films covering the last 20 years. His presentation included a demonstration comparing various film negatives printed on ECN-2 and then to color prints.

Hood provided a discussion of the causes of distortion followed by a demonstration of a method now under development of pre-distorting sound for film.

Gardiner described and demonstrated a technique he uses to produce holograms using incoherent light instead of a laser light. The holograms are three-dimensional and can be animated without the use of a projector and without requiring viewing devices. The meeting was preceded by a dinner at John's Meatmarket. Following the meeting staff members of Teknifilm provided a conducted tour of the firm's motion-picture laboratory. — C. Eugene Newcomer (Secretary-Treasurer), Pacific Northwest Bell, 1200 Third Ave., Rm 1101, Seattle, WA 98101.

PHILADELPHIA, 12 Nov. — The meeting was held in the Presidential Apartments with an attendance of 29 members and guests. A paper on "A Small Portable TV Camera for Electronic News Gathering" by A. H. Lind, J. J. Clark and L. J. Bazin was presented by Lind. The camera described in the paper is the portable RCA-TK 76 designed specifically for television newsgathering. Extensive effort in design details paid off in a small, completely self-contained camera with a low power drain but capable of providing a high-quality picture. It can be operated from a 12-V dc power source and no backpack is required. The package and camera system design required many interesting choices.

The second presentation on the program was by Stanley Miller of Roscoe Labs who presented a paper on "Light Controlling Materials for Cinematographers and Television Cameramen." The program was highlighted by a demonstration of the new HMI Daylight Light Sources. Mr. Miller pointed out that the HMI light source provides daylight color with great efficiency and little generation of heat, offering about five times the light output per watt compared with quartz lamps. He also demonstrated a number of filters for special lighting effects. — Charles G. Perry III (Secretary-Treasurer), Jerrold Electronics Corp., 200 Witmer Rd., Horsham, PA 19044.

PHILADELPHIA, 2 Dec. — The meeting was held at the Oscar H. Hirt, Inc. auditorium. The speakers were Robert M. Smith of Du Art Film Laboratories and David Phillips of Agfa-Gevaert. Smith, who is Treasurer of the SMPTE, described the present financial picture and explained the campaign to retire the mortgage on the SMPTE Headquarters building at Scarsdale. A number of questions, answered by Smith, showed considerable interest in the status of the Society and the benefits obtainable through the mortgage retirement plan.

Phillips presented a slide program on the new Gevaert II films. The improved technical characteristics of the Series II films over the Series I films where shown on slides. Phillips explained that the new films have improved grain and sharpness and improved sensitometric characteristics. The processing time has been considerably reduced and convenient prepackaged chemicals can be used. — Charles G. Perry III (Secretary-Treasurer), Jerrold Electronics Corp., 200 Witmer Rd., Horsham, PA 19044.

Book Reviews

Image Quality: A Comparison of Photographic and Television Systems

By Otto Schade, Sr. Published (1975) by Scientific Publications, RCA Laboratories, Princeton, NJ 08540. 84 pp. Illus. 12 × 9 in. Price (in the United States) $20, (elsewhere) $22.50.

Those who have been accustomed to read Otto Schade's many long papers on television image quality will be surprised by the amazingly small bulk of this summary of this work. The first thing that the reader notes (with the subtitle in mind) is that the author discusses television image quality starting at a point in its development after rough evaluations had indicated a commercial future — when a broadcasting career was already planned. The much earlier image quality considerations, even before Baird's crude London broadcasts, had given a chilling premonition of a need for what seemed a good deal in the way of excellence (and corresponding frequency bandwidth) for acceptable performance.

The rough judgments (as early as 1921) showed that the communications industry needed to forget thinking in kilohertz and start thinking on the then almost unthinkable megahertz bands. By what seems almost a miracle this was consummated in 30 years — with faltering steps in the first 20, and steady accomplishment in the following 10 years.

A second point to be realized was that imperfections in the broadcast link were not just "troubles," but that a small part of the permissible image degradation must be allotted this link for commercial application. Because of cost much simultaneous broadcasting would be needed by distant stations, and some of this degradation would have to come in long-haul links (or, as it has turned out, also in tape or film recorders). This is not really covered in the book, except, perhaps, as added random noise.

Finally, the author ends abruptly with monochrome television and films. One can of course be really baffled by the color problem here. There are two aspects to the matter. The first is to tonal rendering and color fidelity (particularly in view of the television being additive and the film subtractive color). The other is to resolution, in view of the complicated viewed image spot in the shadow-mask tube.

Dr. Schade is recognized as one who has given the most of his attention to the exact shaping of the image spot and scanning line cross-sectional structure to achieve the maximum possible quality for the television image, especially when considering it in comparison with the familiar film image. And of course both media have been undergoing improvement in the recent course of time. The illustrative photographs which Dr. Schade presents are of quite good quality, particularly insofar as resolution is concerned. However, as the author points out, neither evaluation gets an altogether fair hearing here, and the comparison is only illustrative and not crucial for the monochrome images.

The book will be of especial value to those interested in the details of how television image quality has been pushed to its highest capacity by a painstaking study of the fine details of the viewed image spot — especially the extent to which it has been egged on by a comparison with its obvious competitor, the motion-picture projection. This is naturally with the caution that the introduction of color shows that all is not really finished with the monochrome study by itself. — *Pierre Mertz*, Meadow Lakes 9-01, Hightstown, NJ 08520.

The Changing Dream

By Senator John V. Tunney. Published (1975) by Doubleday & Co., Inc., Garden City, NY 11530. 120 pp. 5½ × 8¼ in. Price $5.95.

The subtitle indicates the general nature of the book: "The Truth About the Material and Energy Crisis and What We Must Do to Resolve It"; and, of course, a U.S. Senator brings much that is special to the subject. Quite incidentally a reader learns efficiently if not painlessly how the Congress works, but also to be learned is how its operations are being improved and how it may come to work much better. For instance, we are beginning to see prospects for better control of federal budgeting and appropriations control.

Engineers and scientists particularly can relate to Senator Tunney's thesis because he relates to it through his service as Chairman of the Science and Technology Subcommittee. The movement in Congress to increase the relationship of science and technology to the working of government is encouraging, especially since the office of Science Advisor was abolished by the President in 1973.

This is a straightforward, solid, concise text, without pictures, subheadings or footnotes. There is no Doomsday crying. Senator Tunney reports that some positive things are happening to us in our dilemma; others may well be made to happen. — *Victor H. Allen*, Old Sleepy Hollow Rd., Pleasantville, NY 10570.

Dear Boris: The Life of William Henry Pratt a.k.a

By Cynthia Lindsay. Published (1975) by Alfred A. Knopf, Inc., 201 E. 50 St., New York, NY 10022. 274 + xii pp. Profusely illustrated, drawings, photographs. 7½ × 9 in. Price $12.50.

This delightful biography is worth owning for the photographs alone — that is if one has a nostalgic love for old movies and particularly for horror movies and especially if the reader remembers with affection as well as with a reminiscent shudder *Frankenstein's* monster. Oh, those were the days!

Ms. Lindsay, who was a close friend, was perhaps a little too close to Boris, his wife,

Evie, and his daughter, Sara Jane, to write a really objective biography, but what the biography lacks in cold objectivity, it gains in a warm, human evaluation of a complex and lovable personality.

The opening paragraph of *Dear Boris* notes that he was born in Dulwich, England, in 1887 and named William Henry Pratt (known later as Boris Karloff). His "second birth" occurrred in 1931 when "as Dr. Frankenstein's Monster he rose, bewildered, from the operating table and reached wonderingly for a shaft of sunlight."

Although the book has only limited significance in terms of the technical aspects of the Karloff horror movies, the account of the horrendous make-up required for Frankenstein and other "horror" roles as well as some of the special effects used supply enough information to interest the reader more concerned with how the movies were made than with the personal life of the lovable Boris Karloff. — *Edit.*

Technology and Social Institutions

Edited by Kan Chen assisted by George J. Kral. Published (1974) by IEEE Press, The Institute of Electrical and Electronics Engineers, Inc., 345 East 47 St., New York, NY 10017. i-xii + 212 pp. 6¾ × 9¾ in. Price $11.55.

Unfortunately time has not passed by these papers presented at an Engineering Foundation Conference held 20-25 May 1973, with the financial assistance of the National Science Foundation and published the following year under the sponsorship of the IEEE Systems, Man, and Cybernetics Society. The span of the concern of the subject matter is indicated by Editor's being Professor of Electrical and Computer Engineering at the University of Michigan, assisted by the Assistant Town Planner of Guildford, Conn.

The Preface cites the past "reciprocal relationships between technology and society. Yet today there are growing concerns about the mismatch between (them) and . . . demands for appropriate actions to correct the mismatch." The authors include leaders from industry, labor unions, federal, state and local governments and research centers; faculty and students from universities; and private and public international organizations. Scanning the description of the 27 authors reveals the scope and the mix of our problems and potentialities.

One adjustment for the reader today, two years after the papers were delivered, is to include economic factors to a greater extent and in accordance with recently revealed international realities. The engineer will find here the implications for technology, possibly even for the future's cottage industry, filmmaking. — *Victor H. Allen,* Old Sleepy Hollow Rd., Pleasantville, NY 10570.

IC Op-Amp Cookbook

By Walter G. Jung. Published (1974) by Howard W. Sams & Co., Inc., Indianapolis, IN 46268. 591 pp. Diagrams. 5⅜ by 8½ in. Price $12.95.

The operational amplifier (op amp) is an extremely high gain, differential-input dc amplifier with operating characteristics determined, to a large degree, by how various kinds of feedback elements are used with it. By changing the types and arrangement of these elements, the same amplifier is able to perform a variety of analog operations (summation, integration, differentiation, etc). Op amps have evolved from vacuum-tube designs to discrete solid-state designs to today's integrated circuit (IC) designs. In the early days, the amplifier was a system comprised of many discrete components; now it is a discrete component itself, often costing less than a dollar — and this reality has changed the entire picture of linear circuit design.

Recognizing the inherent economy and widespread appeal of the IC op amp, this book attempts to address the considerations in applying it with maximum effectiveness in a wide variety of circuits. Going beyond the "cookbook" treatment, it also includes a substantial amount of theory to support the applications illustrated. Both general-purpose and special-purpose devices using the 709, 101, 741 and other op amps are covered.

An idea of the book's scope may be obtained by considering chapter titles: Op-Amp Basics; IC Op Amps; The Evolution of General-Purpose and Specialized Types; General Operating Procedures and Precautions in Using IC Op Amps; Voltage and Current Regulator Circuits; Signal-Processing Circuits; Audio Circuits; Signal Generation Circuits; and Unique Op-Amp Devices. One Appendix gives manufacturers' data sheets for general-purpose op amps (Fairchild, Harris, Motorola, National Semiconductor, RCA and Signetics). The second Appendix provides a linear IC cross-reference guide. A list of bibliographical references concludes each chapter.

This book belongs on the shelf of any technician or engineer who has to use or specify operational amplifiers. — *D.H.*