

Service) System is to provide an economic, high quality delivery system for transmission of many point-to-point video signals to commercial television stations on a selective basis. This paper describes how RCA Americom will install, operate, and maintain an earth station on the premises of individual television stations at no charge to the stations. Program distributors will be the customer and purchase distribution service into selected groups of stations equipped for SMARTS. The key to this system is the ability to access several sets of stations through the use of address codes and a signal scrambling system. This allows the simultaneous transmission of several signals while ensuring that only stations taking specific programs will receive them. Planning for the SMARTS system began in October 1977 and proceeded to a test program with Viacom and Post-Newsweek stations in March 1979. Also discussed in the paper were system design considerations including earth station size and figure of merit, command and control, monitoring and reporting, site selection, and clearance. Some details were given on the distribution of syndicated programs and commercials.

107. Fiber Optics: How, When, and Where? (D. Potter, *General Telephone of California, Pomona, Calif.*) The current application of fiber optics within the telephone industry was discussed, with a review of the earliest applications in 1975 and a description of today's continuing field evaluations and plans for the early 1980s. The development of fibers with

losses less than 20 dB/km and fibers of the graded-index type (which minimize the problem of pulse spreading) made possible the present rapid developments in this field. Fiber losses are now down to substantially less than 6 dB/km, a level which makes many new applications seem attractive. During the years 1978 and 1979, field trials were conducted at increased bit rates, primarily at the T3 rate which is sufficient for 96 voice channels. As a rule of thumb, fiber-optic cable is economic compared with copper if it is available for \$1 per meter and carries a sufficient number of channels. Splicing technology is improving and splicing could be done by the telephone company staff; women, incidentally, were found to be particularly deft at it. Six fibers are carried in a 1-in cable with an aluminum stiffener and covered with heat-shrink tubing. The system used at Vista, Florida, (Disney World) was illustrated in block-diagram form; nine T3 systems are already in operation and a T4 (672 voice channels) was scheduled to go on line during 1979.

108. A Two-GHz Compact Microwave (Jack Fackler, *RF Technology, Westport, Conn.*) Compact 2-GHz microwave equipment for handheld and portable ENG operation was the subject of this paper. Such equipment should be inherently stable, rugged in design, and easy to set up to provide good service in the field. The design approach of RF Technology for this class of equipment is to use a basic double-heterodyne design, starting at a low frequency such as 70 MHz; it provides the desired sta-

bility of operation with freedom from short-term drift and freedom from microphonics or adjustment shift due to vibration or handling. The 70-MHz modulator features buffering of the voltage controlled oscillator and local voltage regulation in the circuit. The VCO itself employs a twin varactor modulator, for a very wide linear operating range. The frequency synthesizer of the equipment permits rapid frequency selection of either full- or half-channel operation in the 2-GHz band. The change-of-frequency plan is made possible by using a plug-in PROM encoder; alternatively, the unit can be remotely switched. Because various kinds of circuit protection are built-in, the units can operate from a car battery or from a battery belt. The companion receiver for this type of equipment uses the same synthesizer for frequency selection and the same dc power logic to also permit 10.5-17-Vdc operation. The receiver front end has a built-in low noise amplifier with a 2-dB noise figure. The design approach should minimize the probability of adjacent-channel and cross-modulation interference. Liberal use is made of filters, including a surface-acoustic-wave (SAW) filter in the second IF amplifier. Among the transmitter units illustrated in the presentation were a 0.2-W unit for mounting on a handheld camera and a larger 1-W self-contained transmitter that still measured less than 1 ft (30 cm) in the greatest dimension. The latter unit would be well suited for helicopter-relay applications. Various circularly polarized antennas and several antenna mounts were illustrated.

Equipment Exhibit

The 121st Conference and Equipment Exhibit brought together a record-shattering 167 exhibitors occupying 331 booths, soaring past the previous record held by the 1977 Los Angeles Conference where 220 booths were taken. Another significant record was established with a total of 9720 people attending, surpassing by 2500 last year's record attendance in New York City.

The exhibit was an impressive event, covering all phases of motion-picture and television technology. The companies that exhibited at the Conference are listed below. The Exhibit Directory published in the September *Journal* lists much of what was shown. The exhibit was indeed an exciting experience for everyone who attended.

List of Exhibiting Companies

AATON Cameras, Inc.
 ADDA Corp.
 Agfa-Gevaert, Inc.
 The Allen Products Co.
 Amperex Electronic Corp.
 Ampex Corp.
 Arriflex Corp.

Arvin/Echo Science Corp.
 ASACA Corp. of America
 Audio Services Co. & Sales Center, Inc.
 Bardwell & McAlister, Inc.
 Belden Communications, Inc.
 Bell & Howell (Prof. Equip. Div.)
 Bell & Howell (TeleMation Div.)
 Berkey Colortran
 Birns & Sawyer, Inc.
 Bogen Photo Corp.
 Bolex (USA), Inc.
 Bosch Fernseh
 Brumac Industries
 Canon USA, Inc.
 Carter Equipment Co., Inc.
 Cases, Inc.
 Central Dynamics Corp.
 Century Precision Cine/Optics
 Cetec Vega
 Christy's Editorial Film Supply
 Chyron Corp.
 Cinecare
 Cinema Products Corp.
 Cine/Precision Engineering Co.
 Cine 60, Inc.
 Cinetronics
 Ciro Equipment Corp.
 CMX Systems
 Coherent Communications, Inc.
 Commercial Electronics, Inc.
 Compact Video Sales, Inc.
 Consolidated Video Systems, Inc.
 Container Concepts
 Convergence Corp.

Cool Light Co., Inc.
 Corporate Communications
 Consultants, Inc.
 J.M. Cumming, Co.
 Datatron, Inc.
 Digital Video Systems
 Di-Tech, Inc.
 Dolby Labs., Inc.
 The Durafilm Co.
 Eastman Kodak Co.
 Ediquip, Inc.
 Eigen Video
 Encyclopaedia Britannica
 EPRAD, Inc.
 F&B/Ceco, Inc.
 Ferco, Inc.
 Film Equipment Service Co.
 Filmtechnik Alfred Chrosziel GmbH
 Frezzolini Electronics, Inc.
 Fujinon Optical, Inc.
 Fuji Photo Film USA, Inc.
 G & M Power Products
 General Electric Co.
 Goldberg Brothers, Inc.
 Alan Gordon Enterprises, Inc.
 The Grass Valley Group, Inc.
 Gray Engineering Labs., Inc.
 Harrison and Harrison
 Hazeltine Corp.
 Hitachi Denshi America, Ltd.
 Hollywood Associates
 Hollywood Film Co.
 Houston Fearless 76, Inc.
 Hudson Photographic Industries, Inc.



The number of exhibitors and booths far exceeded previous records. This is only a part of one area.

Ikegami Electronics, USA, Inc.
 Image Devices, Inc.
 Image Transform, Inc.
 Industrial Silver Co.
 J & R Film Co.
 Jamieson Film Co.
 US JVC Corp.
 K B Systems
 KEM Editing Systems, Inc.
 Kliegl Brothers
 Lab Methods Corp.
 LaVezzi Machine Works, Inc.
 Leitch Video Ltd.
 Lenco, Inc. Electronics Div.
 Lipsner-Smith Corp.
 Listec Television Equipment Corp.
 Lowel-Light Mfg., Inc.
 L.T.M. Corp. of America
 L-W International
 Macbeth Sales Corp.
 Magnasync/Moviola Corp.
 Magna-Tech/Quad Eight Electronics
 Marco Scientific, Inc.
 Marconi Electronics, Inc.
 Matthews Studio Equipment, Inc.
 Mayhew & Co.
 Merlin Engineering Works
 Micro Consultants, Inc.
 Microtime, Inc.
 Microwave Associates
 Communications, Inc.
 Miller Professional Equipment, Inc.
 Millimeter Magazine
 3M Co.
 Minolta Corp.
 Mitchell Camera Corp.
 Mole-Richardson Co.
 Motion Picture Enterprises, Inc.
 Motorola
 Moviecam Corp. of America
 Multi-Track Magnetics, Inc.
 Nagra Magnetic Recorders, Inc.
 NEC America, Inc.
 Network Production Music
 NL Film Products
 Norton Associates, Inc.
 Nurad, Inc.
 O'Connor Engineering Labs., Inc.
 Oldelft/KLM Associates, Inc.
 On Location
 Oxberry Div. of Richmark
 Camera Serv., Inc.

Pace International Corp.
 Panasonic Co., Video Systems Div.
 Panoak Lighting Systems & Supplies
 The Perf-Fix Company
 PEP Inc., Div. of Electronic
 Applications
 Peterson Enterprises, Inc.
 Philips Broadcast Equip. Corp.
 Pioneer Marketing Corp.
 Plastic Reel Corp. of America
 David Pringle, Inc.
 Q-TV/Telesync
 Rank Cintel
 Rank Precision Industries, Inc.
 RCA
 Recortec, Inc.
 Research Technology, Inc.
 Rosco Labs., Inc.
 RTS Systems, Inc.
 Skirpan Lighting Control Corp.
 Smith-Victor Corp.
 Sony Corp. of America
 Soremec Eclair USA, Inc.
 Spectra/Simon Associates
 Spin Physics, Inc.
 Steenbeck, Inc.
 Strand Century, Inc.
 Super Eight Research
 Associates (SERA)
 Super8 Sound, Inc.
 Swintek Enterprises, Inc.
 Sylvania Lighting/GTE
 System Concepts, Inc.
 Tektronix, Inc.
 Tele-Cine, Inc.
 Telescript, Inc.
 Television Equipment Associates
 Tentel Corp.
 Thermodyne International Ltd.
 The Video Tape Company
 Thorn Lighting, Inc.
 Toshiba International Corp.
 Twenty-Fourth Frame
 Utah Scientific, Inc.
 Union Connector Co.
 Video Sytems, Network/Videomedia
 Vital Industries, Inc.
 VSC Corp.
 Weathermation, Inc.
 Westrex
 Wide Range Electronics Corp.
 The Winsted Corp.

Social Activities

The social events of the 121st Conference began Sunday evening with a Centennial cocktail party celebrating the 100th anniversary of the founding of Eastman Kodak. The party, sponsored by Eastman Kodak Co., was held in the Century Plaza Hotel.

Luncheon Speaker

The guest speaker at the luncheon was the renowned underseas explorer, filmmaker, and author, Jacques-Yves Cousteau (recipient of the John Grierson International Gold Medal Award). He has produced more than 50 films for television and two Oscar-winning feature films — *The Silent World* and *World Without Sun*. His latest film, *Voyage to the End of the World*, is based on the extensive Antarctic voyage of his famous ship, the Calypso.

Excerpts from Cousteau's delightfully witty and revealing speech appear below.

Thank you very much, Mr. President. Blessing to you all, ladies and gentlemen. I feel that in his introduction your President overlooks the main motivation for these adventures and this well-filled life. It is my incredible love since I was a child for fun and my unquenchable curiosity, added to a complete lack of awareness of what is possible and impossible. If I wanted to do something, I just had to do it. If I had no money, it didn't matter. I hope other people can do the same. I don't say it is easy with this motivation and no money, but it works.

It may seem that a lack of awareness of danger is what makes heroes. The physical danger, however, I always hated and I have always taken all the precautions to reduce the dangers and risks to an absolute minimum.

Now that I am with people who are addicted to motion pictures as you are (including the liquid gate which I use occasionally), I want to tell you that I also have been addicted since I was 13 years old. My first film was made 56 years ago. I didn't have any money to buy a camera, but I bought one anyway — on credit — from an old woman who owned this little shop. It was a small Pathé Baby, 9.5mm with the sprocket holes in the center, and it was hand cranked, of course. It was not very expensive, but I didn't have even that much money. I told her, "It doesn't matter; I'll pay you later." I took the camera and went away and made my film. When my father found out, there was some trouble at home.

At the same time, when I was still 13, I innocently established my first film company. It was called Film ZIX, and we edited a journal that was printed with one of those chemical duplicators of the time. This got me into a lot of trouble at home because of the chemical soil on the carpets.

As you can see, my relationship with the cinema is a long one. I switched to 16mm when I was a little older, when I entered the Naval Academy. I bought this spring-loaded 16mm camera by Kodak. I began to make a