



OCTOBER 1965

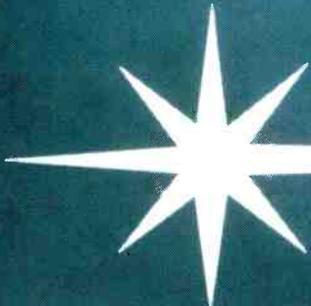
Al Bandy KOP IV 087  
1962 S. Stearns Dr.  
Los Angeles, Calif.

# TV & Communications



**SELL IT TODAY!  
ENVELOPE DELAY IN CATV  
NEWS IN YOUR BACKYARD**

New way to go first-class, with  
 minimum investment... maximum return



**NEW**  
**JERROLD Starline™**  
**UNITIZED CATV EQUIPMENT**

It's *installed* cost that counts. Think of your savings in installation and pole makeready when all the equipment for a complete distribution station is contained in one compact, unitized radiation-proof housing.

That's what you get with new Jerrold *Starline* solid-state equipment. Aside from its superior performance and unparalleled cascading, there's a solid dollars-and-cents reason for going *Starline* now. Every new *Starline* unit is complete and ready to mount when it's delivered.

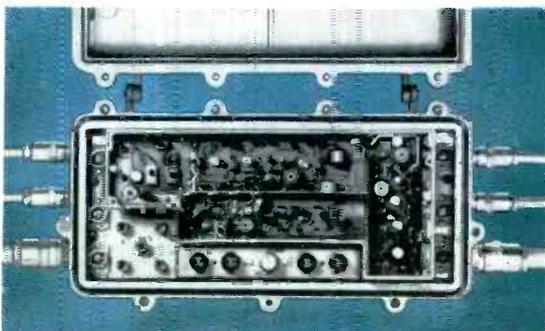
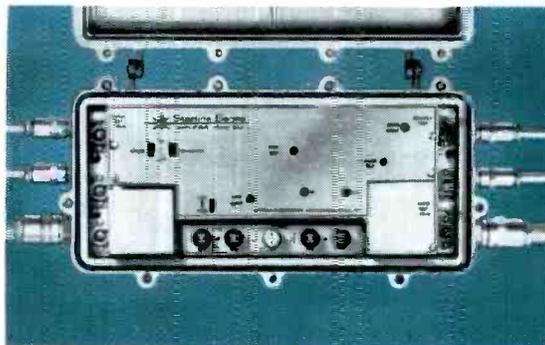
For example, the *Starline* SA-1 contains a super-cascadable mainline amplifier, a bridging amplifier, and an AGC unit—all sealed in a 16-inch weather-proof, dustproof, radiation-proof cast aluminum housing for mounting on messenger, pole, or crossarm. Or take the SA-5, which contains just an intermediate bridging amplifier. In the *Starline* Series there's a complete unit for each of your distribution-station requirements—

no separate housings, no individual mounting problems.

Add to this simplicity and installation economy the CATV industry's most advanced electronic performance specifications—and you have, in the new *Starline* Series, CATV's finest equipment achievement. You can cascade

more than fifty *Starline* main-trunk amplifiers, even in a 12-channel system! And full-wave rectification permits the *Starline* power supply to feed more amplifiers, more smoothly, than ever before.

Gear up for increasing subscriber demand in the Golden Age of CATV. Talk with the man from Jerrold *now*, or write for complete information on the new *Starline* Series.

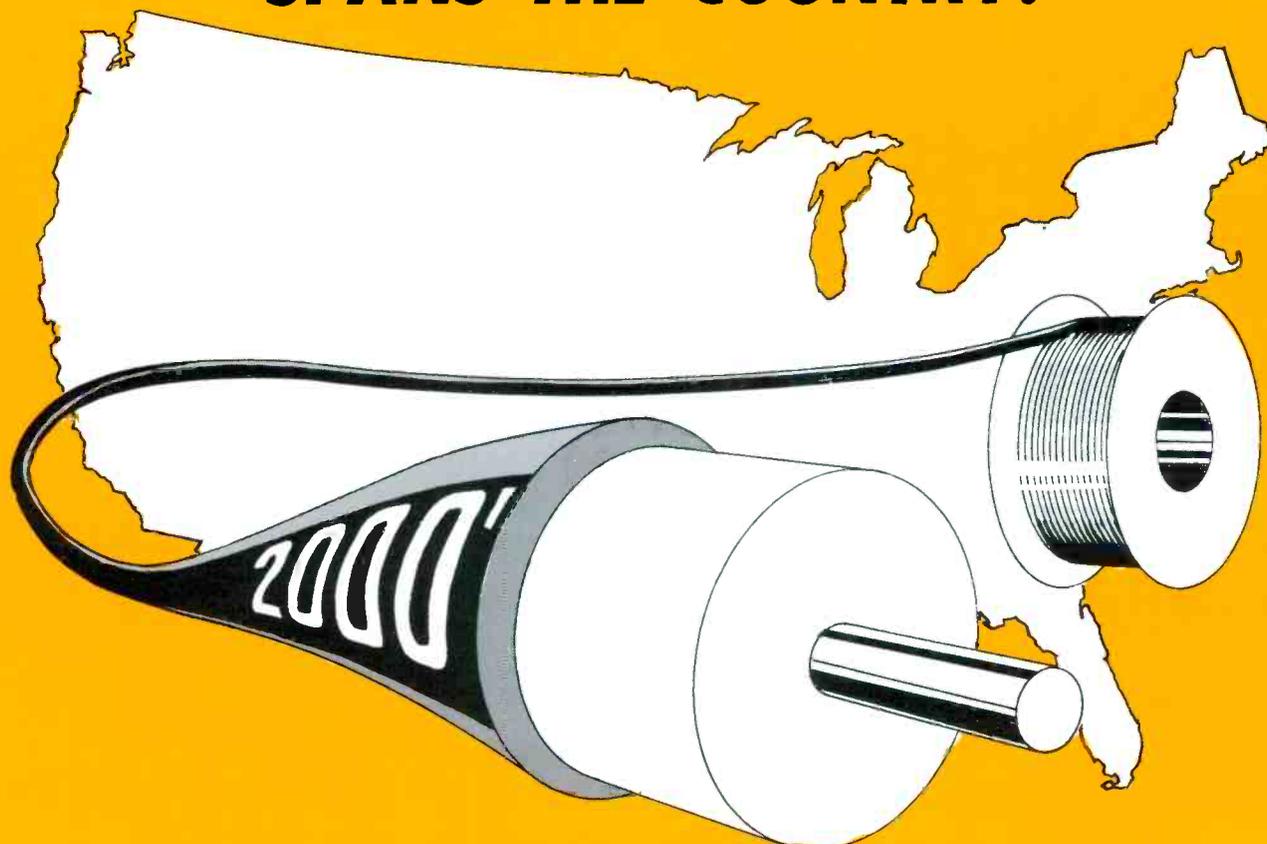


Patent pending  
 CATV Systems  
 Division  
**JERROLD**  
 ELECTRONICS  
 CORPORATION

15th & Lehigh Ave., Phila., Pa. 19132  
**FIRST IN CATV**

The nation's largest, most experienced manufacturer-supplier of CATV equipment and services.

# VIKING SOLID SHEATH ALUMINUM SPANS THE COUNTRY!



**Now in 1/2 Mile Reels . . . One Continuous Length of Solid Seamless Aluminum Perfection. Every Inch Quality Controlled!**

This extra length is available on all our solid seamless aluminum cable:  
Regular or with polyethylene jacket

- In Stock
- Available in All Sizes
- .412" O.D. and .500" O.D. Also available with Integrated messenger.

Think ONCE! Think RIGHT! Think VIKING!

#### WHY THIS EXTRA LENGTH?

- To save you at least 10% in installation.
- To save you in labor costs.
- To minimize connectors and splices and maintenance problems.
- To increase your profits by upgrading your system and your planned potential.
- For the finest electrical performance.

**Note: Super Matched—Full 1" Conductor Engagement — Connectors Available for all size cables.**

**viking**



*Manufacturers of Quality Coaxial Cables and Television System Products*

830 Monroe Street, Hoboken, New Jersey ■ Call Collect: New York: (212) WH 3-5793, Hoboken: (201) OL 6-2020

# ON THE MOVE...

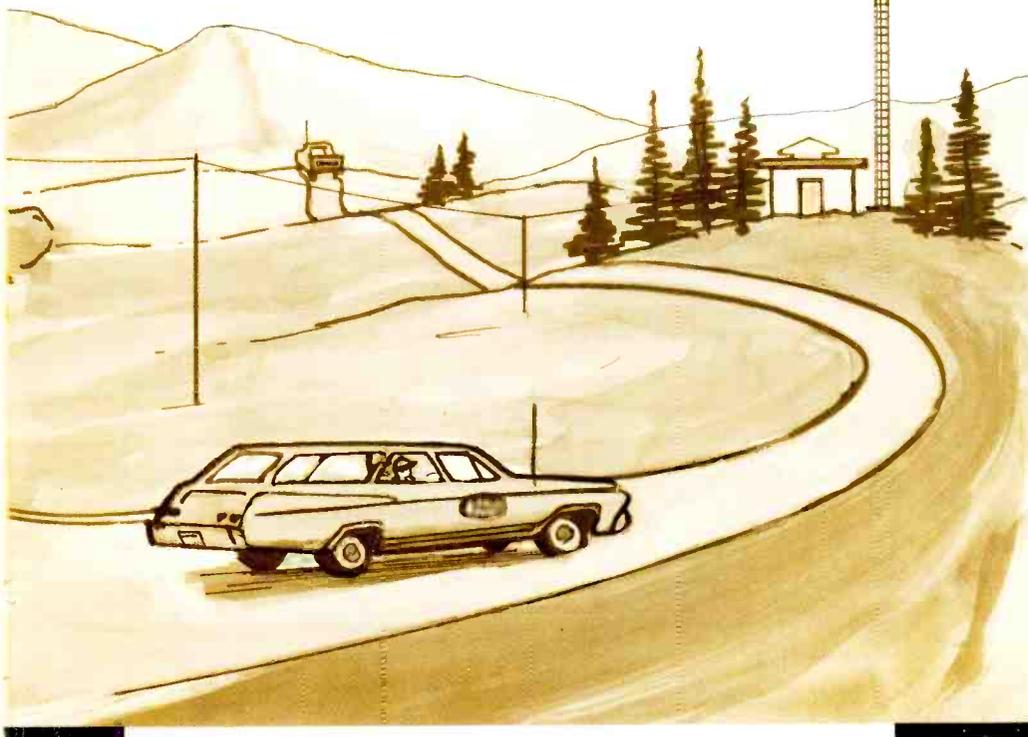


DAVCO ELECTRONICS CORPORATION ■ P. O. BOX 861 ■ BATESVILLE, ARKANSAS ■ (501) 743-3816

# WITH THE FINEST CATV EQUIPMENT AND TURN-KEY CONSTRUCTION SERVICES

For more than a decade, CATV operators have relied upon Davco Electronics for expert engineering services and equipment supply. Ideally located to efficiently serve the booming cable television operations of Mid - America, Davco has literally pioneered in several essential products and services. The Functional Design Head-end and MC - 1100 Music Channel are just two of the outstanding Davco developments. Perhaps just as important over the years has been Davco's famous high-speed service. Same day shipment is a reality — not just a promise — at Davco Electronics. And in many cases Jim Davidson personally delivers equipment by air in the firm's modern business aircraft.

When you want extra prompt attention to your needs — whether it's a single item or a complete turn-key construction job — call the "CATV Supermarket," Davco Electronics.



## DAVCO ELECTRONICS

### IN THIS ISSUE . . .

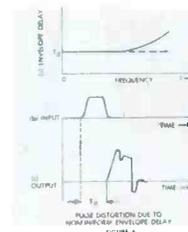
#### CATV NEWS OPPORTUNITIES

**FREE OFFER TO NEW CABLE TV SUBSCRIBERS**

A PHONE CALL NOW BRINGS YOU A 2 WEEK FREE HOME TRIAL AT NO OBLIGATION!

Cable operators have many opportunities to publicize their systems. Author Leonard Gregory presents the how, why and when of submitting news stories to local newspapers. He also proposes several workable ideas that can be used by system operators in large and small towns. For his suggestions on how to get more publicity for your system, turn to page 32.

#### ENVELOPE DELAY



An encompassing article on one of the most disturbing problems of long-line CATV cascades. The article defines envelope delay, discusses its effects on both color and black and white reception pictures, analyzes the sources of envelope delay in CATV transmission systems and explains measurement techniques. "Envelope Delay In CATV Systems" appears on page 44 in the "CATV Technician."

#### OUR COVER



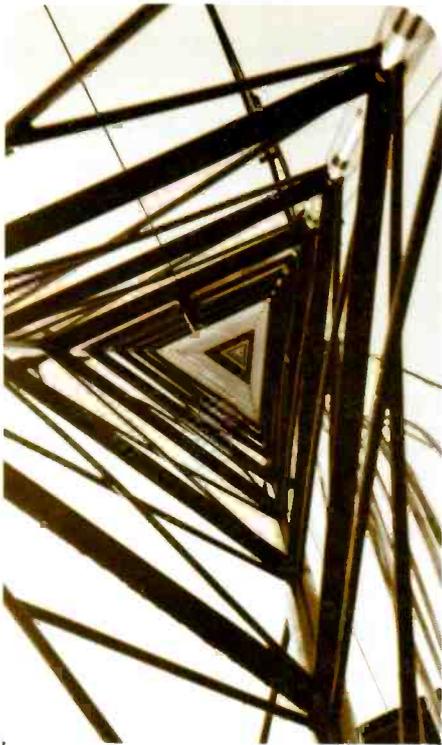
The photo for our cover this month was supplied by Viking Industries. The young lady shown is one of the operators on Viking's Community Antenna Television transistorized amplifier assembly line. Viking's huge plant is located in Hoboken, New Jersey and manufactures solid state amplifiers as well as CATV solid sheath aluminum cable.

Stanley M. Searle, Patrick T. Pogue PUBLISHERS

#### STAFF

- Stanley M. Searle • Editor
- Sherrill D. Dunn • Managing Editor
- Charles Wigutow • Contributing Editor
- R. L. Cowart • Contributing Editor
- Robert A. Searle • Associate Editor
- Jean Schaefer • Art Director
- Virginia Osgood • Artist
- Patrick T. Pogue • Business Manager
- Harry Lando • Washington Bureau
- Phil Cook • Advertising Sales
- Lee Potteet • Advertising Sales
- Sharon Wilkey • Circulation Manager

BPA MEMBERSHIP APPLIED FOR



## ONLY THE BEST IS GOOD ENOUGH

You can always count on first class treatment when you deal with Video Towers. In addition to the finest engineering, manufacture and installation available, you will receive the utmost in genuine personal attention. As our customer, your complete satisfaction is our primary goal, and our performance will prove it.

Every order comes under the careful supervision of Ed Moyer, a thirty-year veteran of the tower fabrication business. Your tower is engineered to meet the specific requirements of your system, then fabricated on precision jigs built by our parent firm, Aeroaffiliates.

Backed by the largest and best-equipped tower manufacturing facility in the industry, Video Towers offers you a complete choice of system financing and leasing programs tailored to the individual requirements of your CATV operation.

Regardless of your needs or problems (we specialize in the tough ones!) call upon the industry's best qualified, fully experienced tower manufacturer. Place a collect call today to Video Towers—where the finest costs no more!

CALL OR WRITE TODAY!

# VIDEO TOWERS

INC

P. O. BOX 4086 — FT. WORTH, TEXAS  
(817) CE 2-1220 — Dallas Office (214) AN 4-1112



OCTOBER 1965  
Volume 2, Number 10

# TV & COMMUNICATIONS

THE PROFESSIONAL JOURNAL OF THE CABLE TELEVISION INDUSTRY

Published by Communications Publishing Corporation, P. O. Box 63992, Oklahoma City, Okla. 73106

## TABLE OF CONTENTS

<b>You'd Better Sell It Today</b> Robert H. Berger, National Trans-Video .....	23
<b>Analysis: FCC Rules</b> Grover C. Cooper .....	30
<b>News In Your Own Backyard</b> Leonard Gregory, American Cable Television .....	32
<b>Home VTR</b> New Concept In Television Recording .....	34
<b>CATV History &amp; Scope</b> Conclusion: L'Heureux .....	35
<b>CATV = Differential</b> J. E. Davidson, Davco .....	40

## CATV TECHNICIAN SECTION

<b>Envelope Delay In CATV Systems</b> G. Rogeness, Ameco, Inc. ....	44
<b>Automatic Gain Control</b> Irving Kuzminsky, Entron, Inc. ....	49

## SPECIAL ITEMS

CATV Directory Questionnaire .....	41
Statement Of Ownership, Management & Circulation .....	54

## DEPARTMENTS

In This Issue .....	5	Letters To The Editor .....	22
Editorial .....	8	New Product Review .....	51
News Spectrum .....	10	Subscription Card .....	52
Calendar of Events .....	12	Index To Advertisers .....	54
Focus On Progress .....	16	Classified Advertising .....	54



**CIRCULATION:** TV & Communications is circulated through United States and foreign mails on the tenth day of each month, to individuals and firms dealing in products and services for closed circuit and community antenna television, television broadcast, and microwave. A detailed circulation breakdown is available upon request. **SUBSCRIPTIONS:** TV & Communications subscription rate in the North American continent is \$5.00 per year for surface mail. Subscriptions outside continental North America are \$7.00 per year, remittances to be made by bank money order or check, negotiable in United States banks. TV & Communications is published 12 times per year. **ADVERTISING:** Commercial display advertising is accepted from manufacturers and suppliers of electronics equipment and allied services, at the discretion of TV & Communications management. Advertising rate card and circulation breakdown are available upon request. **COPYRIGHT:** Contents of this publication are copyrighted by Communications Publishing Corporation. No material, either written or graphic, may be reproduced without the written permission of the Publishers. **TV & COMMUNICATIONS** (title registered at U.S. Post Office). Second-class postage paid at Oklahoma City, Okla. Subscribers should allow six weeks for change of address. **PUBLISHERS:** Patrick T. Pogue and Stanley M. Searle. **GENERAL OFFICES:** 1839 N.W. 16th, Oklahoma City, Okla. 73106 (405) JA 8-3523

BPA MEMBERSHIP APPLIED FOR



**AMECO INC.** 2949 West Osborn Road • P. O. Box 11326 • Phoenix, Arizona 85017 • Phone (602) 252-6041



**WHO'S ON FIRST?** We at AMECO think we're first in CATV. Some of our friends in the East claim they're first. Other CATV manufacturers assure the industry that they are first in something or other. We really don't care who says they're first in CATV. We do care about our customers. We do care about building the best CATV equipment. We do care about constructing reliable CATV systems that will produce the greatest profits for our customers.

And for what it's worth, here's some AMECO firsts: ■ FIRST with a complete line of solid-state all-band cable television equipment. ■ FIRST with a variety of leasing and financing plans tailored strictly for CATV. ■ FIRST with doorstep delivery from a parts and service warehouse on wheels. ■ FIRST with trained technicians to man these "Salesmobile" trucks that blanket the nation. ■ FIRST with solid state amplifiers in over 60% of the known cable systems. ■ FIRST with a new and better connector standard for all types of popular cable in use today. Well . . . we still say we're first, but better yet we'd like the opportunity to show how we can help you be first in CATV.

**ameco**

OFFICES IN ALL PRINCIPAL CATV AREAS

# Technician Shortage

A group system operator recently told us that "the drive that caused the CATV technician to surmount the early operating problems seems to be gone today." In his systems, the operator indicated, the opportunities are becoming more plentiful while the supply of qualified technicians seems to be dwindling. His consternation is understandable.

Is the technician a vanishing specie? We don't think so. The fact is that for the past two years CATV has been mushrooming much faster than the labor supply available. There are undoubtedly hundreds of highly skilled and experienced technical men building and maintaining the nation's cable systems. The problem, one might say, is the number of systems rather than the number of technicians!

An article appearing in the "CATV Technician" section of our August issue presented an analysis of the technician's role in cable television. Author Bob Cowart noted that the "idea of CATV was fostered by and generated from technically oriented people in the radio and television servicing field...who forged ahead and created their own solutions to the problems..." But when "investment people began to enter the field" the technician was "relegated to a minor role".

One of the reasons for the technical manpower squeeze has been the rapid entry of big investors and broadcasters into community antenna television. The many new large-scale operations have siphoned off valuable men from scores of established systems. In fact, one of the most-heard phrases at every state and regional CATV meeting, is "where can I find a good chief technician?"

CATV, as an industry, needs a definite, clear-cut program for attracting young men of technical inclination to our business. We need to extend an invitation to qualified people in related communications fields to share the challenge of a vital, expanding cable television technology. Specifically, we advocate recruiting engineers and technicians from radio and television broadcasting companies. The two-way communications fields, both wired and radio, represent another source of talented technicians. An industry sponsored program, reaching young men across the country, could advise of the opportunities in wired television. Publicizing the employment opportunities in CATV would step up the inflow of new talent into our industry and, consequently, improve the quality of CATV, speed the expansion of systems, and enhance profits through better cable service.

The only question remaining is, who is to undertake the CATV recruiting project? NCTA seems the logical entity—but perhaps regional associations could effectively participate. One way or another, for the good of the industry, something should be done soon to "beef up" our technical manpower supply. □

## ALL-CATV DIRECTORY

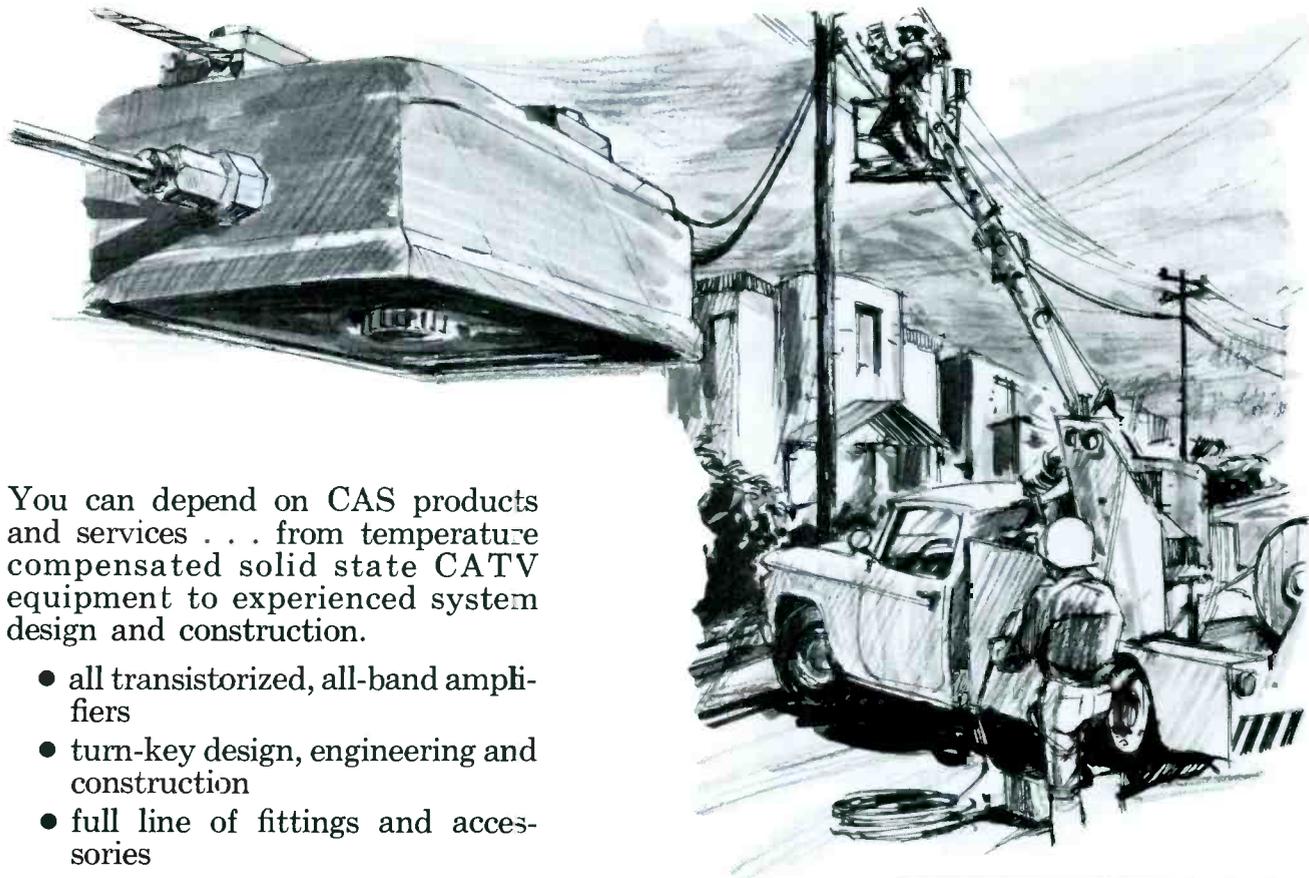
While there are many television "yearbooks", there has never been one devoted exclusively to cable television. This magazine and Cable Television Review are now in the process of compiling information for such a publication.

Our 1966 Annual CATV Directory is a reference manual of all CATV systems, owners, managers and statistics available. It will also contain a comprehensive listing of applicable CATV equipment on the market including both new and old products.

In order to make this book complete and all-encompassing, we need your help. On page 41 of this issue we have included a "CATV System Directory Questionnaire". We urge you to complete the questionnaire as quickly as possible and return it to this magazine (P. O. Box 63992, Oklahoma City, Oklahoma).

*Stan Searle*

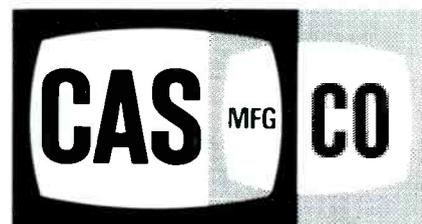
# specify **CAS** for performance-proved **CATV products and services!**



You can depend on CAS products and services . . . from temperature compensated solid state CATV equipment to experienced system design and construction.

- all transistorized, all-band amplifiers
- turn-key design, engineering and construction
- full line of fittings and accessories
- power supplies for transistorized equipment
- live weather instrument packages
- ruggedized antennas
- aluminum and flexible coaxial cable
- TV and FM head-in systems

*Write for CAS  
all-transistorized  
equipment  
brochure!*



P. O. BOX 47066 • DALLAS, TEXAS 75207  
214/BL 3-3661

# News SPECTRUM

## NEW YORK CATV ASSOCIATION DISCUSSES LEGISLATION

### L'HEUREUX GUEST SPEAKER

NCTA counsel Robert L'Heureux speaking at the New York association's annual banquet followed his extensive repertoire of anecdotes with a serious appraisal of the industry's future with respect to copyrights, Federal regulation and phone company tariffs and pole line policy. Mr. L'Heureux predicted moderate Federal regulation through a CATV bill which will be passed next year. He encouraged operators with his opinion that Representative Oren Harris (Democrat, Arkansas) will continue in Congress well into the next session, and perhaps longer. This would assure adequate support for the Harris CATV bill presented this year.

Speaking of efforts to bring about immediate Federal Communication Commission regulation of CATV, L'Heureux stated, "There is no adverse economic impact." Broadcasters have even quit charging economic impact in their pleadings he continued, choosing to claim potential detriment to UHF broadcast operations instead. Of the Federal Communications Commission itself, he declared, "they do not have proof (of economic impact) but they want to regulate," on the basis of presumed adverse effects of CATV upon broadcasting.

"Some very fine agreements with AT&T," L'Heureux said, have been reached through discussions between telephone company officials and the NCTA staff. AT&T policy, he told operators, will apparently be to allow at least one pole attachment contact in every town . . . The phone company in every case will refer prospective cable operators to the city government where franchise authority is claimed by the city. In closing, Mr. L'Heureux told his audience that the CATV business will "win its fight" because "you're a small industry with guts . . . made up of young people, that is people who are young at heart."

New York State Senator James Hastings, (Republican, Olean) speaking to the legal and legislative session of the convention urged operators to work toward improving the CATV industry's image with the state legislature. He

cited TAME, as having done an excellent job lobbying with its use of an ex-assemblyman. He stated that the majority of the Public Service Committee, of which he had been a member knew and cared very little about CATV. Legislators could be interested he continued, because sooner or later CATV would affect most New York citizens. He predicted that another bill placing CATV under Public Utility Commission regulation would be offered during the next session of the legislature. Senator Hastings is an executive of radio WHDL, Times-Herald & Cablevision, Inc. of Olean New York.

### BAGNARDI NEW PRESIDENT

Officers elected by the Association were: President, Al Bagnardi of Oneonta; Video, Oneonta; Vice President Harry Levin of Antennavision, Inc, in Illion; Secretary, Mrs. Dawn Fribley, Corning Community TV; Treasurer, Arthur Heiny, Empire State Cable Co., Inc., Binghamton. Les Reed of Elmira Video, Elmira, and Philip Kenter of Long Island Cablevision, Riverhead, L. I. were elected to the Board of Directors. Continuing as members of the Board will be Larry Flinn, Robert Warner, and Sterling Higley, Immediate Past President.

A special liaison committee to work out problems of mutual concern to the Association and the New York Telephone Co. was set up by the Board of Directors with John McElhenny and Gordon Ray of the telephone company. The Association will be represented by Bill Calsam, Jack Pryor, and Lewis Cohen, association counsel, all of whom are members of the Pole Line Committee. The liaison committee has scheduled its first meeting for next month.

### MANUFACTURERS EXHIBIT

Among the associate members with displays at the Convention, Ameco's hospitality display featured famous caricaturist, Tel Lazar, who drew caricatures of association members and families. Other companies with displays included American Pamcor; Craftsman Electronic Products; Entron, Inc.; Jerrold Electronics Corp; Spencertoid Corp; Rome Wire & Cable; Spencer-Kennedy Labs; Superior Cable

Corp.; Telemation, Inc.; TeleSystems Corp; Times Wire & Cable; TV Digest and Viking Industries. Cable Television Review and TV & Communications were represented by Stan Searle and Phil Cook. Ameco, Inc., Rome/Alcoa and Jerrold also sponsored social hours during the Convention.

### REPLY BRIEFS FILED ON CATV RULES

AMST, International Telemeter, Westinghouse, ABC, and cable operator Fred J. Stevenson were among those filing briefs at deadline time for replies to the FCC's Part I and Paragraph 50, of proposed CATV regulation.

The Association for Maximum Service Telecasters denied network suggestions that AMST proposals for regulating CATV are too rigorous. The Association told the Commission that CBS was in error in indicating that audience extension realized through CATV somewhat counteracts "audience fragmentation" for specific stations. AMST contended that "it thus can scarcely be considered fair competition for CATV to enter the market of a television station and by duplicating that station's own programming, divert its audiences and impair its revenues . . ."

AMST gave both barrels to NBC's suggestion that CATV's gaining permission from program originators or stations would solve the problems. AMST charged that such a solution would allow large metropolitan stations, program distributors and networks to decide whether small market TV stations' audiences would be fragmented.

International Telemeter, Inc., a subsidiary of Paramount Pictures and operator for five years of Pay-TV system in Etobicoke, Canada blasted the FCC's proposals to regulate wired television distribution systems. The firm stated flatly that the FCC has no legitimate basis for assuming authority over CATV or Pay-TV by cable. NAB and the networks, said the firm, assume that the all-important consideration is "the protection of the status quo." Telemeter contended that there is nothing sacrosanct about the existing system of television distribution, but that the public interest requires utilization of all technical capabilities, including CATV, Pay-TV, and even space satellites relaying programs directly from program producers to viewers.

Westinghouse testified that the FCC proposals are satisfactory as they stand, and contended that AMST proposals are too extreme. One exception to

Westinghouse's approval of proposed rules was non-duplication section of which the firm said, "non-duplication creates a heavy burden on any CATV system, and, therefore, should never be imposed absent a finding that it is both necessary and beneficial to the particular station." Switching facilities would be an unnecessary financial burden on CATV, Westinghouse testified, adding that the public interest would not be served by the freeze on new CATV systems, as proposed by AMST.

ABC agreed with Westinghouse that cable distribution should be prohibited only where it would adversely affect the public interest, and should definitely be permitted elsewhere, "where there may well be a substantial public need for CATV services."

The network testified that the AMST proposals for regulating CATV are "unnecessarily harassing . . . without producing significant public benefits." It said that a freeze on CATV would be "both unnecessary and inconsistent with the overall public interest."

Fred J. Stevenson, president of Rogers (Arkansas) TV Cable, Inc. testified, "I would respectfully urge the Commission to carefully consider the impact of such across-the-board application of its proposed rules on many small limited capacity systems. Such systems, he said, have many years of public service to their credit, and yet they would be "circumstantially trapped" in rules intended for larger, more sophisticated systems. He asked the FCC to consider waivers for such systems.

UHF operator Bill Putnam testified on behalf of his ACT group (Association for Competitive Television), a group with little known support other than his own. The New England broadcaster stated, "Despite all the horrendous mass of claims, statistics and counterclaims, interspersed with double-talk and fallaciousness, CATV has a terribly harmful effect on local television station operation," and the bad effects continue, he contended, despite "pious protestations of their good intent."

NCTA, NAB and TAME did not file briefs on these sections of the proposed regulations, preferring to rest on their original filings.

#### TAME COURT CASE DEVELOPES

The NCTA and Rollins Broadcasting have filed for intervention in the TAME, Inc., Philadelphia Broadcasting and JFD Electronics court action declaring CATV a common carrier service. The case is based on proposed Rollins Broadcasting cable system in Wil-

ington, Delaware, and was taken to the U.S. Appeals Court following FCC ruling that CATV is not a common carrier. No opposition to the petitions for intervention was apparent.

The FCC asked the court for extension of deadline for answering the TAME charges, requesting additional time on behalf of the NCTA and Rollins Broadcasting as well as for the Commission itself. TAME counsel Ben Cottone did not oppose the delay.

In petitioning for right to intervene in the court action, NCTA General Counsel Robert D. L'Heureux stated "Apparently the petitioners (TAME, et al) intend to seek to invoke the jurisdiction of the Federal Communications Commission over Rollins' CATV system under the guise of common regulation in order to limit, curtail or even destroy that system or prevent it from coming into being in order to protect petitioners from a fancied, economic detriment to petitioners, although no such detriment is alleged in their petition for review."

He added that "if petitioners were successful in this litigation, adverse pecuniary effects upon the CATV industry and NCTA members are likely to follow, because CATV systems are not common carriers or of a public utility nature."

#### STROMBERG-CARLSON ENTERS CATV

Stromberg - Carlson Corporation has announced its entry into the community antenna television field in association with Entron, Inc., Silver Spring, Maryland. Using Entron-developed equipment Stromberg-Carlson will finance, engineer, and furnish and install complete CATV systems for telephone operating companies.

Entron, Inc., founded in the early 1950's, is regarded as a pioneer in the CATV field. Entron equipment that Stromburg-Carlson will use in the CATV systems include high - power tubes and solid-state all-band amplifiers. Stromburg-Carlson, producer of telephone, data processing and communication systems, has provided a variety of communication systems to the independent telephone industry since 1894, and has a national and field sales engineering organization with transmission experience.

#### TRAINING SEMINAR HELD BY VUMORE

A technical training school for the employees of *Vumore Co.* of Oklahoma City, Oklahoma was held at Lake Texoma Lodge near Kingston, Oklahoma on September 12. Eight of Vumore's systems were represented along with

four other systems. In all, 38 people attended the seminar classes while their families enjoyed the recreational facilities of Lake Texoma State Park.

Instructors at the seminar were Jim Monroe of Idabel, Don Turley of Hugo, Wilbur Hamack of Altus (all of Oklahoma), Ernest Meredeith of Sherman, Texas, and Jack Sanders of Wellington, Texas. Hamack began the sessions with a description of the prob-



Wilbur Hamack of Altus, Oklahoma discusses the problems of building an emergency warning system into a CATV system at the Vumore Company's technical training school at Lake Texoma Lodge.

lems encountered in building emergency warning systems into CATV systems. Monroe discussed the problems of proper system maintenance and the necessity of an active safety program. Meredeith demonstrated amplifier alignment and Sanders lectured on mathematics and basic electronics for technicians. Larry Whitehead,



Ernest Meredeith, Sherman, Texas, demonstrates amplifier alignment while Don Turley of Hugo, Oklahoma handles the mike at the Vumore Company's Technical training school at Lake Texoma Lodge.

field representative for Ameco, Inc., wrapped up the session with a discussion of Ameco's line of high band, transistorized, solid-state equipment.

According to George Milner, chief engineer of Vumore, this seminar was the first of a series to be held in each of Vumore's five districts. Milner stated, "Since it has been proven that the instructors at this type of school usually spend more time planning and participating in the school, thereby realizing more from the time spent, we intend to make all of the students instructors." "This first seminar," he said, "was a huge success".

THE  
BUSINESS END  
OF

# CATV



Quality CATV must start with a high performance antenna. Literally thousands of field installations have proven that TACO Ruggedized Yagis eliminate the high expense associated with repair or replacement of less durable antennas. These significant cost-savings make TACO CATV Yagis your best dollar buy.

**HERE'S WHY**

- High strength aluminum alloy
- Heli-arc welded construction
- Internal baluns
- Vibration Dampeners
- Foam-filled coaxial feed terminal boxes
- Heavy duty square crossarms

These PLUS FEATURES add up to reliability you can count on under all environmental conditions.

TACO CATV Antennas feature low VSWR and unexcelled front-to-back ratios. A wide choice of performance characteristics is available through 5, 8, or 10 element models, plus the extended capabilities made possible by a broad line of screen reflectors.

Write today for complete technical data.



**ANTENNAS**  
GOVT. & INDUSTRIAL DIV.  
JERROLD ELECTRONICS  
CORPORATION

15th & Lehigh Ave.  
Philadelphia, Pa. 19132  
Phone (215) 226-3456

**ILLINOIS-INDIANA CATV  
ASSOCIATION TO BE FORMED**

A two-day organizational meeting is scheduled for mid-November by CATV operators in Illinois and Indiana. They will meet at the Holiday Inn in Danville, Illinois on Monday and Tuesday, November 15 and 16. Following registration at 9:00 a.m. Monday, there will be sessions for both technical and management personnel throughout the

## CALENDAR

**October 17-19:**

The West Virginia and Mid-Atlantic Community Television Association will hold its annual fall meeting at the Greenbrier Hotel in White Sulphur Springs, West Virginia. CATV system personnel from Kentucky, Maryland, Ohio, Tennessee, Virginia and West Virginia are invited as well as suppliers of CATV equipment and services. However, the meeting will not have manufacturers' display space. For further information, contact association president, Buford Saville, Potomac Valley TV Co., 100 S. Liberty, Cumberland, Maryland, telephone 301-722-6540.

**October 28-30:**

The California CATV Association will meet in San Diego at the Vacation Village Hotel. Exhibitor participation is being emphasized at the convention, with ample time allowed for meeting with equipment suppliers scheduled on all days of the meet. All interested parties in California and surrounding states are invited, and top NCTA and other industry officials are expected to be on the program. For details, contact Walter Kaitz, Suite 1506, Latham Square Building, Oakland, California 94612, telephone 415-824-5300.

**November 5:**

The Oklahoma-Kansas CATV Association will meet for its annual fall convention at the Holiday Inn, Oklahoma City. The OK-CATV group will hear NCTA President Frederick W. Ford speak at the meeting, which will also feature manufacturers' displays. For further details, contact Holland Meacham, Box 580, Elk City, Oklahoma, telephone 225-2220.

**November 8:**

The North Central CATV Association will meet for a one-day session in Minneapolis. Meetings will be featured for both technical and management personnel, and NCTA President Frederick W. Ford will speak. Interested parties contact H. C. Kroon, 220 1/2 South Front Street, Mankato, Minnesota, 56001, telephone 507-345-3095.

**November 15-16:**

The Illinois-Indiana CATV Association will hold an organizational meeting at the Holiday Inn in Danville, Illinois. Both technical and management-oriented sessions are scheduled along with well-known industry speakers including Stanley M. Searle, editor of TV & Communications. All cable operators in those states are urged to attend and become charter members, and all interested parties, including equipment suppliers, are invited. For further information, contact Phil Hays, General Manager, Effingham TV Cable Company, P.O. Box 416, Effingham, Ill., telephone 217-342-3979.

day. Tuesday will be devoted to management-oriented meetings with organization matters for the association scheduled for the latter part of the afternoon. See the "Calendar" section for additional details.

### **TEXAS CAPITAL COMMITS ADDITIONAL \$1 MILLION TO ABILENE CATV**

By providing an additional \$1 Million to its previous commitment, *Texas Capital Corporation* brought its total commitment to TV Cable Service of Abilene to \$1,882,000. Texas Capital's commitment provides financing for the system's construction. Three signals from Ft. Worth and Dallas, Texas are delivered via microwave and the system also carries the two local Abilene channels to its 3,000 subscribers.

Texas Capital has also committed \$300,000 for construction of a system in Sweetwater, Texas, which will operate under the same management as Abilene. Texas Capital has a 34 per cent equity ownership in the Abilene system.

### **REGULATION DISCUSSED AT BROADCASTER MEETINGS**

The Louisiana Association of Broadcasters and the Mississippi Broadcaster's Association held a joint series of meetings in New Orleans September 19, 20, and 21. Speaking at the meeting were Bill Carlisle of the NAB, Bill Clancy of TAME, Inc., Dwight Martin of station WDSU, FCC Commissioner Kenneth Cox and Bruce Merrill, system-owner and president of Ameco, Inc.

The problem of CATV regulation was the key topic at the meet. Bruce Merrill presented the CATV position to the broadcasters.

### **SPENCER NEW CHAIRMAN OF SKL**

Donald Spencer, president of Spencer-Kennedy Laboratories, Inc. since 1955, was elected Chairman and Chief Executive Officer at the annual meeting in September. Charles H. Wright will succeed him as president as well as acting as Treasurer of the firm. Added to the Board of Directors was J. B. Richmond of Putnam, Coffin and Burr. John A. Lunn, B. A. G. Thorn-dike and George W. W. Brewster were re-elected to the board with.

Following the meeting a report was issued stating that as a result of factors incident to the introduction of a new line of equipment, manufacturing earnings before Federal income taxes were down to 79 cents per share from \$1.22 in the prior year. Start-up losses in new CATV systems brought into operation during the year reportedly absorbed manufacturing profits and

produced a consolidated deficit after all adjustments of \$.22 per share.

SKL management, in discussing the prospects for the fiscal year ending June 1966, stated that the present backlog of unfilled orders is at the highest level in the company's history and predicted that sales and earnings for the year would be at record levels. CATV operations will produce relatively small losses this year, management stated, and within a year thereafter will begin to contribute significantly to consolidated earnings.

### **REGO GIVES SEMI-ANNUAL REPORT**

Rego Industries, Inc., in its semi-annual message to shareholders, announced that its sales for the six months ending June 1965 were \$5,685,351 as opposed to last year's \$4,114,491 — an increase of 38% over 1964. Net profits, according to the report, were \$260,313 as against \$137,776 in 1964, an increase of 92%. The report interpreted this as \$.32 per share based on 818,067 shares outstanding on June 30, 1965. Shipments for the second quarter averaged slightly above \$1,000,000 per month.

### **NAB MEETINGS TO FEATURE CATV THIS FALL**

Community Antenna Television will be a major topic at each of the eight regional fall conferences scheduled by the National Association of Broadcasters. The Association announced that it will have one Federal Communications Commissioner at each of the meetings. Commissioner Rosel Hyde will be out of the country at that time, so Commissioners Kenneth Cox and Robert E. Lee will each make two appearances. On the subject of CATV, the program is to be similar at all of the meetings. NAB vice president for station services William Carlisle will outline the NAB stand on current CATV issues.

### **CBC DECLARES DIVIDEND**

The directors of Cox Broadcasting Corporation have announced a regular quarterly cash dividend of 10 cents

per share of the firms common stock. The dividend is payable to stockholders of record as of September 22, 1965.

### **TV-BOXING MEASURE GIVEN FULL SUPPORT IN HOUSE**

The House of Representatives voted 346 to 4 in favor of setting up a Federal Boxing Commission which could prevent television distribution of prize fights in which illegal activities were suspected. The measure, if put into law, would allow the proposed commission to regulate distribution of such matches by radio, television, theatre TV, and community antenna systems. Early action on the bill in the Senate is seen as unlikely.

### **COPYRIGHT HEARINGS SLOWING, CATV STILL HOT TOPIC**

CATV copyright position came up in testimony from three different sides in House copyright hearings last month, and all agreed that cable operators should be subjected to copyright payments. Newest, and very vocal interest group to back CATV sections of bill was professional sports squad consisting of American Football League commissioner Joe Foss, National Football League commissioner Pete Rozelle, and Washington attorney Paul Porter, representing all organized professional baseball. Main theme was alleged drop in profits realized from telecast of sports events, when CATV carriage of same could not be controlled. Cable system should not be allowed to "pirate sports programs" according to Rozelle. Subcommittee chairman Robert W. Kastenmeier (D-Wis.) asked the sports representatives if the CATV audience might not actually enlarge the audience for the TV sponsor of such sports events, and might not also popularize the sport among new fans. He found little agreement from the sports moguls.

### **CANADIAN CATV EQUIPMENT FIRM FORMED**

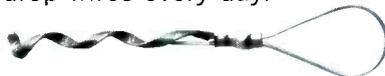
Cascade Electronics, Ltd. is the name of a new firm formed in western Canada to design and market CATV equipment. Distribution will include the U.S. as well as Canada. Three Phoenix, Arizona CATV engineers have relocated in Vancouver, B.C. to help form the new firm. All former Ameco, Inc. employees, they are: Ferrell Anderson, former director of education; Donn Nelson, former chief of special products; and Victor Tarbutton, former chief technician of special products.

### **ILLINOIS LEASEBACK TARIFFS IN EFFECT**

The Illinois Commerce Commission has lifted suspension of CATV lease-

## **GRIPPING?**

You bet! On more CATV drop wires every day.



New TV "S" Wire Grip. Single piece—stainless steel—fastest installation—greatest strength—longest lasting—lowest cost—19¢. Order today.

Communication, CATV & Power Line Supplies

**JACK PRUZAN CO.**

PHONE 206 + 624-6505  
1963 FIRST AVE S. SEATTLE, WASH. 98134

back tariffs filed by Illinois Bell Telephone Co. The commission made it clear that its action in approving the tariffs did in no way affect the authority of cities to grant permission to operate cable systems within their boundaries.

#### BELL TARIFFS APPROVED IN MAINE

The Public Utility Commission of Maine has approved the CATV lease-back tariffs filed there by the New England Telephone & Telegraph Co. The PUC decision came after objections by the New England CATV Association which insisted that the tariffs should include provisions requiring that leaseback system operators obtain local franchises for such systems. The PUC indicated that it could not include such provisions with regard to the CATV operation itself, since the cable television business is not considered a public utility in that state.

#### AMECO GOES PUBLIC STOCK

Bruce Merrill's Ameco, Inc. of Phoenix, Arizona has filed for registration of 400,000 shares of common stock with the Securities and Exchange Commission. The \$1 par value shares are expected to sell for about \$21 per share. Net proceeds from half of the new issue will be added to working capital of the corporation, while the other half are registered to Mr. Merrill who holds all of the current 1,000,000 shares outstanding.

#### TIME-LIFE AND FETZER FORM WOLVERINE CABLEVISION

Time-Life Broadcasting and Fetzer Broadcasting Co. have joined forces to form Wolverine Cablevision for system operations in the Michigan area. Present plans call for systems in Battle Creek, Albion and Marshall, but will not affect the operations of Fetzer in Kalamazoo or Time-Life in Jackson.

Directors of the new firm are John E. Fetzer and Carl E. Lee of Fetzer

Broadcasting, and Willard Schroeder and Leonard Bridge of Time-Life. One additional director will be named. Gordon Anderson of Fetzer will be administrator of the new firm.

#### EXECUTIVE COMMITTEEMEN, COMMITTEE CHAIRMEN NAMED BY NCTA

Irving Kahn and Frank Thompson were appointed by NCTA national chairman Ben Conroy, to serve on the Association's Executive Committee. The seven-man committee, which acts for the board of directors between quarterly board meetings, also includes the NCTA elected officers (including Bruce Merrill — immediate past national chairman).

Chairman for NCTA standing committees have been named, and the following have accepted to date: Franklin R. Valentine, Jr., Unicom Inc. budgeting and audits committee; Robert Regan, Minnesota TV Signal Distributing Company, by-laws committee; George Barco, Meadville Master Antenna Inc., educational television committee; Frank H. Nowaczek, TeleSystems, membership committee; James Palmer, Centre Video, rural services committee; James Duratz, Meadville Master Antenna Inc., safety committee; Al Stern, TV & Communications Corp., industry planning committee (new committee); and Frank Thompson, Rochester, Minnesota, international relations committee. Two other chairmanships were announced but acceptance has not been given. They are, Jack Crosby, utility relations committee (formerly pole line committee), and Hubert Schlasly, technical standards committee.

#### COMMUNITY CABLECASTING GETS \$1.5 BACKING

Community Cablecasting Corporation, CATV development firm organized earlier this year by Leon Papernow has received agreement from Electronics Capital Corporation of San Diego for that firm to provide \$1.5 million in equity and long-term financing. This is the second investment in CATV by ECC within 30 days. The firm recently agreed to provide Harriscope Cable Corporation with \$1.7 million.

#### TELEPROMPTER ACQUIRES MATVS

TelePrompter Corporation is reported to have become the nation's largest provider of cable television reception services by acquiring three New York City master antenna TV companies which serve approximately 200,000 outlets in the metropolitan area.

Irving B. Kahn, chairman and

president of TelePrompter, said the three companies install and maintain cable TV on a contract basis in apartment houses, schools, hotels, hospitals and commercial buildings and also provide reception service to individual apartment tenants for a monthly fee.

The latter, combined with services provided by TelePrompter subsidiaries in 16 community antenna systems throughout the United States, gives the company approximately 90,000 monthly subscribers an industry high — Mr. Kahn said.

The new acquisitions, for cash and TelePhompTer common stock, are Electronic Installation Corporation; Retma Electronics, Inc.; and Amplitel Incorporated.

Mr. Kahn said that their cost plus other initial investments that TelePrompter plans to make in them will total in excess of \$2 million.

He said that the three companies, which have been in operation for periods of up to 15 years, are all operating profitably and should add substantially to TelePrompter's earnings.

TelePrompter Corporation reported earnings for 1964 of \$401,070, or 54 cents a share, and for the first quarter of this year \$70,917, or 10 cents per share. It is listed on the American Stock Exchange.

All three companies had been part of a joint venture seeking a New York CATV franchise, for which TelePrompter also is an applicant, and Mr. Kahn said their qualifications are now being incorporated with TelePrompter's in its application pending before the Board of Estimate.

#### MEREDITH REPORTS EARNINGS UP

Meredith Publishing Company parent of Meredith Broadcasting and half owner of Meredith-Avco Inc. has reported an increase of 67.4% in net earnings for the fiscal year ended June 30. Earnings per share for 1965 were \$3.55 as compared with \$2.14 in 1964. The firm has filed an application with the New York Stock Exchange for listing of the firm's common stock.

#### "ANTI-CATV" BROADCASTER JOINS THE RANKS

Outspoken broadcaster Bill Grove (KFBC-TV, Cheyenne, Wyoming) has announced the acquisition by his firm, Frontier Broadcasting Company, of a cable television franchise in Cheyenne. Grove has advocated FCC control of wired TV for several years, and has indicated that his firm's entry into the industry is based upon the Commissions intended regulation of same. The system will be developed by Wyneco Co., wholly-owned by Frontier Broadcasting. □

## GRIPPING?

You bet! On more CATV drop wires every day.



New TV "S" Wire Grip. Single piece — stainless steel — fastest installation — greatest strength — longest lasting — lowest cost — 19¢. Order today.

Communication, CATV & Power Line Supplies  
**JACK PRUZAN CO.**  
 PHONE 206 + 624-6505  
 1963 FIRST AVE S. SEATTLE, WASH. 98134



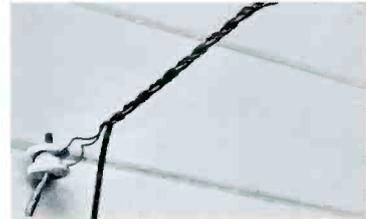
New!  
**TELEGRIP**  
 for  
**CATV**

**Unique dead-end design  
 assures your customers uninterrupted  
 television reception; fast hook-up**

**Check these benefits:**

- ✓ Economical to buy and apply.
- ✓ Wraps on in seconds without tools.
- ✓ One piece – easy to handle; easy to stock.
- ✓ Made of stainless steel to resist abrasion and corrosion.
- ✓ Only flexible CATV dead-end commercially available.
- ✓ Holds full rated strength of RG-59/U coaxial cable.
- ✓ Won't crush cable or affect its dielectric properties.
- ✓ Holds cable in straight-line suspension; prevents kinking.
- ✓ Twist at end of leg prevents spin-out of cable.
- ✓ Performance proven by extensive laboratory and field testing.

**Use TELEGRIP on all three connections – pole, tap, and house**



**PREFORMED LINE PRODUCTS  
 COMPANY**

5349 St. Clair Avenue • Cleveland, Ohio 44103 • UTah 1-4900 (DDD 216)  
 600 Hansen Way • Palo Alto, California 94306 • 327-0170 (DDD 415)

**PREFORMED LINE PRODUCTS COMPANY**

**CATV Department** 5349 St. Clair Avenue, Cleveland, Ohio 44103

Please send 4 FREE samples of TELEGRIP.

Please send Price List and Product Information Bulletin No. H-39.

Please send TELEGRIP Laboratory Test Data.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP NO. \_\_\_\_\_

# FOCUS

... On Progress

## AMECO APPOINTS NEW EXECUTIVES

*Bill Johnson, Frank Jackson, Robert Malonek and Loyd Littlepage* have been named to new positions in Ameco, Inc. in announcements by *Bruce Merrill*. *Johnson* has been made district construction manager with responsibility for the direct supervision of the construction of all systems Ameco is building for Kentucky Cable TV, Tennessee Cable TV, and Indiana Cablevision. *Jackson*, who had previously been working with Motorola, Inc. as a national account executive, has joined the contracting department of Ameco, Inc. as a systems engineer and assistant to *Lewis Coggins*, director of contracting. *Malonek* who has been appointed director of personnel was with Palmer Manufacturing Corp. and Kennecott Copper prior to joining Ameco. *Littlepage* has been named art director at Ameco, Inc. He had previously worked for Audiotone.

## LIPP IS HONORED BY VIKING INDUSTRIES

Viking Industries paid tribute to *Allen Lipp*, Marketing Director of Sales, at a testimonial dinner held on September 22nd at the American Hotel in New York City.



Arthur Baum (l) presents a plaque to Allen Lipp.

*Arthur Baum*, President of the Company, presented *Allen* with a plaque commemorating his 18th anniversary of association with Viking Industries. Prior to his promotion to director of marketing sales, *Allen* served as Administrative Assistant to the President.

## PAST PRESIDENTS HONORED

The past presidents of the New York CATV Association were honored at the annual banquet. Receiving the

first plaque was *W. J. "Bill" Calsam* who headed the association for its first two years, 1956 - 1958. Engraved plaques were also presented to *Jack Pryor, Warren Fribley, Hugh Sutphen, Harold Spriggs, Tony Cerrache, and Sterling Higley. Harry Levin*, association Vice President, made the presentations to the former officers with president *Al Bagnardi* presiding at the banquet which was attended by 150 New York operators and suppliers.

## GREGORY PROMOTED TO REGIONAL MANAGER

*Leonard C. Gregory*, former general manager of Kentucky Cable T.V., has been promoted to regional manager of American Cable Television's Decatur, Alabama, and Panama City, Florida systems. The promotion was revealed by *Donald R. Atwell*, President of the Company. *Atwell* also revealed that *Gregory's* vacated position will be filled by *Douglas Shank*, former manager of American Cable Television's Glasgow Cablevision.

*Gregory* was also, at one time, manager of the Glasgow system and later was made general manager of the company's systems in Kentucky, Indiana and Tennessee.

## WESTERN MICROWAVE ANNOUNCES NEW AREA MANAGER

*Bob Magnus*, President of Western Microwave has announced that *Ian A. Elliot* will be regional manager in charge of Western's Montana and Idaho operations. *Mr. Elliot* was one of the founders of Micro-TV, the cable system serving Miles City. He will continue as president of this firm but has resigned his positions as manager of radio KATL and Star Printing Co. in Miles City.

## FRANKLIN FILLS NEW ENTRON POST

*J. Phil Franklin* has filled the newly created position of director of systems operations for Entron, Inc., according to *Robert J. McGeehan*, president.

In this position, *Franklin* will be responsible for the operation of all Entron's present, partially and wholly owned CATV systems. He will also act as an advisor and consultant to new system operators.

Prior to joining Entron, *Franklin* was the vice president-general manager of the *South Jersey Television Cable Co.* of Ocean City, Ventnor and Wildwood, N.J. and is president of the *New Jersey Community Antenna Television Association*. Previously he was a vice president and general manager of the *Desert Cable Television Co.* of Palm Desert, California.

## WALTERS TO BE NEW VICE-PRESIDENT

*H. Lex Walters* has been appointed vice president in charge of field assignments for *American Cable Television, Inc.* according to *Donald R. Atwell*, President. *Walters* has been vice president of Kentucky Cable TV.



Mr. Walters

Tennessee; Cablevision, Indiana; Tri-Town Video, New York and Valley Telecasting, California. American Cable Television, Inc. has absorbed all of these systems. *Atwell* says, "The company's addition of 21 franchises in 2 years is due to *Walters' efforts.*"

## STREET TO DIRECT AMECO ADVERTISING

The appointment of *Samuel S. Street, Jr.* to the position of director of public relations and advertising has



Mr. Street

been announced by *Bruce Merrill*, president of Ameco Inc.

Before joining Ameco, *Mr. Street* was a partner in the consultant firm.

Adler, Street & Associates, with offices in Washington, D.C. and Southampton, Pennsylvania. At one time, he was also consultant and general manager of New Jersey Cable TV Corporation. Prior to joining New Jersey CATV he worked with TeleSystems Corporation. At TeleSystem, Street was responsible for the coordination of engineering, construction, management and promotion of community antenna television systems. He is a well-known authority on cable television promotion and has developed many advertising campaigns that are now being utilized throughout the United States. He is also a contributing editor to TV & Communications.

**SERVICE CENTER IS ESTABLISHED BY TELEPROMPTER**

A Cable TV Engineering and Service Center has been established by TelePrompter Corp. to house its newly formed master antenna television division according to chairman and president, *Irving B. Kahn*.

*Joseph Silverman*, formerly president of Retma Electronics, Inc. will be the general manager of the division which designs, installs and maintains master antenna TV systems in apartment houses, schools and commercial buildings.

Kahn said the MATV division is carrying out TelePrompter's \$500,000 contract for installation of television distribution facilities in 240 Roman Catholic parochial schools in in Brooklyn and Queens.

**GARDNER JOINS JACK PRUZAN**

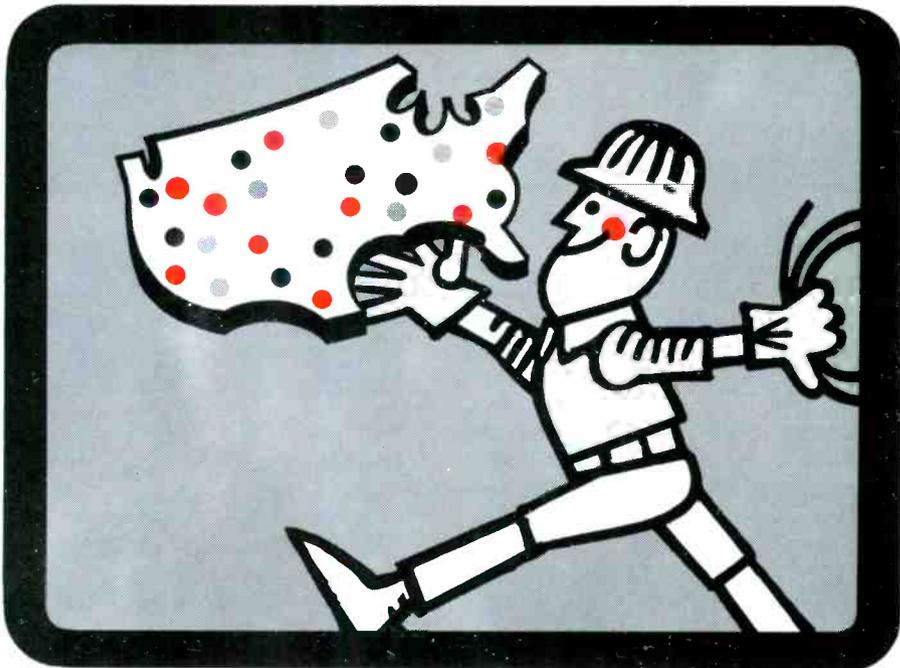
The Jack Pruzan Company has announced the addition of *Lyonel "L. J." Gardner* as an inside sales representative.



*Mr. Gardner*

A native of Battle Creek, Michigan, Gardner has been engaged in sales and sales administration work primarily

# NATIONAL DISTRIBUTION WITH "HOME TOWN" SERVICE!



The service that made Jack Pruzan Company grow ten times over in just ten years is now available nationwide. This is the service that puts customer needs first in terms of range of products handled, warehouse locations, inventories carried, and same day filling of orders. We call it "Home Town" service.

**If you'd like to enjoy "Home Town" Service on all of your needs, write today for the new, complete Catalog-Stock List.**

## **JACK PRUZAN COMPANY**

1963 FIRST AVENUE SO. • SEATTLE, WASHINGTON 98134  
PHONE 206 MAin 4-6505

- CABLES and WIRES**
- POLE LINE HARDWARE**
- TOOLS**
- SAFETY EQUIPMENT**
- STRAND**
- TERMINALS and SPLICING MATERIALS**
- SPECIALTIES**

JACK PRUZAN CO., 1963 First Ave. So., Seattle, Wash. 98134  
Yes, we'd like to enjoy "Home Town" service on our material needs. Please send us your new, complete Catalog-Stock List.

Firm Name \_\_\_\_\_  
Address \_\_\_\_\_  
City & State \_\_\_\_\_  
By \_\_\_\_\_ Title \_\_\_\_\_

ly in the communications equipment field since 1950. He was formerly with Oliver Electrical Manufacturing Company.

According to *Herbert Pruzan* the addition of Gardner "is a continuation of the company policy of providing knowledgeable, experienced people to handle office sales contacts. Rapid growth in the company volume has necessitated added personnel."

#### MEREDITH-AVCO APPOINTS NEW VICE PRESIDENT

The board of directors of *Meredith-Avco, Inc.* has announced the appointment of *Thomas J. Michel* of Cincinnati as executive Vice President. Mr. Michel has been Director of Field Engineering in the Avco Electronics Division at Cincinnati. He will assume his new position September 15, at the company headquarters in New York City. Michel will replace *Raymond V. Schneider*, Vice President and General Manager, who has announced his resignation. Michel has been with AVCO since 1933.

Meredith-Avco was formed a year ago as a joint CATV venture by Meredith Publishing Co. and AVCO Corp., New York.

#### STAN SOCIA CORP. APPOINTS WILLIAMS

Stan Socia Corporation of Tyler, Texas announces the association of *Norman A. "Chick" Williams*. Named Management & Sales Executive, Wil-

liams has been in CATV for 12 years as systems manager and was awarded the National Community Television Association's Halo Award.

Mr. Williams has been with Television Cable Service Co., Inc., Tyler, Texas Video, Inc., Palestine, Texas and has worked for Systems Manage-



Mr. Williams

ment and Daniels & Associates. Named to the Founding Executive Committee in the Louisiana Association of Cable TV Operators, Mr. Williams is also regional manager of the Houma, Leesville and DeRidder, Louisiana CATV systems.

The executive will specialize in CATV equipment and sales turn-key construction.

#### NEW VICE-PRESIDENTS ELECTED

*Dause L. Bibby*, president of Stromberg-Carlson Corp., has announced the election of two new vice presidents by the Board of Directors of that corporation.

*O. D. Center*, who has been controller, was named vice president of finance, and *Howard G. Strassner* was named vice president manufacturing coordinator.

*William A. Rockwood*, former vice president - marketing and administration, will become vice president of the Telecommunications Group.

#### SHARP APPOINTED AS TEXAS REGIONAL MANAGER

*Donald Atwell*, president of *American Cable Television, Inc.*, has announced the appointment of *Erwin Sharp* as regional manager of the company's Texas systems. He will be operating out of Waco, Texas. Sharp began his career in CATV in 1957 as chief engineer and manager of the Tucumcari, New Mexico Television Company.

Sharp's CATV activities include the building of the Mule Shoe, Texas Ca-



Mr. Sharp

ble System, the cable system in Portales, New Mexico, three microwave systems in Texas and New Mexico and the setting up and organization of the Tex-Mex Communications Company. Sharp was transferred by H & B Corporation from Tucumcari, New Mexico to Dothan, Alabama as general manager, where he remained until taking his present position with American Cable Television, Inc.

#### BRANDT TO HEAD JERROLD'S INTERNATIONAL OPERATIONS

*Sidney Brandt* has been named General Manager of Jerrold International, a division of The Jerrold Corporation, according to *Robert H. Beisswenger*,

## CATV FINANCING . . .

gives you room to grow and the POWER to expand

- MONEY** • For purchasing systems
- MONEY** • For new equipment
- MONEY** • For expansion
- MONEY** • For turn-keys

Phone us collect — Area Code 317, MELrose 8-1331. Ask for: Harold Ewen, Gail Oldfather, or Jim Ackerman.

# ECONOMY

FINANCE

## CORPORATION

108 East Washington St., Indianapolis 4, Indiana



## The spirit of 76 (tv)

We'd like to urge you to buy our 76TV microwave relay system next time you are in the market for monochrome or color video transmission equipment. Not for the obvious reasons, though, like its outstanding performance, low price, and easy maintenance.

No, we think you ought to buy our 76TV because of its demonstrated heroism and valor. And long-suffering patience in the face of overwhelming odds.

How do you think it feels when, year after year, hundreds of tons of explosives are fired off inside you? When, in a typical week—besides three glorious concerts and five exciting football games—about 30 murders, 24 auto accidents, twelve divorces and four or five extortion schemes are perpetrated

through your unflinching innards? When headaches, backaches, congested nasal passages all get their appropriate fast relief through you?

To do this day-in and day-out takes solid-state guts. Such devotion ought to be rewarded. Buy a 76TV microwave relay system from Lenkurt Electric Co., Inc., San Carlos, California, now! That's the spirit.

**LENKURT ELECTRIC**  
SUBSIDIARY OF  
GENERAL TELEPHONE & ELECTRONICS **GTE**

Executive Vice President of the corporation.

Jerrold International is engaged in the marketing, distribution and licensing of all Jerrold products for sale in the international markets. These include community antenna television equipment; television antennas and reception aids, and microwave communications gear.

#### **BLONDER-TONGUE ANNOUNCES PROMOTIONS**

*Richard B. Helhoski*, marketing director of Blonder-Tongue, has announced the promotions of *Walter Ullrich* and *Nick Young* at Blonder-Tongue Laboratories, Inc.

Mr. Ullrich will fill the position of manager of the closed-circuit and master antenna television, and Young has been named national sales training manager.

In this position, Young will assume responsibility for the development and administration of all Blonder-Tongue training programs.

Ullrich's new position will give him responsibility for CCTV and MATV systems on a national level, including developmental marketing and sales program coordination.

#### **GRAY RESIGNS POSITION**

*Gordon Gray* has resigned his position as president-director of the Mid-New York Broadcasting Corp., Utica, N.Y. to become more involved in CATV. Mid-New York operates the cable TV system in Utica.

#### **FUTURE EXECUTIVE IS BORN**

*Robert Baum*, Vice President of Viking Industries, became the proud father of a son on September 15th. This is the first child born to Bob and his beautiful wife, Patricia. This indicates, Bob claims, that there will not be a future shortage of executive personnel at Viking Industries.

#### **NEW MANAGER OF MONTEVIDEO**

*Ralph Demgen*, president of Montevideo Cable Inc., announced that *Robert Zellmer* has been appointed general manager of the systems in Montevideo and Marshall, Minnesota. Zellmer has an option to purchase an interest in the two systems.

#### **CATV FIRM CHANGES NAME**

*Philip A. Farr, Jr.* has announced a name change for McGehee Video Company. The new name is *Southern Video Company*, McGehee, Arkansas. Farr indicates the ownership and management will remain unchanged.

The name change will be "to operate our expanded Community Antenna Facilities under a satisfactory corporate title" according to Farr.



## **CHECK the value . . . .**

Check the published specifications, THEN CHECK THE PERFORMANCE under all operating conditions to determine the actual VALUE of CATV amplifiers, and other system components you plan to buy. When you do, you'll see how KAISER's tradition of quality control, research and engineering skill works for you today and tomorrow.

Write, phone or visit . . .

**KAISER**  
AEROSPACE &  
ELECTRONICS

Phoenix Electronics Plant  
P. O. Box 9098, Phoenix, Arizona  
Phone (602) 943-3431

A smaller version of the Kaiser Aerospace & Electronics logo, featuring the company name in a white box with a black border, set against a black background. The logo is positioned at the bottom center of a large black rectangular area that occupies the lower half of the page. A thick green vertical bar runs from the top of the page down to the top of this black area. A thick green horizontal bar runs across the width of the black area, intersecting the vertical bar. At the bottom of the black area, there are five white triangles pointing upwards, spaced evenly across the width.

**KAISER**  
AEROSPACE &  
ELECTRONICS



**KAA-25 KMA-25 Mainline All-Band Amplifiers.** Features famous Kaiser **CASCADE-ABILITY** and positive lightning protection circuitry.

**KBR-4 All-Band Bridging Amplifier.** High output levels with low trunk line insertion loss.

**KCP-12 Cable Powering Unit (Regulated)**... unaffected by momentary short circuit.

**KAL-30 KML-30 Mainline Low-Band Amplifiers.** High gain and output level permits direct replacement of old style vacuum tube amplifiers.

**KRP - Remote Power Coupler.** Provides convenient coupling of AC power to coaxial cable.

**KLE-20 All-Band Line Extender Amplifier.** New high output with frequency response - 54 to 216 Mc, within -0.5db.

**KLS - Line Splitter.** 2, 3 or 4 way Line Splitters available now with connectors or fittings for aluminum and corrugated copper cable.

**KCP-3 Cable Powering Unit.** Economical cable powering. Built-in circuit breaker.

Kaiser's complete solid-state all-silicon transistorized line - CATV's new standard for performance and capability under ALL operating conditions.

## ... in aerial or buried cable systems.

Whatever the system application, whatever the performance demands - **KAISER CATV** quality has been fully demonstrated in actual use - as well as in the research laboratory. These and other quality-engineered CATV products are now in full production in **KAISER'S** Phoenix Electronic Plant. Write or phone us today. We'll be glad to prove **KAISER** quality and value to your satisfaction in *your* system!



Phoenix Electronics Plant, P. O. Box 9098, Phoenix, Arizona, Phone (602) 943-3431

### NEW CATV "TECH-WAGON"

Davco Electronics Corp. of Batesville, Arkansas has developed an "electronic laboratory on wheels" for CATV according to *Jim Davidson*, President. The "Tech-Wagon" is a Chevrolet station wagon that boasts a total value of more than \$10,000 and includes such sophisticated equipment as the Telonic Sweep/Marker.



Davco's new "Tech-Wagon" ready for emergency call or routine head-end servicing.

Davidson reports the "Tech-Wagon" carries test equipment for doing a complete alignment of head-end and systems. It will be used for installation of the Davco functional design head-end equipment and for alignment of existing head-ends. It will also be available for emergency calls to assist system operators in need of service according to Davidson.

The Telonic Sweep/Marker is an instrument that sweeps 400mc bandwidth at one time and contains both crystal and variable markers of extreme accuracy. It covers all VHF and UHF channels.

### CAREY TO MANAGE NEW CATV

*H. C. "Chris" Carey* has been named area resident manager of Southwest CATV Inc.'s proposed systems in Edinburg, McAllen, Mission, and Pharr, according to *Lester Kamin*, President of Southwest CATV.

### KOSCHMANN JOINS SKAGIT TV CABLE

*W. O. Phillips* announced that *Marty Koschmann* has joined the staff of Skagit TV Cable Co., Sedro Woolley Washington. Koschmann was previously with KAPS radio station in Mount Vernon, Washington.

### WESTERN CATV NAMES MANAGER

Western CATV Inc., Saugus, California has named *Ed Cooper* as its new manager. Cooper was with National Consumer Services (Reuben H. Donnelley Corp.) prior to joining Western CATV.

### NEW CATV CORPORATION

The state of Pennsylvania has granted a corporate charter to *Chris J. Mitos*, *Kathryn E. Reid* and *Betty M. Zbegan* for CATV activities in that state. Charter was granted under the name *Lawrence Cablevision Inc.*, of New Castle, Pa. □

# LETTERS

## Copyright Infringement

Dear Sirs:

We received by registered mail . . . a communication from the firm of Phillips, Nizer, Benjamin, Krim & Ballen Attorneys stating that they have pending in the southern district of New York a case against the CATV cable systems in Clarksburg and Fairmont, West Virginia for violation of their client's (United Artists) copyrights. They note that this company is contemplating the operation of community antenna and cable systems and ask us to please note that they intend to protect their client's copyrights against any infringement thereof.

We would like to know if several system owners have received such a letter.

Our own attorney . . . said it is very unethical for any attorney or group of attorneys to bring any note of liability or possible violation of a right of one's copyright until such violation or liability has been proven in court . . . and that anyone so doing

could be called before the bar association for unethical practices.

If you have received any other comments we would appreciate your letting us know what, if any, actions are contemplated to stop such threats before one has even commenced to operate a CATV system.

John N. Thompson  
Thompson Theatres Co.  
Atoka, Oklahoma

● *We invite any reader who has received such a letter to forward a copy of it to us. We also suggest such correspondence be directed to Robert L'Heureux at NCTA headquarters.*

### A Needed Service

Dear Stan:

It has been a real pleasure to sit on the sidelines and watch TV & Communications improve each month . . . Your latest innovation, a special monthly section for cable technicians, is indeed indicative of what I am talking about. Congratulations on scooping the publication field with this much needed service.

Robert H. Huston  
Cox Broadcasting Corp.  
Atlanta, Georgia

Dear Stan:

. . . I personally take a particular interest in your coverage in TV & COMMUNICATIONS with "News

Spectrum" and "Focus on Progress". Seems there are so many people in the CATV Business that have changed jobs recently that *this* is the only practical means of keeping up with some of my friends.

. . . Keep up the good work on your constantly improving coverage of the entire CATV industry.

Norman A. "Chick" Williams  
Houma TV Cable Co., Inc.  
Houma, Louisiana

### CATV Paper

Gentlemen:

I am preparing a historical-descriptive seminar paper on Community Antenna Television. James F. Morton of the TV Cable Supply Company suggested I write you for information regarding the typical components and cost of a CATV system. Also, if you happen to have any historical data available, I would appreciate receiving it.

Phillip O. Keirstead  
WSUI News  
State University of Iowa  
Iowa City, Iowa

● *The information you request is in the mails. For more specific details we suggest you get a copy of National Community Television Associations "The Facts About Community Antenna Television."* □

# NEW

## DELTA MODEL FSM-C

- WILL CALIBRATE ANY FREQUENCY
- WILL CALIBRATE ANY METER
- USE AS A REFERENCE FOR ALL METERS
- USE FOR GAIN MEASUREMENTS
- USE AS SWEEP — MARKER GENERATOR

# \$140.00

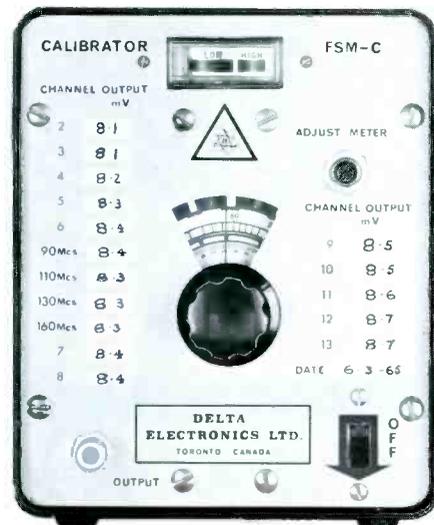
WRITE FOR DETAILS TO:

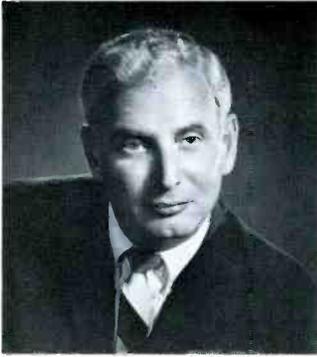
# DELTA

ELECTRONICS LTD.

70 RONSON DRIVE • REXDALE, ONTARIO

## THE FIELD STRENGTH METER CALIBRATOR





# You'd Better Sell It Today!

By Robert H. Berger  
National Trans-Video

Not too many years ago, there was . . . and may still be in some circles . . . the idea that Community Television Antenna Systems were "public utilities" and should conduct themselves as such. An operator was expected to invest a quarter of a million dollars, or more, in a system, then sit and wait.

Selling was "undignified."

I'll never forget our first reaction to that approach, "Fella, it may be undignified, but it's darn sure more profitable!" . . .

I must confess that it did, and still does, seem totally unreal for an American businessman to think that he can operate successfully, and by that I mean profitably, without selling. If there was ever an economy in the world whose success was due largely to selling, it's ours . . . and the CATV business is no exception.

We entered the field selling. We've sold successfully, and profitably. And, we plan to keep on selling just as hard as we know how.

In due course, we developed a firm sales philosophy which today is only slightly modified from our original concept. Actually, our concept of selling CATV is simple.

*You'd better sell it today!*

It's so easy to identify your prospects. You've either got the area cabled, or you don't. The cable is either energized or it isn't. If you can't serve them, you can't sell them. If you can serve them, you'd better sell them now, because every day that cable runs past a house that isn't connected to your system, it is costing you money!

You're selling a perishable, a service that exists and can be sold at any given moment, but a service that cannot be put back into stock, or held over until tomorrow, or next week, or next month. If you don't draw revenue from today's service, you'll never be able to draw a dime from it!

Think about it!

We did. Our answer was consistent, day in, and day out selling. Work these prospects as fast and as often as necessary to make as many sales as possible . . . as soon as possible.

Our selling has taken many forms, varying from system to system and varying with the status of an individual system at a given point in that system's maturity.

We reckon with Napoleon that plans are made to be changed, to suit the situation. So, first we made a "standard" sales plan. We swiped an idea, a successful one. We modeled our ideal sales force after the Fuller Brush men, or, to be more exact, our own insurance companies.

We installed a sales manager . . . a salesman whose job it was to organize, train and direct a crew of part-time salesmen. Then, we staffed our crew and we gave the sales manager an incentive tied directly to his salesmen's performance.

We found the most effective selling time to be in the late afternoon, let's say from 6 p.m., to early evening, perhaps 8:30 or 9 p.m. . . . moonlighter's paradise. An ideal set-up to let good, regularly employed salesmen pick up extra money.

Obviously, the number of salesmen in each system will vary. You must have enough men to work your prospects as fast, and as often as necessary, but, at the same time, there must be enough potential for the individual salesman to make enough money to make the job worthwhile.

We had a sales staff, we had something to sell, and we had one more step to take before our total sales promotion package was ready to go. We had some softening up to do for our salesmen, we had advertising and sales aids to prepare.

Now, certainly a salesman can make sales on cold calls, but the odds are against him. Remember the ad the McGraw-Hill Business Press published some years ago? The ad was directed to industrial consumers, but the thought is as valid today as it was then, and just as applicable to our situation.

The illustration was of typical, hard-nosed purchasing agent, arms on the edge of his chair, glaring out of the ad at our cold-call salesman. Here's

what that particular "consumer" was saying:

"I don't know who you are . . . I don't know your company . . . I don't know your company's product . . . I don't know what your company stands for . . . I don't know your company's customers . . . I don't know your company's record . . . I don't know your company's reputation! . . . Now, what was it you wanted to sell me?"

Any of you who have ever sold anything . . . from newspaper subscriptions to cable systems . . . know exactly how the salesman, who faced that guy, felt. And, you know, too, the odds against his making a sale on that first call. Why put our hand-picked salesmen in that position? It's just not smart.

We prepared first of all, a simple folder that answered the question, "What is Cable TV?", the story of our product . . . the written back-up of the sales talk our man would give. We prepared it in two sizes, one that could be mailed, and in a larger version the salesman could use as he sat with the prospect making his pitch.

We prepared newspaper ads, direct mail pieces . . . and for several reasons we dreamed up and polished several Periodic Promotions. Why the promotions? Simple. We knew from experience that any sales force . . . and any set of prospects . . . needs an occasional shot in the arm, a little excitement, an extra special reason to buy . . . AND TO SELL. They are valuable, but not intended to ever replace the day-after-day sales effort. You need both.

But, in all our plans, all our programs, there was one common factor, the two-week free trial. We found out very early in the game that, if we could get a prospect hooked up, we had him hooked. Over the years, we've had no reason to change our minds. Our salesmen know that if they can get the trial offer accepted, we've got a customer 90% of the time. So, we have made the two-week trial a permanent feature.

Now, let's see how our ideas worked, how the basic plan was altered to fit various types of systems, various situations.

We've found out the hard way that there seems to be a saturation point in some systems. We don't like it. We don't plan to live with it forever, but we had to face the fact that, when we reached this level, sales peaked, flattened out and no reasonable expenditure of time or money seemed to change it appreciably. All right. For the time being, then, a system with this saturation had to be considered "mature." This was our first exception to our rule.

It followed, then, that a sales force of any size was waste, even a sales manager might be, so we did our best to perform a miracle. We took the system manager, a technical man, and we gave him the darndest brainwashing you've ever seen. We split his personality and made a part-time sales manager out of him. It worked. In our mature systems, we have maintained the percentage of saturation at its so-called peak level despite the natural turn of customers from move-outs, move-ins, deaths, new families, the changes that slowly occur in a mature system in a static population area.

At the other end of the spectrum, is the brand new system in the community that is literally crying for cable TV service. We've just wound up opening a system like this. Here's how we did it.

The local newspaper was most cooperative. It carried, almost without our asking for it, full coverage of the granting of the franchise. Part of the story was a description of exactly what cable TV is. Almost as soon as the franchise was granted, we started feeding them releases. Believe me, we *fed* it to them.

We supplied continuing series of construction-progress stories, and it became pretty evident, early in the game,

that we were going to make sales whether we had salesmen on the street, in the office, or anywhere. When people approach the crew asking how to subscribe, you can be pretty sure you've got a live one.

We altered our basic sales plan to take this into account. We made it easy, and attractive, for the eager prospects to subscribe.

We began an intensive advertising campaign at almost the same time we began construction. We took large space ads in the paper extolling the virtues of cable TV and telling our prospects to watch the mail for a valuable certificate.

Then, as we were about ready to start building a segment, we mailed a direct-mail piece consisting of a letter, a "gift certificate" for a free trial, along with a reprint of some of the very nice stories the local newspaper had printed about us.

We dated the "gift certificate" to expire one month after we figured the area would be energized, giving ourselves a little leeway in the event construction or technical problems slowed us down, but still clearing the way for the sales force to begin making regular sales right after we "allowed" the eager ones to buy.

It worked beautifully.

We gained substantial monthly revenue as soon as we energized each area. We left plenty of potential sales for the sales force, and, as a matter of fact, we found that one of the best sales clinchers we've got is the next door neighbor who has the service and talks about it!

Of course, most of our systems, and I imagine, most of yours, are somewhere in between the mature and brand new systems. Certainly, the systems we have acquired, rather than built, are that way, and, as the ones we've built grow, we'll find ourselves on middle ground.

I'd describe a "middle system" as one in a growing community that is pretty well cabled, but that is constantly growing with the addition of new areas to cable. It will have areas of town which are pretty static. It will have areas that are constantly changing. And it will have new areas coming up.

This system needs an alert sales manager, an aggressive sales force and every tool in the business. The sales manager needs to keep peak saturation in static areas, in the older parts of town. He needs to keep pushing for more sales in the changing areas. And, he needs to crack the new areas wide open the moment they're ripe.

He's got a balancing problem with

his salesmen and their income. He must carefully balance assigned calls so that the call-to-sale ratio can even out among the men. There's not a faster way to wreck your sales crew than to favor one man, or one group of men.

Okay. You've got it balanced. Now what? Sell!

But, this sure doesn't mean that you just send your men out aimlessly. You plan.

You make sure they're on the job every day, knocking on doors, making sales, but you help them squeeze every opportunity out of every day you can.

Let's face it. There are some times in the year when people are just more interested in buying. Perhaps. The ratings tell us that television audiences are greater in the winter than they are in the summer. Sometimes, they need a little boost.

We had an interesting experience with one system in the heat of the summer. We'd been selling with the rates that were in existence in this system when we bought it. Remember the \$125.00 connect fees? They were brutal. This system had been like that, with an alternate arrangement of \$50.00 for a connect and the difference spread out on the monthly charge.

We wanted to get out from under that rate structure and, at the same time, boost sales. So, one July, we came out with a package changing the connect fee to \$25.00, raising the monthly charge a \$1.00, lowering the salesmen's commission, and told them they could have this rate until Labor Day.

Sales went from approximately 25 a week to 150 a week. We tripled the size of that system that year. Oh, by the way, you're probably not surprised, but we kept that rate in effect past Labor Day. In fact, it still is in effect.

Television sets, and nowadays color television, are popular family Christmas gifts. A marvelous sales opportunity. Get the dealer on your side.

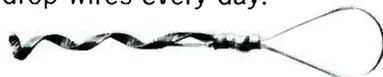
You look again. Fall and winter sports, particularly pro-football, are gaining in popularity. Another sales opportunity. You watch for local, one-time sales opportunities, perhaps the local high school or college gets to the state finals, and it's going to be telecast. You look for sales opportunities like this, and you sell with them.

Let me give you a few examples of the sort of thing we did. Fall shows, for instance. This is a good selling period. We wanted to make the most of it. We wanted the call-sale ratio as high as possible.

To help pre-sell for the salesmen, we

## GRIPPING?

You bet! On more CATV drop wires every day.



New TV "S" Wire Grip. Single piece—stainless steel—fastest installation—greatest strength—longest lasting—lowest cost—19¢. Order today.

Communication, CATV & Power Line Supplies

**JACK PRUZAN CO.**

PHONE 206 + 624-6505

1963 FIRST AVE S. SEATTLE, WASH. 98134

**FOR *EASIER, FASTER* INSTALLATION**

**SUPERIOR  
COAXIAL  
TRUNK CABLE**

**SEQUENTIALLY FOOT-MARKED**

Guaranteed accurate to the  
critical tolerance of  $\pm 1\%$

- **SUPERIOR CELL-O-AIR® for AERIAL USE**
- **SUPERIOR "SOLID-D" for DIRECT BURIAL**

Know the lengths of cable between amplifiers . . . *to the foot* . . . and assure positive checks of cable attenuation measurements and amplifier performance.

Know the *exact cable footage* installed . . . without time-consuming physical measurement.

Know the cable footage received. . . and easily verify the footage in stock.

The numerical markings are per-

manently printed in white at two-foot intervals on the cable jacket. . . . and one-foot increments are designated by a white horizontal line midway between each numerical marking.

To simplify installation, handling and inventory procedures, order SUPERIOR Sequentially Foot-Marked Coaxial Trunk Cable . . . at no extra cost! Every reel is 100% sweep-tested.

**AVAILABLE FROM STOCK . . . AT NO EXTRA COST!**

*For detailed information and prices, write*

**SUPERIOR CABLE**

SUPERIOR CABLE CORPORATION • HICKORY, NORTH CAROLINA



designed a five-piece mailing to proceed the salesman. The series consisted of five colorful postcards. One on sports . . . one on comedy . . . one on drama . . . one on westerns . . . and one on news. We mailed one each working day. On the sixth day, our salesman knocked on the door. Sure, it took a little planning, a little scheduling, but you'd be surprised how little time it took for him to complete the sale . . . even to prospects who had turned us down time and time again.

Let's take another common situation. You have your drop in a house. Your customer moves out. You've got a disconnect on your hands . . . and you don't want it. It would be pretty hard to know exactly when a new family is going to move in. You have a man who works the neighborhood regularly, but not every day, by any means. Here's what we did. We had the man who did the disconnect leave a door-knob hanger. All it says is, "This house is wired for cable TV. For more information, please phone . . ."

You'd be surprised how well it works. Now, don't misunderstand. No door-knob hanger, mail piece, newspaper ad, or anything else, will work as well as an eyeball-to-eyeball call. What I'm talking about is a stop-gap designed to cover you until your sales-

man can get there and tackle his real live prospect.

But, it all adds up.

You search for every possible natural sales opportunity you make every call as productive as possible, and you sell, sell, every day.

Gee, this sounds great, but, ah, are you sure there's a *natural* sales opportunity every day?

Of course not. That's when you start making them up.

Know what we do when we carry a heavyweight fight? If you can call that last one a fight!

First, we let the present subscriber know that we're giving them the fight as a free bonus. This is to take advantage of all the good will we can build up. Then we advertise the fight to the public *for free*. We tell them we'll give them a free two-week trial in their homes so that they can see the fight. We get business this way. We keep it, too. Same 90% retention of two-week trials.

And, still, sometimes that isn't quite enough, so we swiped again. We took a page from the retailer's book.

And, if you really want to see what I mean, study the grocery and department store advertising in your home town. These people have reduced the practice of taking advantages of real

and created sales opportunities to a real science. They've got a "big deal" to talk about, to sell with, at least once a week. Notice how they do it.

We did, and we came up with the best promotion we've ever had. It was a little over seven months ago, and we're just now getting things back to normal.

We started worrying this thing around one day when we were discussing the loss of revenue we were suffering because our cable was running past houses that were not connected to the system.

Our first impulse was to just say, "Hey! Anybody who wants our service can get hooked up FREE!" But, cooler heads prevailed.

FREE is a dangerous word. Most adult Americans are suspicious of it, and for good cause, I suspect. The average person values something that's FREE . . . at just that. BUT, SALE is a grand old retailing staple that works, and works, and works.

We did it. We put connections on sale. . . . We borrowed from the retailer again. . . . We put them on sale for the magic figure of 99c.

To convey a sense of urgency, we made our 99c special good for one week only! And, we used all the regular means of retail sale advertising to tell our prospects about it: newspaper ads, handbills, radio, the whole works!

Boy! The results literally staggered the whole operation! We made more sales in that week than we had the whole year to date. Our service crews went on overtime on top of overtime!

We ran out of drop cable and hardware and our home office engineering people spent hours on long distance begging for air shipments.

It was a nightmare! It was the nicest nightmare I have ever had! You know why?

Today, seven months later, we still have as permanent customers 88% of the people who bought our 99c special.

We've had pretty good luck selling extra connections to present subscribers. We've had so-so luck giving trading stamps on special deals.

Well, the list could go on and on. We intend for it to. We intend to keep looking for new sales opportunities.

You see, we *don't* know all the answers.

But, we are firmly convinced of one guiding principle: a system that is in operation is losing money, no matter what the books say, as long as there is a single house in a cabled area whose resident is not a subscriber.

That's why we say, "You'd better sell it *today* and keep selling it *every* day." □



**ARMADILLO FIBERGLASS BUILDINGS  
ARE IDEAL FOR MICROWAVE REPEATERS**

- Custom design to any size
- Factory equipment installation
- Economically priced

Stationary buildings — Mobile Units — Pole mounted units

Armadillo Mfg. Co. • 847 E. Colfax Ave. • Denver, Colo.

# CRAFTSMAN COMPLETE TAP-OFF Package..

\$ **375**  
IN LOTS OF 100

\$ **395**  
IN LOTS OF 25



**BACK-MATCHED TRANSFORMER TAP**  
Specify Type—Refer to Table A

## YOUR PACKAGE INCLUDES:

1. TAP BLOCKS (refer to Table B)
2. HEAT SHRINK BOOT
3. 2 POSI-GRIPS
4. T-15 TRANSFORMER (Epoxy-filled and Full-Shielding)
- 4a. PLASTIC CLIP, MALE CONNECTOR and FERRULE
5. BACK-MATCHED TRANSFORMER TAP (refer to Table A)

## EVERYTHING YOU NEED for SINGLE HOUSE-DROP in ONE PACKAGE

**WE SHIP WITHIN 24 HOURS!**

**TABLE A**

BACK-MATCHED TRANSFORMER TAPS		
TECHNICAL SPECIFICATIONS		
Frequency response:	8-220 MC	
Tap-off flatness:	± 2 db	
Body:	Solid brass, silver plated tap output is AC/DC isolated	
Tap VSWR:	1.2:1 max.	
Output connector:	F type	
Dimensions:	2-1/4" x 5/8"	
Craftsman Order Number	Type	Insertion Loss
304-12	12 db	0.75 db
304-16	16 db	0.25 db
304-20	20 db	0.10 db
304-24	24 db	0.10 db
304-30	30 db	0.10 db
304-36	36 db	0.10 db
304-40	40 db	0.10 db
304-50	50 db	0.10 db

**TABLE B**

PRESSURE TAP BLOCKS			
Type Cable	Construction	O. D. of Cable	Order No.
RG11U	SSSJ	.407	200
	DSDJ	.465	201
Strip-Braid 308/408	SSSJ	.465	201
	DSSJ	.465	201
Aluminum .412 O. D.	Unjacketed	.412	202
	Jacketed	.480	203
Corrugated CF480 Cables	Jacketed	.480	203

BE SURE TO STATE BOTH ORDER NUMBERS AS SHOWN ON CHARTS  
(For ex: Order #201/304-20)

## THE PIONEER CATV ACCESSORY MANUFACTURER

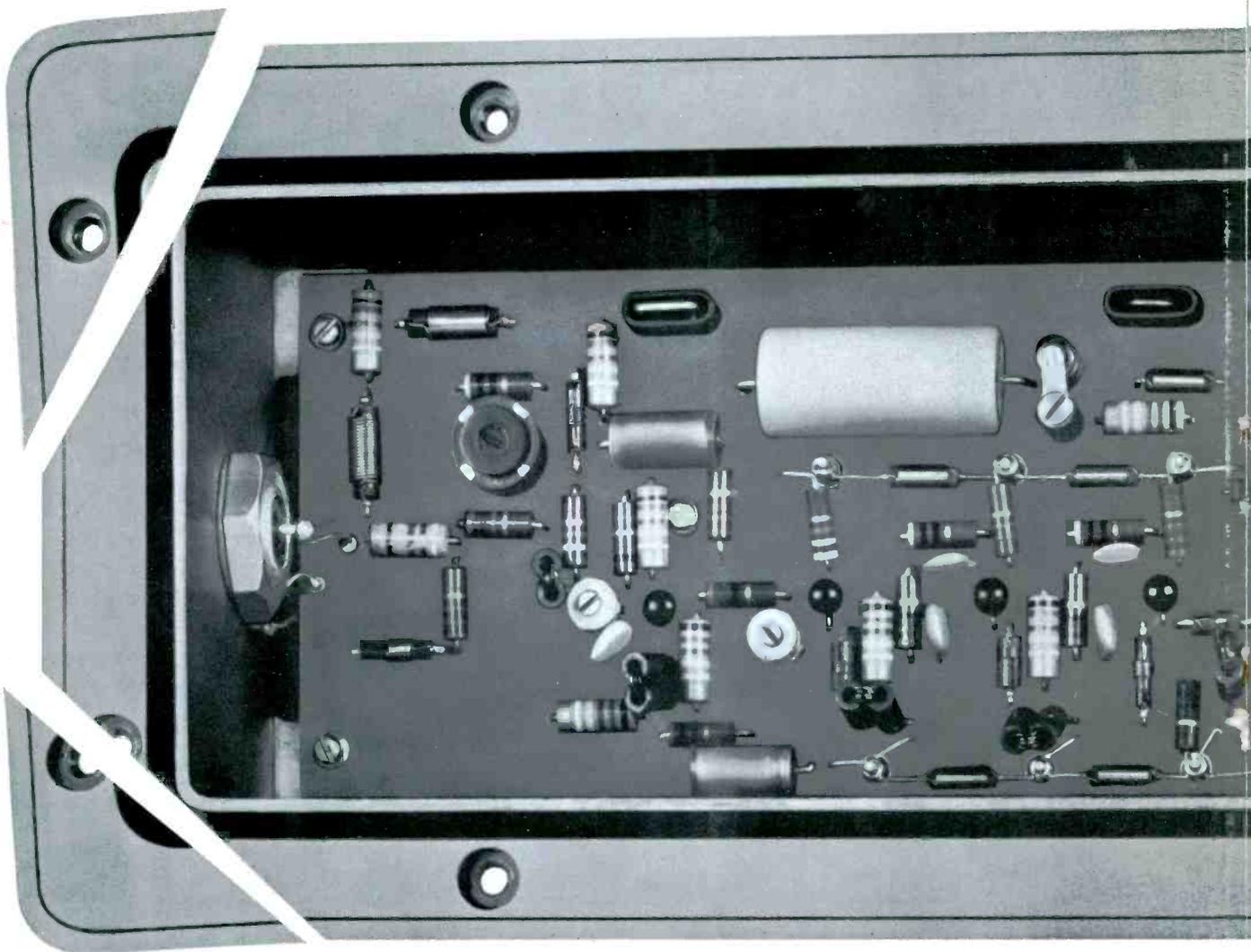
WRITE TODAY for complete catalog and price lists . . . .



**CRAFTSMAN ELECTRONIC PRODUCTS, INC.**

133 WEST SENECA ST.  
Area Code 315

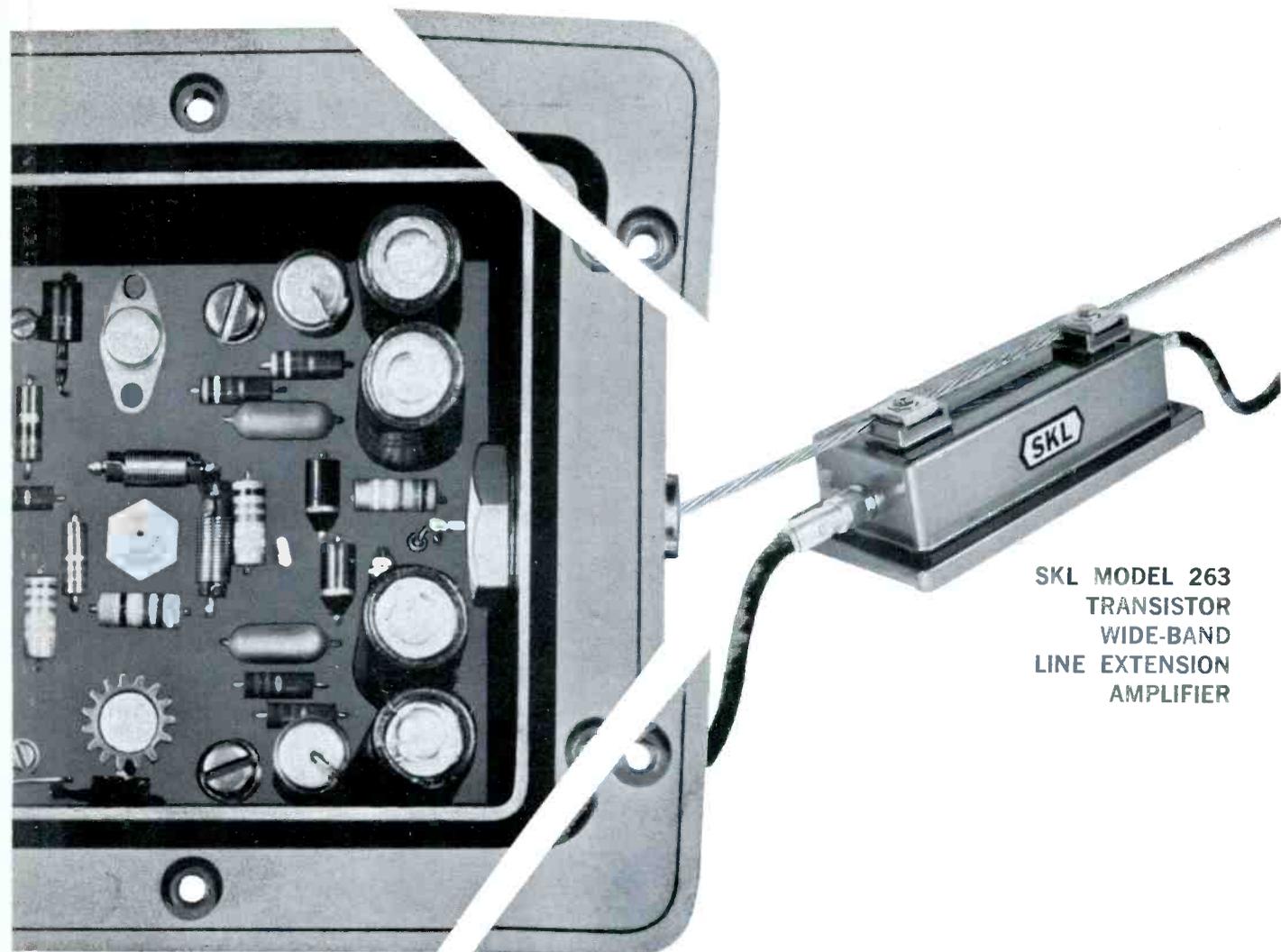
MANLIUS, N. Y. 13104  
Phone OVerbrook 2-9105



## **WE COULD CUT COSTS**

**But...if We Did...You Wouldn't Have SKL Q**

The SKL Model 263 Line Extension Amplifier is a new high output, transistorized amplifier with full 12-channel bandwidth. It is designed for use as a line extension amplifier in any wide-band distribution system. The nominal gain is 22 db at 216 mc, with a 7 db slope across the 54 to 216 mc band. Manual gain and tilt controls complete the compensation for the average cable losses encountered in feeder lines. Low noise and cross-modulation allow the Model 263 to be used even at the most remote ends of a distribution system. AC cable powering provides flexibility in designing new and in extending or updating existing distribution systems. The unit is housed in a rugged, waterproof, cast aluminum box with a captive cover, and may be mounted on the messenger or on a pole.



SKL MODEL 263  
TRANSISTOR  
WIDE-BAND  
LINE EXTENSION  
AMPLIFIER

# TURNERS...

## Quality and Reliability

### SKL 263 TRANSISTOR WIDE-BAND LINE EXTENSION AMPLIFIER

#### FEATURES:

- 12-Channel Bandwidth
- Built-In Cable Compensation
- Gain and Tilt Controls
- High Output Capability
- High Return Loss
- AC Cable Powering

Call or write for SKL Model 263 Product Data Sheet containing complete specifications and the SKL Short Form Catalog describing all SKL Cable Television System Equipment and Services.



**SPENCER-KENNEDY LABORATORIES, INC.**

1320 SOLDIERS FIELD ROAD • BOSTON, MASS. 02135 • TEL. 617-254-5400

# ANALYSIS: New FCC Rules

By Grover C. Cooper

(Editor's Note: The author of this article prepared a summarization of the Commission's complicated First Report and Order in Dockets 15233-14895. We believe you will find this a handy guide in determining your rights and responsibilities under the new provisions. Mr. Cooper is associated with the law firm of Fisher, Wayland, Duvall and Southmayd of Washington, D. C.)

## I. CARRIAGE OF THE LOCAL SIGNAL

Generally speaking, a microwave supplied CATV must carry the signals of all stations within whose Grade A or B contour the CATV is located.

However, the Commission recognizes that this requirement could result in a CATV carrying several substantially duplicating signals from networks in nearby markets, with the consequent exclusion of signals from more distant independent and educational stations. This is particularly true in the case of narrow band CATVs — CATVs capable of carrying only about five signals.

Therefore, recognizing the limited channel capacity of many CATV systems, the new rules provide that a microwave-fed CATV need not carry a particular television station's signal if (1) that signal "substantially duplicates"<sup>1</sup> the network programming of a signal of a higher grade;<sup>2</sup> and (2) carriage of that signal would — because of the limited channel capacity of the CATV — prevent the CATV from carrying a non-network signal which would contribute to the CATV's diversity of service.

## II. NON-DUPLICATION REQUIREMENTS

Stations which are carried on a microwave supplied CATV system (by virtue of the carriage requirements above), which CATV system is located within the station's or stations' Grade

A or B contour are entitled to non-duplication program protection as follows:

1. *As to its network programming*, a station is entitled to non-duplication protection on the CATV unless one or more other stations which "substantially duplicate"<sup>3</sup> its network programming place an equal or higher grade signal over the CATV.<sup>4</sup>

The purpose of this non-duplication protection is to preserve a station's exclusivity of network programming, but only where the station actually has exclusivity; if the station already receives duplication of its network signal from another source (with an equal or better signal), then it does not have this exclusivity, and therefore is not entitled to network program protection from the CATV.

2. *As to its non-network programming*, a station is entitled to non-duplication protection so long as no other station, located in another market, places an equal or higher grade signal over the CATV. In other words, if any station, operating in another market places an equal or higher grade signal over the CATV, then the CATV will be entitled to carry programs which duplicate the first station's signals — irrespective of where the duplicating signals are obtained.

An example may make this clear: Assume two cities, A and B, are located in separate markets some 80 miles apart and that each city has one operating television station. Assume that there is some overlap of the Grade B signals of these two stations. Assuming no other stations anywhere in the area, the stations in both cities are entitled to non-duplication protection of their non-network programming within their service contours, except in the area enclosed within the overlap of their Grade B contours. Within this overlap area, neither the City A nor City B television station has exclusivity vis-a-vis one another, hence they are not entitled to duplication

protection from the CATV. A CATV located in this overlap area will be permitted to duplicate the non-network programming carried by either station through its carriage of some distant city's TV signal.

The apparent rationale here is to offer minimum disturbance to a CATV's operation "between markets" and to only offer complete non-duplication protection where a particular station enjoys present exclusivity versus other television stations in other markets. The tendency is to protect the isolated TV station in a sparsely populated area, which stations claim to need protection within their entire service areas. It also tends to protect CATVs in areas such as Central New York where the CATVs are covered by a great number of Grade B signals from various different markets, the cumulative effect of which would, without the duplication exemption, substantially deprive the CATV of the opportunity of carrying independent non-network programs.

## III. EXCEPTIONS

The non-duplication protection will be provided to stations for a period of 15 days before and after such stations carry the particular programs entitled to protection. *However*

1. A CATV need not delete reception of a network program if in so doing it would leave available for subscribers less than two network programs including those stations whose signals are being carried and whose exclusivity is being protected by the CATV.

2. A CATV need not delete reception of a network program which is scheduled by the network between the hours of 6:00 and 11:00 p.m. Eastern Standard Time, but is broadcast by the station requesting deletion, in whole or in part, outside the period which would be considered prime time for network programming for the zone involved.<sup>5</sup>

<sup>1</sup> "Substantially duplicates" here means that the lower grade signal duplicates the network programming of the higher grade signal a total of 14 hours or more in the 6:00 to 11:00 p.m. period of a normal broadcast week.

<sup>2</sup> Grade A is higher than Grade B and a city grade signal is higher than Grade A.

<sup>3</sup> See Footnote 1.

<sup>4</sup> For example, if the area where the CATV is located is covered by two Grade A NBC signals, then the CATV does not have to offer non-duplication protection to the NBC programs of either station; the CATV is entitled to bring in NBC programming from any distant location it wishes.

<sup>5</sup> Thus, for example, "Shindig" is an ABC program scheduled for 8:30 p.m. EST. This program could not be delayed until 11:30 p.m. (non-prime time) or until the next afternoon (non-prime time) and still be entitled to protection from duplication. If it were broadcast the next night at prime time it would be entitled to protection. Indeed, in the central time zone, "Shindig" (a one hour show) could not even be delayed until 9:30 CST and demand protection since it would extend beyond 10:00 CST and this would be partially outside of central time zone time. (Caveat: The question of what is prime time in a given area is subject to some debate.)

# If you're buying a "turn-key" CATV system, make them prove you're getting Plastoid welded aluminum sheath co-ax; it's stronger than seamless!

It's the same whether you buy or build. If something should go wrong later, recourse can be difficult indeed. So you want to start with the very best.

With Plastoid welded aluminum sheath co-ax, you get the ultimate in strength and lasting performance. We're years ahead in cable-making.

Plastoid bends precision rolled aluminum strip into a uniformly concentric sheath, then welds it together by means of UHF-radio frequencies. This way we avoid crystalizing the metal grain structure, avoid the pushing and pulling that goes with making seamless cable and that makes for thin spots, thick spots—points of potential breakage.

Plastoid's UHF weld is actually stronger than the metal in the rest of

the sheath; yet the seam is the same thickness as the wall.

Further, the exclusive Plastoid manufacturing process permits unequalled lengths—up to a mile for our TA-5 half-inch trunks and TA-4 .412-inch feeders, 2,000 feet for TA-8 three-quarter inch head-end cable. Less need for splicing where moisture can penetrate, radiation leak out.

As color TV comes in, you owe it to yourself to know that your CATV system is built for technical stability. Whether you are buying a "turn-key" system, or building your own, we will be glad to provide you with complete information about the finest aluminum sheath cable made today. It's UHF-welded. It's by Plastoid. Exclusively. Write, wire or call us today.

**PLASTOID**  
CORPORATION  
42 61 24TH STREET / LONG ISLAND CITY 1, N. Y. / ST 6 6200

3. The CATV need not delete reception of a program or event as to which the time of presentation is of special significance (e.g. speech of the President), except where the program is being simultaneously broadcast by a station entitled to protection. In other words, if a station, otherwise entitled to protection chooses not to carry a rocket launch or a presidential address "live" — preferring to present it later in prime time — then the CATV can carry the event.

#### IV. MISCELLANEOUS

1. Of considerable practical importance is the fact that the broadcaster, the television station, has the burden of providing notice to the CATV about the programs not to be duplicated. This notice must specify the "program to be protected and the program against which he desires protection." (First Report and Order at pp. 66-67) The station requesting protection must set forth "the date and time of its broadcast of the program and the date and time of the broadcast to be deleted as soon as possible and in any event no later than 48 hours prior to the broadcast to be deleted." (Rules 21.712(f)) In view of the complex priorities and exemptions, this notice will be quite difficult to figure out.

2. All applications subject to Section 21.712 of the rules (applications for initial grants, modifications, assignments and transfers and renewals of microwave systems) shall contain a statement that each CATV to be served, notified all television station licensees and permittees within whose Grade A or B contour the CATV will operate that (1) the application was filed and (2) the CATV will abide by the rules adopted in this proceeding.

The television stations to be notified may be determined based on their predicted contours (on file with the FCC). For other purposes, however, e.g. determining what stations are to be carried, any party is free to make a showing that because of terrain or other factors the actual contours lie elsewhere. Indeed, it is even suggested that notwithstanding the presence of equal designated contours over a CATV area, for example, two Grade As, that one station may be able to show it has a "materially" better Grade A signal, hence entitling that station to a carriage or non-duplication priority over the other station. This concept of gradations of signal strengths within a TV station's service area will probably be determined on an ad hoc basis, after hearing, and promises to be a fertile area for confusion and misunderstanding. □

## News in Your Own Backyard

By Leonard Gregory

Cable operators — like most businessmen — are missing a real promotion opportunity by failing to develop a good working relationship with their hometown newspaper.

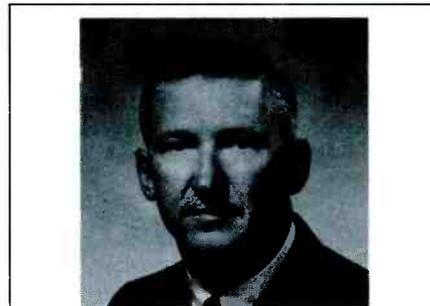
After the initial splurge of advertising that accompanies the opening of a new system, many cable operators settle down to a rather monotonous advertising program and completely ignore the many opportunities to get releases into the news columns of the paper.

"Sure, the paper ran some stuff when we opened up," the average manager will say, "but that publisher is not going to keep on giving us a lot of space free."

That depends on what you offer him. If it's NEWS, and it's handled right, the newspaper is more than eager to give it good coverage. But make sure it is NEWS, not just a lot of advertising with the words, News Release, underlined up in the top left corner of the sheet. Nothing infuriates a publisher more than a lot of not-so-subtle advertising passed on to him as news. He considers it an insult to his intelligence — which it is.

You can find good news stories regularly right in your own operation. What about the technician who goes to a special school, the employee you promote, the new employee hired, the addition of new equipment or service, the expansion into an area previously not served, your election to a post in your state association? Think about it a little, and you can add a dozen possibilities to this list.

A good feature story will get the editor on your side in a hurry. One small-town system manager in Kentucky did a feature on his office receptionist's visit to the antenna tower which overlooked the town. The road to the tower was a quagmire and hardly anyone in the community had ever been near it. The readers followed her every step from the base of the hill to inside the tower shack. The newspaper used three pictures the manager had thoughtfully provided to illustrate the story. One showed the attractively-dressed receptionist frowning at the rutted road and trying to avoid the mud. In another, she was viewing the weather and time equipment, and the third picture had a technician explaining the electronic



Leonard Gregory is Southeast Regional Manager for American Cable Television, Inc., Phoenix, Arizona.

gear in the tower shack. For days, people in the community were still mentioning the story to her.

Okay, so you now have the ideas. You get the stories written, and maybe you even have some pictures. What now?

First, get your copy in good shape for the editor. Give it at least an inch and a half of margin on the left side of the sheet and roughly the same on the right side. Leave approximately three to four inches of space at the top of the first page. This leaves the editor plenty of room for writing the headline and for any "blue-penciling" on the margins. Of course, your copy should always be double-spaced.

When you turn in your release to the editor, simply mention that you have a news item you hope he can use. Don't tell him how to use it or where. If you flip it on his desk with the order to put it on the front page, you can be sure that it will be buried on page nine — if it even makes the paper at all. And please don't tell him to run it exactly as you have written it. Tell him this and he'll chop the heck out of it just to remind you that he has that right and privilege. It is his newspaper, remember.

One more thing. News releases should be in addition to your regular advertising, not a replacement for it. No newspaperman is going to look favorably on your releases if it means a cutback in his share of your advertising budget. Instead, it would be a good idea to increase your advertising expenditures — and reap the rewards of a better advertising and promotional relationship with your newspaper. □



## It will take you 117 seconds to read this booklet. It took us 8 years to write it.

We started writing this booklet when we started operating our first cable system . . . back in 1957.

Even then, we knew a sound CATV system depended on more than just the equipment.

So, instead of basing our outlook on just nuts, bolts and wires, we took the broader approach. We delved into franchise procurement . . . feasibility research . . . engineering . . . construction . . . financing . . .

sales promotion . . . as well as personnel training and management. These are areas in which TeleSystems serves CATV operators. And you'll find all of our services outlined in this brief little booklet, called "Scope."

Today, when someone wants the broad picture on CATV, he comes to TeleSystems. Or, he fills out this coupon, and we come to him.



## TeleSystems Corporation

113 South Easton Road, Glenside, Pa.  
215 TU 4-6635

TeleSystems Corporation 113 South Easton Road Glenside, Pa.	
Gentlemen:	
Please send your free copy of "Scope."	
Name _____	
Title _____	
Firm Name _____	
Address _____	
City _____	State _____

# NEW CONCEPT: HOME VTR

A new concept in home entertainment has been developed by Ampex Corporation. The concept is a home video tape recorder that will record televised programs or originate taped programs.

Application of this new concept for community antenna television systems is practically unlimited. It can be used to record network or local programs for showing at a later time (a procedure very common in the television broadcast field). With an inexpensive television camera, the recorder can be used to record city council meetings, style shows, local talent shows, editorials, etc.

The VTR will have two-speed configuration. At higher tape speed (9.6 inches per second) the recorder will produce high quality pictures that are compatible with future color recorders. At the slower speed (4.8 inches per second) it produces high quality black and white pictures. The one-inch tape on a 9½ inch reel will record up to two hours of programming at the slower speed. Tapes can be retained as a permanent record or erased and re-used.

Camera, tape unit have many home, CATV applications.



Furniture console with camera can record "home movies."



Ampex table model home video recorder is about the size of a professional audio recorder.

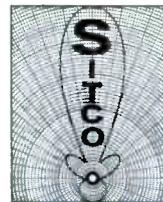


Ampex's home table-top model video tape recorder is approximately the size of a conventional audio recorder. It can be connected to any home television receiver with special connection components. The components will cost approximately \$25 installed.

Four furniture console models are available. These include the recorder, a television camera, a television receiver and related accessories. The basic table-top unit will sell for \$1,095 in a single-speed model. Two-speed model will cost \$1,295.

Furniture console systems with necessary equipment to record in the home start at \$1,795. They range up to \$2,495. Tape for recording costs \$64.95 for a 9½ inch reel.

William E. Roberts, Ampex President, claims the Ampex home recording concept "will be the leader in a broad new field of home entertainment." □



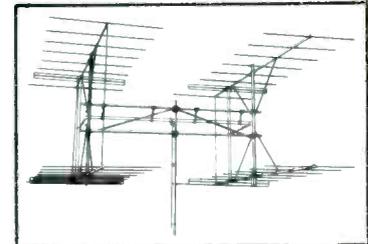
# SITCO

Antennas

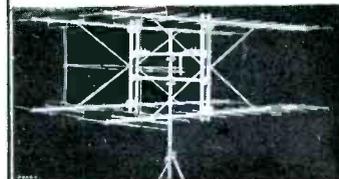
Designed by SITCO for Community TV and extreme fringe area requirements.

## HEAVY DUTY QUADS AND YAGIS

The SITCO Models SHD 32-4 and SHD 48-4 Quad Mount Antenna Arrays are designed to produce high gain, high front-to-back ratio and large aperture to weak signals. A completely balanced system which reduces noise pick-up and greatly improves the signal-to-noise ratio.

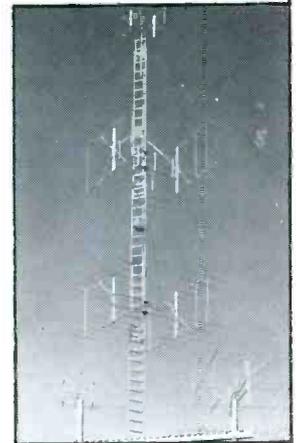


Model No. SHD 32-4  
Channels 5 and 6



Model No. SHD 48-4  
Channels 7 to 13

These antennas have been improved with sleeve strengthened SOLID BAR elements, larger diameter booms, heavier reinforced braces, and improvement in aluminum alloys.



SITCO WEDGE SCREW FASTENERS



Ask about SITCO MD Series Antennas  
WRITE FOR FREE SITCO CATALOG

# SITCO

Antennas

10330 N. E. MARX ST. • P. O. BOX 7691  
PORTLAND, OREGON 97220

# THE CATV INDUSTRY

## Its History, Nature and Scope

By Robert D. L'Heureux  
NCTA Legal Counsel



### PART VI: CONCLUSION

#### Attempts at Compromise on Legislation

The CATV industry has frankly stated to the Commission in its Further Comments in Opposition to Proposed Rule Making in Dockets Nos. 14895 and 15233 that it is not opposed in the case of applications for microwave to serve CATV systems to the Commission proceeding to determine whether there is a serious adverse economic impact on a truly local television station on a case by case basis. In fact the National Community Television Association, which is the spokesman for 640 CATV systems serving about 90 percent of the homes which receive television signals via CATV systems, concluded its "Further Comments" as follows:

"It is obvious from the data presented above that there is no crying need for the protection of local broadcast stations. History has shown that CATV systems have not had a discernible, adverse economic impact upon local television stations. Because only a small number of CATV systems which are served by microwave will be significantly affected by the proposed rules, the purposes of the Commission will be thwarted.

"There were very few conflicts between local broadcasters and CATV operators in the past, and there have been no claims that a CATV system has caused the demise of a television station in the past five years. The solution of these problems should be generally left to the arm's-length negotiations between broadcasters and CATV operators. Should a local television broadcaster feel that he is aggrieved by the presence of a CATV system, which is served by microwave or applying for microwave service, the Commission should allow the broadcaster to present evidence on a case-by-case

basis in an attempt to prove that the CATV system is having a substantial, adverse economic impact upon his TV station, to the extent that there is injury to the public interest present. If a strong prima facie case to that effect is presented to the Commission, the Commission should allow interim relief with periodic reviews of the effect which this relief is having upon the financial position of the broadcaster and the CATV operator. When relief is given on a case-by-case basis, even in a case not involving interim relief, this type of periodic review should be afforded to the parties involved. In any event, the Commission should proceed with its remedy, making use of a scalpel, rather than an axe. It should attempt reception of the complaining station on the CATV system and simultaneous non-duplication only, until it is assured through a reasonable trial period, that a more drastic remedy is required.

"A remedy should never be given in a final judgment, except upon clear, convincing and strong evidence that the alleged economic impact has taken place, and that the public is injured thereby. Any other disposition by the Commission will result in tampering with the public's jealously guarded and highly prized right to select the television channels of its choice. If the Commission deals lightly with this right, the public response will be overwhelming and will make enforcement of the rules impossible. Finally, the Commission will involve itself in a veritable maze of hearings and court actions if it attempts to enforce rules which are not strictly patterned to the demands of the particular situations involved.

"A case-by-case approach is the only reasonable answer to the problem. Accordingly NCTA exhorts the Commission to terminate the proposed rulemaking in the above-captioned dockets, and to refrain from issuing

rules restricting the right of applicants for microwave service designed to serve CATV systems. Instead, the Commission is respectfully requested to announce that when a protest to such an application is made, and a strong prima facie case is presented which tends to prove that a CATV system which is receiving or requesting microwave service is having a substantial adverse economic impact upon a broadcaster, and that the public will suffer from the grant of the microwave license, then the Commission will order a hearing and determine the facts."

Although the CATV industry is satisfied that the case-by-case approach is all, if anything, that is required under existing circumstances, it has shown its willingness to cooperate fully with the Federal Communications Commission and the National Association of Broadcasters to arrive at a mutually satisfactory agreement to lodge additional authority in the Commission through legislation. For a period of about 18 months representatives of the National Community Television Association met with staff members and Commissioners of the Federal Communications Commission to discuss such legislative proposals.

The NAB Television Board on January 25, 1965, in Palm Springs, California, rejected the basic principles worked out by its special panel with the panel appointed by the NCTA with respect to provisions which should be included in Federal legislation for the regulation of CATV systems. This is the second time that the tentative agreements on basic understandings reached by the NAB panel and the NCTA panel failed to come to fruition.<sup>77</sup>

A summary of the latest basic understandings<sup>78</sup> rejected by the NAB is as follows:

#### "I. DEFINITIONS

"(h) 'Common carrier' or 'car-

<sup>77</sup> An earlier version was disapproved in December 1964 by the Future of Television in America Committee, a committee of the NAB to which the NAB panel had to report.

ier' means any person engaged as a common carrier for hire, in interstate or foreign communications by wire or radio or in interstate or foreign transmission of energy except, where reference is made to common carriers not subject to this Act; but a person engaged in radio broadcasting or in operating a community antenna television system shall not, insofar as the person is so engaged, be deemed a common carrier.

"(h) 'Community antenna system' means a facility utilizing a receiving antenna or antennas, connecting wire, cable or relay facilities and associated equipment, for the reception and simultaneous distribution to subscribing members of the public of the signals of one or more broadcast stations.

#### "II. LOCAL STATIONS — For the Purpose of Carriage

"(a) Within the limits of its channel capacity, a CATV system would receive and distribute to its subscribers the signals of television stations in accordance with the following priorities:

"(1) All stations assigned to and operating in the same community in which the CATV is located.

"(2) All stations within whose predicted Grade A Contour the CATV is located. No Grade A signal, however, need be carried if that duplicates the network of a co-located television station and if by carrying that signal the CATV system would have to exclude the signal of a non-affiliated station.

"(3) All stations within whose predicted Grade B contour the CATV is located. This, again, is subject to a limitation similar to that contained in (2) above, i.e., the CATV need not carry Grade B signals if the network carried by those signals is already being picked up from either a co-located or a Grade A station.

"(b) Whenever a selection between signals may be made under priorities (2) and (3), the CATV shall have exclusive discretion in making the selection.

"(c) Existing CATV systems would bring their operations into compliance within one year after the effective date of the legislation.

#### "III. LOCAL STATION — For the Purpose of Protection

"(a) The CATV will not duplicate the programming of any co-located station.

"(b) If there are co-located stations and Grade A signals, the CATV need not protect against the Grade A signals.

"(c) Where there are no co-located stations, Grade A signals are protected against incoming Grade B but not against each other.

"(d) Where there are no co-located stations or Grade A signals and only one Grade B signal, the CATV will not duplicate the programming of that station. Multiple Grade B signals, however, are not entitled to any protection from duplication.

#### "IV. EXTENT OF PROTECTION

"The statute will provide that those television stations entitled to protection under III shall:

"(1) Upon request by the station to the CATV be entitled to protection against simultaneous duplication of its programs by means of the CATV.

"(2) The Commission shall have authority after hearings on a case-by-case basis to provide for additional protection to the station as the Commission may find to be required in the public interest. The burden of showing the need for such additional protections shall be on the broadcaster *except* in those cases where CATV proposes to bring in distant stations when the burden of proceeding with the evidence of public need shall be on the community antenna proposing to receive the distant station.

"(3) In those cases where CATV desires to receive independent stations it must receive those closest to it in the order of their geographical proximity to the CATV. For the purpose of this requirement an independent station is defined as a non-network station in a market containing four or more stations. The CATV may request permission from the Commission to adopt some other order of selection of independent stations and the Commission may with due regard to local and regional stations grant such request if it finds the public interest would be served.

#### "V. PROGRAM ORIGINATIONS

"A CATV system is limited to the receipt and simultaneous distribution of broadcast signals with the ex-

ception of automatic time and weather service. Any other type of program distribution would require a license from the Commission on a finding of public interest, convenience and necessity.

#### "VI. ENGINEERING STANDARDS

"The Commission would have the power to establish standards of good engineering practice for CATV systems. These would encompass questions of degradation standards of color, adjacent channel reception, etc.

#### "VII. ENFORCEMENT PROVISIONS

"The legislation shall contain appropriate provisions for enforcement."

There was inadvertently omitted from the memorandum on the basic understandings a definition of a distant station. A distant station would be defined as one which could not be picked up and distributed directly off the air (at the CATV head-end) or within its Grade B contour.

Additionally, under *Extent of Protection*, the statute would also provide that local agreements shall control. This was omitted from the summary because it was believed to be unnecessary. This for the reason that if there is a local agreement, there would be no objection on the part of the broadcaster and, hence, nothing to submit to the Commission for resolution. However, for the sake of clarity, there would be no objection to it being specifically set forth.

Also, there was an agreement between the NAB and NCTA panels that CATV systems with 5-channel capacity or less would be grandfathered in with respect to their present reception practices, provided these remained unchanged.

Conversely, the NCTA Board on January 25, 1965, approved reluctantly in Dallas, Texas, the basic understandings worked out by the NAB and NCTA panels in the following unanimous resolution:

"Whereas it is the sense of the Board of Directors of the National Community Television Association that its legislative negotiating Committee which met with the subcommittee of the Future of Television in America Committee of the National Association of Broadcasters has performed an outstanding service to the television industry in reaching an understanding on CATV legislative proposals with the NAB subcommittee and has presented such understanding with a full

78 The NCTA stated: "These reflect the understandings arrived at between the NCTA and NAB sub-committees. It should be pointed out that the language used is designed to reflect understandings only and should be read from that point of view."

and detailed oral explanation of the compromises to which it reluctantly agreed;

"Now, therefore, be it resolved that in the event the Board of Directors of the NAB agrees to such understanding in accordance with the NCTA committee's explanation of intent, the NCTA negotiating committee is authorized to work with the FCC and others in the drafting of legislation implementing the understanding in the public interest — upon the completion of which the draft legislation should be resubmitted to the NCTA Board for its concurrence.

"In the event the Board of Directors of the NAB will not agree to the above understanding the committee is authorized to inform the FCC and to resume discussions with it looking toward, at this session of Congress, legislation on CATV designed to best serve the public interest."

The NAB Television Board has stated its disagreement with the understanding upon simultaneous non-duplication by rule making.

Commenting upon these actions of the respective Association Boards, the President of NCTA, Mr. Frederick W. Ford<sup>79</sup> on January 27, 1965, stated that the NAB Television Board had introduced "major changes" in the legislative understandings previously agreed to by NCTA and NAB Committees, which "in effect vitiate the understandings."

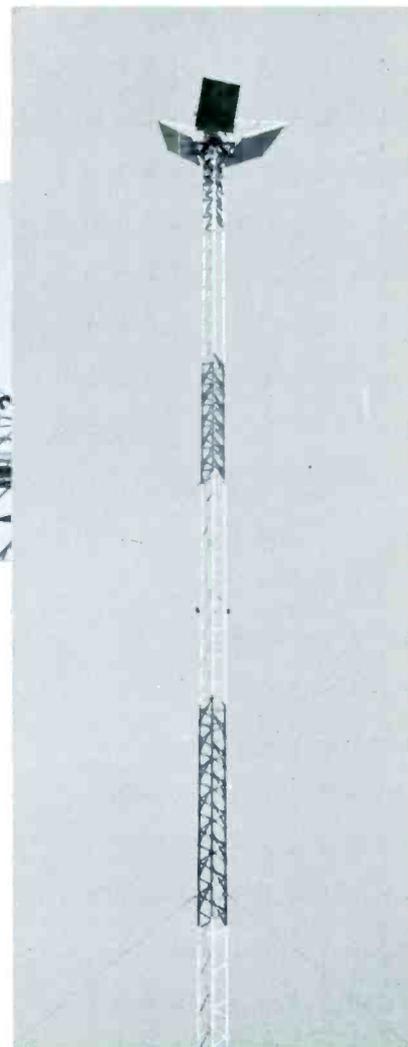
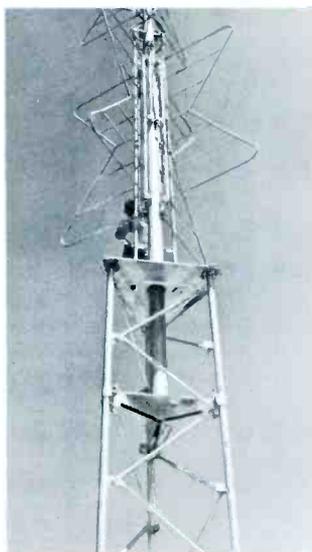
"The changes," Mr. Ford said, "unnecessarily and injuriously penalize community antenna television (CATV) systems with no corresponding benefit to local television stations.

"In approving its basic principles for CATV legislation, NAB's TV Board made a basic change in the committees' understandings. The committees had agreed to give protection to local television stations against simultaneous duplication of their programs by other stations received on CATV systems. The TV Board changed this to give protection against duplication for 15 days before and after a program appeared on a local station.

"We consider this action by the TV Board a rejection of the understandings so long and laboriously worked out by the subcommittees," Mr. Ford said. "NCTA agreement to the legislative proposals was predicated on the simultaneous duplication protection as written in the understandings approved by the NCTA and NAB committees.

<sup>79</sup> Mr. Ford, former Chairman and member of the FCC, resigned from the Commission on December 31, 1964. He assumed office as President of NCTA on January 1, 1965.

## CHECK **ROHN** FOR YOUR TOWER NEEDS FIRST!



- ✓ Full line of proved communication towers to fit every need . . . includes heavy duty broadcast, CATV, and microwave.
- ✓ Tower design and engineering is tested by thousands of ROHN tower installations.
- ✓ Complete installation service available to take care of the entire job—professionally and to save you money.
- ✓ Complete line of microwave reflectors and tower lighting equipment available.
- ✓ Deal with one of the oldest and largest tower manufacturers in the U. S.—representatives world-wide.

*Write — Call — Wire for Immediate Service*

## **ROHN Manufacturing Co.**

P. O. Box 2000, Peoria, Illinois

Phone AC 309-637-8416

"The subcommittee understandings contain compromises, some of which were reluctantly agreed to by NCTA," Mr. Ford said, "but we agreed to them in good faith in an effort to afford adequate recognition and protection to local television stations. We believe that CATV systems should receive local stations, and should respect their integrity which we feel would be adequately accomplished through protection against simultaneous program duplication.

"Committees of NCTA and NAB have been actively engaged over a considerable period of time in attempts to resolve differences which could lead to joint approval of understandings regarding CATV legislation.

"Committees of both television trade groups met in Washington, D.C., on Sept. 2, and in New York City on Dec. 7 and 8, 1964. At the New York meeting both committees agreed upon proposals to be submitted to their parent groups for approval. At a special meeting in Washington, on Dec. 17, 1964, the Future of Television in America Committee of NAB rejected the proposals worked out earlier in New York. Again the two committees met, this time in Dallas, Texas, Jan. 5, 1965. It was at this latter meeting that the two subcommittees approved the basic understandings rejected by NAB's TV Board in its action today.

"We are still hopeful," Mr. Ford concluded, "that the National Association of Broadcasters will adopt a more progressive attitude toward the understandings agreed to by its committee. Of course, NCTA stands ready to meet with representatives of the NAB at any subsequent meeting requested by NAB, in an effort to reach an agreement on these understandings. This would be a step forward in the orderly development and unification of both cable and broadcast television."

The Commission repeatedly and correctly ruled that it does not have jurisdiction over CATV systems.<sup>80</sup> It can affect only CATV systems which are served by microwave. This represents about 250 to 300 CATV systems out of a possible total of about 1,600.<sup>81</sup>

The Commission and the Chairman of the Committee on Interstate and Foreign Commerce of the House of Representatives have urged leaders of the CATV and broadcasting industries to attempt to reach an agreement upon

provisions for the Federal regulation of CATV systems.

The broadcaster cannot fail to pay heed to the sound advice of the legislator who spearheaded the drive to prevent the Commission from enacting rules with respect to the length or content of commercials. Radio-Television Daily of June 16, 1964, carried the following news item:

"Broadcasters who seek Congressional help against the inroads of Community Antenna TV, are flirting with 'complete governmental control,' Georgia broadcasters attending their 29th annual convention were told yesterday, by Congressman Walter Rogers (D., Texas), chairman of the House Communications Sub-Committee.

"There are great changes ahead in broadcasting but your biggest problem with dealing with community antenna systems won't be solved through Congressional protection. On the contrary if Congress starts to protect it, complete control of your business will follow. Better work out your own problems with antenna operators without seeking government intercession," he said."

CATV operators have taken to heart the wise advice contained in the Georgetown Law Journal in the Fall of 1963, as follows:

"Another alternative would be additional congressional enactment, modifying the Federal Communications Act. Such a modification could well provide the most desirable solution to the CATV problem. It could, in the first place, avoid the necessity of resting FCC authority over CATV on a liberal (and questionable) construction of the existing act. Secondly, it could provide the first clear set of detailed guidelines for governing CATV activity.

"A properly drafted enactment would avoid giving the FCC blanket control over CATV. The FCC should be empowered to intervene only when a local station has met the burden of proof in showing that irreparable harm will be done to the public interest unless a CATV system is limited in its operation. Irreparable harm to the public interest might be shown if a CATV caused such substantial losses in advertising revenue than an imminent threat to a local station's continued existence was created. Or possi-

bly irreparable harm might be shown if a CATV caused undue interference with reception of the signal of a local station. In any event, where irreparable harm to the public interest is found, the Commission should be empowered to issue cease-and-desist orders, enforceable, if necessary, through court action.

"Any congressional enactment should state specifically that the 'end-use' test, as applied in *Carter Mountain*, is not a valid means of determining whether or not an applicant should receive a common carrier microwave license. There is no more reason to hold a common carrier employing microwave responsible for the end-use of what it carries than there is to hold American Telephone and Telegraph Company or Western Union (also common carriers) responsible for the use made of information they carry.

"Finally, any legislation on CATV should be made pre-emptive. A carefully drafted bill ought to indicate this clearly, in order to end the present confusion. Unless such pre-emption is established, there is a danger that friction will develop between the FCC and the state utility commissions over authority to control CATV.<sup>206</sup>

"Considering the fate of recent legislative proposals, it is questionable whether enough interest can be generated in Congress in the near future to pass a bill which would be satisfactory to all interested parties. Nevertheless, legislation on CATV stands as the most promising of the solutions discussed here. CATV operators would do well to consider the dangers inherent in allowing the present regulatory vacuum to be filled without their consultation and advice."<sup>82</sup>

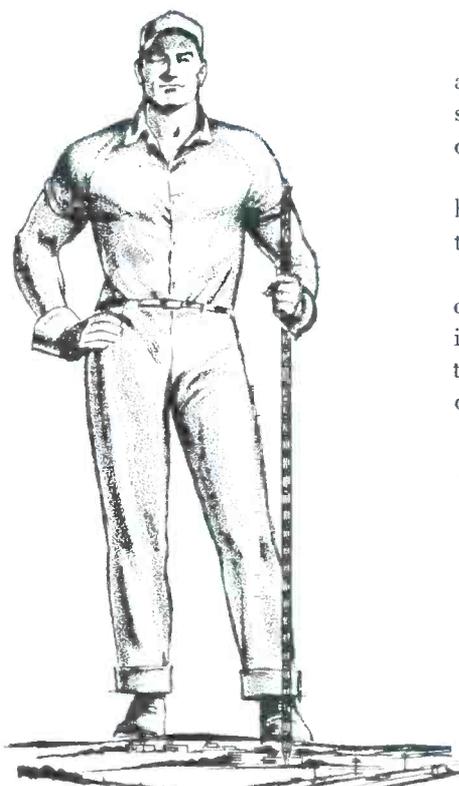
<sup>206</sup>A serious attempt to control CATV systems was made by the Public Utility Commission of Wyoming. In the matter of Cokeville Radio & Elec. Co., Wyoming Public Serv. Comm'n decision of Nov. 19, 1954, 11 P. & F. Radio Reg. 2041. The Wyoming Commission decided it had jurisdiction and that the federal government had not preempted the field. The issue was raised again in *In the Matter of Community TV Sys. of Wyoming*, Wyoming Public Serv. Comm'n decision of May 28, 1956, 17 P. & F. Radio Reg. 2131, which affirmed the prior holding since CATV systems were not engaged in 'broadcasting.' In overturning this decision, the court found that CATV was not a public utility, and that CATV systems were engaged in interstate commerce. 17 P. & F. Radio Reg. 2135 (Dist. Ct. Wyo., 1958). Accord, *Television Transmission, Inc. v. Public Util. Comm'n*, 47 Cal. 2d 82, 301 P. 2d 862 (1956), where the court held CATV systems were not 'telephone Corporations' or within any other class of regulated public utility. But cf. a letter of Feb. 23, 1962, from the FCC to the City Manager of Salinas, California, FCC Public Notice 16695, 23 P. & F. Radio Reg. 2159 (1962), which indicated that the city should, in considering whether or not to grant a CATV franchise, weigh the benefits of multiple service from the CATV against the possibility of having a local station. □

<sup>80</sup> Report and Order No. FCC 59-292, 24 Fed. Reg. 3004, 18 P. & F. Radio Reg. 1573 70 (1959); *Frontier Broadcasting Co. v. Laramie Community TV Co.*, Memorandum Opinion and Order FCC 58-311, 24 F.C.C. 151, 16 P. & F. Radio Reg. 1006 (1958).

<sup>81</sup> Broadcasting of January 25, 1965, quotes the most recent estimate of CATV systems in existence as 1,600.

<sup>82</sup> Note — Community Antenna Television: Survey of a Regulatory Problem by John C. Palmer, Jr., James R. Smith and Edwin L. Wade, the Georgetown Law Journal, Vol. 52, No. 1, Fall, 1963, pp. 175 and 176. While the author of this article is not in 100% agreement with all the conclusions of this 40-page Note, the reader is urged to read it. It is the best and most complete treatment up to this time of the legal considerations applicable to the industry.

# peace of mind for sale



A major slice of your total investment in a cable system goes into the tower, antenna hardware and installation. This is understandable, since a community antenna system is only as good as its antennas and supporting structure. Consequently, you cannot afford to take any chances with the dependability of your receiving antennas.

How can you have peace of mind about your towers during the extremes of heavy wind and ice loading, or the ravages of a hurricane? There is only one answer: the careful selection of the right tower from an experienced and reliable manufacturer.

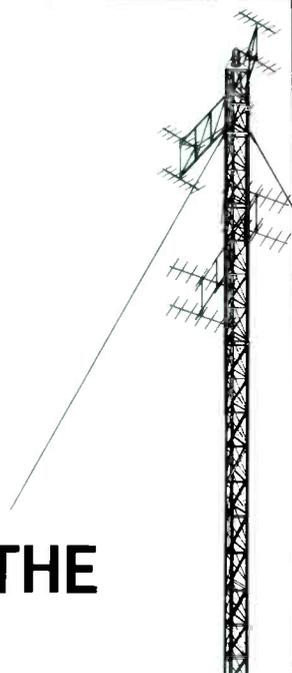
You can have complete confidence in a Utility tower because of the tremendous depth of engineering, manufacturing and construction experience behind every installation. Many hundreds of towers installed literally "around the world" attest to the utter reliability of each Utility tower. Want peace of mind? Call us for a comprehensive quotation on your CATV tower needs.

*The World's Finest Towers . . . from*

**Utility Tower**  
**COMPANY**

3140 N.W. 38 • Oklahoma City, Oklahoma • (405) WI 6-5551

**EASTERN DIVISION:** P.O. Box 163 • Mayfield, Kentucky • (502) CH 7-3642



# AND STILL THE LEADER IN CATV TOWERS



Ft. Tower Co. offers you excellent towers plus complete construction services!

Cable television operators are coming to us in increasing numbers. They know our reputation for delivery, price and reliable towers.



Check prices, compare quotes, evaluate specifications . . . and you, too, will reach the conclusion that Ft. Worth is your best bet for CATV and microwave towers and buildings. The basic reason for Ft. Worth Tower's steady growth is the wealth of experience which we have gained as a pioneer supplier of CATV towers. Our men are thoroughly trained in every step — from drawing board to fabrication, to installing antennas and head-end structure. You will be pleased with our prices, too.



CALL OR WRITE TODAY

## Fort Worth Tower

COMPANY, INCORPORATED

P.O. Box 8597 — Fort Worth, Texas — (817) GL 1-1281

— Associated Companies —

Tommy Moore, Inc. — Big State Engineering, Inc.  
Tower Construction Finance, Inc.

## CATV = $\frac{\text{QUANTITY} + \text{QUALITY}}{\text{DIFFERENTIAL}}$

By Jim E. Davidson

In CATV we are selling a *differential*! By this we mean the difference between what the viewer can receive on his home antenna and what we are able to deliver on the cable.

We are talking primarily in terms of both quality and quantity, however there are other plus features that make CATV attractive to the viewer, such as (1) ease of tuning, (2) multiple outlet feature, (3) elimination of lightning hazards, (4) elimination of unsightly roof top installation and (5) elimination of antenna maintenance.

We have learned that the viewer demands multiple channel television, music and FM services. Let's take a hypothetical situation. Suppose we are in a metropolitan market that has four television stations, three network and one educational. If we bring in two additional channels from outside the city we would no doubt be duplicating much of the existing programming and it is doubtful that this *differential of two* would be sufficient to make this system economically feasible. On the other hand if we would bring in two independent stations, a weather channel two stereo FM channels, a music service channel and background music in addition to the four local channels our *differential* would then be *seven*.

In another situation a *differential of two* was quite feasible and result in 100% saturation of hookups. The big difference was that the people in this community received *no* television at all! Thus, when we delivered them two channels, our service was the difference between absolutely nothing and two good channels. The more off-air television available on home antennas, the larger our *differential number* must be.

The one big advantage of CATV that is seldom discussed is the ease of tuning for the viewer, without a complex array of UHF and VHF antennas, rotors, etc. This was graphically proven to us when we did a feasibility analysis for one of our customers in a city with *seven good off-air signals*. Within the homes that had elaborate UHF-VHF antenna installations with rotor, etc., these seven channels came in good. The more modest installations were happy with two or three channels. When interrogated, they stated that it was either too much trouble or too expensive to try to receive all of the U's and V's. When we installed our system we made it easy for them to tune all seven channels, and the system has been quite successful.

Here is an area that was in the A/B coverage of three UHF stations, plus the V's and only about 10% of the families watched UHF prior to the CATV installation.

In view of all of these facts, it is our contention that (a) CATV is feasible in large metropolitan areas and (b) that UHF stations will be enhanced by the existence of CATV.

There are many other aspects that need to be considered when planning a system in either a small town or a large city. But, the key to the success or failure of a CATV system will be determined primarily by the *differential*.

# FREE LISTING FOR ALL U.S. AND CANADIAN SYSTEMS

All U.S. and Canadian community antenna systems will be listed without charge in the **TV & Communications 1966 Annual CATV Directory**. System owners and managers are requested to fill out the form on this page and return it to TV & Communications. This will assure complete and accurate listings for your operations. Complete a separate questionnaire re for each cable operation—additional forms are available from the address shown below. Co-operation in obtaining completely accurate and up-to-date information for the Systems section of the CATV Directory will be appreciated. This publication will be the only all-CATV directory . . . prepared by the staff of the only all-CATV magazines. With your assistance, the 1966 Annual CATV Directory will be the most comprehensive and useful CATV reference book available.

## CATV SYSTEM DIRECTORY QUESTIONNAIRE

Firm name .....

Mailing address .....

Phone number .....

City & state .....

Area served by system if other than city shown above .....

System owners and/or officers .....

System manager ..... System chief engineer .....

Affiliated systems and/or parent company (for multiple ownership cross-reference) .....

Present number of subscribers: ..... Potential subscribers (estimated): ..... Total number of

homes in area served: ..... Month and year system began operation: ..... 19.....

Total number of TV channels carried: ..... Educational channels included: ..... Number of

radio signals carried (FM) ..... (AM) ..... Is weather/time service carried? .....

Other locally originated services presently offered .....

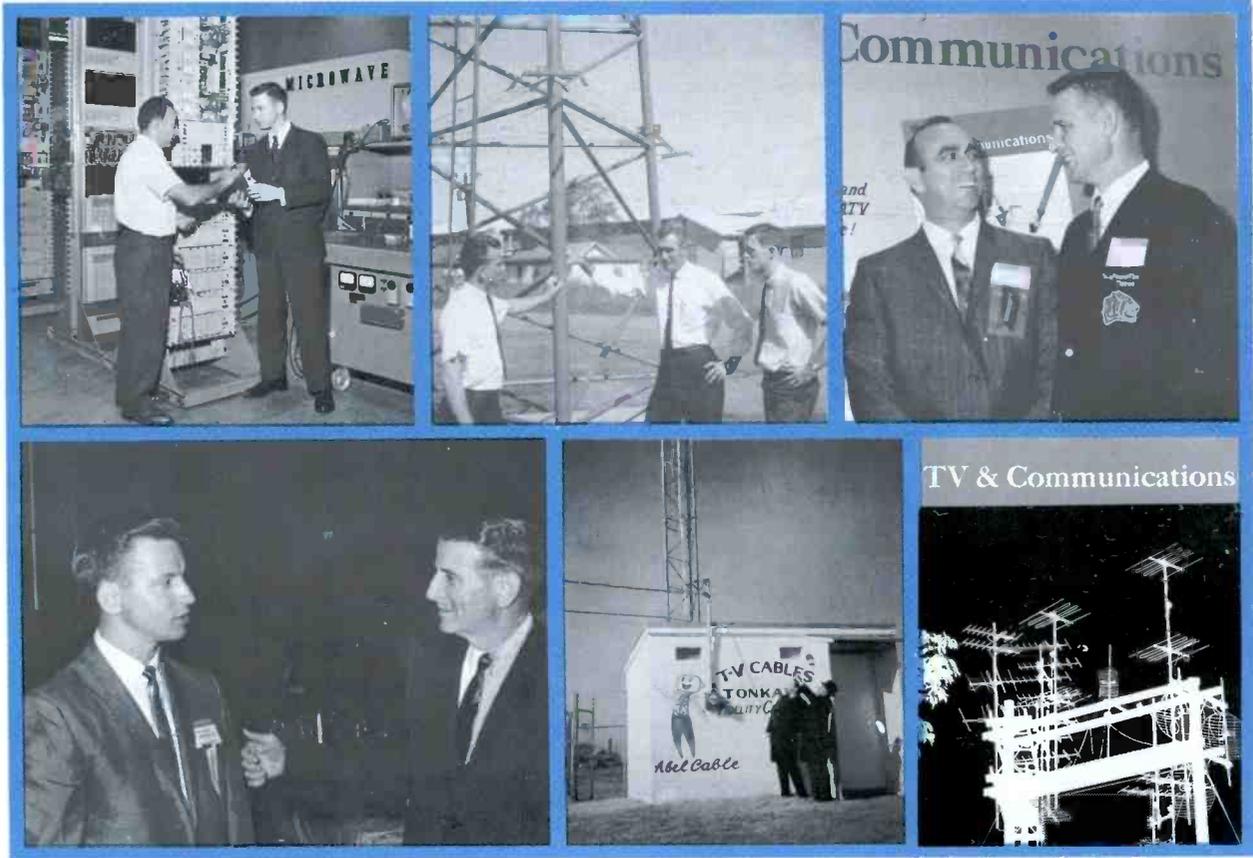
Channel capability of plant ..... Number of miles of plant at present ..... Additional miles

planned ..... Brands of equipment used .....

..... Number of signals via microwave .....

Tear Out and Return To: TV & COMMUNICATIONS • P.O. Box 63992 • Oklahoma City, Okla. 73106

# CONTACT!



## IS THE KEY

Contact! First hand knowledge of the intimate details **inside** the CATV business. Not an **outsider's** viewpoint . . . not just a professional publisher's viewpoint . . . but an **insider's** comprehension of exactly what makes cable television tick. That's what **TV & Communications** offers. And that's what gives the magazine its essential leadership role in the CATV industry. Use the form below to start your subscription to the recognized cable television trade journal.

Contact! That's the key to successful coverage of CATV news-fronts. The staff of **Cable Television Review** maintains contact not only with those in the CATV business, but also with the news-makers in broadcasting, legislation/regulation, finance . . . all the fields which affect CATV'ers. Each week the "Review" provides you with the **inside information** so necessary for **first-rate management**. Use the form below to start your subscription to **Cable Television Review**, the weekly news service of **TV & Communications** magazine.

Write or call collect for special quantity subscription rates to both TV & Communications and Cable Television Review.

### CABLE TELEVISION REVIEW

Please start my subscription to the "Review" for: \_\_\_\_\_ one year (\$50.00); \_\_\_\_\_ 13 week trial offer (\$15.00); \_\_\_\_\_ payment is enclosed; bill me.

Name.....

Firm.....

Address.....

City, State.....

### TV & Communications

Please start my subscription to "TV&C" for \_\_\_\_\_ one year (\$5.00); \_\_\_\_\_ two years (\$9.00); \_\_\_\_\_ three years (\$12.00). \_\_\_\_\_ payment is enclosed; \_\_\_\_\_ bill me.

Name.....

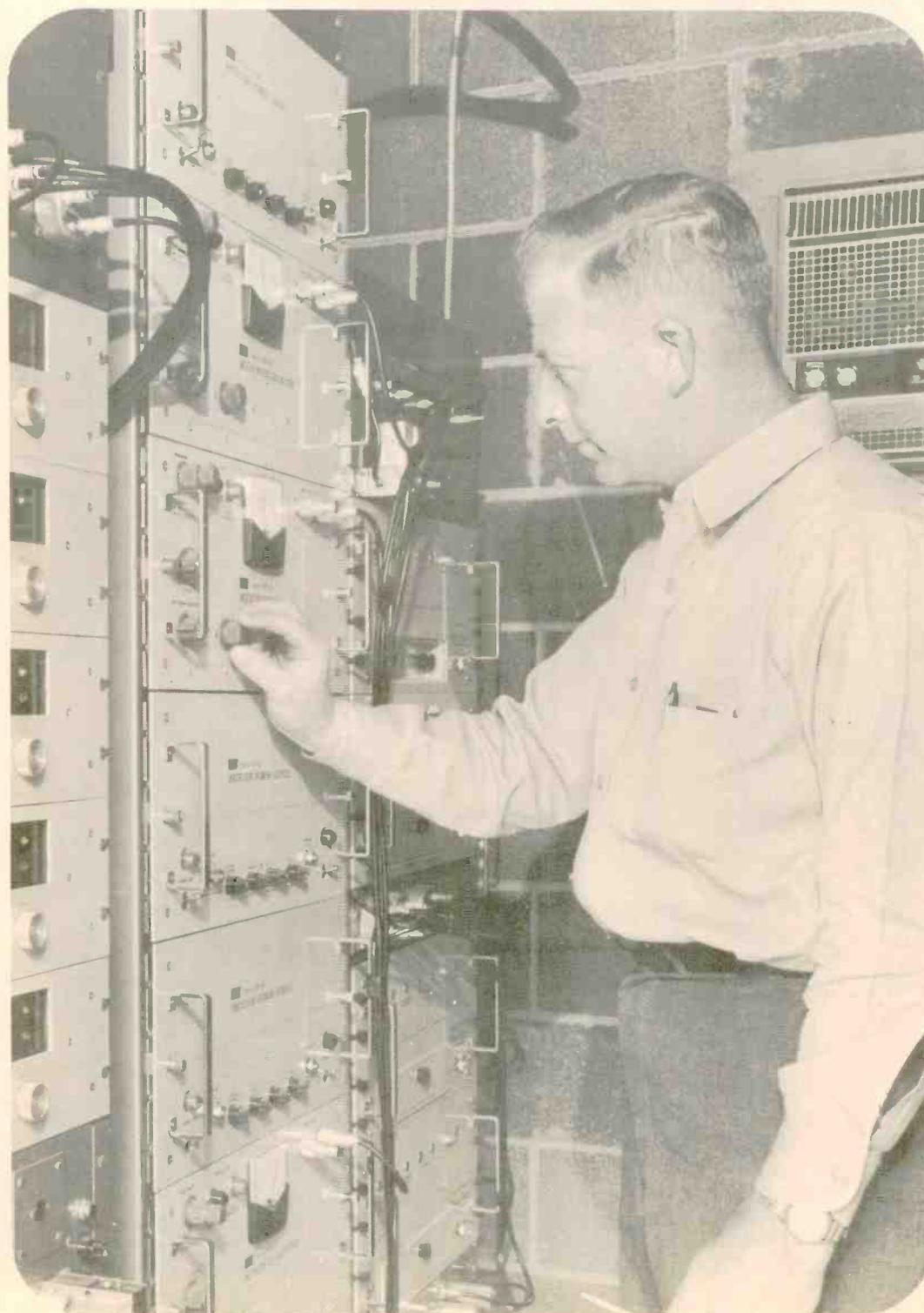
Firm.....

Address.....

City, State.....

Return to: Communications Publishing Corp. • P.O. Box 63992 • Oklahoma City, Oklahoma 73106

# CATV TECHNICIAN

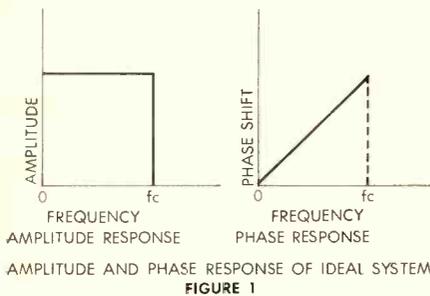


- Envelope Delay In CATV Systems
- Automatic Gain Control Requirements
- Newest CATV Equipment

# ENVELOPE DELAY IN CATV SYSTEMS

G. Rogeness, Ameco, Inc.

Black and white TV pictures produced by signals at the output of long CATV system cascades have a loss of crispness or sharpness compared to "off the air" reception pictures. Low band channels appear to be more affected than high band channels. This picture quality exists even though the cascade amplitude response is adjusted for optimum, the signal to noise ratio is high enough for good quality pic-

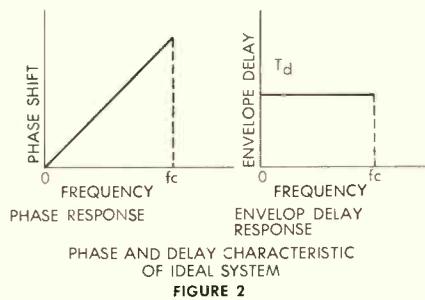


tures, and cross-modulation products are below the required values. There must therefore exist properties of the CATV transmission which affect picture quality other than those mentioned above. One of these properties is the envelope delay or group delay characteristic of the transmission system. As longer cascades are built, and as CATV systems are required to compete with off the air reception the effects of envelope delay between CATV antenna and home receiver must be considered.

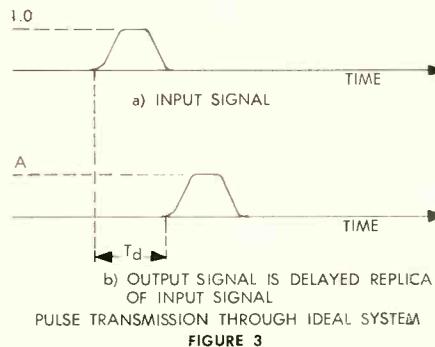
## DEFINITION OF ENVELOPE DELAY

Envelope Delay is defined as the rate of change of phase shift with respect to frequency. Another way of saying the same thing is that envelope delay is the incremental slope of the phase shift versus frequency curve of the transmission system. Envelope delay is also synonymous with group delay.

Consider the characteristics of an ideal transmission system (Figure 1). The amplitude response is flat over the frequency range of interest or pass-band of the system, and the phase re-



sponse varies linearly with respect to frequency in the passband. In the discussion that follows, the system response is always referring to transmission characteristics of a single TV channel.



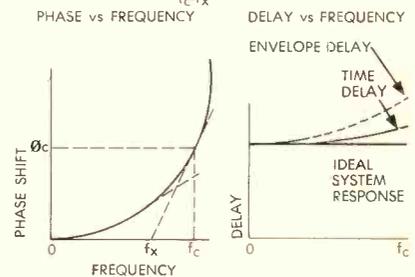
Envelope delay of an ideal system will be constant with frequency since the slope of the phase characteristic is constant with frequency. This is shown in Figure 2.

When applied to the input of an ideal transmission system, a pulse or any other signal whose frequency

spectrum is within the bandwidth of the system, will appear at the output as an exact replica of the input delayed in time. This is shown in Figure 3. In terms of a TV picture signal, this means that the identical picture viewed on a TV set at the transmission system input would be viewed at the output but at a later point in time. The difference in time being equal to the delay of the transmission system.

$$\text{TIME DELAY} = \frac{\theta}{f_c}$$

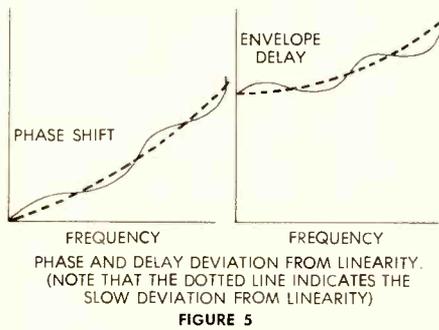
$$\text{ENVELOPE DELAY} = \frac{\theta}{f_c f_x}$$



Deviations from the ideal characteristics represent distortion, or in other words, the signal out of the system will not be an exact reproduction of the signal into the system. By specifying the system envelope delay, the phase characteristic of the system is defined. Envelope delay is a sensitive indicator of phase distortion since it measures the rate of change of phase shift with respect to frequency.

The quantities time delay and envelope delay are often confused. The difference between envelope delay and time delay is shown in Figure 4. Time delay is defined as phase shift divided by frequency whereas envelope delay is the rate of change of phase shift with respect to frequency.

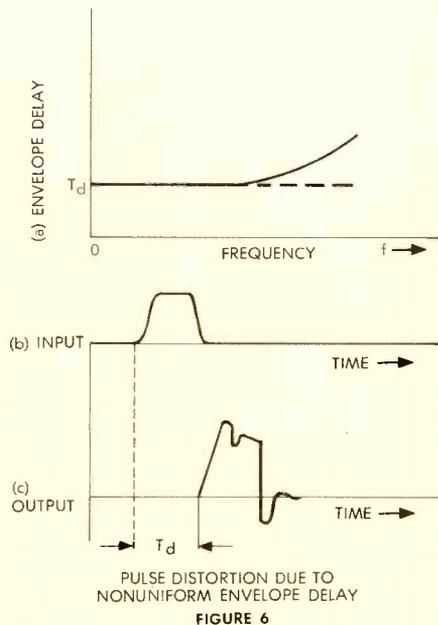
Deviations of phase response from the ideal characteristic can usually be



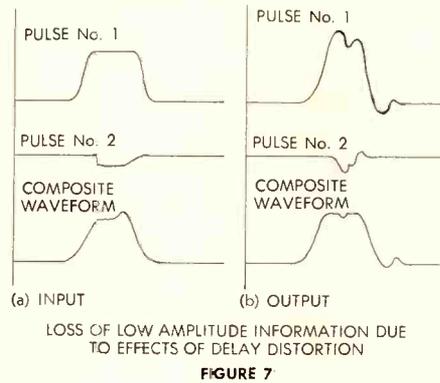
described by two types of distortion. One is a slow or gradual deviation from linearity over the passband, and the second is rapid variations of small amplitude over a narrow band of frequencies. Envelope delay characterizes both types of phase non-linearities. The slow deviation from linearity is shown in Figure 5 as the dotted line.

### EFFECTS OF ENVELOPE DELAY DISTORTION

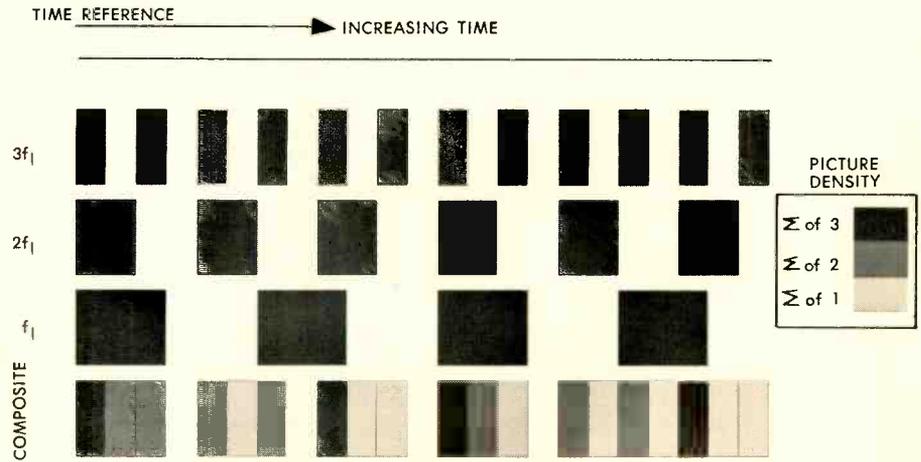
As a first example of delay distortion consider a pulse applied to a system whose delay characteristic is shown in Figure 6a. The information contained in the input pulse has been distorted and appears as the waveform in Figure 6c. This effect in itself is



serious enough. Consider next what happens if two pulses are applied to the same system as shown in Figure 7a. Note that the information to be transmitted in the form of the smaller pulse is masked out by the distortion of the larger amplitude pulse (Figure 7b). Comparison of the input and output composite waveform sketches shows this.



pulse being transmitted. The amplitude and time relationship of the echoes with respect to the main pulse depend upon the amplitude and frequency of the sinusoidal phase deviation. In addition to the pulse distortion shown in Figure 7, the echoes due to the steady-state phase transmission characteristic produce picture distortion similar to that produced by impedance mismatch reflections. A detailed discussion of the paired echo theory, which explains the generation of echoes due to response irregularities,



GENERATION OF TEST PATTERN BY SIGNALS PASSED THROUGH IDEAL SYSTEM

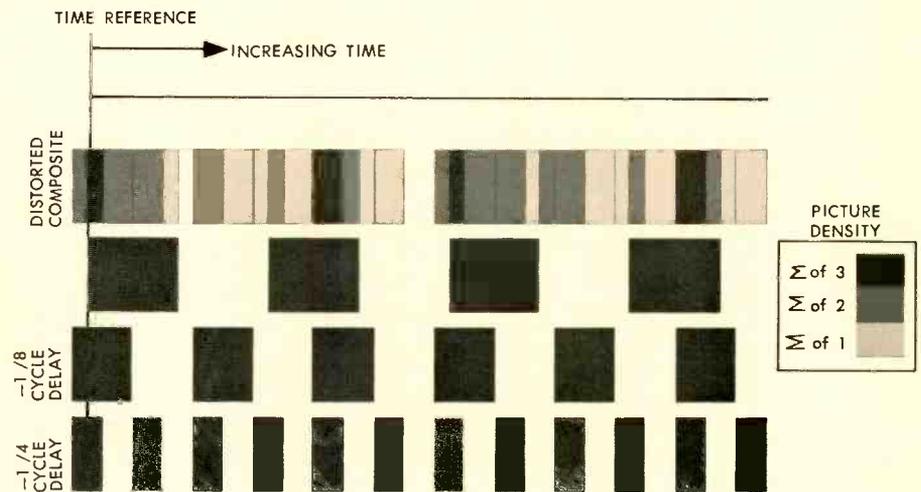
**FIGURE 8**

It is difficult to mathematically describe the phase response of a practical system, since phase distortion will many times not be a simple function. The effects of sinusoidal deviations from linear phase have been considered elsewhere.\* The amplitude and frequency of the sinusoidal deviations both affect high fidelity pulse transmission by introducing echoes of the

\* Refer to references 2, 3, 4 and 5.

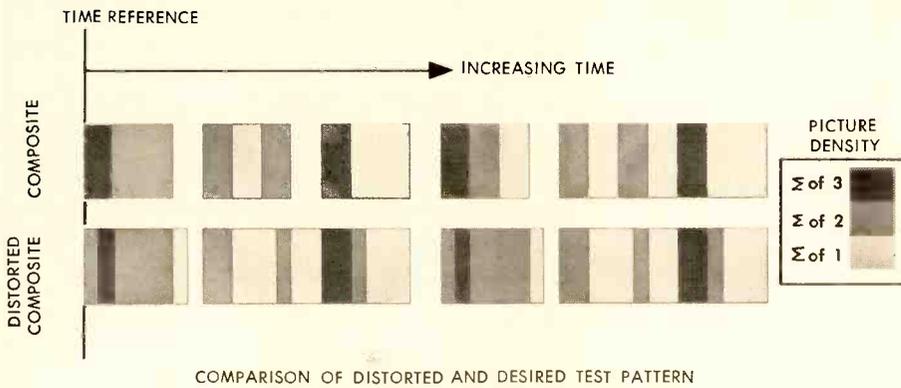
is referred to in the references cited.

A third example of delay distortion is now described by expanding the description given in reference 6. Assume that three sinusoidal signals of equal amplitude and frequencies  $f$ ,  $2f$ , and  $3f$  are applied to a TV picture tube in the time relation shown in Figure 8. The resulting pattern due to the sum of the three signals is shown in Figure 8c.



GENERATION OF TEST PATTERN BY SIGNALS AND DESIRED TEST PATTERN

**FIGURE 9**



COMPARISON OF DISTORTED AND DESIRED TEST PATTERN

FIGURE 10

Now assume that each of the three signals does not reach the picture tube at the same time. The pattern on the tube will then be that shown in Figure 9c for the assumed delay distortion. A comparison of the desired test pattern and the test pattern affected by delay distortion is shown in Figure 10. Note the differences.

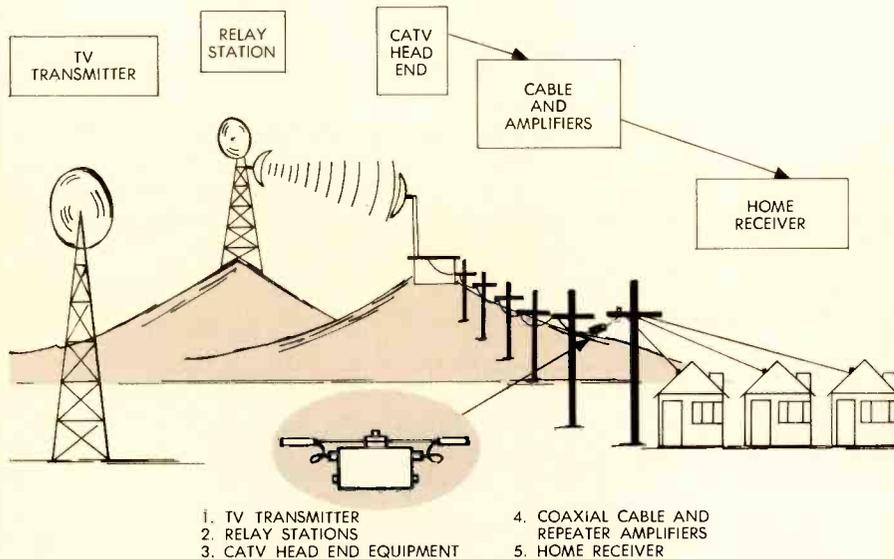
The envelope delay response of the CATV transmission system is extremely important for the transmission of color TV signals. The color TV signal is composed of the luminance signal which contains brightness information and the chrominance signal, which contains the color information. The luminance and chrominance signals are transmitted in different portions of

fect" occurs. That is, color of the image is displaced to the right or left of the image and does not appear on the tube coincident in time with the brightness information.

Delay distortion will affect the transmission of both black and white and color TV pictures. To perfect the CATV transmission system, the sources of delay distortion must be determined and then altered to provide highest fidelity TV picture transmission.

#### SOURCES OF ENVELOPE DELAY DISTORTION IN THE TV TRANSMISSION SYSTEM

Sources of delay distortion are shown in Figure 11. For the American compatible color system, the FCC requires that the color signal transmitted



SOURCES OF ENVELOPE DELAY

FIGURE 11

the single channel frequency spectrum. Both signals must arrive at the color tube at the same time to produce the desired color picture. If the chrominance signal is delayed with respect to the luminance signal, picture distortion known as the "funny paper ef-

fect" occurs. That is, color of the image is displaced to the right or left of the image and does not appear on the tube coincident in time with the brightness information.

transmitter envelope delay response is specified to allow the manufacturers of home receivers to set tolerances on the delay networks required in the luminance and chrominance channels.

#### HEAD END EQUIPMENT

Since the tolerances mentioned above were determined before the days of CATV, the CATV transmission system must have near perfect characteristics if it is to provide off the air type reception. Delay characteristics of cascaded systems are additive, so the delay response of the head-end equipment and amplifier cascade can be considered separately. The sum of the two are then equal

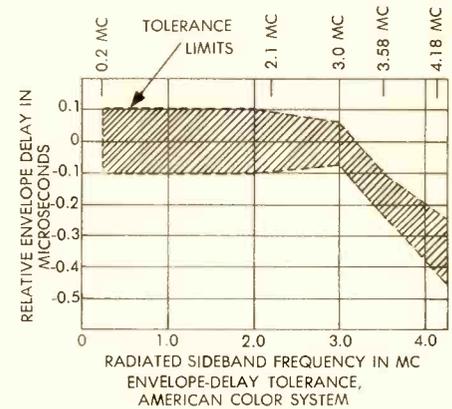


FIGURE 12

to the over-all CATV transmission system delay characteristic.

A demodulator-modulator head-end arrangement results in an over-all delay characteristic equal to the sum of a receiver and transmitter delay response. Therefore, rules similar to those which govern the station transmitter-home receiver delay characteristic can be applied to the design of the demodulator-modulator delay characteristic.

Head-end equipment utilizing the converter technique should incorporate phase equalizers to insure that the correct delay response can be attained. A phase equalizer is required since the phase response of the selective circuits will cause some delay distortion.

#### AMPLIFIER CASCADE

Assuming that the head-end equipment has the desired envelope delay response, the delay response of the amplifier cascade remains to be considered. The amplifier cascade consists of low loss coaxial cable and equalized repeater amplifiers.

#### DELAY CHARACTERISTIC OF LOW LOSS COAXIAL CABLE

Delay distortion due to low loss coaxial cable is negligible for a single TV channel. This is shown by first

considering the complex propagation constant of a transmission line.

$$\gamma = (R + j\omega L) (G + j\omega C) \quad (1)$$

The quantity  $(R + j\omega L)$  is the equivalent series impedance per unit length and  $(G + j\omega C)$  is the equivalent shunt admittance per unit length. The real part of  $\gamma$  is the attenuation constant per unit length and the imaginary part is the phase constant per unit length.

For a low loss line,  $R \ll \omega L$  and  $G \ll \omega C$ . Using the binomial expansion the imaginary part of (1) becomes:

$$B = \sqrt{LC} \left[ 1 + \frac{1}{8} \left( \frac{R}{\omega L} \right)^2 \right] \quad (2)$$

Equation 2 is the phase shift constant of a low loss line. By taking the derivative of  $B$  with respect to  $\omega$ , the envelope delay of the low loss cable becomes:

$$T_d = \frac{dB}{d\omega} = \sqrt{LC} \left[ 1 - \frac{1}{8} \left( \frac{R}{\omega L} \right)^2 \right] \quad (3)$$

Note that this term is not independent of frequency, and therefore all frequencies are not delayed by the same amount. However, the variation in delay over a 4.5 mc bandwidth is so small that the effects of delay distortion due to the cable can be ignored. As a numerical example, equation (3) is evaluated at 54 mc and 60 mc for cable constants taken from a cable manufacturers data sheet for 1/2" aluminum sheathed 75 ohm cable.

Typical values are:

Capacity per foot  $C = 16.5$  pf/ft  
Velocity of Propagation

$$V_c = 0.82 V_o = \sqrt{\frac{1}{LC}} = 7.87 \times 10^8 \text{ ft/sec}$$

$V_o$  is the velocity of propagation for free space Attenuation at 54 mc,  $\alpha = 0.006$  db/ft; at 60 mc,  $\alpha = 0.0065$  db/ft.

Using these numbers, the difference in delay at 54 mc and 60 mc becomes:

$$T = 90.6 \times 10^{-18} \text{ seconds/foot}$$

For thirty (30) amplifier cascade of 45000 feet,

$$T = 4.08 \times 10^{-12} \text{ seconds or, } 4.08 \text{ micro-micro seconds}$$

The difference in envelope delay across the 6 mc band is so small that its effect on picture distortion is negligible.

#### ENVELOPE DELAY OF REPEATER AMPLIFIER

Envelope delay for an arbitrary equalized amplifier response is calculated and then plotted. An equalizer with a rising 6 db/octave response is used and matches the attenuation response within a db over the frequency range of 54 mc to 220 mc. The upper and lower cut-off rates of the amplifier are assumed maximally flat. The overall response of the equalizer amplifier

through 18 db cable is flat within 1 db over the band from 54 to 220 mc.

The transfer function for the equalized amplifier is written as the ratio of amplifier output voltage to amplifier input voltage and is, in general form,

$$\frac{e_{out}}{e_{in}} = \left[ \frac{1 + j \left( \frac{\omega}{\omega_1} \right)}{1 + j \left( \frac{\omega}{\omega_2} \right)} \right] \left[ \frac{j \left( \frac{\omega}{\omega_3} \right)^n}{1 + j \left( \frac{\omega}{\omega_4} \right)^m} \right] \left[ \frac{1}{1 + j \left( \frac{\omega}{\omega_5} \right)^m} \right] \quad (4)$$

To calculate the envelope delay of this transfer function the phase response is first derived, and is

$$\text{Phase} = \tan^{-1} \left( \frac{\omega}{\omega_1} \right) - \tan^{-1} \left( \frac{\omega}{\omega_2} \right) + 90^\circ -$$

$$\tan^{-1} \left( \frac{\omega}{\omega_3} \right)^n - \tan^{-1} \left( \frac{\omega}{\omega_4} \right)^m \quad (5)$$

Taking the derivative of the phase response (equation 5) with respect to  $\omega$ , the envelope delay is,

$$\left( \text{Envelope Delay} \right) T = \frac{1}{\omega_1} \left[ \frac{1}{1 + \left( \frac{\omega}{\omega_1} \right)^2} \right] - \frac{1}{\omega_2} \left[ \frac{1}{1 + \left( \frac{\omega}{\omega_2} \right)^2} \right] + \frac{n}{\omega_3} \left[ \frac{\left( \frac{\omega}{\omega_3} \right)^{n-1}}{1 + \left( \frac{\omega}{\omega_3} \right)^{2n}} \right] - \frac{m}{\omega_4} \left[ \frac{\left( \frac{\omega}{\omega_4} \right)^{m-1}}{1 + \left( \frac{\omega}{\omega_4} \right)^{2m}} \right] \quad (6)$$

Phase, time delay, and envelope delay were calculated as a function of frequency and plotted as shown in Figure 13. The following values were used in the calculations:

$$\begin{aligned} \omega &= 2 \pi f & n &= 2 \\ \omega_1 &= \pi \cdot 2 \times 49.5 \text{ mc} \\ \omega_2 &= \pi \cdot 2 \times 334 \text{ mc} \\ \omega_3 &= \pi \cdot 2 \times 40 \text{ mc} \\ \omega_4 &= \pi \cdot 2 \times 250 \text{ mc} & m &= 4 \end{aligned}$$

The value of  $m$  is chosen to be greater than  $n$  because the high frequency roll off of the amplitude response is generally faster than the low frequency roll off.

Since channel two occupies a higher percentage bandwidth than channel thirteen, it is more susceptible to delay irregularities over its passband. However, this does not necessarily mean that low band channels will be more affected by response irregularities. Percentage bandwidth is defined as the ratio of modulation bandwidth to center frequency times 100.

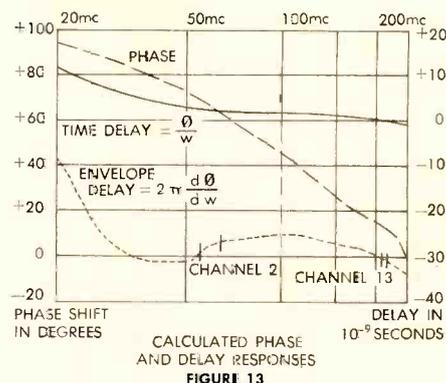


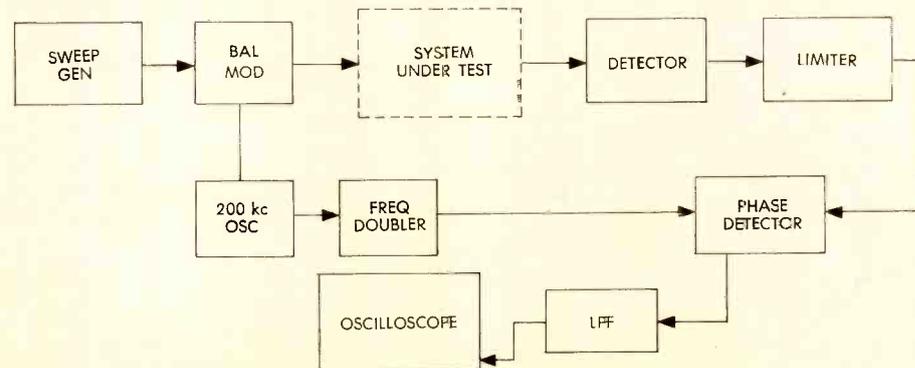
FIGURE 13

Referring to Figure 13, the difference in envelope delay across a 4.2 mc band in Channel 2 is  $1.5 \times 10^{-9}$  seconds and in Channel 13 is  $0.3 \times 10^{-9}$  seconds respectively. These magnitudes of delay differences are of little consequence for a single amplifier, but consider a thirty amplifier cascade. Envelope delay of cascaded systems is additive. Assuming an identical delay response for each amplifier as an example, the delay difference at the end of a 30 amplifier cascade at Channel 2 is 0.045 us. This number is a large fraction of the tolerance allowed the transmitter envelope delay characteristic (refer to Figure 12) and could produce TV picture distortions.

This numerical example of delay distortion in an equalized repeater amplifier does not refer to any specific unit in use today. Its purpose is to show that delay distortion can be generated in a cascade of broadband repeater amplifiers. With the knowledge that delay distortion exists in a CATV transmission system, the next step is to measure this distortion and then either remove or compensate for the distortion.

#### MEASUREMENT OF ENVELOPE DELAY

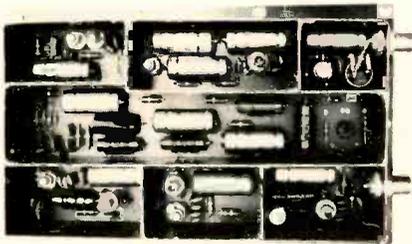
After understanding what envelope delay is and how it affects the transmission of TV pictures, the next step is to develop measurement techniques with which to evaluate the CATV



ENVELOPE DELAY TESTER  
FIGURE 14

transmission system delay characteristic. When the delay distortion function has been determined by measurement, then the appropriate corrective networks can be designed and incorporated in the system. The transmission path of the CATV system begins at the CATV antenna and ends at the input to the home receiver.

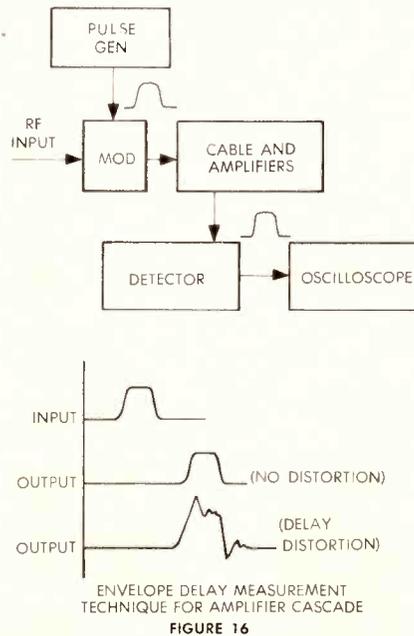
A test set that will measure envelope delay is shown in Figure 14. This system is described in detail in reference 8. By interchanging balanced modulators, this test set can be used on either video circuits or RF circuits. The output of the phase detector is a measure of the incremental slope of the phase response of the system under test and this is by definition, envelope delay. By applying a sweep generator to the balanced modulator, a display on the scope of envelope delays versus frequency results. A test set designed and built at Ameco, Inc. to make laboratory measurements of envelope delay on amplifier cascades is shown in Figure 15.



The preceding test set is effective for making measurements on simulated cascades in the laboratory. However, it is not practical in the field since the input and output of the cascade are separated by great distances. One technique for field measurement could involve sending a pulse down the cascade and correlating this pulse's wave-

form at the end of the system to a reference wave shape. Refer to Figure 16.

Comparison of the input and output pulse will determine if delay distortion is present.



form is present. A template could be made for evaluating the output pulse. This template would encompass pulse distortions caused by acceptable amounts of delay distortion. If pulse distortions were not encompassed by the template, then the system under test would be assumed to have excessive envelope delay distortion.

#### SUMMARY

Envelope delay has been defined and is the rate of change of the transmission system phase response with respect to frequency. An ideal transmission system requires the same envelope delay at each frequency. Deviations from the ideal envelope delay characteristic affect the transmission

of TV pictures. Effects of delay distortion on black and white TV pictures are: loss of picture crispness, ringing, and ghosts. One of the most disturbing effects of delay distortion on color TV pictures is the "funny paper" effect.

Delay distortion is related to the bandpass characteristics of the transmission system. This means that both CATV head-end equipment and amplifier cascade can produce delay distortion. Only careful design of this equipment will minimize the delay distortion to an acceptable level. The use of special test equipment is required to accurately evaluate the envelope delay of the transmission system. Envelope delay characteristics of the CATV transmission system must be considered if CATV systems are to compete with off-the-air reception. □

#### REFERENCE LIST

1. Fink, *Television Engineering Handbook*, McGraw-Hill, 1957.
2. H. A. Wheeler, *The Interpretation of Amplitude and Phase Distortion in Terms of Paired Echoes*, Proc. of IRE, Vol. 27, pp 354-385, June 1939.
3. Standford Goldman, *Frequency Analysis, Modulation and Noise*, McGraw-Hill, 1956, pp 102-123.
4. Pierre Mertz, *Influence of Echoes on Television Transmission*, Journal of SMPTE, Vol. 60, pp 572-596, May 1953.
5. J. R. Klauder, A. C. Price, S. Darlington, and W. J. Albersheim, *The Theory and Design of Chirp Radars*, Bell System Technical Journal, Volume XXXIX, July 1960, Number 4.
6. Deutsch, *Theory and Design of Television Receivers*, McGraw-Hill, 1957, pp 175-182.
7. Mischa Schwartz, *Information Transmission, Modulation, and Noise*, McGraw-Hill, 1959.
8. Wentworth, *Color Television Engineering*, McGraw-Hill Television Series, 1955, pp 424-426.
9. W. L. Everitt and G. E. Anner, *Communication Engineering*, McGraw-Hill, Third Edition, 1956, pp 235-240 and pp 320-324.
10. *Television Signal Analysis*, American Telephone and Telegraph Company, Long Lines Department, Second Edition, April 1963. □



# PROTECT YOUR COPIES OF Cable Television Review AND TV & Communications

For those readers who want to preserve their copies of CABLE TELEVISION REVIEW and TV & COMMUNICATIONS as a valuable permanent reference. Now available — deluxe custom-made hard cover Binders with rich gold imprint on a textured charcoal vinyl. A handsome addition to any bookshelf. Ideal for your office or home library.

Each deluxe Binder has space for a full year of CABLE TELEVISION REVIEW or 12 issues of TV & COMMUNICATIONS. The easy, practical and attractive way to keep your copies safe and close at hand. Order your Binders today at the special low rate, for subscribers of CABLE TELEVISION REVIEW and TV & COMMUNICATIONS. Just \$4.95 each. Shipped Post paid. Please specify how many you wish of each.

## Communications Publishing Co.

(Dept. B) P. O. Box 63992, Oklahoma City, Oklahoma

# AUTOMATIC GAIN CONTROL IN CATV SYSTEMS

By Irving Kuzminsky  
Entron, Incorporated



In a CATV system, two types of situations arise which necessitate the use of gain control. One is a narrow-band single-channel problem caused by signal variations at the antenna. The other is a wide-band variation in the transmission system caused by changes in either the cable or the amplifiers.

In order for a community antenna television system to function properly, it is necessary to first eliminate the variations in signal level which are normally encountered at receiving sites. Let us consider what might happen at the customer's receiver if this were not done.

## ADJACENT-CHANNEL SYSTEMS

Most present day CATV systems utilize adjacent-channel transmission as a means of most efficiently carrying the maximum number of channels at a minimum cost. However, as far as the receivers are concerned, the adjacent channels are potential sources of interference. This was the reason that, in the early days of CATV, some people thought that adjacent-channel systems would not work. In order for these systems to work properly, it is necessary to accurately control the levels of the signals with respect to each other so that the receiver is able to pick out the selected signal without objectionable interference from other signals.

Once the single-channel signals are combined onto a common line, random

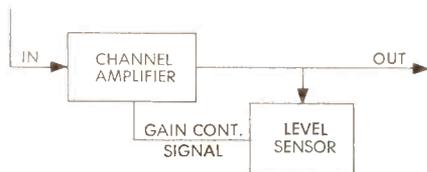


FIGURE 1

variations of these signals would be impossible to handle. This is because the gain of the trunk amplifiers is controlled on a wide-band basis. That is, the gain is varied in a coherent manner to all channels in the amplifier passband simultaneously. With random variation of each channel's signal, cross modulation and noise problems would be encountered in the trunkline system. With some signals going up, some going down, and others remaining constant, gain control would be

impossible, and the problems generated are obvious. Thus, stabilization of the antenna signals is mandatory before the signals are inserted into the trunk system.

The variation in antenna signal level is usually handled by the method shown in Figure 1. The signal is amplified in a single-channel RF amplifier. The output signal is detected and provides a DC control signal which is indicative of the output signal level. This control signal is used to vary the operating point of the intermediate stages and, by this means, the gain of the amplifier so as to maintain the output at a nearly constant predetermined level.

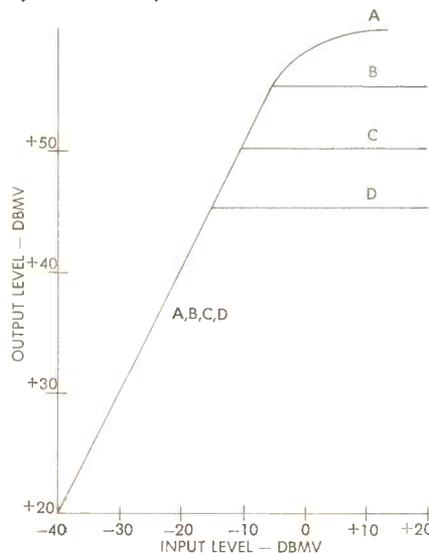


FIGURE 2

## DELAYED AGC

Figure 2 is a plot of the output level vs. input level of a typical single-channel AGC amplifier. The amplifier being considered has a gain of 60 db. Curve A indicates that, with no AGC, there is a linear relation between input and output except for high levels where the amplifier overloads. Curves B, C, and D show that, for small signals, the output follows the input. However, once the AGC threshold is exceeded, the output remains almost constant. Thus, for proper AGC operation, a minimum signal level is required, depending on the setting of an output level control.

This is called "delayed AGC" because gain control is delayed until the threshold signal is reached. Curves B,

C, and D represent different delays. The maximum allowable input level is determined by the overload characteristics of the amplifier.

Normally, the input and output stages are not varied, since varying the input stage affects noise figure and input match, and varying the output stage affects the overload level of this stage. Because of these noise and overload limitations, some other method should be used where large signal level variations exist.

Consider the block diagram shown in Figure 3. The RF input signal is amplified and detected. When the detected signal exceeds a predetermined amplitude, a relay is activated and an attenuator is inserted between the antenna and the head end equipment. When the signal decreases sufficiently, the attenuator is removed. A cascade of four such switchable attenuator sections — each section having 10 db attenuation — effectively reduces a 60 db signal swing to 20 db. This smaller swing can then be handled by the AGC arrangement previously considered.

## INPUT VS. OUTPUT

Figure 4 is a typical plot of output level vs. input level for a four-section controller. "A" is a plot of output level vs. input level with no compensation and, of course, the changes in output level follow the changes in input level. The output level vs. input level is shown

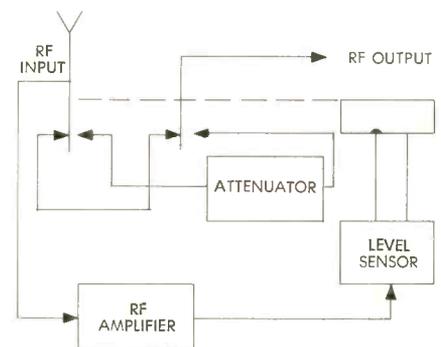


FIGURE 3

by "B" for increasing, and "C" for decreasing signal. At any given level, the input can vary over a 20 db range with no switching occurring. For example, at Point 1, with an input of 18 dbmv, two attenuators have been switched in so that the output is 18 — 20 or —2

dbmv. As long as the input signal level remains between +10 and +30 dbmv, no switching will occur, and operation will be along the joining Points 2 and 3.

### TEMPERATURE EFFECTS

Once the signal levels at the head end are stabilized, the signals are ready to be inserted into the transmission system. Since the signals are stabilized, why is AGC necessary in the trunkline amplifiers? To answer this question, it is necessary to look at the entire trunkline system. While the sig-

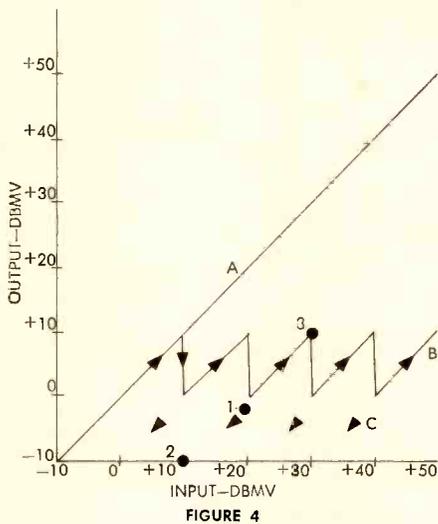


FIGURE 4

nals may be stabilized at the input to the trunkline, they will still vary in the trunkline because of changes in cable attenuation with temperature variation and because of changes in amplifier gain. While the latter factor is a matter of conjecture, the change in cable attenuation is a well known fact and can be predicted.

If the last amplifier at the end of the longest trunk is capable of handling the largest signal swing expected, then AGC is not required. Figure 5 shows the correction factor which must be applied to the 68°F value of cable attenuation to obtain the attenuation at some other temperature.

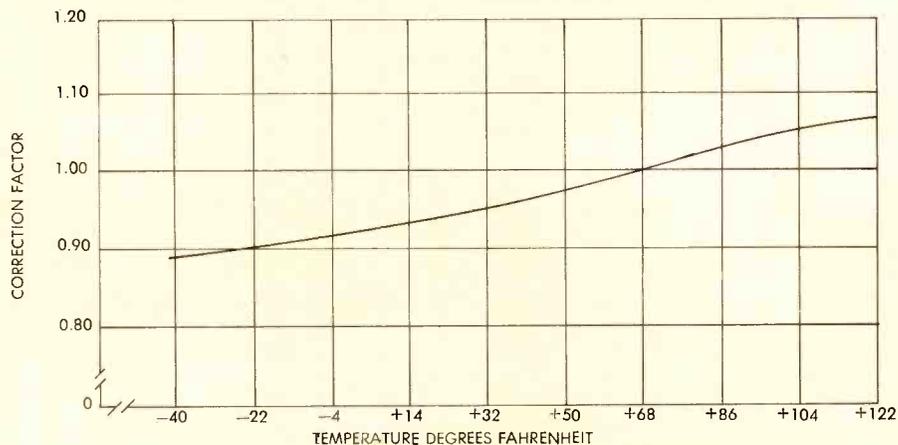


FIGURE 5

We can see that at the extreme temperature to which the cable may be subjected, attenuation correction factors are obtained of 1.06 at +120°F and 0.90 at -20°F. This means that for each 100 db of cable attenuation, there results an increase of 6 db at 120°F and a decrease of 10 db at -20°F.

A trunkline consisting of 1/2 inch foam dielectric aluminum jacketed cable may typically have an attenuation of 1.3 db per 100 feet at Channel 13 at 68°F. In a five mile line, this would amount to 340 db attenuation. However, at 120°F this would increase by 20.4 db, and at -20°F, it would decrease by 34 db. No presently existing amplifier can take this signal swing. Therefore, AGC would be a necessity in this system.

### SPLIT-BAND/BROADBAND

Other problems, of course, also arise because of this characteristic of cable. Such a problem is the difference in the attenuation change at different frequencies. One way of dealing with this problem is by using automatic tilt control derived from two pilot carriers. Another way of dealing with the problem is to use thermal equalizers. A third way is to split the band so that the accumulated difference in cable attenuation within each band is within tolerable limits. This leads to two different types of transmission systems, the so-called "Split-Band" transmission system, and the broadband transmission system. The advantage of a split-band system is the reduction of change of tilt effects to the point where they may be neglected, while the broadband system must use some method of automatic tilt control.

Regardless of whether a split-band or a broadband system is used, there are still many methods in use today by which the gain of the transmission system is controlled. There are also many names by which these systems are known. Be it AGC, AOC, ALC,

AVC, or A—you name it—C, all of the methods in use have one common objective, and that is to vary the gain or loss (in some cases) of an amplifier or an attenuator in an attempt to maintain a constant signal level. Why do we all strive towards this goal?

### AGC SYSTEM TYPES

As we have seen, signal swings of 20 or 30 db are to be expected in a relatively short system as the temperature varies over the day and through the year, if no AGC is used. The use of AGC reduces maintenance problems by eliminating the need for periodic resetting of levels. Too, compensation for cable and equipment aging is provided to some extent. Let us look at some of the different methods that are used to achieve these goals.

Whether the transmission system is broadband or split-band, operation of the AGC circuits in either of these systems may be controlled by either TV signals or by pilot carrier signals. Also, either a single signal or a multiplicity of signals may be used for AGC purposes. Thus, many possible types of AGC systems exist. However, all of these methods are very similar in actual operation. Figure 6 is a block diagram which illustrates two methods

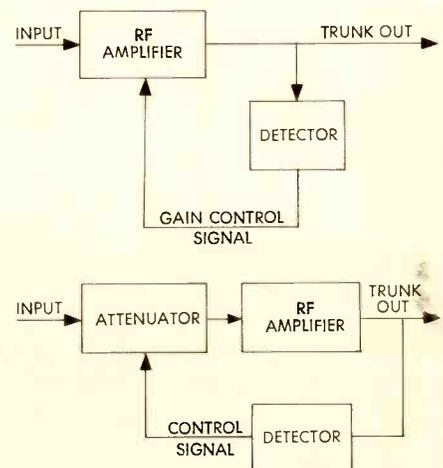


FIGURE 6

which might be used with either TV signal or pilot carrier AGC systems.

In the first case, the amplifier is operated below its maximum gain capability so as to be able to compensate for anticipated changes in input signal in either direction. Usually, only the gain of the intermediate stages are varied so as to maintain good noise figure and overload characteristics while the input and output stages are at a fixed optimum operating point. The detector is tuned either to a single frequency or is broadband, depending on the type of AGC system used.

In the second system, the entire amplifier is maintained at its optimum operating point as far as noise figure and overload characteristics are concerned. The attenuator ahead of the amplifier is varied to change the overall gain at the amplifier station. The nominal operating point of the attenuator must provide an insertion loss of at least the magnitude of the anticipated downward change in input signal level. The loss of the attenuator is then varied up or down to correct for changes in input level. This arrangement, while allowing optimum operation of each stage of the amplifier, effectively increases the noise figure of the amplifier by the amount of the attenuator's nominal insertion loss. The best solution may be a combination of the two methods. That is, place the attenuator at an intermediate point in the amplifier. This would allow optimum operation of the active elements in the amplifier and, at the same time, provide a good noise figure.

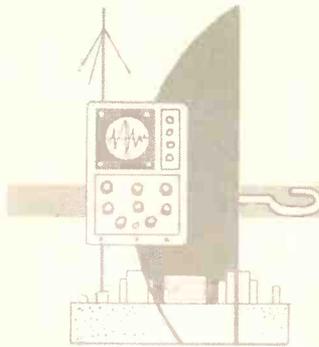
As stated previously, the AGC may be derived from either TV signals or from pilot carrier signals. A single TV signal cannot be used alone to activate the AGC because if that channel went off for any reason, all amplifiers would run wide open. Excessive gain would be accumulated, and overload would soon occur on the remaining channels. Therefore, if this method is used, a standby oscillator is required which is switched into the system if the primary source goes off.

Another method is to sense the composite signals in the passband of the amplifier and adjust the gain to the composite level. With this method, if a station goes off, the AGC is still operative. No standby oscillator is required since the AGC circuit operates from the remaining carriers.

Still another method utilizes only pilot carriers to drive the AGC circuits. This system is independent of the TV signal levels and has the advantage of providing a fixed standard signal to which the entire system may be referenced.

To summarize, the main advantages of AGC are:

- (1) Stabilization of individual channel signals permits adjacent channel operation and maximum utilization of the transmission system.
- (2) Proper signal levels may be maintained in the trunk, thereby avoiding problems of noise and cross modulation.
- (3) Maintenance problems are reduced by eliminating the necessity to reset levels with changes in temperature. □



### NEW SKL TRANSISTOR TRUNK AMPLIFIER

SKL's Model 265 Trunk Amplifier is an all new wide-band transistorized trunk amplifier with full 12-channel response. It has built-in SKL Temperator (Patent Pending), gain and tilt controls. AC cable-powering and power regulation is said to adapt it to both new system design and modernization of existing systems.

SKL reports the 265 compensates for all losses in 20 db of cable over



the band of 54 to 216 mc from -20°F to +120°F. Low noise output and low cross-modulation permit high cascading. In long line applications, more than 50 Model 265 amplifiers may be cascaded.

Model 265 is housed in a rugged, waterproof, cast aluminum box with a captive cover; it may be mounted on the messenger or on a pole, with a bracket. The unit is equipped with special sealed waterproof Type N connectors.

For more details on the 265 write Robert G. McLaughlin, **Spencer-Kennedy Laboratories, Inc., 1320 Soldiers Field Road, Boston, Mass. 02135.**

### VIKING INTRODUCES BROADBAND AND FM AMPLIFIER

The Viking #955 Broadband Amplifier has been designed for black and white, color TV and stereo FM reception by **Viking, 830 Monroe Street, Hoboken, New Jersey.** Manufacturer says the 955 is excellent for

# PRODUCT REVIEW

feeder line and stereo distribution, small motels and garden apartments.

Viking's new amplifier features 75 or 300 ohm connectors for both input and output (no matching transformers necessary). Other advantages include separate low and high band gain controls for signal balancing; framegrid tubes used throughout; low noise circuit, and matched input to eliminate ghosts and smears from antenna lead.

Contact Robert Baum, Viking, for more details and price.

### C-COR SOLID STATE AMPLIFIERS

C-Cor Electronics, Inc., has announced a new series of high output, solid state low pass amplifiers. Covering the frequency band of 5 cps to 70 mc, the three models available in this series are Models 3329, 3368 and 3388. These units provide 20 db, 40 db, and 60 db of gain respectively.

According to C-Cor, each model is capable of providing as high as 15 volts peak to peak at 10 mc into a 50 ohm load. Each also provides two output impedances, one a matched 50 ohm output and the other a low



impedance (approximately 15 ohms) which will provide a higher output if an output match is not required. Prices range from \$450 for the Model 3329 to \$1,000 for the Model 3388.

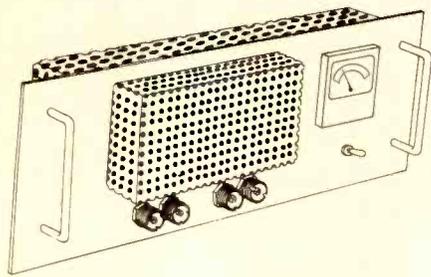
Contact James F. Iastra at **C-Cor, P.O. Box 824, State College, Pennsylvania** for complete specifications.

### NEW VIKING POWER SUPPLIES

Immediate delivery is now available for two new power supply units from Viking. The units, Models #580 and #561 are designed to be used with transistorized line amplifiers.

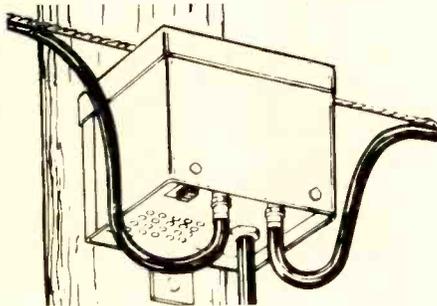
Model #580 Remote Power Supply

provides 6 amperes of regulated 30 volt AC. It has built-in automatic re-set circuit breaker plus a meter to permit constant monitoring of output current.



#580

Priced at \$77, Model #580 can be rack, wall or cabinet mounted.



#561

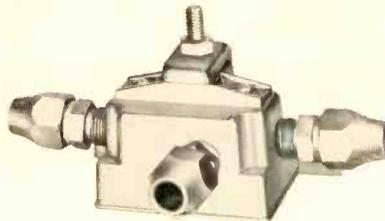
Model #561 Remote Power Supply will duplex 24 or 30 vac onto cable systems. It also incorporates automatic re-set.

In weather-proof housing, the 561 can be mounted indoors or outdoors on pole or cabinet. It is priced at \$33.

Write Robert Baum, **Viking, 830 Monroe Street, Hoboken, New Jersey**, for more details.

### TRUNK LINE SPLITTERS

Viking also has two new trunk line splitters available. Designed for CATV, CCTV or sub-channel applications, the splitters are in Viking's "Super Matched Series" for direct coaxial cable attachment. Die-cast housings permit messenger or pole mounting.



#525

Model #525 features a "T" design and offers VSWR of 1.15:1 with 75 ohm input and output. Frequency response is 18-220 mc at  $\pm 0.25$  db maximum. Through loss,  $\pm 0.25$  db, is 3.25 db.



#528

Model #528 offers same specifications as Model #525. 528 has one fitting on one side with two on the opposite side.

For further information including prices, contact Mr. Baum.

### ALLIED ELECTRONICS ANNOUNCES KNIGHT CABLE

Allied Electronics Corp., industrial subsidiary of Allied Radio Corp., has announced the availability of a line of Knight wire and cable for electronics, electrical and related applications.

Coaxial cable includes Mil-C-17C Polyethylene, Teflon and CATV Low-Loss Foam types. There is also a complete line of microphone cable, shielded and unshielded intercom cable, rubber-sheathed service cord, speaker cable, and many others.

Knight cable and wire is stocked in depth in 25, 50, 100, 250, 500 and 1000 ft. spools. It is also available in bulk spool lengths.



Specifications and prices can be obtained from **Allied Electronics Corp., 100 N. Western, Chicago, Ill., 60680**, or from Allied locations in Pasadena (Allied Radio of Calif.); Los Altos, Calif.; Seattle; Denver; Dallas; Milwaukee; Detroit; Cleveland and Dayton, Ohio; Washington, D.C.; Rochester, N.Y.; and Tampa, Fla.

### SKL MODEL 263 LINE EXTENSION AMPLIFIER

The SKL Model 263 Line Extension Amplifier is a new high output, transistorized amplifier with full 12-channel bandwidth. It is designed for use as a line extension amplifier in wide-band distribution systems.



The nominal gain is 22 db at 216 mc, with a 7 db slope across the 54 to 216 mc band. Manual gain and tilt controls complete the compensation for the average cable losses encountered in feeder lines. Low noise and cross-modulation allow the Model 263 to be used even at the most remote ends of a distribution system.

## TV & COMMUNICATIONS

P. O. Box 63992 • Oklahoma City, Oklahoma 73106

Gentlemen:

Please start my subscription to **TV & COMMUNICATIONS**, the monthly CATV magazine which includes outstanding technical and management articles—plus vital industry news.

1 Year, \$5.00       2 Years, \$9.00       3 Years, \$12.00

(Outside North American Continent, Add \$2.00 per year.)

Check here if RENEWAL.

Name .....

Company .....

Address .....

City & State .....

Type of Business

- CATV System  
 Microwave  
 Closed-Circuit  
 Educational TV  
 TV Broadcaster  
 Other.....

*The Professional Journal of the Cable Television Industry*

AC cable powering provides flexibility in designing new and in extending or updating existing distribution systems. The unit is housed in a rugged, waterproof, cast aluminum box with a captive cover, and may be mounted on the messenger or on a pole.

Contact Robert G. MacLaughlin, **Spencer-Kennedy Laboratories, Inc., 1320 Soldiers Field Road, Boston, Mass.** for additional information on the SKL Model 263.

**COLLINS CATV/MICROWAVE BROCHURE**

A new 22-page brochure, "Microwave-Applied to CATV/CCTV/ETV Operations," has been published by Collins Radio Company. It deals extensively with CATV and covers both general and technical aspects, CATV economics, establishing a CATV system, composition of a microwave system, typical microwave system specifications and microwave licensing information. Copies are available from: George Runge, **Collins Radio Company, Public Relations Department, Dallas, Texas 75207.**

**VIDEO ANALYSER MODEL 301**

Colorado Video, Incorporated reports that two breakthroughs in television waveform display are incorporated in the Colorado Video Model

301 Video Analyser. First: the equivalent of "Line Selection" is provided at field rates, thus allowing a new dimension in picture analysis with a resultant clear, bright, single trace oscilloscope pattern.

The second unique feature of the Model 301 is the ability to actually display video waveforms on the screen of a normally operating TV picture monitor, providing a large, highly visible, trace, and direct correlation between picture content and video waveform.

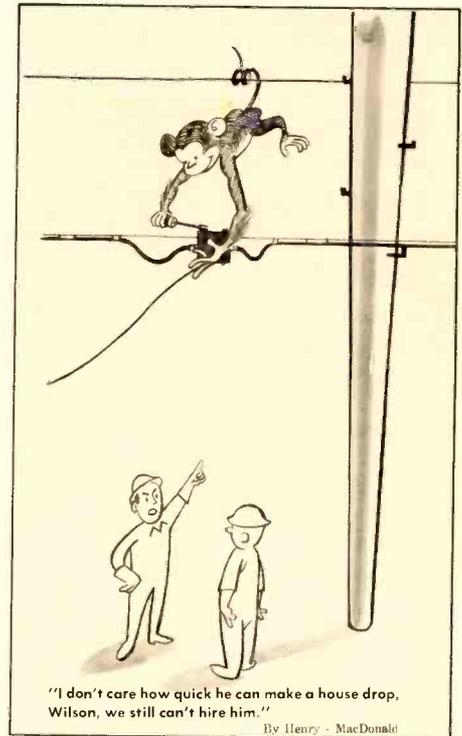
The model 301 includes both vertical and horizontal marking signals for convenience in making point-by-point scene brightness analysis. Other features include remote control, internal calibration, and a reference grating generator.

Price of the Model 301 is \$875. Inquiries should be sent to Glen Southworth, **Colorado Video, Inc., Box 829, Boulder, Colorado 80301.**

**COAXIAL CABLE DELAY LINES**

Andrew Corporation of Chicago has introduced a series of delay lines for use in pulse or CW applications from 60 cycles to 20 Gc. The units cover power ratings up to several kilowatts and in impedances of 50, 75 and 100 ohms.

These delay lines are fabricated of HELIAX, flexible foam or air coaxial



cables with either copper or aluminum conductors in sizes 1/4" to 7/8" diameter.

For additional information request Bulletin 8547 from **Andrew Corporation, P.O. Box 807, Chicago, Illinois 60642.**



**... FROM END TO END... RELY ON MICROFLECT'S "WALL-TO-WALL" CAPABILITIES**

Microflect has supplied precision passive repeaters for systems around the world since 1956. Complete design-engineering, manufacturing and field engineering, is available for Microflectors (flat, billboard type passive repeaters), stub towers, roof mounts, self-supporting towers and wave-guide run accessories. If you demand quality products and reliable performance . . . Specify Microflect . . . wall-to-wall.



**ENGINEERING**



**MANUFACTURING**



**PASSIVES**



**MOUNTS**



**TOWERS**

**INSTALLATION**

**FREE LITERATURE** — **Passive Repeater Engineering Manual 161:** Configurations, designs, specifications, bearing calculations, charts, locating, erection and optimizing of passives. **Passive Repeater Cat. PR-864:** 14 standard passives, specs, foundations, how to order. **Stub Towers & Roof Mounts T-365:** Engineering drawings of swing-pipe, vertical & horizontal mounts for parabolic antennas. **"Q" Tower Cat. Q-765:** Short, self-supporting towers for multiple antennas.



**Microflectors**—The most comprehensive line of 2 to 13 Gc passives available. **Towers**—self supporting, wide variety of configurations from short roof mounts to 300 ft. **Tower Accessories**—Antenna pipe and frame mounts, walkways, ladders, wave-guide runs and wave-guide entry hatches. **Custom Fabrication**—Structures designed and manufactured to special requirements.

**MICROFLECT CO., INC.**

3575 25th SE · Salem, Ore. 97302

PHONE (503) 363-9267

# ADVERTISER INDEX

Ameco, Inc. .... 7	Plastoid Corp. .... 31
Armadillo Mfg. Co. .... 26	Performed Line Products .... 15
CAS Mfg. Co. .... 9	Pruzan Co., Jack .... 12, 14, 17, 24
Craftsman Electronics .... 27	Rohn Mfg. .... 37
Davco Electronics .... 4, 5	Sitco Antennas .... 34
Delta Electronics .... 22	Spencer-Kennedy Labs .... 28, 29
Economy Finance .... 18	Superior Cable .... 25
Entron .... C-3	Taco .... 13
Ft. Worth Tower .... 40	Telesystems Corp. .... 33
Jerrold Electronics .... C-2	Utility Tower .... 39
Kaiser CATV .... 20, 21	Video Towers .... 6
Lenkurt Electric .... 19	Viking Industries .... 3, C-4
Microflect .... 53	

## CLASSIFIED SECTION

Rate for classifieds is \$1.00 per line or fraction thereof for advertising which, in our opinion, is obviously of a non-commercial nature. A charge of \$30.00 per column inch (2 1/4" col.) is made to all commercial advertisers. Deadline for receipt of copy, 1st of preceding month.

### CHIEF ENGINEER

For operation and maintenance of turnkey system starting construction in eastern city. Additional systems in planning stage. Send resume of CATV experience, qualifications and salary desired. Write Dept. No. 91, TV & Communications Magazine, P. O. Box 63992, Okla. City, Okla.

### DIRECTOR OF ENGINEERING (CATV)

For New Jersey's Fastest Growing CATV Systems. Requirements: practical experience in CATV, television, understanding of Micro-wave and closed-circuit systems. Many company benefits. Send complete details to: Mr. John F. Scarpa, Garden State Television Cable Corp., Box 99, Vineland, N.J.



**NOPE, WE'RE NOT  
LOST. SEE THE  
DAVCO  
ADVERTISEMENT  
ON PAGES 4 & 5**

### DISTRIBUTORSHIPS AVAILABLE

For PENGUIN Liquid Plastic Coatings. For all Surfaces Inside or Out. Wax no More. PENGUIN makes floors gleam and sparkle with a hard, glossy, durable, stain-resistant, crystal-clear finish which is wholly different from any product being used today. Quickly applied by anyone—no skilled labor is required. It goes on smoothly whether applied with cloth or brush, dries rapidly, leaving a brilliant transparent film that lasts indefinitely under heavy traffic. Completely eliminates waxing, scrubbing and polishing. Dealer and jobber inquires also invited. Users may order for \$13.95 per gallon delivered prepaid. Also for boats and autos.

Minimum Investment — \$500.00  
Maximum Investment — \$12,000  
For Complete details write or call:  
Area Code 314-AX 1-1500

Merchandising Division  
P.O. Box 66  
St. Ann, Missouri 63074

### IDEAS THAT SELL!

Attention-getting promotions, effective direct mail to sell new CATV subscribers. Planned and produced at lowest cost. 25 years experience, print, radio, TV, CATV.  
**SAMUEL HENRY & ASSOC., PHOENIX, ARIZ.**  
3300 North Central Ave., Ph. 602 274-3508

Turn-Key Construction  
Field Engineering  
Closed Circuit  
Management & Consulting

**CATV**

**Stan Socia CORP.**  
TELEVISION CABLE INSTALLATION

634 Fair Pet. Bldg.  
Tyler, Texas  
Phone: Area Code 214 LY 3-0911  
214 LY 3-8085

THIRTEEN YEARS IN CATV

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Act of October 23, 1962: Section 4369, Title 39, United States Code). Publisher: File two copies of this form with your postmaster.

1. Date of filing: September 20, 1965.  
2. Title of publication: TV & Communications.  
3. Frequency of issue: Monthly.  
4. Location of known office of publication, (Street, city, county, state, zip code): 1839 N.W. 16th, Oklahoma City, (Oklahoma) Oklahoma 73106.  
5. Location of the headquarters or general business offices of the publishers (Not printers): Same as above.  
6. Names and addresses of publisher, editor, and managing editor.  
Publisher (Name and address) — Patrick T. Pogue and Stanley M. Searle, 1839 N.W. 16th, Oklahoma City, Oklahoma.  
Editor (Name and address): Stanley M. Searle, 1839 N.W. 16th, Oklahoma City, Oklahoma.  
Managing Editor (Name and address) Sherrill D. Dunn, 1839 N.W. 16th, Oklahoma City, Oklahoma.  
7. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given.)

Patrick T. Pogue — 2224 Laneway Drive, Oklahoma City, Oklahoma  
Stanley M. Searle — 2033 Manchester Drive, Oklahoma City, Oklahoma  
Sherrill D. Dunn — 102 North Markwell, Moore, Oklahoma  
Jean Schaefer — 1416 N.W. 105th, Oklahoma City, Oklahoma  
DeLois Nell Matthews — 1305 N. Hudson, Oklahoma City, Oklahoma

8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities (If there are none, so state): None.

9. Paragraphs 7 and 8 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner. Names and addresses of individuals who are stockholders of a corporation which itself is a stockholder or holder of bonds, mortgages or other securities of the publishing corporation have been included in paragraphs 7 and 8 when the interests of such individuals are equivalent to 1 percent or more of the total amount of the stock or securities of the publishing corporation.

10. This item must be completed for all publications except those which do not carry advertising other than the publisher's own and which are named in Sections 132.231, 132.232, and 132.33, Postal Manual (Sections 4355a, 4355b, and 4355c of Title 39, United States Code).

A. Total number of copies printed (net press run): 6740 average number of copies each issue during preceding 12 months. 6200 single issue nearest to filing date.

B. Paid circulation:  
1. Sales through dealers and carriers, street vendors and counter sales: None.  
2. Mail subscriptions: 5500 average number of copies of each issue during preceding 12 months. 5360 single issue nearest to filing date.

C. Total paid circulation: 5500 average number of copies of each issue during preceding 12 months. 5360 single issue nearest to filing date.

D. Free distribution (including samples) by mail, carrier or other means: 650 average number of copies of each issue during preceding 12 months. 600 single issue nearest to filing date.

E. Total distribution (Sum of C and D): 6150 average number of copies of each issue during preceding 12 months. 5960 single issue nearest to filing date.

F. Office use, left-over, unaccounted, spoiled after printing: 590 average number of copies of each issue during preceding 12 months. 240 single issue nearest to filing date.

G. Total (Sum of E and F—should equal net press run shown in A): 6740 average number of copies of each issue during preceding 12 months. 6200 single issue nearest to filing date.

I certify that the statements made by me above are correct and complete.  
(Signature of editor, publisher, business manager, or owner)

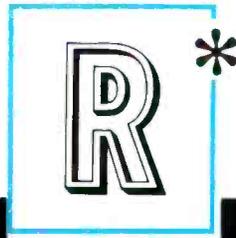
Patrick T. Pogue  
POD Form 3526 — Jan. 1965

---

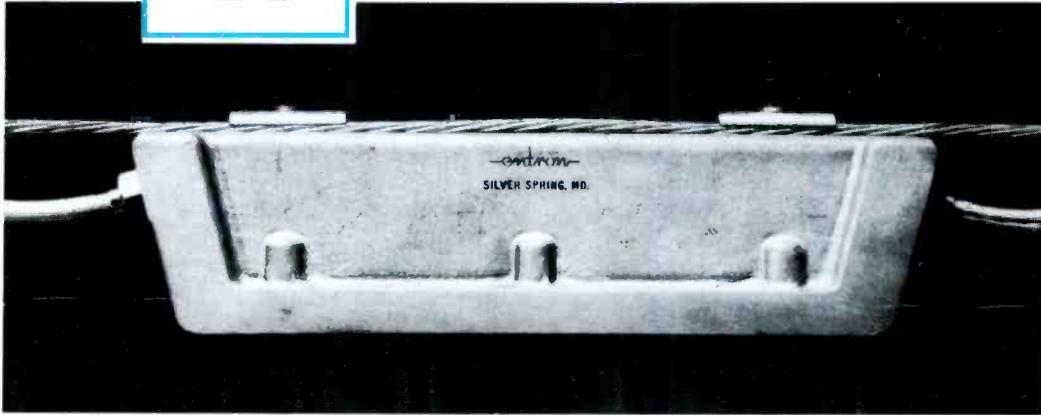
ENTRON—The Most Respected Name in CATV . . . Presents

---

## THE R\* SERIES TRUNKLINE AMPLIFIERS



... for reliability



One of Entron's new  
In-A-Line family of  
CATV equipments.

- All Solid State
- Continuous Bandwidth
- Maximum Spacing
- All Types of Fittings Available

The wise CATV system owner can save MONEY and MAINTENANCE with the new R-series of trunkline amplifiers from Entron.

These units provide maximum spacing for economy and solid state circuitry for reliability—two MUSTS in any profitable CATV system.

The R-1, R-2, R-3 and R-4 trunkline amplifiers give continuous bandwidth coverage for excellent transmission from 50 mc to 220 mc. All of the amplifiers are 28 volts. (60 volt models are available.)

The R-3 has automatic gain control and R-4 includes Equatrol<sup>®</sup> automatic tilt control in addition. Both are spaced 25 db in the trunkline.

Other important features of each member of the R-series are:

- Low Noise—More cascadable
- Versatility—Mount anywhere! Available with all popular fittings
- Heavy Aluminum Housing—Weatherproof
- Strand Mounting—Strand clamps provide instant mounting. No messy drip loops

For specifications and prices,  
write or call:  
  
ENTRON  
INCORPORATED

2141 INDUSTRIAL PARKWAY • SILVER SPRING, MARYLAND • PHONE: (301) 622-2000

---

CATV and  have grown up together!

---

<sup>®</sup>Registered Trademark

# viking UNITIZED CATV

## HIGH LEVEL INLINE MODULAR SOLID STATE AMPLIFIERS



THE  
*Goldline*  
SERIES

**CASCADABILITY** – The Viking Solid State amplifiers have been designed with one goal in mind – cascading. A 12 channel system bigger than 60 main line amplifiers in series or better than 1400 db of cable can be built for a system signal-to-noise ratio in excess of 40db. This achievement has been accomplished by a combination of the best possible electrical and mechanical specifications unified in a single design, in the following ways:

**OUTPUT CAPABILITY AND NOISE FIGURE** – The Viking amplifiers are designed with the lowest noise figures, 10db maximum, and the highest output capability, 51 dbmv.

**AGC** – The built-in AGC system of the Viking 574 amplifier operates so that the system can be set for the best signal-to-noise ratio under average conditions. Picture quality will improve with increased signal and not significantly deteriorate with moderately less signal. This is because the Viking AGC circuits are an integral part of the amplifier and operate by changing gain *after* the second stage of the amplifier so that there is an insignificant change in noise figure with AGC action.

The Viking AGC is also designed to tilt the amplifier's response curve to compensate for the tilt change in cable attenuation due to temperature. The Viking AGC thus does double duty: it holds the output constant for a change in *any* TV channel signal and automatically compensates for cable attenuation and tilt change due to temperature.

**MODULE CONSTRUCTION** – Every Viking Solid State amplifier is constructed in module form. The entire amplifier can be quickly replaced without disturbing cable or fittings, without unsoldering any connections and without the use of jumper cables. When a bridger amplifier is disconnected, the trunk signal and AC power is undisturbed.



**VIKING'S GOLDLINE SERIES IS THE ONLY SOLID STATE LINE WITH ALL THESE IMPORTANT FEATURES:**

- A** Directional outputs built in.
- B** 51 dbmv output capability for a 12 channel system (5db block-tilt).
- C** External fuses for easy replacement.
- D** Push-pull modular construction.
- E** Inline housing.
- F** Reversible mounting.
- G** Lowest noise figures.
- H** Unparalleled cascading (60 maintrunk amplifiers).
- I** All silicon RF transistors in sockets and heat-sunk.
- J** Lightning protection beyond 10,000 volts.
- K** AGC amplifiers with separate low and high band plug-in pads and full-wave power supply.
- L** Cable equalization: A 4 position switch plus an overlapping continuous control for 30db of continuous control.
- M** Both RF and AC power feed through the bridger amplifier locations whether or not the amplifier is in place.
- N** Can be strand mounted on side or back; or pole mounted.

**PUSH-PULL      CLICK-CLICK**  
**CHANGE AMPLIFIERS THAT QUICK**

**viking**



**THE NEW VIKING - FOR THE NEW LOOK IN CATV**

830 Monroe Street, Hoboken, New Jersey ■ Call Collect: New York: (212) WH 3-5793, Hoboken: (201) OL 6-2020