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Product Profile: Channel Processors

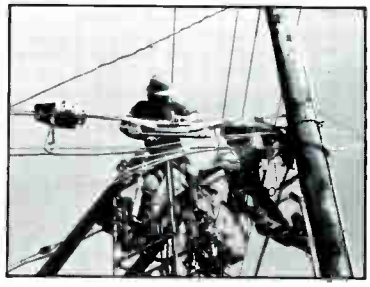
Communications Engineering Digest/The Magazine of Broadband Technology November 1982

Sruki Switzer Designs On Cable's Future

Also:
Western Show Preview

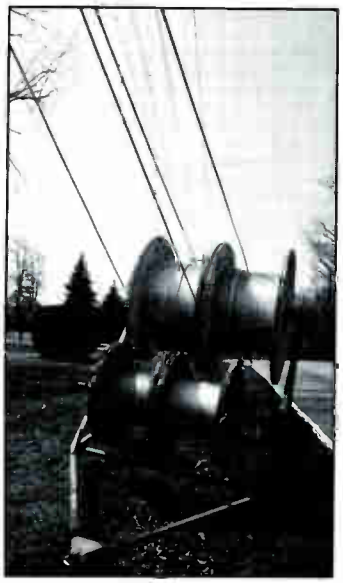
Jackson tools

2 year warranty



The name **Jackson** has always meant quality in cable construction tools. We stand behind this claim. Every tool shipped from Jackson Enterprises is backed by a **Two Year** limited warranty against factory defects in material and workmanship.
We will be introducing severai new tools during the balance of '82, each designed for the demands of today's construction industry. Call or write for more information, or contact your local distributor.
With Jackson Tools, you get the quality you expect.

New Lexan single roller #JP-3; greater strength at a lower cost.



Shown above: #1010 Trailer, #1078 Reel Brake, #1019 90° Corner Block, #1084-0 Double Bender.

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Top performance is the hallmark of MAGNA 6400's sophisticated 440 MHz design. For example, our PROM (Programmable Read Only Memory), unlike others on the market, is a **true** PROM. If plugged in improperly, the converter just won't work. A plug-in descrambler for any or all channels is optional when you order. Or you can add it later. Even the converter case is top performance rated. Made of high impact space-age plastic, it's fire retardant, UL approved and virtually indestructible.

Cordless remote control keypad is identical to the converter. Durable membrane keypads provide long-life operation.

MAGNA 6400 is a product of years of Magnavox CATV experience and technology, backed by the enormous technical resources of North American Philips Corporation. See a MAGNA 6400 demonstration in our Mobile Training Center when it's in your area.

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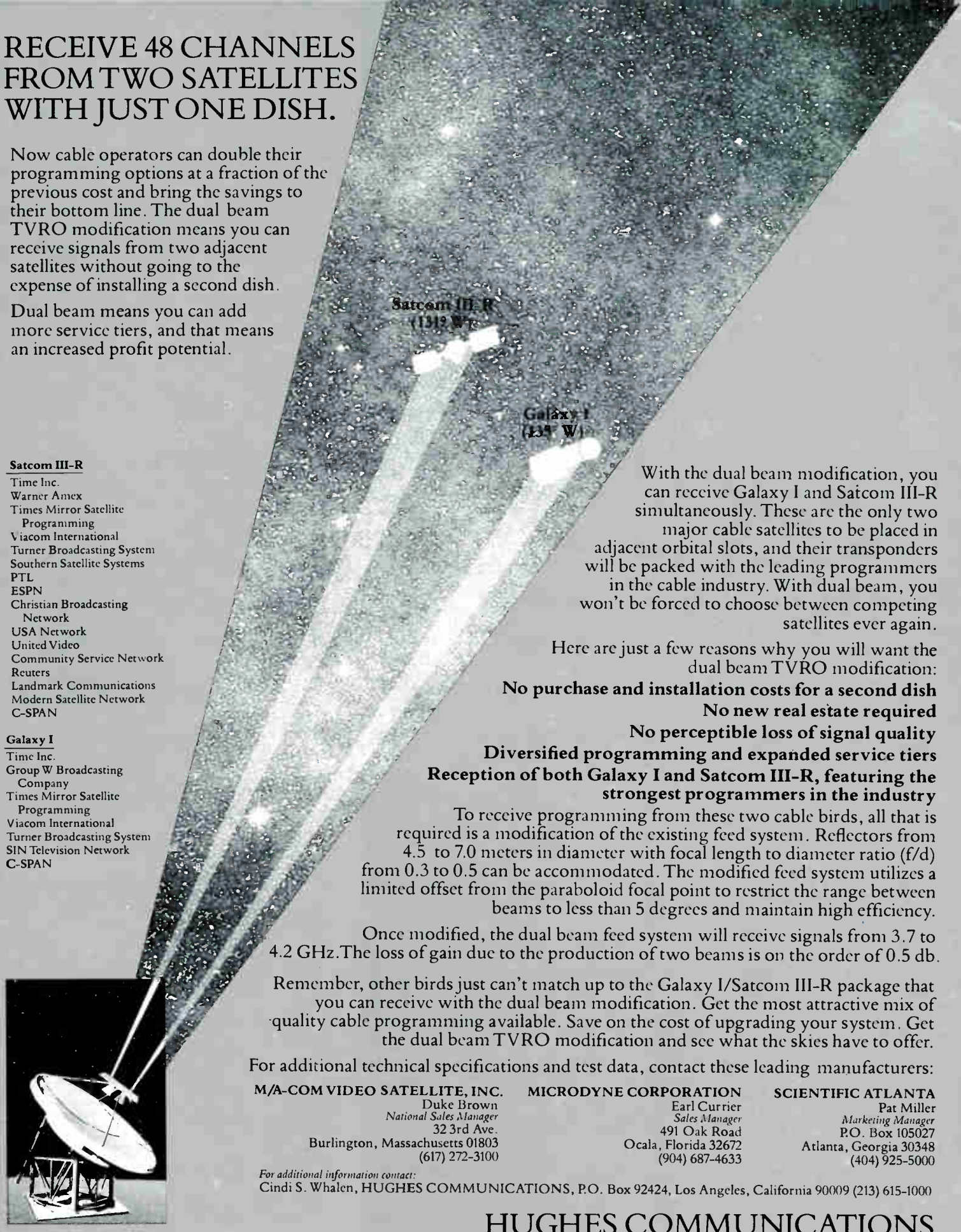
RECEIVE 48 CHANNELS FROM TWO SATELLITES WITH JUST ONE DISH.

Now cable operators can double their programming options at a fraction of the previous cost and bring the savings to their bottom line. The dual beam TVRO modification means you can receive signals from two adjacent satellites without going to the expense of installing a second dish.

Dual beam means you can add more service tiers, and that means an increased profit potential.



Satcom III-R
Time Inc.
Warner Amex
Times Mirror Satellite Programming
Viacom International
Turner Broadcasting System
Southern Satellite Systems
PTL
ESPN
Christian Broadcasting Network
USA Network
United Video
Community Service Network
Reuters
Landmark Communications
Modern Satellite Network
C-SPAN

Galaxy I
Time Inc.
Group W Broadcasting Company
Times Mirror Satellite Programming
Viacom International
Turner Broadcasting System
SIN Television Network
C-SPAN

With the dual beam modification, you can receive Galaxy I and Satcom III-R simultaneously. These are the only two major cable satellites to be placed in adjacent orbital slots, and their transponders will be packed with the leading programmers in the cable industry. With dual beam, you won't be forced to choose between competing satellites ever again.

Here are just a few reasons why you will want the dual beam TVRO modification:

No purchase and installation costs for a second dish
No new real estate required
No perceptible loss of signal quality
Diversified programming and expanded service tiers
Reception of both Galaxy I and Satcom III-R, featuring the strongest programmers in the industry

To receive programming from these two cable birds, all that is required is a modification of the existing feed system. Reflectors from 4.5 to 7.0 meters in diameter with focal length to diameter ratio (f/d) from 0.3 to 0.5 can be accommodated. The modified feed system utilizes a limited offset from the paraboloid focal point to restrict the range between beams to less than 5 degrees and maintain high efficiency.

Once modified, the dual beam feed system will receive signals from 3.7 to 4.2 GHz. The loss of gain due to the production of two beams is on the order of 0.5 db.

Remember, other birds just can't match up to the Galaxy I/Satcom III-R package that you can receive with the dual beam modification. Get the most attractive mix of quality cable programming available. Save on the cost of upgrading your system. Get the dual beam TVRO modification and see what the skies have to offer.

For additional technical specifications and test data, contact these leading manufacturers:

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Duke Brown
National Sales Manager
32 3rd Ave.
Burlington, Massachusetts 01803
(617) 272-3100

MICRODYNE CORPORATION
Earl Currier
Sales Manager
491 Oak Road
Ocala, Florida 32672
(904) 687-4633

SCIENTIFIC ATLANTA
Pat Miller
Marketing Manager
P.O. Box 105027
Atlanta, Georgia 30348
(404) 925-5000

For additional information contact:
Cindi S. Whalen, HUGHES COMMUNICATIONS, P.O. Box 92424, Los Angeles, California 90009 (213) 615-1000

HUGHES COMMUNICATIONS

10/82

HUGHES
HUGHES AIRCRAFT COMPANY

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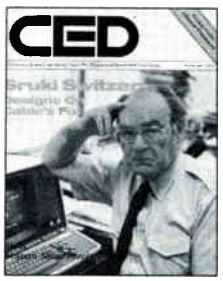
Contents

About The Cover:

Sruki Switzer, one of cable television's most influential design engineers, is shown at his office in Toronto, Ontario. Photo by George Sell.



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    c. will operate in frequency offset systems
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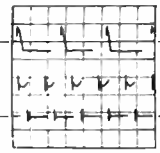
Techscope



Hot Cable

If a shady-looking character comes around to sell your system a Machine Pro cable lasher, several Kellems pulling socks, an AB Chance one-ton chain hoist or a Microwave Associates low-noise amplifier with cover and dual-polarized feed—beware: That cable gear just may have been stolen from Saguaro Cable in Pima County, Ariz. The system has been hit with two recent burglaries, and its officials believe the thieves will try to "fence" the equipment through an intermediary—who will try to foist off the hardware to legitimate cable companies. Theft of hardware is an increasing problem for systems nationwide. Two other Arizona systems also have been victimized: Superior Cable had about $30,000 worth of receiving equipment stolen from its headend, causing an interruption of service. Headend equipment also has been stolen from Cooper Basin Cable. Serial numbers of the "hot" cable gear are available from the Arizona Cable Television Association, which asks operators nationwide to check with them first before buying any of the equipment that matches the description of the stolen goods.

Sprucer II, Too

The Sprucer set-top converter, introduced by Kanematsu-Gosho USA Inc. last spring at the National Cable Television Convention, has spawned a second generation. While the first Sprucer was two-way with upgrade capability to interactive, the Sprucer II will be two-way interactive. The three-microprocessor, baseband, addressable model will be displayed at the Western Cable Show in Anaheim, Calif. A demonstration unit will be shown with actual production of the Sprucer II projected for January, 1983. The convertor will be available for delivery in March, 1983.

Hearing Voices

The Alien Group, a New York-based company, is offering a "voice box" for Apple II, Apple II Plus, Atari 400 and Atari 800 personal computers. The unit converts typed or stored text into speech and other sound effects such as animal roars, spoken clues in maze games, songs or alien languages. The box can also be programmed for pronunciations of unusual words, names, foreign languages and more practical sound effects. Complete with diskette or tape-based pronunciation dictionaries for thousands of commonly used words and word-fragments, the box features a random sentence generator that creates grammatically correct sentences, a "talking face" with lip-sync animation, and a screen menu. The Atari models cost $169 and the Apple units $215.

Four HDTV Systems

At Britain's International Broadcasting Convention (IBC) in late September, four different High Definition Television (HDTV) systems were demonstrated. Sony displayed the Japanese 1,125-line system for the first time in Europe and employed, for the first time, all Sony equipment. Philips showed its Hi-Fi Zero receiver. This receiver obtains a high resolution picture from the standard PAL signal by doubling the field rate to 100 per second. It uses a three-field storage method. The BBC presented its "Enhanced PAL" system that uses 10-11 MHz of bandwidth for altered luminance and chrominance signals. The system also adds digital audio. IBA's "MAC" system was proposed as a world standard to replace PAL and SECAM. It digitally encodes signals, uses time division multiplexing, and reconstructs the signal at the receiver with a digital decoder. Eight channels of audio are possible with the MAC system.

CableBus' Two-Way Patents

CableBus Systems Corp. was awarded one American and three Canadian patents for its data communications protocols and expansion features used in its ACT-1 and UADT-1 home two-way terminals. The terminals are key components in CableBus' residential security systems. The terminals handle alarm conditions from sensors and detectors, as well as from medical, police and fire panic inputs.

TBS Uplink

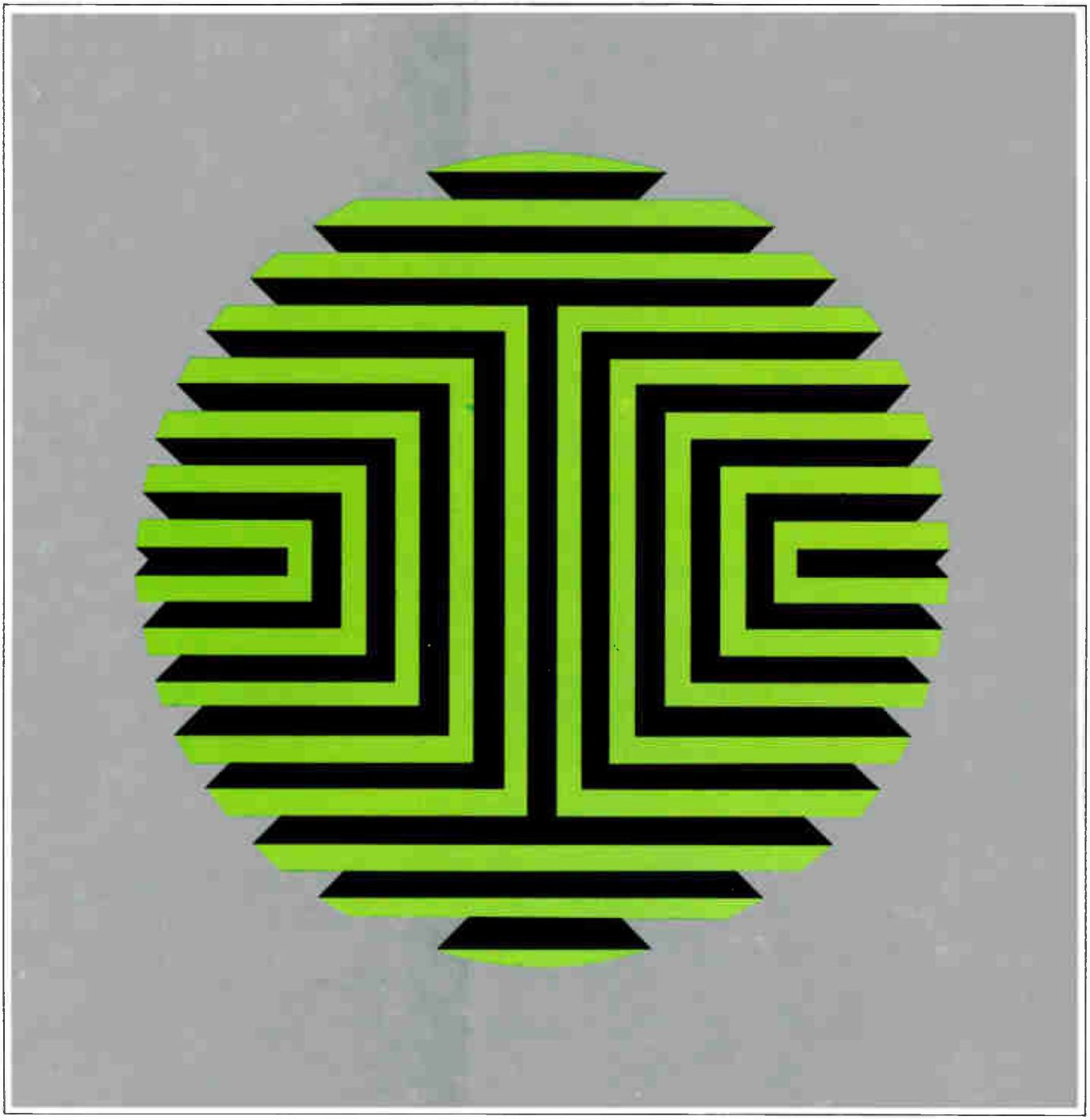
Turner Broadcasting System has built a new permanent satellite uplink at its headquarters in Atlanta. TBS' satellite garden was composed of six receiving dishes. Now TBS has transformed one of its 7-meter dishes into a pre-programmed scanning dish and its 11-meter dish is now an uplink for the three TBS 24-hour news services. According to TBS Vice President of Engineering Gene Wright, the company had had "more trouble getting our signal 20 miles to our uplink in Douglasville (Ga.) than in getting it 22,300 miles up to the satellite." The new uplink will use Varian high-powered amplifiers and a Scientific-Atlanta antenna and exciters.

First FO-LAN

The first fiberoptic Local Area Network (LAN) has been developed. The Ethernet-compatible LAN, called Fiber Optic Net/One, is the result of joint efforts undertaken by Ungermann-Bass, Codenoll Technology and Siecor/FiberLAN. Three versions will be made available: two baseband LANs and one broadband network that is compatible with cable television operating systems. The use of fiberoptics in LANs makes them immune to electro-magnetic and radio frequency interference and secure from tapping.

Viacom Seattle Working With Hams

Viacom Cablevision of Seattle has taken a conciliatory approach in the face of the continuing conflict between ham radio and cable television operators. The conflict focuses on radio frequency interference, particularly in the 142.9 to 148 MHz, 220 to 225 MHz and 420 to 450 MHz bands. Viacom engineers and other personnel have been working with local ham operators to help resolve any interference or other technical problems experienced with signal leakage. By establishing special alert telephone numbers, Viacom has set up a channel of communication between hams and Viacom cable engineers. Other Viacom personnel have spoken before several amateur radio groups. Additionally, a bucket truck, equipped with a Mid-State RD-1 radiation detector, has been cruising throughout those effected franchise areas. Viacom hopes these efforts will diminish the antagonism existing between hams and cable engineers.



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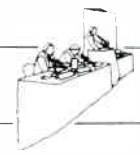
ANAHEIM, CALIFORNIA NOVEMBER 17, 18, & 19
(SPACE 412) MCMLXXXII

Seminars



November

2, 3, 4: A **Blonder-Tongue** MATV/CATV/Earth Station Technical Seminar will be held in Palm Beach, Fla. in conjunction with Enjay Associates, Inc. Contact Glenn Stawicki or Floria Rothfuss (201) 679-4000.

8-9: A seminar on "Ku-Band Satellite Communications in the '80s" sponsored by **Phillips Publishing Inc.** will be held at the Hyatt Regency in Washington. Contact Stacey Schalton, (301) 986-0666.

8-10: The Center for Advanced Professional Education (**CAPE**) will present a seminar on network communication protocols in Boston, Mass. For more information contact CAPE, (714) 633-9280.

8-10: The Center for Advanced Professional Education **(CAPE)** will present a seminar on the design and management of local area networks in New Brunswick, N.J. For more information call (714) 633-9280.

8-10: A concentrated short course, "Digital Television-Bandwidth Reduction and Communication Aspects," will be presented by the **University of California, Berkeley**. Contact (415) 642-4151.

10-12: Magnavox CATV Systems will be conducting a field training seminar with its Mobile Training Center in St. Louis, Mo. Contact Larry Richards, (315) 682-9105.

13-15: The **National Cable Television Association**'s second annual National Cable Programming Conference and ACE Awards will be held at the Biltmore Hotel in Los Angeles. Contact NCTA, (202) 775-3550.

15-17: The Center for Advanced Professional Education **(CAPE)** will present a seminar on the design and management of local area networks in Detroit. For more information call (714) 633-9280.

15-17: Magnavox CATV Systems will be conducting a field training seminar with its Mobile Training Center in St. Louis, Mo. Contact Larry Richards, (315) 682-9105.

15-19: The **Community Antenna Television Association** is sponsoring an advanced technical training seminar in Knoxville, Tenn. Contact the CATA Engineering Office, (305) 562-7847.

17-19: The annual convention of the **California Cable Television Association**, the Western Show, will be held at the Anaheim Convention Center, Anaheim, Calif. Contact CCTA, (415) 881-0211.

17-19 The Center for Advanced Professional Education (**CAPE**) will present a seminar on network communication protocols in San Francisco, Calif. For more information contact CAPE, (714) 633-9280.

18-20: Magnavox CATV Systems will be conducting a field training seminar with its Mobile Training Center in St. Louis, Mo. Contact Larry Richards, (315) 682-9105.

30-Dec.1: Frost and Sullivan Inc. is presenting a seminar on "Understanding and Using CAD/CAM" in New York City. Contact Carol Sapchin, (212) 233-1080.

December

1-3 The Center for Advanced Professional Education (**CAPE**) will present a seminar on network communication protocols in Albuquerque, N.M. For more information contact CAPE, (714) 633-9280.

6-11: An advanced technical training seminar sponsored by the **Community Antenna Television Association** will be held in Orlando, Florida. Contact the CATA Engineering Office, (305) 562-7847.

8-9: A **Blonder-Tongue** "MATV/CATV/TVRO Technical Seminar will be held in Phoenix, Ariz., in conjunction with J.R. Morgan Agency. Contact Chuck Fitzer, (415) 449-0547.

8-10 The Center for Advanced Professional Education (**CAPE**) will present a seminar on network communication protocols in Pittsburgh, Penn. For more information contact CAPE, (714) 633-9280.

9-10: A seminar entitled "Interactive 2-Way Cable TV Technologies and Opportunities," sponsored by **Telestrategies Inc.** will be held at the Key Bridge Marriot in Washington, D.C. For information call (703) 734-7050.

15-17 The Center for Advanced Professional Education (**CAPE**) will present a seminar on network communication protocols in Baltimore, Md. For more information contact CAPE, (714) 633-9280.

20-22 The Center for Advanced Professional Education (**CAPE**) will present a seminar on network communication protocols in Minneapolis, Minn. For more information contact CAPE, (714) 633-9280.

January

25-27: A **Blonder-Tongue** "MATV/CATV/TVRO Technical Seminar" will be held in Atlanta in conjunction with Adams and Associates. Contact Tom Adams, (919) 272-6838; or Gloria Rothfuss (201) 679-4000.

February

2-4: The annual convention of the **Texas Cable TV Association**, the Texas Show, will be held at the San Antonio Convention Center. Contact the TCTA, (512) 474-2082.

8-9: The annual meeting of the **Arizona Cable Television Association** will be held at the Phoenix Hilton Hotel. Contact the ACTA, (602) 257-9338.

9-11: The **Arkansas Cable Television Association** annual convention will be held at the Excelsior Hotel in Little Rock. Contact (501) 661-7677.

May

6-8: The **Society of Cable Television Engineers** will hold its first cable TV hardware exposition, Cable-Tec Expo, at the Dallas Convention Center. Contact SCTE, (202) 293-7841.

Looking ahead

November 7-9: Subscription Television Association convention, Los Angeles Airport Hyatt Hotel.

November 17-19: Western Cable Show, Anaheim Convention Center, Anaheim, California.

1983

April 10-13: National Association of Broadcasters convention, Las Vegas Convention Center.

June 12-15: National Cable Television Association convention, Houston.

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Editorial

SCTE: Plans For The Future

Recently, exciting things have been happening and continue to happen at the Society of Cable Television Engineers (SCTE). SCTE members just returned from a very successful Fall Engineering Conference and are about to present their 10th annual Western Cable Television Show technical sessions program. They are looking forward to their upcoming elections in January and have already planned the Spring Engineering Conference. While the SCTE CableTec Expo continues to receive a very positive response from the cable industry, the Principal Cable Television Engineer (PCTE) program prepares itself for the coming year. According to Judith Baer, executive vice president of the SCTE, the SCTE is "up and positive."

The Fall Engineering Conference, held in St. Petersburg Beach, Fla., Oct. 10-12, was well-attended and praised for its quality of presentation. The three-day event, sponsored by the SCTE and the University of California at Los Angeles, revealed a successful and cooperative working relationship between the SCTE and UCLA. The fall conference, Baer reports, included an "excellent presentation" by Izak Rubin of UCLA on "Data and Business Communication on Cable Systems," as well as a 640-page handout. A poll taken of attendees gave the conference a 99 percent excellent rating. As a result of the conference's success, the SCTE is planning at least three SCTE-UCLA seminars in 1983 along with one Engineering Conference for the presentation of papers sponsored only by the SCTE.

For the Western Show, the SCTE's Judy Baer and the CCTA's Joe Van Loan (Viacom) have organized an exciting program of technical sessions scheduled to begin at 8:30 a.m. on Nov. 18. The morning sessions will cover engineering management and industry issues, compliance and regulation, workers compensation costs, system hardware evaluation and inventory control as well as cable systems rebuilding. The afternoon sessions will feature Sat-a-dat, Group W's satellite uplink project, Alex Best's speech on broadcast multichannel sound, GE's Comband signal compression technique, analysis on addressability, and HBO's signal scrambling project. Prior to the Western Show, on Nov. 16, the SCTE will sponsor a workshop on labor relations.

During the Spring Engineering Conference, to be held in March at the Biltmore Hotel in Los Angeles, approximately 20 papers on data and business communications via broadband cable systems will be presented.

Plans for the SCTE CableTec Expo, scheduled for May 6-8 at the Dallas Convention Center, are currently underway. According to Baer, "The exhibitors' responses are far beyond SCTE projections and fondest wishes." The Expo will provide a showcase for hardware and technology with "back-to-basics" technical sessions, hardware demonstrations on the exhibit floor and even some booths with classroom setups for instruction in "how-to" use of the products displayed. With a $40 registration fee, the show is an affordable package for everyone and promises to be one of the most important events in the cable industry calendar. Futhermore, the SCTE CableTec Expo sites have been chosen for 1984 through 1987.

The SCTE's new PCTE designation program will involve the testing and engineering experience evaluation of cable television technicians and engineers and will lead to the PCTE designation. Plans for the program are progressing. The program has already obtained funding for 50 percent of the SCTE goal, with General Instruments' Jerrold Division the biggest corporate contributor to date. Additional support is being sought from cable industry members. The study group preparing the compiled reading materials is in a gleaning-out process and will be making their documents available soon.

While 1983 was a rough year for the SCTE in terms of finances, with no reserves and no credit lines, 1983 looks like it will be much better. The SCTE has held the line with a $40 membership fee and, unlike some professional societies and companies, the SCTE has not been threatened by Chapter 11 bankruptcy. Credit goes to Judy Baer and the officers of the society for their successful management of a difficult situation.

George Sell

CED

Volume 8, No. 11

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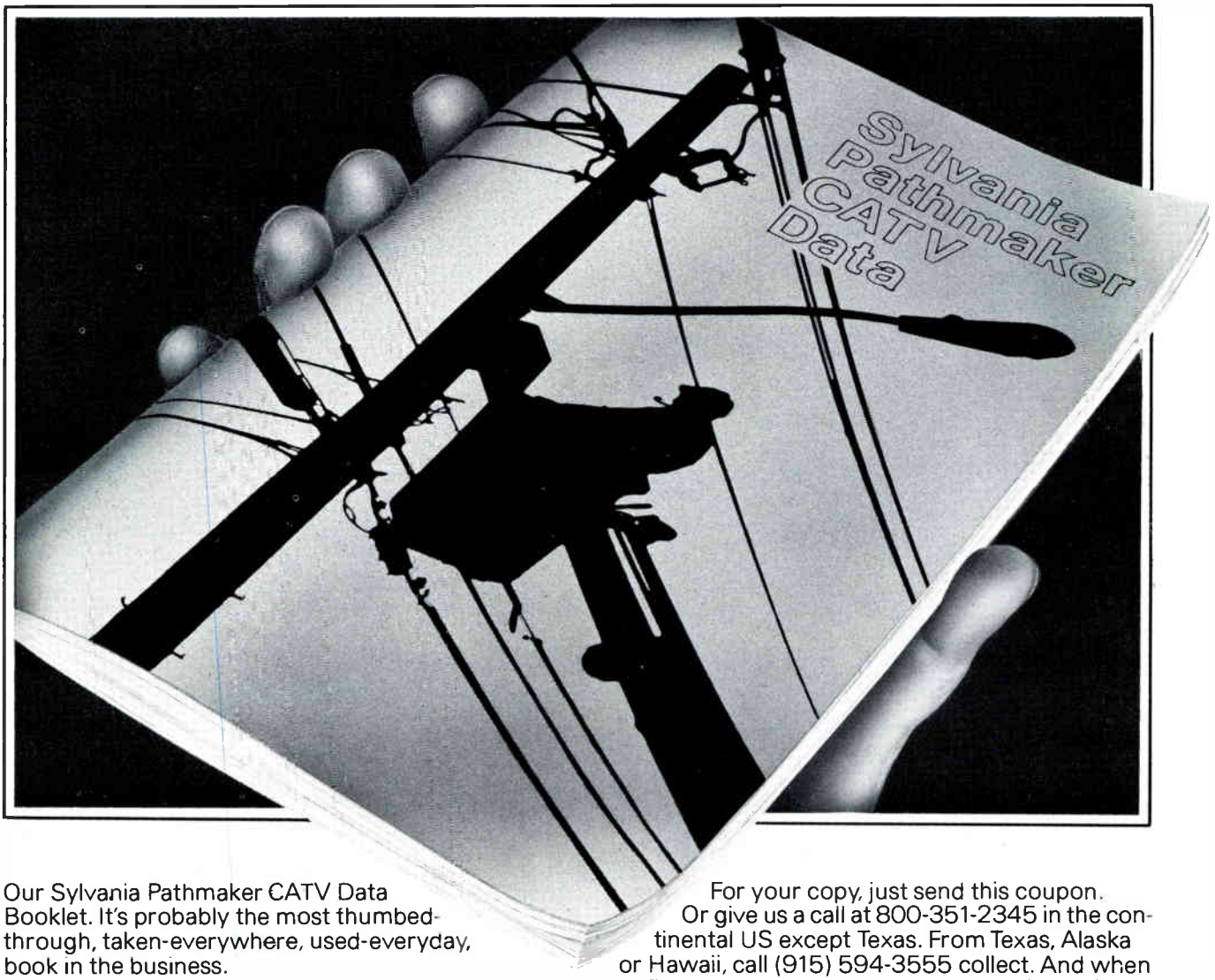

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10841 Pellicano Dr., El Paso TX 79935
Attn: Marketing Communications Department CED 11/82

GE Announces Comband System

PORTSMOUTH, Va.—General Electric has announced a new headend and set-top converter system, called Comband, for bandwidth compression that, according to company spokesmen, will significantly reduce the cost of upgrading channel capacity for cable systems.

Based on analog bandwidth compression technology, Comband combines two video sources into the space normally occupied by one video source in the cable system. These paired signals are then separated and reconstructed so that they arrive at the subscriber's home as two independent channels.

Comband will be marketed to 12-channel systems seeking upgrades at low cost, and 35-channel systems looking for state-of-the-art equipment. Production of these addressable converters, which will cost $200, is scheduled to begin in 1984.

Company spokesmen project that an operator of a 100,000 subscriber system with a 35-channel operation, seeking to upgrade to 58-channels, could save $15 million or $150 per subscriber by using Comband instead of other methods of upgrading.

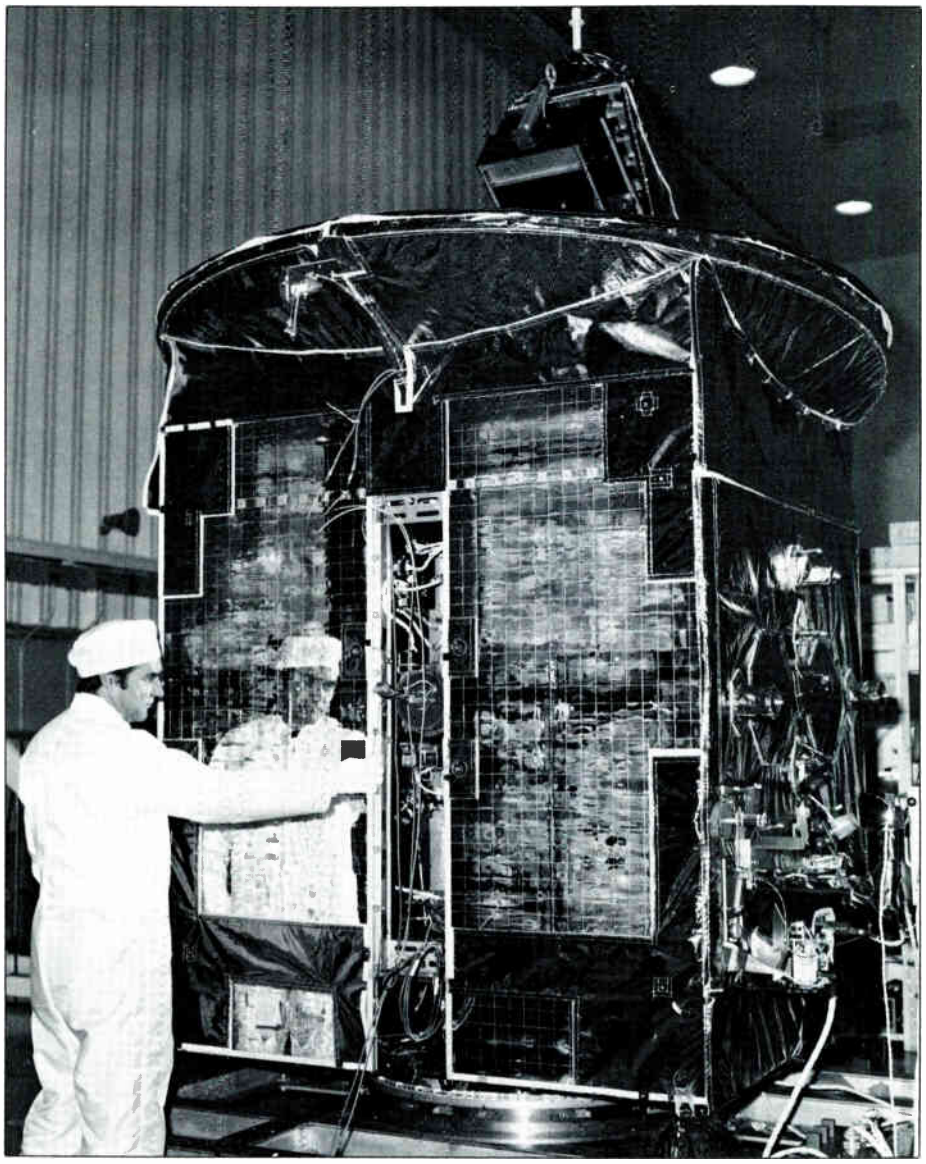
The Comband system will be presented to the cable television industry at the Western Show, Nov. 17-19 in Anaheim, Calif.

Hughes Demonstrates Dual Beam Modification

LOS ANGELES—Hughes Communications has demonstrated how an existing TVRO antenna can receive signals from two satellites—Satcom III-R and Galaxy I—simultaneously. Technical representatives from major MSOs, antenna manufacturers, the NCTA, Galaxy I programmers and the trade press witnessed the demonstration held at the Hughes facility in Torrance, Calif. The demonstration consisted of replacing the present single feed system of an existing antenna with Hughes' new dual beam feed system. This system enables the cable operator to double the amount of programming received and reduces, by two-thirds, the expenditures necessary to buy a new antenna.

According to Clay Whitehead, president of Hughes Communications, the modification was developed by Hughes Aircraft ten years ago. But, it was not until the FCC assigned the two major cable satellites, Galaxy I and Satcom III-R, adjacent orbital slots at 135°W and 131°W longitude, that this new application was created. With this modification, cable operators will be able to receive all 48 channels of cable programming that will be available on these two satellites in 1983. There is an imperceptible increase in the signal to noise ratio of less than 0.5 dB with the modification because Galaxy I and Satcom III-R are only 4 degrees apart. At the demonstration, participants tested this signal-to-noise radio and discerned the quality of signals received from two satellites via a modified antenna.

According to the company, the concept of the modification is not complex. Signals from two adjacent satellites (from 3 degrees to 5 degrees apart) are received along two separate beams and are then reflected off the parabolic surface of the antenna up to the dual beam feed system. The feed system is suspended from an adjustable support structure so that a cable operator can direct the antenna to two adjacent C-band satellites in the geostationary arc and adjust for different



The mirror finish of RCA's Satcom V communications satellite reflects the image of an engineer at the RCA labs in Princeton, N.J. The mirrors and the spacecraft's mylar thermal coating help keep its interior at a mild 68 degrees fahrenheit despite the super heat and cold of space, 23,000 miles above the equator. Satcom V will be used by Alascom Inc., Alaska's long distance telecommunications company and by RCA for voice and data communications. It is the first operational, all solid-state satellite, and is scheduled for launch in late October or early November.

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Build the muscle you need with Hughes AML™ Systems. When your downstream and upstream traffic has used up all your allocated microwave frequencies, it's time to expand your capabilities with a Hughes AML frequency reuse system. There's no need to top off your operation at 70 or 80 channels when you could use a hundred or more. No need to struggle with the CARS band or hope additional channel allocations are made available. You can look to Hughes now.

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geographic locations. This also permits adjustment for reduced spacing between satellites, a proposal now before the FCC.

The Galaxy I satellite will transmit 24 channels of programming from Time Inc.; Turner Broadcasting System; Westinghouse Broadcasting Company, Inc.; Times Mirror Satellite Programming; Viacom International, Inc.; SIN Television Network; C-SPAN; and others yet to be announced.

In addition to Galaxy I, Hughes plans to launch a second satellite in September of 1983 and a third in 1984, to be named Galaxy II and Galaxy III respectively. These satellites will be used primarily for data communications.

TCI Orders $100 Million In CATV Electronics From General Instrument

NEW YORK—Tele-Communications Inc. and General Instrument Corp. have jointly announced that TCI has placed orders for CATV electronics equipment valued at $100 million. General Instrument's Jerrold Division will supply digital addressable subscriber terminals and associated headend equipment to be delivered over the next three years for use throughout TCI's 300 cable systems in the U.S.

The contracts call for 750,000 Jerrold 400 and 450 MHz addressable converters that can deliver up to 66 channels of programming and permit pay-per-view service. These contracts will enable TCI subscribers to select from a choice of individual programming offered by the system and to pay according to their selections. Selection and billing procedures will be automatically controlled by a computer at the central processing center, yet to be established by TCI. Under the contract, Jerrold will also supply active and passive distribution equipment and TVRO equipment.

TCI spokesmen claim they believe this to be the largest contract ever written for cable television electronics. According to the company, first deliveries under the contract have begun with equipment deliveries to TCI cable systems in Gary, Ind. and Parkersburg, W. Va. The equipment called for in the contract will be manufactured in Jerrold facilities in Arizona, Japan, Canada, Mexico and Taiwan.

GTE To Purchase Southern Pacific; Spacenet Launches Expected To Remain On Schedule

STAMFORD, Conn.—GTE Corp.'s planned purchase of Southern Pacific Communications, reportedly for about $750 million, includes SP's Spacenet satellite unit, which has several cable industry customers.

The purchase will not affect the launch schedule of Spacenet I, according to Terry Bronocco, a GTE spokeswoman. However, Bronocco told *CableVision* it is "premature" to be able to determine what effect the buy-out may have on transponder pricing schedules.

Spacenet I is expected to be launched in February 1984. The bird carries 18 4/6 GHz transponders and six 12/14 GHz transponders. Firms that have reserved space on the satellite are Satellite Syndicated Systems (three), Pop Network (three), SIN (two), Landmark Communications (two), Bonneville International (three), Southern Baptist Convention (two), United Video (one), Midwest Radio & TV (one), Double-B Enterprises (one), Rainbow Communications (one) and NBC (one).

SP targeted some $200 million for its satellite program, including the launch of Spacenet I and Spacenet II in 1984. Spacenet III is being built.

Prudential Insurance Co. of America had announced an agreement in principle to invest up to $135 million in SP's satellite program. However, an SP representative said that agreement may have to be renegotiated.

The purchase of Southern Pacific drew quick attention from the Justice Department, which raised the possibility of

antitrust violations. GTE would be purchasing SP's long-distance Sprint telephone service while maintaining local exchange services. The combination of local and long-distance capability was a key factor in the antitrust suit filed against AT&T. In addition to the scrutiny by the Justice Department, MCI Communications has vowed to fight the purchase.

Bronocco said, "We will make complete filings with the FCC and Justice Department. We expect a full investigation but don't anticipate any antitrust problems."

New Home, New Strategy for United Video

TULSA, Okla.—United Video has moved to a new $2.2 million headquarters building and satellite facility. Formerly scattered in three separate locations, United's marketing, administrative and engineering departments now are together under one roof. The staff has doubled to 85 during the last year. The facility sports a $50,000 multifrequency Torus satellite antenna and earth station capable of uplinking in both the C-band and Ku-band.

United Video is the company that pioneered rebroadcast via satellite of station WGN-TV in 1978. Today, WGN reaches 3,200 cable systems and more than nine million subscribers.

By stretching the capacity of one transponder, United Video is able to offer seven additional satellite services: WFMT fine arts stereo, Seeburg Music, Satellite Music Network, Bonneville Music, Moody Bible, the Electronic Program Guide and VISIT, a data and message service.

Commenting on the outlook for cable services in the wake of the demise of CBS Cable, Roy Bliss, executive vice president of United Video said, "The industry knew it would take deep pockets, but it may be the pockets need to be even deeper than they thought."

"Remember even HBO was down $60 million once," Bliss continued. "People tend to forget how long and hard it was to get there. It takes a long time to change viewing habits."

There's a lot to be said for being first, Bliss said. He noted that it costs $15 million to get on the satellite today compared to $1 million four years ago. "It's very expensive to catch up."

AT&T To Lease Transponders On Preemptive Basis

NEW YORK—American Telegraph and Telephone Co. recently announced its plan to begin leasing excess capacity on its Comstar satellite system. The company has designated twelve satellite transponders for lease at $96,000 a month each. Since leases will be made on a preemptive basis, AT&T will reserve the right to use one or more of these twelve transponders even if the customer's lease has not yet expired.

Leases on transponders will run for a minimum of thirty consecutive days and will expire by August 31, 1983. In 1983, the company plans to offer protected leases on transponders at $102,000 a month.

Columbus Teleport Proposed

COLUMBUS, Ohio—A formal commitment to the construction of a teleport to serve Ohio businesses was made with the Oct. 1, 1982 inception of the Columbus Teleport Corp. The new corporation plans to construct and operate a telecommunications center with interactive uplink and downlink satellite reception capability for video, audio and data signals.

According to the company, the teleport will provide Ohio companies with the most efficient and cost-effective mechanism available today to deliver and receive data communications, audio signals and video communications.

The four initial shareholders in the corporation are Ohio State University; CompuServe Inc.; Chemical Abstracts Service Division of the American Chemical Society and M&R Companies, a partnership of the Ruscilli Construction Co.

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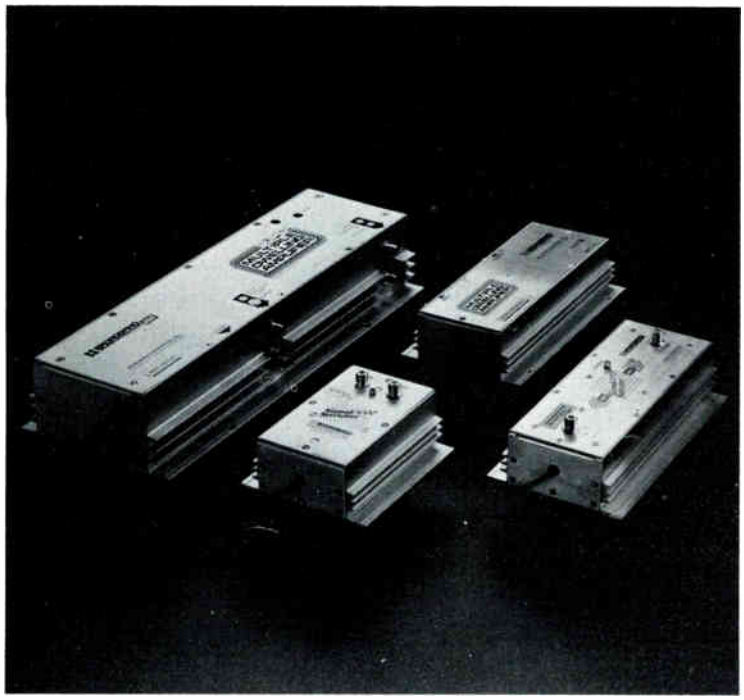

Super Multiple Dwelling Amplifier Multiple Dwelling Amplifier Signal Stretcher™ — Two-Way Signal Stretcher™ — One-Way

Model	Gain	Bandwidth	Output Capability*
Super Multiple Dwelling Amplifier			
SMDA-300	20 to 40 dB	50-300 MHz	+49/44 dBmV
SMDA-440	20 to 40 dB	50-440 MHz	+47/42 dBmV
Reverse Amplifier	10 to 30 dB	5-32 MHz	+50 dBmV
Multiple Dwelling Amplifier			
MDA-300-30-T	30 dB	50-300 MHz	+49/44 dBmV
MDA-440-30-T	30 dB	50-440 MHz	+47/42 dBmV
Signal Stretcher™ - Two-Way			
SS-300-15-T-2W	15 dB (flat)	50-300 MHz	+45/40 dBmV
SS-440-14-T-2W	14 dB (sloped)	50-440 MHz	+41/36 dBmV
Reverse Amplifier	0 dB	5-32 MHz	N/A
Signal Stretcher™ - One-Way			
SS-300-15-T	15 dB (flat)	50-300 MHz	+45/40 dBmV
SS-440-14-T	14 dB (sloped)	50-440 MHz	+41/36 dBmV

*Output specified at -60 dB CTB @ 54-channel loading for 440 MHz units and 35-channel loading for 300 MHz units.

We now offer you a complete line of one- and two-way apartment and house-drop amplifiers to fill all your requirements for home, apartment, condominium, hotel and motel distribution systems.

Super Multiple Dwelling Amplifier (SMDA): New! Topping off our product line, the SMDA is super-flexible to meet your changing apartment distribution needs. Easily convertible to two-way operation, it features a variety of gains up to 40 dB at 300, 440 MHz bandwidths.

Controls include gain and slope as well as plug-in pads and equalizers. Powering is also flexible with 120-volt line and 30/60-volt cable power options.

Multiple Dwelling Amplifier (MDA): New! Available in 300 MHz and 440 MHz bandwidths, the MDA has 30 dB of gain and plug-in pads and equalizers. It's one-way and is powered by a U.L.-approved Class II transformer that may be located away from the unit itself.

Signal Stretchers™ (SS): Introduced last year, Signal Stretchers™ are designed for house drops requiring additional signal to feed a number of TV sets. Available in 300 MHz and 440 MHz one-and two-way models, they are also effective for long drops where the signal loss is great.

Because of their high output capability, Signal Stretchers™ may also be used to feed small apartment buildings of ten to fifteen units.

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Model No. G120

The Model G120 Lemco Looper forms 12" flat-bottom loops 6" deep in dual .750 trunk and dual .500 feeder — four cables at one time. A unique combination of simple mechanics guides the cables into the accepted flat-bottom configuration. As the loop forming arms rotate the cables, the arms simultaneously move laterally toward each other as cable is required for the 6" loop depth. This combined tool action moves the cable into the loop form with minimum force and eliminates stretching, rippling and premature cracking of the aluminum conductor. A combination of five different tool motions are activated and synchronized by turning a drive-screw handle.

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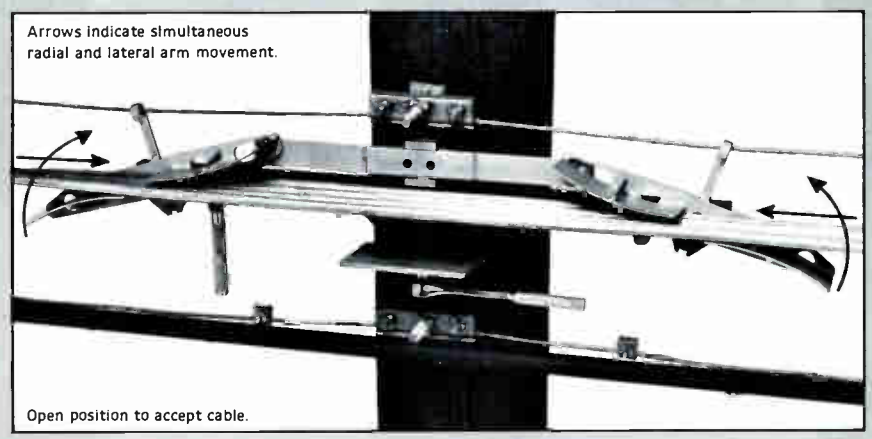

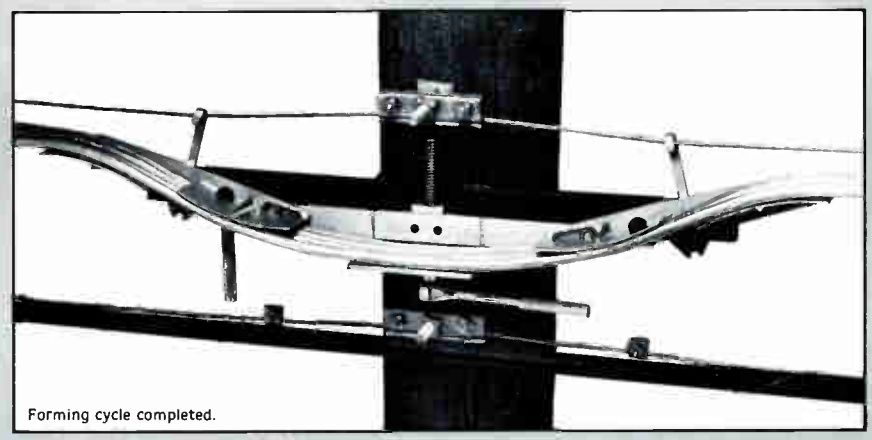

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The formal organization of Columbus Teleport allows these shareholders, and others to be added at a later date, to begin research on the telecommunications needs of Ohio companies and the technical planning for the Teleport. Shareholders will also start developing the educational campaigns necessary to help businesses understand how to utilize the satellite communications facilities that will be made available to them via the teleport.

Texscan To Introduce New Security Product Line

PHOENIX—Texscan Corp. will introduce a new product line for the home security market at the Western Cable Show. By utilizing wireless installation and microprocessor technology, the home security system offers ease of installation at low cost and several tiers of residential security for subscribers. According to Raleigh Stelle, vice president of marketing at Texscan, the products have been developed and, after the Western Show, will be produced and manufactured in substantial volume.

System Fined For Signal Leaks

WASHINGTON—The FCC fined Sonic Cable TV, an operator of cable systems in Grover City, Arroyo Grande and Pismo Beach, Calif., $6,000 for signal leakage and failing to correct harmful interference to amateur radio operators. The commission said it had received complaints from local amateur radio operators over the past two years. FCC investigators said they found excessive signal leakage.

Business Notes

★ **M/A-Com Video Systems Inc.** has signed an OEM agreement with **Artel Communications Corporation** to market a full line of fiber optic video/audio/data transmission systems to the broadcast and industrial communications industries.

★ A new fiber optics systems company, **American Photonics Inc.**, has been formed in Brewster, New York. James Walyus, president of the new firm, was the former manager, marketing and sales, for Optical Information Systems, which was until recently a division of Exxon Enterprises. American Photonics, Inc. is now designing, developing and manufacturing fiber optic systems and products for the local network and telecommunications markets.

★ **U.S. Cable Corporation** has signed an agreement to purchase nearly $3.5 million in converters and distribution equipment from the **Jerrold Division** of General Instrument Corporation. Under the agreement, Jerrold will furnish $3 million worth of converters and $450,000 worth of distribution equipment over the next 12 months.

★ **WW Communications Inc.** has installed the first totally addressable cable operation in Missouri, using the **Oak** MiniCon System. 1,500 Oak TC-35 (TotalControl-35 channel) addressable converters are currently installed in the Excelsior Springs, Mo., system. WW Communications passes 4,200 homes in Excelsior Springs and forecasts a 40-50 percent market penetration by the end of 1982.

★ **Linear Corporation** of Inglewood, California, has announced the appointment of **Anixter Communications** as nationwide distributors of their cable television home security equipment.

★ **RCA Cablevision Systems** has announced that **Viacom Cablevision** will install an RCA headend incorporating the company's newly-announced CTM20 color television modulator. The headend, the first of its kind in the industry, will be used in Viacom's Mountain View, Calif., system, and is scheduled to be in operation on October 1, 1982. The headend will feed a dual cable system with 108 channels of video and FM programming.

★ **Harris Corporation** has appointed **American Satellite and Television Inc.** as a distributor of satellite communications products. The company is the only Harris distributor in Florida and one of eight appointed throughout the United States.

★ **LNR Communications Inc.** has received an order, totalling more than $160,000, to supply Ku-Band Video Exciters to Telesat Canada. The order was for LNR Model UEV14-D3 Synthesized Video Exciters. They will include intregral audio subcarrier modulators synthesized in 10 KHz steps. Operating in the 14.0-14.5 GHz frequency range, the Exciters are dual conversion, thumbwheel-controlled and tunable in 125 KHz steps. LNR's Exciters meet the requirements of INTELSAT and domestic satellite communications systems.

★ **Telsat Corporation** of Houston, Texas, has announced the availability of a testing service for both manufacturers and users of 4 GHz antennas. To determine how well an antenna will perform, Telesat will provide both gain measurements and power patterns.

★ **Warner Amex Cable Communications** has introduced security service in metropolitan St. Louis providing fire, burglary and medical alert emergency services 24-hours-a-day. The new service will be available to residents in 26 communities in the metropolitan St. Louis area, passing some 75,000 homes with a potential of 90,000 subscribers. The security service will be available to all residents in the area including non-cable TV families and businesses. St. Louis is

the sixth major city in which Warner Amex offers complete security services.

★ **Staunton Video Corp.** Staunton, Va., has given **Scientific-Atlanta Inc.** a $2 million order for equipment to rebuild Staunton Video's 130-mile CATV system. The order includes a pre-wired 54-channel headend, 130 miles of coaxial cable, drop cable, 130 miles of 400 MHz distribution electronics, taps and passives, a 5-meter cassegrain earth station and 12,000 descrambling set-top terminals. Rebuilding has begun, and Staunton Video will begin transferring subscribers in October 1982. By July 1983, all 9,500 subscribers will be served by the new system. Construction is being carried out by DAVI Communications Inc., a contracting company, with Scientific-Atlanta providing technical support.

★ **American Satellite and Television Inc.** has announced that it is building a mobile uplink transmitter. The uplink will be leased by the company to television networks and teleconference producers for coverage of regular programming and special events originating from Florida and other Southeastern locations. ASTV has contracted wtih The Satellite Group, Orlando, Florida, to manage operations of the new uplink system.

★ **General Cable Co.** a division of GK Technologies Inc. has announced receipt of a major NASA contract to design, manufacture, install and test fiber optic cable for a broadband communication system at the John F. Kennedy Space Center in Florida. The project requires over 20 km of cable having ten dual window optical glass fibers and is the first phase of a major upgrading of the Space Center's communications system. The cable will be installed in existing underground ducts and manholes and maintained under constant pressurization. The project is expected to be completed by January, 1983.

★ **Pioneer Communications** has announced the first major sale of its 58-channel, dual, set-top tunable converter. Purchaser of the cable television converters is **Metrovision Inc.** of Atlanta. Metrovision signed a $465,000 contract with Pioneer for units to be used in their Prince George's County, Maryland system. According to Pioneer, the first 500 units will be delivered in December with deliveries of 500 to 800 units scheduled for January through June and the remainder delivered by November of 1983.

★ **Tribune Company Cable** of California has been given first right to negotiate for the cable television franchise in Lakewood, Calif. The 26,000-home franchise area was unanimously awarded to Tribune over three other applicants. The company proposed a 116-channel, fully interactive subscriber system with 167 miles of plant. A total of 17 channels were allocated for local access for educational, municipal and public use.

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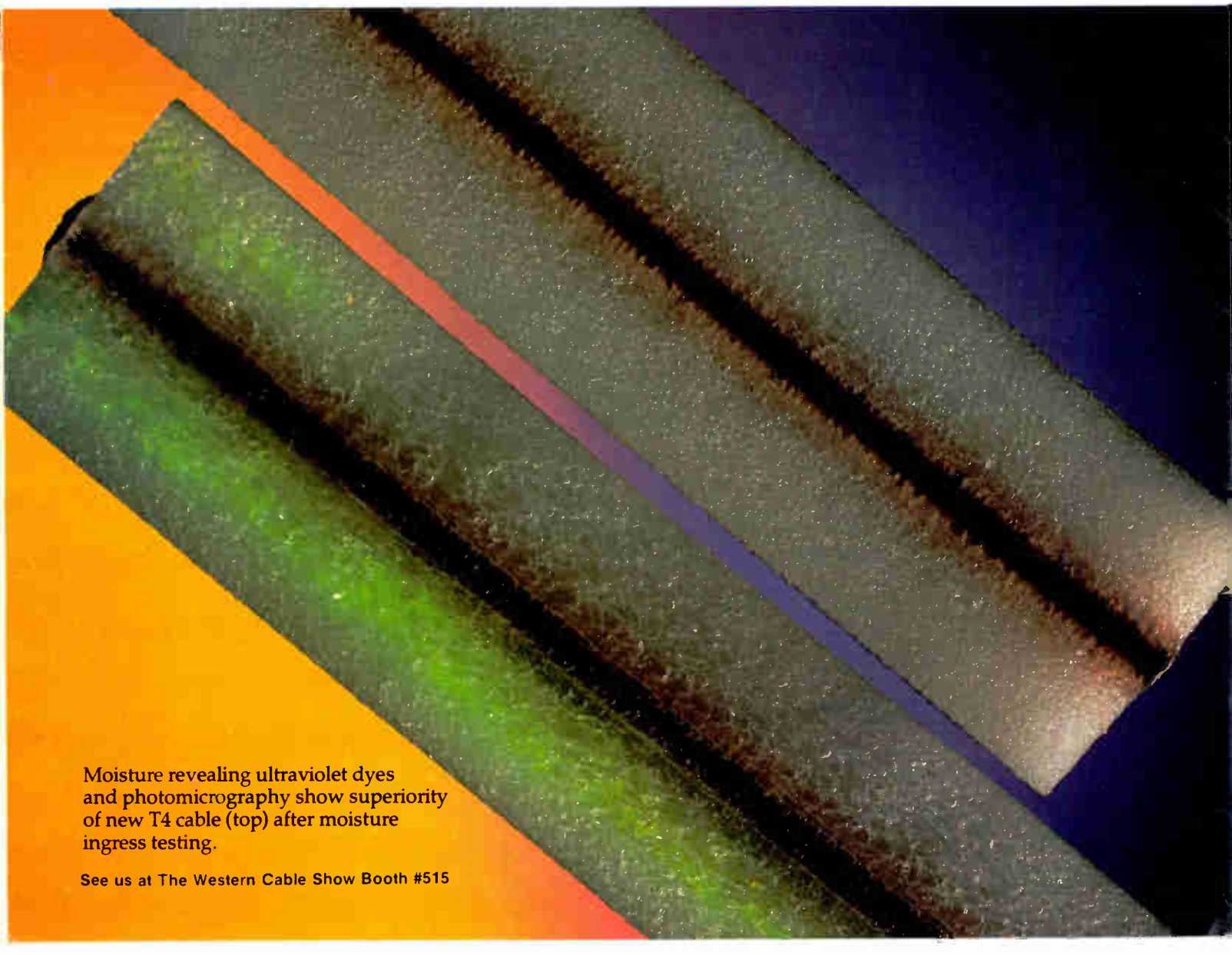

Moisture revealing ultraviolet dyes and photomicrography show superiority of new T4 cable (top) after moisture ingress testing.

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and we went from single-ended to push-pull amplifiers. The push-pull designs and reduced second-order distortion problems allowed us to fill in the midband. Once we had filled in the midband, we were now using virtually all of the spectrum. We now had 21-channel systems operating to 260 MHz. To extend bandwidth further past 260 required a combination of the lower loss cables that came along and improved amplifiers—that is, amplifiers with extended bandwidth and the ability to carry the loading of additional channels.

I don't think the square root law was really appreciated. People seemed to concentrate on the loading problem and on the improvement of amplifiers. Well, by '75 we ordered a 300 MHz system and they were operating with 35- to 36-channel loadings.

I got interested in 400 MHz around 1978 when I came to a franchise proposal for Fort Lauderdale, one we lost. That's the first time, I'm pretty certain, that a 400 MHz system had even been proposed. In the one or two years before that, there had been some frequency extensions from 300. Manufacturers, on the request of users, were just tweaking their 300 MHz amplifiers and extending them to 320 or 330 MHz. I proposed a 400 MHz system. I first did it without having an actual firm commitment from any amplifier manufacturer to make it. I was pretty certain, though, that that kind of amplifier could be made and that it would work. The first system actually accepted by a franchising authority—that is the first firm commitment to build a 400 MHz system—was probably Cable Atlanta's system for Atlanta. By that time to support that, we had commitments from amplifier manufacturers. The question of whether it would work or not—I looked at it this way—was, is this really radical new technology? I had City Council's franchising authorities turn down 54-channel proposals on the basis, and on the advice of some consultants at that time—this is two and three years ago—that 54 channels, 400 MHz was an unproven technology, and they might get stuck. Not so. The worst that would have happened is that we would have had a very good 35-channel system. But the likelihood of 400 MHz being a failure I considered remote.

The best analogy is this one: We started with these 12-channel systems, and the old tube-type 12-channel systems were like the old DC-3 in the airline business. By the time we get to a transistorized amplifier, running 300 MHz and 35 channels, that's analogous in the airline business to the introduction of the DC-8 and the 707, the first jet airliners. The change from propellors on DC-3s to jets is like the change from tube to transistor. The airplane still looks the same. It's got wings and engines and it flies the same way. It's just the power, the guts of it, the energy of the thing has been changed and so similarly in cable television. Our amplifiers worked exactly the same way, but we have changed from tubes to transistors with consequent efficiencies and reductions in cost and the like. Now we have these DC-8s and these 707s and people like them. And now there is a demand for more capacity in these airliners. And then what do you do? Well, the easiest thing to do—but very expensive—is just to buy more of them. That's like dual cable. It is more efficient, though, if you go back to Boeing and Douglass and say, "Well, can't you stretch this airliner?" But another thing you can do to increase capacity is to go to the drawing board and draw a whole new generation of airliners.

CED: Starting over?

Switzer: Well, not quite starting over, but engineer a whole new one, like from the drawing board up. So all of these things went on at the same time. Some people went out and bought and crewed more airliners, just as some systems proposed a dual cable. Some people said, "Oh, it will never work. We'll build you this safe conservative dual 300 'meg' system." We said the most efficient thing to do is to stretch the present system because of the

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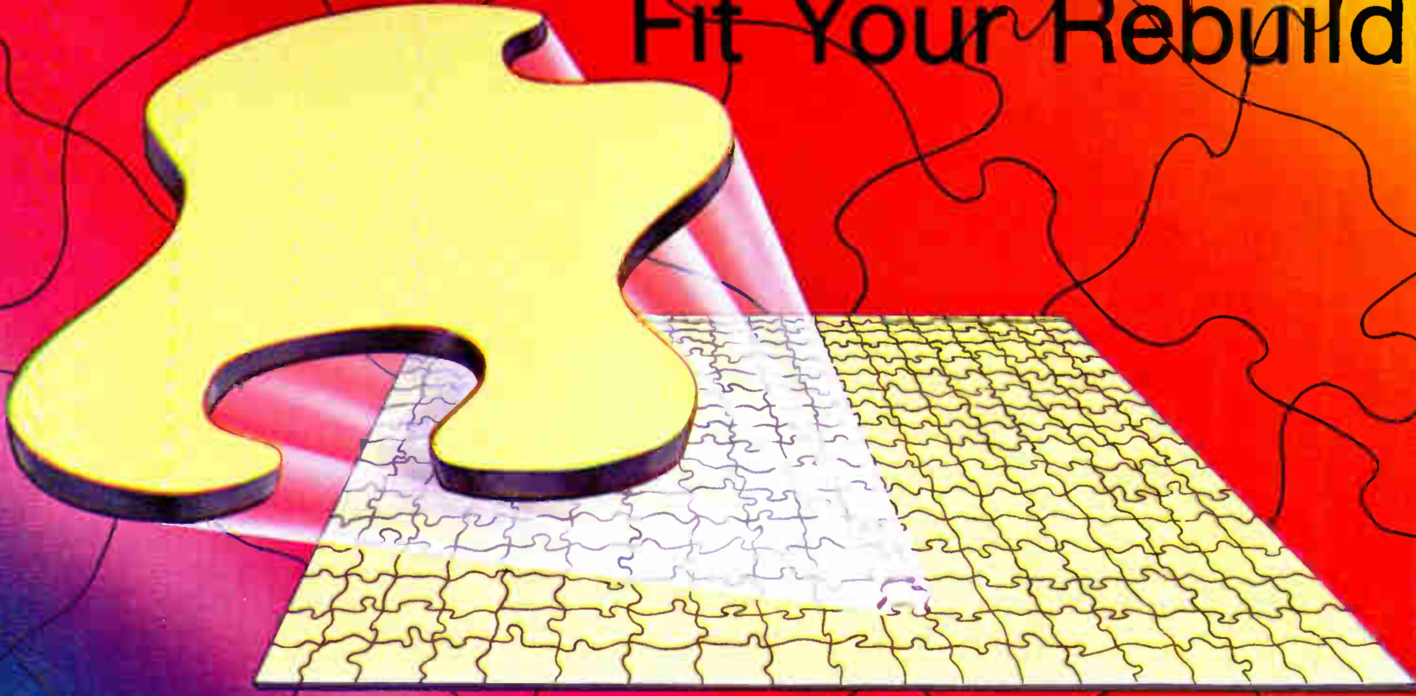

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WE LET THE FACTS SPEAK FOR THEMSELVES.

FACT: Vision Cable of Pinellas in Clearwater, Florida has an active 400 mega hertz, two-way (burglary, fire, medical) system. It is addressable and features an institutional network with Dow Jones information retrieval and more. LRC connectors are used exclusively for the system.

FACT: Suburban Chicago area MSO installed LRC connectors to build a 400 mega hertz system in 1980.

FACT: Eight of the top 10 MSOs are using LRC connectors for their 400 mega hertz systems.

CONCLUSION: When you want connectors offering proven performance, not just promises; LRC connectors are the ones you can count on.

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economy and the square root law. Our estimate was that it shouldn't cost but perhaps 15 percent more to build a 400 MHz system than a 300 MHz system with comparable quality.

Now whether it would work or not, I felt that, gee, my professional capability had been impuned by the suggestion that it wouldn't. And this is a view that I have always taken, that that's what engineers are for—to tell ahead of time whether a stretch cable system will work or not work and how well it will work and what you need to do to make it work. So I have always really resented the suggestions that 400 MHz, having been recommended, having been suggested, having been on the advice then of engineers that it would fly, that there would have been any suggestion that it wouldn't work.

CED: Did you happen to recognize in any of these contexts that it was not an engineering consideration as much as politics and franchising?

Switzer: Well, it probably was.

CED: So you see the engineering and the technology of channel capacity as being something that is self-motivated and moves forward on its own apart from social considerations, politics and franchising?

Switzer: It moves forward, but there is, I think, a duty on behalf of the engineering community both to maintain and improve the efficiency of the industry. Extension of bandwidth is such a natural way to improve the efficiency of a cable system because of the square root law, that there must always then be a continuing review of the bandwidth situation, because you get an increase in return as you extend bandwidth. I had always been reluctant to accept dual cables as a legitimate means of further bandwidth extension because capital costs double. Almost everything doubles: two cables, two amplifiers, two passes, two powering, doubled maintenance, double everything, so it's a double investment. And what you get is a doubling of system capacity. Two years ago, when I first considered bandwidth extensions, I rejected the concept of a dual cable for those reasons. And another reason is that, as we increase channel capacity, we get a reduction in value for it. The additional channels that we get are worth less to us and worth less to the public, and ultimately, we must view the value to the public, because we, as cable operators, won't get any more from additional channels than the public is willing to pay us for them.

I have never seen actual figures, but I think anyone in the business would intuitively know that most viewing is on a small number of channels. I might guess that perhaps the 10 most popular channels in the cable system command perhaps 80 percent of total viewer hours. And you could draw a graph for each channel you add—you get a reduced number of total viewer hours. By the time you're up to channel 50, 60, 70, 80, by the time you're up to channel number 126, and you said, "Now if we in fact then had the ability to accurately—reasonably accurately—measure the total viewer hours on every channel on our system, we would find that the 126th least popular channel gets a very small fraction—much less than 1/126th of the total viewer hours." As we buy the channel capacity, we get a decrease in value to the public and hence a decrease in true value to the cable system. A dual cable then doubled our capacity but didn't double the value to us but did double the capital cost.

I've rationalized it this way and come to live with it: In the context of the entire cost of the cable system now, the incremental cost of dual cable is relatively small, and that came when we introduced fairly expensive subscriber terminal equipment. Now, in our newer systems where our typical subscribers will have a—I call them APCDs—an addressable, programmable converter/descrambler, costing us about $165 (in some subscribers' homes, we will have two or three of those), and the incremental cost for dual cable of that is perhaps only $5. That's about what we paid for an automatic dual cable

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switch in one of these new boxes. Then, when you tote up the total capital investment, our headends, which now run $1.5 million to $2 million each, the distribution plant and this investment of subscriber terminal equipment, which is the single largest capital item we buy, then the incremental cost of dual cable, as part of that entire capital investment for the system, it doesn't look nearly so bad. Once we then go into expensive APCDs, then I am prepared to accept dual cable as a rational investment.

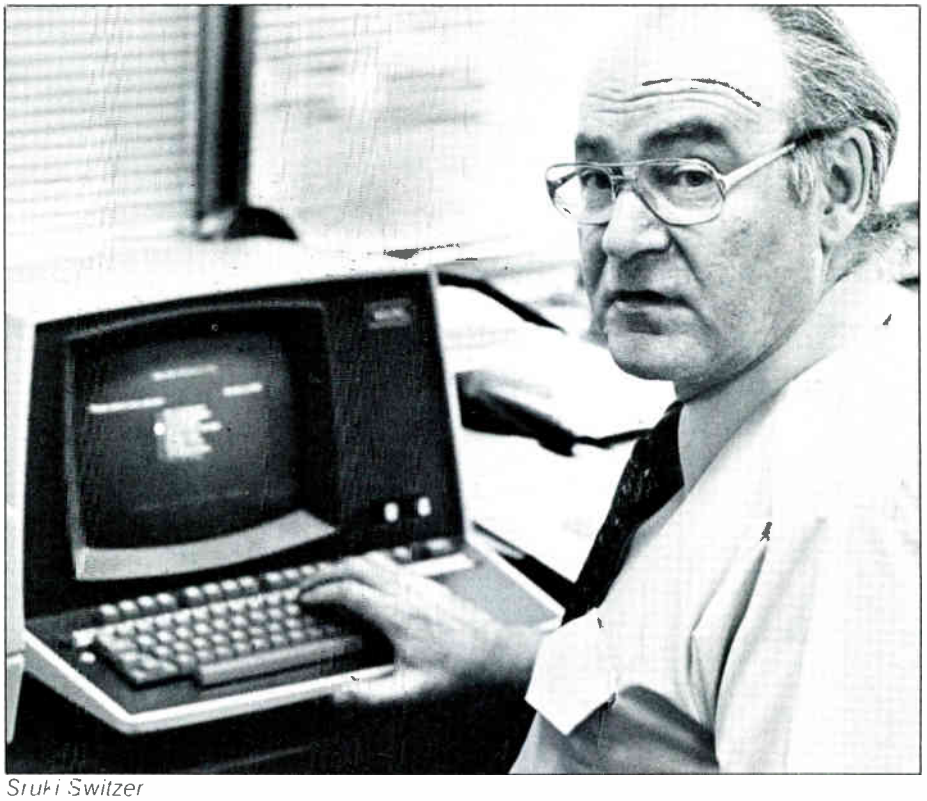
Had the industry engineers—had I, as one of them—been given the time, had I been relieved of franchising pressures for two or three years, I think the direction would still be a further increase in system bandwidth rather than a move to dual cable, because dual cable is an inefficient way to do it. It doubles the cost of that component of the plan but doesn't provide a doubling of benefit to the public. You see, we operate these tree-structured broadband coaxial cable networks. If we're going to provide a service for one person in it, we have used up the capacity of that entire network for thousands of subscribers even though only one person is using it. We don't have the ability in a tree-structured broadband network to address a particular program to one user. We can address it to them in that we can provide them with a scrambling code and an addressing code that gives only one person access to that program, but we have used up that channel capacity throughout the entire network.

CED: Essentially, over the cable, you are broadcasting that transmission.

Switzer: Exactly. A cable system is really a closed-circuit broadcasting network. The function is still one of broadcasting, and it is optimum for a broadcast type of function. There has been no basic change in cable architecture, no truly basic change from day one, from 1952. We still build a broadband tree-structure distribution system that is optimized for the one-way broadcast distribution of television signals. Now, we've gone to transistors, we've improved the coaxial cables, we've gone to hub structures, but basically, it's still the same, and has been the same for 30 years. All we have done is magnified and improved the systems.

CED: You stated at the NCTA last spring that it's getting tougher to do encores. What do you see as the future of cable system design in terms of the higher frequencies and channel capacity?

Switzer: Well, the logical way for cable systems to expand capacity would be to further extend the bandwidth—the operating bandwidth of the system. And I think that the problem involved in furthering—for the significant extension of—system bandwidth could be overcome if we had the time to work on them. But we're not being given the time to work on them. Municipalities want their cable systems



Sruki Switzer

right now. The investors want the cash flows to start right now. They perceive that there's a market out there ready to be tapped, and if they don't get in and get it, the satellite people will get it, the SMATV people will get it and so will the video-disc/cassette people. They want to get into business right now, with confidence and with low technical risk. We have to use technologies that have just that aspect. I don't perceive bandwidth expansion as being a seriously high technical risk to make. But it would take time to develop the components that we would need for it and to give them a reasonable field test even though I am sure that that could be done. I question whether it ever will be done, because I think all the systems that are worth doing will have been built in America within the next two or three years, within about the time that we would require to do the detail and to prove really big expansion of bandwidth.

I think we'll go to 500 MHz because it doesn't really strain anything that much. Going past 500 MHz in a worthwhile way would mean some significant development problems, but we won't have time. By the time we did it all, the really worthwhile systems would have been built, they would have been committed, so to speak, for the next 10 years or so, and there wouldn't be any really big market then for substantial investment in development.

CED: So you believe that for going beyond 500 MHz it is a question of reaching the ceiling in terms of the political franchise competitive constraints?

Switzer: (These are) competitive constraints in terms of being able to deliver within people's expectations. I'm often amazed—two or three years ago, there were cities that had been getting along very well without cable television for about 35 years, and then they decided they want it, and they want it now, just all of a sudden.

CED: At the NCTA, again, you discussed videosynchronization.

Switzer: Well, that's part of "getting tougher to do encores." Generally speaking, cable, to a large degree, has taken the improvement road of least cost. The improvements we've gotten have been the ones that were either achievable with least development and least implementation cost, or which, if they were a bit expensive, had immediate commensurate cost savings—like the step from tube to transistor, a relatively expensive thing to do, but it was obvious then that you get a good return on it for various reasons—power, maintenance, all of those things. We gradually have expanded system bandwidth and capacity, using the available technologies as they became affordable. HRC coherent carrier technology, then, was an advance and improvement in cable transmission that was relatively inexpensive. All it cost you was the headend—perhaps an additional $500 per channel.

Now, we've just about run out of inexpensive things to do, of inexpensive ways to improve system quality. If there were any, me and all the other guys in the business would be using them by now. That's what I meant—that it gets harder to do encores. You are complimented for a

particular improvement in system quality or reduction in cost or whatever for a step forward, and you're expected to do another one, and it's tough.

I had described system videosynchronization probably seven years ago as a promising technique for the future. The first videosynchronizer I saw was a unit from NEC from Japan. It was half a rack high and it was about three feet worth of electronics, and it cost $50,000. I looked at it and what it did, and I said at once that this had the potential for significant improvement in cable television quality. Surprisingly, for "What's-A-Million Switzer," I took the view that inevitably the price would come down because it was a normal digital product So I watched it, year by year, as the price came down, and waited for a coincidence of two things to happen: a very large system that I have to build with high transmissions standards to be maintained and a reduction in cost to around $12,000 per synchronizer. And when that came together, for a system I designed in the Northwest suburbs of Chicago, we committed to use videosynchronization. The headend system was installed with full videosync this past spring. And it uses more than 50 videosynchronizers and they cost just over $10,000 each.

CED: Which manufacturer's digital frame synchronizer did you purchase?

Switzer: That particular group came from Microtime. The costs are going down further. We're dealing now for synchronizing for delivery in the spring of '83, and it looks like the cost will be under $10,000 per channel.

CED: People have told me that the tree structure for distribution is not the optimum architecture even for coaxial cable and is completely out of the question for a fiber optic system, using fiber optic cable.

Switzer: Well, it's out of the question for fiber optics.

CED: Would you say that the primary problem is the splitting?

Switzer: No. The primary problem is the frequency division multiplexing, to get light sources and repeaters that will efficiently handle a multichannel FDM-type system without excessive distortion.

CED: That's new to me.

Switzer: Well, you maybe haven't thought of it that way. I think the problems of splitting and tapping and the like could probably be overcome, but the optimum light sources, which are laser diodes, are not very linear, and they are as linear as they presently are as a result of heroic efforts to make them linear. I still don't believe they're linear enough to handle 50-, 60- or 70-channel loadings at acceptable distortion levels, with acceptable levels of intermodulation or cross-modulation, and there are also some noise considerations. So it would be very difficult to design a broadband system, forgetting taps, forgetting splitters and the

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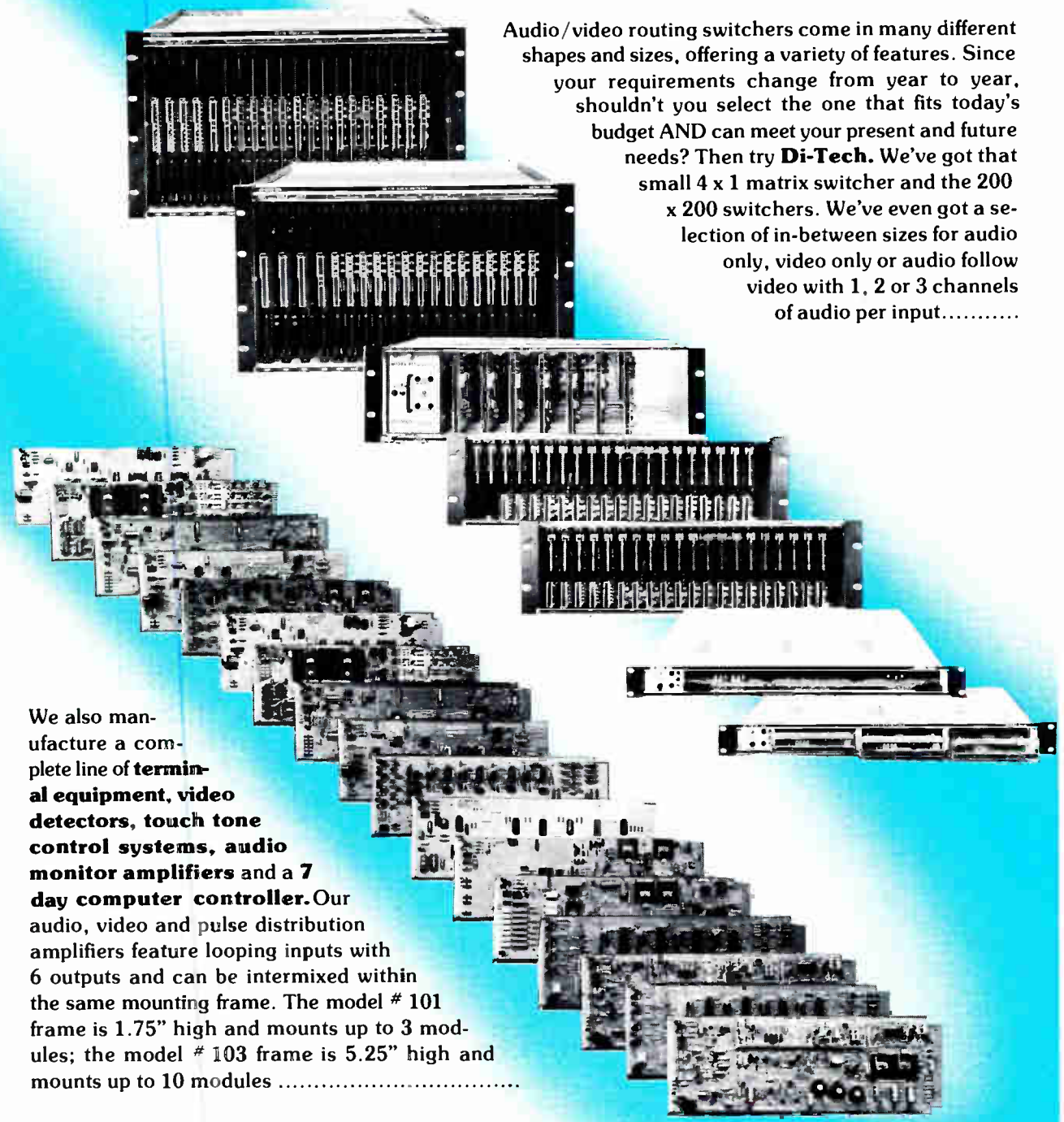

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like, just from one point to another, to carry, say, 60 channels FDM—frequency division multiplex—from one point to another through a glass fiber, a single glass fiber.

Glass should be operated in the digital mode. Most fiber optic capability going in today is going to the telephone industry, and fiber optic for telephone is all digital—one hundred percent digital. So here we are sitting out in the left field of the fiber optics industry, using a very small percentage of the total capability and operating in the analog mode, whereas all of the R&D effort in the fiber optics business is substantially in digital transmission. Hundreds of millions of dollars are spent every year on digital transmission with fiber optics. The repeaters, the sources, the electronics, everything to do with fiber optics is focusing on the telephone industry and on digital modes of transmission. So, here we are in cable television. It isn't realistic to expect that the problems we have, which, so far, we've been looking at analog-type transmission, will be solved for us, and we don't really have enough economic clout and resources in the cable television industry to do it properly. One of the things that is non-optimum for the use of fiber is our continued use of analog transmission and our expectation that we would move into fiber with analog transmission. And it's obvious then that as we go to fiber, we should go to a digital mode of transmission as soon as we can.

CED: What do you see as the stumbling blocks to using digital in transmissions?

Switzer: Well, I didn't deal with the question of architecture because you raised a question outside the context of architecture. I was saying for a number of reasons that fiber optic is not suitable for a tree-structure type of architecture, which requires multiplexing. As long as we have tree-structured systems, I think we will stay with coaxial cable networks. It is obvious that for general purpose telecommunication systems, a star-configured switch network is far more optimum for general telecom purposes. That's the type of network that the telephone company operates. It is also, I think, quite obvious that coax cable is not really a suitable communications medium for that kind of network. The next major step is the improvement of star-configured switching systems in the use of fiberoptic as a transmission medium. The next generation of system, after what we build today, I think will be star-configured fiber optic systems switched and operating in an all-digital mode.

CED: Does this present franchising problems, convincing people of the necessity of radical change in system architecture?

Switzer: I think that the systems we are building now will have a minimum 10-year lifetime. They'll continue to operate and serve their purposes quite well through the rest of this decade. The question will then come early in the 1990s: What kind of services would we want to provide? I believe that there will be a very substantial business continuing in the provision of broadcast-type entertainment services, essentially the business that the cable television system has today. For the provision of that service, I don't think there will be any compulsion to rebuild in a new technology. There will be other businesses in communications, but that particular aspect of the business will continue to be a money-maker, and I don't think we will be looking to throw out plant that is only 10 years old just because there is fiber optics available and...

CED: Let me try to anticipate—do you see the possibility of hybrid architectures where, for the provision of transmission of entertainment, we will maintain the traditional kind of system architecture, but say, perhaps for data transmission for business or institutional networks, we might see fundamentally different architectures within the same franchise area?

Switzer: I think we will. The network systems that we're presently building are not really optimum for non-television purposes. We're using them for non-television purposes because we have them. They have excess capacity and they can be adapted for that purpose. As I was saying, the system we build today is a direct linear descendent of the first systems of 1949, 1950 or a little more than 30 years ago, and they continue to look like that because they have to perform the same function as they did then.

If one were starting today to build a true, general-purpose telecommunications system, you wouldn't build a broadband tree-structured coaxial cable network for several reasons. Television distribution is only a very small part of the overall communications business. I think it would be the rarest of coincidences if the systems that we started 30 or more years ago turned out to be optimum for this purpose. You know, I think people should be reminded of the history. Just to put it briefly, the history started when people had television reception problems, and in Europe, in those years, when people had television reception problems, they complained to their member of Parliament, and the national network put up a re-broadcast station. Television was run by national networks, and they had a responsibility to serve everyone in the country, so they developed a network of over-the-air transmitter facilities. They put in as many of whatever kind of transmitters it took to provide coverage. If you were in a mountain valley, you got a little rebroadcast, if you were in a bigger city, you got a medium-power transmitter, and the whole country was served by the national network by broadcast means.

Not so in America. The television

stations that started in Pittsburgh, Portland, Philadelphia, New York and the like, have no responsibility for service other than that people happen to pick up their signal. They didn't have to increase their power or height or extend their coverage any more than was profitable to them. They had no other responsibilities. So you have, then, communities in these mountain valleys and the like that were left to their own devices for the provision of television.

So, in came cable television. We put an antenna where there was good reception, and now to get paid for it, we had to have some means of controlling it. We chose coaxial cable, which was ideal for that purpose. It was radiation-proof. It has acceptable losses. It was available, some of it war surplus. There were technicians fresh out of the armed services who knew how to work with it, and so we built these coaxial cable networks to solve people's reception problems and to get paid for them. We built them tree-structured because that suited the concept of a headend and a place with good location and a trunk that came down the mountain and fanned out in branches throughout the community. There was coaxial cable again, because it gave us control of the signal. It was broadband because this is the way the basic television system operated—that is, frequency division multiplex. And that system architecture, those system operating concepts that were started in 1949 and 1950 and the like, continued to this day.

Now, what reason is there to suppose that a system with that heritage, with those antecedents, conceived in that way, should turn out to be the fix-all, the end-all, general purpose telecommunications system several decades later? I'd say it would be a rare coincidence.

What we have done is taken the grandson of these systems, which looks exactly like his grandfather, except he is now transistorized and aluminum sheet cabled and has hubs, and we now say, "Well, we're going to make you a data communications system and you're going to handle voice and you're going to do all these marvelous things." Well, we do that, but it isn't really optimum.

CED: Can the telephone company do it better?

Switzer: The telephone system started, though, the other way. It started for general purpose, one-on-one intercommunications purposes. It evolved with switching. The next generation will obviously have increased bandwidth, operate in a digital mode. So, for non-television uses and non-broadcast pie pieces—that is one point to multipoint uses—the Bell System will work better with its different type of network.

CED: But look at all of these digital networks that are now evolving that use broadband techniques within the office,

the "office of the future" concept. These bus systems, these local area networks handling the data, operate on a broadband basis. Perhaps it was a lucky coincidence and the broadband tree-structured system in fact becomes ideal for this purpose.

Switzer: I haven't made a rigorous comparison, but neither have I seen one with a contrary view. I suggest that a truly optimum system has a sort of hybrid structure. Within a small area, for example, within an office in a building, a broadband bus-type of concept is probably quite acceptable and will probably turn out to be optimum for mundane reasons like being able to relocate easily. When you want to plug in a new phone or data terminal, you just plug it into this bus instead of having to drag a cable as big as your thumb halfway across the building every time you want to connect another multikey-set or data-set or the like. But for the communitywide network, for these non-television services, those switch-type narrower band services, star configured systems are probably optimum. I expect we will see a combination then of a star-configured system with broadband bus-type local bands on it—local area networks at the ends of these things. I think fiber optic will be brought increasingly into use, for example, in trunking in the general purpose telecom systems, and that fiber optic transmission will become virtually 100 percent legitimate.

CED: AT&T has said several times, and recently reiterated the fact, that they don't intend to compete with cable television in the traditional transmission of entertainment services, that this is really not something that their plant is organized for.

Switzer: I don't think they want to bother with it.

CED: Actually, my suspicion has been all along, and they finally, just recently in a public forum, admitted that they intend to provide stiff competition with cable in virtually all the other ancillary services. Their development of fiber optic plant gives them a tremendous amount of bandwidth. Is cable going to be able to survive in that kind of environment?

Switzer: Cable will survive very well with its present business, which is entertainment. I personally would be prepared to (agree) right now in a consent decree with them if they'll leave me the entertainment business. They can have the rest of it. What's wrong with the entertainment business? I look at Bell this way: It's like the Roman Empire. They're in business forever. I don't have the time, I'm not going to live long enough and I don't have the financial resources and the like, to compete with Bell. I've got lots of other things to do. There is, in my view, scope enough within the entertainment business to keep engineers, to keep our capital and to keep these systems adequately busy. Now there may be people in the business who want to take a tilt at the Roman Empire. Perhaps Warner Amex might. I don't know. I see that American Express is already looking for partners—they're not really coping with the entertainment business. But I don't see anybody in the cable television business with the resources in either people or money or in any way, really, ready to take on the telephone industry on a meaningful scale for general purpose telecommunications functions.

Oh, we can nibble away at it. I'll take little bits and pieces of it. We're into data applications, and, yes, we can provide data circuits. Other cable companies, Manhattan, for example, are more deeply into it than we are. We're into the security business but actually with very little use of cable, because security is the least suitable non-television service for cable that there is—absolutely the least suitable. Cable television companies are the most suitable companies to go into the business, but cable technology is the least suitable transmission medium for security.

CED: Can you justify that?

Switzer: You want to go into that? It's not hard to justify.

CED: I can't let you go without justifying that because a lot of people have said just exactly the opposite.

Switzer: No, no. I've been saying that for five years and a lot of people are now, as I read Kagan's newsletters on the subject, almost universally coming to agree and realize it. There are three functions of security: 1) the sensor function within the home or premises; 2) the communications function; and 3) the monitoring function. And cable doesn't do anything but the middle function—the communications. The sensing function for a cable-operated system is no different, and the monitoring function is no different than it would be if you had some other communications medium in between, so all we're looking at is communications. What's the communications function? An alarm. One bit tells us that something has happened. How often? How often do you get an alarm condition in the home? Once a year?

CED: But, nevertheless, it's highly valuable for it to be continuously polled.

Switzer: Well, we'll question how valuable it is. Let's talk basic information. We'll go to the arithmetic of it: One bit per year average data transmission rate. You need a broadband communications system for transmitting one bit per home per year? Basically, security is a low information content service. Consequently, it can be provided by any number of supplementary communication systems, by telephone, by dialers, by scanners, by carrier pigeons or by radio. They've been operated by umpteen different things because it is essentially a low information rate, compared to other services, for example, various data communication services

that are truly high information rate. And television, live color TV, has a tremendous information content to be transmitted. So, because (security) is basically a low information rate service, it doesn't really need cable. And as you now examine the business, you find that, increasingly, people realize that.

Now, why should a cable system be in it? Not because they have an optimum communications capability, because they don't. Cable systems have all kinds of problems for this purpose, not the least of which is that it is basically unreliable. Our cable systems are not really very reliable. There's no redundancy—no redundancy of routing whatever. We're dependent on all these electronic repeaters, all these connections to the electric power supply. Yes, we cover it with standby power, but the industry has done very little yet about redundancy of electronics and nothing about redundancy of routing. We break a cable and then no amount of standby power or redundant amplifier modules will do anything for it.

CED: There's an interesting legal problem of liability...

Switzer: Well, yes, but all security services have got liability problems to various degrees, and they cover it with insurance and, in cable, by trying to avoid high risk situations.

The cable system goes into the security business, not because they have an optimum or a very efficient communications medium for that purpose, but because they've got the right business structure—because they are used to dealing with subscribers in large numbers. They're used to investing several hundred dollars per subscriber and getting it back a few dollars at a time. They're used to billing, they're used to selling, they're used to servicing.

So we have a business structure and a business psychology and an administrative psychology and the financial structure that is suitable for going into the high volume security business. So you find, when you examine security business like the one we have in Atlanta, that once you set up this extensive monitoring facility and the sales structure and the like, why limit yourself to cable subscribers? So we don't. We provide a telephone dialer. In effect, most of our subscribers—that is, more than half of our security subscribers—are operating on digital dialers rather than cable. Secondly, why limit ourselves to our franchise area once we've got this business structure? So we don't. We don't take on banks and other "fancy" installations. We're set up for high-volume, low-value security and we're optimized for that purpose. We use cable where we have it. We use low-cost digital dialers where we don't. And interestingly, you brought up the question of scanning. It is valuable then to be able to monitor. It's called supervision. That is, you supervise a line to be sure that everything is continuously working. You can do the same thing with telephone lines. It operates under voice, and it doesn't interrupt or interfere with the normal use of the telephone.

CED: Will modular TV receivers have important implications or any kind of implications for CATV system design?

Switzer: Yes they will. In a paper I gave at NCTA this past May in Las Vegas, I pointed out that there is an extremely wasteful redundancy in the present system, particularly as we introduce baseband type subscriber terminal equipment. The subscriber buys a full capability tuner with remote control, and we provide, then, another full capability tuner with remote control, and, in the newer boxes, complete with demodulator. So there is a terrible waste of resources that can't possibly be in the public interest. As baseband type terminal equipment becomes more firmly established, more widely used—and I believe it will be—both boxes can very easily be fitted with baseband video/audio outputs. The subscriber to a cable television system who has a baseband type of box needn't buy the tuner. The component system allows him to buy the monitor only, and we provide the tuner, optimized for cable and for the particular pay security and addressing system that we use. So, that's a benefit. I think we will see, also, certainly beginning with the national show next year, say beginning in '83, a probing of interest—that is, manufacturers' probing or industry interest—in non-standards video tranmission—that is, in exotic forms of video. I'm not talking about 1,125-line high definition. I'm talking about 525 line, with improved color encoding. The NTSC system and the way that receivers were built, there are some compromises, and we are not really getting the full capability of the 525 scanning lines. So I think we will see proposals put forward in the next year for non-standard techniques.

CED: There is a growing new controversy, given the fact that United States broadcast networks are considering multichannel sound transmission, and that, evidently, according to the NCTA engineering committee, there are major problems with those for cable systems.

Switzer: Well, there are. I think if you check the trade press, and I get most of the newsletters here, *TV Digest* in particular, the networks themselves are not too keen on stereo. But I think they'll have to follow along. Local stations are. Public Broadcast said they would go into it immediately, but they're all geared because they have got satellite networking with stereo capability. The networks don't have a stereo capability—that is, ABC, CBS, NBC for their networks—and it would cost them quite a bit in terms of production and in network tranmission to go stereo, but they probably will.

The NCTA technical committee is quite right. The three systems that have been proposed and that are being reviewed by EIA and moving toward a recommendation to the FCC, essentially are very similar. Alex Best chaired a subcommittee and did a very detailed report on it. And I read Alex's report and I'm very pessimistic.

NCTA's view is—or the projection that I saw coming from NCTA was—that perhaps a companding system would fix the signal-to-signal noise problem. I'm personally a little skeptical. I don't think it will, and I just don't think any of those systems are really going to work on cable. I don't know what to propose as an alternative. The broadcasters could go ahead and introduce a stereo system and put the blame for it not working on the cable industry. What cable systems would probably have to do is, in effect, strip out the stereo at the headend and reproduce it in the FM radio band. But they would not be able to provide a satisfactory feed of stereo to subscribers in the television audio channel. We may be able to do that in some systems in which we have complete control over subscriber terminal equipment, but that's a relatively small percentage of systems today. Most systems are going either through conventional RF converters to TV sets or direct to TV sets.

So I see it as a major problem, and it's not clear to me yet what the solution is. My first reaction is that it isn't going to work and that they had best go back to the drawing board—go right back to the beginning in terms of concept. It may turn out that, because of cable, there is no compatible system that will provide satisfactory results. We would have to raise our signal levels to at least-10 dB. We presently operate around -15 to -17 dB. But raising them to a -10 dB level, which is the broadcast level, would create a whole bunch of problems, particularly in adjacent channel operations. We'd have some loading problems.

Now, in systems in which we're using a baseband type converter for every subscriber, we can spec that converter to provide adequate rejections. In fact, most of them do because they use saw filters. But there are a lot of systems that don't use that kind of equipment and have no control, in effect, over the adjacent channel cell activity of subscribers' sets. And the benefit to the public? I guess it would be improved sound.

There are other problems, too, and that has to do with "if" their subscriber receivers ever go to split sound. We introduced a huge amount of phase noise in the ordinary converter. On a split sound set you couldn't use it. You couldn't use an ordinary converter in front of a split sound TV receiver. CED

Checking out a system was never easier, or more precise. The 1880 System Analyzer uses a powerful microprocessor to take the place of all the controls and adjustments of previous instruments.

Most measurements are now just a matter of selecting the frequency, and pushing the button for the appropriate test. The Model 1880 will "beep" and put the results on the screen, in digital form. Tests like carrier-to-noise, cross modulation, hum, composite triple beat, carrier level, and FM deviation are now at your fingertips. What's not at your fingertips are the extra knobs, tedious adjustments, and time-consuming calculations.

In their place are some amazing extra features. Like Split-Screen—so you can view a single channel and the entire spectrum at the same time. Zoom—which lets you zero in on any part of the display. And Keyboard Parameter Entry—a remarkably simple way to set the center frequency and frequency span.

When the 1880 System Analyzer isn't checking out your system, it can be checking out itself, with the built in auto calibrator. There is also a built in audio detector and speaker.

The Model 1880 is even simple to pay for, because it costs about one third of what you'd expect to pay. For details, contact Wavetek Indiana, Inc., 5808 Churchman, P.O. Box 190, Beech Grove, IN 46107. Phone Toll Free 800-428-4424. In Indiana (317) 787-3332. TWX 810-341-3226.

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'82 Western Show Preview

The 14th Annual Western Show is notable for many reasons, but chief among them for the technical community is the fact that approximately 65 percent of the exhibitors at this year's show will be representing hardware manufacturers and suppliers and/or construction/implementation services for the industry. While there will be very few major announcements at this show, some manufacturers will use the show as a forum for their new product announcements.

The theme of this year's show is "Pioneer Spirit." California Cable Television Association representative Jerry Yanowitz estimates the final attendance at this year's show will be between 5 and 10 percent ahead of last year's, probably about 11,000 people.

This year's Western Show is notable particularly for its size in a recessionary year. Thus far, 300,000 square feet has been sold, breaking last year's record of 200,000 square feet. Pre-registration figures for the show are running ahead of last year's also, although figures vary as to exactly how much the margin may be. Exhibitors this year are expected to cut back on the number of people they bring to the show, but that should be offset by the number of exhibitors—more than in any past year.

Technical session topics for this year come under two general headings, "Engineering Management & Industry Issues," and "The Cable Technologies." All sessions will be held on Thursday, Nov. 18, starting at 8:30 a.m. and will continue on through 5 p.m. that day. The program, developed by the SCTE and coordinated by Joseph Van Loan of Viacom Cablevision and Judith Baer of the SCTE, will be fast, furious and intense, so those planning to attend should come prepared. A complete listing of technical sessions is on page 55.

Among the topics presented will be, "Technical Issues, Compliance and Regulation" "How Much Is Your System Hardware Worth?," "Sat-a-Dat, the New Uplink/Downlink Technology," and a presentation by Ronald Hess, manager of video systems at General Electric Television, that will focus on their new Comband system, an analog bandwidth compression technique that, according to the company, will increase CATV system channel capacity.

The closing panel at the show will key in on the "Pioneer Spirit" theme of the show. Entitled "If We Knew Then What We Know Now: Media Pioneers," the panel is to include some of cable's forerunners, who will discuss what the industry was like when it began, how things have changed and what the future may hold in store for owners, operators, suppliers and programmers. As *CED* goes to press, specific panelist names were not available.

Look for some of cable's major manufacturers to be making product announcements at the Western Show. For openers, **General Electric** will be entering the CATV hardware field with a new system for bandwidth compression called Comband. GE will unveil the Comband technology at the show. **Intercept Corp.** will be introducing a new converter, the EXPANDER 3000 FM, which converts channels A, B and C to the FM band allowing cable systems to use these channels where heretofore they might not have, due to interference with aviation's use of these frequencies.

M/A-COM Video Satellite Inc. will be debuting a new triple-feed system allowing reception of signals from three adjacent satellites with a single parabolic antenna. They will also be showing a motorized version of their 5-meter antenna. **Blonder-Tongue Laboratories Inc.** will introduce its new two-piece pay TV trap that permits a system operator to offer either a single program or up to a one-month time segment of premium programming. The trap can be easily installed by the subscriber.

Finally, **Scientific-Atlanta** will introduce its new model 6501 distribution amplifier station that, according to S-A, offers better operation and more flexibility than a line extender, at a price less than that of a trunk amplifier. The unit needs only 9.5 inches vertical clearance and has options for AGC ability and switching regulated power supplies.

—David Murdock/Craig Leddy

Technical Booth Guide

The following guide does not contain all of the hardware/service oriented companies exhibiting at the Western Show. For a complete technical exhibit guide, pick up a copy of *CED Reports* at the show. *CED Reports* offers up-to-date information on technical sessions, prominent exhibits, and new hardware/technology.

A

Alpha Technologies Inc., Booth 526
AP-660 standby power supply with micro processor remote status-monitor, AP-880 add-on inverter concept.

AM Cable TV Industries Inc., Booth 501-A
Total turnkey construction services, systems engineering, strand mapping, make-ready, 450 MHz directional taps, E-Com interactive security devices.

American Technology Co., Booth 156
400 MHz taps, modular taps, splitters, couplers, brackets, PVC pedestals, test equipment, power supplies, apartment lock boxes.

Anixter Communications, Booth 420
Hamlin CRX 5000 58-channel cordless remote convertor, Hamlin MLD 1200 multilevel descrambler, the S.A.F.E. apartment house enclosure, Siltron standby power supplies, Dynatel cable fault locators, home security products, Raychem products, earth station specials.

Antenna Technology Corp., Booth 139 (inside), 5, 7 (outside)
Simulsat 5 multibeam antenna, complete Simulsat product line.

Augat CATV Group, Booth 522
Products from divisions—Broadband Engineering, LRC Electronics and Vitek.

Automation Techniques, Booth 198
GLR satellite receivers.

Avantek Inc., Booth 508 (inside), 10 (outside)
The AR1000 Simulchannel™ satellite earth station receiver featuring a new computer-controllable remote telephone interface system, a complete line of CATV test equipment, new low level sweep for midband split systems.

B

Belden Corp., Booth 531
Duo Bond Plus 59/u and 6/u in dual cables, messenger and nonmessenger types; flooded underground cables, converter cables and "Unreel."

Blonder-Tongue Laboratories Inc., Booth 414
New two-piece pay-per-view trap, CATV antennas, modulators, preamplifiers, converters.

Brad Cable Electronics, Booth 459
Converter repair, buying and selling new and reconditioned converters.

Broadband Engineering, an Augat Co., Booth 522
Amplifiers, upgrade modification, replacement components and repair service.

Burnup & Sims, Booth 401

C

Cable & Computer Technology, Booth 503C
CATV standby power supplies: series 90 and series 94.

CableData, Booth 500.
New one-way, addressable home converter—HTU.

Cable TV Supply Co., Booth 422
Aerial and underground construction materials, Microdyne and Harris earth stations and components, house drop materials, LRC and Gilbert connectors, Cable-Text character generators.

CableBus Systems Corp., Booth 411
CableAlarm™ security products offering intrusion, fire, panic alarms for residential and commercial use over CATV plant.

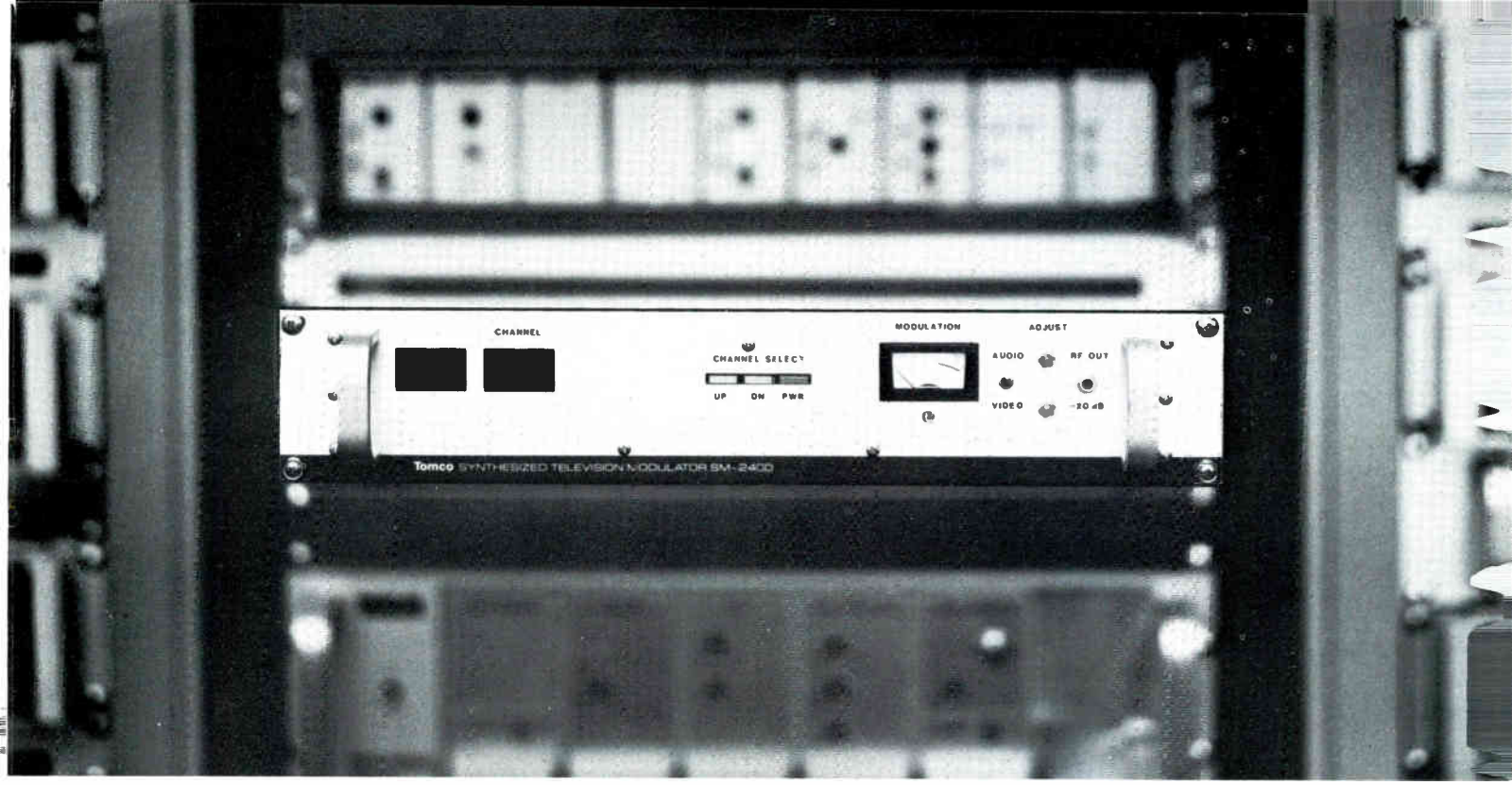
Cadco Inc., Booth 164
Modulators, processors, antennas, civil emergency alert system, full line of CATV headend equipment.

Capscan, Booth 401
Complete line of coaxial cable including aluminum trunk and feeder; part of Burnup & Sims Total Management System.

Catel/Tomco, Booth 429
Premium audio scrambler/descrambler (PAS/PAD 2000), standby modulator (SM-2400).

CATV Services Inc., Booth 560
Complete line of CATV components—headend, distribution, installation equipment.

C-COR Electronics Inc., Booth 424
SCAT series 10 system; 450 MHz trunk amplifiers including 22, 26 and 32 dB spacings, sub-low long-haul, two-way sub-split or split-band, more.



THE NEW TOMCO SM-2400 STANDBY MODULATOR. AT $2395^{00} IT'S THE CLEAR CHOICE.

Available for standard CATV or HRC channel assignments, Tomco's new SM-2400 Modulator offers synthesized 38-channel agility, IF loops and scrambler compatibility, plus full 60 dB output—with no band-pass filters needed for adjacent channel operation. Further, the microprocessor-based SM-2400 incorporates a battery backup for holding channel selection during power blackouts.

The Tomco SM-2400 represents an ideal companion to Catel's TM-2400 Modulator, offering the same performance characteristics with the addition of full frequency agility and +60 dBmV output. At **$2395,** the SM-2400 delivers maximum capabilities at minimal cost.

Finally, the new SM-2400 means you can have a complete standby headend system for only **$4545**—simply by teaming it up with our SR-2001 UHF/VHF Processor. Either way, for unmatched value, the SM-2400 is the clear choice.

For more information, phone Tomco today at 408-988-7722.

The Tomco Standby Headend System.

CATEL/TOMCO COMMUNICATIONS

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See us at The Western Cable Show Booth #429

CCS Cable, Booth 407
Complete line of coaxial cable.

Century III Electronics, Booth 516
Feed forward, trunk and line extender amplifiers.

Chyron Corp., Booth 453
New model VP-1 video printer, model U1-A ¾-inch cassette cleaner and evaluator.

Colormax Electronic Corp., Booth 179
Cable caption systems including 36-channel converter and closed caption decoder in one unit, closed caption decoders for use with any converter, captions and two-channels text converters; taps, full line of passive devices.

Comsearch Inc., Booth 114
Communications engineering services including site placement and interference studies for earth stations, terrestrial microwave planning, frequency protection, on-site RFI testing and path surveys, FAA studies.

ComSonics Inc., Booth 529
SA440B spectrum analyzer, "Sniffer" RF leakage detection system, coaxial relays, mini-step attenuators, CATV equipment repair services, strand mapping, FCC testing, technical support services.

Compucon Inc., Booth 151
Engineering services for communications planning including satellite earth station frequency analysis and coordination, transportable earth station frequency engineering, more.

Comtech Data Corp., Booths 196A (inside) 6, 8 (outside)
Inside: RCV 550 24-channel frequency synthesized video receiver, cable modems, modulators; outside: 5-meter, 3.8-meter antennas.

D

Delta Benco Cascade Ltd., Booth 503
The intelligent wallplate—IT1-6SM, trunks, line extenders, apartment amplifiers.

Ditch Witch, Booth 433
Underground construction equipment.

Di-Tech Inc., Booth 100
Seven-day computer controller, audio/ video routing switchers, audio/video pulse DAs, video detectors, audio monitor amplifiers.

E

Eagle Comtronics Inc., Booth 506A
Addressable descramblers, programmable descramblers, traps, taps, home terminal, splitters, other passives.

G

Gamco Industries Inc., Booth 415
Full line of active and passive equipment including new addressable scrambling system.

Gardiner Communications, Booth 401
Receivers, modulators, earth stations, complete TVRO package, new 4400 receiver; part of Burnup & Sims Total Management System.

General Cable Co./Apparatus Division, Booth 418
A-28C aerial lift for splicing, maintenance and construction of cable TV aerial plant.

General Cable/CATV Division, Booth 501
Fused Disc M-III coaxial cable.

General Electric Co., Television Division, Booth 456
Comband™ techniques for bandwidth compression.

Gilbert Engineering Co. Inc., Booth 442
A full line of coaxial connectors for trunk, distribution and drop cables featuring video training tapes and laser-identified parts.

GTE, Booth 406
Complete line of 450 MHz transmission equipment, two-way addressable converter.

H

Hamlin U.S.A. Inc., Booth 536
42- and 58-channel converters with A/B switch and built-in descrambling options, addressable CATV converter software demonstration, Hamlin MLE-12 scrambling system

Harris Satellite Communications, Booth 304
Live Delta gain with L-band receiver system.

Hughes Aircraft Company, Microwave Communications Products, Booth 521
New AML terrestrial microwave systems.

Hughes Communications, Booth 550

I

Intercept Corp., Booth 441
Tier traps, parental control traps, block converters, pedestals, multi-taps, complete line of passive equipment.

J

Jackson Enterprises, Booth 539
Aerial cable construction and installation tools, strand mapping services, new and rebuild construction services.

Jerrold Division, General Instrument, Booth 400
Demonstrating one-way and two-way addressability, home security, status monitoring system, headend and distribution equipment, full line of converters.

K

KES (Klungness Electric Supply), Booth 559
Complete line of CATV hardware, electronics tools and satellite receiving stations.

Addressability isn't equipment. It's a marketing concept.

It's time to think about addressability in terms of how you market your product. Your business may be great today. But subscriber tastes can quickly change, creating a new market that's not satisfied with yesterday's programming.

Addressability delivers more specialized entertainment.

Your subscribers will want selections tailored to their personal needs. They'll want a wider assortment of programming to choose from. In short, they'll want everything only addressability offers.

It pays you to go with addressability

There's almost no limit on the advanced program packaging you can sell with an addressable system. Like college courses, hobby classes, job enrichment programs, even business and personal financial programs. Plus all the revenue-building opportunities from pay-per-view, multi-pay marketing and tiering.

Make a change for the better.

With addressability, you can run cost analyses on all your programs to determine profitability. You can track viewing trends to change your offerings as the audience changes its tastes.

And when they do, you can change service levels quickly and efficiently right from the office. Only addressability puts at your fingertips an almost limitless number of ways to expand your market opportunities as well as your profit potential.

You'll be sold on Oak.

Of all the people selling addressable systems, why should you choose Oak Communications Systems (formerly Oak Communications CATV Division)? Experience. We've been involved in the cable industry as hardware/software designers and builders for over 15 years. We invented state-of-the-art addressability and introduced it in 1977.

Today, over 300,000 cable subscribers and 600,000 STV subscribers have Oak addressable systems. When you select Oak, you're in good company.

For more information on how you can profit from an Oak addressable system, call or write us today. Let us show you how Oak addressability can be the golden egg in your cable system.

Oak: The first choice in addressability.

OAK

Oak Communications Systems
P.O. Box 517 Crystal Lake, Illinois 60014
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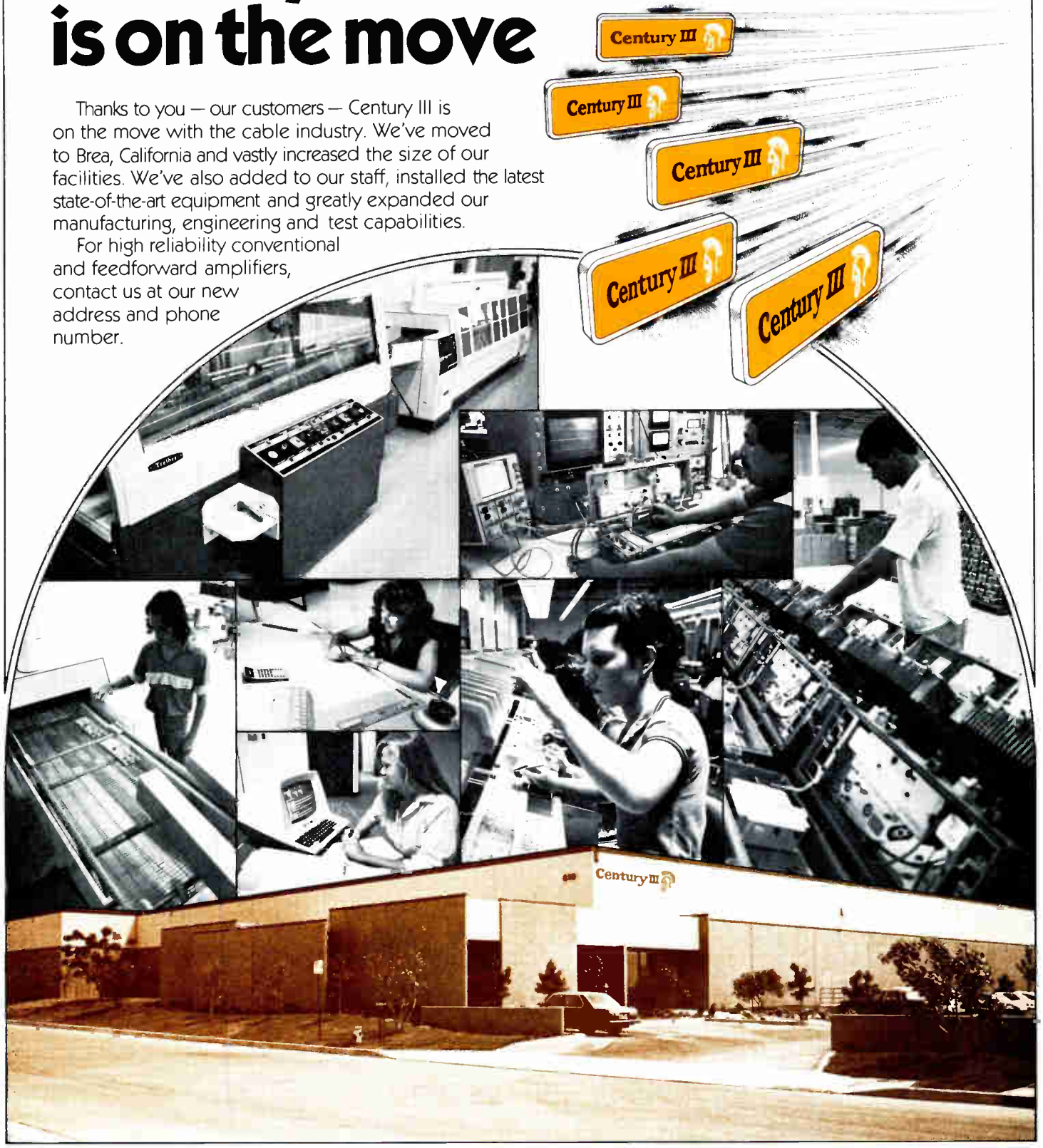
Subsidiary of Oak Communications Inc.

Century III is on the move

Thanks to you — our customers — Century III is on the move with the cable industry. We've moved to Brea, California and vastly increased the size of our facilities. We've also added to our staff, installed the latest state-of-the-art equipment and greatly expanded our manufacturing, engineering and test capabilities.

For high reliability conventional and feedforward amplifiers, contact us at our new address and phone number.



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The feedforward company.

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CENTURY III ELECTRONICS INTERNATIONAL, INC.

KMP Computer Services Inc., Booths 106, 107
Computerized accounts receivable and billing system for the CATV office.

L

Leaming Industries Corp., Booth 152
Stereo processor demonstration of stereo TV audio for MTV, TMC, Bravo, HTN, HBO, ESPN, WFMT, AM station conversion to stereo FM.

Lectro Products Inc., Booth 401-A
Standby power with status monitoring, 30-60 volt power supplies, Lectro-lert warning system; part of Burnup & Sims Total Management System.

Lemco Tool Corp., Booth 165
Mechanical tools, equipment, and materials for the construction and maintenance of cable TV systems.

Lindsay America, Booth 446
Full CATV trunk and distribution product line—"Tapped Trunk," amplifiers, CATV ruggedized antennas "Home Run" systems, systems passives.

LRC Electronics, an Augat Co., Booth 522
Complete line of coaxial cable connectors for the CATV industry, from "F" Styles through "I" connectors.

Logica Inc., Booth 204
Context teletext origination systems and teletext decoders.

M

M/A-COM Comm/Scope Marketing Inc., Booth 412
Coaxial cable, dropwire, specialty cables, related telecommunications products.

M/A-COM-Prodelin Inc., Booth 412
Microwave antenna and transmission line system for terrestrial and satellite communications, 3.7-meter earth station antenna featuring new t-bar AZ/EL mount assembly, terrestrial line-of-sight equipment.

M/A-COM Video Satellite Inc., Booth 412
CATV and point-to-point FM microwave equipment, four-channel mini-cable satellite system.

Magnavox CATV Systems Inc., Booth 404
440 MHz cable system including amplifiers and control systems products, Magna 6400 converter, Magna 6400 converter/descrambler, Digital System Sentry, Magnavox Mobile Training Center.

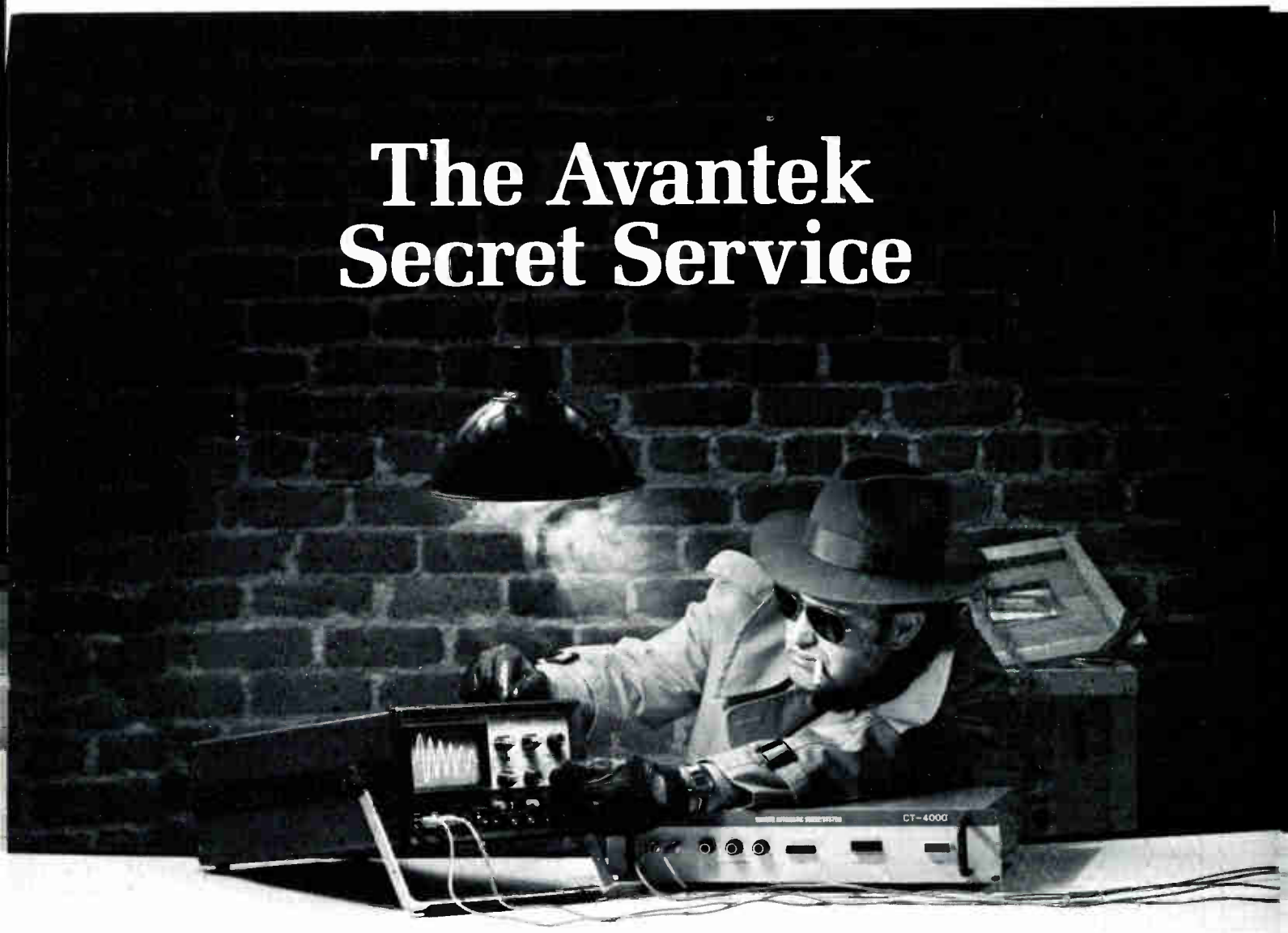
Mergenthaler/Mycro-Tec, Booth 136
MicroVision 7000-character generator, includes off-line editing and storage and line printing capabilities for billing of video ads wire service and weatherstation hook-up.

Merrill Communications Inc., Booth 533
SMATV, CATV, addressable systems.

Microdyne Corp., Booth 432
Low cost earth station consisting of Microdyne's 1100-BDC/DCR block downconverter and receiver with 1000-LCM modulator, three meter precision molded fiberglass antenna.

Microflect Co. Inc., Booth 111
Microwave towers, passive repeaters, waveguide support systems.

The Avantek Secret Service



CATV system surveillance without bugging your customer.

Now you can sweep test your entire CATV system during prime time, or anytime with no interference to your subscribers' reception. The CR/CT 4000 low-level sweep system can automatically monitor the performance of up to 58 channel capacity systems. A low-level, non-interfering test signal below video occupies each channel for only milliseconds. The response is displayed on a portable tracking receiver. It's everything you need for regular maintenance and proof of performance including the spectrum analyzer functions of signal level, co-channel interference, cross modulation, hum, and other system conditions. The CR/CT 2000 offers the same features, but is designed for lower frequency systems.

Now, accurate measurement of scrambled carriers.

Only the Avantek SL 400 and SL 300A signal level meters can offer the same level of accuracy in measuring both scrambled and standard video carriers. Readings are based on vertical interval sync pulses rather than horizontal sync pulses, thus eliminating problems associated with other techniques.

And there's more at the Avantek store.

Many other products are available to fill out your testing and reception needs. There are instruments such as the CT 202 return-link transmitter and the CA 100B TDR cable analyzer. There are microwave components such as 3.7–4.2 GHz GaAs FET LNAs, line extender amplifiers and power dividers, and low-noise preamplifiers to increase CARS-band link performance and capacity. And now, the versatile AR 1000 TVRO earth station receiver is available with a choice of antenna-mounted LNA/downconverters, or rack-mounted downconverters for use with already-installed LNAs.

Any Avantek product will make your system run better. All of them could make it run the best. Call or write today for immediate applications information or to set up a product demonstration.

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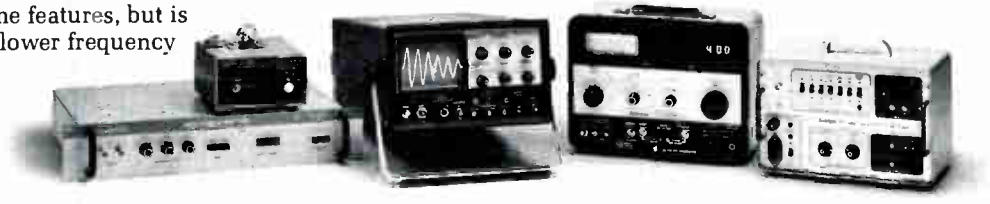

See us at The Western Cable Show Booth #508

Texscan Corp., Booth 413
Track system, remote addressable converters, test equipment, set-top converters, MDS equipment, security system, stand-by power supplies, status monitoring systems.

TOCOM Inc., Booth 502A
Addressable systems with one-way and two-way addressable converters, cable security systems with home alarm terminals and wireless sensors and detectors.

Toner Cable Equipment Inc., Booth 523
Electronics division: full line of headend equipment, character generators, ad inserters, distribution equipment, multi-taps, antennas, earth stations, towers and apartment house security cabinets.

TRW Semiconductors, Booth 519
Hybrid amplifiers and discretes specifically designed and characterized for CATV.

V

Video Data Systems, Booth 505
Character generators for news, weather and Video Newspaper™

Viewsonics Inc., Booth 543
400 MHz passive devices, drop and grounding materials, pole line hardware, tool and safety equipment, security devices "lockinator," protective meter/instrument cases and "new" stereovision package.

Vitek and Augat Co., Booth 522
Descrambler/traps, RF leakage detectors, pay TV security traps, single and dual block converters.

W

Wavetek Indiana, Booth 450
Complete line of CATV test equipment.

Wegener Communications Inc., Booths 181, 182
Complete line of stereo processors, synthesizers and FM modulators and satellite and terrestrial microwave audio and data transmission equipment.

Winegard Co., CATV Division, Booth 517
Featuring 84 Series, 400 MHz and 85 Series 450 MHz distribution equipment; AP series hybrid modular apartment amps and modular mini-trunks amd addressable converters.

Z

Zenith Radio Corp., Booth 506
New Mini-System (TAC-100) and new two-way system using telephone technology.

Western Show Technical Sessions

Thursday, Nov. 18, 1982

Engineering Management & Industry Issues ***8:30 a.m.-Noon***

Program Coordinator, Joseph Van Loan, vice president-engineering, Viacom Cablevision

I. Technical Issues, Compliance and Regulation: Industry experts report on changes in the FCC cable regulatory structure, revisions to the National Electrical Code, cooperative efforts between cable and Ham radio operators, activities of the NCTA Engineering Committee, and more

II. How to Reduce Workers' Comp Costs: How cable operators, construction companies and others can substantially reduce payments on workers' compensation and generate savings. George Tamasi, Communications Construction Group, has done it in one eastern state, and you can probably do it too

III. How Much Is Your System Hardware Worth? Many engineering and operations managers don't have the answer. Lynn Dent, president of Dent & Associates, will present methods of inventory control, hardware evaluation and appraisal

The Cable Technologies ***2-5 p.m.***

Program Coordinator, Judith Baer, executive vice president, SCTE

I. SAT-A-DAT: The New Uplink/Downlink Technology, David Beddow, senior vice president-operations, Group W Satellite Communications

II. Implications of Multi-Channel Sound for The Cable Industry, Alex Best, manager-R&D, Communications Group, Scientific-Atlanta

III. Analog Bandwidth Compression Technique for Increasing CATV System Channel Capacity, Ronald Hess, manager-Video Systems, General Electric Television

IV. Analyzing Addressability, Tom Bird, vice president-Cable System Development, Rollins Cableview Inc

V. HBO Scrambling Project, Edward Horowitz, vice president-Studio Network Operations, Home Box Office

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2. RETURN FROM NEWS AGENTS		
G. TOTAL (Sum of E, F1 and 2 - should equal net press run shown in B)	8,431	8,552

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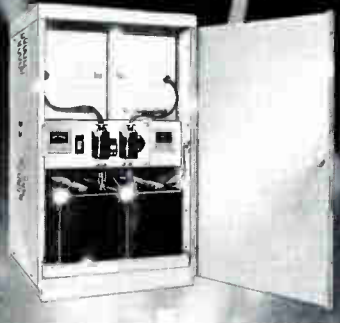

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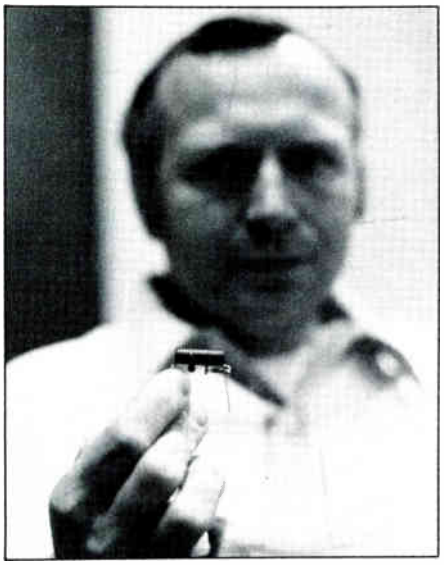

C-COR's RF choke

"We must be doing something right," notes 57-year old Palmer. "Our business has grown at a rate of five percent a month for the past 50-some months."

The atmosphere of the C-COR labs, currently nurtured by Palmer, might be described as high-energy relaxation. It's most easily seen in Palmer himself. He's headed C-COR since 1956; yet he retains the enthusiasm, the drive, the *wonder* of it all that he had when he first became a registered engineer. Sit opposite him in his first-floor, corner office in State College, Pa., and you can watch him seethe with energy. He paces. He sketches diagrams. He taps fingertip drumbeats on his armrest. He swings his feet up onto his desk, apparently relaxed and casual—but he can't hide the spark, the *energy*.

The company's research laboratories are run the same way, on high-energy casualness. Upper-level directives are purposefully vague, almost directionless. Nevertheless, the rooms fairly throb with excitement. "If you're going to engender creativity, you have to give your people enough room to create," says Palmer. "We give the engineers a problem, then get out of their way. We let them try almost any unusual approach they want, and even though we may wonder what they're up to, even though it's *obvious* that what they're doing isn't going to work, we let them go ahead and try it. If nothing else, you have broadened the experience of the individual so that the next time he has a similar problem he can look into this bag of tricks he's developed.

"In the case of Pavlic, his choke is really the result of ten years of working on all the other devices: ten years of twiddling, of a multitude of blind alleys, of all the failures."

And Pavlic, in turn, passes on the attitude to his own team. "I insist on my people using their imaginations," he says. "I refuse to spoon feed information. Most of the things we do here have never been done before, so we hire only those people who are willing to run blind, who are willing to fail. That means, in the case of the choke, of trying, for instance, to put the ferite on the outside and the wire on the inside. That's impossible, of course, but you should at least think of it, and if you can find a way, try it.

"A lot of engineering forces don't operate that way. They don't allow the freedom to try absurd things. If you really want to run a tight ship, you must know exactly what your engineering staff is doing all the time; but I'm not all that interested in running a tight ship. My concern is that we develop an engineering force capable of producing products that are not only cost-effective but technically superior."

It was that freedom to let the mind wander, and simply a lot of time on the job that led to Pavlic's new design. The choke itself, of course, is a relatively elementary device. Connected to the input and output terminals of the equipment, it's used to route the AC power around the RF amplifying or splitting circuitry.

The device is simply a coil that encloses a ferite rod with a resistor tapping the coil near one end. This functions as a shunt impedance on the RFC to avoid a sharp loss in signal levels at the self-resonant frequency of the RFC circuit.

Pavlic's initial procedure in recasting the choke was rather standard. First he varied the number of turns and the wire size. But the result was either poorer performance, or a wire size so small it couldn't handle the required current without excessive temperature risk. Eventually he returned to the 18-gauge wire he started with. Then he tried spacing turns, leaving gaps. For awhile that looked good; by careful control he was able to stretch bandpass to 400. Although 400 MHz might have been good enough for the short term, it wouldn't, Pavlic knew, be good enough for the long run.

Then he worked on a dampening method in which he experimented with placing resistors on both input and output RF sides of the choke. "But that was too 'lossy,'" he said later. "It had a significant insertion loss; for every unit used you could kiss one-half dB goodby."

He tried any number of other possibilities too, "but most of them," he says, "were simply not reproduceable. I wanted to do things in a conventional way—it certainly is easier and safer that way—but the more I looked at the thing the more I knew that in no way could I be successful by normal means."

It was during one of those try-anything sessions—when he was letting his mind roam over the theory of magnetics, allowing disparate ideas to combine—that he flashed onto the idea. Says he: "It's common knowledge that UHF attenuators can be made out of little beads of ferite material. Well, it suddenly seemed to me that if a bead were placed within the coil, in series with the wire—just slid onto it—the bead could very well add just the right amount of impedance at the frequencies where the resonances occur. It was one of those times when you can hardly wind the coil fast enough."

He tried the idea with some scrap ferite he had on hand, and *success*—the response showed that the new resistor formed a series impedance within the RFC and efficiently eliminated the self-resonance for a vastly extended frequency range. From then on it was simply a matter of finding the correct bead permeability, the right physical size, and developing a method of locating the bead on the coil.

What eventually emerged was a choke that:

- Presents a high impedance to RF frequencies, which relates to only 0.15 dB insertion-loss degradation caused by each RFC shunting the RF signals.
- Has a useable 50-450 MHz bandpass, with the ability to allow frequencies to go as high as 750 MHz whenever the future demands it.
- Allows cable-power bypass to 10 amps.

When compared with competitors, as follows, C-COR passives equipped with the new choke revealed themselves to be at least eight percent more efficient.

C-COR	84.0% efficient
Scientific-Atlanta Inc.	70.1
Jerrold Electronics	75.1
Magnavox	71.7
RCA	71.5 (*)

Might other companies—noting such figures and realizing that extended-range bandpass soon will be mandatory—simply copy C-COR's design? Not likely. It's a dramatic enough departure that the patent seems solid. "A slight change in design would be an infringement," says Palmer, "and a large change would result in a choke that is useless."

The answer, suggests Palmer, might be licensing agreements—an arrangement that is far from the norm in the CATV component industry. "But I believe in a free exchange of ideas," he says. "So if another manufacturer wants to use this device, we'll be glad to talk to him."

In the meantime, Pavlic, again looking to the future, has returned to the lab to fine tune his offspring up through 500 MHz. "That will be easy," he says. "In fact, until we get above 800, we won't have major problems. Now let's see—above that. . . ."

CED

(*) Comparison of total output power vs input power for 8 dB directional coupler at 400 MHz Theta-Com data was not available at time of tests

It's Clear MSO's Demand QUALITY

Confronted with the task of building a long-lasting cable television system, MSO's and system operators alike are demanding quality products. Consequently, for a high quality closure they insist on Utility Products, the best selling closure in the world.

System operators demand Utility Products pedestals because they last. In most cases they are in use 25 years or more. Utility Products has engineered this longevity into each pedestal through a unique engineering and manufacturing design.

All pedestals are coated with unique 5-step finish to resist corrosion and weathering. Vents, screens and louvers are also available on many pedestals to increase air flow and heat dissipation.

Security is another built-in feature of Utility Products pedestals. Many models include a three-point lock, key locks, padlock hasps, or a flange-free construction to restrict unauthorized entry.

In addition, Utility Products pedestals include a greater mounting space for enclosing passive and active equipment.

For your next installation insist on the pedestal MSO's demand, Utility Products, the best selling closure in the world.

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RELIANCE COMM/TEC

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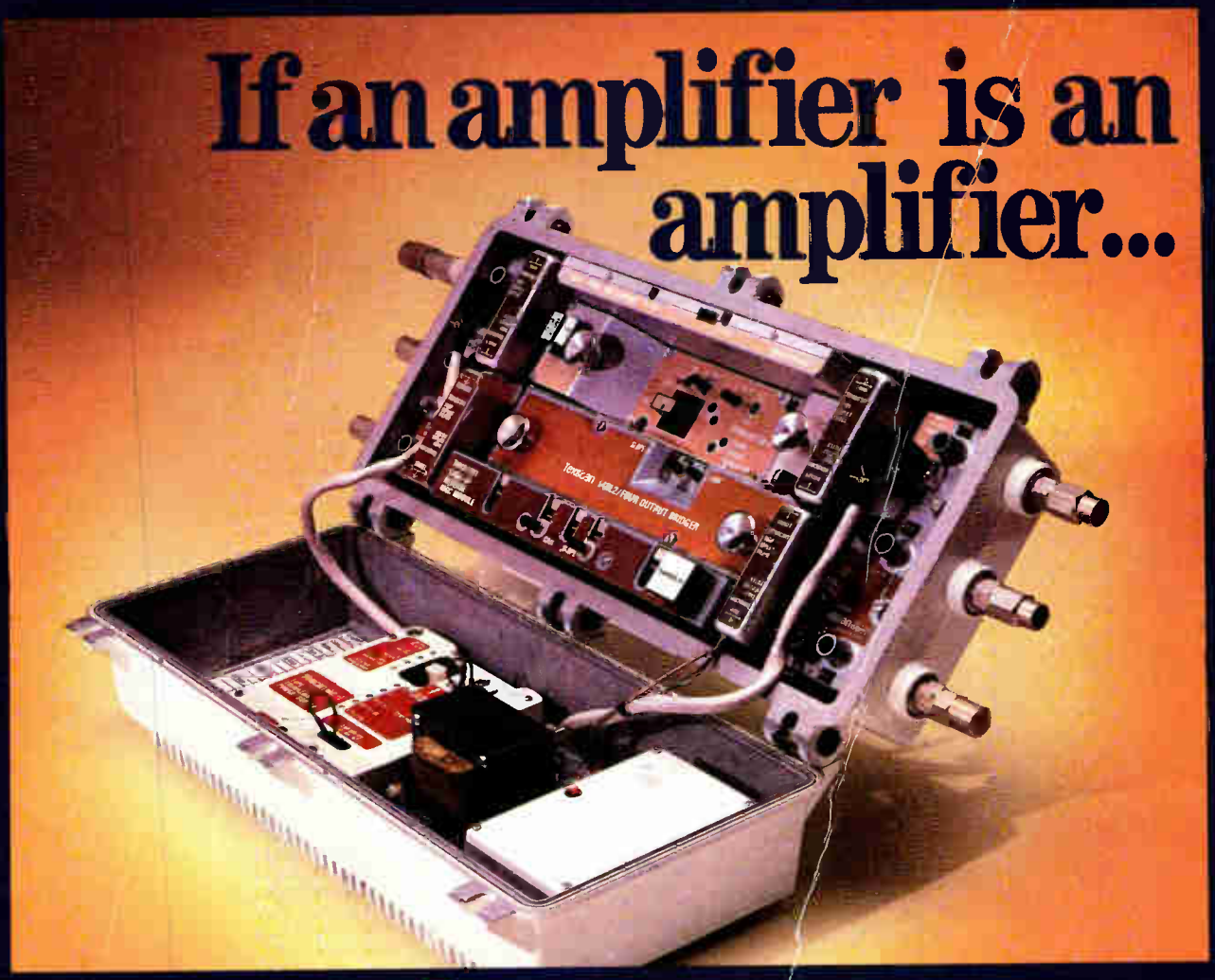

what makes ours so special?

Flexibility

The T-series 450 MHz trunk amplifier's flexibility allows you to install it in a one way or two way system, a high-split, mid-split, or two way sub-split. Our modular design is easily upgraded, including status monitoring and dual plant capabilities. The modular units are anchored directly into the housing which means fewer parts, fewer problems, and less money spent on replacement parts. The durable white die cast housing provides maximum heat dissipation and reflection.

Reliability

Our competitively priced amplifiers have 12 years of field proven reliability backed by a strong engineering staff. We have over 500 employees involved in the sales and manufacturing of distribution equipment. We want to serve you! That's Special.

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Among the many advantages we have over others is our responsiveness to your system needs. Our service begins before the sale and we follow up with system design and on-site training.

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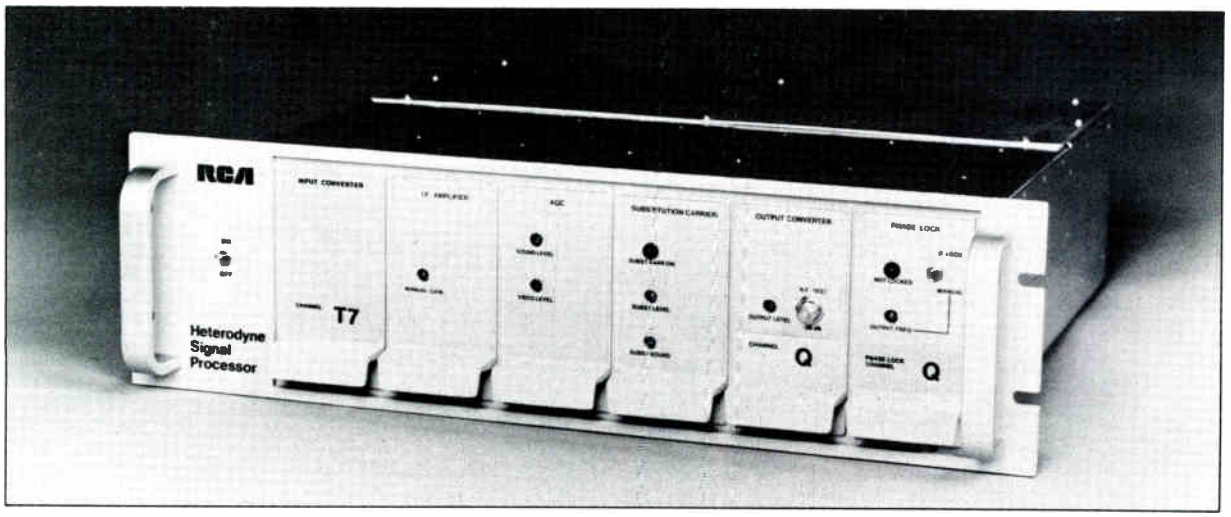
Product Profile

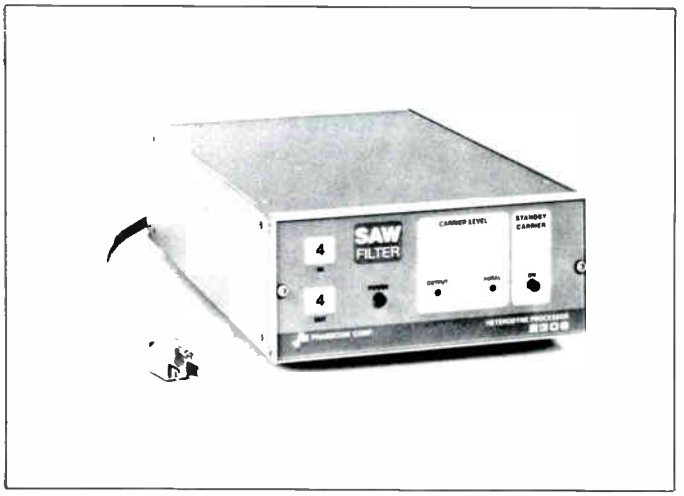


Channel processors or signal processors are widely used in the CATV industry as a means of processing local off-air stations for use in the cable format. The channel processor is an integral part of virtually every operator's headend. Some of the features listed on the following pages have made channel processors more efficient now than at any other time in the history of CATV. SAW filtering, heterodyne processing, automatic gain and notch controls, scrambling compatibility and modularity of construction all help to give operators the edge for maintenance-free applications.

Modular construction is very important for operators in that equipment can be configured to solve many unusual headend switching and processing problems. Modular construction also means that operators need only carry a few modules as operating spares for signal processors and other pieces of headend equipment. Expandability in design achieves optimum results with no compromise in performance.

All of the units listed are rack mountable with fully regulated power supplies. Options on all models of channel processors vary from manufacturer to manufacturer as does price (depending upon quantity and application) and availability. It should be noted that Blonder-Tongue makes another group of processors, known as strip amplifiers, for UHF and VHF applications. Additionally, the Jerrold Division of General Instrument has made available their new Commander series of channel processors as of October 1982.

We urge you to contact the manufacturers listed for more specific information on these and all their products.



Channel Processors

Set-top converters are obsolete.

MINI-HUB IS THE NEW ANSWER.

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TFC's Mini-Hub™ System is a unique and superior alternative to the set-top addressable converter in high subscriber density cable communications systems.

Mini-Hub is a modular, two-way interactive, video switching system incorporating the very latest advances in fiber optic and microprocessor technology. It is designed to achieve maximum revenue per subscriber with minimum operating expense.

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You can creatively market totally flexible programming packages with unlimited system capacity, and provide future enhanced services with plug-in modules.

To find out how the Mini-Hub System will let you take full advantage of the burgeoning urban market, contact TFC today at P.O. Box 384, Wallingford, CT 06492, (203) 265-8500.

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International News

Canadian Government Issues Warning To SMATV Operators

OTTAWA—The Canadian government has issued a formal warning against Candian master antenna television operators, who are currently picking up programming from U.S satellites and distributing it to subscribers for commercial purposes This warning precedes more severe actions to be taken against Canadian SMATV operators and cable company violators

Pierre Pompriand, an official at the Canadian Radio-Television and Tele-Communications Commission, announced that fines of up to $1,000 per day could be levied against SMATV operators and up to $25,000 against cable companies involved in unauthorized program distribution.

These actions were promted by a growing perception, held among various Canadian agencies, including the Canadian Association of Broadcasters and the Canadian Cable Television Association, that unauthorized reception of programming poses a serious economic threat to both established licensed broadcast services and recently licensed pay television services.

The primary targets of these regulations will be Canadian operators supplying unauthorized programming to apartment complexes, taverns and restaurants. Since backyard operators who have already paid for their own earth stations are close to impossible to regulate, they are likely to remain unaffected by these new regulations. The Canadian government has said that it does not plan to prosecute operators distributing programming for non-commercial purposes.

American Data Networks Launch Videotex Service With French Terminals

PARIS—Intelmatique, the international marketing arm of the French Telecommunications Administration, has announced that French Minitels (stand-alone videotex terminals) have been adopted to make international financial services available through two American data networks.

The services have been launched by PARIBAS, a major French bank, and Automatic Data Processing (ADP), the American-based computer services company, following a period of close collaboration with Intelmatique.

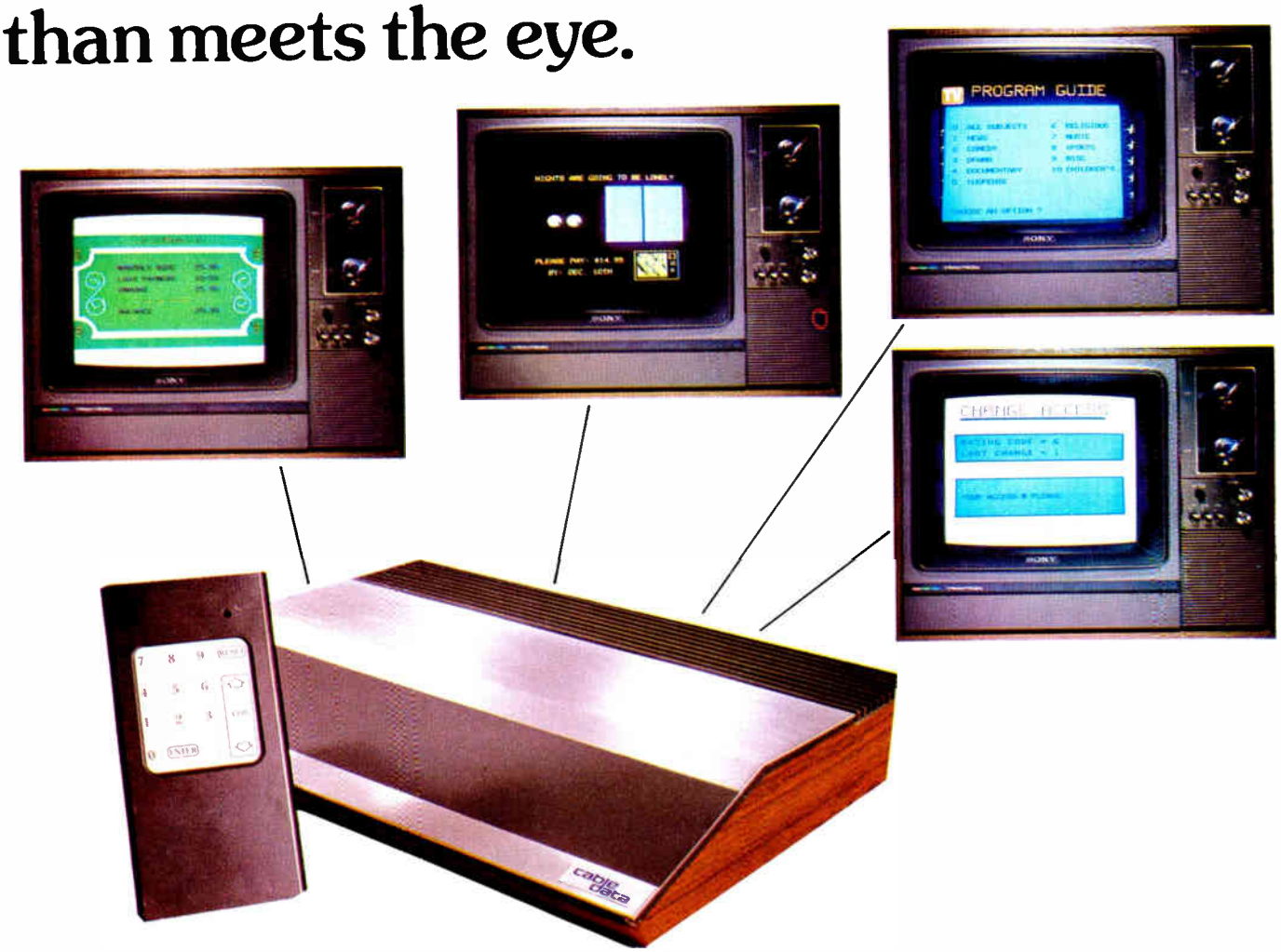
PARIBAS is using MARK III, the international network of General Electric Information Services (GEISCO).

ADP is using its own network, AUTONET, to give Minitel terminals on-line access to currency exchange and interest rates reported by the New York Stock Exchange and other financial services.

Minitel terminals already link PARIBAS corporate accounts in France, Belgium, and the United States, and the French bank plans to extend the financial services to corporate customers throughout the world. They will be able to check balances and statements on subsidiaries in many other countries.

No prior training is necessary to use the Minitel, which can be directly connected to the ordinary telephone network without the need for additional equipment. It is already being used in the United States by First Bank System, Inc. of Minneapolis.

There's more to one-way addressability than meets the eye.



Addressability means little to your subscribers. All they care about is getting the services - they don't care how automatically you activate and deactivate those services. Even if it does save you money.

But if you could deliver a host of visual services to your subscribers and make them an active part of your cable operation, in addition to performing the basic functions of addressability, you've just increased your profit potential considerably.

CableData's new addressable converter is the first to make addressable software tangible.

It not only activates/deactivates • 54 channels • 64 tiers • 64 special events, it also delivers eight dynamic software programs, graphically displayed, right into the home for your subscribers to see and interact with.

- Video Cable Bill
- Personalized Message from Cable Office
- Display of Special Events
- Reminder of All Events Purchased
- Video TV Guide
- Community Directory
- Parental Discretion Programming Control
- Reminder of All Services Purchased

Because the converter is peripheral to and interactive with any one of CableData's three on-line business systems, it is governed by the same DDP software. This, in addition to a 16K memory and the capacity for 256 bits of non-volatile information makes the converter as software driven as its Tandem host computer. All the graphics reside on the disk of the Tandem and you have the option of designing your own messages.

The converter is one-way addressable from the cable office and two-way interactive with the subscriber. Subscribers can communicate with the converter in much the same way your staff communicates with your on-line business system.

CableData's new addressable converter goes far beyond today's conventional approach to addressability, but then, that's what you were always talking about. There *is* more to addressability so why settle for less?

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cable data

Our only business is perfecting yours.

and by Continental Telecom of Atlanta. The cost of each Minitel is in the range of $490 per terminal.

The first service offered to Minitel users is access to a foreign exchange data base with daily, recent past, and historical information on exchange and interest rates from the New York Stock Exchange. Clients also have available a daily financial commentary by analyst Bach Halsey Stuart Shields. On-line calculations are also possible, enabling the user to do arithmetic comparisons of various foreign currencies.

British Cable Regulatory Proposal Announced

LONDON—A proposal for the future regulation of a nationwide British cable television system was made to the Conservative government last month. The proposal, authored by Lord Hunt, calls for the establishment of a central franchising authority to award rights for building cable systems in the U.K.

The Hunt Committee advocated minimal regulation of cable programming and advertising and recommended that maximum freedom be granted to cable operators for programming their channels. If the proposal is enacted into law, programs and commercials wouldn't need advance clearance from the franchising authority.

The proposal, however, would bar foreign companies and existing broadcasters and publishers from obtaining a controlling interest in cable companies. In addition, no maximum number of channels would be required in any franchise.

"Standards of decency" would continue to be met by most programming but would not apply to special channels offered on a pay basis. Must-carry rules would be imposed and pay-per-view events traditionally available over broadcast networks would be restricted.

While program content would be minimally regulated, some claim that potential cable system builds would be required to offer proposals with high cost, state-of-the-art facilities. Opponents to the proposal argue that this "regulation of technology" would retard progress toward a national cable television industry since massive investments would be required to design and build cable plants.

Gustave Hauser Speaks To IFRA Congress

COPENHAGEN, Denmark—The emerging role of cable TV in the "electronic delivery of information to homes" will complement the efforts of the print publishing industry rather than hinder them, Gustave Hauser, chairman and chief executive officer of Warner Amex Cable Communications Inc., told an audience of major European newspaper publishers and executives here.

Hauser addressed the IFRA Congress, an association composed of many of Europe's leading publishers.

"Cable Communications can provide a major alternative opportunity for print publishers to disseminate their existing information product electronically. Cable's potential is a natural and logical extension of the print medium, and I believe that the traditional providers of information are likely to be among the major beneficiaries of this new communications technology, not its victims," he said.

Reminding his audience that information services will no longer be the "exclusive" province of print publishers and traditional television broadcasters, Hauser said, "others are free to enter and provide competition either as information gatherers or electronic disseminators. This is already happening in the United States."

Hauser noted that cable operators—in providing a new "electronic path" to readers—are "likely to be your (publisher) distributor, business affiliate or partner rather than your competition."

In listing the actual or potential cable services of interest to print publishers, Hauser cited the interactive capability of

Warner Amex's QUBE two-way interactive service that can be used by organizations including newspapers to obtain "quicker, cheaper and more widespread public opinion resources."

American newspaper publishers already have responded to cable opportunities, he said, citing several partnership formations with cable systems. In addition, newspapers are experimenting with cable channel time purchases and have entered into joint ventures with cable operators.

Newspaper data banks, Hauser said, are being utilized for information retrieval, including QUBE experiments in Columbus, Ohio, and Pittsburgh using Atari home computer terminals.

Pointing to the American Newspaper Publishers Association's interest in cable, Hauser said the group was recently successful in "obtaining a judicially imposed prohibition on American Telephone and Telegraph's ability to provide cable television and other information services, particularly an electronic telephone directory capable of providing dynamic classified advertising information."

In the evolving relationship between the print publishing industry and cable communications services, Hauser said, "cable operators need your product and print publishers need cable and the cable operators' functions if publishers are to reach new customers on an electronic basis."

Oak Cancels Telesat Agreement

SAN DIEGO—Oak Industries Inc. has nullified its agreement with Telesat Canada to lease four channels on a Telesat satellite. By withdrawing from this agreement, Oak relinquishes its plans for getting an early start in the Canadian DBS business. Originally, Oak had hoped to introduce its DBS service to Canada in 1984.

Oak initially entered into the agreement with Telesat with the intention of using Telesat's satellite until its own satellite would be launched in 1986. After launching, Oak planned to reorient its subscribers' antennas to receive signals from its satellite.

Oak withdrew from the Telesat agreement for a variety of reasons; the company realized that the cost of redirecting antennas was not economically viable and that the Telesat satellite would not have adequate signal power.

Despite Oak's cancellation, it plans to continue with its efforts to launch its satellite in 1986. The company is presently considering entering into a collaborative venture to launch this satellite, which will be used for direct pay-television broadcast.

Canadians Support Plan For Joint Use Of NASA Shuttle

OTTAWA—The government of Canada has announced formal support for a plan to send Canadians into space under the NASA Space Shuttle program.

The announcement coincided with the formal inauguration of service by Anik-DI, the first satellite for which a Canadian company was the prime contractor. Anik-DI was built by Spar Aerospace Ltd. and launched by Telesat Canada.

Canadian Communications Minister Francis Fox noted, "It is particularly significant that the first commercial satellite payload carried aboard the Space Shuttle this November will include Telesat Canada's ANIK-C3 communications satellite."

Fox pointed out that, today, Canada is one of the few nations capable of supplying complete commercial communications satellites systems to the world market. He noted the recent announcement that the government of Brazil intends to buy two satellite and related support systems and services from Canadian companies.

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New CA 5000 Series "super chip."

But for many new and rebuilt systems, our top-of-the-line CA5000 hybrid is more than you need for optimum performance. So TRW matches performance to price and gives you a real choice. TRW CA2000, 3000 or 4000 series are specifically designed to make fewer-than-52 channel systems play longer and stronger for less. With TRW, you don't pay for more than you need.

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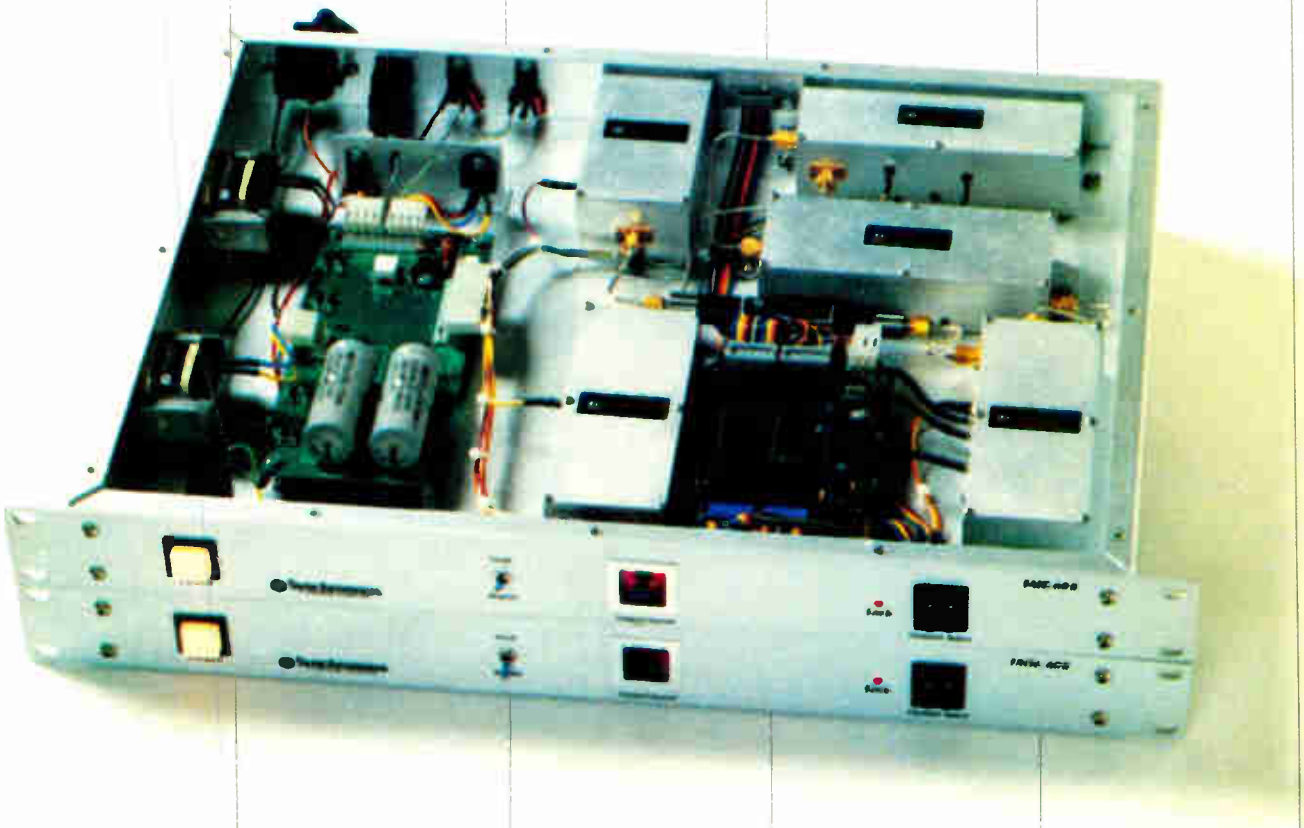

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to the cable television industry

Here are **11** good reasons why **CableFile/83** can help you manage your time better. Don't miss this opportunity for your key to productive time management. Order today with the card in this issue. See page 23.

1. WHO'S WHO IN GOVERNMENT

CableFile includes Congressional Communications Committees, House and Senate committees dealing with communications, House and Senate profiles, FCC staff and commissioners, Executive Branch, Public Utility Commissions, CATV Associations, all with names, addresses and phone numbers.

2. RULES AND REGULATIONS

CableFile lists the FCC rules and regulations for the cable industry including FCC Rules Parts 76 and 78 and STV and MDS.

3. PROGRAMMING DIRECTORY

CableFile provides a complete directory of basic and pay services, startup dates, number of subscribers, price per subscriber and programming hours. Plus the Satellite Directory reporting who is on each transponder and who owns the satellite. This section will also give you basic and pay figures plus projections for 1982 through 1990.

4. TOP ADVERTISING AGENCIES AND CABLE TERMS

CableFile tells you who the top 100 advertising agencies are in the country and leading advertising agencies in largest television markets, plus advertising and cable terms.

5. FINANCIAL FIGURES

CableFile reports the 1981 FCC cable industry figures, which includes the number of systems, subs, rates, industry wide income and assets and revenue. Plus a complete listing of cable brokers and the top 50 cable companies.

6. CABLEVISION AND CED INDEX

CableFile combines an article index of CED and CableVision. For your convenience, the index is arranged alphabetically by subject or company name and includes issue date, page number and author.

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CableFile provides you with a call book—a listing of those hard-to-find phone numbers.

8. CATALOG OF EQUIPMENT AND SERVICES

CableFile provides a listing of products and services broken down by category and subcategories of manufacturers and distributors.

9. 35% more SUPPLIERS AND SERVICES than 1982.

CableFile has complete information of suppliers and services including all types of companies listed with personnel, address and phone numbers, what kind of service they provide; cable equipment, programming, legal services and consulting services, and more.

10. TOP MSO'S

CableFile provides the most comprehensive and complete listing available of the top MSO's including numbers of pay and basic subscribers and names of operating systems personnel.

11. 30% more SYSTEMS PROFILES than 1982—over 5500 cable systems listed.

CableFile, once again, provides a listing of all the cable television systems operating in the U.S. and territories. Plus a list of the top 100 systems by basic subscriber count and STV stations and MDS systems.

Classifieds

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CHIEF TECH—Supervise 25 employees for this 30,000-sub Florida system. Strong headend knowledge a real plus.
CHIEF TECH—Be your own boss in this small, 1 man operation in Florida.
CHIEF TECH—FCC license and AML experience required, as well as supervisory skills for this 400-mile plant operation in Florida.
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Ad index

People News

★ **Dean Dixon** has been appointed vice-president, satellite systems sales and marketing for **Anixter-Mark.** Dixon will be responsible for all areas of Anixter-Mark's satellite antenna marketing, including private, commercial and data transmission.

★ **Joseph Taylor** has been appointed CATV systems manager at **Jackson Enterprises**. Taylor, formerly in charge of Jackson's tool operation, construction and strand mapping services, will be responsible for all systems owned and operated by Jackson Enterprises

Dean Dixon

★ **Darryn Roasa** has been promoted to CATV regional sales manager of **Winegard**'s cable TV division. Roasa, formerly a district manager with Winegard's TV reception products division, has been with Winegard's sales staff since 1976. In his new position as CATV regional sales manager, Roasa will be responsible for coordinating equipment sales to cable systems operators in Ohio, Ky., Ind., Mich., Wisc. and Ill.

★ **Eugene Sherman** has been appointed president of **Warner Amex Cable Communications** of Dallas, Texas. Sherman will also serve as a vice president of Warner Amex Cable Communications.

Sherman joined Warner Amex from the Xerox Corp. where he was vice president of market development for the office products division. During his 19-year career with Xerox, he held various executive posts including vice president, field operations with responsibility for nationwide sales, marketing, technical services and customer administration.

Also, **Thomas Shaeffer** has been appointed vice president and regional manager of the midwest region. **Joel Rudich** succeeds him as vice president and regional manager of the central region of Warner Amex Cable Communications.

In his new position, Schaeffer will be responsible for operations in 41 systems throughout nine midwestern states serving more than 117,000 subscribers.

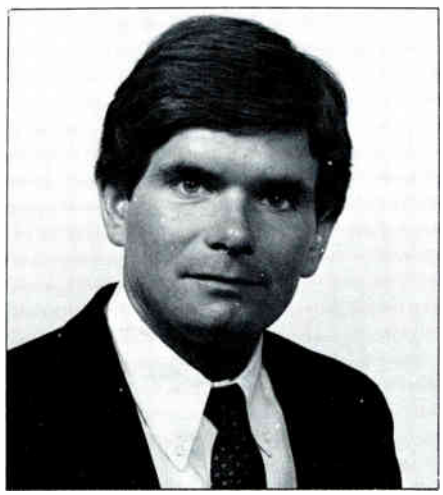
Rudich will be responsible for the operation of Warner Amex's Akron, Canton and Youngstown systems in northeastern Ohio.

★ **Scientific-Atlanta Inc.** has appointed **Charles Rhodes** a principal engineer assigned to the company's corporate research and development unit. Rhodes came to S-A from Tektronix Inc., where he was engaged for 26 years in engineering positions, most recently as chief engineer.

★ **Daniels & Associates** named **Lowell Staubitz** general manager of its Greeley, Colo., system. Staubitz recently managed several cable systems in New Mexico. He replaces Mark Boryla, who resigned to pursue other interests.

★ **David Nicholas** has been appointed product specialist with Magnavox CATV Systems Inc. In this capacity, Nicholas will be responsible for product development, market analysis, sales and promotional strategies of the control systems product line.

Prior to joining Magnavox CATV, Nicholas was a market specialist for Potomac Satellite Systems in the Washington, D.C. area. He holds a BA in government & law from Lafayette College, and an MS in Resource Management from Syracuse University.



Dave Nicholas

★ **Donald Philips**, former vice president of operations, engineering and construction for Warner Amex Cable Communications in Cincinnati, has been named senior vice president of operations for **CommuniCom.**

Donald Phillips

★ **Comtech Data Corp.** recently annouced the addition of **Allen Scharf** to their staff. Scharf joins Comtech in the newly created position of director of audio/video operations. As such, he will be responsible for directing Comtech's satellite television and radio receive-only equipment business. Scharf was formerly vice president of operations for American Cable in Phoenix.

★ **Scientific-Atlanta Inc.** has announced the appointment of **Perry Tanner** as communications products account manager for Texas. Tanner, who is based in Dallas, will be responsible for the sale of satellite earth stations, headend electronics, distribution equipment, broadband data modems, set-top terminals, coaxial cable and energy management and security systems to the cable television industry in the state.

Tanner has been with Scientific-Atlanta for the past year and has a significant background in the sale of CATV products. He holds a bachelor's degree in political science from Georgia State University in Atlanta.

★ **C.J. Bach** was named **Oak Communications**' new sales vice president. He was recently vice president of marketing for Oak's systems division. Oak also promoted **John Donohue** to vice president of manufacturing, systems division, and **Michael Shaughnessy** to vice president for market planning and devel-

opment of that division. Donohue was formerly operations vice president for Oak's switch systems division. Shaughnessy was a strategic planning director.

★ **Thomas Sharrard** is **Group W Cable's** new general manager in its Dearborn, Mich. system. He joined Group W last year as Michigan area manager for new markets development.

★ **William Tabler** recently became general manager for **Times Mirror's** cable system in Louisville, Ky. Before the appointment, Tabler was vice president of trust marketing at Citizens Fidelity Bank and Trust Co. in Louisville.

★ **Dominick Stasi** has been named vice president/general manager, network operations and design engineering at **Warner Amex Satellite Entertainment Company.**

Previously, Stasi was director of engineering at WASEC. Prior to joining WASEC in June 1980, he was director of engineering/support for Home Box Office. Mr. Stasi joined HBO in 1976 as systems engineer and advanced to senior engineer, engineering manager and field engineering director before becoming director of engineering/support. Before joining HBO, he was with the department of engineering at the State University of New York, advancing to engineering supervisor. Mr. Stasi also served as technical director of Long Island Center and in avionic flight-testing with Grumman Aerospace. He holds a Bachelor of Engineering degree from the State University of New York.

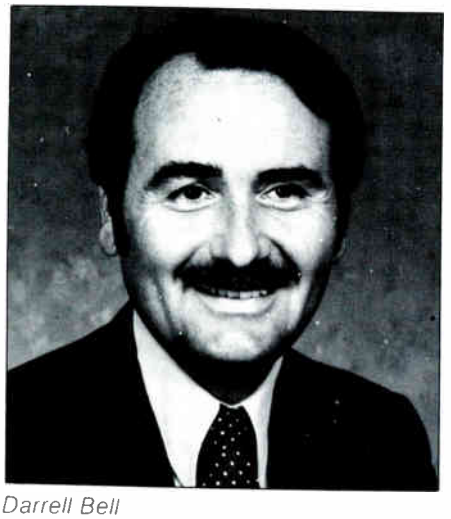
Dom Stasi

Michael Wheeler has been promoted to director, southeastern region, at WASEC. In this position, Wheeler is responsible for overseeing sales, marketing and affiliate relations operations in the Southeastern Region for WASEC's three program services.

Wheeler joined WASEC in January as director, advertising sales, southeastern region. He holds a Bachelor of Journalism degree from the University of Missouri.

★ **Darrell Bell** has been appointed vice president-Southeastern region for **Anixter Communcations.**

In his new position Bell will be responsible for managing the Anixter Communications sales effort in the cable TV and telephone markets in the Southeast region of the United States. In addition, Bell will be responsible for the Atlanta and Tampa service facilities.



Darrell Bell

★ **Western Union Video Conferencing Inc.**, a newly formed subsidiary of Western Union Corp., recently appointed **Melvin Borer** to the position of president and **Michael Caffarel** to vice president and general manager. Borer will continue with his primary responsibilities as assistant vice president-video services and new business development for the The Western Union Telegraph Co. Caffarel also will continue with his primary responsibilities as assistant vice president and general manager of WUTC's video services business.

★ Two national sales promotions at **Oak Communications**: **David Eng** to Southeast regional manager and **David Wright** to Atlanta district manager. Prior to the reassignments, Eng was in Oak's Atlanta sales office; Wright handled Northeast sales.

★ **Century III Electronics International Inc.** has announced the promotion of **Tom Van Hoven** to the newly created position of production control manager. In his new position, Van Hoven will have total responsibility for the planning and scheduling of all production for Century III.

Suddenly, cable construction has a totally new kind of management.

Byers System Management.

In the past few months, one small company has quietly revolutionized the cable construction business.

Using a total systems management approach, Byers Communications is already at work on two of America's largest new metropolitan builds, with more waiting in the wings.

In creating this unique matrix format, Byers drew upon key executive experience not only in computer management (Morgan Payne, President), but also in aerospace (Jay Simmons, Executive VP/Operations) and in cable operations (Bill Pitney, Executive VP/Corporate Development).

Unlike old-fashioned cable construction methods –where operators themselves had to supervise coordination of labor, materials, and testing–Byers System Management can provide complete turnkey delivery of your plant. You receive it already tested and ready for marketing, on schedule and on budget.

Each project is supervised locally by experienced Byers' project managers, with close support from a highly skilled team of specialists based in Atlanta. Materials procurement and computerized inventory control are also centrally managed for cost efficiency and assured on-time delivery.

To today's MSO faced with multiple builds of increasingly complex 400-440 Megahertz, dual-cable plants, the Byers Turnkey delivery can be a blessing that frees skilled personnel for more profitable operations duties.

Other operators may want to use Byers' modified turnkey capabilities–engineering/design, labor only, material procurement and inventory control, and testing.

Byers also offers complete rebuild services through "retrofit," an economical way to upgrade.

Discover how you can make use of Byers Systems Management to free up key personnel, save time and expense, and expand your new build capacity. Write or call Bill Pitney at (404) 696-7455.

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Product News

Telease Introduces MAAST System

Telease Inc. has announced the introduction of its Multiple Application Addressable Secure Television (MAAST) System. The MAAST system will be shown at the Western Cable Show in Anaheim, Calif., Nov. 17-19.

According to Telease, MAAST employs state-of-the-art digital devices, a proprietary encryption system and advanced modulation techniques to provide extraordinary features and benefits for cable, STV, MDS and satellite system operators.

MAAST features five in-band audio channels for each video channel, high-speed addressability, impulse-pay-per-view (IPPV) for one-way systems, parental control lock and remote control.

According to the company, MAAST high security eliminates loss of revenue by preventing signal piracy. Cryptographic techniques are used to scramble the audio channels and both sync removal and inversion are used to scramble video.

For more information, contact Telease, (213) 552-1055.

MAAST system from Telease

New System Analyzer From Wavetek

Wavetek Indiana Inc. has announced the addition of the model 1880 system analyzer to its line of CATV test equipment.

Designed as a field-portable, microprocessor-controlled instrument, the model 1880 allows rapid, pushbutton selection of system parameters such as amplitude, hum, FM deviation, composite triple-beat, cross-modulation, and carrier-to-noise.

In addition, the model 1880 features automatic one-button calibration, a built-in audio detector and speaker, and a unique split-screen image system which allows the operator to view two expanded portions of the spectrum simultaneously. Housed in a field-proven ruggedized case, the model 1880 may be powered from 12 volts, from its own internal battery pack, or with the BC-3 power supply, from 110 volts AC.

Wavetek model 1880 system analyzer

The price of the model 1880 is $4995. Delivery is approximately 120 days ARO.

For more information, contact Wavetek Indiana Inc., (800) 428-4424.

Coaxial Scalar Measurements Extended

Broadband coaxial measurements can be made with Wiltron's 5659 automated scalar network analyzer system. This new system allows broadband coaxial measurements of transmission and reflection to be made from 10 MHz to 26.5 GHz. According to the company, these broadband measurements are mechanically simpler, more accurate and freer of measurement ambiguities than ever before.

The 5659 System consists of Wiltron's 560A scalar network analyzer, 6659A sweep generator, 85 controller, precision components necessary to make swept coaxial scalar measurements from 10 MHz to 26.5 GHz and advanced user-friendly software.

Price for the 5659 is $49,210. Delivery is 12 weeks ARO.

For more information, contact Wiltron Co., (415) 969-6500.

LNR Producing Transponder Crosstalk Unit

LNR Communications Inc. has received an order in excess of $180,000 from RCA's Astro Electronics Division in Princeton, N.J., to develop, manufacture and test a 14/12 GHz crosstalk unit. The unit, designated XTU, will be used to evaluate K-Band satellites presently being built at RCA. According to a release from the company, LNR will furnish a complete system utilizing standard LNR Ku-Band Earth Station hardware integrated in a compact, easily accessible, 19-inch rack-mounted configuration.

The XTU consists of the LNR UC14-D1 Ku-Band frequency upconverters, UEM-70 FM modulators, DC12-D1 Ku-Band frequency downcoverters, DRM-70 video demodulators and other packaged electronics.

In order to permit video input/output testing of the XTU itself, an LNR Model TL14/12 Loop Test Translator is supplied as an accessory to the XTU to serve as a transparent bypass of the transponder under test.

The purpose of the XTU is to measure intelligible crosstalk between two Ku-Band satellite transponders. Coupled with external signal generators, the XTU outputs two signals in the frequency range 14 to 14.5 GHz. One of the signals is modulated, the other is not. After passing through the components under test (transponder or receiver), the signals are returned to the XTU in the band 11.7 to 12.2 GHz. The XTU then measures the amount of modulation relative to the signal with modulation on the previously unmodulated carrier. The ratio of demodulated output for the modulated and unmodulated signals is the crosstalk ratio.

For more information, contact LNR Communications Inc., (516) 273-7111.

New Plow Option From Vermeer

A hydraulically steerable plow, designed to provide greater maneuverability on slopes, contour streets or around obstructions, is now available from Vermeer Manufacturing Co.

The new Vermeer plow option is available on all rubber-tired M-series machines and is capable of pivoting (steering) 15 degrees left or right. The unit also can be shifted left or right with a total range of 28 inches (71 cm). Both features provide much greater versatility and efficiency when operating near trees, telephone poles or next to buildings.

A wheel height adjustment of 5 inches (13 cm) also allows the operator to pinpoint desired depth of cable.

For more information, contact Vermeer, (515) 628-3141.

Vermeer hydraulic plow option

Anixter-Mark Introduces Rear-Mounted Feed Design

Anixter-Mark has introduced a new microwave grid antenna with a rear-mounted feed.

The rear-feed design features weather-proof construction and positive sealing. According to the company, the primary advantage of the rear-mounted feed design is that it allows for maximum ease of installation, maintenance and repair.

The new Anixter-Mark antenna features a slot excited cavity feed for operation in the bands from 1400-2700 MHz. The feed support is 13/16 inches thick by 9" diameter casting, locked in place by 3/8-24 stainless steel bolts and heli-coils.

For more information, contact Anixter-Mark, (312) 298-9420.

New JVC S-62U Camera

JVC has announced the availability of the S-62U single-tube camera. It replaces their model G-71US which was discontinued.

The S-62U's mainstay is a one-inch Saticon pick-up tube coupled to an innovative color separation filter. According to the company these components guarantee accurate color reproduction and optimal horizontal resolution, which measures 280 lines at center. The video signal-to-noise ratio exceeds 48 dB.

Features of the new camera include a 6:1 zoom lens, a white balance circuit and iris and gain control switches. The 6:1 zoom lens adjusts manually from 17 to 105 mm and offers macro capability. Maximum lens aperture is f/1.8.

The white balance circuit, which can be set to standard or automatic, controls color temperature, while the iris control switch also offers the flexibility of manual or automatic setting. For low-light shooting, the gain control can be switched from zero to + 6 or +12 dB. With the gain control set to 12+ dB, minimum illumination measures 80 lux at 5.4 fc.

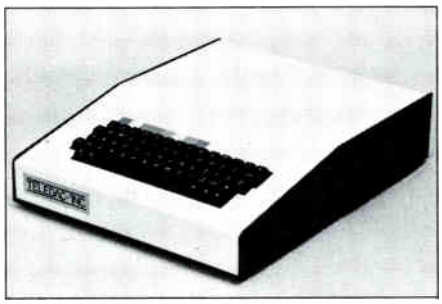
Other key features include a 1.5-in. electronic viewfinder with indicators for VCR start/stop, white balance auto/manual and battery level, and automatic beam optimizing circuit that minimizes comet-tail effects caused by intense bursts of light and aperture compensation and vertical contour correction circuits for enhanced image clarity. A uni-directional microphone, mounted on a telescoping boom, is a convenient built-in feature of the carrying handle.

For more information contact JVC, 41 Slater Drive, Elmwood Park, N.J., 07407.

Teledac Character Generator

Teledac Inc. has introduced a new junior/senior, low-cost, model T-1016 character generator. A new memory compression technique provides up to 68 pages of memory. Other features include Spanish characters, graphic text separators and bar charts.

For more information, contact Teledac, (514) 651-3716.



Teledac character generator

Gilbert Engineering CableFlex connector

Gilbert Engineering has introduced integral sleeve connectors for use with Scientific-Atlanta's CableFlex coaxial cable. Gilbert's new CableFlex connectors are available in various sizes, both in pin and splice types and are available from stock.

The new connectors were developed in conjunction with Scientific-Atlanta to fit the needs of system operators.

For pricing and delivery information, contact Gilbert Engineering, (800) 528-5567.

TOCOM Introduces New 55 PLUS Addressable Control System

TOCOM Inc. has introduced a new computer-based addressable control system for its 55 PLUS line of one-way and two-way addressable terminals.

The new 5530A adressable control system (ACS) expands the number and variety of operator control features and is priced at $79,500, approximately 36 percent less than the price of the 55 PLUS Programming Control System it replaces.

The new addressable control system is based on the Hewlett-Packard 3000 computer system. TOCOM's ACS software is designed to take advantage of the database management system and other advanced software tools offered with the HP 3000.

For cable system computer security, the ACS provides a comprehensive method to control personnel access to its functions. In order to access the ACS, a terminal operator must provide an authorized identification and an individually-assigned password. Additional security is provided for such functions as initialization of terminal services and deletion of customers or terminals from the ACS database.

TOCOM's 55 PLUS system delivers up to 55 channels of video programming, protected by baseband video scrambling. Both one-way and two-way addressable terminals may be used in the 55 PLUS system. The subscriber terminals provide on-screen digital time and channel display, parental discretion coding and emergency alert. Two-way terminals deliver interactive services such as

information retrieval, opinion polling, home shopping and home banking in on-screen text and graphics as well as video formats.

For more information, contact TOCOM, (214) 438-7691.

Intercept Expander 40 block converter

New 40-Channel Block Converter

A new block converter that, according to the company, provides the most economical means of delivering 40 channels of high quality video to subscribers was shown by Intercept Corp. at the Atlantic Cable Show, October 26-28, in Atlantic City, N.J.

The Expander 40, a 40-channel VHF to UHF block converter offers, according to the company, performance features superior to most double conversion converters. It takes all VHF bands (54-300 MHz) and converts them to UHF Channels 36 to 76 (602-848 MHz). Straight-through VHF is also available on a second output port.

The Expander 40 is compatible with built-in remote tuning. As such, it can be located away from the TV set or behind it. It is also compatible with HRC frequencies; and has a pass band wide enough for video carriers in HRS headends. The new unit has completely shielded housing and is totally maintenance free.

For more information, contact Intercept Corp., (800) 526-0623.

New Filter For Severe Terrestrial Interference

Microwave Filter Co.'s model 4127 filter allows reception of a single transponder signal even when encountering severe terrestrial interference, according to the company.

The combination bandpass filter and double notch filter assembly is inserted in either the coax line between the LNA and downconverter (4127C) or, in very severe interference cases, between the feedhorn and the LNA (4127W) using WR-229 waveguide flanges. A three-pole single-channel bandpass filter, cut to customer specified frequency, and two microwave notches, +10 MHz from the transponder center frequency, work together to exclude interfering terrestrial carriers in the 3700-4200 MHz band.

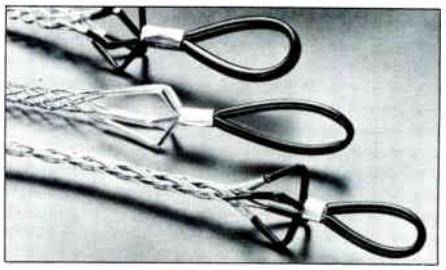
The model 4127C has type N connectors and passes DC power. The 4127W has WR-229 waveguide flanges (no DC power passing is required).

Price is $545 for the 4127C and $520 for the 4127W. Delivery is one week. For more information, contact Microwave Filter Co. Inc., U.S. toll-free (800) 448-1666 (collect (315) 437-3953 in New York State, Canada, Hawaii and Alaska.)

New Pulling Grips From Klein Tools

Klein Tools Inc. has announced the availability of a full line of wire mesh pulling grips. This new line of grips includes a full range of sizes in flexible eye pulling grips, rotating eye pulling grips and offset eye slack pulling grips.

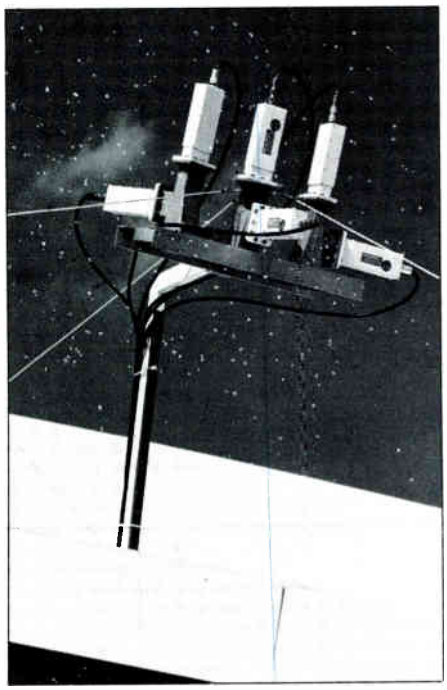
These grips are used for pulling overhead or underground cable, for stringing service or communications lines into buildings or for pulling wire through conduit.



Wire mesh grips from Klein Tools

These grips are reusable and do not damage the cable because pulling tension remains uniform along the length of the grip. The mesh will fit either a single cable or a bundle of cables. All Klein pulling grips are woven of galvanized steel.

For further information, contact Klein Tools Inc., (312) 677-9500



M/A-COM triple feed system

M/A-COM Marketing New Triple Feed And Motorized Antenna

M/A-COM Video Satellite Inc. has announced the availability of a new feed for mini-cable television systems. The feed allows simultaneous reception of signals from a maximum of three adjacent satellites with a single parabolic antenna. Each of the three prime focus feeds accommodate two LNA's or LNB's for reception of both vertically and horizontally polarized signals from one, two or three satellites within an 8 degree arc. According to the company, the feed has been designed for flexibility: each feed may be independently rotated for polarization adjustment. The company recommends the feed for use with an antenna having a F/D ratio of 0.38 or higher.

This system allows mini-cable operators to offer a full range of programming services without the expense and space requirements of three separate antennas. The triple feed is available for delivery from stock within 30 days.

M/A-COM has also announced it will market a motorized version of its 5-meter antenna. Powered by a 110 Vac circuit, the remotely controlled antenna tracks the entire geostationary arc.

The polar mount (hour angle declination) is available in two options: painted or hot dipped galvanized for highly corrosive environments. During installation, the control unit is coded for all satellites of interest. A manual override is available for "cherry picking."

For more information, contact M/A-COM, (617) 272-3100.

Bell System To Display Software At Western Show

The Bell System will introduce West Coast cable television companies to a new telephone system software package designed for the CATV industry at the Western Cable Show.

The new system, Horizon CMS (Call Management System), helps cable television companies provide customer service in their franchised areas.

Horizon CMS can handle a high volume of calls by queuing calls with a recorded announcement. This feature, according to the company, provides the quickest and most equitable customer access for billing questions or repair problems. The system measures service and productivity levels by tracking the amount of customer calls received and the time in which they were handled.

Included in the exhibit will be several data network services and terminals.

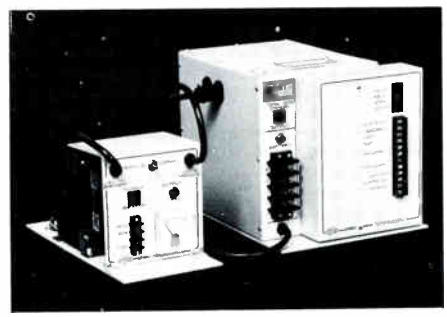
Artel Fiberoptic Modules

Artel Communications Corporation has announced an addition to its SL-2000 Fiber Optic Transmission System. Designated the T-2020/R-2020, this new transmitter/receiver module set combines broadcast quality video and audio on a single card module set. The result, according to the company, is a compact, economical system that, for the first time, makes fiberoptics cost-effective in shorter distance video/audio applications.

Maximum transmission distance of the T/R-2020 is one kilometer, as compared to the 6.4 km (4-mile) range of other SL-2000 module systems.

Price for the T/R-2020 video/audio transmitter/receiver module set is $2250. Delivery from stock to 6 weeks.

For more information, contact Artel, (617) 752-5690.



Alpha AP880 standby power supply

Two-Module Standby Power From Alpha

Alpha Technologies has introduced a new standby power supply for the CATV industry, the model AP-880 featuring a two-module concept. The model AP-880 employs the same circuit design found in the company's current line of standby power supplies. However, the two-module concept, according to the company, allows the user to purchase the low cost transformer module only, to minimize initial cash lay-out.

The Alpha model AP-880's modules are fully functional independent of each other. Simple line cord plug-ins are all that are required to update.

In addition, the model AP-880 operates with all standard and optional plug-in boards available for Alpha's AP series of power supplies.

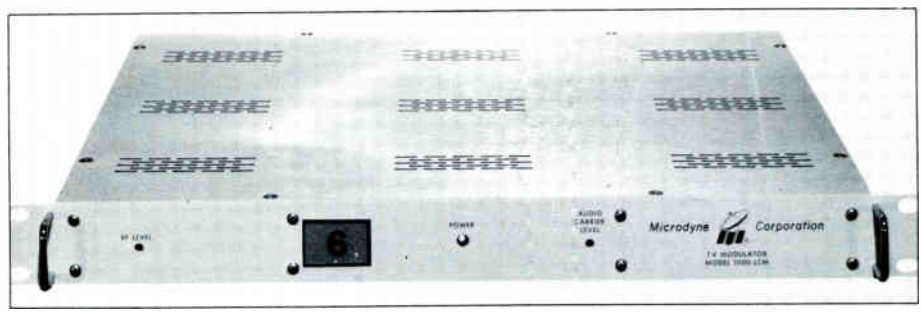
For more information, contact Alpha Technologies, (206) 671-7703.

High Isolation TVRO Power Dividers

Merrimac Industries has introduced the PDI series of Power Dividers with internal isolaters. They are used to divide an RF input signal into equal in-phase output signals.

The devices cover the 3.7 to 4.2 GHz TVRO band with isolation between output ports of at least 60 dB. The dividers feature low insertion loss and are available in two-way and four-way versions.

For more information, contact Merrimac Industries, (201) 575-1300.



Microdyne 1000 LCM TV modulator

New TV Modulator From Microdyne

Microdyne Corp. has announced the availability of a new television modulator, the 1000 LCM. According to the company, it is a high quality, reliable, low cost modulator that will be featured at the Western Show along with their new 1100 BDC/DCR downconverter system and a new 10-foot parabolic antenna.

For more information, contact Microdyne, (904) 687-4633.

THE TALENT SHOW

One for the money. Lots for the show. Microdyne's talent show is the 1100 CSR, a small versatile satellite receiving system. Our CSR is a breakthrough in satellite system science. Its technologically advanced construction includes increased reliability and simplicity of design to provide the cost-efficient reception you demand.

The CSR combines the advantages of both fixed frequency and remotely tunable units and surpasses industry standards in threshold performance. It automatically configures its channel readout for compatibility with 12 and 24 transponder satellites. Input polarity switching is provided at no additional cost. Microdyne's progressive technology has enabled us to manufacture a receiving system with all features necessary for increased performance in one 1¾" compact unit.

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CATV battery offers stand-by power

Gould Inc. has introduced its new Watchman SB-27, a maintenance-free battery specifically designed to serve as a back-up system at cable television booster stations.

Power outages resulting in service interruptions and disgruntled subscribers are often solved with standard automotive and boat batteries. But these batteries are not designed to withstand constantly being on charge, and deteriorate rapidly.

According to the company, the new Gould Watchman is maintenance-free, requires no additional water or cleaning, and can remain in place three to five years compared to an average of six months for an automotive battery.

Measuring 12 × 7 × 9 inches high, the Watchman features combination SAE-threaded stud terminals, offset to ease installation and reduce connection corrosion, a low gassing rate, and envelope separators to prevent shorting out and to permit more electrolytes over the top of the plates.

The Watchman switches on automatically when the power goes off, and can operate uninterrupted for up to 4-8 hours, making it ideal for an electrical system requiring emergency stand-by power.

The Watchman is priced at just over $60 in quantities of 30 or more. For more information, contact Greater Distributing Service, (312) 998-0444.

New Backhoe From Ditch Witch

Ditch Witch has introduced a new heavy-duty utility backhoe for its 40-HP-class and 50-HP-class Modularmatic® equipment.

The model A420 backhoe offers simplified hydraulics, and can dig to depths of 92.5 inches. Reach from swing post is 134.5 inches.

Mounted on front of a 4010 or 5010 vehicle, one machine can do utility backhoe work, restoration, trenching, or vibratory plowing, depending on which work modules are used.

For more information, contact Ditch Witch, (405) 336-4402.

Ditch Witch heavy-duty backhoe

Multi Products International Expands Indoor/Outdoor Splitter Line

Multi Products International has expanded its line of stainless steel indoor/outdoor splitters to include 2-, 3-, 4- and 8-way models. These models can be installed and reinstalled in a variety of applications, including industrial and shoreside systems.

Constructed of corrosion-proof stainless steel, these splitters withstand harsh indoor or outdoor environments and, through a connector design, provide watertight and unbreakable seals between the connector and splitter body. Other features these splitters offer are durability, cost savings and reduced maintenance or servicing.

For more information, contact Multi Products International, (201) 239-8183.

Anixter markets Hamlin converter

Anixter Introduces New 58-Channel Cordless Remote Converter

Anixter Communications is now marketing a new cordless, handheld remote 58-channel Hamlin converter, the CRX-5000.

The CRX-5000 features a frequency synthesized first local oscillator. It is available with built-in descrambling, and an internal A/B switch for dual cable operation. The remote handheld channel selector operates on infra-red wireless remote control, and features instantaneous frequency selection, scan up-down channel select, and "favorite channel" memory.

For more information, contact Anixter, (312) 677-2600.

Radar Engineers Upgrades 1455 Cable Ranger

Recent improvements made on Radar Engineers' model 1455 cable ranger make the unit more useful to electrical and telephone utilities. These improvements include a built-in DC option that permits operations directly off a 12-volt DC battery, a standard 120-volt, AC circuits and a calibration circuit.

Comprised of a selector switch and positive and negative terminal posts, this DC option can be added to the back panel and connected to the battery via ten-foot red and black cables. A 7-ampere fuse is used to protect the DC circuit.

The calibration circuit, calibrated to modern URD cables, allows the user to resolve distances to within plus or minus 1 percent of the selected range. The propagation velocity factor is now adjustable from 0.35 to 0.75.

Through utilization of the reflective radar principle, the model 1455 cable ranger locates open and shorted cable faults in buried primary power cable, some secondary cable, coaxial cable, and CATV cable. It can detect faults from zero to 20,000 feet in length in five different ranges.

High frequency pulses are generated and transmiitted along the cable under test. An impedance change in the cable reflects the pulse and causes a deflection at the point of the fault. The type of fault is identified by the shape of the reflection displayed on a CRT screen. The fault distance is determined by superimposing a range step on the displayed trace from the initial pulse to the fault pulse.

For more information, contact Radar Engineers, (503) 256-3417.

Midland-Ross Kindorf Cable Cleats

Kindorf polyethylene cable cleats support cable and conduit without the use of special tools, indoors or out.

The cleats placed around cable or tubing are mounted with a single fastener to the supporting surface. As the fastener is tightened with a screwdriver, or driven home with a hammer, the cleat adjusts to provide a tight grip on the cable or tubing without cutting or damaging it. The cable cleat combines both the bundling and mounting of groups of small wires or cables into a single operation, in contrast to the conventional tieing with one tool and then mounting with another. Kindorf cable cleats from Midland-Ross come in a series of eight sizes capable of handling cable or tubing diameters from 0.4-2 inches.

For more information, contact Midland-Ross Electrical Products Division, 1207 Columbus Avenue, P.O. Box 1548, Pittsburgh, Pa., 15230.

Boonton 1020 signal generator

Boonton Satellite Generator

Boonton Electronics has announced new versions of its programmable signal generators designed to test the wideband IF amplifiers and demodulators of satellite communication links. Designated the 1020/1021S/1, these generators provide low-distortion FM to 600 kHz peak deviation at internal modulation rates to 50 kHz. External FM sensitivity is 1 dB down at 100 kHz and 3 dB down at 200 kHz. Phase modulation capability is to 6 radians peak, and a 75-ohm RF output to 200 MHz is available, calibrated in both dBm and voltage.

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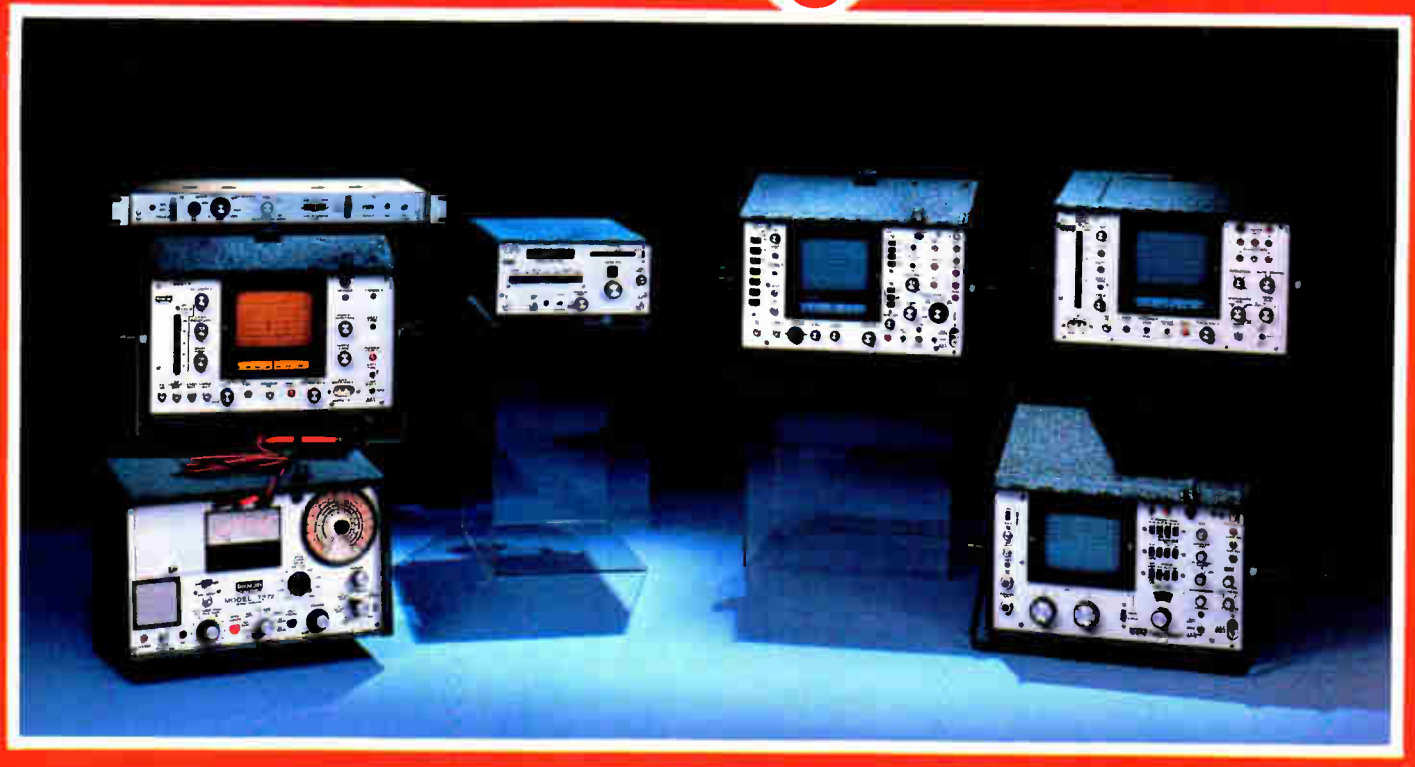

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Signal	Day	Start/Stop	Alert Tones	Satellite/ Transponders
ACSN-The Learning Channel	Weekdays Weekends	6 a m /4 p m 6 a m /1 p m	192° #	Satcom III-R #16
The American Network	Daily	5 p m /5 a m		Satcom IV #19
ARTS		9 p m /12 a m		Satcom III R #1
BET	Daily	8 p m /2 a m	406°/#	Westar V #12X
BizNet	Weekdays	9 a m 2 p m		Satcom IV #15
Bravo		8 p m 6 a m		Satcom IV #6
Cable Health Network		24 hrs	361 ° #	Satcom-III R #17
CBN		24 hrs	None	Satcom III-R #8
CBS Cable	Weekends	4 30 p m 4 30 a m 5 p m /5 a m	524° #	Westar V # 4D
Cinemax		24 hrs	None	Satcom III-R #20 (E C) Satcom III-R #23 (M P)
CNN		24 hrs	024 °/#	Satcom III-R #14
CNN Headline News		24 hrs	635 ° # 541 ° #	Satcom III-R #15
C-SPAN		24 hrs	195 °/#	Satcom III R #19
Daytime	Weekdays	1 p m /5 p m		Satcom III-R #22
The Entertainment Channel		24 hrs	None	Satcom IV #8
ESPN		24 hrs	048 ° #	Satcom III-R #7
Eros	Thurs -Sat	11 p m /2 a m		Westar IV #10D
Escapade/Playboy		8 p m /6 a m		Satcom IV #7
Eternal World Television Network		8 p m /12 p m	762 °/#	Satcom III-R #18

Major Communications Satellites Serving North America

Location: Degrees West Longitude	Satellite: Present	Satellite: Future
70		Southern Pacific-2 (Oct 84)**
74		Galaxy-2 (Mid 84)
79		Advanced Westar-2**
83	Satcom-4	
87	Comstar-D3	Telstar-2
91	Westar-3	Advanced Westar-1**
94		SBS-3**
95	Comstar-D2 & D1	Telstar-1
97	SBS-2*	
99	Westar-4	
100	SBS-1*	
103		GTE-1*
104		Anik-C (Mid 82)
106		GTE-2*
109	Anik-B**	
114	Anik-2 & 3	
119	Satcom-2	Southern Pacific-1 (Feb 84)**
123	Westar-2	
123 5	Westar-5	
127		Comstar-D4 (Mid 82), Telstar-3 (1986)
131	Satcom-3R	
135	Satcom-1	Galaxy-1 (Mid 82)
139		Satcom-1R (Mid 83)
143		Satcom-2R (1984)

*Ku Band
**Dual Ku/C Band

Signal	Day	Start/Stop	Alert Tones	Satellite/ Transponders
Financial News Network	Weekdays	10 a m -5 p m		Westar IV #9X
GalaVision	Weekdays	4 p m -4 a m		Westar IV #12X
	Weekends	24 hrs		
HBO		24 hrs	Program 729°/# Scramble 835°/# Duplication 940° #	Satcom III R #24 (E,C) Satcom III-R #13 #22 (M,P
HTN Plus	Daily	4 p m /4 a m	207 °/#	Satcom III-R #16
The Movie Channel		24 hrs	None	Satcom III-R #5
Modern Satellite Network	Weekdays	10 a m 1 p m	243 ° # 421 °/#	Satcom III-R #22
MTV: Music Television		24 hrs	None	Satcom III-R #11
National Christian Network		6 a m /8 p m	073° #	Satcom IV #7
National Jewish Television	Sundays	1 p m /4 p m		Satcom III-R #16
Nickelodeon		8 a m /9 p m	311° # (E C M) 519° # (P)	Satcom III-R #1
PTL		24 hrs	None	Satcom III-R #2
Reuters	Weekdays	4 a m /8 p m	None	Satcom III-R #18
Satellite News Channel		24 hrs	None	Westar V #4X
SelecTV	Weekdays Weekends	8 p m 4 a m 2 p m 4 a m		Westar IV #9X
SIN		24 hrs	None	Westar IV #8X
SPN		24 hrs	None	Westar IV #11x
Showtime		24 hrs	576 °/#	Satcom III-R #12 (E C) Satcom III-R #10 (M P)
Spotlight		24 hrs	None	Satcom III-R #4
Trinity (KTBN)		24 hrs	None	Satcom IV #17
USA Blackout Network		O/V after 5 p m	295 ° #	Satcom III-R #22
USA Cable Network	Daily Weekends	3 a m /10 p m 10 a m /2 a m	438 ° #	Satcom III-R #9
WFMT		24 hrs	None	Satcom III-R #3 Subcarrier
WGN		24 hrs	None	Satcom III-R #3
WOR		24 hrs	None	Westar V #2D
	Daily	10 a m /5 p m		
WTBS		24 hrs	None	Satcom III-R #6
The Weather Channel		24 hrs	None	Satcom III R #21

E eastern M mountain
C central P pacific

Alert tones listed are for sign-on, sign-off

All program times are listed for the eastern time zone, unless otherwise noted

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