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In this column, we provide interesting historical briefs from the journal articles of days past. The purpose of this column is primarily entertainment, but we hope it will also stimulate your thinking and reflection on the Society's history, how far we have come in the industry, and (sometimes) how some things never change. This column is sponsored by Television Broadcast Technology, Inc., since March 2001: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7257346>.

25 Years Ago in the Journal

The March 1992 *Journal* published in “A Wide-Aspect NTSC-Compatible EDTV System” by Minoru Ashibe and Hideki Honma: “A new single-channel, NTSC-compatible, wide-aspect extended-definition television (EDTV) system is proposed. It is an intermediate system, between the side panel and letterbox systems. Unlike previously proposed intermediate systems, it widens the aspect ratio to 16:9 without using the horizontal blanking period. Moreover, it achieves 420 active lines using a bandwidth compression technique for side-panel signals. Conventional NTSC receivers display a center-panel portion of the widescreen image using 420 active lines, and side-panel signals are multiplexed into the remaining top and bottom areas of the image. High-frequency components are also transmitted, not only for the center-panel area but also for the side-panel area. This produces a high-quality, boundless widescreen image with more than 400 TV lines of horizontal and vertical resolution.” For the full article, see: <http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7236099>.

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50 Years Ago in the Journal

The March 1967 *Journal* published in “Some Automatic Methods of Lens Design” by J. S. Courtney-Pratt: “Many papers have been published in recent years on automatic lens design. There has been much disagreement and argument—some on points of detail and some on fundamental concepts... More recently, two other papers were submitted for publication, and the reviewers felt it would be most helpful if all the questions were presented to the membership, and an opportunity provided for written and oral discussion... It then seemed appropriate to widen the discussion and ask a number of other people working in the fields of optics and computer technology to contribute. A panel of experts agreed to come to the 99th SMPTE Semiannual Technical Conference... Most of the discussion was recorded on tape. A rough draft from this tape is published below.” For the full article, see: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7268633>.

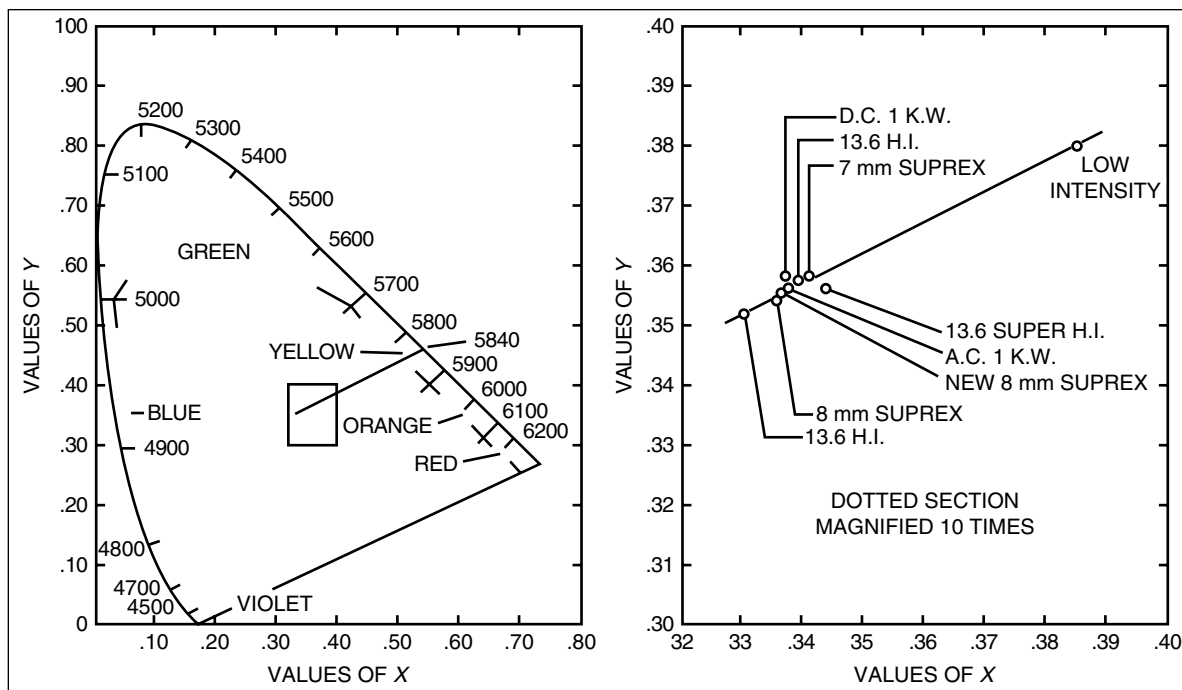
75 Years Ago in the Journal

The March 1942 *Journal* published in “The Color of Light on the Projection Screen” by M. R. Null, W. W. Lozier, and D. B. Joy: “The various combinations of carbon

arcs and lamps employed for motion picture projection have been discussed before this Society on previous occasions. The characteristics of the arcs themselves and also their performance with complete optical systems have been considered and important factors concerning the light on the projection screen have been determined. The growth of colored motion pictures has led to increased emphasis on the importance of color, and we have undertaken a program of study of the color of the light on the projection screen in terms of modern methods of measurement and specification... Spectral energy distribution measurements of the light at the center of the projection screen have been made for a number of arc lamp and carbon combinations employed in motion picture projection. ICI color coordinates and color temperatures have been calculated and show that the various high-intensity combinations give chromaticities and color temperatures, which agree closely among themselves. The spectral-energy distribution data of both low- and high-intensity lamps and carbons show marked similarity to black-body curves.” For the full article, see: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7252740>.

100 Years Ago in the Journal


The April 1917 *Journal* published in “Motion Picture Cameras” by C. L. Gregory: “The rapid growth of the motion picture industry has made it a difficult problem for manufacturers of motion picture apparatus to keep pace with the growing demands of the industry. The manufacturing problems have paralleled in



Chromaticity diagram shows ICI color coordinates of various lamp and carbon combinations. The right-hand figure shows a tenfold enlargement of the indicated portion of the left-hand figure. (Fig. 2 from *JSMPE*, March 1942, p. 222.)

many respects those of the automobile industry, but have by no means kept pace with them. It was only with the standardization of parts, and with the adoption of a standard method of measurements and specifications, that the automobile industry was able to

reach the development that it has today...One of the first things to put in order out of the chaos of filmdom is a comprehensive and comprehensible list of specifications by which a camera may be described. No manufacturer of automobiles would think of issuing

a catalog describing his car without including a full and detailed list of specifications. Yet none of the camera manufacturers have seemed to think this necessary.” For the full article, see: <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&number=7308225>. 

EXCLUSIVE ARTICLE ONLINE: ABSTRACT

For expanded coverage of this month's topic on "Perception," the following article is available only in the Digital Edition of this issue. Visit the SMPTE digital library at <http://journal.smpte.org> to access the issue and to read this paper.

The Resolution Revolution: How Many Bits Do We Really Need?

By William Cooper and Sue Farrell

As technology develops, the resolution of audiovisual reproduction is rising rapidly in every dimension in the quest for increasing quality and fidelity. Technical

standards previously considered sufficient to reproduce sounds and images in the digital domain may no longer be adequate. Image resolution is increasing, but even 4K frames are only eight megapixels, which is relatively low in photographic terms. Higher resolutions and bit depths may be required. Video frame rates have been sufficient to provide the illusion of continuous movement, but higher frame rates may be beneficial. This paper challenges conventional wisdom on the resolutions required to reproduce convincing audiovisual representations. It proposes that digital compression may be used to allow increased sampling resolution and precision while maintaining practical data rates. 