

3M Hears You, a 36-page brochure illustrated in full color, is available upon request from 3M, Dept. 99/3M, P.O. Box 2202, Robbinsdale, MN 55422. The brochure classifies 3M's diversified products into ten major markets including voice, video, and data communications; electronics/electrical manufacturing; communication arts; and others.

The VII precision test chart system is described in an illustrated brochure available from Visual Information Institute, Inc., P.O. Box 33, Xenia, OH 45385-0033. The chart configurations are designed for thorough analysis of monochrome and color TV camera performance. The test charts, screen printed onto a 25x19-in. rigid card stock, are illustrated in the brochure.

The New Zealand Film and Television Directory is available from Marlyn Publishing, P.O. Box 7085, Wellesley St., Auckland, New Zealand, at a price of \$66. The 300-page directory lists production houses, laboratories, manufacturers, editing and post-production services, unions, guilds, associations, casting agencies, maps, and locations services. It is a complete listing of facilities, services, and professionals required to make films in New Zealand.

The U.S. Motion Picture Theatre Industry, an analysis of current performance and future prospects, is available from Business Trends Analysts, Publications Dept., 2171 Jericho Turnpike, Commack, NY 11715, at a price of \$475. The study begins with an overview of the historical perspective, current market dynamics, and prospects and projections. The nine chapters include a detailed analysis of motion-picture theater revenues, factors affecting industry growth, industry structure and cost analysis, the Canadian market, the industry's future, detailed financial statistics on selected production companies, company-related developments, and a company directory listing major motion-picture theater operators with addresses and telephone numbers.

The Video Register 1983-84, a completely revised sixth edition, includes 3000 professional television operations in industry, medicine, cable, religion, government, and education. It is available from Knowledge Industry Publications, Inc., 701 Westchester Ave., White Plains, NY 10604, at a price of \$47.50 (soft cover). A new section in this edition is a listing of cable access/origination centers. Also listed are producers and distributors of off-the-shelf video programming intended for organizational use, firms that rent or sell video equipment, and approximately 525 manufacturers of video and video post-production equipment.

ABSTRACTS OF PAPERS FROM OTHER JOURNALS

Testing Fiber Optic Systems, E. Y. Nakagawa, *Photonics Spectra*, 34-40, December, 1983.

The growth of optical communications and the need to test the associated hardware and optical fibers are fueling demands for a variety of measuring instruments. This paper examines the places in a fiber optic system where optical measurements must be made. Certain measuring techniques are discussed, and some of the instruments used to perform these measurements are described.

The Undersea World of Fiber Optics, Gordon R. Petrie, *Photonics Spectra*, 51-56, December, 1983.

To date, research in undersea applications of fiber optics has centered on the development of suitable underwater cables. This dominant direction stems from the major research efforts being carried out in the U.S. by the Naval Undersea Center, the Naval Ocean Systems Center, and Bell Telephone Laboratories. The naval centers have concentrated on fiber optics for sonobuoys, whereas Bell Laboratories has concentrated its research on an underwater optical cable for transatlantic communications.

Outside of these major programs, however, fiber optic technology holds promise in many other undersea applications involving both data transmission and sensor systems. Now that underwater fiber optic cables are readily available, new application areas are ripe for development.

A 20 dB Audio Noise Reduction System for Consumer Applications, Ray Dolby, *Audio Engineering Society Journal*, 98-113, March, 1983.

A 20 dB noise reduction system, designated C-type for use in cassette tape recording and similar applications, is described. An arrangement of two compressors and two expanders in cascade has been developed in which the signal-to-noise ratio improvement is compounded without significant accompanying increases of the overall maximum compression and expansion ratio. Overshoots, modulation distortion, and noise modulation are well controlled. The maximum demands made on transmission channel uniformity are generally unchanged from those associated with the B-type system, although the uniformity requirements extend over a greater range of signal frequencies and levels.

An improvement has been made in one condition of compressor/expander mistacking, namely, low-level mid-frequency signals in combination with dominant

signals in the region above 10 kHz and in correct channel response at such frequencies. A further development reduces the tendency of highly equalized channels to saturate, thereby increasing the useful signal levels that can be handled.

Mathematical Analysis of a Pulse-Width-Modulation Digital-to-Analog Converter, Yashuhiro Mitsuhashi, *Audio Engineering Society Journal*, 135-138, March, 1983.

Mathematical analysis of a pulse-width-modulation digital-to-analog converter is carried out by use of periodic input signals. As the number of samples in one period increases, the conversion precision approaches that of a conventional D/A converter.

Subjective Quality of a 70 Mbit/s Digital Codec for Colour Television, M. W. Red-stall and T. A. White, *IEE Proceedings-F*, 477-483, October, 1983.

Quality-rating tests have been conducted to determine the subjective quality of PAL- and SECAM-coded color television pictures after passage through a 70 Mbit/sec DPCM digital coder and decoder. The assessment methods employed comprised both the traditional single-stimulus quality-grading method and a double-stimulus continuous quality-rating method specifically intended for assessing small impairments, such as are introduced by digital codecs.

The double-stimulus method is shown to be highly suited to the evaluation of such impairments. After removal of the residual impairment (due, for example, to scan structure and flicker) and assuming an error-free environment, the digital codec was found to introduce a basic impairment of about $1/20$ imp for PAL-coded pictures and about $1/10$ for SECAM-coded pictures, irrespective of the assessment method employed. These levels of impairment are compared with the performance of analog links, of various types and lengths, presently in use for the distribution of television signals.

An Easy Way to Calculate Power Spectra for Digital FM, Tor Aulin and Carl-Erik Sundberg, *IEE Proceedings-F*, October, 1983.

A general method for numerical calculation of power spectra for digital FM signals is developed. Arbitrary baseband pulse shape, the modulation index, and the number of levels of the data can be used. The probability density function of the statistically independent data symbols can also be chosen arbitrarily. With this

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operating in areas of high ambient acoustic noise.

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method, the auto-correlation function is first calculated and then numerically Fourier-transformed, yielding the power spectrum. The time required to calculate a power spectrum on a digital computer is extremely short, and the calculations are simple and easy to use.

800×800 Charge-Coupled Device Image Sensor, Morley M. Blouke, James R. Jancsick, Joseph E. Hall, Marvin W. Cowens, and Patrick J. May, *Optical Engineering*, 607-614, September/October, 1983.

The design and performance of an 800×800 pixel CCD imager are described. This device is fabricated utilizing a three-phase three-level polysilicon gate process. The chip is thinned to 8 μ and is employed in the rear illumination mode. Detailed measurements of the device performance, including dark current as a function of temperature, linearity, and noise are presented. The device is coated with an ultraviolet down-converting phosphor which allows imaging with the same device over an extremely wide optical bandwidth.

A New Image for Television, Joe Roizen, *Television Broadcast Communications*, 52-54, October, 1983.

Television engineers are currently being confronted by a number of new technologies that promise to provide the home viewer with better pictures on the TV set by enhancing present systems or creating new ones; more information via the existing television channel, by employing teletext or vidcotex techniques; a greater variety of programming via DBS, VCRs, videodisks, or other new media such as fiber optics; and more visually pleasing images through the use of computer graphics, digital effects, real-time video animation, ghost cancellation, and the like.

Display Holography: A Frontier of High Resolution Photography, N. J. Phillips, *Journal of Photographic Science*, 134-142, July/August, 1983.

Since the invention of holography by Dennis Gabor (c. 1948) and the invention of the laser in 1960, the field of display holography has seen great advances. The early promise of the modern work in the early 1960's was clearly blocked by a lack of understanding of basic photographic science. More recent work based on a better understanding of photographic chemistry has revealed many of the obvious problem areas.

This paper outlines the important holographic imagery regimes, to offer an understanding of how each depends on specific photographic manipulative methods as far as chemistry is concerned, and how they interrelate with the special photographic materials in the recording process.

NEW PRODUCTS

Further information about these items can be obtained from the addresses given. As in the case of technical papers, the Society is not responsible for manufacturers' statements, and publication of these items does not constitute endorsement of the products or services.



Kodavision camcorder Model 2400, Eastman Kodak Co.

An entirely new 8mm video camera-recorder system called the Kodavision camcorder has been announced by Eastman Kodak Co., 343 State St., Rochester, NY 14650. Also, more than 50 configurations of Kodak and Eastman brand videocassettes and tapes for home entertainment and professional applications, have been developed by Kodak in accordance with its "plans to extend its reach in imaging to the worldwide video market."

The products will be manufactured to Kodak specifications in Japan. TDK will supply the videotape and Matsushita, the equipment. The Kodavision series 2000 includes two camcorders, Model 2200 and auto-focus Model 2400. The camcorders weigh about 5 lb each. Features include fast forward and reverse, a 6X power zoom lens, a 5X visual search, fully automatic white balance, an electronic viewfinder, and an automatic iris for automatic exposure control.

Both camcorders accept cassettes of either MP (metal particle) or ME (metal evaporated) tape. They can record for up to 90 min. Model 2200 has manual focus, two recording/playback heads, and still-frame capability. Model 2400 has an auto-focus lens (with manual override), three heads, still-frame and frame-advance capability, and pushbutton fade-in/control.

A playback component called the Kodavision cradle, Model 2020, allows users to play back recorded tapes when the camcorder is placed in it. The cradle is connected to the user's television set. The camera's motor drives the tape, and circuitry within the cradle converts the sig-



Kodavision cradle with camcorder Model 2200, Eastman Kodak Co.

nals recorded on the tape for television display. The camcorder's battery is recharged while the camera is in the cradle. The cradle can also recharge a separate battery to extend the time the camcorder can be used.



GZ-S5U single-tube camera, JVC Co. of America

The GZ-S5U camera, a lightweight camera with auto-focus and auto-fade, has been announced by JVC Co. of America, 41 Slater Dr., Elmwood Park, NJ 07407. It uses a 1/2-in. highband Saticon pickup tube. Features include an auto-focus mechanism using the TCL (through the camera lens) image-sensing focus system. This system, developed by Honeywell Visitrone, measures visible light from the subject so no extra energy is required as with infrared or ultrasonic auto-focus systems.

An optional external titling system, which uses the CG-P50U character generator, can be attached to the camera to produce a variety of titling effects, including scrolling, zooming, and date and lap-time display. Titles can be superimposed on any scene during actual recording, or later, when editing.

A universal mount for Sony 330 cameras has been announced by Optex, 22-26 Victoria Rd., New Barnet, Herts EN4 9PF, England. The mount is for use with Canon lenses ranging from 300- to 800-mm.