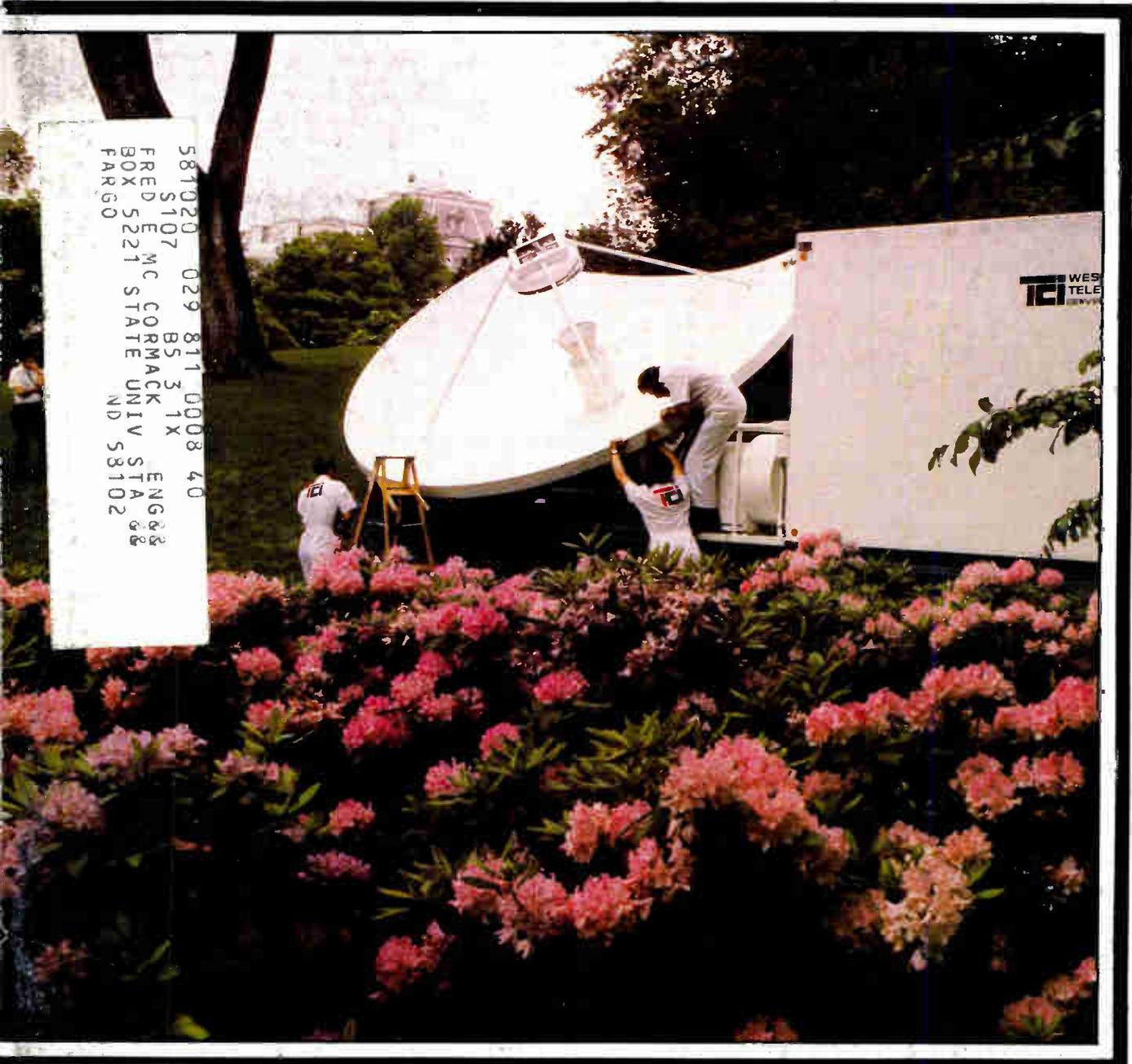


# GED

Special  
Tech Review

NCTA Show Wrap-Up



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**Communications-Engineering Digest**  
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Volume 5, No. 7



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# GED News at a Glance

WASHINGTON, D.C. — A test of wills has been averted by the **rescheduling of the National Cable Television Association's 1980 convention** from its original April dates to **May 18-21**. The rescheduling resolves a conflict with the National Association of Broadcasters, who switched NAB convention dates from late March to April 13-16.

WASHINGTON, D.C. — The **FCC has expanded** the number of **frequencies available** for use in the **cable television relay service (CARS)** from 12.7-12.95 GHz to **12.7-13.20 GHz**, which puts CARS on a shared, co-equal and primary basis with TV auxiliaries. The exception, 13.15 GHz to 13.2 GHz, is reserved for electronic news gathering and mobile use.

The commission has also proposed similar technical standards for equipment used in CARS and in the TV auxiliary broadcast service; proposed type acceptance for transmitting equipment used by TV auxiliaries operating in the A, B and D bands; and antenna performance standards for CARS and TV auxiliaries in the 12.3-13.25 GHz frequency band. (See page 20.)

NEW YORK, NEW YORK — With no transponder space left on Satcom III, **program suppliers are moving enmasse to procure transponders** on the second RCA satellite to serve the cable industry. Reliable sources indicate that already seven transponders have been leased for **Satcom I** when existing cable traffic moves to Satcom III this December. Availability of attractive cable program services on two satellites signals the start of an industry-wide move to install a second earth station.

WASHINGTON, D.C. — The FCC has begun an inquiry into television waveform standards for horizontal and vertical blanking intervals to assist it in considering a course of action for dealing with problems encountered by the broadcast industry concerning compliance with these standards. (See page 24.)

LAS VEGAS, NEVADA — **Frank J. Blas has received NCTA's engineering award for Outstanding Achievement in Operations** at this year's NCTA show. Sharing the honors is **Michael F. Jeffers, who received NCTA's engineering award for Outstanding Achievement in Development**. (See page 24.)

WASHINGTON, D.C. — The **Federal Communications Commission** has **denied a petition** by the Atlantic Research Corporation of Alexandria, Virginia, **for amendment of the rules to permit the transmission of digitally coded program related information in the visible portion of broadcast television signals**. (See page 24.)



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**Cover:** Our post-NCTA convention cover features WTCI's five-meter transportable satellite station in place on the south lawn of the White House. Cover photograph courtesy of Western Tele-Communications, Inc.

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## Editor's Letter

**W**ell folks, we've survived another NCTA convention, and what a convention! The cable industry has never looked healthier, as evidenced by the amount of traffic and orders written at, and after, the show. This year's show featured another technological "first" for cable—a live, two-way conversation with President Carter. See our satellite section, beginning on page 63.

Also announced at the convention was the expansion, by the FCC, of the CARS band frequencies from 12.7-12.95 GHz to 12.7-13.20 GHz. This now puts CARS on a shared, co-equal and primary basis with TV auxiliaries.

Congratulations to Frank Bias and Mike Jeffers, two industry professionals who received this year's NCTA engineering awards.

Finally, we offer *C-ED's* semi-annual Tech Review. Our review features the multitude of equipment displayed at the NCTA convention. In addition to the new products unveiled at the show, we have included top-of-the-line equipment from major manufacturers. The review starts on page 29.



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# The Convention From There

By Robert Bilodeau, SCTE chairman

Periodically, we met in the aisles of the exhibit floor, or the coffeeshop, or the parking lot of the Hilton Hotel. In each instance the question arose, "Have you seen anything new at the convention, technically speaking, that is?" And so, after three or four such chance discussions, I searched harder, asking myself the question, "What have I missed?"

As a result, I spent more time on the floor this year than in past years — and less time at other kinds of activities. This in deference of the obvious distractions of the Las Vegas scene. Ultimately, I did not find innovative, technological breakthroughs — bread-board or prototype devices — that promise to unlock new sources of revenue. What I did find, and happily so, were measurable improvements in the products I already knew: security devices, converters, table performance, cost reduction efforts and some standard parts of the system, information display systems that were finally realizing their program objectives, sophistications in test equipment, and earth stations as common place as gas stations. In addition, software filled the air — everywhere.

I'm not denegrating this situation. I find it to be consistant with other technicians I have queried. It's a healthy sign. The untested and untried prototypes of yesteryear that found their way to the convention floor to hype sales stayed at home for properly needed refinements. And why not? The industry didn't need to bear its future secrets to the market place! New construction in the industry is such that virtually everybody is situated with a substantial backlog. It seems logical to me not to promote items that can't be delivered, due to immaturity of the product, when alternatively its difficult at best to deliver shelf items. I understand the delivery on some items, such as set-top converters, could be as much as one year for those getting into line now.

I did review at least one interesting

approach to the security pier hardware gap. There is still the technological requirement to substantially reduce the penalties now paid for the maintenance cost of in-home devices. It is still my unanswered query to minimize the dollar exposure of system-owned hardware in subscribers homes. I haven't yet seen a reasonable approach to this problem. Perhaps, things are going too well for those who could, given the motivation, tackle such a difficult technical situation.

There was spotty concern for the location of this year's convention. Vendors, and those interested in technical programs and seminar attendance, were concerned that the temptations of the area would cut down on attendance at floor exhibits, and so forth. In my estimation, this did not materialize within the technical community that makes up a small portion of the total attendance at the annual—two or three hundred diehards who would go to tech sessions any time of the day or night under adverse and dissimilar environments. Most of them are "technaholics." They attend the annual, pursue their objectives and, temptation be damned, they'll be making their usual rounds unswayed by the vagaries of the moment. I can't change my habits overnight for a two- or three-day period and quickly convert back to what I am the other 360 plus days of the year. Perhaps that happens to Legionaires or merchants at conventions, but certainly not to "our" technical group.

It was a solid convention. As one cable savant observed, "one for eating, not for trading." It's a time when we don't have to live hand-to-mouth, recoiling from one crisis to another.

It promises to get better before it gets worse. With the gasoline situation as it is today—per capita cost of gasoline exceeding that of beer—the choice is obvious—stay home and drink beer. What else but watch cable? The summer disconnect rate should be favorably reduced.

With the impact of deregulation, proliferation of new program services,

a recession-proof product, a bullish financial market for cable, and the confidence of knowing that the industry has arrived, next year should yield another "solid" convention.

### SCTE Developing Manpower Resource

WASHINGTON, D.C.—The SCTE is developing a manpower resource pool for graduating students wishing to enter the technical side of the cable television industry. SCTE is currently polling various learning institutions around the country and asking that interested students forward their resumes to the organization. SCTE then will send those resumes on to cable operators looking for personnel.

The cost of using this SCTE Manpower Resource Pool covers the reproduction and mailing of resumes on hand at the time of request. A one time mailing of resumes on-hand costs \$10.00. Companies wishing to receive all resumes accumulated by SCTE over a 12-month period may pay an annual fee of \$75.00. Payment is required in advance. The program will begin August 15, 1979.

This service is available from SCTE, 1100 17th Street NW, Washington, D.C. 20036.

### Special Programming For Very Special People

WASHINGTON, D.C.—SCTE member Cliff Schrock has been actively working on the NCTA Committee on Services for the Deaf, the Blind and the Handicapped, and has come up with some proposals that need support by everyone involved in the communications industry.

For the hearing impaired, (who number over 13 million), it is proposed that one channel be used for: nationally distributed specialty programming which is usually available by tape but needs wider distribution; locally generated news and activities for the deaf by the deaf; educational programs for the deaf and interested citizens. For the blind, the proposal calls for setting aside a dedicated FM channel along with an audio channel on a cable system on which short stories, periodi-

cal type information, newspapers, etc., could be read to the blind audience.

If you would like to support these proposals, write NCTA or Cliff Schrock at 2040 S.W. 187th Avenue, Aloha, Oregon 97005. In Schrock's words: "Please respond. Don't wait until legislation forces CATV to carry special programming. Let's be pioneers and do it on our own."

### SCTE Elects Covell Western Vice President

WASHINGTON, D.C.—Harold Null, president of the Society of Cable Television Engineers, has announced that Richard Covell of Sylvania-CATV has been elected SCTE western vice president, succeeding Frank Bias of Viacom. Covell is currently a director on the SCTE board, representing Region 2.

By unanimous vote of the board, Covell will serve in a dual role as Region 2 director and western vice president until the 1979 elections. Covell will then assume the post of vice president for the 1980 membership year.

### Dolan Appointed Chair Of Nominations Committee

WASHINGTON, D.C.—SCTE President Harold Null, of Storer Cable TV, has appointed Larry Dolan of Mid State Communications and an At-large Director of the SCTE as chair of the 1979 Nominations Committee.

Dolan will announce the members to serve on this committee within the next 60 days. Meanwhile, nominations for directors are being requested from the membership. In order to qualify as a nominee, the person must be a member in good standing of SCTE and



Larry Dolan to chair Nominations Committee.

able to participate in the organization's activities. If required, the support of the member's management must be cleared prior to submitting the nomination.

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The Society of Cable Television Engineers announces the release of its new publication:

## Guidelines For Employee Management and Personnel Development

Available from:

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Price: \$16 per copy (\$5 billing charge applicable if payment not included with order.) Publication PD-2.

For information on how to place a name in nomination, please write to Larry Dolan, Chair, SCTE 1979 Nominations Committee, 1100 Seventeenth Street NW, Washington, D.C. 20036.

## SCTE to Host Meeting on Earth Stations and Networking

BOSTON, MASSACHUSETTS—The Society of Cable Television Engineers will hold a technical meeting at the

Logan Airport Hilton Inn in Boston on August 20-21, 1979. Table top exhibits will be included at this meeting. Registration includes the sessions, workshops, and a Certificate of Completion for attendance. Advance registration is \$75.00 for SCTE members; \$100.00 for non-members.

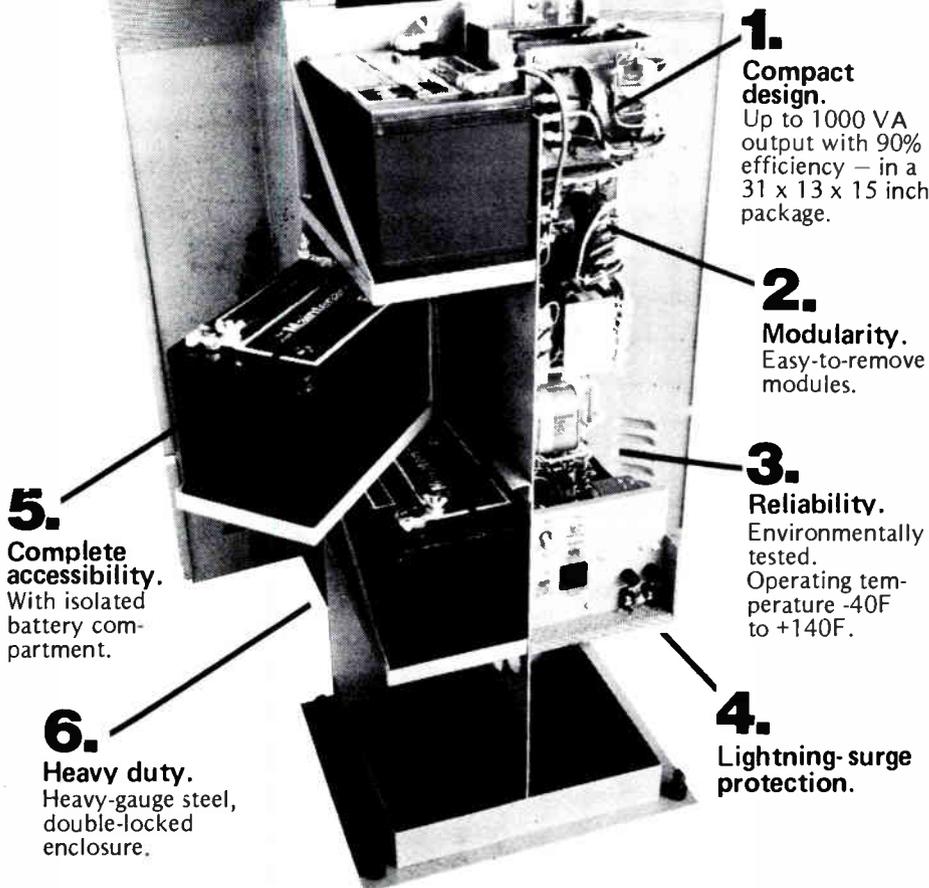
Topics and panelists include Satellite Cross-Polarization, Robert Tenten, Manhattan Cable TV; Practical Construction Aspects of A TVRO, Gerald Marnell, Douglas Communications Corporation; Cue-Tone Switching for

Earth Stations, Kenneth Gunter, UA-Columbia; Satellite Networking: The Future of Earth Station Switching, Al Davis, Home Box Office; Satellite Applications, James Vaughn, Showtime Entertainment; Future Trends in Satellites, George Bell, Microdyne; Importance of Satellites for TV Entertainment Distribution, Isaac S. Blonder, Blonder-Tongue Laboratories, Inc.; Maximizing Satellite Capacity, Shaun Johnson, Southern Satellite Systems; and, Delivery of Multiple Premium Services, Terry Spearen, Suffolk Cablevision, Inc.

Featured luncheon speakers will be Danny Cornett of Scientific-Atlanta who will provide an overview of satellite technology and Edward A. Eagan, Eagan & Associates, who will speak about pay-programming options.

Hotel reservations must be made directly with the Logan Airport Hilton Inn at (617) 569-9300. Program registrations and request for further information should be directed to SCTE at (202) 659-2131.

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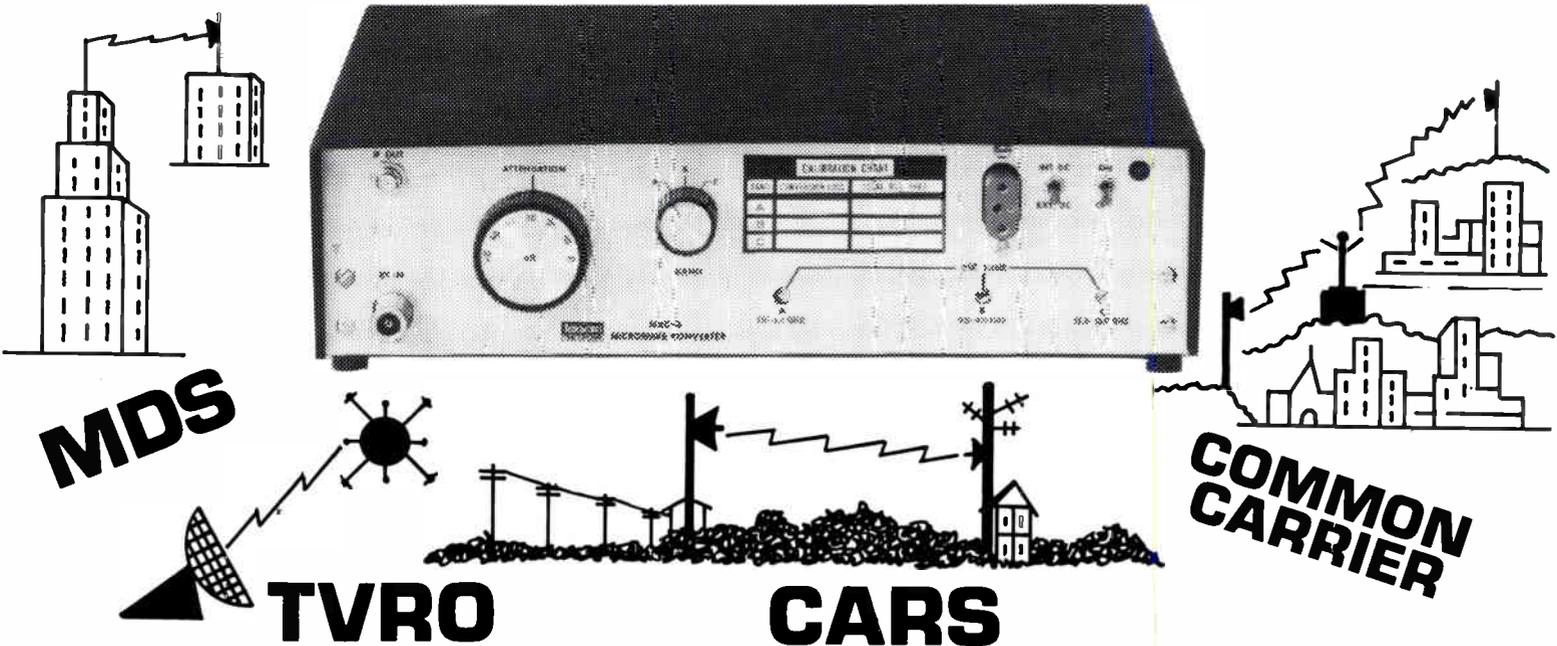
WASHINGTON, D.C.—The SCTE has released the first in a series of guideline publications: "Guidelines for Employee Management and Personnel Development" (PD-2). The book contains twelve chapters of information researched, compiled and edited by SCTE, along with checklists, questionnaires, a report on past CATV industry manpower studies, and projections of manpower requirements through 1988.

SCTE, currently the largest membership organization representing the cable television industry, has released this guideline publication to promote good management practices and encourage professionalism in employee supervision and management. Basic job specifications and descriptions for engineering and technical personnel are included as a guide for individual managers in developing such tools for their own particular needs.

"Guidelines for Employee Management and Personnel Development" (PD-2) is a copyrighted publication of SCTE. It is available for \$16.00 a copy by ordering from SCTE, 1100 17th Street NW, Washington, D.C. 20036. A \$5.00 billing charge is applicable if payment is not included with the publication order.

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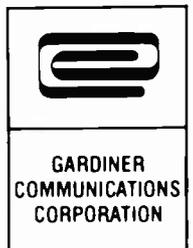
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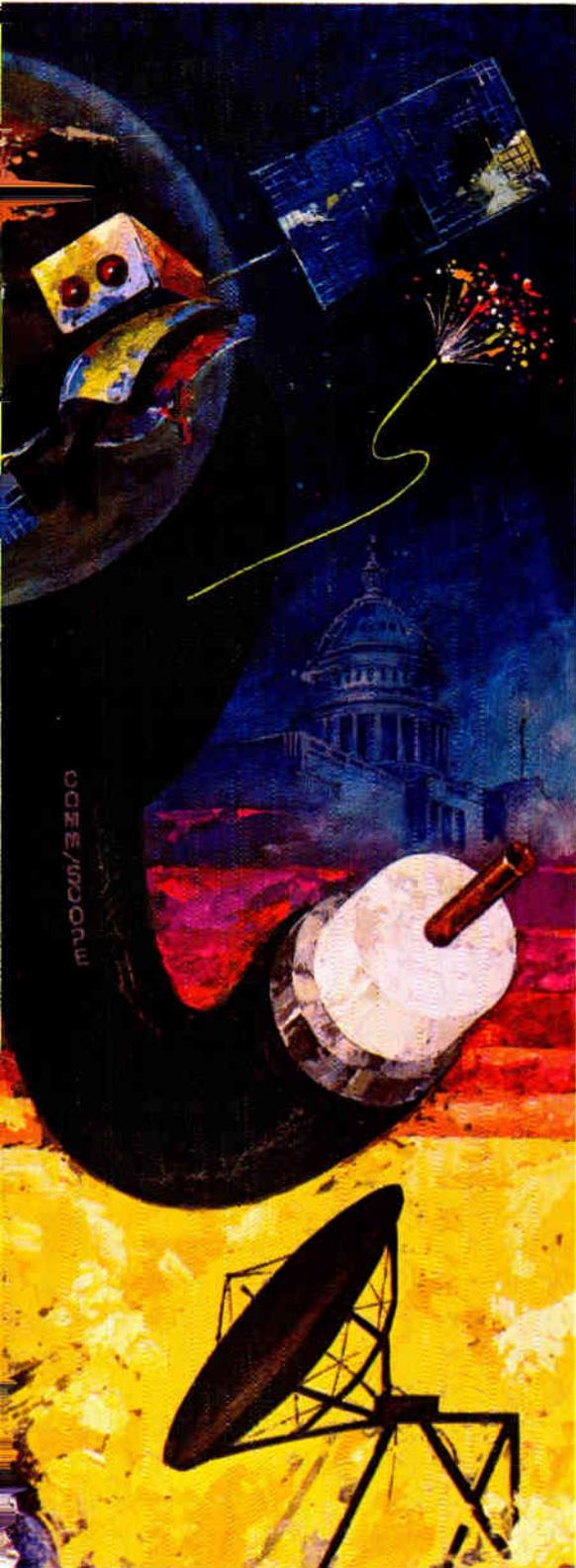
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### FCC Expands Frequencies for CARS

WASHINGTON, D.C.—The Federal Communications Commission has expanded the number of frequencies available for use by stations in the Cable Television Relay Service (CARS) from 12.7-12.95 GHz to 12.7-13.20 GHz to put CARS on a shared, co-equal and primary basis with TV auxiliaries. It also set aside the 13.15-13.20 GHz band for use by TV and cable pickup stations on an exclusive basis for Electronic News Gathering (ENG) within 50 kilometers of the top 100 television markets.

At the same time, the FCC began a further rulemaking proposing similar technical standards for equipment used in CARS and in the TV auxiliary broadcast service, proposed type acceptance for transmitting equipment used by TV auxiliaries operating in the A, B and D bands (2, 7 and 13 GHz, respectively), and antenna performance standards for CARS and TV auxiliaries in the 12.7-13.25 GHz band.

(CARS is a microwave service used by cable TV systems to bring TV and cablecast programming to its subscribers. TV auxiliaries basically relay TV programming material and related communications to TV broadcast stations. Cable pickup stations are land mobile facilities used to relay TV and related material to cable systems.)

The actions were the result of an inquiry and rulemaking begun in December 1977, due to the increased use of the CARS band coupled with the continued growth and popularity of cable systems which have contributed to a saturation or full occupancy of the current CARS allocations in many areas.

The commission said it has documented the need to expand the current CARS band, noting that while the 12.95-13.20 GHz band has, until this time, been an exclusive allocation for the broadcast auxiliary service, the spectrum needs for CARS outweighed the need to preserve the band for TV auxiliary purposes exclusively.

In setting aside the 13.15-13.20 GHz band for ENG purposes, the commission said it saw no real impact from this proposal which principally would provide interference protection to pickup stations by prescribing any

further licensing of other types of stations. Since pickup usage generally is confined to urban areas, the commission said the geographical restriction will allow the use of this segment for point-to-point relay operations in the rural areas.

The changes become effective July 6, 1979.

### Philip L. Verveer Named Common Carrier Bureau Chief

WASHINGTON, D.C.—The FCC has appointed Philip L. Verveer as Chief of its Common Carrier Bureau.

Verveer, who has been serving as Chief of the FCC Broadcast Bureau since May 1, joined the FCC on March 1, 1978, as the Chief of the Cable Television Bureau. Prior to joining the FCC, Verveer was with the Federal Trade Commission as a supervising attorney in the Bureau of Competition. He was lead counsel in the FTC's case challenging Nestle Aliment S.A.'s acquisition of the Stouffer Company.



*Philip L. Verveer now Chief of Common Carrier Bureau.*

From 1974-1977, he was head of the U.S. Department of Justice trial staff in the government's antitrust case involving the American Telephone and Telegraph Company.

A native of Corvallis, Oregon, Verveer received a B.S. degree from Georgetown University School of Foreign Service in 1966 and a J.D. degree from the University of Chicago Law School in 1969.

*(Cont'd on page 24)*

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**From Washington**

**Super Bureau**

*By Pat Gushman  
Washington Bureau Chief*

**A**t the Federal Communications Commission it has been musical chairs during the past few weeks. This spring four top spots changed hands, including the Office of Chief Engineer, and the Broadcast, Cable and Common Carrier Bureaus. The Broadcast Bureau, in fact, has had three different chiefs during that span. But, no less remarkable is that Philip L. Verveer, originally Chief of the Cable Bureau, has headed three different bureaus in less than two months.

Where the chain of events actually began is debatable, but for the sake of convenience, things began to happen with the retirement of the veteran Broadcast Bureau Chief Wally Johnson in March. Prior to Johnson's departure, the first two years of Charlie Ferris' chairmanship had been marked primarily by the normal exodus of the more purely political bureaucrats left over from the Republican days of Dean Burch and Richard E. Wiley. The supposedly "preassured" departure of Johnson created for Ferris the opportunity to position yet another of his picks in a key bureau. In fact, by that time, it was the only one left which did not have his mark. The problem was whom should he pick.

It was becoming apparent that Common Carrier Chief Larry Darby was not completely satisfied with the way things were working out in his bureau, and Ferris was also in danger of losing Cable Bureau Chief Verveer to an attractive offer from a private law firm. Sources say that it was the challenge of tackling broadcast deregulation which enabled Ferris to persuade Verveer to take over the Broadcast Bureau and also the dangling carrot of maybe being able to become Common Carrier Chief if that should become available.

So, Verveer first was taken out of the cable bureau to head the Broadcast Bureau to replace Johnson. Randy Nichols, an assistant to Darby in the Common Carrier Bureau, was named Chief of the Cable Bureau. Darby soon

resigned. Almost immediately, Verveer was named to take his place. And Ferris got the unanimous support of the other commissioners to name Dick Shiben as Chief of the Broadcast Bureau, replacing Verveer who replaced Johnson and then Darby. It all happened so quickly, it still seems to be a blur.

This pattern should develop and continue in the other bureaus at least until some other dramatic event occurs, like the merging of the Cable Bureau into the Common Carrier Bureau. Some still scoff at the notion. Others think it will be accomplished by the end of the year, particularly if signal carriers and syndicated exclusivity are deregulated. CARS is already being transferred to common carrier. And if the commission deregulates almost everything else and Congress doesn't reverse the trend, why not? Does being regulated by something called a Common Carrier Bureau necessarily mean you are a common carrier? Some people don't think so anymore. It could mean simply this: that somehow government is not interested in regulating your content. And if it should reach that same conclusion for broadcasting, why not merge them all into a super bureau—the common•broadcast•cable bureau.

But for now, the Common Carrier Bureau is the Common Carrier Bureau. There is one cross-over issue which is surfacing which is indicative of the kind of interplay beginning to be seen as technologies mesh. It was the cable industry which led the way in developing an extensive satellite network by implementing hundreds of earth stations within a couple of years.

The one-shot coordination necessary to complete an application will no longer be adequate we are told. Coordination must become a living, on-going, organic thing with common carriers, broadcasters, cable operators and data users all involved. The private sector will probably carry the load, as it has in other spectrum uses, but overseeing the whole operation which will impact every aspect of communications before too long will be the Common Carrier Bureau. And there won't be anything common about it.

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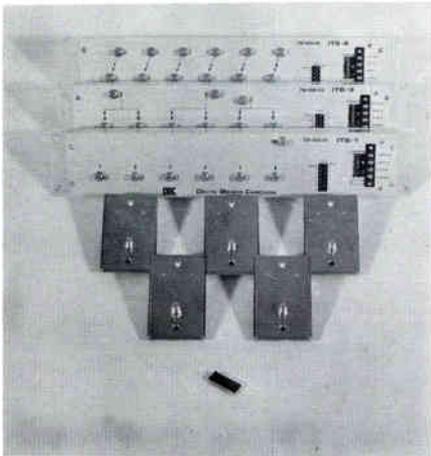
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(Cont'd from page 20)

### Bias and Jeffers Receive NCTA Engineering Awards

LAS VEGAS, NEVADA—Frank J. Bias received the engineering award for Outstanding Achievement in Operations from Robert Bilodeau, last year's award recipient. Bias is a registered professional engineer in the states of New York and California; a fellow of the Institute of Electrical and Electronics Engineers; a member of the Society of Motion Picture and Television Engineers; the Society of Broadcast Engineers; and the Society of Cable Television Engineers. He is also active on the NCTA's Engineering Committee, and has served on various committees in industry affairs.

Bias is presently vice president—Science and Technology for Viacom International, Inc.

Michael F. Jeffers received the engineering award for Outstanding Achievement in Development from Robert Tenten, last year's award recipient. Jeffers is currently vice president of engineering for Jerrold Electronics Corporation. He has been involved in cable since 1951. At that time, he joined Jerrold Electronics Corporation which later became a sub-



*Frank J. Bias (right) receives engineering award for Outstanding Achievement in Operations from Robert Bilodeau.*

subsidiary of General Instrument Corporation.

Jeffers is the author of many papers related to cable television which have been presented at IEEE technical services and at NCTA annual conventions. He has also presented papers in Canada, Japan, Moscow, Switzerland and Belgium.



*Robert Tenten presents engineering award for Outstanding Achievement in Development to Michael F. Jeffers.*

### TV Waveform Standards for Horizontal/ Vertical Blanking Intervals

WASHINGTON, D.C.—The FCC has begun an inquiry into television waveform standards for horizontal and vertical blanking intervals to assist it in considering a course of action for dealing with problems encountered by the broadcast industry concerning compliance with these standards.

(Vertical and horizontal blanking intervals are those intervals during which synchronizing pulses are transmitted to control the vertical and horizontal scanning of the TV picture. During these intervals video information is not transmitted, but the interval is not noticed since it occurs outside the area of the TV picture seen by the viewer. However, excessive blanking can result in partial picture loss.)

Noting that the horizontal and vertical blanking rules for black and white and color TV were adopted in 1941 and 1953, respectively, the FCC said in view of the changes that had taken place in the industry since then, a review of the purposes served by a mandatory blanking standard was necessary.

In particular, the commission said it wanted to examine whether competitive marketplace forces would serve the public interest adequately or if there were a need to continue explicit FCC regulations in this area.

### Transmission of Digitally Coded Programming Information

WASHINGTON, D.C.—The FCC has denied a petition by the Atlantic Re-

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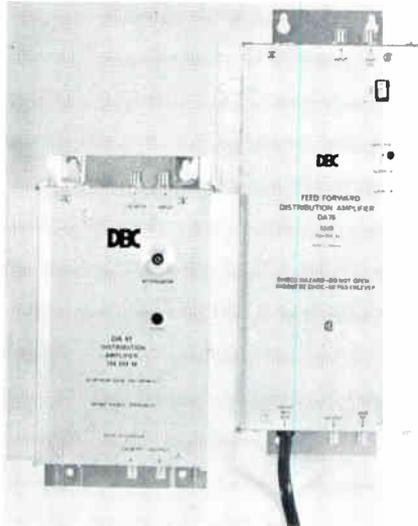
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The DA-61 push-pull high output level broadband amplifier is ideal for high level distribution in large apartment complexes. Plug-in pads, and 8 dB slope range and 20 dB gain controls ensure easy operation.

- DA-76 feedforward amps outperforms 4 traditional amplifiers at less cost
- 40, 52 dB gain, 117 V standard options
- 30, 60 & 240 V powering on request
- Full 35 Ch performance, 20 dB margins

The DA-76, ultralinear amplifier, designed for large apartment complexes, outperforms four traditional amplifiers at less cost. System noise, triple beat noise, 2nd order and cross modulation distortion remain unimpaired on 35 channel systems at +54 dBmV output levels. Forward and backfeeding conventional distribution lines can save on line extenders and simplify powering needs.

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search Corporation (ARC) of Alexandria, Virginia, for amendment of the rules to permit the transmission of digitally coded program related information in the visible portion of broadcast television signals.

The Association of Maximum Service Telecasters, Inc. (AMST) and CBS, Inc. opposed the petition. The Eastman Kodak Company requested that the petition be supplemented to include information concerning application of the proposal to both videotape and film program material.

To utilize ARC's "Data-Dot" system, a detector and other terminal devices must be used. The detector is a photo-transistor enclosed within a case about 3/4 of an inch in diameter. A detector is attached and held on the television screen by a small suction cup connected to the detector case and can be used on standard size television screens. Given the appropriate terminal equipment, ARC's system concept claims to provide for a variety of ancillary program services, including the widespread printing of subtitles for those with hearing difficulties, educational and instructional involvement, and supplementary information on performers, news items and advertisements.

CBS and AMST contended that the proposed system would result in picture degradation, noting the commission's previous unsatisfactory experience with a program identification system authorized in Docket 18605.

(In that case, the FCC authorized the use of three lines at the top and bottom of the scanning field for the purpose of electronic identification of television programs and spot announcements. Two of the limitations imposed were that no single transmission could exceed one second in duration, and that the transmission should not result in significant degradation of broadcast transmissions. Because the results were unsatisfactory, the commission, in January 1976 deleted the rules established in Docket 18605.)

The commission said that in addition to the annoyance factor of the blinking dot image to viewers not equipped with a decoder, it was brought out that the deleted portions of the video program signal, caused by Data-Dot, might contain essential information including that of superimposed titles or captions. It also noted that CBS pointed out that the Data-Dot's system's proposed transmission rate

of 60 bits per second was relatively low and inefficient compared with the megabit per second rates of other systems under development for ancillary signals, which additionally would not cause picture degradation.

The commission said that significant degradation to the quality of television pictures would apparently be caused by the Data-Dot system. Therefore, it found the proposal was at variance with FCC policy on ancillary signals and on protecting the quality of the broadcast signal.

## TV Translator Stations for Rebroadcasting in Spanish

WASHINGTON, D.C.—The commission has granted the applications of Spanish International Communications Corporation for authority to construct and operate five 1,000-watt television translator stations to provide Spanish language programming to Philadelphia; Denver; Hartford, Connecticut; Austin, Texas; and Bakersfield, California.

Spanish International is the licensee of five UHF television stations: KMEX-TV, Los Angeles, WLTV, Miami, WXTV, Paterson, New Jersey, KWEX-TV, San Antonio, Texas, and KFTV, Hanford, California. Several of the officers and directors also have interests in station KDTV, San Francisco. All the stations are programmed in Spanish.

The translators are to rebroadcast WXTV programming from Paterson to Philadelphia on channel 35 and to Hartford on channel 61; KWEX-TV from San Antonio to Austin on channel 42; KMEX-TV from Los Angeles to Denver on channel 31; and KFTV from Hanford to Bakersfield on channel 39.

Spanish International's proposal represents an unprecedented use of TV translator stations, which are used to reach rural areas lacking TV broadcast service and to strengthen weak-coverage areas of regular broadcast stations. Spanish International's plan will be the first use of translators to import broadcast signals into urban markets already containing a substantial number of broadcast stations.

In approving the applications the commission made particular note of the fact that Spanish International's proposal was aimed at filling an unmet need for Spanish language programming in the five urban markets.

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### Increased Pay Penetration

According to the latest figures\* (Paul Kagan), average pay penetration of houses passed has increased from 12.7% to 15% and average pay penetration of basic subscribers has increased from 27% to 31%. . . in just six months from Dec. '77 thru June '78.

### Basic/Pay Combination Trend

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\*July 5, 1978 edition of Paul Kagan Associates Pay TV Newsletter.

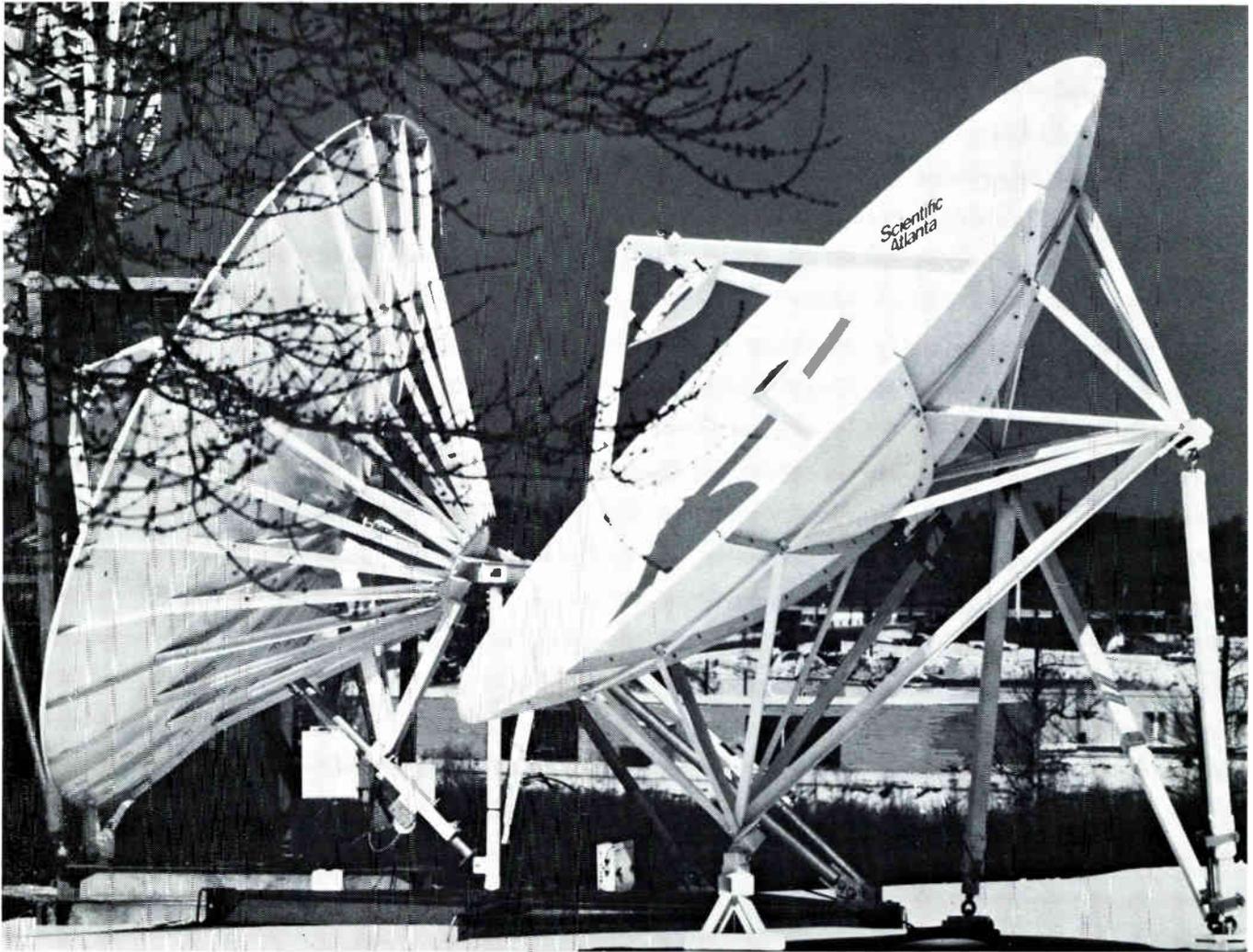
This is true in franchise negotiations as well as marketing your services to basic subscribers.

And it makes sense that if you're getting into multi-tiered pay service, it pays to trap more than one channel initially for the small added cost. You'd be surprised at how economical it really is.

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# C-ED

# Tech Review

This special July tech review features the various types of equipment displayed at the National Cable Television Show in Las Vegas, Nevada, May 20-23. In addition to the new products unveiled at the show, we have included top-of-the-line equipment from major manufacturers.

Below is a handy reference, in alphabetical order, for locating specific equipment for your requirements.

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# Las Vegas Revisited

By Toni Barnett, Managing Editor

Exhibitors, customers and participants at this year's NCTA convention were pleasantly surprised by the incredible turnout in Las Vegas. The good health of the cable industry was evidenced by the amount of traffic and volume of business done at the exhibits. (There were approximately 6,340 attendees.) However, this healthy attitude in the industry also helps to explain why there were no startling product revelations or introductions versus past shows.

Several new concepts were introduced—specifically addressable technology—and many product lines were upgraded and repackaged. There were also variations on old themes. Noted Abe Sonnenschein, AML manager for Hughes Microwave Products Division, "The industry climate, as I observed it, was bullish in spite of the clouds on the horizon about retransmission consent, etc."

Vendors seem to have been pleasantly surprised with the quality of the show and the amount of traffic in the booths. Observed Ken Gunter, vice president of engineering for UA-Columbia Cablevision, "The overall tenure of the manufacturers represented at the show was, I think, very upbeat."

Basically, the feeling seemed to be that since the industry was so healthy, with orders already backlogged, there was no reason to drag out anything in breadboard fashion to romance the industry into buying. After querying various industry management and technical leaders, the consensus was that the show was quite successful, despite previous misgivings concerning the choice of Las Vegas as a convention site, and all of the distractions that city can provide.

Remarked Dean Bach, vice president of marketing for Oak Industries, "The show was fantastic in terms of Oak's participation in the show, the amount of people who searched us out to see the items we had to offer, and in terms of business written at and after the show." At a time when the industry is prospering as well as it is, there isn't a lot of incentive for manufacturers who might have something on the boards to show it off.

The exhibit hall itself was huge, with plenty of aisle space. For this reason, at various times, the hall looked half-empty. This was definitely not the case. In fact, exhibitors' booths were continually flooded with traffic.

Carl Pehlke, president of Texscan/Theta-Com, stated that, "it was a great show because everybody was on a high." However, he added, "the emphasis today in cable isn't the technological development of equipment. Everybody is using integrated circuits, so mostly the vendors are repackaging and putting refinements on the basic package to make it more attractive."

The ever-present problem of supply and demand in the CATV industry has definitely impacted on the new products, or the lack thereof, evidenced at the show. The major setbacks at the present time are production and delivery problems. "It's a matter of fine-honing your factory to be able to meet the commitments you've made," stressed Pehlke. "I think," he went on to emphasize, that "some people are over committed."

It seemed that the basic premise of most manufacturers was to try to keep the customers that they're supplying equipment to happy, because the vendors can't make

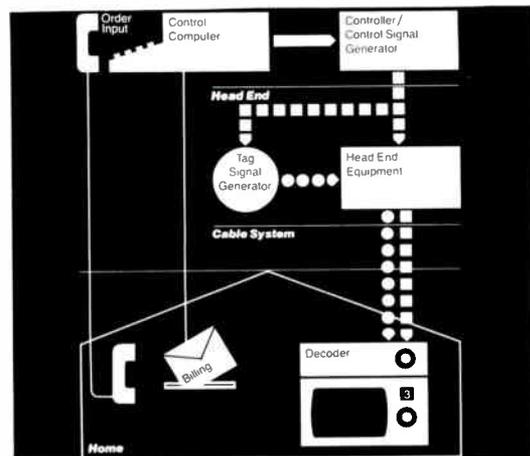
enough products to satisfy everybody. Many customers asked if orders could be written at the show. Obviously, the answer was "yes,"—but the hitch was that delivery would take 20 weeks or longer on the average. The major problem manufacturers have today is not gearing up their facility to build the products, but in getting the raw materials to build the products.

## Addressable Technology

At this year's show, addressable products that have long been on the drawing board finally surfaced. One prime example of this type of technology was Oak's "Total Control" system. Oak has been using addressable decoders in STV for a few years, and the company felt that the national was the right time and place to introduce it. The company's "Total Control" system was shown at the Western Show in Anaheim in December. However, at the national, Oak had much more precisely defined the type of product (the multichannel addressable converter and descrambler combined).

According to Graham Stubbs, director of engineering for Oak, "Our feeling is that in the next couple of years the industry will swing very strongly towards addressable technology. These products," he continued, "will be ready to be used on-line the beginning of next year. We've had field trials earlier this year in three different systems, and we've got the product well defined now. In the late fourth quarter of this year," he continued, "certainly in the first quarter of next year, we should see a lot of these products going on-line in cable systems."

Also new in addressable technology was Intercept's addressable pay-TV security system. The system, called the UHS Pay-TV System, is addressable from the headend or office, and can decode any combination of 36 channels. This new system permits adding midband or superband channels to any system, while allowing the operator to secure any channel combination. The system has a memory unit capable of storing up to 36 channels, and synthesized channel frequencies which eliminate fine tuning. This new security system is available in two models. The UHS 9 will convert and decode all mid and VHF channels, and the UHS 36 can convert and decode 36 channels.

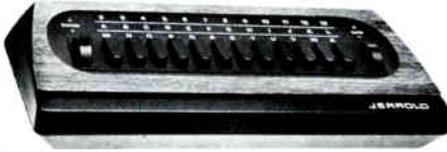


How Oak's "TotalControl" system works.

Frank Bias of Viacom International remarked, "A lot of things, like addressable taps and addressable descramblers, are really waiting for their time. You see a slow sharpening up of the technique and you see these products being produced

by more manufacturers in more forms. But," he added, "you really don't see their being utilized. They're just kind of waiting for their time to come."

A prime example of this type of addressable technology is the block converter. That is, the idea of converting from midband to UHF on one block and letting the tuner on the UHF separate the signals. On the cable system an operator would send out a lot of midband channels which would be block converted to the UHF band. Therefore, the output of the converter would go into the subscriber's TV set through the UHF terminal. The advantage is a cheaper converter because the TV set's already got the tuning in it. The block converter is just one idea already being presented by several manufacturers.



*In addition to PlayCable, Jerrold Electronics featured a new series of StarCom II 36-channel converters.*

"Timing is everything in this business," stated Bias, referring particularly to the block converter and other addressable devices. "I'm reminiscent of the way color television was introduced. Color television was sitting around for years, and then all of a sudden, one year that was the year that the timing and economics were right, and it sold."

One of the more glamorous presentations at the show was the Jerrold Electronics' PlayCable demonstration. PlayCable is a new home video system capable of functioning in both one- and two-way cable systems. The device uses a Mattel terminal and Jerrold adapter. PlayCable offers subscribers access to educational learning instruction and various types of games. This new device was another demonstration of cable's providing various services to subscribers via cable. However, PlayCable was not for sale at the show, and had no promise date for delivery or price associated with it. The product will be used, however, in field trials in the fall by five major MSOs.

Tele-text type services were also on display by several manufacturers. Although it generated a lot of activity and interest, this type of service also seems to be waiting for its time to come. The immediate problem is that there are no current standards for the tele-text services. More of these types of services will be on-line or displayed at next year's Western and NCTA shows.

Another addressable approach was offered by C. B. Schrock and Associates, Inc. The display consisted of a new universal home terminal for providing pay-per-view, security and energy controls in the home. This data handling system utilizes a universal/addressable data terminal.

Also featured at this exhibit was an audio talkback system that's able to conduct classroom lectures via two-way cable.

TOCOM's exhibit featured its new information retrieval service in conjunction with Dow Jones. Prior tests performed jointly by the two companies have demonstrated the feasibility of providing instant financial and market information from the central files of Dow Jones, Inc., directly into the subscriber's home via cable TV.

This retrieval information service is accomplished by

adding expansion modules to the TOCOM III terminals. It also allows hard copy printouts and display on standard TV sets.

### **Earth Station Equipment**

A major portion of the exhibits were related to earth station technology. Tom Humphries of Scientific-Communications observed, "This was probably one of the largest exhibits for earth station equipment that I have ever seen at a national show." There were several antennas located outside of the exhibit hall which were at least feeding the exhibitors booths and some of their customers. Inside the exhibit hall were two static display antennas by Comtech and Harris.

Hughes, Scientific-Atlanta, Andrews Corporation, Gardiner, and U.S. Tower all displayed new antennas. Harris Corporation is introducing a less expensive antenna on the market in order to be more competitive. Its present antenna is the most expensive on the market, and is also probably one of the best. "There are people who are willing to pay the price for a high-quality antenna," noted Humphries. "These people would rather have a Cadillac version because the antenna is a crucial part of the system." The antenna is a technological device, but it's passive. There seem to be advantages to having a higher-quality antenna and to not spending as much on the electronics—such as the low noise amplifier.

The test equipment exhibit area was also heavily flooded with traffic. "We were just swamped," emphasized Raleigh Stelle of Texscan/Theta-Com. "Traffic was knee-deep," he continued, "and I'm sure everybody else did as well. I'm sure that our booth was representative of what's happening to everybody."

There weren't many new technological advances in the test equipment area. However, Tektronix displayed a new sweep system utilizing computer technology (mainly microprocessor control), and also a programmable sweeper that uses microprocessors and memories to extract information.

Texscan featured an improved version of its popular 9900C, a package consisting of a sweep generator, display oscilloscope, return loss bridge, and attenuators. This device provides bench sweep capability in a battery-generated, field-adapted, portable package.

Activity was good in the booths displaying fiberoptics, and this is the first year when an order could be written up for delivery after the show. Observed Frank Bias, "Fiberoptics has more application as a dedicated studio to a headend link." Fiberoptics, as it develops, seems to be moving more toward distances that can be accomplished without repeaters (two to four miles). As of yet, the terminal devices and connectors are not being mass-produced.

There was not a great deal of new technology involving MDS. It appears that everyone is waiting for it to take off, although much activity and interest have been generated. Noted Stelle, "I don't think there's going to be any advance in the technology until there's more demand for it." It seems the technology that exists now satisfies the requirements of the industry, so there's not a big push to do something dramatic in MDS.

Although there weren't many technological breakthroughs at the 1979 NCTA show, the demand for established product lines demonstrates that the industry is healthy and active. Next year should see the unveiling of many new technological advancements and services for the industry.

## AEL's Distribution Equipment

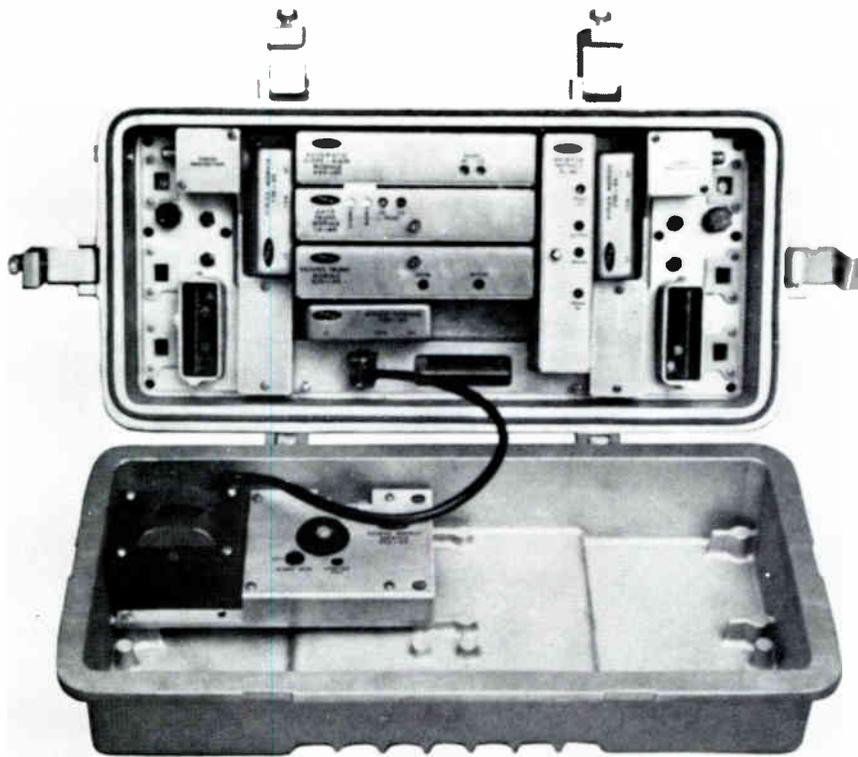
AEL CATV Communications Division presented its line of distribution equipment. Previously unveiled at the 1978 Western show, the company highlighted its modular AEL 80 amplifier series. Bandwidth in the forward trunk and bridging is 50-300 MHz and reverse trunk and bridging is 5-30 MHz. The noise figure (measured with 0 dB equalizer) in the forward trunk is 7.5 dB, 7 dB in the reverse trunk and 17 dB with reverse bridging. All modules are heat sunk to the finned casting for greater heat dissipation, and the AEL 80 features low power consumption.

Also spotlighted were the Mark IV series of trunk stations that use push-pull hybrid circuitry in modular construction to permit the addition of functions without interruption of ser-

vice and to facilitate preventive maintenance and repair. These series of trunk amplifiers are designed for split equalization of cable to accommodate various signal amplitude plans from "flat" with 3 dB block tilt—to 7dB, four-step block tilt—to 7 dB continuous tilt. A Mark IV single cable system may be installed initially as a forward system only. Bi-directional capabilities may be installed initially, or at a later date as required.

AEL also displayed its M4XE series trunk extender amplifiers. These units provide high quality, VHF signal amplification for use in distribution applications. High gain and flat response are provided in the VHF spectrum from 50-300 MHz.

For additional input, contact AEL CATV Communications Division, P.O. Box 552, Lansdale, Pennsylvania 19446, (215) 822-2929.



## Amplifier Spotlighted By Century III—Anaconda

Century III's booth featured a variety of equipment: feedforward trunk amplifiers, a microprocessor-controlled status monitoring system, apartment amplifiers, line splitters, directional couplers, universal taps and AC power supplies.

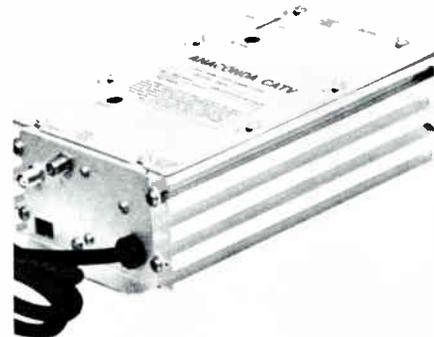
Of particular interest was Century

III's recently introduced feedforward supertrunk incorporating the latest advancements in integrated circuits. The 3100 trunk amplifier essentially provides a 20-25 dB improvement in distortion out of a trunk amplifier at the same output levels of older amplifiers operating at the same output levels. These units are designed for long-haul supertrunk systems or for high-level distribution applications. This series of

trunk amplifier stations provides a wide range of capabilities within a 45-300 MHz bandwidth. The feedforward amplifiers combine the latest advancements in integrated circuits, coupled with a method of noise and distortion cancellation, to provide reliability and stability throughout a wide temperature and frequency range. The ability to cancel the distortion products of the amplifier allows the implementation of long coaxial cable systems while still maintaining a quality signal at the near end.

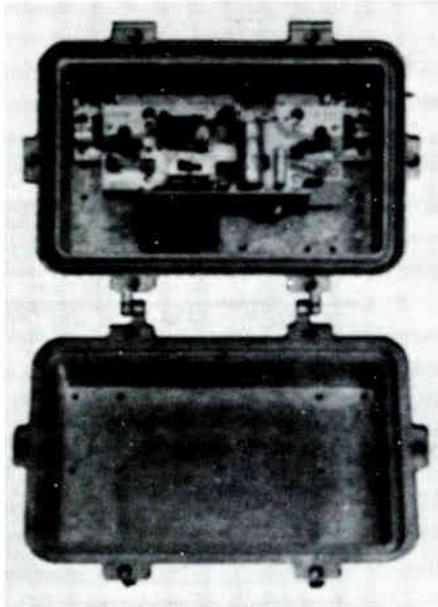
Interest was also generated in Century III's 2626 apartment amplifiers. This series of apartment amplifiers is designed to suit any distribution requirements in CATV and MATV applications for large multiple-unit structures such as apartment houses, hotels, motels, office buildings, etc. Optional signal gain ratings offer 40 dB minimum full gain (model 2626A) or 43 dB minimum full gain output (model 2626B) across a 40-300 MHz bandwidth. Hybrid integrated circuits are used in all 2626 amplifiers, and the regulated power supply provides stable DC voltages to RF circuits. A line-cable powering switch enables the 2626 amplifiers to operate optionally on standard 117 V AC line power or on 35-60 V AC cable power. Plug-in equalizers are available in 8, 12 and 16 dB values of fixed slope compensation, and variable slope control provides 8 dB of continuous range. Plug-in attenuator pads are available to provide up to 9 dB of flat loss (in 3 dB increments) for incoming signals. Variable gain control provides 10 dB of continuous range across the operating bandwidth.

For more input, contact Century III Electronics, Inc., 3880 East Eagle Drive, Anaheim, California 92807, (714) 630-3714.



## C-COR's Product Line Comes On Strong

C-COR Electronics' exhibit presented a vast array of products. Included were new distribution and extender amplifiers; trunk amplifiers with 22, 26 and 32 dB spacing; two-way sub-split or mid-split mainline passives; preamplifiers, surge protection and standby power; and three-message extension bracket to the chief technician/engineer of an operating system or an MSO.



Heavy emphasis was placed on C-COR's new \$115.00 E-417 extender

amplifier. This economical unit is designed for efficient system use for applications where two-way capability is not required. AC power distribution is accomplished with a link supplied for thru powering and a fuse for protection of the power supply. The E-417 is available in either 30 or 60 V AC versions and has one output. This product can be bought with surge protection, such as C-COR's SPM-32, and gas diodes.

Announced at the NCTA show was a new standard amplifier with additional bandwidth up to 320 MHz. The company will be shipping the units in September.

C-COR also announced a new interchangeable line extender family. The new E-501 will replace the E-442 line extender amplifier, with 22 dB gain. The new E-502 will replace the E-445, with 34 dB gain with interstage slope and equalization.

The interchangeable line extenders were designed with advanced thermal design techniques and utilize gold bonded hybrids. The effective use of heat sinks and convection cooling fins of the castings provide excellent heat dissipation. Since the cooler an amplifier runs the longer it will last, this has a direct affect on system reliability and longevity.

For more on C-COR's product line, contact C-COR Electronics, Inc., 60 Decibel Road, State College, Pennsylvania 16801, (814) 238-2461.

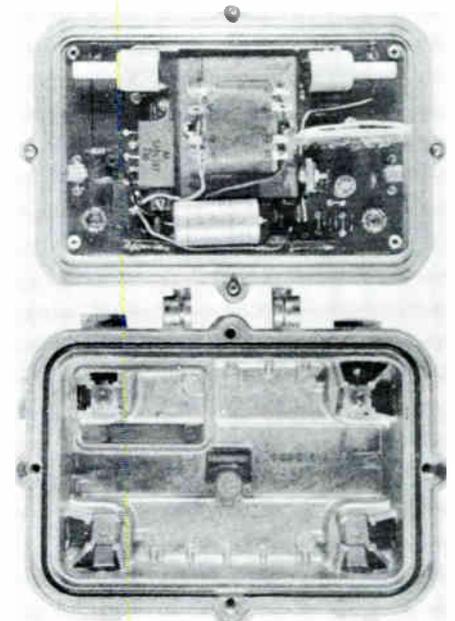
an epoxy sealed cover, silver plated contacts and a 5-300 MHz response.

For further data, write to Cerro Communication Products, Halls Mill Road, Freehold, New Jersey 07728.

## Magnavox New Line-Extenders

Magnavox' exhibit featured a well-rounded complement of products including three new special application bridging distribution line extenders, the recently introduced utility line extender, mainstation amplifiers and accessories, directional taps, connectors, addressable taps with word processor generators and a full line of converters and descramblers for pay cable.

Magnavox introduced three new special application bridging distribution line extenders at the show. The new 5 dB/2 series models are available with gains of either, 40 dB, 34 dB or 38 dB. Each model can be used as a distribution terminating bridger or as a two-output line extender. Backfeed design requirements are aided by internal plug-in couplers and by two integrated circuits in each model.



The company also showed its recently introduced MX-5-ULE utility line extender. This device is designed for applications where a low-price line extender is desirable. The one-way line extender features low initial cost and low power consumption. The MX-5-ULE utilizes a high efficiency power

## Cerro Offers Full Line of Equipment

Featured at Cerro Communication's exhibit were the Cerroflex™ bonded shield drop cable, a full complement of coaxial electronic cable, Cerrofoam GX™ low loss and Cerrofoam GXX™ extra low loss trunk and distribution cables, and one of the most complete lines of indoor/outdoor splitters. Also featured were distribution amplifiers and drop hardware.

One of the company's newest product lines were the "C Series" two-, three- and four-way indoor/outdoor splitters. These new splitters feature a heavy duty, corrosion resistant, die cast, iridite plated housing to withstand environmental extremes and eliminate signal ingress and loss. The "C Series" splitters feature a low insertion loss and excellent matching

characteristics. These devices also have a high isolation rating between outputs to eliminate signal ingress from television receivers in multi-directional systems. The F-type connectors used are sealed to protect internal components from moisture. Additionally, the connector threads are precision machined, rather than cast, to ensure burr-free threading. Other features of the splitters include



supply with RF integrated circuits for high reliability. The AC, DC and RF test points, and the gain and slope control, are all accessible without opening the cover. Standard equalizers and attenuators are employed, minimizing inventory cost.

Magnavox also spotlighted its "Super-Tap" series. This tap retains all of the outstanding features of the Magnavox MX-3700 directional tap, with the addition of corrosion and moisture resistant features and new lower insertion loss specifications. The "Super Tap" is available in two-, four- and eight-port versions. New 3/16-inch hex-head seizure screws permit uncompromised impedance match and avoids damage from screwdriver slippage.

For more information, contact Magnavox CATV Systems, Inc., 133 W. Seneca Street, Manlius, New York 13104, (315) 682-9105.

## MCE Introduces Nova Trunk Amplifier

Merrill Cable's exhibit featured the company's new Nova 300 amplifier, Nova line extenders, Nova PII amplifier, and 35- and 60-volt power supplies.

MCE's newest addition to its product line, the Nova 300-2/W two-way trunk amplifier combines field-tested circuitry with mechanical simplicity. Utilizing highly reliable hybrid micro-circuitry has resulted in performance specifications designed to meet the most critical system requirements, both forward and reverse. A wide range of trunk and bridger combinations offers up to 41-channel capacity, with reverse amplifier and filter for 5-300 MHz operation. The amplifier is designed for single or dual trunk aerial or underground systems. Also, all components, including amplifier power supply, are contained in a cast-aluminum weather and fireproof housing which exceeds FCC standard requirements. The reverse trunk amplifier is housed in a plug-in aluminum module which can be inserted during installation, or easily added when reverse operation is required. Built-in two-way filters are provided as an integral part of each Nova 300-2/W amplifier, eliminating the service interruption and response alignment inherent with "plug-in" filters.

Also highlighted was MCE's recent-

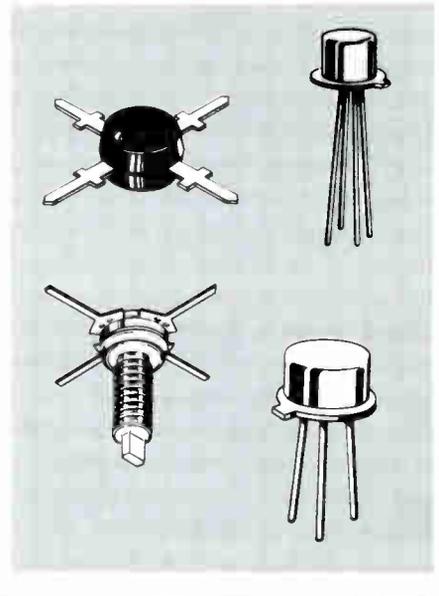
## Motorola Shows Linear Hybrids

The Motorola RF linear hybrid line-up represents one of the most diversified and complete collections of hybrid amplifiers available. These units are specified for use in MATV, CATV and general purpose 50-100 ohm applications. With available gains of from 12.0-39.0 dB, over 1.0 watt RF power handling capability, bandwidth coverage of 0.1-400 MHz, supply voltages of 13.6 and 24 V DC, the Motorola line encompasses a wide range of industrial and commercial uses.

All Motorola CATV hybrid amplifiers use ultra-low distortion push-pull cascode circuitry to achieve wide bandwidth, extremely flat response and low distortion products. Units with 22 dB or less of gain consist of one push-pull stage with a pair of cascodes (common-emitter device followed by

common base device) for a total of four transistors and two transformers, a bifilar transformer at the input and a trifilar transformer at the output. Units with 34 dB or more of gain use two push-pull stages, each stage again consisting of a pair of cascodes, resulting in a total of eight transistors. One transformer at the interstage between the two push-pull gain blocks brings the transformer count to three, one bifilar and two trifilar devices.

For additional input, contact Motorola Semiconductors, P.O. Box 20912, Phoenix, Arizona 85036.



ly introduced Nova Cap-Tap. This new 5-300 MHz customer tap provides complete control of subscriber access to a system for standard service and premium television channels. The Nova Cap-Taps are usable with any new or existing dedicated system, with no other system equipment changes needed. These taps provide security for standard service and premium television by allowing the operator to specify the channel or channels. There is complete control for the entire tap or for the individual customer's drop.

For additional input, contact Merrill Cable Equipment Corporation, P.O. Box 13741, Phoenix, Arizona 85002, (602) 271-9181.



## TEST EQUIPMENT / POWER SUPPLIES

### Avantek's Product Line

Avantek displayed several of its popular product lines. Of special interest was the CATV-remote automatic sweep system. The system consists of the model CT-2000 or CT-2000A cable transmitter and the model CR-2000 cable receiver. Used simultaneously, these devices employ a very low level test signal to measure the swept frequency response of a CATV system without interference to subscribers' reception. The CR-2000 cable receiver offers a second, independent mode of operation—that of a spectrum analyzer. With no adjustment other than the switching of a selector knob,

the receiver allows the operator to measure spurious intermodulation beats in the CATV system. In the spectrum analyzer mode, the receiver can also be used as a tuned wave analyzer to measure co-channel, cross-modulation and hum.

Also on display was Avantek's SL-300 signal level meter. This unit is a precision RF voltmeter tunable to any frequency between 4.5-300 MHz. This SLM can read signal levels from -40 dBmV to +60 dBmV (10  $\mu$ V to 1V) with guaranteed  $\pm 1.0$  dB accuracy when calibrated at the opening ambient temperature using the internal level calibrator. A three-digit LED display indicates the frequency to which the SL-300 is tuned with 1 MHz resolution and guaranteed  $\pm 1.0$  MHz accuracy. Signal levels are displayed on a true logarithmic meter scale with equally spaced and fully usable divisions for a 20 dB range, and the specific range is selected with a nine-position rotary attenuator.

Avantek also displayed its 100 degree K 3.7-4.2 GHz uncooled GaAs FET low noise amplifiers. These down-link preamplifiers (LNAs) are used in small communications satellite earth terminals. The standard unit, the AW-4285, provides 50 dB minimum gain and a guaranteed maximum 120 degree K noise temperature (1.5 dB noise figure).

For additional information, contact Avantek, Inc., 3175 Bowers Avenue, Santa Clara, California 95051, (408) 249-0700.

## ComSonics' Uninterruptible LNA

The ComSonics display focused on the uninterruptible LNA power source and the video sensing coaxial relay switch. Also shown were the Sniffer Junior battery-operated pocket-size RF leakage detector, and the Armor Mark V and Mark III surge protectors.

ComSonics' LNA power source supplies 15 V DC nominal, at 4.5 watts totally isolated from the 115 V AC or 220 V AC primary mains. This eliminates the possibility of coupling an overvoltage transient to the vulnerable LNA circuitry. Isolation is accomplished via the use of a DC/DC converter operating from two service-free gel cell-type lead acid batteries. The "In Service" battery supplies operational power while the other battery receives a full charge. A precision voltage sensor monitors the terminal voltage of the "In Service" battery. When a level of  $1.75 \pm 0.05$  V DC is reached, the sensor causes the batteries to change functions, thus placing the freshly charged battery "In Service" and the depleted battery in a charge cycle. As the second battery becomes discharged, the first is charged. The "In Service" battery sensor will cause the cycle to repeat continuously. At the same instant the batteries change status, a second sensor monitors the "In Service" time. If this time is less than approximately five hours, the "Short

Life" indicator for the battery under test will illuminate. When "Short Life" is indicated, the user is urged to procure a replacement as battery failure is imminent.



The video sensing coaxial relay is a totally passive coaxial switch designed for all baseband video signal switching applications requiring high performance specifications. Passive design eliminates the distortion inherent in solid state switches making it desirable for CATV headend use where additional distortion cannot be tolerated. This device features excellent return loss (VSWR), single polarity control voltage, high isolation and virtually no insertion loss. Specifications include: 90 dB isolation, 35 dB return loss, -0.15 dB insertion loss of 12 V DC-24 V DC operating voltage.

For further input, write or call ComSonics, Inc., P.O. Box 1106, Harrisonburg, Virginia 22801, (703) 434-5965.



## New Power Units from Control Technology

Highlighting the Control Technology, Inc. exhibit was its line of PAX power devices. Included were the PAX SP900 and SP300 primary and auxiliary power systems and the PAX UPS 900/115-S uninterruptible power source.

Both the SP900 and SP300 are heavy-duty pole mounted power supply systems with a standby power efficiency rating of 89 percent typical at full load. The units include such features as front panel status lights, load current meters, plug-in relays and push to test switches. Both units have a commercial power to battery transition time of 200 milli-seconds and a battery to commercial power transition time of 50 milli-seconds. A delay of 15 seconds is provided after the units detect the

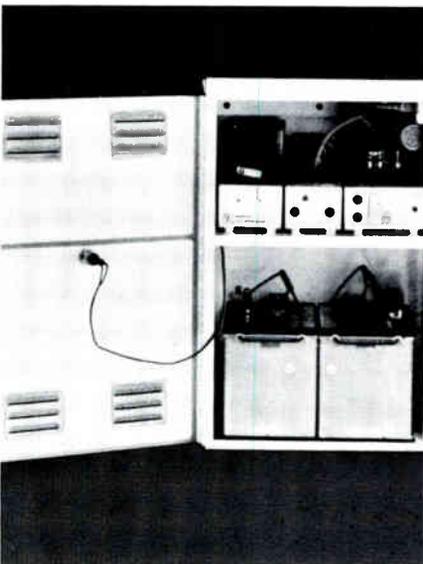
presence of commercial power before the transition is allowed from battery to commercial power.

The SP900 system provides 900 watts at 60/30 VRMS of dependable standby power to a CATV distribution system. The unit requires a normal input power of  $110 \pm 20$  volts AC (15 amps) and a standby input power of 42-52 volts DC (battery power). Normal output power is  $60 \pm 3.0$  VRMS at 15 amps (900 watts) or  $30 \pm 1.5$  VRMS at 30 amps (450 watts). The same output power is achieved in the standby phase with a battery input voltage of 48 volts DC.

The SP300 requires a normal input power of  $110 \pm 20$  volts AC (10 amps) and a standby input power of 21-26 volts DC (battery power). Normal output power is  $30 \pm 1.5$  VRMS at 10 amps (300 watts) or  $60 \pm 3.0$  VRMS at 5 amps (300 watts). The standby output power is the same as the normal with a battery input of 24 volts DC.

The PAX UPS 900/115-S is a rack-mounted uninterruptible power supply delivering 900 watts of 115 volts AC sine wave power to eliminate the problems of short term brown-out and black-out conditions. The output frequency is normally line synchronized, while the standby mode frequency is  $60 \pm 1$  hertz at 0 degrees F to 105 degrees F. The output current is rated at 7.8 amperes RMS or 25 amperes peak. The unit's system monitoring is provided by three front panel meters and two indicator lights.

For additional information, contact Control Technology, Inc., 620 Easy Street, Garland, Texas 75042, (214) 272-5544.



## Mid State Offers Popular Test Equipment

Mid State Communications had a variety of test instrumentation on exhibit. The SAM I and SAM II signal level meters were featured. Both units operate on a frequency range of 4-300 MHz (470-890 MHz optional) with an amplitude of  $-40$  dBmV to  $+60$  dBmV. The primary difference between the two units is in the method of frequency tuning. The SAM I utilizes the conventional five-band calibrated dial and band selector switch, while the SAM II accomplishes tuning with a complete digital frequency system.



Some additional highlights were: the MC-50 meter calibrator, with a  $\pm 25$  dB accuracy and operates from 4-300 MHz as a signal generator with the ability to be switched to an amplitude modulated mode with simulated TV modulation; the RD-1 radiation detec-

tor, a tuned dipole utilizing a 16 dB gain battery operated amplifier, that can be used with any signal level meter and is designed to assure compliance with the FCC 20  $\mu$ v/meter specifications; the ST-1 "Cuckoo" signal transmitter, a headend based detection system utilizing an ordinary FM radio for patrolling, which is also available in a crystal controlled version—the ST-1C, and complimentary CR-1 crystal tuned receiver; the SP-2 signal processor, which is designed to process TV signals so that a frequency counter will read them with minimal modulated distortion; and the 4000 series of digital frequency counters, which includes



the 4800A for 5 Hz to 520 MHz readings and the 4900A for readings of up to 1,000 MHz.

For more information, contact Mid State Communications, 174 S. First Avenue, Beech Grove, Indiana 46107, (317) 787-9426.

## RMS Unveils "Power-King" Power Supply

RMS Electronics' exhibit featured the company's new power supply, Unitaps and Econotaps, passive devices, power passing line splitters, directional couplers, power inserters, and the line of Superfit connectors.

The new "Power-King" model PS-60 regulated power supply converts 115 volt, 60 Hz commercial power to a 60 volt square wave output voltage. This constant-voltage, square wave power source is specifically designed for CATV systems where trunk and feeder coaxial cable distribution lines must carry both RF and AC power. This ferro-resonant regulated power supply incorporates several features that are not usually included in the standard design of competitive units. These features significantly increase performance reliability while greatly reducing maintenance and operational

cost. The PS-60 features: time-delay relay, primary input circuit protection, output circuit protection, on/off primary overload circuit breaker, input and output pilot light indicators, and 115 V AC convenience outlet.

Also highlighted were RMS' Econotap series. This tap can be used for either aerial or underground installation, and input and output feed-thru coaxial cable ports are located on either side of the housing for aerial strand mounting. Input and output feed-thru coaxial cable ports are also located on the bottom of the tap for pedestal mounting. The Econotap will accept VSF connectors and standard feed-thru connectors with 1-1/4-inch stinger. Additionally, the device will also accommodate "Sealmetic", "Dynafoam" and "Fused Disc" cable connectors. The unit has a tapered counter-bore in all four entry ports, so that the connector gasket sets perfectly inside



# RCA Passive Components for Quality and Performance

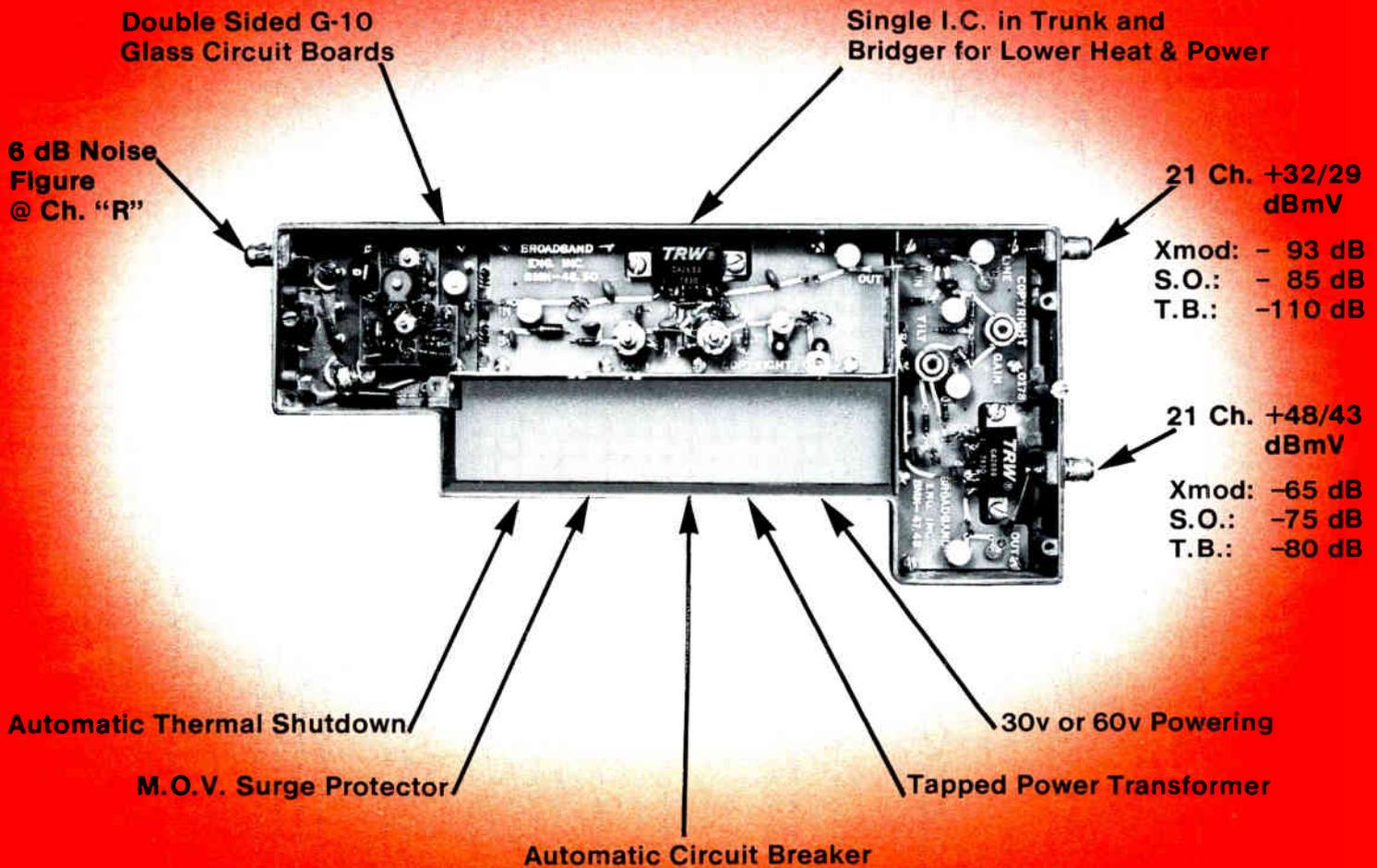
The RCA line of passive components includes a wide range of subscriber taps and trunk passives for cable system applications. RCA Subscriber Taps are available in 2-way, 4-way and 8-way units and are used in the feeder line to distribute the signal to the subscriber. RCA Trunk Passives include directional couplers in 4, 8, 12, and 16 dB values, 2-way and 3-way splitters and a power inserter. The directional couplers and the splitters are utilized for splitting the main trunk lines in a cable system into sub-trunk lines. The power inserter combines the AC Power with the RF signal onto the coaxial cable. For more information contact RCA/Cablevision Systems, 7355 Fulton Avenue, North Hollywood, California, 91605. Toll free number: (800) 423-2404. In California: (213) 764-2411.

# RCA

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## JERROLD SA-SERIES PUSH-PULL HYBRID



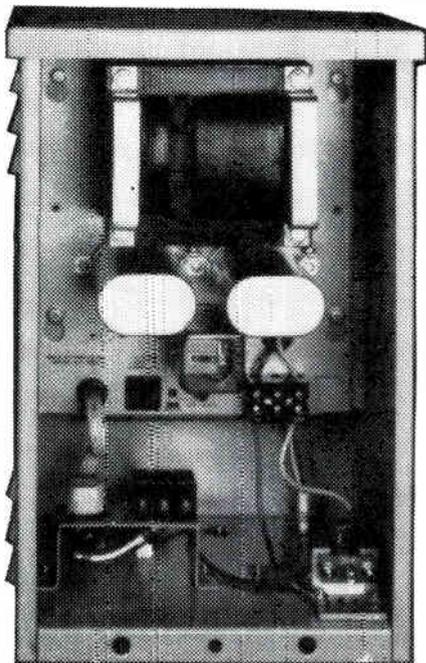
- ★ A completely new power supply is furnished with every kit
- ★ SA-1 thru 5 available
- ★ SLE 1 & SLE 20 available
- ★ Prices start as low as \$165.00

**ROADBAND**  
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1525 CYPRESS DRIVE, JUPITER, FLORIDA 33458  
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the entry port. This allows the metal shoulder of the connector to make 100 percent metal-to-metal contact with the entry port, providing 100 percent RFI integrity.

For additional information on RMS' complete product line, call or write RMS CATV Division, 50 Antin Place, Bronx, New York 10462, (212) 892-1000.



## Test Gear from Sadelco

On display at the Sadelco, Inc. exhibit was an assortment of portable test instruments. Highlighted was the Mark-3 low frequency adaptor. The device utilizes the latest in balanced mixers and operates with 0 dB insertion loss. The Mark-3's built-in attenuators enable it to handle signal levels up to 60 dBmV.

The model 260-B spectrum calibrator was also on hand. The 260-B (used in conjunction with a field strength meter) provides data directly in dB across the entire VHF spectrum continuously. The unit emits a continuous flat signal from 4.5 - 300 MHz, and operates with an accuracy of  $\pm 0.25$  dB throughout its frequency range.

Also, several signal level meters were featured: the Digit-Level-100 and the FS-733B. The Digit-Level-100 SLM features a unique display window containing a half-inch three-digit LED readout and provides a 90 dB total

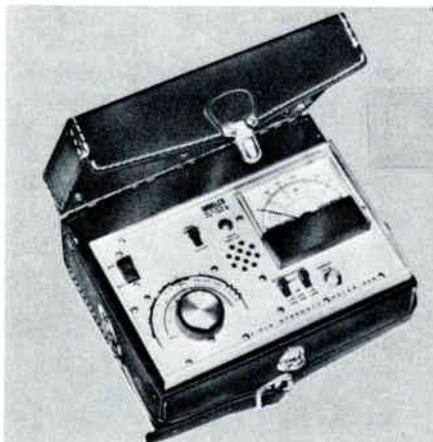
## Texscan Offers New Sweep System, MDS Equipment

Texscan/Theta-Com exhibited a full line of test equipment, in addition to a variety of distribution equipment including amplifiers and passive devices. Additionally, the company displayed directional taps and a full line of MDS equipment.

Texscan's new 9900C is a versatile instrument composed of a sweep generator, display oscilloscope, return loss bridge and attenuators. The 9900C provides bench sweep capability in a battery-generated, field ruggedized, portable package. The size is 8 inches x 13 inches x 10.5 inches, and the weight, including battery, is approximately 25 pounds. Applications of the new 9900C include: amplifier alignment, cable sweeping for insertion loss

range with 0.1 dB resolution. The devices' digital dynamic range is 20 dB within any individual attenuator position, and all attenuators can be switched in 10 and 20 dB steps.

The FS-733B has many features similar to Sadelco's FS-35C, and maintains an accuracy of 2 dB. Its circuitry and attenuation range have been tailored to provide the basic requirements for the CATV installer at a low cost. The meter reads directly in dBmV and microvolts to show exact signal levels, and provides continuous coverage of the 54 - 216 MHz range for VHF and FM; and 216-300 MHz range for mid- and superband.



For further details, contact Sadelco, Inc., 299 Park Avenue, Weehawken, New Jersey 07087, (201) 866-0912.

and return loss, sweep testing of active and passive devices, detecting illegal hookups by interpretation of return loss patterns, and numerous other sweep measurements. Standard features include: medium persistence phosphor on the CRT, 50-10-1 MHz markers standard, provisions for four additional markers, 4-350 MHz frequency range, +57 dBmV output,  $\pm 0.25$  dB flatness, 1 dB step attenuator, adjustable tilt, and internal switching for dual trace display of test and reference traces.



Texscan also introduced the XR-1500 sweep signal generator. This unit features excellent stability and low residual FM. A unique phaselock feature allows the XR-1500 to double as a signal generator. One kHz residual FM provides for testing devices with less than 10 kHz bandwidth as well as for signal generator applications. The device features digital frequency display, and pushbutton controls provide easy setup. This sweep generator features superior frequency and amplitude accuracy. Exceptional flatness and precision built-in RF attenuation provide relative amplitude measurement accuracy of  $\pm 0.1$  dB over narrow ranges and  $\pm 0.5$  dB over full 1500 MHz range.

The Theta-Com Division of Texscan offers an MDS converter, model TCC-1. The device features an ultra stable crystal controlled oscillator. Specifications of the MDS converter include: 2.1-2.2 GHz frequency in, and any VHF channels 2-13 frequency out; 30 dB minimum gain; 5.5 dB noise figure; -40 to +140 degrees F temperature range; -20 dB output test point; +55 dBmV maximum output level; and 25 V AC operating voltage.

Texscan Corporation also features a microwave converter, model MDC-3. This device is a three band device  
(Cont'd on page 44)



# Why gamble with pay-TV performance when you can have a sure thing?

Home Box Office has the most successful record by far for launch and after-launch growth. We're with you from the start, and we're there all along the way.

HBO provides the most effective marketing and promotion support programs for our affiliates with custom-tailored plans and materials for each system. So after we've worked with you on your launch, we'll keep you moving in the right direction.

No guesswork, no misses—we're the most experienced and successful Pay-TV company in the business and you can place your bets on that.

The results are evident in our extraordinary percentages of pay penetration of both cable and homes passed.

So call one of our General Managers now: Peter Frame (212) 841-4241, Bill Hooks (214) 387-8557, or Don Anderson (213) 557-1010.

The HBO logo is rendered in a bold, black, sans-serif font. The letters 'H', 'B', and 'O' are solid black. The 'O' is unique, featuring a white circle inside it, which is centered within the letter's outline.

**Where Performance is Fact.**



# SEE FOR YOURSELF. THE MOST RADIATION-PROOF CABLES IN THE INDUSTRY.

Today, when radiation from drop cable has become a serious concern to many people, Times has taken action to alleviate the problem significantly.

To begin with, we've developed an instrument called the Radiometer which, for the first time, measures radiation definitively. Until now it was anyone's guess. Radiation characteristics were based on relative ratings and not always accurate. But the Radiometer measures capacitive coupling and transfer impedance. The characteristics of the test sample and the test chambers are measured separately. So now we have radiation data that's absolute, accu-

rate and dependable.

Number two and more important, we've used the Radiometer in Research and Development to bring you improved drop cable. How good is the cable? Thanks to the Radiometer, you can see for yourself in the comparative tests shown on the right.

Times 2245, with its sealed foil/double braid construction, is proven to be far superior to every other cable on the market. The best competitive cable (a sealed foil type) was higher in transfer impedance and capacitive coupling. The worst competitive sample we tested was a dry foil construction. And just as a point of reference, we includ-

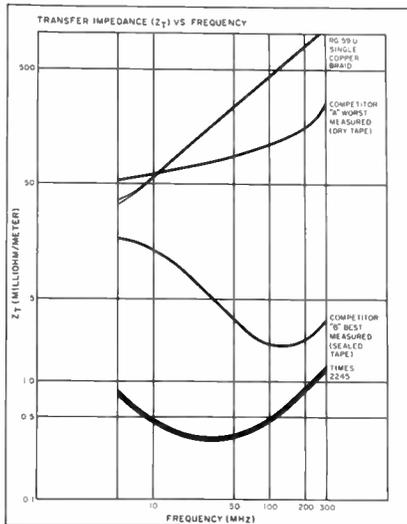
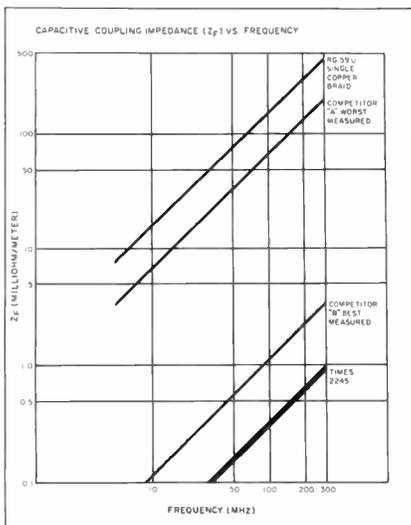
ed standard MIL SPEC RG59U, the original CATV drop cable.

Not shown but also vital is data taken after flexure testing. After many hours of being subjected to simulated severe wind conditions, the radiation from one competitor's cable increased by a factor of 40. But the tough construction of Times 2245 kept it from degrading one iota. What's more, we've improved all of our drop cables. Times can offer you cable with the lowest radiation in every price range construction. And this is no idle boast. Radiometer tests prove it.

The Radiometer, however, isn't limited to duty at the manufacturing level alone. CATV operators can utilize its unique ability to check quality of every reel of drop cable purchased. That's why Times is making the Radiometer Model TNX-247 on a production basis. Selling price: \$975.00 including three different size test chambers to cover all RG-59, RG-6 and RG-11 cable.

So now that radiation is such an important issue, there's never been a better time for Times — our Radiometer and our drop cable.

Times Wire & Cable, 358 Hall Avenue, Wallingford, Ct., 06492. 800-243-6904.



**Times Wire & Cable**  
**The #1 Cable Company**  
DIVISION OF TIMES FIBER COMMUNICATIONS, INC.

(Cont'd from page 39)

designed specifically for CATV service. The MDC-3 permits the use of any field strength meter or spectrum analyzer to perform measurements in three microwave bands: MDS (2.1 GHz), TVRO (3.7 GHz) and CARS (12.7 GHz). The MDC-3 is a small, lightweight portable unit capable of AC or DC powering or direct powering from Texscan's portable spectrum analyzers. The optional bandpass filter kit adds increased accuracy and usefulness to the MDC-3. Utilizing these filters and a VHF/UHF sweep generator, a microwave sweep signal can be generated.

For additional information on Texscan/Theta-Com's complete line of products, contact Texscan Corporation, 2446 N. Shadeland Avenue, Indianapolis, Indiana 46219, (317) 357-8781.

## Wavetek Features New Sweep Recovery System

Wavetek Indiana featured a variety of equipment including a new microprocessor control sweep recovery system, sweep signal generators, CATV sweep test sets, display scopes and attenuators.

Recently introduced by Wavetek is the company's new model 1855/1865 sweep recovery system that makes full use of microprocessor technology and a unique new processed sweep technique to provide a combination of accuracy, resolution and ease of operation for frequency response measurements. This revolutionary system virtually eliminates subscriber interference. Routine performance tests/adjustments, FCC proof-of-performance flatness tests and troubleshooting can be accomplished day or



night. In addition to reliable performance, the system offers the following standard features: minimum front-panel controls, digital storage and refreshed display, alphanumeric read-out and a battery-saver. The Wavetek processed system also incorporates a sweep transmitter and a sweep analyzer.

For additional information on Wavetek's complete product line, write or call Wavetek Indiana, Inc., 66 N. First Avenue, Beech Grove, Indiana 46107, (317) 783-3221.

## EARTH STATION EQUIPMENT

### Dual Polarized Antenna from Andrew For 12.2-13.25 GHz Band

Andrew Corporation presented its complete line of earth station antennas, CARS band microwave antenna systems and equipment. Of special interest was the company's new dual polarized antenna for the 12.2-13.25 GHz band. The dish is four feet in diameter and meets Category B requirements of the FCC Rules and Regulations, Part 94. Dual polarization permits the use of a single antenna for two-channel operation, thus eliminating the need for a second antenna. The results of this approach are significantly lower cost and lower windload on the tower compared with using two antennas. In CARS band applications, isolation between inputs of 35 dB minimum and cross-polarization discrimination of 25 dB minimum, permits transmission of adjacent channels (12.5 MHz separation) and optimum frequency coordination. Compared with other dual polarized antennas of comparable size, purchase cost is 30 to 40 percent less.

For further details, call or write Andrew Corporation, 10500 W. 153rd Street, Orland Park, Illinois 60462, (312) 349-3300.

### Farinon Displays Earth Station Equipment

Farinon Video showed various earth station equipment, FM subcarrier packages, clamper amplifiers, distribution amplifiers, specialized microwave test equipment, a portable microwave receiver and transmitters.



One of the company's newest products was the 60594 earth station video receive equipment—a compact, solid state weather protected downconverter. This downconverter is designed for direct mounting on earth station antenna to convert incoming satellite signals in the 11.7 — 12.2 GHz range to a 70 MHz IF output. The 70 MHz output connects to the optional baseband treatment equipment with up to 500 feet of low cost coaxial cable, without

the need for external equalization. An optional equalizer/amplifier is available to extend the length of cable runs to as much as 2,500 feet. Utilizing a dual conversion IF heterodyne design, the downconverter provides for manual tuning over the 11.7 — 12.2 GHz band, while offering a high degree of selectivity and immunity to noise. Antenna connection is facilitated through a short length of flexible waveguide, minimizing losses or noise contribution ahead of the input. Metering, alarm and intercom facilities are provided to aid setup and maintenance, and self-contained power supplies are available for use with 115 V AC, and -24 or -48 V DC sources. The components of the FST 60594 downconverter are housed in a rigid, weather-protected aluminum case. The top and side mounted hand holds ease transport and handling, and sturdy rails are provided on the bottom to facilitate mounting to the antenna supports. In addition, a removable access door on the rear of the unit exposes the distribution monitor which contains metering, alarm indications, control switches and intercom jacks. Additional connectors are located on the bottom, and the antenna connection is accommodated at the waveguide flange at the front of the downconverter.

For more information on Farinon's complete product line, contact Farinon Electric, 1691 Bayport, San Carlos, California 94070, (415) 592-4120.

## Channelcue® Now in Production

Gardiner Communications featured information on its complete line of satellite earth stations and Channelcue®, a programmable video switcher.

The Western show featured a prototype of Channelcue®, now in full production. This unit is a crystal controlled programmable switcher capable of up to 2,552 switch functions per week on as many as eight channels. The device is an A/B switcher with an internal preprogrammed color character generator that can provide a video message during nonprogrammed hours. It is designed to prevent unauthorized carriage of programming from earth station transponders and to provide switching and substitute programming for network nonduplication and syndicated exclusivity protection. Channelcue® is programmed with a ten-key pad using the digital clock on the master panel. The clock is equipped with standby power, and an LED display shows the switching time, day, channel number and program source. Display of the unit is page-by-page and front panel switchable. Video is output color, one volt peak-to-peak.

For more input, contact Gardiner Communications Corporation, 1980 South Post Oak Road, Suite 2040, Houston, Texas 77056, (713) 961-7348.

## Harris Offers Six-Meter TVRO Terminal

Harris Corporation featured its six-meter satellite earth station. The model 6200 terminal is fully FCC compliant, cost effective for video operators, and provides quality video signals with superior margin performance. The basic system consists of a rugged six-meter antenna requiring minimum installation time without the use of a crane or heavy equipment. To improve performance, a highly efficient Cassegrain feed subsystem is employed, and a full equatorial coverage mount is provided. The low noise amplifier, GaAsFET, is housed on the antenna which connects to the satellite tele-

vision receiver through a low-loss coaxial cable. At the input of the receiver, a power divider provides for test and/or additional downlinks. Separate video and audio outputs are also provided. Frequency range of the antenna RF subsystem is 3.7-4.2 GHz, and antenna diameter is 6.1 meters (20 feet). Antenna gain is 46.5 dB + 20 log f/4 GHz, and cross polarization is 40 dB minimum.

For more input on this unit, contact Harris Corporation, P.O. Box 1700, Melbourne, Florida 32901, (305) 727-6000.

## Hughes Microwave Previews Low-Cost Five-Meter Antenna

The Microwave Communications Products Division of Hughes Aircraft featured a wide variety of products at its booth: two 24-channel receivers with threshold extension, a multi-channel AML transmitter, an AML receiver redundancy system, an outdoor AML receiver and a high power AML transmitter array. Highlighting the exhibit was Hughes' new earth station antenna that features two feed options plus the ability to convert a basic five-meter station to a high performance six-meter system.



Hughes new low-cost, five-meter antenna is designed for use by CATV system operators to receive satellite-transmitted television programming. The new antenna is available with two feed options—a high-gain Cassegrain design for maximum gain in weak



signal areas, and a less expensive focal point feed for strong signal areas. The unit is also convertible to six-meters should additional gain be required at a future date. The antenna mount permits 360 degree azimuth and 0-70 degree elevation adjustments to provide coverage of the complete orbital arc and does not require orientation of the antenna foundation pad. Antenna and mount have been designed to withstand windloads up to 87 mph without performance degradation and survival windloads in excess of 125 mph. A unique fiberglass composite reflector structure achieves maximum stiffness with low weight, and corrosion resistant hardware is used throughout. Options available include sidelobe suppression shrouds and a base extender to provide additional ground clearance.

Also highlighted at Hughes' exhibit were the model SVR-461 and SVR-462 phase locked video receivers. Both receivers feature 24-channel selection agility and threshold extension. The SVR-461 unit has provisions for remote tuning, useful for time sharing of satellite channels. These integrated receivers provide baseband video (1 volt peak-to-peak) and audio (+10 dBm) utilizing modular circuit assemblies including: a single down-converter (for reliability and simplicity), phase lock demodulator, video processor, audio subcarrier demodulator and associated power supplies and control circuitry. FM threshold occurs at C/N of 5.5 dB.

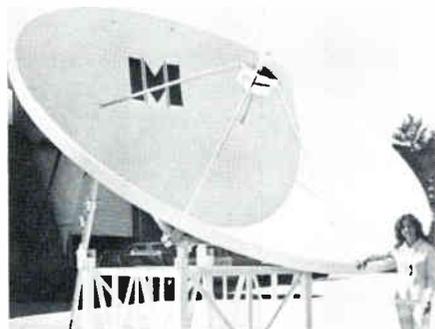
Additional information may be obtained by writing or calling Hughes Microwave Communications Products, P.O. Box 2999, Torrance, California 90509, (213) 534-2146.

## Microdyne Features Line of Satellite Equipment

The Microdyne display featured the company's Satro-5M satellite TVRO antenna, the model 1100 TVR (X12) frequency agile receiver, and the 1100-FFC(X1) manually-tuned receiver.

The company's popular Satro-5M five-meter satellite TVRO antenna is designed to provide the CATV industry with an economical, high performance antenna capable of receiving both 4 GHz and 12 GHz transmissions from current and projected geostationary satellites. This small aperture antenna offers excellent performance, versatility, ease of transportation and quick installation. It provides a minimum gain of 44 dBi at 12 GHz and features easy polarization, azimuth and elevation adjustments. Measured side lobes are in compliance with FCC requirements from the first lobe to 48 degrees off boresight, and are below -10 dBi from 48 degrees. The antenna consists of a precision-formed parabolic reflector surface, a lightweight back-up structure and a steel pedestal that can easily be installed by two men. The molded fiberglass reflector consists of two sections for ease of transportation. The two antenna sections are supported by an extruded tubular aluminum back-up structure. The pedestal has a square frame structure of welded steel members measuring 4 x 7 x 7 feet mounted on a circular ring. This structure rotates to provide a full 360 degree azimuth range. Two elevator struts vary the elevation setting with a turnbuckle-type screw arrangement for fine positioning, and the telescoping portion expands the range of elevation from 10 degrees to 65 degrees.

For additional input on Microdyne's product line, write or call Microdyne Corporation, 627 Lofstrand Lane, Rockville, Maryland 20850, (301) 762-8500.



## Microwave Associates Exhibits Satellite Receivers

Microwave Associates featured its line of CATV satellite receivers, external frequency control units, 15 GHz distribution systems, power amplifiers, subcarrier demodulators, a CARS band FM microwave system and an FM CATV microwave relay.

Microwave's VR-4 is a low cost, all channel satellite receiver designed for the CATV industry. The frequency synthesizer in the dual downconverter tunes any present or future channel



with its quarter megahertz frequency stepping synthesizer. The receiver is the same general size and appearance as Microwave's VR-3. It also uses the same plug-in modules resulting in a compatibility of appearance and operation. The VR-4 is compatible with the PAC-5 or PAC-6 series subcarrier demodulators, enabling the operator to receive additional voice, slow scan video or data subcarrier material.

For more information, contact Microwave Associates, Inc., 63 Third Avenue, Building 5, Burlington, Massachusetts 01803, (617) 272-3100.

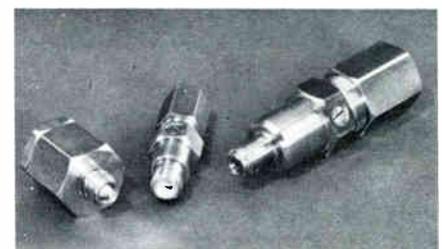
## Prodeline Shows Earth Station Antennas

Prodeline, Inc. featured its earth station antennas, coaxial cable, waveguides and connectors at the NCTA show.

Prodeline manufacturers earth station antennas in 6, 8, 10, 12 and 15-foot diameters. Plane and dual polarized antennas cover 2.2 - 2.3 GHz, 2.25 - 2.69 GHz and 3.7 - 4.2 GHz. Dual frequency antennas cover 3.7 - 4.2/5.925 - 6.425 GHz and 11.6 - 12.2/14.0 - 14.3 GHz, allowing the user to retain the same reflector despite use of ever higher frequencies for satellite service. The eight through 15-foot reflectors are available in two and four interlocking sections for easier transportation and field installation. Made of fiberglass, the antennas resist dents, and a slight tap with a rubber mallet is all that is needed to dislodge most ice accumulation. An excellent feature of the earth station antennas is the simplified mount that allows a single operator to change the orientation to receive any other satellite within the visible geostationary arc.

Prodeline's Spir-O-Guide CC ellipti-

cal waveguide is manufactured from high conductivity copper, precision formed into an elliptical cross section. The corrugated design imparts crush strength, dimensional stability and flexibility. A black polyethylene jacket is extruded over the corrugated waveguide to provide protection during shipping, handling and installation. The waveguide is available in continuous lengths to eliminate bends, joints, splices and flex-twist sections in order to preserve the lowest possible



VSWR. These waveguides are offered in "Standard" form — recommended for medium and low capacity radio delay systems, and "Super Premium" with tunable transitions for high capacity systems. The two differ only in VSWR performance. Spir-O-Guide is available in bulk lengths or in specified lengths, with factory-attached connectors.

For more input, contact Prodelin, Inc., P.O. Box 131, Hightstown, New Jersey 08520, (609) 448-2800.

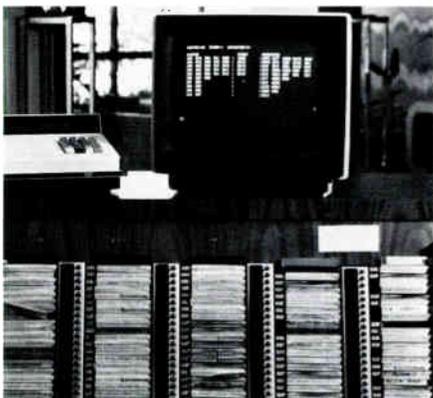
### Earth Station, Energy Package From Scientific-Atlanta

Scientific-Atlanta's exhibit featured several new innovations: a 4.6-meter TVRO antenna, a series of receivers, and an energy conservation package for hotels and motels. Also on display were S-A's complete line of CATV headend products, and the series 6500 trunk amplifiers and line extenders.

Scientific-Atlanta's new model 8005 4.6-meter Cassegrain antenna was on display at the NCTA show. Performance of the new antenna is said to offer equal performance of larger prime focus antennas. The new TVRO incorporates 12 metal panels formed using a die-stamp technique, and the panels can be interchanged or replaced in the field.

S-A also introduced a new series of receivers. The model 6601 is a single channel TVRO receiver, and the model 6602 is a frequency agile radio. The single channel radio can be adapted to the frequency agile status by changing out the tuner module. Up to three subcarriers are possible, and threshold extension is standard on the unit.

The company has also introduced a new energy conservation package for



hotels and motels. The HMA-1200 is designed to integrate the energy management procedure in the front desk clerk's function. A master control unit at the front desk permits the desk clerk to control each guest's room heating and air conditioning unit. The master control will also automatically schedule on and off times for lights, heating and cooling equipment in common areas. An important feature

of this system is the use of a carrier current signal impressed on the hotel's existing AC power wiring for control messages, thereby eliminating the need for any new control wiring throughout the hotel.

For further details on S-A's complete product line, write or call Scientific-Atlanta, Inc., 3845 Pleasantdale Road, Atlanta, Georgia 30340, (404) 449-2000.

### U.S. Tower Shows New Antennas

United States Tower Company introduced its new SAT FLEC III series of four- and five-meter satellite receive dishes that feature a unique bonding of a highly reflective fiberglass skin over a rigid and lightweight all-aluminum dish. The new series is an improved production model of the company's popular all-aluminum six-meter dish that has been in production during recent years. The five-meter model, called the 5MDF, features a dual feed antenna and a prime focus feed with capabilities to adapt to Cassegrain feed. The four-meter 4MLF features linear feed and an electronic self-rotation polarization change kit stan-



dard with each dish. It is targeted for the small cable television systems and the hotel/motel markets where a limited number of cable installations are required.

For additional input, contact United States Tower Company, P.O. Drawer "S", Afton, Oklahoma 74331, (918) 257-4257.

### Winegard Enters MDS Market

Winegard Company had an assortment of antennas and RF distribution products on display, although highlighting the exhibit was its new MDS

receiving package.

The low-cost MDS package, aimed at the single-family-residence, includes the receiving antenna, a crystal-controlled downconverter and a power supply/post amplifier. Designed to work as a system, the three components, after being mounted in their respective locations, are simply interconnected by coaxial cable. The antenna and downconverter mount are on a common mast, while the power supply/post amplifier must be sheltered from the weather and conveniently located near a source of 120 V, 60 Hz power. The receiving antenna consists of a single active 1/2-wave dipole and a passive reflector located at the focal point of the parabolic-shaped reflector. The downconverter, in order to convert the 2150-2162 MHz signals, employs a crystal-controlled oscillator. The MDS antenna is available in two models, the PT-1800 and the smaller PT-1000.

For additional details, contact Winegard Industries, 3002A Winegard Drive, Burlington, Iowa 52601.



## CABLE EQUIPMENT

### Belden Features New Cable, General Catalog

Belden's exhibit featured its fiberoptic line of cable, Dual Bond II drop cable, the UNIREEL pack and the UNIREEL sling, and the company's new catalog. Attention was focused on Belden's recently introduced 11/U-type MATV coaxial cables. Both designs (Nos. 9011 and 9012) utilize a 14

ga. solid bare copper-covered steel wire conductor, cellular polyethylene dielectric, Duofoil™ foil-film-foil shield augmented by 40 percent aluminum braid, and black PVC jacket. Nominal OD for both is 0.405 inches.

For more information on Belden's complete line of cables, contact Belden Corporation, 2000 S. Batavia Avenue, Geneva, Illinois 60134, (312) 565-1200.

### CCS Hatfield Shows Complete Cable Line

CCS Hatfield's display included the company's complete line of aluminum sheath coaxial cable, featuring first- and third-generation gas-injected armored cable and the GID III series copperclad aluminum center conductor cable.

For more data, write to CCS Hatfield Communication Products, Inc., 5707 West Buckeye Road, P.O. Box 14710, Phoenix, Arizona 85063.



### Cable from GK Technologies

GK Technologies, Inc., formerly General Cable, highlighted its exhibit with its fused disc coaxial and fiberoptic cables.

GK's AT fiberoptic cable provides excellent performance, high reliability, is rugged and suitable for installation in any environment and under all conditions. Type AT cable may be operated under gas pressure to provide alarm service in case of sheath perforation, ease in sheath fault location and the exclusion or retardation of

water at a fault. The cable's center core is strengthened with a central copper wire which can also serve as an electrical conductor.

For more details, contact GK Technologies, Inc., 500 West Putnam Avenue, Greenwich, Connecticut 06830, (203) 661-0100.

### Systems Wire & Cable Changes Company Name

At the NCTA show, Systems Wire & Cable, Inc., announced a corporate name change and introduced its third-

generation cable. The company has changed its name to Systems Communications Cable, Inc.

The company introduced GID-3 Plus, its third-generation low loss cable with improved construction and easy handling properties. The GID-3 Plus is a 75 ohm aluminum sheathed coaxial cable incorporating polyethylene gas injected dielectric. Features of the new cable include seamless aluminum sheath, expanded polyethylene dielectric, and copper or copper clad aluminum conductor.

For more information, contact Systems Communications Cable, Inc., 3500 S. 30th Street, Phoenix, Arizona 85040, (602) 268-8744.

### Cables and Catalog from Times Wire

Times Wire and Cable Company's exhibit offered a variety of products for inspection. On display were several types of coaxial cables from the Lumifoam III, Alumifoam II and Alumifoil series; along with the 2200 series RG 59/U and RG 6/U cables.

Fiberoptics was also featured in the exhibit. The display included a fiberoptic earth station link package, a variety of fiberoptic components and its line of fiberoptic cables.

For additional product information, contact Times Wire and Cable Company, Wallingford, Connecticut, (203) 265-2361 or Phoenix, Arizona, (602) 278-5576.

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For CATV or MDS  
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Call Van Nuys, Ca. (213)989-4535 — Atlanta, Ga. (404)993-7249  
or Write TEST | Tanner Electronic Systems Technology, Inc.  
16130 Stagg Street, Van Nuys, Ca. 91409

## Security Devices From AEL

AEL featured its model AEL-DCV dual-channel converter unscrambler. This device is designed for the fully-loaded, 12-channel system. The AEL-DCV converts and unscrambles two midband or superband, non-adjacent channels to a lowband channel. Frequency range input is 126-168 MHz or 216-264 MHz. Frequency range output are on channels 2, 3, or 4.

Also on display was the AEL-D descrambler. This unit is an on-channel scramble/descramble system that can be used on any channel of either a 12-channel system or in conjunction with a converter. Gain on the device is



5 dB min. (54-300 MHz). The noise figure is 9 dB max. and cross-modulation (with a 35-channel input) is -57 dB at +15 dBmV input.

For more data, contact AEL CATV Communications Division, P.O. Box 552, Lansdale, Pennsylvania 19446, (215) 822-2929.

affecting any other signals. With the IT-1G, there is no need to rewire current loop through systems, and the unit is designed with standby memory power to maintain system conditions during AC power outages. Each IT-1G can be monitored to verify correct operation and detection of tampered units.

The IT-6 intelligent tap is designed with six independently switchable outputs and also furnishes six independent control voltages for operating external pay traps or slave taps. The unit can be used as a system building block and can be configured to switch a number of different inputs to a multitude of outputs in an unlimited fashion, providing control of multiple pay, MATV and CATV services. Other features of the IT-6 include RF/IF switching, all ports matched when on or off, and custom LSI logic control with parity checking for reliable control.

For further details, contact Delta-Benco-Cascade, Ltd., 124 Belfield Road, Rexdale, Ontario, Canada M9W 1G1, (416) 241-2651.

## Addressable Taps from Delta-Benco-Cascade

Delta-Benco-Cascade Ltd. featured, along with its full line of CATV equipment, its IT-1G loop through intelligent pay-TV trap and its second generation of addressable taps designed with six outputs.

The IT-1G pay trap, recently unveiled at the Western show, is well suited for hotels and motels where basic service is provided free and a pay channel can be controlled locally from within the premises or remotely, from a central location via a cable system. The device can render a specified television channel unintelligible, without



## A Product for your Pay TV Requirements

New,  
The MDS Mini-Combo...

Combines the antenna  
and downconverter into  
one, economical unit.



## Eagle Features Three-Channel Block Converter

The Eagle exhibit featured the double eagle system negative and positive trapping for double security, scramblers and descramblers, notch filter traps, band pass filters and special-application traps for all channels including midband.

Of special interest was the company's new three-channel block converter. This unit is crystal controlled with power line filtering. The device converts G, H and I to channels 2, 3 and 4. Gain is  $-0 +3$  dB and the noise figure is 11 dB. Isolation input-output is  $-65$  dB and cross-modulation is  $-65$  dB min.  $+15$  dBmV in. Output return loss is 16 dB min. and input return loss is 18 dB min. The block converter features all P.C. board construction and employs an I.C. regulated power supply.

The Double Eagle security system combines the effectiveness of both the Eagle 2-DF positive descrambler and the 2-NF negative trap to provide two-tiered security. The model 2-DF is an indoor/outdoor audio and video descrambler for pay-TV applications. This descrambler is available for channels 2-7, including midband. For security, a tamper-proof security shield covers the unit, and special tools are required for installation and removal. This unit will withstand 200 V AC from the center conductor to the sheath, and the frequency response is flat  $+0.5$  dB, 5-300 MHz. Impedance is 75 ohms, and the decoding level is  $-50$  dB min. at temperature extremes (nominal  $-70$  dB).

For more information on Eagle's complete line of equipment, contact Eagle Comtronics, Inc., P.O. Box 93, Phoenix, New York 13135, (315) 638-2586.

## GTE Sylvania Displays Programmable Converter

Products exhibited by GTE Sylvania featured the model 4012 midband to UHF converter, the complete series of transmission electrical equipment, and a live demonstration of the 4041 programmable converter.

The company's model 4041 is a wired remote converter which consists of a small, handheld, calculator-style control unit connected to an electronics unit (RF processor) at the TV

receiver through a rugged, flexible multi-conductor cable. The major considerations in the design of this model are ruggedness, reliability and serviceability. The control unit, which is subject to the most abuse, is lightweight, molded of high impact plastic, and resistant to moisture. The touch-type keyboard is sealed against moisture and contact corrosion. The interconnecting cable used is an ultra-flexible type, and can be replaced by simply releasing and unplugging its

tuned to the channel that was being viewed before the programming mode was entered. This channel number is redisplayed when the CHAN ENT button is released. The programmed channels can then be recalled in sequence by individual presses on the keyboard's CHAN RCL button. The electronics unit uses a digitally-controlled phase-locked loop frequency synthesizer to tune the channels. Because all frequencies are referenced to a single crystal oscil-



connectors at the control and electronic units. Another major feature of the unit is ease of operation. A channel can be selected and tuned instantaneously by touching two numbered keys in sequence, after which the microcomputer sends a digital signal to the electronics unit which tunes the channel. The microcomputer has the capacity of remembering up to ten subscriber programmable channels. The desired channels are entered into memory by holding the CHAN ENT button located on the bottom of the control unit while entering the channels that are to be viewed in sequence. When the last channel is entered, the button is released and the microcomputer returns to the channel selection mode. While the channels are being programmed, the TV receiver remains

lator, the converter requires no fine tuning and, even on a set without AFC, the TV receiver's fine tuning control can be set once and never touched again, except for cases of TV receiver drift. Channels 37, 38 and 39 are reserved for pay-TV or other special channels and can be service shop or factory assigned any frequency between 50-300 MHz. When one of these channels is selected, an output is provided which turns on the proper descrambler and tunes the channel frequency. Each channel provides a separate output to allow up to three-tier pay service.

For additional input, contact GTE Sylvania CATV Operation, 10841 Pellicano Drive, El Paso, Texas 79935 (800) 351-2345 or call (915) 591-3555.

## Intercept Unveils Pay Security System

Intercept's display offered a variety of CATV drop materials, the PED 6000

metal cable closure, pay security equipment and block converters.

Of particular interest was the new addressable pay-TV security system called the UHS Pay-TV System. The

system is addressable from the head-end or office and can decode any combination of 36 channels. This system is a new method of adding midband and superband channels to any system while allowing the operator to secure any channel combination. The memory feature stores up to 36 channels and synthesized channel frequencies eliminate fine tuning. Additionally, the microcomputer's solid state design assures reliability. The security system is available in two models: the UHS 36 will convert and decode 36 channels to channels 3 and 4, while the UHS 9 will convert and decode all mid and VHF channels. Both versions are compatible within the same system to allow for future expansion.

Intercept also featured its ICM two- and four-output multi-taps. The ICM series provides two- or four-way subscriber taps over a broad range of tap values. Modular design enables the operator to remove the base plate and circuit board as a unit without removing the center seize or the strand mounting. The housing is fabricated from a corrosion resistant aluminum alloy, and stainless steel hardware is used throughout. The housing and all ports have separate moisture sealing gaskets and the subscriber ports have a puncture sealing rubber membrane. All connector ports, including subscriber ports, have large shoulders and anti-slip ribs for use with shrink sleeving. The unit can be either messenger or pedestal mounted.

For additional information, contact Intercept Corporation, 140 Delawanna Avenue, Clifton, New Jersey 07014, (201) 471-2212.



## Jerrold Unveils PlayCable, New Converters

Jerrold Electronics Corporation's exhibit featured a new line of set top and remote converters, Starline 300 amplifiers with code-operated switch and upgraded remote status monitoring, the Commander III processor, modulator and demodulator, taps and connectors, and PlayCable—a new video game/home computer system.

PlayCable is an equally-owned joint venture by Jerrold and Mattel Electronics. The new home video system is capable of functioning in both one- and two-way cable television systems, and will enter field trials in the fall.

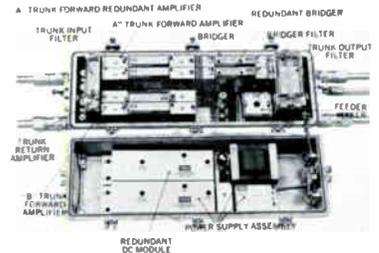


Sylvania will make the Mattel part of the system, an Intellivision terminal which can be purchased separately for \$250.00. Jerrold will supply the head-end and adapter. The player houses a microprocessor developed by General Instrument Corporation's Microelectronics group, which will be the control center for all programs. The microprocessor unit generates all the required standard television synchronizing and color information. The Mattel terminal and Jerrold adapter are linked together to form PlayCable. Sports games, said to be designed with strategies based on computer analyses of actual game play, and a library of educational services will be available for users. The Jerrold adapter, priced about \$50.00, will permit access to the educational services library which will be located at the cable operator's headend or office.

Jerrold's newest converter addition is the StarCom II 36-channel converter. The new unit comes in two versions: the JRX has remote capability, and the JSX is a set-top converter. Performance of the converters features low noise figure, double conversion, high signal level capability, RF shielding and oscillator rejection. Options for the converter include: Starpack pay controller option (factory installed), TV set on/off, and offset frequency assignment. The unit is of modular construction, allowing quick disas-

sembly and assembly, minimizing repair time and costs. A detachable control cord allows simple field removal and replacement of the control cord, and varactor pushbutton tuning provides instant, direct access.

Jerrold also featured the upgraded new Series II 30-channel RSC converters. The RSC is a 30-channel system consisting of a remote-control, push-button selector with fine tuning. It's designed for set-top or table-top use, and has an RF converter module for rear-of-set or wall-mounting. The two units are interconnected by a rugged, 20-foot three-wire line. The 30 channels are divided into two bands of 15 channels each. A rocker-type switch on the pushbutton console is used to select the desired band of channels, activated directly by depressing the numbered push buttons. Options for this unit include automatic frequency control or remote set on/off.



Also featured by Jerrold was the Starline 300 distribution system for urban CATV markets. This system features redundant amplifiers and power packs to insure uninterrupted service, and the housing and chassis are completely passive. Plug-in modules with versatile housing-and-chassis designs allow economical expansion and configurability, including dual trunk in a single housing. Hybrid ICs are employed in the plug-in modules, with direct heat-sinking of chips to housing walls for efficient heat dissipation. Reversible return-amp locations in the connector chassis facilitates system alignment and allows construction of supertrunk systems. Additionally, filters and equalizers have been designed to work in pairs for maximum flatness and minimum chroma delay, and separate surge protectors and thermal circuit breakers provide current and overvoltage protection.

For more input on Jerrold's complete line of equipment, contact Jerrold Electronics Corporation, P.O. Box 487, Hatboro, Pennsylvania 19040, (215) 674-4800.

## Oak Introduces New Pay Products

Oak Communications CATV Division has expanded its pay product lines with the introduction of seven new units, including "TotalControl" Videotext, a secure information system designed to present alphanumeric data in "electronic newspaper" form. These new products included: the "TotalControl" 35-channel converter/decoder; "TotalControl" Videotext; Moduline series D-39, a synthesized 39-channel converter; the RL-35, a wired remote fine-tuning converter; Econo-Line Thirty-Five, an economically priced 35-channel converter; a fine-tuned midband block converter; and second-level security option, a system which enables operators extra control over service and equipment.

Oak's "TotalControl" system, introduced in May 1979, allows operators to deliver multiple tiers of premium entertainment and information by remote control from the headend. This system includes computer installation, software programming, addressable home terminals, operator personnel training, billing assistance, and ongoing maintenance services. When a new or existing subscriber orders a program, a control computer sends the message to the signal controller. The control signal generator then passes the message through the headend equipment. Once activated by the headend equipment, control signals travel over the cable system into an addressable converter/decoder in a subscriber's home. Two types of control signals—an addressing signal and a program level signal for every channel being controlled—move over the cable system. The addressing signal pre-authorizes the decoder to decode specific program levels such as pay movies, newswires, super stations, the Christian Broadcast Network, or a combination of programs—up to eight levels. Each channel carrying a controlled program is "tagged," or encoded, with a program level identifying the signal at the time the program is shown. The decoder compares the program level "tag" of any channel selected by the subscriber, and permits decoding only if the "tag" signal matches a program level for which the decoder has been pre-authorized.

Oak's "TotalControl" system incorporates a converter/decoder and

Videotext. The addressable 35-channel converter/decoder enables system operators to offer secure, multi-tier, premium programming that can add extra revenue from add-on subscriber demand for special shows. Combined with the "TotalControl" system, the converter/decoder offers built-in security of programming and equipment.



"TotalControl" Videotext was developed by Oak to offer CATV system operators total control of information transfer. A wide range of Videotext information, ranging from local comparative shopping to nationwide airline schedules, can be transmitted from a control center into the home, decoded by an Oak addressable decoder, and displayed in color on the television screen. Remote control of data from the system operator's headend ensures that subscribers receive only those programs for which payment has been made. Videotext data is organized into full-screen pages of 24 rows of characters. A subscriber may key in any one page in sequential order or rapidly scan all pages arranged in a cycle—

initially up to 800 pages—in less than five minutes. All data can be transmitted within an existing channel. However, the system can be further expanded by dedicating additional video scanning lines within one CATV channel to increase either the system capacity or speed of operation by a factor of more than 100 times. In addition to words, colorful graphic displays—such as a linear chart to illustrate growth of a particular stock or a block picture of a diver to advertise community swimming lessons—also can be displayed on-screen.

Oak also introduced the Econo-Line Thirty, an economical, 30-channel converter with manual fine tuning that incorporates capabilities previously found only in higher priced units. The unit is particularly suited for small system operators who want to economically add more channels. The new converter enables cable system operators to furnish subscribers with broadcast signals, time, weather, news, stock options and local origination programming. The unit employs advanced electronic technology to ensure greater frequency stability. With a noise figure of 13 dB, the converter compares favorably with the industry norm. Its wide dynamic range enables operation over a variety of input levels, from -6 to +15 dBmV. Econo-Line Thirty is priced at \$37.50 per unit in 5,000 lot quantities, with a 90-day lead time.

For additional input, contact Oak Communications CATV Division, Crystal Lake, Illinois 60014, (815) 459-5000.

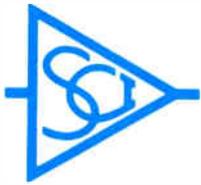
## RCA Shows New Products, Full CATV Line

RCA Cablevision Systems featured its full line of CATV headend, distribution and subscriber equipment at the NCTA show. The display also included the new 36-channel set top converters, a new generation of hybrid amplifiers and new high performance passive components.

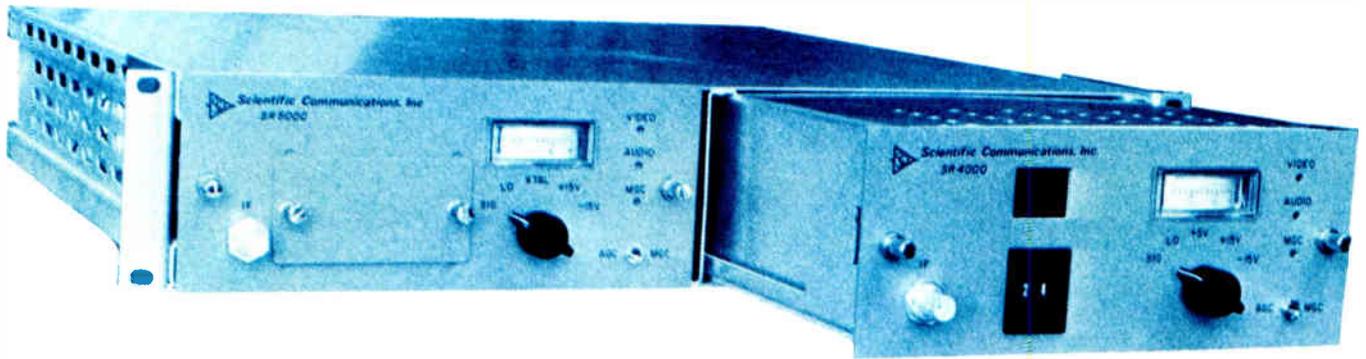
Of particular interest was RCA's new 36-channel set top converter featuring a high reliability rotary switch channel selector with only one moving contact. The new converter exceeds the reliability of push button or slide switches and is available in both one piece and cord remote versions. The converter maintains a cool

case temperature and has a low power consumption. With the standard 36-channel version, channels 2 or 3 can be chosen as output channels, and channel 4 is available on special order.





# SATELLITE VIDEO RECEIVERS



## Reliable Performance

Scientific Communications has designed the SR-4000 and SR-5000 Satellite Video Receivers to exceed cost/performance criteria expected of CATV earth stations. Quality picture and sound reception at a life cycle cost that provides a profit.

## Fully Agile or Fixed Channel

The SR-4000 is a fully agile, synthesized 24 channel selectable model. An LED readout indicates the transponder number selected by thumbwheel switches. The SR-5000 is the fixed channel version. Transponder selection is accomplished by the selection of a crystal and binary code on a five position dip switch.

## Compact Modular Construction

The compact design of these units allows two receivers to be mounted in a standard 19 inch rack only 3½ inches high.

Module construction simplifies maintenance and allows module interchangeability between unit types except for synthesizer/LO source modules.

## Simplified Testing

Both receivers were engineered to provide a simple method of testing in an operational environment. A meter and selector switch on the front panel permit the monitoring of critical voltages and the IF monitor output is available at the front panel. An AGC/MGC switch and a manual gain adjustment are also located on the front panel. The rear panel contains an auxiliary video output to allow monitoring of video performance without disrupting programming and an extra pair of audio outputs to facilitate audio monitoring.

## Subcarrier Demodulator Option

This feature is pre-wired on all units so that the addition of a printed circuit card can provide up to four subcarriers for audio, slow scan TV or other software offered by the programming originators.

# SCIENTIFIC COMMUNICATIONS, INC.

3425 Kingsley Road, Garland, Texas 75041 TEL (214) 271-3685 TWX 910-860-5172

2929 Eskridge Road, Fairfax, Virginia 22031 TEL (703) 698-1450

The company also unveiled a new generation of hybrid amplifiers incorporating many advanced electrical and mechanical features. Electrical specifications of the new amplifiers have been improved for noise, cross-modulation and composite triple beat. A die-cast heat sink and module enclosure has improved module protection and heat dissipation. Surge arrestors plug in from the top on the new series and do not require removal of the module covers. The new amplifier line includes model 152 for single trunk, single feeder, sub-split systems; model



157 for dual trunk, single feeder, sub-split systems, model 172 for dual trunk, single feeder, mid-split systems and the model 177 "Transportation" amplifier for single cable headend-to-hub or hub-to-hub systems.

RCA has also developed a new high performance line of passive components that includes a wide range of two-, four- and eight-way subscriber taps, directional coupler, splitters and a power inserter. One of the most important features of the new passive component line is a center seize which is mounted in the housing for superior strength, not on a circuit board. A beveled screw reduces the chance of cutting the center conductor. The RCA taps and trunk passive also feature low insertion loss and a full 5 - 300 MHz operating range. An interlocking RFI flange exceeds FCC required performance for radiation and eliminates the need for a conductive RFI gasket. Modular construction allows the base plate and the circuit board to be removed as a unit without disturbing the center seize or the strand mounting. The passive components have been designed for easy, efficient installation and maintenance, and can be either messenger or pedestal mounted. An integral hanger eliminates the need for an extra bracket when the trunk cable passes the tap.

For further information, contact RCA Cablevision Systems, 7355 Fulton Avenue, N. Hollywood, California 91605, (213) 764-2411.

## Schrock Displays New Universal Home Terminal

C. B. Schrock and Associates featured a new universal home terminal for providing pay-per-view security and energy controls in the home. Also presented was an audio talkback system able to conduct classroom lectures via two-way cable.

The data handling system utilizes a universal addressable data terminal (UADT). The system is a microprocessor based controller that converts the cable to a data "bus" and then reads the bus back into the cable. Functional modules containing a minimum of hardware are then plugged onto this bus. Modules in production today include CATV, pay, security and energy. The capability for any other services such as polling of subscribers,

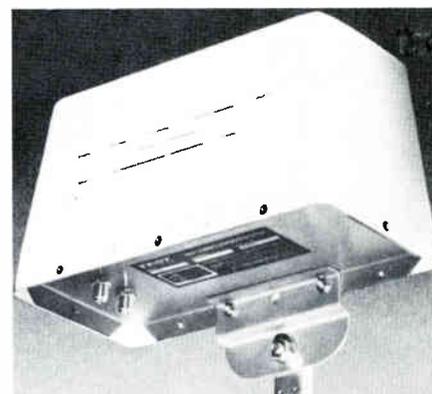
utility demand reading, and sophisticated data services such as credit card verification and point of sale terminals are all easily accommodated with specialty modules. Headend control and protocol (or language) of the system is also very basic. The ASC11 standard found on most teletype and home computers is used for all commands. To interrogate a box in the system, typing four ASC11 characters selects any box, two more characters select the module and a question mark (?) interrogates the status of the box. The sub-modules are also controlled (such as turning off lights or a furnace) with a two-character command. The microprocessor based controller uses a fast, accurate data format, and has a number of operating modes including a Simple mode for home alarms, a Complex mode for data services, and

an All Call or Service request mode for alarms and interrupts. All modes are available in each controller and can co-exist on the same system carrier. The UADT is available with six modules: a TV and pay module, a security module (including entry alarms, alert panel and alarm warning), an energy conservation module for load shedding and temperature turndown, a utility meter reading module, and an installer's test and set up module.

For additional information, write to C. B. Schrock and Associates, Inc., 2040 S.W. 187th Avenue, Aloha, Oregon 97005.

## TEST Offers Pay-TV Security Equipment

The TEST exhibit offered pay-TV security equipment for CATV and MATV application, and a complete line



of MDS receiving equipment and accessories.

TEST also announced a new addition to its popular MDS downconverter line, the battery-operated downconverter, model MDSC-MC-B. Featuring the sensitivity of TEST's MDSC-MC package, the size of this new self-contained antenna-downconverter combination provides the system operator with the means for quick and simplified field surveys and antenna orientation, thus eliminating the need for AC line cords. This unit may be used with a field strength meter or the TEST companion unit, ASM-1 television survey monitor.

TEST also offered its SB-1 scramble booster. Multiple apartment and hotel MATV systems often require input levels in excess of 1 volt for signal distribution. To enable the TEST EC and LS scrambling signals to achieve these high levels, the 15 dB gain

scramble booster amplifier is offered by the company. The broad bandwidth and low distortion characteristics of this amplifier makes it useful in other headend applications. The internal power supply is highly filtered to maintain high isolation from the AC line, and the hybrid amplifier used in the SB-1 is capable of running at high levels without compressing or producing spurious signals.

For additional information, contact TEST, Inc., 16130 Stagg Street, Van Nuys, California 91406, (213) 989-4535.



### TOCOM Features Converter/Descrambler And Dow Jones System

TOCOM's exhibit featured the Paymate converter/descrambler, the TOCOM interactive system, a three-channel block converter, a 36-channel infrared wireless baseband converter, and the Dow Jones information retrieval service.

The company's Paymate converter/descrambler is designed to convert selected midband channels to channel 2, 3 or 4. The unit is installed on the cable prior to the TV input and employs a band-pass switch that turns the converter off and allows normal VHF signals to pass directly to the TV set. A channel selector on the converter alternately tunes the midband channels to the pre-determined channel 2, 3 or 4. The fine tuning assures that the scrambled signal is tuned precisely to the proper frequency for descrambling.

TOCOM also features a three-channel block converter which is used between the cable drop and the customer's TV set to convert three midband channels (G, H and I) to three lowband channels (2, 3 and 4), or to bypass the converter function for

standard channel operation. The converter does not require tuning by the customer, and all functions are controlled by the controller bypass switch and by the TV set channel selector.

Of considerable interest is the TOCOM/Dow Jones new information retrieval service. The user accesses the system in seconds by typing the appropriate Dow Jones News Retrieval Codes on the home computer keyboard. The signals travel to the microprocessor terminal via coaxial cable—instead of telephone lines—to a TOCOM III-A central data system mini-computer. The computer routes the request via dedicated lines to Dow Jones' Regal Row facility in Dallas.

### Traps and Tracers from Vitek

Displayed at the Vitek Electronics, Inc. exhibit were a variety of pay-TV products including single- and multi-channel traps, bandpass filters and band-reject filters.

One of the featured products was the latest addition to Vitek's line of cable traps for pay-TV security—a combination midband/superband band-reject trap. The trap, along with a midband (Channels A-G) and/or superband (Channels L-W) band-reject trap will allow a system operator to trap out both the midband and the superband, or either one by itself. The device will enable a system interested in multi-tiered service to market premiums plus blocks of channels in the mid and superbands.

Vitek also had the Tracer line of RF leakage detection receivers on display. The Tracer comes in two models, the TR-1 and TR-2. Specifications of the TR-1 include: a receiver sensitivity of  $-86$  dBmV from a 74 ohm source; the meter display incorporates a linear signal strength scale reading from  $-20$  to  $+20$  dB with center zero and  $\pm 1$  dB accuracy; a crystal-controlled local oscillator; the unit can run off of its internal, rechargeable gel cell battery, off of its AC charger/adaptor, or off of a 12-volt car battery; measures approximately eight inches by five inches by six inches; and weighs 2.27 kilograms (5 pounds). The TR-2 specifications include: a receiver sensitivity of  $-76$  dBmV from a 75 ohm source; the meter display utilizes a three region display which, in conjunction with the gain control, allows for readings over a 30

dB range; a crystal-controlled local oscillator; can be run off of its internal, NICAD battery pack (four size AA cells); off of its AC charger/adaptor, or off of a 12 volt car battery; the unit measures approximately four inches by six inches by two inches, and weighs .7 kilograms (1½ pounds). Both units can operate with any one of the standard TV video carriers, eliminating the need for a special transmitter. Additionally, both receivers emit a recognizable audio tone when leakage is detected, allowing for unmistakable CATV system checks.

For additional information, contact TOCOM, Inc., P.O. Box 47066, Dallas, Texas 75247, (214) 438-7691.

For more information, call or write Vitek Electronics, Inc., 4 Gladys Court, Edison, New Jersey 08817, (201) 287-3200.



### VIDEO

### Barco Unveils Mosaic System

Barco/Elector introduced the first 16 picture on a single channel transmission system. This system allows 16 pictures to be displayed on one screen

in a 4 x 4 format. Sixteen independent non-synchronous video signals derived from sources such as off-air signals, cable, tape and cameras can be processed and transmitted on one composite master video signal or for distribution on one channel of a CATV system. In a CATV system, up to 16 incoming programs can be monitored for picture content, interruptions or failures. Additionally, one channel of a CATV system can be reserved for the transmission of the picture Mosaic, to offer subscribers a survey of the

programs being transmitted on other channels.

For additional information, contact Barco's representative; E & O Systems, Ltd., 2998 Scott Blvd., Santa Clara, California 95050, (408) 727-1506.

### Computer Video's Compuvid®-I System

Computer Video Systems, Inc., offers the third generation Compuvid®-1

microprocessor data display system which utilizes the latest in design and microcomputer technology. The system provides individual stand-alone, microprocessor based displays which are totally software formatted, making it simple to customize the format to accomplish almost any type of display objective. Many standard features and functions of the device are the EIA RS-170 color sync generator, the built-in memory to protect battery and charger; seven hue generators plus black level; three video outputs, two program and one edit with cursor display; and the CDD-1 display chassis. The display system contains two cards (video and control) which are interchangeable and provide easy maintenance. It is also equipped with front panel data input LED indicators and voltage test points. The CWS-1 gathers the weather information, performs all required analog to digital conversion, formats a complete string of serial data, and sends the data every 2-½ seconds. Unique software filtering and analog calibration signal insures a stable and reliable weather presentation. This design allows the CWS-1 to be located close to the weather instruments with only two wires to the display chassis.

For additional information, write to Computer Video Systems, Inc., Suite 7, 3575 South, West Temple, Salt Lake City, Utah 84115.

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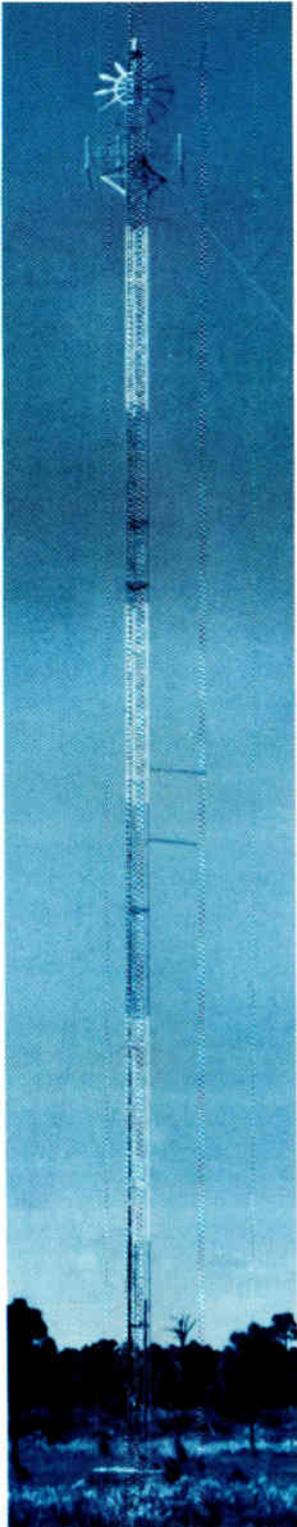
### Edutron Previews Video Time Base Correctors

Edutron has introduced the ccd-16h video time base corrector that has adjustable blanking widths and also stretches the active video to eliminate the black border effect. The vertical video picture can be stretched up to four horizontal lines. Utilizing the latest digital technology prevents any visual distortion. The ccd-16h has a full sixteen line window of correction, allowing it to track even the most severe distortions. This unit uses both horizontal and vertical enhancement to give a well-defined, sharp picture. Coring the enhancement frequencies before adding them back to the luminance gives a sharp picture without causing additional noise normally associated with enhancement.

The new ccd-2h video time base corrector is ideal for all heterodyne

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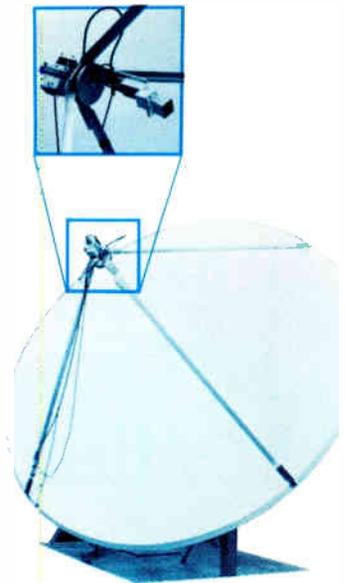
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VTR studios. This unit features noise reduction, image enhancement, system gen-lock, and a window of correction of two horizontal lines. The ccd-2h uses the latest technology in charge-couple-device analog memory. The blanking widths on the processed video are adjustable along with the sync and subcarrier timing. A white and a black clipper are standard while an advanced servo-controlled sync and phased subcarrier are available to drive the VTR. The ccd-2h can reduce chrominance noise up to 10 dB and reduce the luminance noise up to 7 dB. It uses both horizontal and vertical enhancement to give a well-defined, sharp picture without causing additional noise.

Also introduced was Edutron's ccd-VP video processor, intended for use on any one volt composite video signal. Typical applications for the ccd-VP would be following any VTR, TBC, camera, microwave or satellite receiving station. It is a combination of a broadcast standard sync generator, processing amplifier, video image enhancer and noise reducer. The gen-lock sync generator meets RS-170A

standards and can be used as a master sync generator, back-up unit, or secondary source. The ccd-VP will gen-lock to incoming video, black burst, or external subcarrier and sync. The processing amplifier adds new sync, burst and blanking to the incoming video. Front panel controls are video

gain, chroma gain, set up and hue. To achieve a maximum amount of noise reduction without causing any picture degradation, the ccd-VP uses both combing and coring.

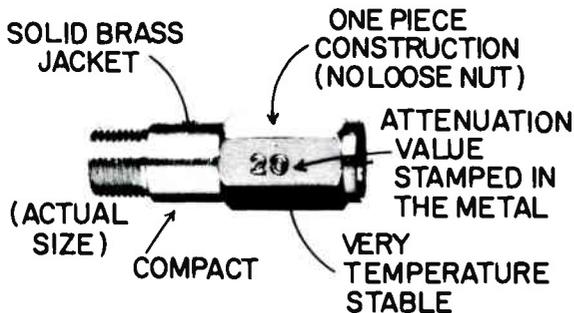
For further information, contact Edutron, 25 Oak Street, Suite 1, Roswell, Georgia 30075, (404) 992-1626.

### Automated Systems

Highlighting System Concepts' exhibit were several microcomputer based systems. The Q-III Billboard™ system for automated weather, news service and local keyboard entry presentations, comes in two models: the Q-III/S for single channel display, and the Q-III/D for dual channel display. Some standard features of the Q-III include: an electronic keyboard with choice of keyboard programs, either the KP-3 multi-row display or the KP-4 one-row crawl display; 20 character sizes—selectable by row; 85-row flexible internal memory; choice of character font style; automatic page sequencing of zero to 45 seconds; crawl through static display; color graphic separators; RAM memory with

built-in battery and charger; digital clock; 365-day automatic calendar; EIA RS-170 sync generator and video circuits; and requires a rack mounting space of 19 inches wide by 5-1/4-inches high and 24 inches deep. Additional Q-III program display options available include three RAM memory options, which allow for expansion within the chassis to accommodate larger keyboard program memory requirements—up to 369 rows. Three news service program options enabling the Q-III to be formatted to display any news service, any data or teletype service, and the NYSE Ticker Service are available. Also, several weather display programs are available. The weather displays range from a simple one-row current temper-

## Five Reasons for Choosing the LRC Attenuator Pad



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ature to a full page of weather information.

Another microcomputer based information display system on exhibit was the Merchandiser. The Q-VI/M Merchandiser is a full function, studio teleproduction graphic titler with internal modifications to drive and control a digital cassette mass-memory system. Features include: over 400 pages per cassette; 24 character size selection; choice of character font; 192-row flexible internal memory; automatic random page sequencing and duration timing; crawl through static display; full editing functions; EIA RS-170 sync-lock and downstream video matte; and RAM memory. Two models are available, the Q-VI/M Merchandiser I™ and the Q-VI/M Merchandiser II™.



For more information, contact System Concepts at 395 Ironwood Drive, Salt Lake City, Utah 84115, (801) 486-3833.

### TeleMation Shows Noise Filter, Character Generator

Highlighting TeleMation's exhibit were the company's Programatic 4000 22-channel cable character generator, TDF-1 digital noise filter, and a compositor-videographics control device.

The company's newly introduced TDF-1 digital noise filter uses the latest industry sampling standard and state-of-the-art memory components to improve the signal-to-noise ratio of television signals — in some cases by as much as 18 dB — on an element-by-element basis. The unit is especially useful for SNR improvement of multi-generation videotapes, ENG material and microwave/satellite feeds. A four-times-subcarrier sampling rate delivers greater bandwidth and resolution than competitive systems using a three-times-subcarrier rate, while the

new charge-coupled-device memory matches the performance of RAM systems at a significantly lower cost.

### New Studio Quality Video Link from Valtec

At the NCTA show, Valtec Corporation announced a new multi-media fiberoptic video link. Via this system, broadcast studios, surveillance systems, and other applications requiring high resolution television signals can realize studio quality video over distances up to three kilometers. The VS-100 is a completely modular video link costing less than \$4,000. Both transmitter and receiver contain a power supply, along with individual video, voice and data cards. The new Valtec video link is 19-inch rack mountable

For more input, contact TeleMation, Inc., P.O. Box 15068, Salt Lake City, Utah 84115, (801) 972-8000.

for convenient, speedy installation and has expansion provisions for doubling the unit's video, voice and data capacity. Expandable to six modules, the easily-removable cards may be mixed or matched in any combination to contain two video, voice and data channels; three video-voice combinations; or simply six video boards as might be found in security installations. All video link connections are totally pre-engineered and interface-compatible with existing EIA RS-170 standards.

For more on Valtec's complete product line, contact Valtec Corporation, 99 Hartwell Street, West Boylston, Massachusetts 01583, (617) 835-6082.

### Video Aids Features Genlock Sync Generator

Video Aids Corporation of Colorado featured its model 5000 NTSC color genlock sync generator at the Las Vegas convention. The unit's color burst is held to plus and minus 5 Hz to a long term duration of 180 days, while short term is less than one hertz per second change with internal xtal. The unit meets all NTSC/RS 170 specifications. The MOS/LSI technology improves reliability by drastically reducing parts. All output pulse widths are digitally controlled to eliminate drift from temperature and aging. There are three modes of operation: the automatic position genlocks with NTSC stability, or when external composite video is absent, the unit will automati-

cally return to internal mode; the helical position provides a wide range of lock for video inputs of low stability, such as helical recorders; and the internal position provides an internal reference of NTSC stability.

Additional products displayed by Video Aids included its electro optical isolators, which convert standard Sony Trinitron™ color receivers into a high quality color monitor and/or demodulator while still retaining the receiver function. Also on display was Video Aids' Party Line system. An intercom amplifier for audio intercommunication between any points needing two-way headphone-microphone type interconnect.

For additional details, contact Video Aids Corporation of Colorado, 325 East 7th Street, Loveland, Colorado 80537, (303) 667-3301.

### Tapes from The Video Tape Company

Products offered by The Video Tape Company include one-half-inch VTC reel-to-reel tapes, in 5- $\frac{1}{8}$ -inch and 7-inch reel sizes; one-half-inch VHS cassettes, available with recording times of 30/60, 60/120 and 120/240 minutes; one-half-inch Beta cassettes, with recording times of 30/60, 60/120 and 90/180 minutes;  $\frac{3}{4}$ -inch U cassettes, with either 30 or 60 minute recording times; one-inch super highband video tapes,

in either A- or B-wind with recording times of 34, 66 and 96 minutes; and The Video Tape Company's own VTC UCA  $\frac{3}{4}$ -inch videocassettes, with seven available recording times from five to 60 minutes; plus the VTC UCS mini  $\frac{3}{4}$ -inch U videocassettes, with ten and 20 minute recording times. The VTC 1000 master broadcast video tape is available with four recording times.

For more information, contact The Video Tape Company, 10545 Burbank Blvd., N. Hollywood, California 91602, (213) 985-1666.

## Cadco Previews NOAA Weather Converter

Cadco, Inc.'s exhibit displayed an array of products including UHF and VHF antennas, preamplifiers, processors, FM equalizer Yagi antennas, weather monitors, civil emergency alerting system and line extenders.

Of special interest was Cadco's new NOAA weather converter. This device has a low noise figure, and is crystal controlled, receiver tuned to accept the NOAA continuous weather cast broadcast of 162.400 MHz, 162.475 MHz or 162.550 MHz. Gain control is  $\pm 15$  dB and conversion gain is 40-45 dB. Input and output impedance is 75 ohms, and the power is 115 V AC  $\pm 15$  V AC.

For more data, contact Cadco, Inc., 2706 National Circle, Garland, Texas, (214) 271-3651.

## Carlton Features Porta Mole

Carlton International Manufacturing Corporation presented its highly reliable Porta Mole underground boring system. This device can bore a 2-1/4-inch hole under a double driveway (16-18 feet) in 40 seconds and can ream up to six inches (or more with special reamers). Porta Mole operates at ground level, has an amazingly fast set up time, and is light weight.

For more on Porta Mole, call or write Carlton International Manufacturing Corporation, 1509 Central Park Drive, Hurst, Texas 76053, (817) 284-5144.

## Ditch Witch Offers Three Trenchers

Ditch Witch offers two compact C trench models, C77 and C99 (34-1/2 inches wide and 91 inches long) that work in areas too confined for larger machines, yet with the designed strength capability to perform along with larger units. High flotation, bar lug tires provide the flotation and traction to work on lawns or unimproved terrain. A standard 20,000-pound test digging chain parallels those used on many larger trenchers. These models are fully propelled at a comfortable walking speed, and a choice of a 7 or 9 HP, air-cooled, industrial engine is available.

Ditch Witch also offers its model 2200, 18 HP class trencher. Quick access covers rapidly expose main-

tenance points on the device.

For more information, write to the Ditch Witch Division of The Charles Machine Works, Inc., P.O. Box 66, Perry, Oklahoma 73077.

## "Flexis" Receive MSI Emphasis

MSI Television's exhibit emphasized its Flexi-Kim and Flexicaster systems. The Flexi-Kim is a keyboard interface module set that uses printed circuit cards, designed to plug into all standard MSI character generators and provide 112 lines of memory together with outstanding display flexibility. The system enables the operator to tailor alphanumeric presentations on a line-by-line or page-by-page basis from the keyboard fit to individual requirements.

The Flexicaster, MSI's latest version of microcomputer memory controllers, is used in applications requiring more memory than 112 lines provided by Flexi-Kim and for more sophisticated

control situations such as news-splitting, Data Guide applications and non-duplication switching control. The unit can be used equally well as a stand-alone single channel memory addition or to provide data and control for up to eight separate character generator channels. The Flexicaster works directly with Flexi-Kim to provide additional memory capability and program versatility to Flexi-Kim channels.



For further information, contact MSI Television, 4788 South State Street, Salt Lake City, Utah 84107, (801) 262-8475.

## Protective Devices from T.R. Pitts

Two featured products on display at the T.R. Pitts Company exhibit were the Zerust vapor capsules from Northern Instruments Corporation and the Pultech low profile pedestals.

The Zerust vapor capsules, especially designed to protect electronics, are inexpensive protection devices which simply mount in the line equipment. The unit comes with a self-stick strip for mounting ease and works by vapor release to get into the total area

of the equipment, preventing any type of oxidation. The capsules come in two popular sizes, and larger units for storage problems are also available.

The Pultech low profile pedestals are total environment climate control chambers for cable protection. The units are available in seven popular sizes with customized lengths also obtainable. The pedestals utilize rugged fiberglass construction, with large housing chambers.

For additional details, contact T.R. Pitts, P.O. Box 57, Winona, Minnesota 55987, (507) 452-2629.

## UEC Offers Two Aerial Devices

The newest offerings from UEC Manufacturing Company include the Skyjacker™ and Skyvan aerial lifts. The Skyjacker™, when operated by one man, is designed to perform 90 percent of light duty aerial maintenance jobs. It has a working height of 32 feet and standard side reach of 14 feet. The fiberglass basket has a 300 pound capacity and optional hydraulic or electric tool circuits available. The unit mounts on vehicles with 8,600 GVWR chassis or larger, and utilizes a combination electric/hydraulic system powered by batteries that charge

automatically off of the vehicle's alternator.

The Skyvan aerial lift utilizes a bridge-mount main support frame consisting of four relatively small legs—3-1/2 inches by 3-1/2 inches—thus eliminating the center pedestal support and freeing additional cargo space. The unit is equipped for a 33-foot working height with a side reach of 19 feet, 6 inches, mountable on a 8,500 GVWR van.

For more input on the Skyvan or Skyjacker, contact UEC Manufacturing Company, P.O. Box 18879, Oklahoma City, Oklahoma, 73154, (405) 528-3479.

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- LOCAL OR REMOTE TUNING CAPABILITY
- COMPLETE RF TO VIDEO AND PROGRAM AUDIO IN ONE UNIT
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- THRESHOLD AT 8 DB C/N
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# Carter Attends NCTA Convention — Via Satellite

By Toni Barnett, Managing Editor

On Wednesday, May 23rd, the CATV industry demonstrated another technological "first." President Carter spoke to National Cable Television Association delegates in Las Vegas, Nevada, via a two-way satellite teleconference. At the end of Carter's address, the convention delegates asked the President questions in a two-way question and answer session. Additionally, the two-way conference was delivered to cable systems, via the RCA Satcom I, that retransmitted the conference to approximately 13 million cable homes via some 1,500 earth stations.

Tom Dowden had the original idea of doing a two-way feed with the President. However, it was the NCTA who initiated the invitation.



Doug Dittrick and Bob Schmidt during the two-way transmission with President Carter.

Robert Luff, NCTA's vice president of engineering was told by NCTA executive vice president Tom Wheeler,

two weeks prior to "D-Day," that the President had been invited to the con-  
(Cont'd on page 69)



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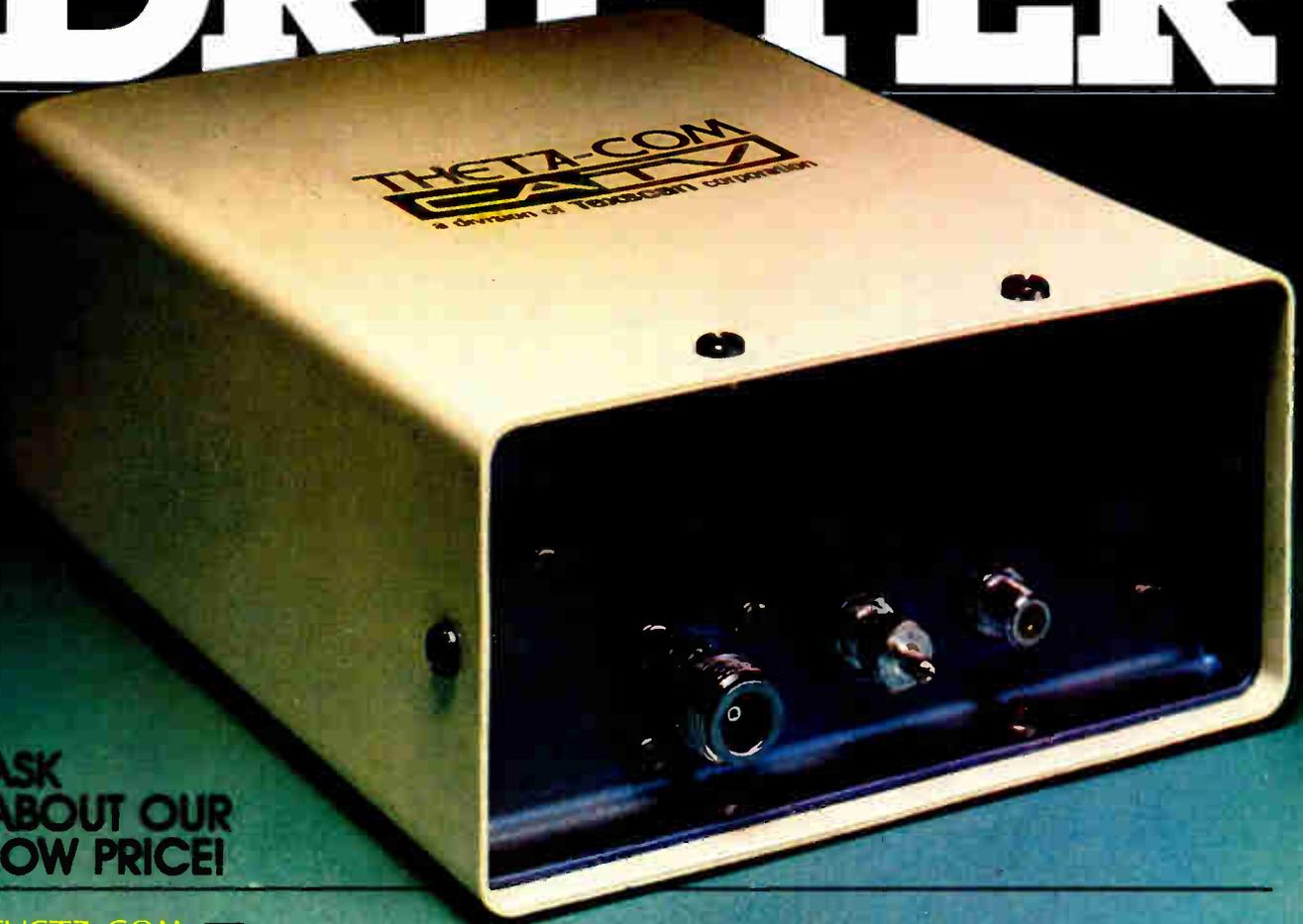
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(Cont'd from page 63)

vention. Since he couldn't come in person, NCTA offered the possibility of a live video transmission. Luff was also told that he was the person selected by NCTA to put this project together.

"Nobody told me to use satellites," Luff told *C-ED*. "I could have gone AT&T. In fact, that method was a very clear front-runner. It would cost NCTA less money to do the project in-house," emphasized Luff, "than pay AT&T rates. So, I made the decision to go satellites."

The session originated from the Map Room of the White House and a meeting room at the convention center.

Production and transmission of the President's address and the question-and-answer session from Las Vegas were handled totally by cable television industry firms.

Western Tele-Communications, Inc. of Denver, Colorado provided its transportable satellite station [see cover] to uplink the television signal of the President from the White House, to the convention delegates, and also to Home Box Office in New York City. WTCL's five-meter portable earth station was placed on the south lawn of

the White House.

Scientific-Atlanta, Atlanta, Georgia, operated transmission facilities at the Las Vegas Convention Center, receiv-

ing the west-bound signal from Satcom I's transponder 20. The company provided its transportable satellite station to uplink the television signal of

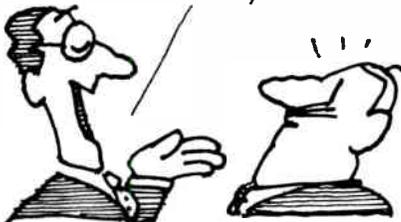


Ted Turner volunteered to transmit the composite feed to the Atlanta market.

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the President from the White House, to the convention delegates in Las Vegas, and also to HBO in New York City.

President Carter viewed the convention floor proceedings, produced by Cox Cable Communications' Mission Cable TV, in San Diego, California,

on an east-bound signal transmitted by Scientific-Atlanta's earth station. It was Cox' recommendation, with Luff's approval, that they hire John Long, formerly with Mission Cable. Long has started Sunset Productions, his own independent production company. He

was really the person on-the-scene in charge of video transmission. Commented Luff, "He's the person I depended on 100 percent for pulling it together out there."

Long stated, "Even with the formidable logistics involved in accomplishing this technical feat, the entire conference went beautifully and significantly demonstrated the impact and flexibility of point-to-point television communications by satellite."

In addition to the point-to-point two-way video conference between Las Vegas and the White House, the video feed was carried nationally on a simultaneous basis by HBO, Showtime, the Christian Broadcasting Network and WTCG in Atlanta.

The uplink at the White House was to transponder 20 and the Las Vegas uplink was to transponder 22, both on Satcom I. Frequency coordination on the White House grounds for the transportable uplink was tight. This was because frequency coordination cleared for uplinking to transponder 20, but receiving on transponders 22 and 24, required blockage from trees and buildings on the White House grounds.



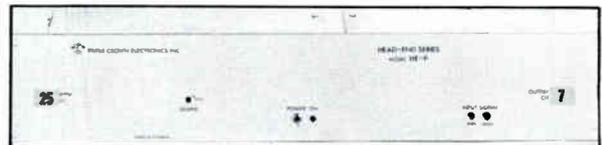
Sunset Productions helped produce the convention floor proceedings.

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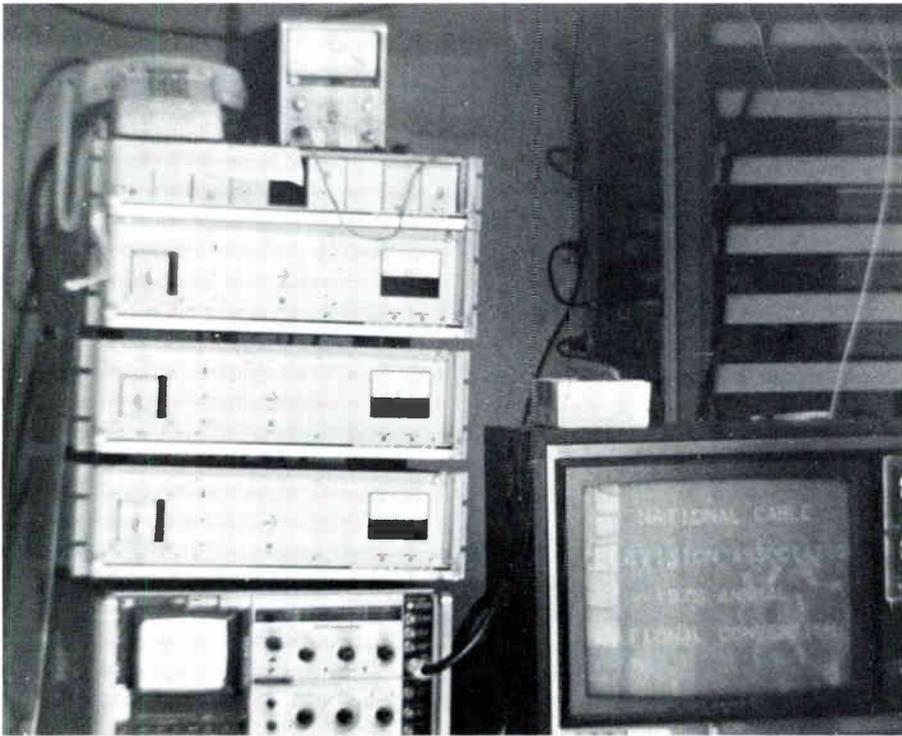


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Monitoring equipment inside of Scientific-Atlanta's van, located next to S-A's transportable satellite station.

WTCI's transportable uplink arrived on the White House grounds Monday morning, May 21. Set-up required only

a few hours and a transmission test with Las Vegas was successfully run that afternoon.

RCA's Vernon Valley, New York facility picked up both signals from Washington, D.C. and Las Vegas, and transmitted them to HBO Productions in New York City. There, the two signals were switched and mixed into a composite program to be distributed to cable television subscribers nationwide. The composite signal was fed back to the Vernon Valley facility for transmission to Satcom 1's transponder 24.

Luff stressed, "Sid Topol of Scientific-Atlanta and Tom Dowden were prime examples of companies that made a substantial commitment to make this thing go. It was not a trivial effort on their part." Luff added, "WTCI also made a substantial contribution, as did HBO. There were a number of other entities involved — Ted Turner himself. He actually volunteered to take the composite feed and transmit it live to the Atlanta market." That feed was picked up automatically by Turner's normal satellite distribution arrangement and simulcast on the channel 17 satellite feed. In addition, PTL, CBN, Showtime and Modern Cable Programming also transmitted the conference.

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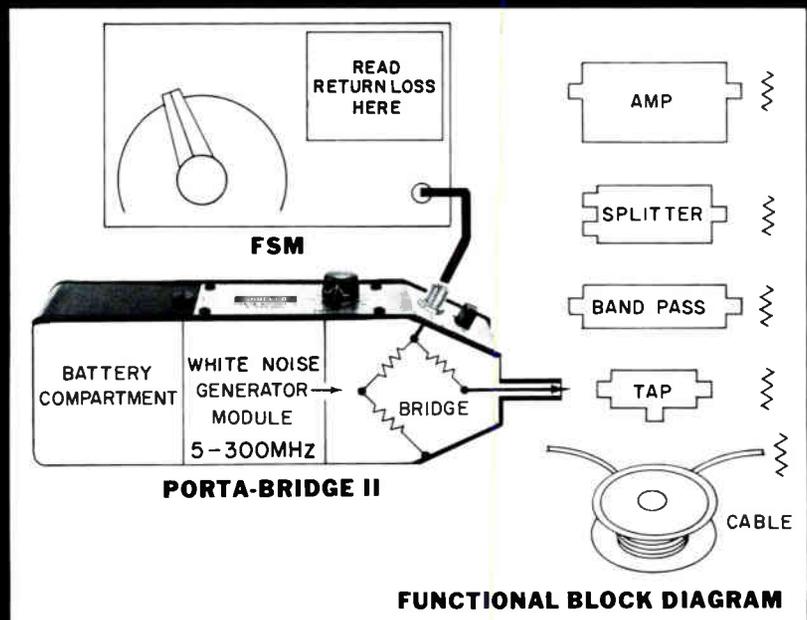
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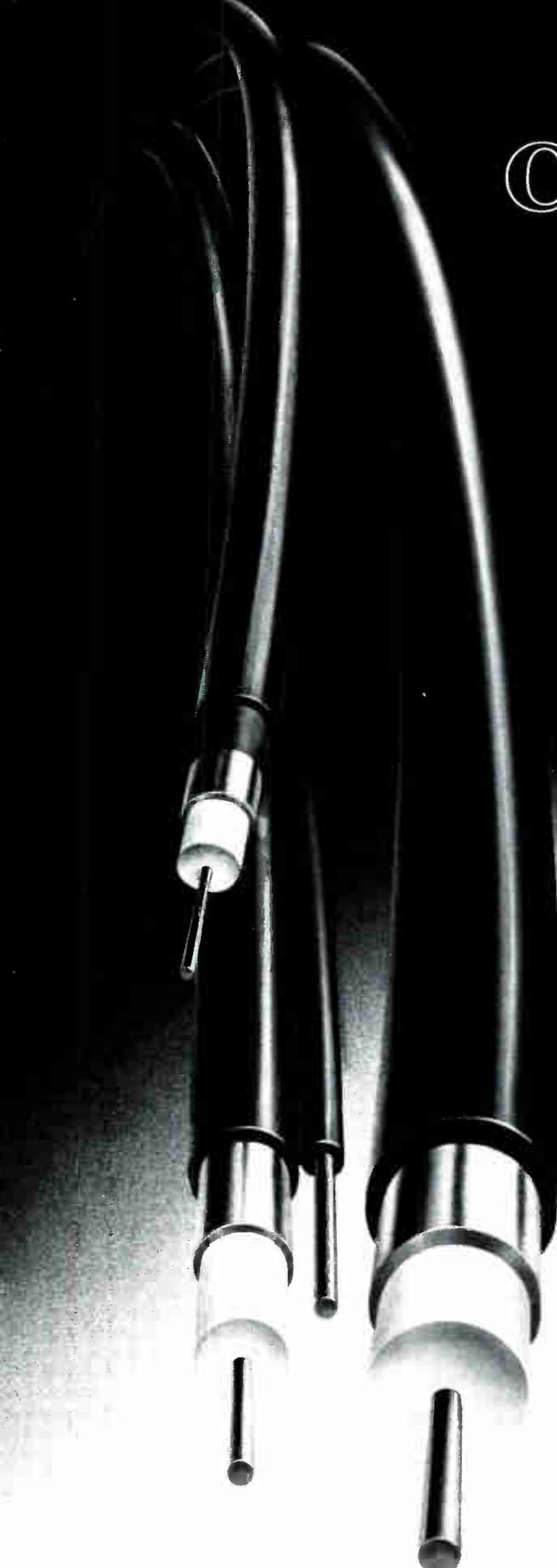


# Cable Programming for August

Signal	Day	Start/Stop	Alert Times	Satellite/ Transponders	Signal	Day	Start/Stop	Alert Times	Satellite/ Transponders
<b>C-SPAN</b> (times approx.)		12 pm-6 (6:30) pm (Mon., Tues., & Fri.) 10 am-6:30 (7:30) pm (Wed. & Thurs.)	No	F1, #9	<b>MSG Sports</b>		Schedule unavailable at press time.	No	F1, #9
<b>Callope</b>		6:30 pm-7:30 pm (Mon., Tues., & Thurs.)	No	F1, #9	<b>Modern Cable Programs</b>		12 pm-5 pm (weekdays) 7 am-12 pm (weekends)	No	F1, #22
<b>CBN</b>		24 hrs.	No	F1, #8	<b>Newstime</b>		24 hrs.	No (tones only for local adv.)	F1, #6
<b>Fanfare</b>		Schedule unavailable at press time.	No	F1, #16	<b>Nickelodeon</b>		10 am-11 pm (weekdays) 9 am-11 pm (weekends)	No	F1, #11
<b>Front Row</b>		2:30 pm-2:30 am		E,C F1, #12 P,M F1, #10	<b>PTL</b>		24 hrs.	No	F1, #2
<b>HBO (East)</b>	1	6 pm-1:02 am	Before & after programming & promos.	F1, #24	<b>Reuters</b>		Not in use yet.	No	will use F1, #18
<b>(West)</b>	2	5:30 pm-2:49 am		F1, #22	<b>SPN</b>		7 am-10 am (everyday) 7 am-8 pm (Mon.-Sat.) 7 am-11 pm (Sunday)	Yes	F1, #1 F1, #21 F1, #21
<b>(TAKE-2)</b>	3	6 pm-1:24 am		F1, #23	<b>Showtime</b>		Schedule unavailable at press time.	1 minute before and after programming.	F1, #12
<b>(Back-up)</b>	4	3:30 pm-1:45 am		F1, #20	<b>SIN</b>		2:30 pm-1 am (weekdays) 4 pm-12 am (Sat.) 11 am-11:15 pm (Sun.)	No	Westar II, #7
	5	2:30 pm-12:59 am			<b>Star Channel</b>		9:30 am-2:20 am		F1, #5
	6	6:30 pm-1:27 am			<b>Trinity (KTBN)</b>		24 hrs.	No	F1, #14
	7	6 pm-2:44 am			<b>WGN</b>		5:42 am-3 (3:30) am (Mon.-Thurs.) 24 hrs. Sat. & Sun. Ends 3 am on Sun.	No	F1, #3
	8	5 pm-2:04 am			<b>WOR</b>		6:30 am-1:30 am		F1, #17
	9	6:30 pm-1:57 am			<b>WTCG</b>		24 hrs.	No	F1, #6
	10	5:30 pm-2:34 am							
	11	3:30 pm-2:32 am							
	12	3 pm-1:28 am							
	13	5:30 pm-1:18 am							
	14	6 pm-1:30 am							
	15	6 pm-1:17 am							
	16	6 pm-12:58 am							
	17	5 pm-2:02 am							
	18	2 pm-2:27 am							
	19	3 pm-2 am							
	20	6 pm-1:58 am							
	21	5:30 pm-12:48 am							
	22	5 pm-1:29 am							
	23	6 pm-2:28 am							
	24	5:30 pm-1:19 am							
	25	2:30 pm-2:30 am							
	26	3:30 pm-1:32 am							
	27	5:30 pm-1 am							
	28	6 pm-1:05 am							
	29	5:30 pm-12:53 am							
	30	6:30 pm-1:34 am							
	31	5 pm-3:19 am							
<b>HTN</b>		8 pm-10 (11) pm	No	F1, #21					
<b>KPIX (time permitting)</b>		2-4 hrs. per day	No	F1, #1					
<b>KTVU</b>		7 am-1 am (weekdays) 7 am-4 am (weekends)	No	F1, #1					

E = eastern  
C = central  
M = mountain  
P = pacific

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



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These positions are immediately available in Lower Delaware and on the Eastern Shore of Maryland. Apply to:

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Attn: J. A. DiBacco  
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### CHIEF TECHNICIAN— ENGINEER

Immediate openings available in Lawrence, Kansas and Fort Collins, Colorado. FCC license desirable but not mandatory. Qualified applicants should have solid technical experience in cable and proven supervisory ability. We offer growth potential and attractive compensation and benefits package. Call (913) 841-2100 or send resume to:

John Dennis  
644 New Hampshire Street  
Lawrence, KS 66044

### OPERATIONS MANAGER

To manage a 400 mile 17,500 subscriber system and 32 man crew in a tropical paradise. Real opportunity for a technical manager ready to advance to decision making management. Top pay, contract for 2 or more years if desired. Write:

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### CHIEF TECHNICIAN— MANAGER

Chief technician-manager needed for 60 mile system in El Dorado, Kansas, starting construction in mid-June. Duties include supervision and training of all personnel and supervision of plant construction and maintenance. After construction is completed assume full management responsibilities of system. Salary commensurate with experience. Call (913) 841-2100 or send resume to:

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- Microwave/AML.
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- TVRO's.

Must also be strong in personnel management with good leadership qualities. Salary commensurate with capabilities and experience. Also included is a liberal benefits package. Contact: Roger D. Pience  
Director of Engineering  
ARTEC  
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Needed: EXPERIENCED technicians.

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**Business Directory**

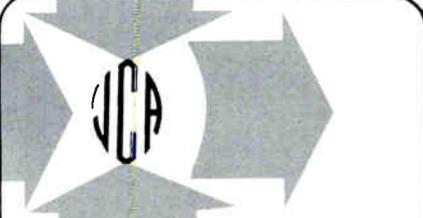
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## New Literature from George-Ingraham, Inc.

A 28-page catalog of underground telephone and utility products which includes all types of fittings, adapters, couplings for PVC, concrete, asbestos cement, fiber, clay tile or wood ducts, both solid and split, is available from George-Ingraham, Inc. Also included is a complete line of duct rods, rodding tools and accessories and cable pulling equipment. Straight sections of fiberglass and all types of PVC duct, as well as bends and sweeps, are cataloged.

For a copy of this catalog, contact George-Ingraham, Inc., P.O. Box 106, Morristown, New Jersey 07960, (201) 267-8934.

## Digital Storage Oscilloscopes Subject of New Gould Bulletin

Two digital storage oscilloscopes, designed for flicker-free and fade-free viewing of long-term events and transients, are described in new literature from Gould. The six-page illustrated bulletin explains the advantage of digital signal storage and provides specifications of two portable dual trace models—the Gould OS4000 and OS4100.

For a free copy of Bulletin 449-5 contact Marketing Services, Gould Inc., Instruments Division, 3631 Perkins Avenue, Cleveland, Ohio 44114, (216) 361-3315.

## New Brochure on Nonmetallic, Non-conducting Tower Guys from Philadelphia Resins

A new brochure from Philadelphia Resins Corporation explains ten major advantages of Phillystran®, nonmetallic, non-conducting tower guys for radio and TV broadcasters and for CATV and other signal-reception applications.

In addition to dielectric integrity—which eliminates the problems of white-noise arcing and electromagnetic interference (EMI)—these new corrosion-resistant tower guys combine high strength, light weight and inherent flexibility for installation ease.

For tower installations where extreme corrosion of steel guys and EMI are especially severe problems, the new Phillystran® guys will eliminate those problems and, on an installed-cost comparison, be very competitive with conventional metal guys.

For a copy of the Phillystran® brochure, contact Philadelphia Resins Corporation, 20 Commerce Drive, Montgomeryville, Pennsylvania 18936, (215) 855-8450.

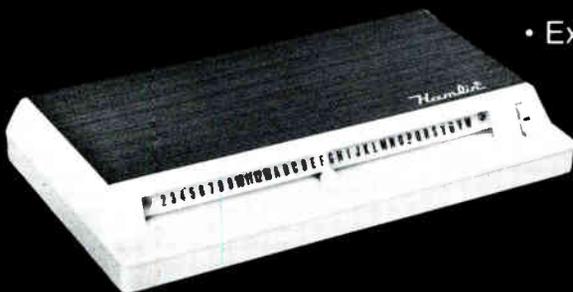


Digital storage oscilloscope bulletin from Gould.



New Phillystran® brochure from Philadelphia Resins.

# The MCC-3000 Convertor: 35 Trouble-Free Channels



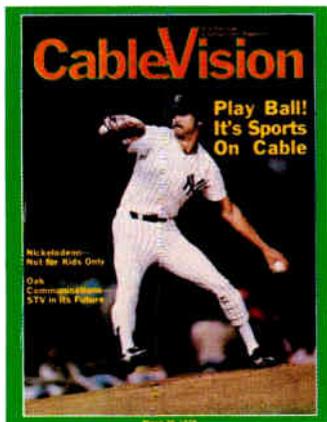
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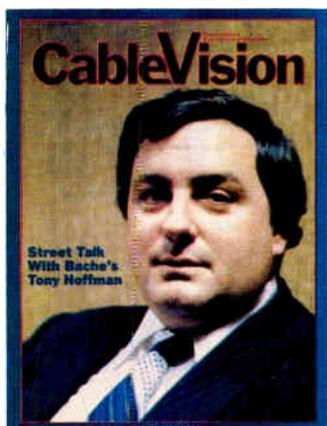
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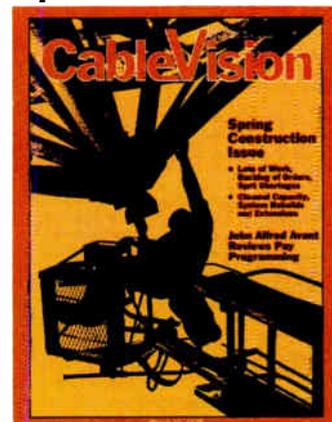
How cable television performs in the market each week.

## Marketing

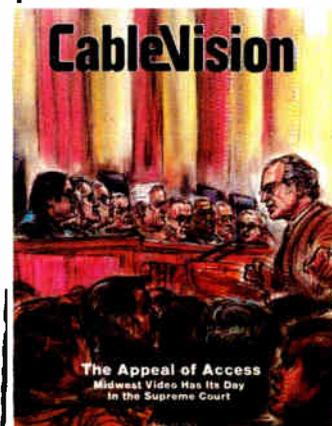
Latest reports on the marketing of industry goods and services.

## Features

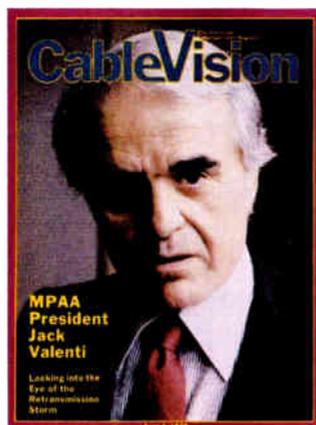
Each edition contains at least one major feature story about current issues that make this business tick.



Building cable systems has never had a bigger boom. How and why in this issue.



Cable chalks up another legal victory. But many cable operators are still turned on to access programming.



Jack Valenti talks about 1976 copyright agreement: retransmission consent and the relationship between cable and the Motion Picture Assoc. of America.

**See our Subscription cards on page 14.**

★ **James P. Duffy** has been named national sales manager for **Magnavox CATV Systems**, announced Allen J. Lipp, general sales manager. Duffy most recently served Magnavox as manager-systems design. He came to Magnavox last year after serving with Jerrold Electronics Corporation for ten years as a supervisor in CATV systems design and applications engineering. In his new position, he will direct the national activities of Magnavox field sales personnel, based in or near Atlanta, Dallas, Philadelphia, Providence, Denver, Los Angeles, San Francisco, Seattle, Chicago, Kansas City, and Syracuse.



*James P. Duffy*

★ **Richard N. Lawrence** has been named general manager of **Lenco, Inc., Electronics Division**, announced Lenco President Andrew E. Perrin. In his new position, Lawrence will be responsible for all activities of the division, which is a primary manufacturer of video terminal and test



*Richard N. Lawrence*

equipment. Lawrence joined Lenco in August 1975 as sales manager, and was instrumental in establishing the company's regional sales and distribution organization.

★ **SOAR Corporation**, Ronkonkoma, New York, has honored two of its sales representatives for their outstanding service during 1978. **McLaughlin Marketing, Inc.**, Edmonds, Washington, and **K & M Sales Company**, Shawnee Mission, Kansas, were cited by Steven Cohen, president of SOAR, for exceeding their sales goals in 1978 for the entire line of SOAR's portable and bench-type multimeters. Cohen also indicated that both of these firms will be handling SOAR's new line of frequency counters and clamp-on ammeters.

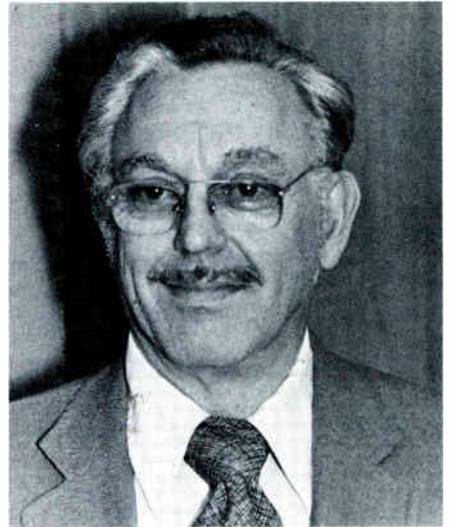
★ **Elizabeth Sauter** has been named sales administrator—professional products, of **Sharp Electronics Corporation**. In her new position, Sauter will report directly to Robert Garbutt, manager of professional products and will be responsible for sales administration for both professional video and audio visual products. Sauter has been with the professional products department for two years. Before working at Sharp Electronics, she held the position of office manager for an area manufacturer.



*Elizabeth Sauter*

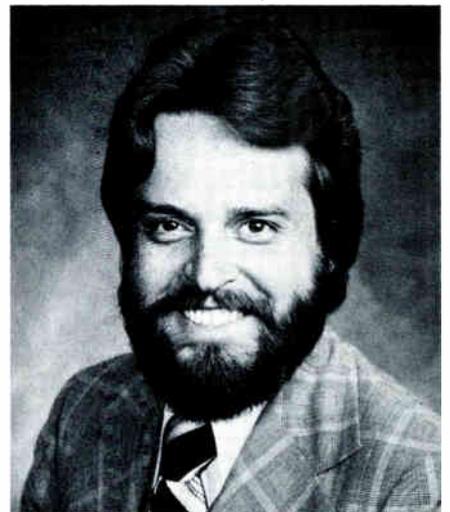
★ **Philip J. Thomas**, former chief design engineer for Circuit Assembly Corporation, Costa Mesa, California, has been named product design specialist for rectangular connectors at **ITT Cannon Electric**, Santa Ana, California. Thomas has held engineering management assignments with Rock-

well International, Microelectronics Division; Hughes Connecting Devices; and Connecticut Telephone and Electric Company.



*Philip J. Thomas*

★ **Gregory Morris** has been appointed national sales engineer for **Radiometer Electronics'** complete line of audio, communication and component test equipment. Morris will be responsible for regional representatives and national account sales throughout the United States with special emphasis on Radiometer Electronics' testing systems for high quality stereo equipment. Prior to joining Radiometer Electronics in 1978, Mr. Morris developed an extensive background in marketing and technical services with Hickok Electrical Instrument Company and Gould, Inc., Instrument Systems Division.



*Gregory Morris*

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