | 6,278.00 | + 1,278.00 |
| Royalties | 400 | 263.16 | − 136.84 |
| Other | 500 | 1,536.00 | + 1,036.00 |
| Total income | $ 8,760 | $10,817.15 | +$2,057.15 |
| EXPENSES: | | | |
| President's office | $ 300 | $ 0.00 | −$ 300.00 |
| Treasurer's office | 200 | 203.82 | + 3.82 |
| Secretary's office | 2,400 | 2,400.00 | 0.00 |
| Newsletter | 6,000 | 7,788.32 | + 1,788.32 |
| Newsletter—binding | 200 | 0.00 | − 200.00 |
| Newsletter—amortization | 500 | 0.00 | − 500.00 |
| Membership list printing | 1,000 | 0.00 | − 1,000.00 |
| Fidelity bond | | 250.00 | + 250.00 |
| Audit | | 250.00 | + 250.00 |
| To Godlove Fund | | 500.00 | + 500.00 |
| Other | | 42.32 | + 42.32 |
| Total expenses | $10,600 | $11,434.46 | +$ 834.46 |

S. Leonard Davidson,
Treasurer

## INTER-SOCIETY COLOR COUNCIL, INCORPORATED

### I.H. GOODLOVE AWARD FUND
### YEAR ENDED DEC. 31, 1974

| | |
|---|---|
| Balance on hand (savings account) Jan. 1, 1974 | $ 616.83 |
| Interest—savings account (net) | 28.92 |
| For boxes for future awards | 500.00 |
| Balance on hand Dec. 31, 1974 | $ 1,145.80 |

### GENERAL FUND COMPARISON

| | Dec. 31, 1973 | Dec. 31, 1974 |
|---|---|---|
| Balance—checking account | $ 3,383.60 | $ 2,266.29 |
| Balance—savings accounts | 12,000.73 | 12,654.13[1] |
| Total | $15,384.33 | $14,920.42 |

[1]Includes $653.40 in interest

### TOTAL CASH ON HAND

| | | |
|---|---|---|
| General funds | $15,384.33 | $14,920.42 |
| I.H. Godlove Award Fund | 616.83 | 1,145.80 |
| Total | $16,001.16 | $16,066.22 |

S. Leonard Davidson,
Treasurer

## REPORT OF THE FINANCE COMMITTEE
## S. LEONARD DAVIDSON, CHAIRMAN

I would start by thanking the following members of the Inter-Society Color Council who serve as members of the Finance Committee: Miss Midge Wilson, Messrs. Robert Hoban, George Gardner, and Warren Reese.

The Finance Committee has recommended and the Board of Directors has accepted the 1975 operating expense budget and projected income, which is attached.

With the dues increase, it is anticipated that there will be no deficit in 1975.

### Budget 1975

### INTER-SOCIETY COLOR COUNCIL

| INCOME: | 1974 Budget | Actual | 1975 Proposed Budget |
|---|---|---|---|
| Annual meeting net | $ 1,000 | $ 939.99 | $ 1,000 |
| Membership dues | 1,860 | 1,800.00 | 2,175 |
| IMG dues | 5,000 | 6,282.77 | 9,000 |
| Royalties | 400 | 263.16 | 250 |
| Other | 500 | 436.00 | 500 |
| Total | $ 8,760 | $ 9,721.92 | $12,925 |
| EXPENSES: | | | |
| President's office | $ 300 | $ —0— | $ 250 |
| Treasurer's office | 200 | 203.82 | 300 |
| Secretary's office | 2,400 | 2,400.00 | 2,400 |
| Newsletter | 6,000 | 7,787.79 | 8,000 |
| Newsletter binding | 200 | —0— | 200 |
| Membership list printing | 1,000 | —0— | 1,000 |
| Audit | | 250.00 | 300 |
| Fidelity Bond (3 years) | | 250.00 | — |
| International Color Association dues | | 34.09 | 40 |
| Total | $10,100 | $10,925.70 | $12,190 |
| Difference | −$ 1,340 | −$ 1,203.78 | +$ 735 |

## MINUTES OF THE ANNUAL BUSINESS MEETING

The 1975 Annual Business Meeting of the Inter-Society Color Council was called to order in the Gold Ballroom of the Statler-Hilton Hotel, New York, at 9:40 A.M. on Tuesday, April 15, 1975. President Roland E. Derby, Jr., presided, with about 60 in attendance. The following items of business were transacted.

Reports were presented by the President, the Vice-President (Charles W. Jerome), the Secretary (Fred W. Billmeyer, Jr.), and the Treasurer (S. Leonard Davidson). Since these reports are included in the Annual Reports issue of the *Newsletter*, their subject matter will not be covered in these Minutes, except as noted.

Mr. Davidson's Treasurer's Report noted that in 1974 the Council operated at a deficit of about $1,000 with a budget of about $14,000. On motion, the Voting Delegates approved the Treasurer's Report. Mr. Davidson then presented the report of the Finance Committee, projecting operation with a slight budget surplus for 1975.

Dr. William Benson, *Newsletter* Editor, reported informally for the Publications Committee. He asked that all members of the Council send him material for publication in the *Newsletter* and warned the Delegation Chairmen that he expected to make a similar request to each of them in writing in the near future.

Mrs. Ruth M. Johnston-Feller, Chairman of the Problems Committee, introduced the chairmen of the Problems Subcommittees to give individual reports. Reports were heard from all active Subcommittees except those for Problems 10 (Color Aptitude Test) and 30 (Color in the Building Industry), which were to be discussed in the Tuesday afternoon Symposium, and 6 (Comparative List of Color Terms), for which there was then no chairman (this position was subsequently filled by Robert W. Serenka). Of particular interest was the identification of several guest speakers at Problems Subcommittee meetings, including Dr. David H. Alman at 18 (Colorimetry of Fluorescent Materials), Mr. Faber Birren at 33 (Human Response to Color), and Dr. David L. MacAdam at 34 (Color Difference Problems).

Reports were given by the following Member-Body Delegation Chairmen: Graphic Arts Technical Foundation (Mr. William B. Schaeffer), Society of Plastics Engineers Color and Appearance Division (Dr. Thomas G. Webber), Manufacturers Council on Color and Appearance (Mr. Charles G. Leete, who subsequently introduced Dr. William Venable of the NBS), American Association of Textile Chemists and Colorists (Mr. Rolf Kuehni for Dr. Roland Derby), American Society for Testing and Materials (Mr. Harry K. Hammond, III), Optical Society of America (Miss Dorothy Nickerson for Mr. Franc Grum), and American Ceramic Society (Mr. F. Joseph Von Tury).

The meeting was adjourned at 11:20 A.M.

Respectfully Submitted

Fred W. Billmeyer, Jr.
Secretary

## D. L. MACADAM ELECTED TO HONORARY MEMBERSHIP

The Board of Directors of the ISCC unanimously decided at their meeting of April 13, 1975 that Dr. D. L. MacAdam be appointed an Honorary Member of the ISCC.

Dr. D. L. MacAdam has devoted his life to the advancement of color science. After his graduation from MIT, he joined the Research Laboratories of the Eastman Kodak Company, where he made contributions in depth to the fields of colorimetry, color photography, color television, camouflage detection, and color standardization. He obtained basic data on visual sensitivities to color differences in use by most color industries and laboratories throughout the world

Many of his papers became classics in their field, not only definitive in their subjects but also as models of experimental procedure. Two of the papers led to a rare honor, the data themselves being named for the author. These 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. His publications on colorimetry are so basic it is virtually impossible to write or speak on the subject without referring to them.

This honor is not his first from the ISCC. In 1963, he was the recipient of the Godlove Award for outstanding contributions to the knowledge of color. He also served the Optical Society of America as a delegate to the Inter-Society Color Council, as an expert on colorimetry to the CIE, and as a trustee to the Munsell Color Foundation. Dr. D. L. MacAdam has recently been chosen by the Optical Society of America to receive the 1974 Frederick Ives Medal for distinguished work in the field of optics. He has been Editor of the Journal of the Optical Society of America from 1964 to the present.

The ISCC Board of Directors believes that the many and varied contributions of Dr. D. L. MacAdam in the field of color have well qualified him to be appointed an Honorary Member of the ISCC. It is very fitting that this appointment came at the time of his retirement from the Eastman Kodak Research Laboratories. Congratulations Dave MacAdam and best wishes in your future endeavors.

## REPORT OF THE GODLOVE AWARD COMMITTEE
## FRANK C. WRIGHT, CHAIRMAN

We are happy to report our unanimous agreement that Dr. Vincent C. Vesce should be the recipient of the 1975 award. Dr. Vesce was nominated by five member-bodies: American Artists Professional League, Dry Color Manufacturers' Association, Federation of Societies for Coatings Technology, National Paint and Coatings Association, and Society of Plastics Engineers.

We forward herewith our nomination of Dr. Vesce and biographical information* for consideration by the ISCC Board of Directors. We also recommend that Max Saltzman make the award presentation.

*The biographical and bibliographical information submitted by the Godlove Award Committee is on file in the Secretary's Office.

### Godlove Award Citation by Max Saltzman

First I wish to thank the members of the Godlove Award Committee (Frank Wright, Lou Graham, Ruth Johnston-Feller, J. T. Smith and David Mac Adam) for giving me the honor of introducing this year's winner of the Godlove

Award – Dr. Vincent C. Vesce of Phoenix, Arizona, an honorary member of the ISCC.

The presentation of an award, indicating as it does the accolade of ones peers, is a source of pleasure for all concerned. To the man so honored, it is a symbol of the esteem of his colleagues, and, to the organization, the presentation adds lustre to an already prestigious award by the quality of its latest recipient.

In the past, we of the ISCC have given the Godlove Award, our highest honor, to such distinguished members of the council as D. B. Judd, Dorothy Nickerson, Ralph Evans, David Mac Adam, and Leo Hurvich and Dorothea Jameson, all physicists or psychologists. This is the first time the award is being given to a maker of colorants, a member of the profession whose skills provide the pallette of dyes and pigments that are used by art, science, and industry to bring color to our lives.

In honoring Dr. Vesce we pay tribute also to his colleagues both at Harmon and other companies in the pigment industry – for no man works alone or in isolation. The fact that this is so, does not diminish the magnitude of the honor we pay to Dr. Vesce. In this age of research teams and corporate endeavors, it is frequently difficult to single out an individual to say, without hesitation, this is the man. In the field of organic pigments, Dr. Vesce indeed is *the* man.

Although his work, and that of Harmon, has led to innovative use of color in all fields from automotive paints to xerographic toners, it is with the automotive industry that they have been most closely associated. From the earliest days of alternate colors to black – from toluidine toners through arylide maroons and BON reds to thioindigos and other vat pigments, the work of Vincent C. Vesce has pursued a single objective. To produce pigments of such high quality that the designer would be free to work with an unlimited range of color effects without any constraint as to hue and maintain the high standard of performance required by the industry.

Working to achieve this goal reminds me of the old cartoon in which a man is proudly displaying his super high fidelity record player and stereo system to a friend. In the picture records are being rejected by the machine and flying out in every direction while the proud owner says – "With my equipment if it ain't Bach, the hell with it." So for a time it seemed in the research lab at Harmon – if the new pigment was not up to automotive standards – the hell with it! We may have discarded a lot of good Jazz and country western, but we had a great deal of Bach!

Let us then look at the record.

Dr. Vesce was born in Philadelphia in 1901 and was educated in the public schools and the Polytechnic Institute of Brooklyn.

From 1924 through 1961 he was associated with Harmon Colors, now part of Allied Chemical, where, in association with Victor Chartrand and Harold Madden, he built one of the outstanding companies in the field of organic pigments.

Those 37 years coincided with the growth and development of the pigment industry in the United States, and it is for his outstanding contributions to that industry that we honor Dr. Vesce tonight. It would take too long to enumerate all his contributions so I shall discuss only three which illustrate three different aspects of this uniquely creative man: These are camouflage colors, properties of phthalocyanine blue pigments, and the development of high performance pigments.

His studies of the pigmentation requirements for camouflage colors not detectable by the eye or by infra red film combined his interests in three disciplines: pigment technology, photography (black-and-white and near-IR), and spectrophotometry. The studies of the reflectance of all available pigments, both organic and inorganic in the visible and near infrared, was published by the Official Digest, the US Quartermaster-General and later as a chapter in Vol. V of Mattiello's treatise "Protective & Decorative Coatings." The chapter is to this day the handbook for the selection of pigments for camouflage coatings in the visible and near infrared. The results of this work was checked by painting model cars that were photographed under simulated field conditions. In addition, the scientific basis for the performance of such coatings was documented by some of the earliest – if not the first – and most extensive spectrophotometry and data reduction: this involved not only modification and recalibration of the early Hardy-GE recording spectrophotometer but the development of the colorimetric calculations for the spectral region of interest (not truly color since it involved radiation not visible to the human eye – but near enough). This work was done in conjunction with Mr. Howard Allen at Harmon and Mr. K. Stultz, then of the Corps of Engineers.

The second achievement I have selected was his work on phthalocyanine blue in the early 1940's. This work was done during World War II and published in an elegant, private, and very limited edition in 1944. In this too we see a combination of Dr. Vesce's interests: pigment technology, microscopy, and spectrophotometry. Among his coworkers in this area were Mr. H. T. Allen and Mr. F. M. Stalzer. In a paper of fifteen pages the two major problems associated with the early phthalocyanine blue pigments were analyzed and differentiated from each other. Since loss of color strength was the major symptom in both cases, it was not then known that one type of color loss was due to crystallization of phthalocyanine blue in the presence of aromatic solvents, and the other type was due to the instability of the dispersed paint system. Identification of the two separate problems was followed by the production of new types of pigments which were free of both defects. The experimental results are beautifully illustrated in the form of both color chips and photomicrographs.

Finally, in the same paper we find the first colorimetric study of phthalocyanine blue pigments based on spectrophotometry and data reduction, which showed the variation of chromaticity of phthalocyanine blue when diluted with white. It was illustrated with color chips, spectrophotometric curves, and plots of color purity as a function of dilution. The fact that the chromaticity of phthalocyanine blue *increased* with dilution with white, reached a maximum value, and then decreased in the so called "normal" manner with further dilution was ably demonstrated. This pointed the way to the most efficient method of using this most important blue pigment.

The writing of this paper was not just a fine technical achievement. It was a description of a solid commercial

success. At the time of the first use of phthalocyanine blue in the painting of automobiles, the bodies of the cars were sprayed while the fenders were dipped. When this was done, using the same paint, the result was a two-tone car, which no one wanted, grey fenders on a blue body. Dr. Vesce observed this operation at the Ford plant where he had gone to see for himself the first use of Harmon phthalocyanine blue. He returned from Detroit disheartened but determined to solve the problem. In less than six months he and his colleagues found the technical solution, transferred it from laboratory to plant scale and delivered the trouble-free pigment to their customers. This speed was characteristic of Harmon, under Dr. Vesce's direction. Under today's corporate controls it would take more than the six months, in which the problem was solved, for a committee to plan to consider the possibility of examining the problem to see if the potential profit warranted the work that might be involved. Perhaps I exaggerate, but I don't think so. The unique combination of technical and entrepreneurial skills possessed by Dr. Vesce along with the freedom to select projects worth working on contributed much to the success of Harmon.

The third effort, the production of and the evaluation of the properties of high performance organic pigments was the culmination of his work at Harmon. The period from 1945 through 1956 saw the introduction of the complete hue gamut of pigments suitable for the most demanding standard of performance. Together with his colleagues at Harmon, Messrs. Ingram, Santimauro, Woodlock, and Gerson, he ranged through the world of chemistry in search of chemical structures that could be converted to pigments of sufficient durability to be used in the manufacture of automotive finishes. Evaluation was accomplished in cooperation with Messrs. Matson, Jelsma, Stalzer, and Cleary (and me). The success of this combined endeavor directed by Dr. Vesce is visible all around us in the range of colors available in everything from automobiles to outdoor carpeting.

The first phase of this work was published in 1956 – as "Vivid Lightfast Organic Pigments," Official Digest for December 1956 and the final phase, for Dr. Vesce – as the work goes on, was presented in Dr. Vesce's Mattiello Lecture for 1959 "Exposure Studies of Organic Pigments in Paint Systems." This work, fifteen years after publication, remains a unique contribution to the industry and is used daily by all those who work with organic pigments.

As an aside, in the days when the secretive dye and pigment chemist would face death to protect his little black book that contained the structural formulas for his colorants, both these publications revealed the chemical identity of the pigments along with quantitative information, based on objective color measurement, on the color change that occurred on exposure.

To end my discussion of the work of Vincent C. Vesce, we must recognize that in spite of the Scriptures which state in Matthew 13:57 (and the other 3 Gospels as well) "A prophet is *not* without honor save in his own country, in his own house." Mr. Vesce's achievements *have* been recognized in the following ways –

He is an associate of Photographic Society of America (and I assure you that an associate is not someone who is not good enough to be a full member).

He is, as stated earlier, an honorary member of the ISCC.

He was the 1959 J. J. Mattiello Memorial Lecturer of the Federation of Societies for Paint Technology – the highest award of the Federation.

In 1971 he was presented with the Distinguished Alumnus Award of his alma mater, the Polytechnic Institute of Brooklyn. And in 1973 he was presented with the Degree of Doctor of Science, honoris causa by the Polytechnic Institute of Brooklyn. This is the highest academic distinction of that institution. I can do no better in concluding my remarks than by reading the citation.

"Few men are privileged to put their marks so indelibly upon the world that they leave its aspect visibly changed for future generations. Fewer still can work such change for better and not for worse. You are one of these few. Our streets and roads, our towns and cities, our interior as well as exterior spaces are more colorful because of your life and work.

"Largely because of the great originality and imagination of your contributions to research in the science of organic pigment chemistry, American paint technology has come to lead the world in the excellence of its weatherproof, lightproof coatings. You have been the recognized leader in developing synthetic organic pigments. Your work has been the major factor that enabled automobile manufacturers to change from the black cars of yesteryear to the superb color styling and exposure resistance that we take for granted on the road today.

"As research and technical director of Harmon Colors – you built one of the world's leading producers of organic pigments. In the 12 years since your retirement the importance of your research has grown rather than diminished.

"The paint industry is justly proud of your accomplishments. And Polytechnic is also proud – proud of the role it played in your education, and proud of your presence here today. We are happy to confer upon you the highest academic distinction that Polytechnic Institute of Brooklyn affords – the degree of Doctor of Science, honoris causa."

To this I can only add that it is my great pleasure to present to you, Mr. President, on behalf of the Godlove Award Committee their unanimous recommendation that the Godlove Award for 1975 be presented to Dr. Vincent C. Vesce of Phoenix, Arizona.

## REPORT OF THE MEMBERSHIP COMMITTEE
## ROBERT F. HOBAN, CHAIRMAN

The resignation of Walter C. Granville, long the Chairman of the Membership Committee, was accepted with regret after the 1974 Annual Meeting. Robert F. Hoban has accepted the chairmanship of this Committee, but has no report to make at this time due to his short tenure in office. (FWB)

## REPORT OF THE COMMITTEE ON PUBLICATIONS
## W. BENSON, CHAIRMAN

Two matters were discussed at the meeting of the Board of Directors that deserve space in the *Newsletter.* First, the Board felt that every issue of the *Newsletter* should contain information on how one can apply for membership in the Council. From now on, then, the inside back cover of every *Newsletter* will tell readers how to obtain an application for membership.

The Board wished to have another discussion brought to your attention by means of the *Newsletter.* There was a lengthy discussion of the problem of maintaining satisfactory communications with the member-bodies of the Council. The delegations from the member-bodies and, in particular, the chairman of the delegations are the means through which communication with the member-body should take place. For a variety of reasons, this system of communication frequently does not function as it was intended so that, unfortunately, rather little information is transferred between the ISCC and the member-body when such malfunctions occur. Two methods were discussed by the Board for improving communication between member-bodies and the Council. First, the Board considered the possibility of preparing a handbook, similar to the one that is being prepared for chairmen of problem-committees, that would explain the duties and responsibilities of chairmen of delegations of member-bodies. Second, the Board agreed it would be useful to invite a few chairmen to every Board meeting so that they could become more familiar with the operation of the Council. In addition, attendance of the chairmen at Board meetings would provide an opportunity to meet with the President and other officers of the Council to discuss the common interests of the ISCC and their member-bodies. If any of you have any suggestions to make on this subject, I am sure that any of the officers of the ISCC would be pleased to hear from you.

## REPORT OF THE PROBLEMS COMMITTEE
## RUTH M. JOHNSTON-FELLER, CHAIRMAN

The Problems Committee operated this year with six principal members, including the Chairman, the past Chairman, George B. Gardner, and the four Group Chairmen listed below with their subcommittee responsibilities:

Franc Grum, Color Science and Measurement: Problems 18, 22, 27, 34, and 35.

Robert F. Hoban, Colored Materials and Colorants: Problems 6, 7, 10, and 25.

Calvin S. McCamy, Pictorial Reproduction of Color: Problem 32.

Raymond Spilman, Art and Design: Problems 30 and 33.

Reports from the fourteen active Problems Subcommittees follow.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 6
## SURVEY OF COLOR TERMS

Mr. C. J. Bartleson was forced to resign as the Chairman of this Subcommittee on his relocation in England. At the time of the annual meeting, no new Chairman had been identified, but since then Mr. Robert W. Serenka has accepted the position. (FWB)

## REPORT OF SUBCOMMITTEE FOR PROBLEM 7
## SURVEY OF AMERICAN COLOR SPECIFICATIONS
## ROBERT F. HOBAN, CHAIRMAN

Twenty-one copies of the report have been sold since it was made available in April 1974. No corrections or comments have been received by the chairman, but they are invited. Copies of the report are available for $5.00 from chairman, Robert F. Hoban, SANDOZ Colors & Chemicals, Route 10, East Hanover, N. J. 07936.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 10
## COLOR APTITUDE TEST
## BONNIE K. SWENHOLT, CHAIRMAN

Inspection of the "breadboard" model of the new format Color Aptitude Test (CAT) revealed no obvious departure from the design considerations of the current edition. While changes have been made not only in the format but also in the chips themselves, these changes are not of a fundamental nature. The changes that have been made are such as to more nearly maintain adherence to the original design criteria.

However, skepticism is generally a wise position to maintain. The Federation of Societies for Coatings Technology is therefor undertaking the task of determining whether or not any change of scoring procedure is required in order to correlate results obtained with the new edition with those obtained with the earlier editions. This work will be done by Helen Paulson at the U.S. Navel Submarine Medical Research Laboratory – the work will include crosschecks for format change, chip change, and alternate illuminant. The results of her study, when available, will form the basis for determining the weighting function to be applied when using the new edition. To the extent that a high positive correlation between the editions of the test is obtained, the reliability will be presumed to have been established. This then will allow production and sale of the test in its new configuration.

A rough draft of the instruction manual and the descriptive brochure will be supplied to the members of the Subcommittee within the next month. Input from the Subcommittee members will aid in preparation of the final draft.

It is the belief of the Subcommittee that validation of the test includes more than establishing its relationship to earlier editions. As soon as prototypes of the test are available and scoring procedures have been established, data will be collected on as broad a base as possible; hopefully, a random population sample. It is imperative that we establish as soon as possible the ability of the test to predict probably efficiency in certain industrial applications. This can be accomplished only by accumulating data from individuals of known proficiency at various tasks that are

presumed dependent upon excellence of color discrimination and comparing these scores with those of the random population sample.

A questionnaire will be prepared by the Subcommittee for inclusion as part of the test procedure. It is the intent of this questionnaire to obtain an extensive array of data concerning observer attributes which may be significant factors in determining performance on the CAT and other color tests.

Results of other tests will be collected and the data analyzed for interrelationship to determine, we hope, what it is we are measuring in the various instances.

We urgently request the aid of all members in acquiring these data. Additionally we would appreciate input of data from earlier editions of the CAT, which should include observer attribute data such as age, sex, occupation, color education or experience, and any other available, relevant information.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 18 COLORIMETRY OF FLUORESCENT MATERIALS FREDERICK T. SIMON, CHAIRMAN

*Task Force I Activities (T. Cullen) Visual Appraisal of Fluorescent White Samples.*

The Subcommittee has in the past demonstrated that fluorescent white and colored materials can be satisfactorily measured colorimetrically. Task Force I subsequently addressed the task of visually ranking paper, plastic, and textile samples by increasing whiteness under selected conditions and attempted to establish a relationship between visual ranking and whiteness values derived from colorimetric measurements. The results have been compiled for publication. A rough draft of a paper is in preparation. Currently, the task force is considering factors influencing the outcome of visual and colorimetric whiteness evaluation as well as an industry survey of problems regarding colorimetry of fluorescent materials. During the 44th Annual Meeting of the ISCC in New York, proposals for future studies were discussed. It was decided that the Subcommittee will examine closely the problems brought to our attention by the CIE Whiteness Subcommittee.

*Task Force II (R. Hoban) Analysis of the Spectral Reflectance Factor in Terms of True Reflectance and Fluorescence.*

Four approaches to the instrumental measurements and separation of true reflectance and fluorescence have been published (Simon, Allen, Grum, Eitle and Ganz). Since the objective is to derive a *useful* and practical standard procedure (or procedures) it has been proposed that the suggested methods be reviewed from a general applicability point-of-view and that one (or perhaps two) be selected for further detailed examination by the Task Force. Two university groups (Clemson and Rensselaer) are currently conducting research related to this area. The Task Forces' findings and conclusions should hopefully be ready for publication during 1976. The Task Force is also to establish the goodness of fit between the Illuminant $D_{65}$ spectral-energy distribution and various $D_{65}$ simulators. Furthermore, surveys should be conducted to elucidate quality control problems encountered by the U.S. industry in regard to color specifications for fluorescent materials. While the linear relationship between emission intensity of fluorescent substrates and irradiation level is generally recognized, publication of data confirming this conclusion will be encouraged.

*Task Force III. Standard Terms and Definitions in the Area of Fluorescence and Fluorescence Measurements.*

Available terms and definitions (e.g. ASCM, SDC, and CIE TC-2.3) have been compiled and a list of pertinent terms requiring definition prepared. It will be the future objective of Task Force III to review existing and develop new terms with definitions related to the colorimetry of fluorescent materials and measurements. The Task Force plans to confine its activities to the more common terms related to color. This Task Force is no longer in existence, but its aim and activity have become the concern of the whole Subcommittee.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 22 PROCEDURES AND MATERIAL STANDARDS FOR ACCURATE COLOR MEASUREMENTS MRS. ELLEN CAMPBELL CARTER, CHAIRMAN

The Subcommittee met Monday morning with 25 people attending. The discussion centered on two topics. First, Dr. Tom Webber presented his problem concerning setting up visual color tolerances for two levels of acceptance in the plastics industry. The main objectives of the problem were to focus on the needs of the small user and his price range. In the discussion that followed, some people felt he should work either with the Coil Coaters or Munsell. Others felt that this would not meet his need. Some sample sets were volunteered for the study. It was suggested that 30 centers throughout color space might be adequate. Then others could be interpolated. The discussion was continued in other meetings during the day.

The second area of discussion was on the project of writing a "Guide to Color Standards." After some lively discussion on the various problems that could arise, the Subcommittee agreed to limit the scope of the project to standards for calibrating instruments for color measurement, not to be extended to standards for other aspects of appearance. We then used a rough draft prepared by Dennis Osmer to set up an outline of what should be included in the guide. The general topics are scope, definitions, applications, materials and techniques, and literature. If anyone has information to contribute in these areas of standards for instrument calibration, please contact me. We hope to go through two rounds of rough writing and comments before the next annual meeting.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 25D STRENGTH OF COLORANTS – DYES CHARLES D. SWEENY, CHAIRMAN

In addition to the annual meeting, the Subcommittee met in November. At the annual meeting, Dr. Charles E. Garland resigned as Chairman, and Charles D. Sweeny became the new Chairman.

During the past year the Subcommittee has revised the paper resulting from the four round-robins on transmittance measurements. This revision will be submitted to the Committee membership and subsequently to the Board of Directors.

Presently the subcommittee is working on:

(1) A seminar in conjunction with AATCC Committee RA36 on the strength determination of dyes by transmittance and/or reflectance measurement. It is our intent that the symposium be held at the AATCC Headquarters this fall or winter.

(2) The reflectance round-robin, for which the second set of samples has been distributed. The reflectance round-robin was intended to be a companion to the previously completed transmittance study. In this study we are obtaining data on the accuracy and precision of reactive dye strength by reflectance measurement.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 25F STRENGTH OF COLORANTS – MASS-COLORED FIBERS RICHARD F. BACHE, CHAIRMAN

This new Subcommittee was formed to examine the problem of the reproducibility of the determination of the strength of colorants in fibers. It will seek to develop a correlation between color strength on the fiber and alternative methods of measuring strength.

A Task Force (Richard Chartrand, George Samm, and Richard Bache) was formed to develop and distribute questionnaires to fiber producers involved in coloring programs.

It was decided to follow a procedure similar to that being used by the Subcommittee for Problem 25P, asking participants to evaluate the strength in fibers of samples of an inorganic and an organic pigment to be supplied by Paul Tudder of Glidden and Ed Cairns of Du Pont.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 25P STRENGTH OF COLORANTS – PIGMENTS JOYCE S. DAVENPORT, CHAIRMAN

The pigments section of Subcommittee 25 met on Monday morning, April 14th, with twenty-two members in attendance.

Rather than continue on the Phase II (a composite listing of test methods used in the industry) initiated by the past chairman, it was decided to try a new approach.

All members attending were enthusiastic about the idea of actually testing samples to determine their tinting strength and reporting on the results and the procedures used. This would enable members who do not have sophisticated color instrumentation to participate equally in a pigment tint strength evaluation.

Mr. Ed Cairns (duPont) and Mr. Paul Tudder (Glidden Durkee) will supply two samples each (of varying strengths) of an organic and inorganic pigment to each member requesting the samples. The results will be sent to Joyce Davenport, DeSoto Inc. and then evaluated by the reviewing committee. It is hoped all participants will return their data as soon as possible.

I would like to thank all the members for their support and patience as their new Subcommittee chairman.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 27 INDICES OF METAMERISM RALPH BESNOY, CHAIRMAN

1. Review by H. Hemmendinger of Problem 27 activities.
2. Review by W. Thornton of lamp.
3. Allan Rodriques appointed co-chairman of Subcommittee for Problem 27.
4. Six members in attendance agreed to submit questions on metamerism they would like answered.
5. F. Billmeyer agreed to recommend how samples should be prepared, based on questions about metamerism.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 30 COLOR IN THE BUILDING INDUSTRY MILO D. FOLLEY, CHAIRMAN

More than 30 members attended this year's meeting with most adding their thoughts to the program.

This year found a continuation and extension of the discussion of the Appearance Folio, a working tool for anyone who uses color. The folio is meant to be a file-drawer item containing information on the Universal Color Language (UCL), how it's used, where to find samples, an index system based on the Centroids, a color tolerance chart, a gloss chart, and all other data necessary to understand the use of color. This committee sees the folio as a profitable item and is interested in finding a method to have it produced.

Members suggested that a team of writers, who have already compiled information pertinent to the file, send the chairman these papers for condensation into a compact report. This would be sent to all member bodies to inform them that there is a complete method for identification of colors.

From this beginning, interest could be developed to have the full folio produced. New sources of funds were suggested, such as the Smithsonian Institution and the Nancy Hanks committee of the National Endowment for the Arts. It was also suggested that a questionnaire might be sent to colleges and schools of architecture by the national accrediting board. The new publications, COLOR RESEARCH & APPLICATION, could become an aid as a clearing house for committee activity.

A letter of interest from the Society of Plastics Engineers (SPE), Color and Appearance Division, in the description of colors for plastics indicates an area worthy of study,

in relation to UCL. Members of this committee have been active in the presentation of UCL to the SPE.

A question as to how UCL may relate to foreign countries was asked, and Ken Kelly will look into this.

The intense interest in moving ahead with the folio may lead to special Subcommittee meetings in the fall.

The Chairman presented illustrations of what has been called the "Brightstyle", a name for the use of major color for the interior and exterior of building. This use of bright color and graphics is a new trend in architecture and is brought about by the reduced money available for buildings. Color is now important as a feature because it can be used as a low-cost design element. Colorists are asked to become involved in this new style because an understanding of color will be essential if it is to become successful. UCL assumes a more important role in this design system.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 32 COLOR PROBLEMS IN PHOTOGRAPHY AND PRINTING CALVIN S. McCAMY, CHAIRMAN

Five years ago, at the request of the American Society of Photogrammetry, the ISCC undertook a study of the standardization of the measurement and specification of the color of areas about 1mm in diameter on photographic transparencies, standardization of the illuminants for viewing transparencies, and standardization of color designations. This study was called Problem 31. Since that time, a lot of research has been done on microdensitometry, and a subcommittee of the American National Standards Institute is preparing a standard on microdensitometry. The illuminants for viewing transparencies 4x5" or larger has been standardized by the American National Standards Institute, and there is a current project to standardize viewing conditions for smaller transparencies. The CIE system, the Munsell system, and the ISCC-NBS system should be adequate standardization of color designations. Some of these factors may have taken the impetus out of the project, for activity ceased more than two years ago.

Three years ago, at the request of the Technical Association of the Graphic Arts, the ISCC undertook to define how and when colorimetric measurements, rather than densitometry, should be used in the graphic arts industry; to choose between 45° : 0° and integrating sphere-geometry; to choose colorimetric parameters appropriate for the graphic arts; and to recommend methods of preparation of printed samples and determination of ink-film thickness. This was called Problem 32. To ascertain the state of the art, a questionnaire was circulated. Only one questionnaire was returned with adequate information. The chairman posed a number of other questions regarding colorimetry in the graphic arts, but, before they could be answered, he retired from the chairmanship. The post remained vacant until January of this year, when I was asked to assume reponsibility for problems in the fields of photography and the graphic arts. The Problems Committee combined Problems 31 and 32, and gave Problem 32 the general title, "Color Problems in Photography and Printing."

This Subcommittee met on April 14, 1975, and it was generally agreed that there were important color problems in this field but that the application of general-purpose colorimetry to the graphic arts was not of the highest priority.

The Subcommittee felt that it would be highly beneficial to hold a meeting to inform advertising men and others who buy color printing of the capabilities and failings of the various printing processes.

The Subcommittee felt that it would be desirable to hold another meeting of the nature of the 1971 Williamsburg Conference on criteria of reproduction quality.

Several perennial problems can be solved or greatly alleviated by tutorial papers published by ISCC. Three such topics are: (1) the use of selective and non-selective standards for the calibration and diagnostic analysis of densitometers, (2) the reversibility of geometry, and (3) the meaning of "neutrality" and its relationship to measured color densities.

The Subcommittee will undertake a survey of the availability of calibration standards that have been calibrated by absolute methods.

The Subcommittee is looking at the possibility of issuing a booklet giving examples of the kinds of reproduction obtained with the various printing processes.

## REPORT OF SUBCOMMITTEE ON PROBLEM 33 HUMAN RESPONSE TO COLOR ALEXANDER F. STYNE, CHAIRMAN

The meeting of the Subcommittee was structured as a discussion to allow free exchange of viewpoints that had emerged by correspondence during the year. Statements had been invited for presentation at the beginning of the meeting. Mr. Faber Birren, Prof. John Flynn – by letter – and chairman Styne presented their views to an audience of about 40 people. A lively interchange was beautifully and tactfully moderated by Dr. Jo Ann Kinney, resulting in a general consensus that only in-depth studies under well designed controls would result in worthwhile contributions to the vast but undefined knowledge in this field of inquiry.

Since the meeting Dr. Hugo Blasdel, a new member, and Professor John Flynn have offered to define a study for consideration of the committee.

A condensation of the minutes of this meeting will be submitted to the Editor for later publication.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 34 COLOR DIFFERENCE PROBLEMS ROLF KUEHNI, CHAIRMAN

During the year preceding the Annual Meeting, the Subcommittee continued to evaluate visually the six microspaces of physical samples that had been prepared by members of the committee. Evaluation is by both perceptibility and acceptability techniques.

During the year the chairman also attempted to establish a position of the committee in regard to the CIE propo-

sal for color difference formulas. The attempt failed partially because a strong consensus of the members seemed to be lacking and partially because there was not enough time left to develop such a consensus.

The meeting of the committee on April 14 was attended by approximately 50 members and guests. After bringing the attendees up to date on the activities of the committee, the Chairman introduced Dr. David MacAdam of the Eastman Kodak Company as guest speaker. Dr. MacAdam presented a very informative introduction into the uniform color scales recently completed by a committee of the Optical Society of America. The presentation was complemented by many slides and charts and was followed by a lively discussion.

## REPORT OF SUBCOMMITTEE FOR PROBLEM 35 COLOR AND APPEARANCE MATCHING OF LIVING TISSUE ROBERT SPROULL, CHAIRMAN

The Subcommittee had an active year in seeking to further its objectives. A special meeting was held in Washington, D. C. on November 9, prior to the Annual Session of the American Dental Association. During this meeting actions were taken that will hopefully expedite the committee's progress.

At this meeting Bruce Burk volunteered to act as secretary to distribute information to all members of Subcommittee No. 35. The problem of the Subcommittee chairman in trying to determine which information might be of proprietary nature was thereby eliminated. All information forwarded to Bruce is considered to be for general distribution. It is felt that communication has been improved by this action.

Steve Bergen has completed his thesis for a Masters Degree relating to his research on teaching color concepts and a color test developed in conjunction with this study. Steve presented a summary of his work at the Subcommittee No. 35 meeting. Consideration was given at that time to requesting approval from the ISCC Board of Directors of Steve's efforts.

Word was received from Major General Edwin H. Smith, Jr., president of the American College of Prosthodontists, that a proposed By-law change will establish a standing committee of Color and Color Matching in the American College. (At the present time, it is a subcommittee under the Education and Advancement Committee.) Bob Sproull has been appointed Chairman of an ad hoc committee until the College officially approves the new change and Jack Preston has been appointed as a member.

Attempts to form a task force dealing with color and appearance matching of human skin are continuing. To date interest has been expressed but firm commitments are lacking.

A new member welcomed to Subcommittee No. 35 during the year was Dr. Dioracy Fonterrada Vieira, Professor and Chairman of the Dental Materials Department of the Sao Paulo, Brazil School of Dentistry. Dr. Vieira's department has published the results of their color research and he has been good enough to forward copies of these articles. We are presently in the process of having these translated and are eager to learn of their efforts.

A request was received from Unilever Research, England, for information regarding Subcommittee No. 35's work in developing a logical color guide for natural teeth and in particular the use of the spectrophotometer for small sample measurement. A reply is being drafted.

## REPORT FROM THE AMERICAN ARTISTS PROFESSIONAL LEAGUE DELEGATES FRANK C. WRIGHT, CHAIRMAN

The Inter-Society Color Council is now intensely concentrated on problems that are becoming each year more relevant, more valuable, and more important to artists.

Nowhere else can be found the hollow-ground specialists' technical work put into such realistic perfection and practical relationship with other fields. These unforseeable applications make break-through progress, real serendipities, which are the most exciting and unique contributions of the ISCC.

For instance the color system described by Dr. MacAdam. There he was, standing on the shoulders of the men who had made color history from cave men to Newton, Boyle, Goethe, Munsell, Ralph Evans, and many others, looking for a usable system that works. We look forward to his book, shortly to be published. Artists can use this knowledge.

Then look at Vincent Vesce, who quietly made immense contributions in light-fast, brilliant, permanent organic pigments. These we take for granted, for we see them all around us, in our automobiles, houses, – everywhere.

Truly the ISCC "gets it all together," Such scientists are so creative that they are, at heart, artists.

## REPORT FROM THE AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS DELEGATES ROLAND E. DERBY, JR., CHAIRMAN

Research Committee RA 36 "Color Measurement Test Methods" has worked primarily on the following two projects during the year of 1974:

- Volume "Color Technology in the Textile Industry." This book which is in an advanced planning stage, will contain approximately 25 chapters on most aspects of color technology in the textile industry. Some of the chapters consist of important papers previously published, others are written specifically for the volume. It is expected that the volume will be published in the latter part of 1975, if sufficient industry interest is obtained.
- Testing procedure "Determination of the Light Blocking Effect of Curtain Materials." The above testing procedure was drafted and reviewed by the committee. Optical equipment manufacturers were approached to determine if a suitable testing device could be made available commercially.

The new fold-out type Grey Scales for assessment of shade change and staining became commercially available from AATCC Technical Center during the year and a paper (see following compilation) on the comparison of the two types of scales was published by members of the committee.

Research Committee RA 50 "Light Fastness Test Methods" has developed an evaluation procedure for the determination of Adams-Nickerson color differences between unexposed and exposed Blue Wool Lightfastness standards.

The following special conference was sponsored by the AATCC and the book of papers is available from AATCC Technical Center, Research Triangle Park, N.C. 27709:

AATCC Symposium on Flock Technology, December 4-5, 1974, New York, N.Y.

The following color related papers were published in 1974 in Textile Chemist and Colorist:

"Development of a Standard Laboratory Dyeing Procedure," Northern Piedmont Section, January, pages 35-38.

"Difficulties in Preparing Dye Solutions for Accurate Strength Measurements," T.R. Commerford, January, pages 39-46.

"Measurement of Color and Color Differences" E.I. Stearns, February, pages 38-49; March, pages 45-51.

"Computer Color Matching: A Review of Its Limitations" A. Brockes, May, pages 21-26.

"A General Procedures for Determination of Relative Dye Strength by Spectrophotometric Measurement of Reflectance Factor," ISCC Problem Committee 25 (Dyes), May, pages 27-31.

"The Accuracy of Computer Color Matching," R. Kuehni, August, pages 19-21.

"New Gray Scales Simplify Color Assessments," R.F. Hoban and R.L. Stone, September, pages 38-43.

"Open-End vs. Ring Spinning: The Effect on Yarn Color Appearance" Piedmont Section, December, pages 32-36.

## REPORT OF THE AMERICAN CERAMIC SOCIETY DELEGATES F. JOSEPH VON TURY, CHAIRMAN

The only formal action the ISCC requires of a delegation is to present an annual report on color-related activities within their associations, and that the delegates meet once a year to discuss matters of mutual interest.

This year, we combined these two requirements at the 77th Annual meeting of the American Ceramic Society in Washington, D.C. A Society Symposium on Color was held for the Whitewares, Ceramic-Metal Systems, Materials & Equipment, Structural Clay Products and Design Divisions.

Speakers included representatives of the ISCC and members of the American Ceramic Society delegation to the ISCC.

The following is a summation of the reports and papers presented: Waldron Faulkner, F.A.I.A., author of *Architecture and Color,* presented basic current information on the science of color and its practical application to architecture, specifically in relation to ceramics.

Richard S. Hunter of Hunter Associates Laboratory, Inc., Fairfax, Va., spoke on the contrast between the trichromatic scales for color such as CIE XYZ, and the opponent colors L,a,b type scales. "When I first began to work in colorimetry, the big question was: which of these two types of scales is correct?

"It is pretty widely recognized today that both represent the phenomena of color vision at different stages. The color receptors of the eye are red, green and blue as suggested by the trichromatic X,Y,Z scales. Before the color signals are sent from eye to brain, however, these red, green and blue signals are converted to L,a,b type opponent-colors signals. These are: (1) lightness opposed to darkness, (2) redness opposed to greenness, and (3) yellowness opposed to blueness. Gray is the neutral color for all three scales. Nerve switches in the eye are supposed to convert from the initial tri-receptor signals to these so-called opponent color signals which then go down the optic nerve to the brain."

Edward T. Connor of Gardner Laboratory, Inc., Bethesda, Md., exhibited in the Annual Exposition their tristimulus colorimeter, glossmeters, and reflectometers and explained their uses to the Symposium.

Presentations by delegation members.

*Dr. Clarence A. Seabright, The Harshaw Chemical Company, Division of Kewanee Oil Co.:*

In the field of Whitewares there has been no major change in the last year. The use of new, brighter colors on sanitary ware continues as in the last few years. In tiles, due to current economic conditions, lines of different colors have been shortened. Use of earth-tone colors in tiles continues. Interest in production of decorated tiles is expanding. Ceramic Industry magazine in April, 1975, reported the production of all-decorated tile by Hacienda Tile Co. of Gonzales, Texas.

In the field of glass, the use of non-ceramic decorating materials on non-returnable beverage bottles has permitted the application of organic pigments and other pigments not used in glass enamels. Because of this, new hues, difficult to produce in glass enamels, have been made available.

*William G. Coulter, Fusion Ceramics Inc.:*

This discussion will be restricted to the use of color in the ceramic whiteware and natural clay ware fields.

I have separated the area of discussion into the following categories: (1) Commercial construction (2) Commercial furnishings (3) Residential construction (4) Residential furnishings. There will, of course, be some overlap.

(1) Under commercial construction, we have the glazed and unglazed quarry and paved floor tile industry, which has grown so tremendously in the last six to eight years. The earthtone colors predominate here. Semi-transparent glazes in iron manganese brown ranging from deep tones to golden yellow are the most popular colors. Textured white is also a major color. Copper greens and cobalt blues are lower in popularity. Color variation and texture are most important in this field. The recent EPA restrictions have forced the shutdown of many old coal fired periodic brick kilns, eliminating the production of much of the fire flashed shale brick produced in the Mid-West. Color application techniques have been developed to simulate flashed brick in tunnel kiln firing. This involves the random applications of manganese iron-titanium colors to the wet brick column. The technique produces an infinite number of

color combinations. White engobe is also still very popular in the brick industry for producing antique effects.

(2) Under commercial furnishing, we have hotel and institutional china. This is generally a conservative industry and color trends change slowly. In recent years the old gold type of color produced by tin vanadium or praeseodymium yellows blended with gray have dominated the industry. The old chrome tine maroons and pinks still exist but not at the level of ten years ago.

(3) In the residential construction field we have the sanitary plumbing and wall tile industries. Of course, these products are also used in the commercial field, but we are simplifying the categories in this discussion. White predominates here and, in the case of wall tile, the white glazes are often modified with gold or black specks. Autumn gold color based on zirconium yellow and gray is the major color with the recently popular avocado dropping out very rapidly. There is a very close parallel between sanitary and wall tile colors. The trend to bone white in the sanitary field is an interesting development.

(4) The home furnishing market is supplied by the dinnerware and artware industries. The predominant color here is yellow. Bright praeseo and tin vanadium are both used. Earthtone browns based on iron and manganese are second in volume. Traditional cobalt blue patterns hold a fairly strong position. The dark manganese brown Rockingham glaze with the white drip has finally begun to drop in volume after many years of popularity.

The artware industry produces a wide variety of colors with the producers of garden dishes or planters being heavily oriented to copper green colors. Cadmium reds and orange are used in the ash tray and kitchen accessory market.

In conclusion, the current status of color use in the above industries indicates a high volume of iron and manganese oxides while the zirconium yellow, blue, and pink stains remain as the major commercial colors.

*Paul D. Henry, The O. Hommel Company:*

Companies today are using basic colors in most of their match work. They are matching as many shades as possible with the fewest basic colors. They no longer use an individual stain or oxide for each glaze or enamel. By using this system, inventory is greatly reduced. The number of Porcelain Enamel Institute colors has been greatly reduced this year. Many of the intermediate colors have been deleted in both the glossy and nature tone colors.

*Robert B. Bernstorf, Commercial Decal, Inc.:*

In reference to overglaze ceramic color, the big thing has been the Food and Drug Administration requirements. No eating surface or potential eating surface may release more than 7ppm of lead or 0.5ppm of cadmium when subjected to a 5% acetic acid solution for 24 hours. The item is to be filled to ¼ inch of the top and covered with a watch glass for the leaching period. Although not a requirement, the test is now usually done half in daylight and half in darkness. This testing covers glazes as well as glazes with decorations. The actual testing is done with an atomic absorption spectrometer. A number of commercial laboratories have been certified for outside testing. The United States Potters Association and the American Dinnerware Emergency Committee have been promoting uniform laws in regard to these tests. There have been some thoughtless bills passed that prohibit possession of anything containing more than a certain percentage of lead. This automatically made almost every person in that state a lawbreaker. In another instance, a law was passed requiring a license to import or sell dinnerware in that state. It was so vague with no program to provide the license that a huge bottleneck develped. They have now called a temporary halt on the whole program in that state.

The lack of technical knowledge on the part of the legislators from the city level up is causing great hardships. The American Dinnerware Emergency Committee is working to educate these people and provide a model bill that will make it possible for all of us to continue.

This problem is not a local thing. Each country is involved in this with its own set of requirements.

*Laurence D. Gill, Pemco Products, Glidden-Durkee, Div. of SCM Corp.:*

Consider the level of sensitivity and sophistication now available in the area of color measurement. For instance, the ease by which a wealth of data in virtually any set of color units can be generated by the Diano/Hardy recording spectrophotometer. How precisely one can define the spectral gloss, hue, and strength of a given color so there can be no argument over whether one color matches or not. Or can you? When a property like metamerism steps into the picture, the exactness of your color match has to be reconsidered. Occasionally, we become so dependent on color measurement equipment and the numbers derived therefrom, that we forget it is the human eye viewing objects under a wide variety of lighting conditions that must be satisfied with a given color. We should be alert to the continual need of every new generation to learn what many take for granted.

My closing comments were related to government regulations concerning heavy metals and their potential impact on some colors. A few colors would be more difficult to produce in, for instance, a lead free glaze. While duplicates for some shades may be impractical, approximate matches should be possible.

Color trends as outlined by the other participants seem as good a forecast as any.

*Dr. Gordon H. Johnson, Ferro Corp.:*

Color trends remain the same. Continuous work goes on to advance the "state-of-the-art" of enameling and this includes improving the quality of colorants and their application.

*F. Joseph Von Tury, Vontury, Inc.*, after the reports, presented a talk with slides, on "Craftsmanship in the Industry".

Von Tury spoke about the designer-craftsman as a tool in industry, and pointed out the challenges and opportunities for the large-scale producer in making decorated tiles, panels, mosaic murals, and textural tiles for dome coverings.

"Besides traditional tools and materials, the use of new techniques, automation, and creative ingenuity offer unlimited potentialities to exploit the versatility and attractiveness of ceramics without losing the natural color and textural qualities."

Von Tury described the production methods he uses in his workshop and in various tile plants; and showed examples

of his work, among them sections from the dome of the Iranian Embassy in Washington, D.C., and from the dome of the Greek Orthodox Church in Tenafly, N.J. Both domes are composed of ceramic, frostproof, small tiles, 2" x 2" in size, covered with a glaze which was developed by him, and personally applied to about 65,000 tiles for each of the domes.

As a guide for the hue of the Iranian Embassy dome, he was given a Persian blue-glazed terra cotta segment, about 2000 years old. He succeeded in developing the glaze with a textural surface that overcomes the glare and reflection of the sun and retains natural color under any light conditions. The various assortments of color and textural effects on the tiles result in definite light and dark patterns with a shimmering and lustrous effect. As the sun changes position, it creates a non-uniform lighting, intensifying the perception of the beauty and richness of the finish.

In establishing the color tone, it was necessary to take into consideration the light (natural and eventually artificial) and reflection factors. These include the color of the buildings, the adjacent and surrounding colors, the grouting, and their inter-relationship.

Both ceramic domes are the result of a successful collaboration among architecture, industry, and craftsmanship.

Von Tury then discussed the history and renascence of encaustic tiles, and showed original decorated floor tiles from the U.S. Capitol Building, made in England about a century ago. He explained the research and experimentation he is doing to replace some of the worn sections of the floors.

A pamphlet on "Ceramic Color Terms" has been prepared by Engineered Materials, Div. Hi-Purity Materials Inc., New York, N.Y., for the ceramic artist and decorator. It is offered as a starting point in the understanding of the actual physical application of ceramic colors and directed to the actual color user.

## REPORT FROM THE AMERICAN CHEMICAL SOCIETY DELEGATES, CHARLES E. GARLAND, CHAIRMAN

With the resignation of W. B. Prescott, C. E. Garland assumed the Chairmanship of this Delegation late in 1974. The Delegation did not meet during the year.

Three papers on color were presented at the Fiftieth Anniversary Symposium on Chemistry and Technology of Coatings and Polymers of the Division of Organic Coatings and Plastics Chemistry of the Society, at the fall 1974 meeting in Atlantic City, September 9-14. They will be published in a Symposium Volume in preparation. They were:

"Color Science," Fred W. Billmeyer, Jr.

"Science and Technology of Opaque White Pigments in Coatings," Fred B. Steig, Jr.

"Chemistry and Technology of Color Pigments," Max Saltzman.

## REPORT FROM THE AMERICAN COLLEGE OF PROSTHODONTISTS DELEGATES ROBERT C. SPROULL, CHAIRMAN

The *Newsletter* of the American College of Prosthodontists has carried prominent articles concerning the activities of Problems Subcommittee 35 and the Annual Meeting of the Inter-Society Color Council during the past year.

Confirmation of the College's increased interest in Color is the proposal to create a separate committee within the College on Color and Color Matching. An ad hoc committee has been formed and Jack Preston and Bob Sproull appointed as members. Up until this time this has been a Subcommittee within the Education and Advancement Committee.

The activities of College members in color-oriented actions have been reported in reports of Problems Subcommittee 35: Color and Appearance Matching of Living Tissue.

## REPORT FROM THE AMERICAN INSTITUTE OF ARCHITECTS DELEGATES WALDRON FAULKNER, CHAIRMAN

Robert A. Class, Counselor of the AIA delegation, while in London last summer, discovered in the Government Bookshop an article from the January 1973 *Building Research Establishment Digest* titled, "The Co-ordination of Building Colors." This is "a new range based on the attribute's hue, greyness, and weight, instead of the hue, value, and chroma of the Munsell system."

A review of *The Psychology of Color and Design*, by Dr. Deborah T. Sharpe, was published in the January 1975 number of the AIA Journal.

## REPORT FROM THE AMERICAN PSYCHOLOGICAL ASSOCIATION DELEGATES SIDNEY STECHER, CHAIRMAN

Vision research over the past number of years has been receiving increasing emphasis, which has in large part been due to the efforts of the National Eye Institute and ARVO. As usual, members of this delegation have been actively involved with both organizations. Both Drs. J. L. Brown (University of Rochester, Center for Visual Science) and Lorin Riggs (Brown University) have been elected Trustees of ARVO and serve as consultants to the Sensory and Motor Disorders of Vision section of the NEI. Both have been actively involved with various aspects of visual research. Dr. Brown has been investigating spatial, temporal, and adaptation effects in vision, and Dr. Riggs has continued his investigations of human visual response in retina and cortex, as well as visual after-effects.

Dr. Bill Biersdorf has continued studies on the electrophysiological aspects of adaptation and presented an interesting paper at the recent ARVO meeting of possible concern to ISCC members entitled "The Color Rule as a Color Screening Test."

Excellent sources summarizing published visual research over the past year can be found in the journal Vision Re-

search. A number of psychologists interested in vision have also expressed a good deal of interest in the coming new journal, *Color Research and Applications* proposed by various members of ISCC.

A recent two volume report has been issued by the National Advisory Eye Council of the NEI. The report outlines the major research directions, sources of funding, categories of interest, and research projects currently being funded by NEI and other agencies and foundations. While NEI expressly states that color per se is *not* a major research area, projects directly and indirectly related to color are being funded.

Many studies of interest to industry (and ISCC) are currently being implemented, such as the effects of laser use, UV and IR exposure, and safety standards criteria for laser use. NEI is divided into five major areas of vision research: retinal and choroidal disease, corneal disease, cataract, glaucoma, and sensory and motor disorders of vision. It is the category of sensory and motor disorders that is of most interest to psychologists and ISCC members. Subgroups of research thrust in this area are as follows:

A. Congenital, developmental, and degenerative abnormalities
B. Oculomotor disorders
   1. strabismus
   2. oculomotor disorder
C. Optical and pupillary disorders
D. Visual sensory and perceptual disorders
   1. neural mechanisms
   2. psychophysics
   3. electrophysiological techniques applicable to man
E. Sensory and motor disorders related to specific disease processes
   1. vascular and circulatory
   2. inflamatory disease
   3. metabolic, toxic, and traumatic disorders
F. Rehabilitation

Psychologists have been actively engaged in all aspects of research in these areas. A good deal of this research can be found in *Vision Research.* The 1974 volume of *Vision Research* commences with an obituary of Professor S. S. Stevens:

> Dr. Stevens was the world's first Professor of Psychophysics and made important contributions to all areas of sensory psychology, including many areas of vision, being most well known for his famous researches on the power law and its applicability in vision. He was a member of the National Academy of Sciences and numerous other societies and the recipient of many awards and honors and the author of many important articles and books. His influence will undoubtedly be felt for many years as carried out by his many students, but his provocative presence will surely be missed.

The recent meeting of the Association for Research in Vision and Ophthalmology (ARVO) was held on 4/28 - 5/2/75 and as yet unpublished research was reported. Section 10 of ARVO is concerned with visual psychophysics and physiological optics and psychologists actively attended these sessions and those of Section 4 on electrophysiology and Section 5 on oculomotor physiology and disorders. In all there were 53 different sessions of which 20 were denoted to the aforementioned areas.

Meeting sessions were held on after effects of color and motion (orientation contingent after effects, McCulloch effect, temporal phase characteristics of human color channels, chromatic edge effect mechanisms), interaction among receptor mechanisms (rod-cone interaction effects, spatial frequency and color mechanisms), additivity failure: Function of wavelength and purity by P. Kaiser, G. Wyszecki and Fielder, study of the blue cone mechanism and Bezold-Brucke hue shift phenomena. Spatial frequency analysis continued to be an important topic and a special session was denoted to color vision and color blindness. In this last session L. Hurvich and D. Jameson (ISCC delegates) were once again active in presenting their research on color mechanisms (The Spectral Loci of the Protanopic and Deuteranopic Neutral Points). A few papers were presented on tritanopia and one interesting report on unilateral R-G blindness. Smith, Pokorny, and Starr of the Eye Research Laboratory, University of Chicago advanced an interesting hypothesis to explain the variability of color matching data. They explain the variability as being due to varying optical densities of the foveal cones together with a differential spectral filter absorption spectrum similar to macular pigment and maximal density proportional to the difference in optical density of the cone types. Based on their hypothesis they are able to predict the average 10° data and its variability as a function of wavelength. Many papers were also presented on oculomotor processes. Once again, given space limitations and the voluminous nature of the work being done, this summary has been cursory. More complete summarizations may be found in the Annual Review of Psychology.

## REPORT FROM THE AMERICAN SOCIETY OF INTERIOR DESIGNERS DELEGATES
## DON STEVENSON, CHAIRMAN

Because of the interest created by the merger of the American Institute of Interior Designers and the National Society of Interior Designers, I would like to quote a few statements from the Operations Manual about the founding of the American Society of Interior Designers as follows:

January 1, 1975 marked the beginning of a new era in the history of the interior design profession. The date also marks the culmination of a two year period of dedicated effort on the part of the Consolidation Committee members, officers, Board members, and headquarters personnel of both the American Institute of Interior Designers and the National Society of Interior Designers.

On July 6, 1974 in Denver, Colorado, at the first and only joint National Conference of NSID and AID, the respective memberships of the two constituent organizations voted overwhelmingly to accept a plan of consolidation of the two organizations as well as initial set of bylaws for the new corporation.

For many years prior to consolidation, the two organizations operated as two separate entities on nearly parallel tracks. In January 1970 an idea was proposed to begin a joint venture in behalf of education. By June of that year

NSID, AID, and the Interior Design Educators Council formed the Foundation for Interior Design Education Research so that a bridge would exist between the two organizations.

The almost immediate success of FIDER encouraged the leadership of the two organizations to sit down to discuss the qualifications and registration of interior designers. In January of 1971 a meeting of representatives of the two organizations was held. Out of this grew a consolidation committee that retained a specialist's firm to help with a necessary plan and bylaws, which were adopted as outlined above.

With the society a reality and legal technicalities completed, work was undertaken to reform or modify the committees and programs. Special emphasis was placed on those programs that would help members most effectively in their professional practice.

The larger membership and annual budget make it possible for the new Society to have a greater impact on the professional problems that are inherent in the practice of design and to exert more influence in the areas of education, legislation, professional ethics and on the life styles of all people.

With this abbreviated background of our new Society, it will be of special interest to member bodies of the ISCC to know that portions of the material from Problem 30 and 33 will be incorporated into our national conference in Los Angeles August 1-4, 1975. It is our hope to have a continuing dialogue with the ISCC that can be translated into concrete, workable, information for our design profession. By the same token, if our research into members projects bring new information that will be of significance to the ISCC, we will welcome the opportunity to have it on the agenda for the ISCC Annual Meeting.

## REPORT FROM THE AMERICAN SOCIETY OF PHOTOGRAMMETRY DELEGATES ANTHONY E. SALERNO, CHAIRMAN

The role as Chairman of ASP Delegation to ISCC normally falls upon the Chairman of the Color Photographic Committee of ASP. As chairman of this committee, I have appointed subcommittee chairmen as follows:

| | |
|---|---|
| Cameras for Color Aerial Film | Robert Spriggs |
| Color Films in Aerial Photography | Norman Fritz |
| Processing Equipment for Color Aerial Films | Lee Records |
| Laboratory Techniques in Color Aerial Products | Harry Stiller |
| Printers for Aerial Color Films | Martin O'Hare |
| Minification of Color Aerial Films | Millet D'Angeles |
| Photomechanical Reproduction of Color Products | Leonard Pimental |

Each of these subcommittee chairman will deliver a paper/report at our next ASP symposium to be held in Phoenix, Arizona, in October 1975.

## REPORT FROM THE AMERICAN SOCIETY FOR TESTING AND MATERIALS DELEGATES HARRY K. HAMMOND, III, CHAIRMAN

In addition to Committee E-12 on Appearance of Materials, several Materials Committees, notably Paint and Plastics, are actively involved in the measurement and specification of color.

Committee D-1 on Paint is developing a proposed recommended practice for evaluation of metamerism as well as a method for total luminous (hemispherical) reflectance of coated materials by the integrating sphere reflectometer. In the color-related area, there is a proposed new method for haze and brightness of reflected images by two parameter gloss measurement. In the area of ordinary gloss measurement, a cooperative test to develop precision data on reproducibility revealed that more explicit instructions were needed.

Committee D-20 on Plastics is reviewing appearance test methods and also is working with ISO TC61 (Plastics) in an effort to obtain adoption of ASTM methods by ISO. A somewhat simplified form of E-308 (Recommended Practice for Spectrophotometry and Description of Color) is currently being balloted for adoption as a draft international standard. The ISO draft of Instrumental Evaluation of Colour Difference for Plastics is compatible with ASTM D-2244 and the draft of Assessment of Near White or Near Colorless Materials is patterned after D-1925 and E-313.

Committee E-12 is currently reorganizing into three active subcommittees that will undertake the review and revision where necessary of the twelve Test Methods and Recommended Practices already published as well as the development of new methods.

The purpose of the Council and ASTM in appearance evaluation are closely allied. Each organization can benefit from association with the other. The delegates therefore again recommend continued participation by ASTM in the work of the Council.

## REPORT FROM THE COLOR ASSOCIATION OF THE UNITED STATES DELEGATES MIDGE WILSON, CHAIRMAN

Colors and their application are highly sensitive to shifting economic conditions. During 1974-75 monetary considerations prompted a more conservative approach to styling, with greater emphasis on basic colors, carefully edited lines, and a limited number of new shades per season. Staple colors have been continued, without the customary variations for the sake of newness. This "crunch" has also been reflected in fewer styling innovations and, therefore, greater emphasis on color for variety. Thus, it is the fresh tones and accents and the manner in which colors are presented, which currently carry the fashion message.

Casual living strongly influences our lifestyle and dressing harmonizes with the environment, featuring sportswear and unconstructed clothing, in soft fabrics and relaxed lines. Moving away from the grayed, negative colors of the "protest era," clothing colors are progressing steadily into clear tones and a healthy, fresh-air-and-sunshine spectrum.

Recent emphasis on no-season colors and seasonless dressing has been replaced by a strong seasonal look, with lighter, brighter tones for spring-summer styling and rich autumn and jewel tones for the fall-winter season. Even the neutrals reflect this, with the dominance of pure white and natural tones for spring and the extensive use of gray (particularly in heathers) for the fall neutral.

The price factor has also resulted in a two-class market. Fabrics in natural fibers are costly and therefore tend to be restricted to upper bracket clothing. Special shades and subtle tonalities, most effective in natural fibers, are important here, while the volume market, dominated by synthetic fibers, is bound by the color availabilities of these dyestuffs.

Perhaps the greatest and most lamentable change is that which has accompanied the expansion of technology. Unfortunately, the day of the expert dyer and his remarkable "color eye" has passed, to be succeeded by the unavoidable variations of the mechanical world. Strict standards for color matching have given way to the acceptance of ranges of tolerances, with the result that *close* matches are considered acceptable and slightly off-cast styling regarded as chic!

As social developments cause us to place more emphasis on our private, personal worlds, individual interpretations of color become more and more significant, assuring that home base provides not only an escape from the pressures of the outside world, but a color-harmonious habitat. Thus the magic of color reaches into every area of our overwhelmingly synthetic world to add a warm, personal touch.

## REPORT FROM THE COLOR MARKETING GROUP DELEGATES LOUIS A. GRAHAM, CHAIRMAN

The second annual edition of the Color Marketing Group's "Color Directions" was issued in 1974 to cover the sales year of 1976. It was felt that for the first time this is a meaningful set of colors to serve as guidelines for individual color palettes and colorlines to be developed by individual industries and companies. Copies are available through the CMG office (1000 Vermont Ave., N.W., Washington, D. C.). "Color Direction" cards are issued to chairholders in CMG much in advance of the public release.

Two semi-annual meetings were held by the Color Marketing Group in 1974 and were attended by an average of over 100 persons each. The first meeting was held at the Sheraton-Biltmore in Atlanta. The theme "Cotton Pickin' Colors." The program co-chairmen were Carol M. Sheets of Carol Sheets Research and Ross Snodgrass of Matherson-Selig Co. At the time of this meeting the energy crisis of 1973-74 was high in everyone's mind and the talk by Mr. Haaga of Union Carbide Corporation on "Energy – Color It Gold" was well received. The panel discussion on "Who Influences Color?" was staffed by Kenneth A. Charbonneau of Benjamin Moore & Co., Lois Zolliker of American Motors, Robert Monckton of Marlite Inc., Stephen P. Gasperecz, Jr. of Stephen Gasperecz Interiors and Joe Martin of Allied Chemical Corp. By the Fall 1974 meeting emphasis had shifted from shortages in raw materials to shortage of sales. The Philadelphia meeting, at the Bellevue Stratford Hotel, concentrated on the relationships of shortages to the current business environment. The program chairmen were Everett Call of the National Paint & Coatings Assn. and Bud Walrod of the Georgia-Pacific Company.

The CMG Board of Directors now consists of Everett R. Call, National Paint & Coatings Assn.; Louis A. Graham, Burlington Industries; Harriet E. Jennings, Champion International; Hugh A. Price, DeSoto; Ross C. Snodgrass, Matherson-Selig Co.; Elinor J. Frank, Lanvin-Charles of Ritz; Cecelia Riley, Celanese Coatings Co.; Boone C. Siegchrist, Pemco & Pigments Group – SCM Corp.; F. F. Walrod, Georgia-Pacific; Arnis Zebergs, A & V Zebergs Design Associates; Yale Forman, Yale Forman Designs, Inc.; Patricia Barnes, consultant; Richard Hoffman, United DeSoto, Inc.; Harry Shortway, Congoleum Industries, Inc.; and Lois B. Zolliker, American Motors Corporation.

CMG's next semi-annual meeting is in Dallas, Texas, April 27-29, 1975, under the theme "Two-Hundred Years of Color." Hugh Price of DeSoto, Inc. is program chairman.

## REPORT FROM THE DRY COLOR MANUFACTURERS' ASSOCIATION DELEGATES EMIL A. WICH, CHAIRMAN

The meetings of the Dry Color Manufacturers' Association continue to feature speakers on various aspects of color and related color consuming industries. These included "Advertising" (Mr. John A. Timon of Chemetron Corporation), "Printing Ink" (Mr. Donald Morrison of the National Association of Printing Ink Makers) and "The Colour Index and Its Uses" (Mr. Emil Wich of Sandoz Colors & Chemicals.)

Two committees, one for organic pigments and one for inorganic, are actively involved in an examination of the impact of pigment manufacture on ecology. A report "Trace Metals in Organic Pigments" was published in the American Ink Maker. A second seminar was held on the problems of waste disposal encountered by pigment manufacturers.

The introduction to the Pigment Section of *Clinical Toxicology of Commercial Products* by Gleason, Gosselin, Hodge and Smith was rewritten by a committee from the Association. Pigments were also listed according to their Colour Index Number, and a usage category given for each pigment listed. The Fourth Edition of this reference will become available early in 1975.

Further study is also being given to pending and established regulations implemented by the Occupational Safety and Health Administration (OSHA) concerning the use and handling of dichlorobenzidine (DCB) and other suspected carcinogens in pigment manufacture.

Close cooperation has been established with the British Color Makers Association for the exchange of technical brochures, committee lists, newsletters, and other pertinent publications.

Grants of $1000 each have been made to Clemson University and Rensselaer Polytechnic Institute for their continuing studies of color measurement.

The Association also continues to provide an award for the best technical paper relating to pigments which is presented at one of the major meetings of the Society of Plastic Engineers, the Federation of Societies of Coating Technology, and the National Association of Printing Ink Makers.

## REPORT FROM THE FEDERATION OF SOCIETIES FOR COATINGS TECHNOLOGY DELEGATES RUTH M. JOHNSTON-FELLER, CHAIRMAN

The annual meeting and show of the Federation of Societies for Coatings Technology (formerly the Federation of Societies for Paint Technology) was held November 6-8 in Atlanta, Georgia. The theme for the meeting was "Change Is The Challenge." Several papers were presented which could be of interest to ISCC members:

(1) "$TiO_2$ and Microvoids – A Theoretical Study of Three Models" by Professor Milton E. Kerker and Derry D. Cooke.

(2) "Organic Yellow Pigments as Replacements for Chrome Yellows" by the Louisville Society for Coatings Technology.

(3) "Studies of the Mechanism of Chalking Involving Metal Oxide Pigments" by S. Peter Pappas and Richard M. Fischer, Jr.

(4) "Genesis of an Automotive Coating" by Sol Panush.

The ISCC Committee continued its work on a glossary of color terms.

The Dry Color Manufacturer's Association (DCMA, a Member Body of the ISCC) will offer a prize of $200.00 plus a certificate for the best paper on color presented or published each year, beginning with 1975. The award selection will be made by the ISCC Committee.

Papers published in the *Journal of Paint Technology* in the year 1974 which may be of interest to ISCC members include the following:

(1) Billmeyer, F. W., Jr., and Davidson, J.G., "Color and Appearance of Metallized Paint Films," June, p. 31.

(2) Billmeyer, F.W., Jr., and Phillips, D.C., "Predicting Reflectance of Color of Paint Films by Kubelka-Munk Analysis – III. Effect of Concentration Errors on Color for Mixtures of One Chromatic Pigment with White," April, p. 36.

(3) Carr, W., "Pigment Flocculation in Baking Enamels," Sept., p. 96.

(4) Conley, R.F., "Design, Functionality, and Efficiency of Pigment Dispersants in Water-Base Systems," July, p. 51.

(5) Golden, H.J., "Influence of Dispersion Medium on Performance of Precipated Amorphous Silica Flatting Agents," April, p. 51.

(6) Kaempf, G. Papenroth, W., and Holm, R., "Degradation Processes in $TiO_2$ Pigmented Paint Films on Exposure to Weathering," Nov., p. 56.

(7) Madson, W.H., "Zinc Oxide and Rutile-Anatase Chalking Study in White, Exterior, Latex House Paints – Part IV. A Four Year Progress Report," Oct. p. 63.

(8) Pappas, S.P., and Fischer, R.M., "Photo-Chemistry of Pigments – Studies on the Mechanism of Chalking," Dec., p. 65.

(9) Tahan, M., "Comparison of Reflectance and Related Methods for Studies of Film Surface Deterioration – I. Natural Weathering of PVC (Organosol) Film," Mar., p. 35. II. (with B.J. Tighe) "Natural Weathering of Alkyd, Urethane, and Epoxy Polyamine Coatings," Mar., p. 48. III. "Modification of the Goniophotometer and Its Efficiency in Weathering Studies," Oct., p. 52.

(10) Tunstall, D.F., and Hird, M.J., "Effect of Particle Crowding on Scattering Power of $TiO_2$ Pigments," Jan., p. 33.

## REPORT FROM THE GRAPHIC ARTS TECHNICAL FOUNDATION DELEGATES WILLIAM D. SCHAEFFER, CHAIRMAN

This report summarizes the color and color reproduction activities that GATF has been involved in during 1974. Included are in-house research projects, committee activity with other graphic arts industry associations, technical publications, and educational programs.

### Research Projects

*The Munsell-Foss Color Chart.* Following the success of the sheet-fed version of this chart, a web offset version was produced during 1974. A Research Project Report, "A Web Offset Version of the Munsell-Foss Color Chart," was published as a supplement to a previous report that described the system in detail.

*A Color Separation Decision-Making Model.* Over 80 methods of color separation are available to the graphic arts industry. The number is obtained by adding enlarging, scanning, camera, and contact equipment in many combinations to achieve direct or indirect separations, with or without color duplicate transparencies. A quantitative financial decision-making model has been developed to provide a framework for the industry to make equipment decisions. A special report connected with this project, "A Color Separation Time Survey," was published during 1974.

*Quality Criteria for Tone Reproduction.* The studies on tone reproduction of black and white photographs were continued during 1974. The effects of "standard" tone reproduction, press conditions, and memory effects were examined. It was concluded that the adoption of standard plant halftoning procedures for all original photographs except high-key ones would not cause serious shifts in quality ranking. The importance of consistency of density range between printed halftones also was identified as an important quality variable.

*Web Offset Proving Standards.* The industry is facing standardization problems in the area of proving for web offset magazines. Principally, standards are needed for ink, paper, color sequence, and ink amount. This project entails both committee activity and laboratory work. In 1974 a survey was taken of web offset magazine printing in an attempt to derive typical printed densities. Also, laboratory studies were made of proposed standard inks and paper.

### Technical Publications

The outline for the GATF textbook "Color and Its Reproduction" was completed during 1974. An industry committee has reviewed the outline and their comments are currently being incorporated. The publication is designed for all those engaged in graphic arts color reproduction – from the art stage through final press sheet. It will not be a "how-do-do-it" text, but rather will provide general explanations of the color reproduction system, and point out some of the problems in color perception.

The GATF Annual Research Department Report was published. Included were reports on the tone reproduction study and the color separation systems analysis.

### Educational Programs

The GATF Color Reproduction Seminar was presented by Gary Field eleven times in 1974 in cities throughout the U.S.A., Australia, Great Britain, Canada, and New Zealand. At the GATF Technical Center in Pittsburgh, workshops titled Advanced Color Separation, and Color Printing – Standards and Control, were presented by Mr. Field and Mr. Charles Shapiro.

Several other programs related to color reproduction were presented in the following subjects: Art and Copy Preparation, Quality Control, and Offset Press Operating.

## REPORT FROM THE GRAVURE TECHNICAL ASSOCIATION DELEGATES OSCAR SMIEL, CHAIRMAN

The Gravure Technical Association in December of 1973, printed a series of color charts that represented ink standards for the gravure industry. These color charts are a guide for printers, publishers, engravers, and advertising agencies throughout this country and Canada when producing advertising material to be printed by gravure publications. Without such color charts as standards, we would have chaos – with them, we get better uniformity when printing the same advertisement in different publications.

Due to ageing, atmospheric influence, as well as color shifts caused by the paper used to print these charts, it was decided that we must reprint the ink standard charts as soon as possible. This is our next industry project.

Insofar as lighting and viewing standards are concerned, the GTA has had the ANSI 5000K color temperature standard for Viewing and Appraising Color Quality and Color Uniformity in the Graphic Arts Industry. Since this did not take into consideration transparencies smaller than 4" x 5", the GTA, this year, adopted a projector type of viewer that can project a 35 mm or 2¼" x 2¼" color transparency as a standard for the gravure industry. It conforms to the 5000K color temperature ANSI standard, and permits us to view a projected image of 8" x 5½" at the proper color temperature and illumination intensity comparable to the large 8" x 10" transparency viewer now in vogue. This type of projector, which we expect to be adopted as a standard by the American National Standards Institute, has already been approved by the ANSI sub-committee PH 2.6 and is presently in use by many of our gravure people. One such viewer is the Macbeth Prooflite V 135, and we hope to see other manufacturers produce comparable equipment sometime this year.

The other project GTA is undertaking this year is an attempt to correlate densitometers now being used by our printers and engravers. With the aid of the Rochester Institute of Technology as a central source of checking and reading standard film strips or printed color tone scales, we hope to be able to adjust in-plant densitometers so that printers and their suppliers the engravers can communicate with each other more intelligently when discussing supplied color positives and color progressive proofs.

In addition to the above GTA has also standardized on the whiteness of a 36 lb proofing stock to be used by engravers when proofing color ads for gravure printed magazines. We also settled on a 30 lb newsprint proofing stock as a standard for gravure printed newspapers.

## REPORT FROM THE ILLUMINATING ENGINEERING SOCIETY DELEGATES, CHARLES W. JEROME, CHAIRMAN

Color activity in the Illuminating Engineering Society is centered in its Color Committee. That organization is made up of members of ISCC which insures close coordination between the two bodies. The IES Color Committee is working on at least two major projects of interest to ISCC:

1. The discernability of the new Safety Colors.
2. The increased visual efficiency of sources with a high Color Rendering Index over those with lower CRI even though their lumen output may be less.

The Illuminating Engineering Society is continuing its studies of psychological problems in lighting. In a series of articles on hospital lighting, the doctor's plea is voiced, "Let's give more consideration to factors like color rendition." These articles also point out how color is used to allay the fears and tensions associated with being in a hospital. And even in the staff-only areas, "hospital green" is no longer standard operating procedure, but these areas are more casual and colorful.

Colored lighting is being increasingly used in architecture. In the highly successful Chestnut Hill Shopping Mall (Massachusetts), which opened last year, lighting is provided that gives continuous overlapping color changes at various light levels and an on-going lighting program, which fades lights in, allows them to dwell, and then fades them out. During last Christmas, for example, combinations of red and green lights played down onto the planted areas and seating in the courts. Yellow, blue, and pink lights were also used at other times during the year.

It has been pointed out that the preferred illuminant for long-term use may be different than what is chosen in a brief experiment. Sources with some saturated hues may be more desirable than artificial daylight type of lamp because the former provide some animation to the eyes.

At the National Technical Conference last year the following papers on color were presented:

"A New Generation of Deluxe Fluorescent Lamps combining an Efficacy Greater than 80 LPW with a Color Rendering Index of about 85"

"Suitabilty of High Pressure Sodium Lighting in Offices"
"Phototherapy in Vitiligo"

In addition, the following articles were published in the Society's journals last year:

"On the Interpretation of Preference Experiments in Illumination"
"Spectroradiometry Photometry"
"The Movement of People towards Light"
"Display Lighting Preferences."
"Further Studies on the Effects of Brightness on Attention Span in a Learning Environment"
"Lamps for Assessing Metamerism"
"Absolute Color Rendering"
"Validation of the Color Preference Index"
"The Safe Lighting of Art"
"Lamps – Their Effect on Social Interaction and Fatigue"

Three new ISCC members have been incorporated into the IES Delegation. They are: W. L. Heaps, A. Styne and L. Thorington. It is a pleasure to welcome them aboard.

## REPORT FROM THE INDUSTRIAL DESIGNERS SOCIETY OF AMERICA DELEGATES RAYMOND SPILMAN, CHAIRMAN

There will not be a full report from the IDSA delegation for 1974-75 due to a change in national officers and an unresolved filling of an IDSA delegate position.

We have not had a report from the IDSA delegation to their chairman over this past year except for Alex Styne, who is chairman of Problem 33: The Human Response to Color. (See the report from Problems Subcommittee 33 in this issue.) He turned in a magnificent year once again, and has been the only consistently active member of IDSA.

We hope that this coming year will find us better organized into a more smoothly running delegation and we can increase our support to the Inter-Society Color Council.

## REPORT FROM THE INSTITUTE OF FOOD TECHNOLOGISTS DELEGATES, ANGELA C. LITTLE, CHAIRMAN

In 1974, John Yeatman resigned as chairman of the IFT Delegation to the Inter-Society Color Council and Angela Little was asked to assume that responsibility.

We regret to report that no committee meetings have been held during the past year.

Two members of the delegation have recently published reports on the interpretation and application of Hue Angle in Hunter Space to problems in colorimetry of foods. (cf. Journal Food Science, Vol. 40, March-April 1975: "Off on a Tangent," by A. C. Little, p. 410, and "Origin of $Tan^{-1} a/b$," by F. J. Francis, p. 412.) A continuing series of articles on general and specific questions of color science of particular interest to food scientists and technologists written by members of the IFT Delegation to ISCC seems appropriate. We have therefore recommended to the IFT Council and Executive Committee that such an activity be considered a major immediate objective of the delegation and, to insure that such a program be carried out, that IFT provide space without cost in either Food Technology or Journal Food Science. If this suggestion is met with favor, the entire delegation will be contacted for ideas and suggestions as to the best way to proceed and a detailed proposal will be prepared.

## REPORT FROM THE MANUFACTURERS COUNCIL ON COLOR AND APPEARANCE DELEGATES LEROY D. NOYES, CHAIRMAN

During the past year the MCCA continued to expand its relationship with NBS when an agreement was signed to establish a Research Associate position at NBS in conjunction with the NBS-MCCA Collaborative Reference Program. The MCCA also sponsored its 2nd Annual Participants Conference as part of this program.

Agreement was reached with the ISCC for the MCCA to be responsible for the exhibit portion of the next International Color Congress (AIC) to be held in 1977 in Troy, N.Y. Also in concert with the ISCC, negotiations were carried on with Wiley and Sons Publishers, which has culminated in a new technical journal to be issued in January of 1976.

The MCCA and the SPE will sponsor a RETEC in Cincinnati on September 23-24, 1975, with the MCCA providing some of the speakers and hosting a small exhibit.

Work was undertaken between the gloss manufacturers and NBS to determine calibration errors on black glass master gloss standards and to determine the feasability of developing etched glass standards to replace porcelain and ceramic intermediate standards currently in use.

MCCA helped NBS and the Department of Justice to develop a Standard Reference Collection of Automotive Paint Colors. The first sets were distributed to over 190 crime labs throughout the country and will be used primarily in "hit and run" cases.

## REPORT FROM THE NATIONAL ASSOCIATION OF PRINTING INK MANUFACTURERS DELEGATES, DAVID KIRKPATRICK, CHAIRMAN

Mr. David M. Kirkpatrick, Borden Chemical Division, Camden, New Jersey, has been designated Chairman of the NAPIM Delegation.

The NAPIM Color Standards Committee has assisted in the preparation of the AAAA/NPA recommended standards for offset inks to be published monthly. This will revise early edition covering letter press inks.

The computer color matching program cited in earlier reports has been licensed to Pantone for commercialization.

## REPORT FROM THE NATIONAL PAINT AND COATINGS ASSOCIATION DELEGATES, EVERETT R. CALL, CHAIRMAN

As in the past, this Association has not been involved specifically in projects related to color.

Our industry is somewhat unique in that it depends upon color as much as any industry, but that it is the opinion of the Board of Directors of the Association that color holds a very unique place and that it is one of the few remaining personalized selling tools that a company has. For that reason, there is no effort to develop an industry color program.

On the other hand, we are very much interested in new concepts and techniques in the color field. We did have Ruth Johnson as a speaker at our Annual Meeting last October. But at this moment, the delegation to ISCC from the National Paint and Coatings Association is limited to general discussions when we do get together.

## REPORT FROM THE OPTICAL SOCIETY DELEGATES, FRANC GRUM, CHAIRMAN

The 1974 Spring and 1974 Fall Meetings of the Optical Society of America were held in Wasington, D. C. in April 1974 and in Houston, Texas on October 15-18, 1974.

The Spring Meeting was a joint meeting with the American Physical Society. There were no papers given on color at that meeting; however, M. Francon of the Faculte des Sciences in Paris, France presented an excellent invited paper entitled: "What is Light?" The 1974 Adolf Lomb Medal was presented to James M. Forsyth and the 1974 David Richardson Medal to Roderic M. Scott.

The Houston meeting of the Optical Society of America (Oct. 15-18, 1974) provided a very full and lively schedule of activities related to color and physiological optics. A feature of the meeting was a series of special events arranged by members of the University of Texas at Houston, most especially Harry Sperling, the Director of the Sensory Sciences Center. A kickoff symposium on Problems in Ophthalmology, though not concerned with color, contained an interesting discussion by Aran Safir on a seldom discussed topic: the interface between the academic and commercial world. Safir indicated that a society of academic instrument inventors is being formed.

The Ives Medal, highest award of the Society, went to David L. MacAdam who followed with a profusely illustrated talk on the history of ideas about trichromatic vision. Yves LeGrand of Paris, winner of the Tillyer Medal in vision, gave a talk in which he beat the drum for fundamental research in vision. He indicated that such research is in a state of decline in Europe, with professorships in vision difficult to find in the universities, and departments of photometry and colorimetry in government labs tending to fade out. Professor LeGrand, who cautioned against overselling the usefulness of fundamental research, stated that curiosity is by far the best motivation for such research, much of which will be applied anyway in 20 or 30 years. In a philosophical mood, LeGrand concluded by saying that much more stress should be placed than heretofore on the quality of life, and that color has an important role to play in this.

Peter K. Kaiser followed with a paper on "Problems with Heterochromatic Photometry," co-authored by JoAnn Smith Kinney. He discussed work that the CIE is beginning to do, which will hopefully put the prediction of brightness on a more rational basis. As things stand, neither luminance measures, based on the standard observer, nor flicker photometry based on any particular observer, will correctly predict brightness. (In a contributed paper, David Palmer of England brought the audience up to date with respect to some recent developments in mesopic photometry, where the CIE also has a heavy involvement.)

The contributed session on color contained a dozen papers of great variety, including two papers involving monkeys and one concerned with color vision in the pigeon. These and other contributed and invited papers on color were discussed later in a lively technical group meeting. These technical sessions, which allow for very extended discussion of detailed issues, are a very worthwhile feature of OSA meetings.

A number of us spent a fascinating evening at the Sensory Sciences Center, where no less than nine rooms of active research were on display. Of particular interest to those interested in color is the work on the damaging effects of moderate and intense light exposure on retinal structure. The facilities of the center allow monkeys to be raised in a highly controlled light environment, followed by very precise psychophysical measurement of their spectral sensitivity, finally followed up by histology. A topic of current interest is the selective destruction of the blue-sensitive cones, a technique that promises soon to reveal the distribution of these receptors in the retinal mosaic and add much to our understanding of these receptors, whose behavior is always found to be peculiar when compared to that of the red-and green-sensitive cones. At a symposium devoted to the long-term effects of intense light on vision, Sperling reported on this work; also featured were papers by David Palmer on damage to pigeon eyes, and by Mark T'so on injury to the monkey and human macula produced by exposure to the indirect ophthalmoscope.

The meeting also contained many other papers on vision not related to color, including four papers organized as a symposium on photoreceptor membranes. The only disappointing feature of the Houston meeting, for those interested in vision and color, was that the audience was not larger. For those who missed it, the full program has been published in the October issue of the Journal of the Optical Society of America.

In 1975 the Society began its new format for the Spring Meetings. This year's Spring Conference was held March 19-21st and consisted of four topical meetings that were held in parallel. The subjects were: Remote Sensing of the Atmosphere; Optical Displays; Applications of Laser Spectroscopy; and Optical Fabrication and Testing. The indications are that the former meeting format is favored over the present.

The OSA Annual Fall Meeting will be held in Boston, Massachusetts from October 21-24, 1975. During that OSA Meeting, the Chairmen of the four ISCC Problems Subcommittee Groups will review with the OSA Color Group the ISCC Color Problem Activities.

The OSA delegation to ISCC met during the Annual Meeting of the OSA in Houston. The delegation raised the question at that Meeting, "Why does the ISCC always

meet in New York City?" It was decided to suggest that the ISCC Meeting be somewhere else than in New York. Also discussed were possible future candidates for the OSA delegation. The delegation will next meet in Boston during the OSA Annual Meeting.

**Papers indexed under color, color measurement, and color vision published in the Journal of the Optical Society of America during 1974**

A. Valberg, "Color Induction: Dependence on Luminance, Purity and Dominant or Complementary Wavelength of Inducing Stimuli," *J. Opt. Soc. Am. 64,* 1531 (1974).

P. R. Belanger, "Linear-Programming Approach to Color-Recipe Formulations," *J. Opt. Soc. Am. 64,* 1541 (1974).

P. M. Tannenbaum, "Analytic Approximation for the CIE 1964 Ten-Degree Field Color-Matching Functions," *J. Opt. Soc. Am. 64,* 89 (1974).

M.L.F. de Mattiello and M. Guirao, "Direct Estimation of Lightness of Surface Colors," *J. Opt. Soc. Am. 64,* 206 (1974).

F. Grum, R. F. Witzel and P. Stensby, "Evaluation of Whiteness," *J. Opt. Soc. Am. 64,* 210 (1974).

H. Sobagaki, T. Yamanaka, K. Takakama and Y. Nayatani, "Chromatic-Adaptation Study by Subjective-Estimation Method," *J. Opt. Soc. Am. 64,* 743 (1974).

M. R. Pointer, "Color Discrimination as a Function of Observers Adaptation," *J. Opt. Soc. Am. 64,* 750 (1974).

F. Ward and B. W. Tansley, "Increment Thresholds Across Minimally Distinct Borders," *J. Opt. Soc. Am. 64,* 760 (1974).

R. L. Hilz, G. Huppmann, and C. R. Cavonius, "Influence of Luminance Contrast on Hue Discrimination," *J. Opt. Soc. Am. 64,* 763 (1974).

D. H. Kelly, "Spatio-Temporary Frequency Characteristics of Color-Vision Metamerisms," *J. Opt. Soc. Am. 64,* 983 (1974).

E. Allen, "Basic Equations Used in Computer Color Matching. II. Tristimulus Match, Two-Constant Theory," *J. Opt. Soc. Am. 64,* 991 (1974).

D. L. MacAdam, "Uniform Color Scales," *J. Opt. Soc. Am. 64,* 1691 (1974).

P. K. Kaiser, J. P. Comerford and P. A. Biggin, "Least Purity Difference Perceptible Near Spectrum Locus as a Function of Wavelength," Abstract in: *J. Opt. Soc. Am. 64,* 1386 (1974).

A. N. Netravali, "Model for Chromatic Adaptation," Abstract in: *J. Opt. Soc. Am. 64,* 1386 (1974).

## REPORT FROM THE SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS DELEGATES, WILLIAM T. WINTRINGHAM, CHAIRMAN

Activities within the Society of Motion Picture and Television Engineers that may be of interest to the Inter-Society Color Council were the presentation of papers at its Technical Conferences, the publication of papers in the JOURNAL OF THE SMPTE, and the publication of SMPTE Recommended Practices, all on the subject of color and color reproduction.

**Papers Presented at the 116th SMPTE Technical Conference**

L. E. DeMarsh, "Telecine Colorimetry 1 – A Colorimetric Comparison of Film and Television."

L. E. DeMarsh and C. B. Neal, "Derivation of a Correction Matrix for Nonstandard Color Television Display Phosphors."

Fritz Spiess, "Suggestions for a New Standardized Three-Dimensional Test Chart for Color Films."

**Papers Published in the JOURNAL OF THE SMPTE**

Uwe-Jens Amlong, Jurgen Heller, Lutz Grambow and Hans-Raimar Pohlenz, "Lighting for Color Television With a System of Metal Halide Lamps," *83,* 26-30, (Jan. 1974).

L. E. DeMarsh, "Colorimetric Standards in U. S. Color Television – Subcommittee Report on System Colorimetry," *83,* 1-5, (Jan. 1974).

Albert Kaufman and Dietrich Sauter, "Problems of Lighting in Color Television Outside Broadcasts," *83,* 20-26, (Jan. 1974).

D. J. M. Kitson, J. R. Sanders, R. H. Spencer and D. T. Wright, "Preprogrammed and Automatic Color Correction for Telecine," *83,* 633-639, (Aug. 1974).

K. G. Lisk and C. H. Evans, "Color Television Film Recording From a Trinoscope," *83,* 719-721, (Sept. 1974).

M. A. Stern, A. Kaiser, H. W. Mahler and E. DiBenedetto, "Low-Light-Level Image-Amplifying Device With Full Color Capability," *83,* 185-189, (Mar. 1974).

**Recommended Practices Published in the JOURNAL OF THE SMPTE**

SMPTE Recommended Practice RP41-1974, "Evaluation of Color Films Intended for Television," *83,* 906-907, (Nov. 1974).

SMPTE Recommended Practice RP52-1974, "Evaluation of Screen Luminance and Color in Review Rooms Used for Color Television Films," *83,* 907-908, (Nov. 1974).

Proposed SMPTE Recommended Practice RP59 –, "Color and Luminance of Review Room Screens for Viewing Motion-Picture Materials Intended for Slides or Film Strips," *83*, 908, (Nov. 1974).

## REPORT FROM THE SOCIETY OF PHOTOGRAPHIC SCIENTISTS & ENGINEERS DELEGATES, CALVIN S. McCAMY, CHAIRMAN

The Society of Photographic Scientists and Engineers held a symposium on Advances in Applied Photographic Processing in Washington, October 23-26, 1974. There were a number of papers on the technology of color photographic systems. Color measurement in the photographic processing field is generally accomplished by densitometry. C. S. McCamy gave a review of the history of densitometry. W. F. Voglesong discussed color densitometry and its relationship to colorimetry and visual judgments. H. Starbird reviewed the problems of broadcasting color television based on color film originals.

In association with the Electro-Optical Systems Design Conference in San Francisco, November 6, 1974, the Society presented a tutorial seminar on Color Measurement: Instrumentation and Theory. C. S. McCamy gave a review of principles of colorimetry. Franc Grum discussed spectrophotometry for colorimetry. D. L. MacAdam reviewed color difference measurement. L. W. Richards went through the theory of the physics of colored layers. Hugh Davidson described the problems of colorant formulation. R. W. Engstrom reviewed photoelectric sensors for colorimetry. C. W. Jerome described commercially available illuminants of interest in color appraisal. C. S. McCamy described color measurement in photography and printing.

At the Annual Conference of the Society of Photographic Scientists and Engineers in Denver, May 11-16, 1975, there was a session on colorimetry. J. H. Hansen described a three-point technique for color analysis of imagery. W. Zimmer described a digital method of colorimetricimage processing. E. J. Breneman reviewed the visual aspects of color reproduction. W. F. Voglesong addressed the question, "When is a Densitometer Also a Colorimeter?" F. Grum reviewed spectrophotometry for colorimetry. N. Ohta discussed the theory of color reproduction in reflection color prints.

The Society of Photographic Scientists and Engineers has, for many years, published "Photographic Science and Engineering." In the Fall of 1975, the Society will introduce a new journal entitled, "Journal of Applied Photographic Engineering," to be published on a quarterly basis. A brochure on information for contributors is available from the editor of the journal, Joel Gray, Radiological Research Laboratories, Medical Sciences Building, University of Toronto, Toronto, Ontario M5S 1A8, Canada. He may be called at (416) 928-6747 or (416) 781-3124.

The Society of Photographic Scientists and Engineers has established the Raymond Davis Scholarship Fund as a memorial to the first President of our Society, who achieved eminence as Chief of the Photographic Technology Section of the National Bureau of Standards. Mr. Davis is best known to scientists in the field of color for his development of liquid filters for the simulation of daylight in the laboratory and for his introduction of the concept of correlated color temperature. The Raymond Davis Scholarship Fund will provide scholarships to people studying photographic science and engineering. Contributions to this fund should be made out to the Raymond Davis Scholarship Fund and should be sent to Mr. Robert Wood, Executive Director, Society of Photographic Scientists & Engineers, 1330 Massachusetts Avenue, NW, Washington, DC 20005.

## REPORT FROM THE SOCIETY OF PLASTICS ENGINEERS DELEGATES THOMAS G. WEBBER, CHAIRMAN

The Color and Appearance Division (CAD) of SPE sponsored four papers on coloring plastics at the Annual Technical Conference in San Francisco, May 14, 1974.

A Regional Technical Conference was held in Cleveland on October 7 and 8. Twelve color papers were presented, ten of them by ISCC members.

A color seminar in Chicago was attended by twenty-two. The CAD *Newsletter* was published three times.

Reversing a previous decision, we agreed to participate in ISCC Problem 6, a survey of color terms. A proposal to the Problems Committee suggests that ISCC set up color acceptability limits. It is thought that these will be useful for many industries.

The CAD Board of Directors is backing the writing of a book on coloring plastics with Thomas G. Webber as editor.

*Plastics Engineering* published one paper on color, "More fluorescents to brighten your products."

This delegation mourns the loss of Robert S. Foster, who died January 1.

## REPORT FROM THE TECHNICAL ASSOCIATION OF THE GRAPHIC ARTS DELEGATES, MILES F. SOUTHWORTH, CHAIRMAN

The following report of the TAGA color committee reports on TAGA discussions on color at a joint meeting of its Color and Ink Committees in Montreal, May, 1975:

Glenn Davidson reported on the use of the AAAA/MPA color bars as a means to help standardize color printing. Those bars are furnished by PERI without densitometer numbers on them. They are intended to indicate to any printer what level of ink film thickness is to be achieved.

Glenn also discussed a method of controlling a production press by printing an overprinted screen tint of the three process colors in dot percentages aimed at producing a neutral gray. This was printed next to a gray tint of equal density produced with only black ink. A visual evaluation of the two tints gives the user a good indication of what is happening in the printing by any hue change or visual density change in the overprint tint. This method is more sensitive to the printing conditions than the evaluation of a solid of each process color. Several members of the committee agreed with this approach.

A Subcommittee undertaking a survey of existing standard ink sets was not ready to report yet on its findings. That committee consists of the following members:

Glenn Davidson, Chairman, PERI
Frank Preucil, Consultant
Milt Pearson, Rochester Institute of Technology (RIT)
George Leyda, 3M
Dick Maurer, Kodak

Miles Southworth reported on the work of the Gravure Technical Association's Densitometer Committee. That committee will print each type of gravure process ink on its appropriate paper for the purpose of making a densitometer color reference check plaque. Each reference will be read on a densitometer that is part of a group of reference densitometers housed at RIT. Each densitometer reference will be issued once every three months and will be issued with those numbers assigned by the reference densitometer. The purpose of this referencing technique is to help gravure densitometer users to be able to improve densitometer interinstrument agreement on gravure ink. The Southworth Densitometer Study (GTA Bulletin 1973) was the basis for this technique. Further data on its effect will be available only after it is tried. Anyone printing with gravure inks who wants to try this method of densitometer calibration can obtain the Densitometer References from either Gravure Technical Association or from GARC at RIT for a $30.00 yearly subscription.

Dick Maurer of Kodak gave a TAGA paper at the afternoon session that prompted quite a bit of discussion. We had hoped that we could discuss it further, but, due to the late hour, we adjourned after 11:00 p.m.

The following TAGA papers dealing with color were given at the May 1975 meeting in Toronto:

"The Ink Transfer in Rotogravure", Dr. W. Kunz, Burda GmBH, Germany, ERA (European Rotogravure Association) Representative

"Proposed Symbols for Density Measurement in the Graphic Arts," Milton Pearson, RIT, Rochester, N.Y.

"Technical Aspects of Du Pont Cronatone Color Reproduction System as Displayed at Print '74," Karl L. Thaxton, E. I. Du Pont de Nemours & Co.

"Instrumentation of a Digital Computer-Scanner for Color Separation," N. I. Korman, Ventures Research and Development Group, Princeton, N.J.

## REPORT FROM THE TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY DELEGATES, ROLLAND A. AUBEY, CHAIRMAN

As Chairman of the TAPPI Optical Methods Committee I herewith submit a brief annual report of the activities of TAPPI as it relates to the Inter-Society Color Council.

The Optical Methods Committee is a part of the Testing Division of TAPPI and is responsible for the development of methods for evaluating the appearance properties of raw materials or products of pulp and paper industries. Included in its membership are representatives of pulp and paper manufacturers, raw materials manufacturers, including dyestuffs and pigments, instrument manufacturers, governmental agencies, and academic institutions. One of the major activities of the committee is to review at five-year intervals all methods under its jurisdiction to make certain that they reflect the current state of the art. Metric units are being utilized where applicable, and precision statements are being developed.

The methods examined during the past year include opacity of paper, brightness of clay and mineral pigments, as well as pulp, paper, and paperboard, by both the directional and the diffuse reflectance methods, illuminants for visually grading and color matching, and gloss measurements. An in-depth study of color difference from instrumental methods has been made and will be published in a manner yet to be determined.

Future activities include, in addition to the continuing review of existing testing methods, a study of on-line testing for optical properties and series of technical papers to be presented at a yet to be determined meeting relating to optical measuring methods and problems.

## THE SELF-STUDY MANUAL ON OPTICAL RADIATION MEASUREMENTS – A PROGRESS REPORT

A preliminary draft of the first three chapters of the Self-Study Manual has been completed and circulated for comment to all members of the Optical Radiation Section, a few others at NBS, and the CORM Coordinators.

In spite of a wide diversity of opinions and suggestions, some of them even completely contradictory, this exercise has been very helpful in arriving at judgments about the difficult questions of content, level of treatment, style of presentation, etc. We shall briefly summarize here some of the most important points forming the basis on which we are going ahead with this project.

Although we will still do as much as we can to simplify things for the benefit of less sophisticated readers, we have decided that we will aim primarily at readers with at least a bachelor's degree in science or engineering. One reason for this is that it is very difficult, if not impossible, to deal adequately with radiometry without making fairly extensive use of both differential and integral calculus of more than one variable; we must make use of multiple integrals. For those who may be a bit "rusty," we shall try to go back to first principles the first time we introduce each new mathematical concept or procedure beyond those of simple algebra and trigonometry, particularly when this may also throw additional light on the physical and geometrical relationships involved. Where it seems inappropriate to do this in the text, we shall cover these elementary mathematical considerations in an appendix.

The guiding principle in writing the manual will be to try to do what will be most effective in improving the accuracy of radiometric measurements throughout the U.S.A. We estimate that, at present, the best available accuracy is seldom better than a few per cent, even when much better precision (repeatability) can be demonstrated. In fact, we still have not done better than this with some of the optical radiation standards issued at NBS. We are striving, however, to make one per cent accuracy achievable by careful workers everywhere, and the SSM is an essential part of that program.

A broad outline for the Self-Study Manual is as follows.

Book I Fundamentals

*Part I. Concepts*

Step by step build up of the *measurement* equation in terms of the radiation parameters, the properties and characteristics of sources, optical paths, and receivers, and instrumental and environmental parameters. Discussions of actual devices and measurement situations are mainly for purposes of illustrating concepts and basic principles.

*Part II. Instrumentation*

Descriptions, properties, and other pertinent data concerning typical instruments, devices, and components involved in common measurement situations. Included are chapters dealing with sources, detectors, filters, atmospheric paths, choppers (and other types of modulators), prisms and gratings, polarizers, radiometers, photometers, spectroradiometers, spectrophotometers, etc.

*Part III. Applications*

Measurement techniques for achieving a desired level of, or improving, the accuracy of a measurement. This is where we deal with real measurements in the real world.

Book II Advanced Treatment

Chapters reviewing all of the fundamentals in much more rigorous detail than in Book I. A parallel organization into three corresponding parts is an obvious possibility, but the details have not been studied at all and need not be settled now since Book I is clearly the first priority. It is here in Book II that we hope to make it possible for many well-qualified readers to achieve, or even advance, the current state of the art in optical radiation measurements.

Titles of the first three chapters (of Part I) that now exist in draft form are:

Chapter 1. Introduction
Chapter 2. Distribution of Optical Radiation with Respect to Position and Direction
Chapter 3. Distribution of Optical Radiation with Respect to Wavelength

Our immediate course of action will be to make revisions in the draft texts of these first three chapters, based on the detailed criticisms and comments received. About another month of effort will be devoted to this, so the completed text should be ready for editorial review early in March. From past experience, publication as an NBS Technical Note will require about eight weeks more, so we estimate that these chapters will be out by June. Meanwhile, we shall continue to prepare additional chapters, which will also be published in Technical Notes as they are completed. We are eager to make this Manual as widely effective as possible and we repeat our earlier invitation to you to submit suggestions, comments, or criticisms at any time.

Reprinted from *Optical Radiation News,* National Bureau of Standards, No. 7, January 1975.

SPECTROPHOTOMETRY MAILING LIST BEGUN

In order to provide a coverage of NBS activities in transmittance, reflectance, and fluorescence for those with special interests in these measurements, the spectrophotometry group of the Optical Radiation Section is periodically mailing out announcements and abstracts of publications of spectrophotometry, appearance measurements, and related topics by staff members from all parts of NBS. Each mailing will be accompanied by a convenient return mail card used to obtain copies of publications for which we have a supply for distribution. We will continue to report the principal activities in spectrophotometry in the Optical Radiation News in order to keep the main body of our readers up to date, but if you have a very special interest in spectrophotometry and wish to keep a close eye on events at NBS in this field, send your request to be put on the spectrophotometry mailing list to:

Dr. William H. Venable, Jr., Room A317, Metrology Building, National Bureau of Standards, Washington, D.C. 20234.

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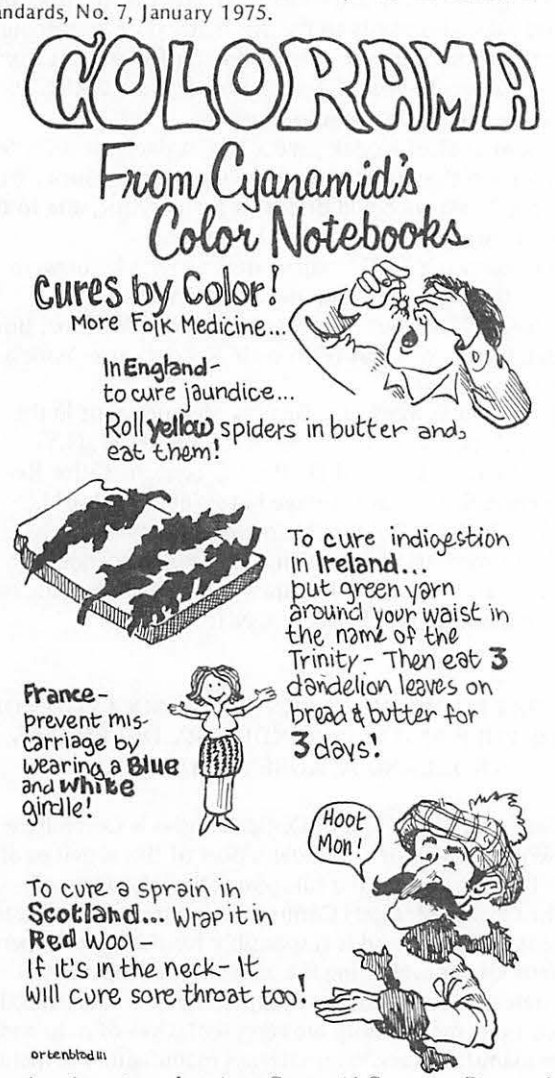


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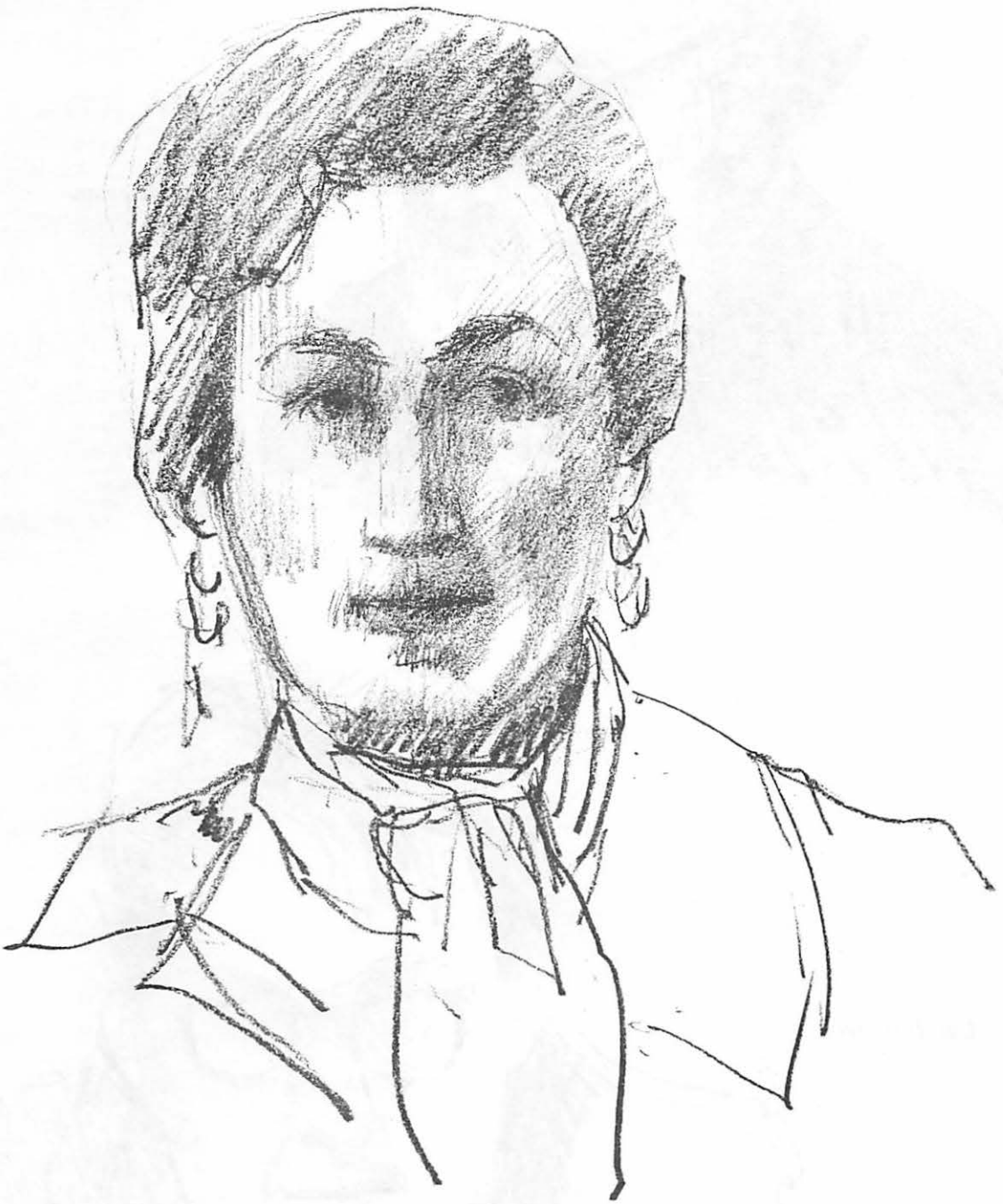
*Sketches of Annual Meeting*

*by*

*Joy Turner Luke*



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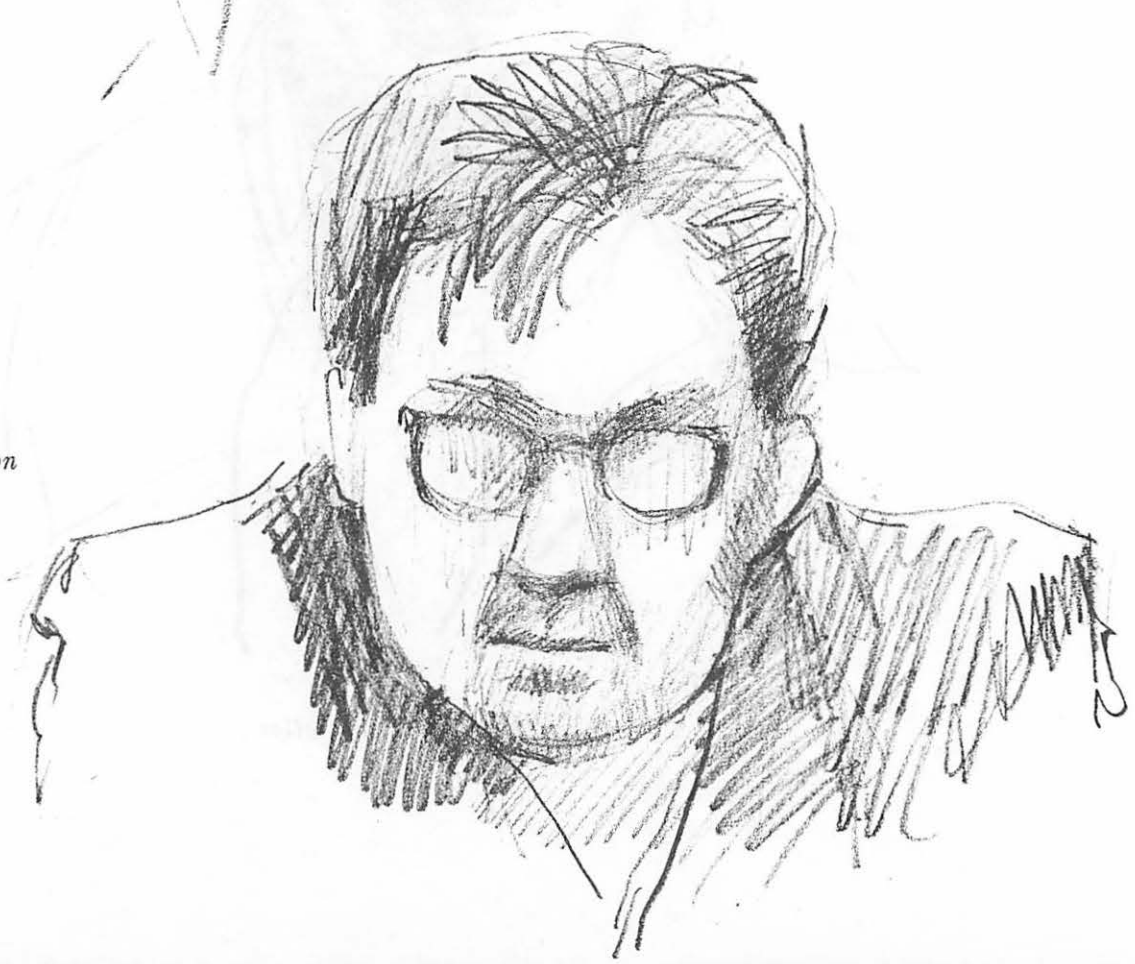

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## NOTES

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2. The Council re-affirms its community of interest and cooperation with the Munsell Color Foundation, a tax exempt organization set up to acquire and use its funds to further aims and purposes very similar to those of the ISCC: to further the scientific and practical advancement of color knowledge relating to standardization, nomenclature and specification of color, and to promote the practical application of these results to color problems arising in science, art and industry. The Council recommends and encourages contributions for the advancement of these purposes to the Munsell Color Foundation. For information, write S.L. Davidson, NL Industries, P.O. Box 700, Hightstown, N.J. 08520.

3. The Council promotes color education by its association with the Cooper-Hewitt Museum. It recommends that intended gifts of historical significance, past or present, related to the artistic or scientific usage of color be brought to the attention of Christian Rohlfing, Cooper-Hewitt Museum, 9 East 90th Street, New York, New York 10028.