des Polymers, der durch jedes einzelne einfallende Photon geformt wird, und durch die Verbesserung der Sichtbarkeit des erhaltenen Polymers. Die beiden wesentlichen Bestandteile eines Photopolymer-Systems sind: die Monomere und das Photokatalysator-System, das die Polymerisation als Reaktion auf die Absorption von Licht einleitet. Diese Reaktionskomponenten befinden sich in Kombination in einem Lösungsmittel, Gel oder anderem geeigneten Medium, zusammen mit anderen Komponenten, die für spezifische Anwendungen des Systems notwendig sein können. Es wird die Wirkung jeder Komponente sowie auch der Einfluss von Inhibitoren auf die Menge des gebildeten Polymers erläutert. Nachdem sich das Photopolymer-Bild geformt hat, muss es für die direkte Betrachtung oder Vorführung präpariert werden; dies besteht darin, dass man die unexponierten Stellen der Komposition unempfindlich gegen Licht macht und eventuell den Kontrast zwischen exponierten und unexponierten Flächen verstärkt. Eine allgemeine photographische Anwendung scheint theoretisch möglich zu sein, doch ist noch eine erhebliche weitere Entwicklungsarbeit erforderlich.

Photographische Gelatine und synthetische Kolloïde zur Anfertigung von Emulsionen - eine didaktische Abhandlung

THOMAS T. HILL [1185]

Das natürliche Kolloïd Gelatine ist als hauptsächliches Dispersionsmittel der Silberhalogenide zur Auftragung auf die verschiedenen Film- und Papierunterlagen seit beinahe hundert Jahren verwendet worden. Die meisten Benutzer photographischer Materialien sehen die Gelatine lediglich als physikalischen Träger der lichtempfindlichen Silbersalze an, und so gesehen, erscheint es einfach, sie durch ein reineres synthetisches Material ersetzen zu wollen, das besser voraussagbare Eigenschaften hat. Nichtsdestoweniger besitzt die Gelatine mehr als ein Dutzend von Funktionen spezifischer Natur, deren einige auch heute noch nicht voll verstanden werden. Obwohl die photographische Gelatine ein Gemisch vieler verschiedener wesentlicher Bestandteile ist, kann sie dennoch mit leidlicher Gleichmässigkeit und Reinheit hergestellt werden; die chemische Industrie, hingegen, hat es schwer, ein synthetisches Kolloïd hervorzubringen, das so leicht reproduzierbar ist und einen so geringen Gehalt an photographisch aktiven Verunreinigungen aufweist, wie die natürliche Gelatine. Die wenigen Ersatzmittel, die auf den Markt kamen, als photographisch sensibilisiertes Material, fanden nur beschränkte Anwendung und, in der Mehrzahl der Fälle, mussten sie von der Produktion zurückgezogen werden, als Folge unerwarteter Mängel. In den letzten Jahren wurden mehrere internationale Sitzungen abgehalten, deren Thema eine etwaige Verbesserung der photographischen Gelatine und der Versuch der Aufstellung von Standard-Verfahren für ihre Untersuchung war. (*Üb. Pablo Weinschenk-Tabernero*)

Einiges über die den Bildaufnahmeröhren für das Fernsehen innewohnenden Probleme

WALTER E. TURK [1189]

Die Ankunft des Farbfernsehens hat eine neue Anforderung an die Aufnahmeröhren gestellt, nämlich die ihrer vollkommenen gegenseitigen Angleichungsfähigkeit, speziell bezüglich der Farbe. Es werden die verschiedenen Betriebsparameter der Röhren erörtert, sowie auch deren individuelle Beiträge zur Erhaltung von annehmbaren - zum Unterschied von fehlerfreien - Farbbildern. Verschiedene Typen von Röhren werden miteinander verglichen und einige Ansichten bezüglich der Erfüllung dieser strengen Anforderungen durch dieselben werden ausgeführt.

Wolfram-Halogen-Lampen zum Ersatz der Standard-Glühlampen

T. M. LEMONS und R. E. LEVIN [1194]

Die kürzlich entwickelten Wolfram-Halogen-Lampen sind austauschbar mit den Standard-Glühlampen für normale Theater-Leuchtkörper. Sie ergeben nicht nur die erwünschten Leistungs-Charakteristiken, sondern verbessern sogar einige derselben. Es werden Ergebnisse mit Bezug auf die Wirksamkeit dieser Wolfram-Halogen-Lampen gegeben, die mit einer weiten Reihe von Lampentypen für Studio und Theater gleichwertig sind. Solch sachdienliche Faktoren wie die photometrische Leistung, Nutzwerte und Wirtschaftlichkeit im Betriebe werden erläutert.

Ein stereophonisches Ton-System für 16mm-Film

STEPHEN A. KALLIS jun. [1199]

Es wird eine Methode dargelegt, die es ermöglicht Stereophonie-Ton mit zwei oder drei Kanälen auf 16mm-Film zu erhalten, ohne dass die Bildbreite vermindert wird. Zwei grundsätzliche Arten der Aufnahme und Wiedergabe von stereophonischen Tonspuren werden besprochen. Probleme, die durch das Auftreten von Tonunterbrechungen zufolge des Filmschnittes entstehen, werden aufgeführt und Lösungen für dieselben werden dargeboten.

Ad Hoc Color Television Study Committee Formed

By WILLIAM T. WINTRINGHAM,
SMPTE Engineering Vice-President

FOR SOME TIME, particularly since the upsurge in color programing and the increased consumer acceptance of color television receivers, there have been reports of a lack of color uniformity as observed on home television receivers. The comments have been made, not only informally in industry meetings, but also, occasionally, in newspapers and trade journals. Primarily, the complaints have been directed toward differences observed in chroma level and hue among stations serving the same city, as well as differences observed in adjacent program segments on any one station. The extent to which the differences result from irregularities in program origination, network transmission or the home antenna and receiver is a moot subject.

Recognizing the importance and industry-scope of the problems, the Engineering Vice-President of Society of Motion Picture and Television Engineers called a meeting of the Joint Committe on Inter-Society Coordination (JCIC)* on June 26, 1968, at Society headquarters.

The Society was represented by K. B. Benson, Member of the Board of Governors; R. S. O'Brien, Vice-President for Television Affairs; R. E. Putman, Chairman of the Engineering Committee on Television; W. T. Wintringham, Engineering Vice-President; and A. E. Alden, Staff Engineer.

At the meeting, it was brought out in discussion that lack of uniformity of color on a home receiver could be caused by variability in each and every one of the many links in the long and complicated chain from the original scene through cameras, recording and reproducing equipment, transmitters and receivers. Some variations might be blamed on unstable equipment, some on inadequate measuring methods, some on too generous tolerances and possibly some on the inadequacy of existing standards. It was evident that the first step toward solving the problem would be an objective study of the whole color television broadcasting system.

Accordingly, the JCIC elected the SMPTE to form and administer an Ad Hoc Color Television Study Committee to work on this problem. The charge to the Committee is to examine the entire color television system from the original scene through all equipment to the picture viewed in the home; to determine the origin of significant deviations in the receiver picture; and then to allocate to appropriate existing organizations specific questions for resolution.

* The Steering Committee of *I-R-S*, was formed in 1950 by the *I*RE, and *R*MA, and the *S*MPTE to coordinate standardizing activities in the field of television. NARTB was invited to join in 1951 and the name of the committee changed to JCIC. The present members are the Electronic Industries Association (EIA), the Institute of Electrical and Electronics Engineers (IEEE), the National Association of Broadcasters (NAB), and the Society of Motion Picture and Television Engineers (SMPTE).

The responsibility was accepted on behalf of the SMPTE by Engineering Vice-President Wintringham.

Subsequent to the meeting, K. B. Benson accepted appointment as Chairman of this Ad Hoc Committee. Invitations to appoint members to the Committee have gone to the Electronic Industries Association, the Groups on Broadcasting and on Broadcast and Television Receivers of the Institute of Electrical and Electronics Engineers, the National Association of Broadcasters, and to the SMPTE Engineering Committees on Color, on Television, and on Video-Tape Recording. These four organizations are represented in the JCIC. In addition, invitations have been extended to the National Cable Television Association, and to the American Telephone and Telegraph Company as a common carrier responsible for long distance networking of color television programs. The Broadcast Bureau and Chief Engineer's Office of the Federal Communications Commission have been invited to appoint observers to the Committee.

At the date this is written (September 4, 1968), each of these organizations has named its representatives to the Color Television Study Committee. (An organization meeting was held late in September and a preliminary plan-of-attack was established.) Interested persons are invited to send their suggestions to Chairman K. B. Benson at 23 Park Lane, South Norwalk, Conn. 06854.

Recent Agreements Reached by the Colorimetry Committee of the Commission Internationale de l'Eclairage

Technical Notes

Note: The following is published to acquaint SMPTE members with recent decisions reached by the CIE on new standard daylight sources, new colorimetric and other terms, and a variety of revised colorimetric formulas that have been found important in present-day color technology. They are reprinted here from the *Journal of the Optical Society of America*, pp. 290–292, February 1968, by permission granted by Dr. David L. MacAdam, Editor.—*Pierre Mertz*, Chairman, SMPTE Board of Editors.

Just prior to and during the 16th Session of the Commission Internationale de l'Eclairage (CIE) held in Washington in June, 1967, the Colorimetry Committee (E–1.3.1) met and discussed a variety of acute problems in color measurement with the purpose of arriving at improved or new colorimetric standards and procedures. Much of the preparatory work of the committee is conducted by correspondence and in informal meetings between the chairman and the members located in different countries. Official meetings of the whole committee (its present roster consists of 10 experts, 14 corresponding members, and 42 consultants from 24 countries) usually take place every two years and at these meetings formal agreements are reached by the members.

The most important agreements reached at the Washington meetings may be summarized as follows:

1. CIE Document on Colorimetry

The chairman of the committee will revise his second draft of a document on colorimetry in accordance with a number of amendments agreed upon at the meeting. This document will contain all official CIE recommendations on colorimetry. The wording of the original recommendations, some of which date back to 1931, will be altered to be consistent with modern nomenclature, and in some cases, the original recommendations will be modified in content to bring them into line with present-day thinking and practice. The document will constitute the official CIE recommendations in force as of the date of publication and will supersede all previous recommendations published in the CIE Proceedings. It is anticipated that in all subsequent CIE Proceedings an official statement will be made regarding the recommendations given in the document, and, if required, amendments will be announced at that time.

Present plans call for completion of the third draft of the CIE document in January, 1968. A formal vote by letter ballot will then be taken on the document and if the committee votes in favor of it we hope that it can be published (in English, French, and German) sometime early in 1969.

Among the various amendments to the document agreed upon by the committee, the following are of particular interest:

It was agreed to change the recommendation regarding the **Standard of Reflectance.** The new recommendation reads: The perfect diffuser is recommended as the reference standard. It supersedes magnesium oxide as of 1 January 1969.

It was further agreed to amend the recommendation regarding **Illuminating and Viewing Conditions.** It may be recalled that in 1931 the recommendation specified the "45°/normal" condition, but colorimetric practice since that time has required and used also other conditions, particularly some that involve an integrating sphere. The new recommendation takes account of the developments and states that the colorimetric specifications of opaque specimens should be given so as to correspond to one of the following illuminating and viewing conditions:

45°/normal;	normal/45°
diffuse/normal;	normal/diffuse.

The recommendation gives rather detailed specifications of the angles involved in each case and angular limitations imposed on the illuminating beams and beams selected for viewing.

The Committee also agreed to include in the document new tables of the color-matching functions $\bar{x}(\lambda)$, $\bar{y}(\lambda)$, $\bar{z}(\lambda)$ of the **CIE 1931 standard observer** from 360 to 830 nm at 1-nm intervals. These tables were developed by interpolating and extrapolating the original 1931 tables. Some smoothing was also done. However, when the new tables are cut back to four decimal figures they agree with the original 1931 tables in all but three instances. The three discrepancies were the result of smoothing but are insignificant for all practical purposes.

2. Degree of Metamerism

The committee agreed to set up a subcommittee dealing with the specific problem of assembling data to study metameric indices. Wyszecki was asked to draft a proposal for a working program.

3. Measurement and Specification of Whiteness

The committee agreed to take a serious look at this problem of long standing and has asked Dr. Anni Berger of Germany to prepare a report on the principles involved and to recommend two or three selected formulas for study.

4. Terminology

Mr. Tonnquist of Sweden was appointed chairman of a subcommittee to study the present status of colorimetric terminology and propose, if necessary, improved terms and definitions with the aim to have them available when the CIE decides to bring out the 4th edition of the CIE Vocabulary. The 3rd edition is to be published soon.

5. Correlated Color Temperature

Jointly with the CIE committee on Color Rendering (E–1.3.2) the Colorimetry Committee agreed to study the problem of evaluation of the correlated color temperature of light sources. A subcommittee was formed with Dr. Robertson of Canada as chairman: