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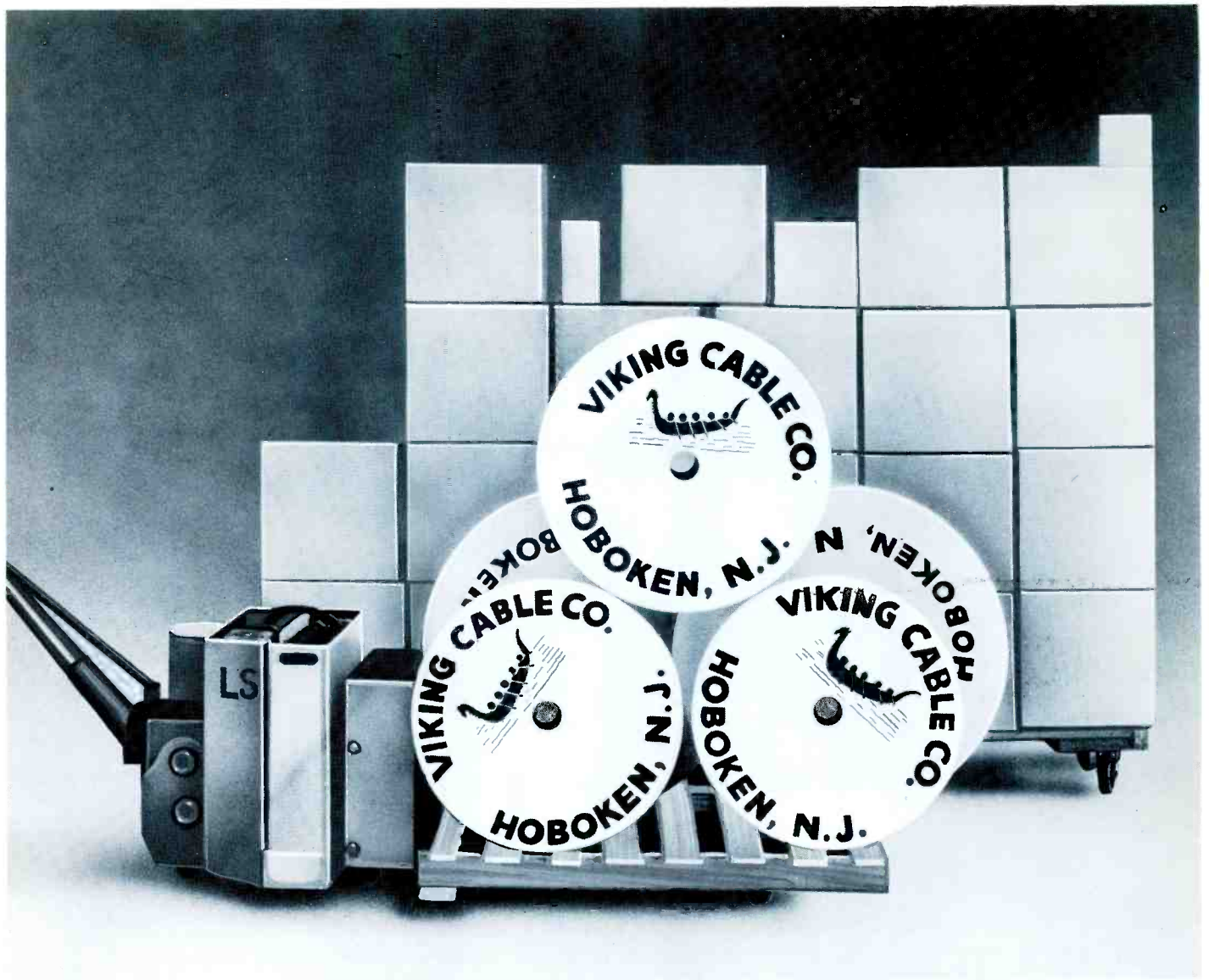
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EDITORIAL

There doesn't seem to be much doubt left that the community antenna industry will eventually be totally regulated by the Federal government. The NCTA has been working with the Federal Communications Commission during the past year in an effort to arrive at acceptable provisions for the proposed controls. This makes it just about unanimous in favor of CATV legislation. FCC wants it, NAB demands it, NCTA is resigned to it . . . and we doubt that our Congressmen will pass up an opportunity to assume control of an important communications industry.

Commissioner Ford in his speech before the Philadelphia NCTA Convention suggested that, "it is becoming clear that regulation of a service which has the potential impact that wire television has . . . should not be left to fifty diverse state jurisdictions."

Even though we accept the inevitability of regulation, we cannot consent to the predicament in which the present Commission approach has placed many systems. We refer specifically to operators who are being subjected to the 15-day non-duplication doctrine of Dockets 14895 and 15233.

While NAB obtains delays and while the Commission launches a "four to six month" study of CATV, system operators under the non-duplication rule continue to suffer.

Although the finding will probably be in favor of dropping the 15 day clause, **there will be no remedy or recourse for the CATV operator who is losing money because of it today!**

Penalizing some of the CATV operators, through a rule that was introduced only as a step toward regulation of all systems seems neither fair nor constructive to us. Consequently we must agree with Commissioners Robert T. Bartley, Frederick W. Ford and Lee Loevinger who have spoken out in favor of dropping the duplication rule pending the rule making following the submittal of comments.

Fairness should dictate reconsideration by the Commission in this matter.

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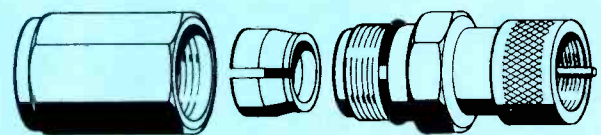
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News SPECTRUM

FCC EXTENDS FILING TIME FOR REPLY COMMENTS IN CATV MICROWAVE RULE PROPOSAL

Interim Condition Removed for Grade B Contour Systems

September 18 is the extended deadline for filing of reply comments to Dockets 14895 and 15233. The Commission granted the extension at the request of the National Association of Broadcasters. The proposed rules are to govern the granting of authorizations in the Business Radio Service and the Domestic Public Point-to-Point Microwave Radio Service for microwave relay of television signals to CATV systems.

The FCC has, meanwhile, removed its interim conditions on microwave grants go relay TV programs to CATVs operating within the Grade B contour of television broadcast stations. The provisions of the proposed rules which require 15 day (before and after) non-duplication will continue to apply to systems operating within the Grade A contour of a broadcast station.

While no voluntary acceptance of the non-duplication condition is required of a microwave-fed system within or beyond a Grade B contour, the Commission has stated that "any public interest questions that arise" in

connection with these systems will be resolved on the basis of individual petitions and "other procedures found to be appropriate."

Three Commissioners dissented, in part, to the FCC extension decision. Commissioner Frederick W. Ford stated, "I concur in that portion of the Opinion and Order which extends the time for filing reply comments in this proceeding. However, I would favor amending our interim processing procedures to provide that any microwave authorizations for CATV systems located beyond the principal city contour of a television station would not be subject to the conditions which heretofore have been imposed. Such applications would be dealt with on a case-to-case basis."

Commissioner Robert T. Bartley concurred on the extension but dissented to the removal of the "freeze" on Grade B involvements only. Said Bartley, "I would remove the freeze in its entirety." Commissioner Lee Loevinger stated, "I am not opposed to granting the extension of time to NAB but I am opposed to extension of the freeze."

NCTA CONVENTION RATED TOTAL SUCCESS; 1100 ATTEND

Last month's 13th Annual Convention of the National Community Television Association was generally conceded to be by far the most successful to date. Record numbers seemed to be the order of the day—with a record 1100 persons in attendance. The Philadelphia gathering exceeded most expectations by several hundred.

This is the first year that FCC Commissioners have addressed the national meeting—and no less than three—Cox, Ford and Lee—were on hand. It was also an occasion for record attendance by broadcasters, with an estimated 75 attendees representing

that industry. Meanwhile, a record number of manufacturers expressed their interest in CATV through carefully prepared and well staffed exhibits and hospitality suites.

The 1964 meeting occurred during a time of diverse problems and challenges for the CATV industry. But the underlying tone of the entire meeting was undoubtedly one of confidence and optimism — expressed in

FCC STUDIES PAY, CATV

On its own initiative, the FCC has authorized \$20,000 from current appropriations to conduct a 4 to 6-month study on CATV and related television. Heading the study unit (to be estab-

lished under the Broadcast Bureau) is Washington economist Dr. Martin H. Seiden.

Dr. Seiden reported that the study will basically be a "fact finding" independent survey to determine the economic and legal aspects of non-broadcast television.

Also assigned to participate in the study is Arthur Goodkind, Attorney to General Counsel for the FCC. The study is designed to provide the FCC with a foundation with which to possibly build future regulation of the industry.

FORD TERM CONFIRMED; FUTURE PLANS STILL QUESTIONED

On July 8 the Senate confirmed a new 7 year term for FCC Commissioner Frederick W. Ford. His previous term had expired on June 30 but he had continued to serve pending Senate approval of his re-appointment.



There is some conjecture that Commissioner Ford may step down after the November elections, having accepted the new term as a favor to the Johnson Administration. It is believed by some observers that the President wants Ford's influence on the Commission to minimize possible political repercussions from the Austin, Texas television involvements of the Johnson family.

Speculation also hints that Ford may be in line for a key post in the broadcast or CATV industry, including present vacancies at the top in both the NCTA and NAB.

PRESIDENT TAPS COLLINS; NAB PRESIDENCY VACANT

The appointment to the Directorship of Community Relations Services of LeRoy Collins has precipitated his resignation, leaving the NAB job vacant. Having received Senate confirmation, Collins will assume his new duties at about a \$50,000 per year pay cut. The NAB post pays \$75,000. Vincent Wasilewski, NAB executive vice president, has been appointed to temporarily head the Association.

CONGRESSMAN INTRODUCES RESOLUTION AIMED AT REGULATION OF MICROWAVE-SERVED CATV

A resolution calling for the FCC to "cease partial regulation of CATV systems by imposing conditions on the

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The Viking Back-matched Transformer Tap is completely compatible with all capacitive and resistive taps in the same Viking Cable Blocks. Its output is matched to 75 ohms so that it completely eliminates ghosting, smearing, and suckouts due to poorly-matched subscriber TV sets. This insures the best possible signal for all color and black-and-white TV sets.

SPECIFICATIONS

FREQUENCY RESPONSE: 8 – 220 MC

TAP-OFF FLATNESS: \pm .25 db/Band

INSERTION LOSS:	Type	Loss
	12 db	0.75 db
	16 db	0.25 db
	20,24,30	0.10 db
	36,40,50 db	

BODY: SOLID BRASS, SILVER PLATED
TAP OUTPUT IS AC/DC ISOLATED

TAP V.S.W.R.: 1.2:1, max.

OUTPUT CONNECTOR: F Type

DIMENSIONS: 2-1/4" x 5/8"



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issuance of licenses for microwave transmitters which are used by some such systems" has been introduced in the House by Rep. Samuel L. Devine (R., Ohio). Devine told Congressmen he would like to see implementation of several suggestions contained in Commissioner Ford's NCTA convention speech (see page 18). Rep. Devine had the Commissioner's speech printed in the Congressional Record.

GAB EXPRESSES CONCERN OVER COMMUNITY ANTENNAS

The Georgia Association of Broadcasters has passed a resolution which defines the position of the organization with respect to CATV. The statement which GAB has adopted and endorsed is as follows:

"The Georgia Association of Broadcasters reflects all possible views regarding Pay-TV and CATV. We have members who have invested millions of dollars in these forms of communications. Other members are stockholders in firms involved with Pay-TV and CATV. Some members have vigorously opposed CATV locally and/or in the courts, many being successful in defeating CATV franchises. Other members approve of CATV and Pay-TV on their merits, while some are totally opposed to those communications systems as injurious to free broadcasting.

The GAB has not made a value judgement whether Pay-TV and CATV are per se legitimate competitors in mass communications; whether they are technical advances to be utilized as complements to free radio and television; or whether they are razors at the jugular vein of advertiser supported television and radio. However, GAB feels that IF Pay-TV and CATV are determined to be inimical to free broadcasting, they pose just as great a danger to radio as they do to television.

Therefore, without endorsing or rejecting the public stands of any other individual or group of broadcasters, the GAB expresses its concern over the growing importance, ramifications and problems presented by Pay-TV and CATV. We believe there is an instant need for exploring all facets and facts of these communications forms, and a critical need for educating all broadcasters in the techniques, plans and possibilities existent in Pay-TV and CATV.

COURT REVERSES KLIX DECISION

In an unanimous decision July 16, the three judges of the U.S. Court of Appeals, San Francisco remanded the KLIX, Twin Falls, Idaho case back to U.S. District Court in Idaho.

Two rulings were made in the appellate court. The judges ruled that the lower court would allow the local TV station an opportunity to amend its complaint on the basis of possible copyright infringement. The second ruling (and most important) was a decision that *as a matter of law, no unfair competition under common law applied in this instance.*

Basis for the District Court's original ruling was that the CATV system could not receive the signals of distant television stations containing programs on which the local station had first call rights. The court had issued an injunction requiring the cable system to delay transmission for 30 days before and after the local station's scheduling of such a program.

EXTENSION GRANTED FOR COMMENTS ON COMMON OWNERSHIP PROCEEDING

Earlier this month the Federal Communications Commission delayed the

deadline for filing comments on the matter of acquisition of CATV systems by TV broadcast licensees, Docket 15415. September 18 is the final date for comments, with reply comments due by October 16. The Commission extended the time to coincide with the filing date on Dockets 14895 and 15233. The FCC observed that "some of the matters which the National Association of Broadcasters wishes to present in latter proceedings are also relevant in Docket 15415."

MEREDITH AVCO CORP. FORMED TO OPERATE CATV SYSTEMS

Already substantially committed in the field of CATV ownership, Meredith Publishing Co. has announced the formation with Avco Corp. of the new firm of Meredith Avco Corporation, with plans to establish, acquire and operate community antenna systems. Meredith already has system interests in Florida as well as a joint venture with Jerrold in that state (TV & C, February). Both Avco and Meredith are multiple station owners of television and radio properties.

Capitalization is reportedly planned to be \$10 million, with the new company to be held equally by the two parent organizations.

MERRILL NEW NCTA CHAIRMAN

Heading the newly elected slate of officers of the National Community Television Association is Bruce Merrill, CATV system operator, television station owner and head of Ameco, Inc. Frank Thompson, vice president of Cable, Inc., Rochester, Minn. is the new Association vice-chairman. Secretary is Charles Clements, operator of Clements TV, Waterville, Wash. R. L. Stoner who manages Eastern Oregon Television, Inc. was re-elected treasurer during the June Philadelphia convention.

Elected to the NCTA Board of Directors for three year terms were: Jack Crosby, Westex Cable Corp., Del

Rio, Tex.; Albert J. Ricci, Better TV, Inc., Bennington, Vt.; Alfred R. Stern, TeleVision Communications Corp., New York City; Archer Taylor, Northwest Video, Inc., Kalispell, Mont. and Warren Fribley, Jr., Community Television Corp., Corning, N.Y. Mr. Fribley had just completed a one year term on the Board.

Harry C. Butcher, Cable TV of Santa Barbara, Inc., Santa Barbara, Calif. and Bob Magness, Community Television, Inc., Bozeman, Mont. were elected to two year terms. Jim Davidson, Davco Electronics Corp., Batesville, Ark. was named a member of the Board for a one year term.



Merrill



Thompson



Clements



Stoner

PAGLIN, MERRIL AND SLOSBERG TO ADDRESS GAB SEMINAR

On August 4 the Georgia Association of Broadcasters will convene the Southeast Radio-TV Seminar in Atlanta, Ga. to discuss CATV and pay television. Announced intention of the group is to "hear all sides of these subjects in the same place at the same time."

Max Paglin, former FCC General Counsel and practicing Washington communications attorney, will speak on "CATV & TV—a Merger is a Must." The FCC's viewpoint on cable television and pay television will be presented by Associate General Counsel of the Commission, Hilbert Slosberg. And NCTA Board Chairman Bruce Merrill will address the gathering on the subject of "CATV: Techniques and Operations."

Other featured speakers will include NCTA's Robert L'Heureux, Theodore Pierson, a Washington attorney, John Pinto of RKO Phonevision, and Terry Lee of Storer Broadcasting Co.

Morton Leslie will represent TAME at the meeting. Eugene Cogan, McCann-Erickson, Herb Jacobs of TV Stations, Inc., and Bill Putnam, WRLP-TV, Greenfield, Miss. will also take part in the program.

JERROLD FORECASTS PROFIT; TO EXPAND SYSTEM HOLDINGS

A modest profit was reported for the first three months of the new fiscal year, stockholders were told at Jerrold Corporation's annual meeting last month. Milton J. Shapp, President and Chairman of the Board, informed shareowners that the firm has "made the turn" to profitable operations and that a profit for the fiscal year ending next February 28 is anticipated.

A record backlog of orders, \$6,803,000, was contrasted to a backlog of only \$1,911,000 a year ago.

Shapp pointed out that Jerrold has once again become a major factor in CATV system operation, having acquired equity interests or franchises in 15 communities in less than one year. He announced the intention of expanding present holdings in community antenna television "as new opportunities develop."

OUR COVER

Shown at the NCTA Convention are (l to r) FCC Commissioner Robert E. Lee, NCTA Chairman Bruce Merrill, Past Chairman Fred J. Stevenson and Commissioner Frederick W. Ford.

Jerrold has received "substantial orders" for amplifiers and other equipment to be installed in the STV systems in California, Mr. Shapp reported. He stated that Jerrold is "on the ground floor as a major supplier to the Pay-TV industry, an industry that is just beginning to stir."

Re-elected as Directors, in addition to Mr. Shapp, were Simon Pomerantz, Treasurer and Assistant Secretary; Alex Satinsky, Secretary; Dalck Feith, President of Dalco Manufacturing Co., Philadelphia; Wentworth P. Johnson, Senior Vice President and Director of Fidelity-Philadelphia Trust Co., and Muriel Shapp.

NCTA OFFERS COOPERATION IN NAB "IMPACT" STUDY

Following confirmation last month of the National Association of Broadcasters' plans for a study of economic effects of CATV on TV stations, Fred Stevenson offered the full cooperation of NCTA in developing "all pertinent facts concerning this much discussed subject."

Occasion for the offer by NCTA's outgoing National Chairman was the authorization by NAB's Television Board of a research study. The remarks were made in a telegram to LeRoy Collins in which Stevenson pointed out that "NCTA has made its own study, the results of which were recently filed with the Federal Communications Commission. It is our hope," he told Collins, "that the NCTA study together with that now planned by NAB may provide useful facts of lasting value in the public interest."

The amount authorized by NAB for the contracting for research was reported, unofficially, at \$50,000.00. NCTA's voluminous study has shown a lack of adverse economic impact on local stations by community television operations.

HARTFORD PAY-TV SUIT SETTLED

Settlement of the anti-trust action brought by RKO General, operator of the Hartford, Conn. Pay-TV Channel 18, has been announced. 20th Century Fox and Universal Pictures, defendants in the suit, have reportedly agreed to supply the broadcast Pay-TV firm with first-run (post '62) films.

RKO had charged that the two motion picture companies conspired with theatre owners and distributors to withhold motion pictures from the Hartford firm. □

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An Employment Service for Cable Television? It's here now!

The need and the thought have been there for some time. TeleSystems Corporation has broached the idea, and the response has been one of universal approval.

Even if cable television were experiencing only the normal pattern of growth, after fifteen years of cable TV, there would be a need for a specialized service of this kind. But community antenna systems have gone far beyond the idea of bringing television to TV deprived fringe reception areas. Concepts of the place that cable television can fill keep expanding, and so does the growth of the industry.

Where do you get the men who can keep pace with this kind of expansion? Business vision is demanded, as well as imaginative engineering. Both, of course, based on knowledge of sound principles. Such men will have grown up in the industry, and have demonstrated their ability to fill a position of greater responsibility. But the need is far greater than can be filled by those presently in cable television.

Allied occupations must be looked to, where the requirements approximate the conditions found in cable TV. With a minimum of training added to their previously successful practices the potential of these men can be properly utilized. Men like these may be available within your own areas.

We have the resources to find them for you, and if desired, train them in our efficiently managed systems. You can so be free of the uncertainties of long distance relocation.

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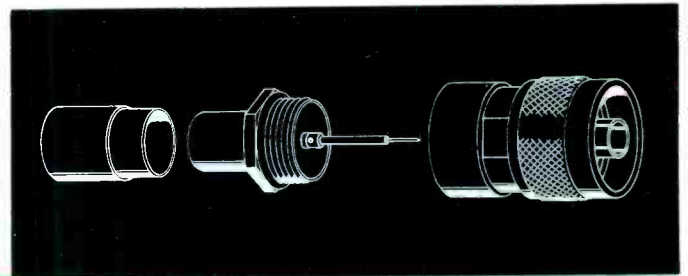
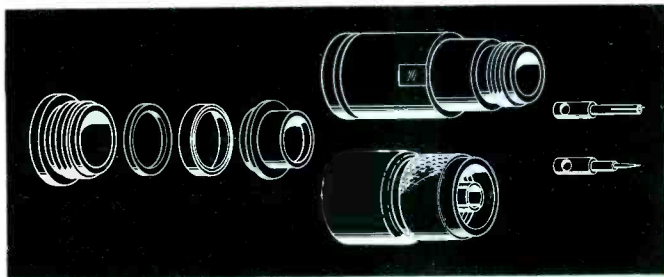
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Eliminate pull-outs that cause blank screens

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CABLE DESIGNATION	PLUGS			JACK
	TYPE "N"	TYPE "F"	TYPE "UHF"	TYPE "N"
4920	SC2A	SC2F	SC2UF	SC2JA
	Captive Contacts For Above Plugs*			
	SC2CCA	SC2CF	SC2CCUF	
4930	SC3A	SC3F	SC3UF	SC3JA
	Captive Contacts For Above Plugs*			
	SC3CCA	SC3CF	SC3CCUF	

FULL CRIMP TYPE 75 OHM CONNECTOR

CABLE DESIGNATION	PLUGS		JACKS		SPLICE
	TYPE "N"	TYPE "UHF"	TYPE "N"	TYPE "UHF"	TYPE "N"
4920	SC2CRN	SC2CRU	SC2CRNJ	SC2CRUJ	SC2CRS
4930	SC3CRN	SC3CRU	SC3CRNJ	SC3CRUJ	SC3CRS

These new connectors make positive, never-fail contact between lengths of coaxial cable to eliminate any and all "pull-outs" that interrupt service and put out the picture. Designed to mate electrically and mechanically with #4920 and #4930 "Cell-O-Air" coaxial cable with "Coppergard" shield. Superior's captive contact connectors assure full-system compatibility.

Both cable and connectors have been designed exclusively by SUPERIOR for the CATV Industry



ELECTRONIC WIRES AND CABLES

Manufactured by

SUPERIOR CABLE

Superior Cable Corporation • Hickory, North Carolina

FOCUS

... On Progress

CHAIRMAN OF THE BOARD ELECTED BY ENTRON

Robert J. McGeehan, President of Entron, Inc., recently announced the election of *Justin W. Pierce* as Chairman of the Board for the communications manufacturing firm. Mr. Pierce replaces *William C. Godsey*, deceased.

Mr. Pierce, a director of the company is also the president of *Justar, Inc.*; and *Pierce Associates*, management consultants. Previously, he was a vice president of *Diebold, Inc.*, and board chairman of *Consolidated Business Systems, Inc.*

Others elected to serve on the board of Entron are *Stephen Hartwell*, a member of the Advisory Board of *Gilsey Associates*; *Vincent A. Pepper*, senior partner in the Washington law firm of *Smith and Pepper*, and *John J. Senesy*, Board Chairman of the *Construction Service Co.* *Nathan Duff*, a director since 1963, was also elected secretary. Mr. Duff is an attorney and a director of *Royal Engineering Co.*, and corporate counsel for other companies.



MYRICK NAMED DIRECTOR OF ADMINISTRATION AT PHELPS DODGE

Donald A. Myrick has been named Director of Administration at *Phelps Dodge Electronic Products Corporation*, North Haven, Connecticut. In this new post Mr. Myrick will assist in the administrative duties of *Henry W. Jones, III*, Vice-President.

Mr. Myrick served for seven years as Manager, Contract Administration

with *Edgerton, Germeshausen & Grier, Inc.*, Las Vegas, Nevada. His staff provided administrative services for an 865-man scientific group concerned with weapons testing and nuclear rocket engine development. Prior to this, he was with *Southern Nevada Power Co.* and *Southern California Edison Co.* engaged in design and installation of distribution networks and hydro-electric facilities.



EXPANSION TO INCLUDE 46,000 HOMES

Principles of Cable TV of Santa Barbara, Inc., and *Golden West Broadcasters* have signed an agreement in a recent move to finance expansion of cable TV to 46,000 homes. Participating in the pact signing ceremonies were (shown l to r in photo) *Harry C. Butcher*, President, Cable TV; *Lloyd Sigmon*, Executive Vice President; *Gene Autry*, President; and *Robert O. Reynolds*, Vice President of *Golden West Broadcasters*. Attorney *Wesley L. Nutten, Jr.*, and Secretary of *Golden West*, and *Charles H. Jarvis*, Attorney and Secretary of Cable TV were present.

WOLF APPOINTED JERROLD SOUTHEASTERN REGIONAL MANAGER

Bert Wolf has been named Southeastern Regional Manager for *Jerrold's Distributor Sales Division*. The appointment was made by *Sanford Berlin*, Sales Manager of the division, which manufactures TV and FM antennas, antenna preamplifiers and other reception aids.

Mr. Wolf's new position gives him the responsibility for the efforts of *Jerrold DSD* representatives and distributors throughout the entire Southeastern portion of the country.

During his eleven year tenure with *Jerrold*, he has had wide experience

in TV systems of all types, including community TV and closed circuit TV.

In announcing the appointment, Mr. Berlin said, "Bert's experience and depth of knowledge should prove valuable to our representatives and distributors in the Southeastern region." Immediately prior to this appointment, Wolf served as a sales representative in the Communication Systems Division of *Jerrold Electronics*.

STV ELECTS NEW BOARD MEMBER

Francis J. Purcell, former regional administrator of the New York office of the Securities Exchange Commission, was elected to the board of directors of *Subscription TeleVision, Inc.*, at the June meeting, replacing the late *Matthew M. Fox*, according to *Sylvester L. (Pat) Weaver, Jr.*, president.

Purcell, a New York City attorney and partner in the law firm of *Manning, Hollinger and Shea*, represented and was a personal friend of Fox, who died suddenly on June 2. Fox was a director of *Subscription TeleVision, Inc.*, and chairman of its programming subsidiary, *STV Programs, Inc.*

Purcell is also a member of the board of directors of *Tolvision of America, Inc.*, and of *Tolvision International, Inc.*, in which Mr. Fox was active as an officer and member of the board. Purcell will serve as legal counsel for Mr. Fox's estate.

HERE'S A FANTASTIC CABLE TV SPECIAL
THIS THURSDAY and FRIDAY ONLY!
OUR INSTALLATION CHARGE
(NORMALLY \$11.25)
WILL BE

ONLY 99¢

YOU SAVE \$10.26

PACIFIC VIDEO CABLE CO.
CALL 442-0801

MEMBER 11 CHANNELS OF CLEAR AND CONSISTENT TELEVISION—STILL ONLY \$3.99 PER MONTH

JUMBO POST CARD GETS RESULTS

Results for *Pacific Video Cable Company's* 99¢ special hookup promotion have been described as "fantastic." The *El Cajon, California* firm reportedly initiated the promotion to overcome a slow period.

5,000 jumbo sized post cards were mailed out to offer *El Cajon* citizens an opportunity to hook up to the system for only 99¢. Regular hookup rates are \$11.25. A "fabulous" return of 551 hookups resulted. The special offer was in effect for two days only.

GAVIN APPOINTS EXPORT AGENCY

Bob McDonald, Sales Manager of Gavin Instruments, Inc., announced the appointment of *Artronics Company*, of River Vale, N. J. as exclusive export agent for the complete Gavin line including UHF Converters, UHF & VHF Boosters, the all new Gavin antenna and molded patch cord lines.

The organization will handle Gavin sales in all foreign markets and Canada.



JACKSONVILLE, N.C. SIGNS FOR CATV SYSTEM

Jacksonville Cable Television Co., Jacksonville, N. C. has signed with *Entron, Inc.* to install a community antenna television system in the area.

According to *Robert J. McGeehan*, President of *Entron*, work on the system will begin immediately with operation scheduled for late Fall. He said, "Entron's newest and most advanced broadband equipment, exhibited at the recent National Community Television convention in Philadelphia, will be used in constructing the Jacksonville system. The cost of this construction is estimated at approximately \$300,000."

President of the Jacksonville Cable Television Co., *Fred Stegner* added that the system will also enable subscribers to obtain all networks—channels 5, 6, 7, 9, 11 and 12.

MOTOROLA NAMES FOUR NEW SALES MANAGERS

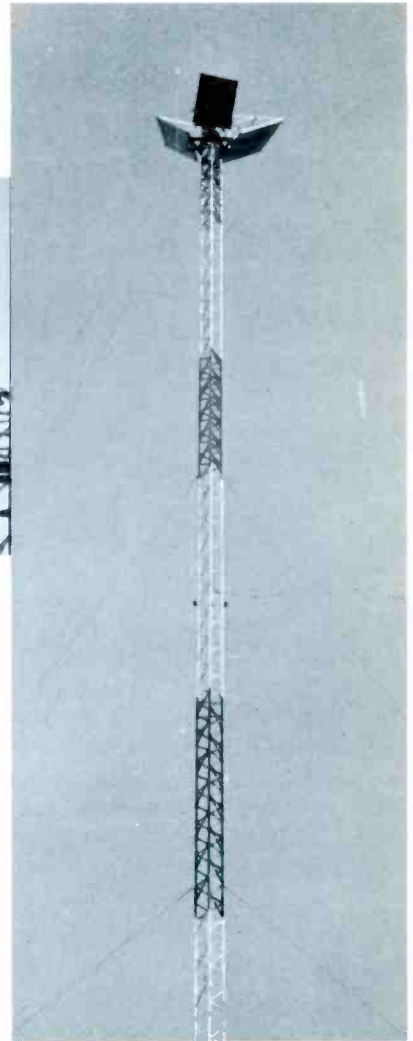
Four appointments to new managerial positions to direct special communications product sales activities have been announced by *Motorola Communication and Electronics, Inc.*

Named to the new positions are *Charles Herrin* in the West, *Eric Goelas* in the Midwest, *Joseph "Ted" Miller* in the East and *Ray Farmer* in the Southwest.

In their new positions, the men supervise the design and sale of electronic communications systems. Product responsibilities include closed circuit TV equipment.

TV & COMMUNICATIONS

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



J. J. Wardell (r) of Superior Cable chats with William McPheeters of Alarm Corporation, Carmel, California.



Ben Conroy of Uvalde, Texas and Lyle Keys of TeleMation at the TeleMation display.



Ike and Lois Blonder.



John Buchanan, Ameco Vice President (l) talks with Norman J. Suttles of Fayetteville, N. C.



At TeleSystems booth are (l to r) Dan Mezzalingua of Craftsman Electronics, Carmen DiLego, Bud Milliken, Fred Weber, Mike Mongiello, Charles Wigutow and Bill Karnes.



Tom Aye of Tape-Athon demonstrates music channel equipment for CATV.



David de Wolfe of Collins Radio Company with Lee Kitchin (r) of TeleCable Corporation, Norfolk, Virginia.



Harley Steiner, Lewiston, Idaho (l) with Al Fowler, President of RF Systems and Robert McGeehan, President of Entron.

The 1964 convention of the National Community Television Association commenced on a warm and pleasant Sunday afternoon in Philadelphia. That historic city, near one of the nation's greatest concentrations of CATV activity, provided an excellent atmosphere for a productive and enjoyable get together. An all-time record 1,100 people showed up to take in the proceedings and returned home both gratified at the progress of their Association and challenged by the various problems still facing the cable television industry.

Among the issues most discussed, both at the rostrum and privately, were FCC controls and possible legislation, the new frontiers of CATV financing and management, and the growing interest in UHF television broadcasting.

From a practical standpoint, the system operators at the meeting had to be most concerned with the possibilities of legislation and the currently pending FCC proposals of controls on microwave-fed CATVs and joint-ownership of systems and broadcast properties. The second most important topic to most operators was system management, including the vital matter of financing for expansion, acquisition and replacement. However, the popular topic of the convention was UHF. Perhaps this was due to the growing broadcaster segment within the CATV industry—or perhaps it's the number of system operators whose business maturity is suggesting imaginative expansion into related fields. Certainly the pronounced interest of broadcasters in CATV ownership suggests that station ownership by CATV operators is a practical possibility.

Equipment

Informative displays by manufacturers drew a lot of attention, aided by a convention program thoughtfully planned to allow for visiting exhibits. Key meetings were held in an auditorium located on the 18th floor directly adjacent to the manufacturers' booths. Transistorized equipment was featured by many firms, with Ameco, Jerrold, CAS, Craftsman and Holt introducing new solid-state equipment at the show.

Entron's large exhibit simulated an actual cable run of 20 miles, utilizing 30 amplifiers. The off-the-air picture

Convention Highlights

13th Annual NCTA Convention achieved record turnout; key addresses reveal dramatic activity and interest

was compared with the cable system picture. Any skeptics had ample opportunity to check out the system to assure that the signal was actually being fed through the long series of amplifiers and attenuators. The Jerrold display also drew a lot of interest with its strong theme in support of the firm's "Parisian Holiday" promotion offering expense-paid holiday tours in connection with equipment purchases.

Major equipment builders manning displays included: Ameco, Blonder-Tongue Labs, CAS Mfg., Craftsman Electronics, Delta Electronics, Entron, Ft. Worth Tower, Holt Electronics, Phelps-Dodge, Plastoid Corp., Rohn Mfg. Co., Spencer-Kennedy Labs, Superior Cable, Sylvania, Tape-Athon, TeleMation, TeleSystems, Times Wire and Cable, Viking Cable and Westbury CATV.

National Theatre Supply Co. and TVC (formerly Telco), a large distributor, had booths at the show. And, in addition, several distributors and contractors such as Davco Electronics, Jack Pruzan Co. and Reprtronics were represented.

Microwave equipment suppliers were much in evidence this year. Lenkurt exhibited for the first time, joining Collins Radio Co. and Raytheon who have promoted business at previous conventions. William Gentry of TeleSystems, Martinez, Calif., and Frank Spain, Tupelo, Miss., were also promoting microwave equipment and services. In addition, Jerrold's display included microwave equipment.

Ampex Corp. showed video recording equipment and another newcomer to the field, Sony Corp. of America, was on hand. Teleglobe Pay-TV System demonstrated newly introduced equipment in a suite of the Bellevue-Stratford, as did several other manufacturers seeking to provide a quiet relaxed atmosphere for discussions with conventioners.

Social Attractions

A thoroughly delightful time was provided for NCTA members and their families through a series of social highlights which started for the ladies with a fashion show on Monday morning. A full ladies program through the week included luncheons, coffee hours, a tour of Peddler's Village and a comedy stage production.

On Tuesday evening Bill Daniels of Daniels & Associates, Denver, hosted a buffet at the Hotel Adelphi. Two separate orchestras filled the spacious "Rose Garden" rooms with music for the party goers.

"An Evening with Jerrold" was hosted at the Latin Casino by Milt Shapp, president of Jerrold. System operators and their wives were supplied courtesy transportation to the New Jersey night spot where singer Robert Goulet was starred. A full evening of entertainment, enhanced by an excellent prime rib dinner, was thoroughly enjoyed by the NCTA party of more than 600 persons.

Climaxing the regular convention was the Annual NCTA Banquet on Thursday evening. High spot of this occasion was the presentation of a scroll to Fred Stevenson by the members of the NCTA Board. It signified their esteem and appreciation of Fred's diligence and effectiveness during a long, trying year in the office of National Chairman.

The entertainment for the banquet was extremely interesting. Master of Ceremonies and co-chairman of the host committee, George Barco, introduced Countess Maria Pulaski who, in turn, delivered an intriguing and thought provoking talk.

Last, but not least, on the social calendar was the change-of-pace Friday picnic and outing sponsored by TeleSystems Corp. at the Ramblewood Country Club (see page 22).

As chairman of the 1965 Annual Convention, to be held next June in

Denver, Colo., Bill Daniels has a big job ahead of him in his announced efforts to make next year's meeting even more enjoyable than the 1964 convention. George Barco and Bob Tarleton, co-chairmen of the host committee, deserve a lot of credit for the success of this year's National Convention. ■

Cox Proposes Special Microwave Channels for CATV

Reviewing his association with CATV, Commissioner Kenneth A. Cox told NCTA Convention attendees of his actions regarding CATV "ever since I first ran across this strange term . . . back in 1956."

Relating that although CATV was once considered to be only an auxiliary service, the Commissioner reported that now "some people regard your wired systems as the wave of the future." He continued, "all of a sudden, community antenna television, with background overtones now and then of pay TV, is the hottest topic of conversation in the communications field. What was once regarded as a temporary auxiliary service is suddenly moving stage center."

Commissioner Cox categorized CATV problems into three general areas: "What licensing policy should the Commission pursue with regard to microwave facilities serving CATV systems"; "Policy with regard to the



ownership of CATV systems," and "Future development . . . should the FCC regulate CATV operations more generally?"

The Commissioner reviewed the Federal agency's stand on local station protection and in particular the proposed non-duplication Documents No. 14895 and 15233. He said, "I personally believe that some such rules are needed and also that they are

clearly within our present authority." Concerning the several pleadings that assert, "nothing really should be done to protect a local station, not even protection against simultaneous duplication of its programs, unless it can show in an evidentiary hearing that it is in precarious financial condition," Cox stated, "I believe that a station's ability fully to serve its community will be impaired long before it reaches such dire extremity as would meet that kind of a test." ■

Ford Speaks at NCTA Luncheon

Commissioner Frederick W. Ford in his Thursday luncheon address to the National Community Television Association in Philadelphia, Pennsylvania told its members that CATV must be included in the overall picture if the United States is to fulfill its goal of a rapid, efficient, nationwide and world-wide wire and radio communications service.

Theme for Mr. Ford's talk was based upon the problem of the "impact upon our broadcast television structure of a system whereby the public pays for its television service." *Television: Divided or United - Some Problems in Television Growth*, Ford's speech was received with repeated applause.

Covering virtually every phase of his views on where television has been, where it is and where it will go, Ford emphasized several needs required to provide the complete television service desired in the United States. He urged the establishment of "an integrated and Federally regulated system of both wire and radio."

Ford referred to the priority set forth in the Sixth Report and Order for the assignment of at least one TV station to each community. He acknowledged that this goal "can never be realized by the use of the allocated frequencies alone." "It is not physically possible with the present state of the art to assign 82 channels to the 4699 communities with a population of more than 2500 each in the US.

"Even if it were possible to add enough additional spectrum space to provide one television station to each community . . . I do not believe that sound frequency management would permit such an inefficient use of this valuable national resource, to say nothing of the economic unsoundness of making such an attempt." Ford

expressed concern "only with satisfying the need for expanded television service over and above that can be provided by the present allocation." He added, "this expanding need can and should be satisfied by the use of the alternate means namely wire."

The Commissioner lauded CATV in its efforts stating that it "has the capacity, desire and ability to furnish that additional service in the public interest. They have done it and undoubtedly will continue to do it on an ever increasing basis."

Turning his attention to another vital matter, Mr. Ford suggested Federal regulation of wire television. His concern was that "regulation of a service which has the potential impact that wire television has . . . should not be left to fifty diverse state jurisdictions and countless cities." He added, "The time has come it seems to me to recognize the development of wired television as a significant national force and to establish a comprehensive regulatory scheme that will provide one fully integrated and unified television system. In short, pre-emption of this field by the Federal Government is essential." ■

As a final point, Commissioner Ford discussed the competitive impact that CATV could have on television. He proposed that CATV system owners establish UHF stations to provide service to rural areas now unable to receive television and in areas economically impractical to serve by cable. Indicating the possibility of establishing UHF where assignments are presently available, he proposed the "possible modification of the Commission's rules on assignment, height, power and a liberalization on the number of UHF stations permitted one owner for this purpose."

In closing his speech, Ford made two suggestions. He proposed that "a separate division be established in the Commission's Broadcast Bureau . . . to study the future of television . . . to plan for the orderly development of television and to keep the Commission informed." His second proposal was that an *ad hoc* committee he formed to study all technical, legal, social, economic and political questions and to study and make recommendations on what form the regulation of wire television should take. ■

(Continued on page 22)



At Jerrold's Latin Casino party are (l to r) Joanne Shapp, Milt Shapp, Mrs. Robert Beisswenger, Robert Goulet and Mr. and Mrs. George Barco.



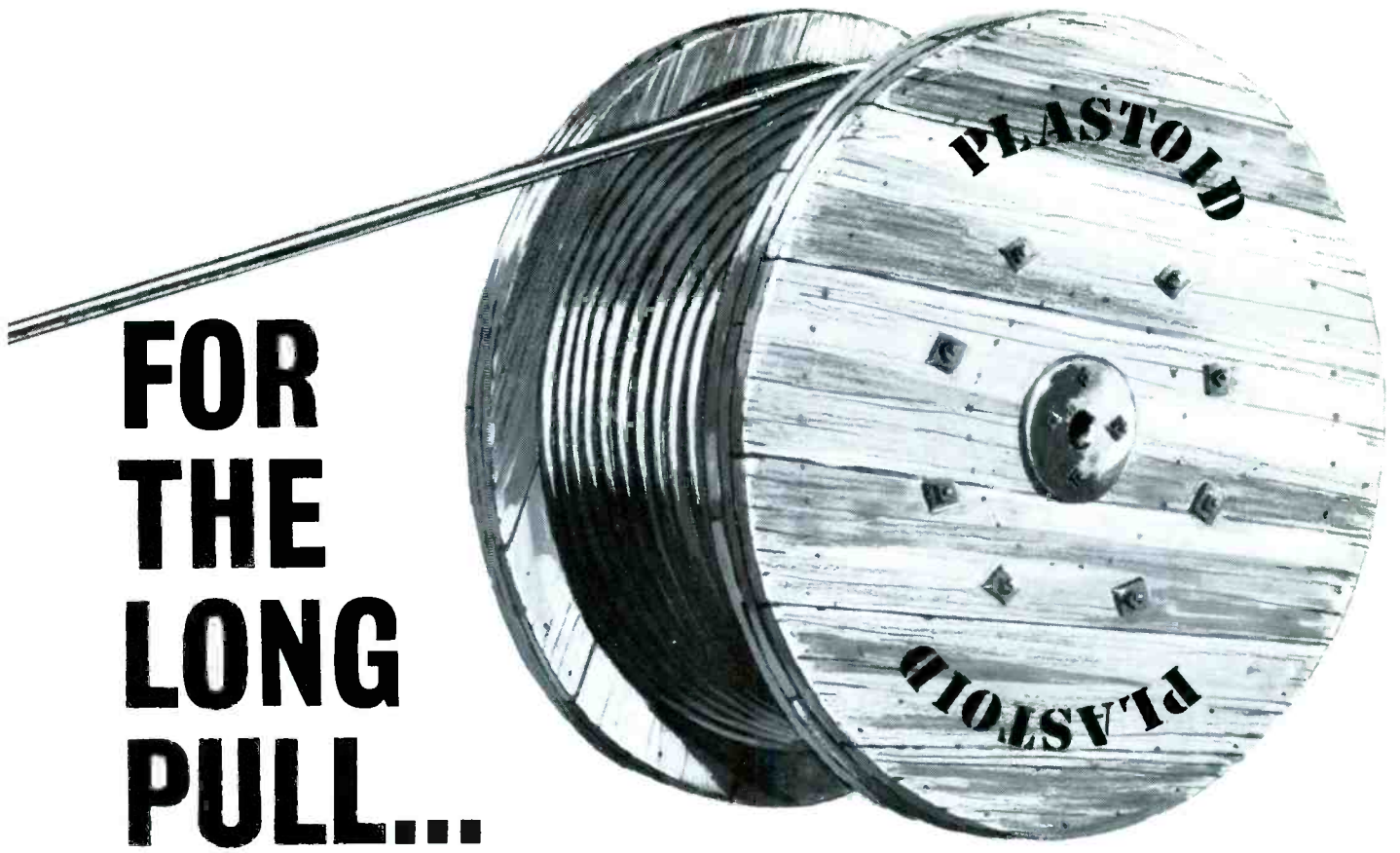
Luther Holt displays one of new amplifiers announced by Holt Electronics.



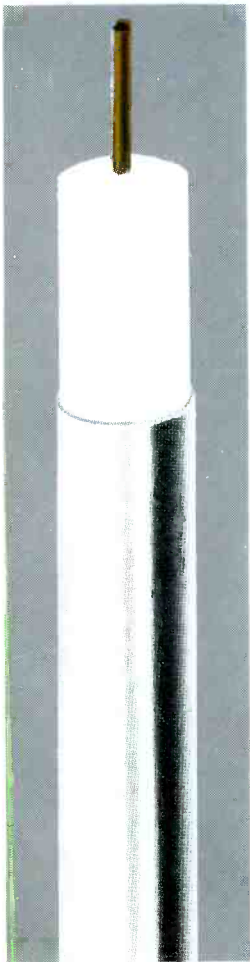
Ed Shafer (l) of Entron with Jim Davidson, Davco Electronics.



Foreground Mr. and Mrs. Bill Smith, (l to r) Mr. and Mrs. Charles Clements, Mrs. Frank Thompson, Jim Davidson, Mr. and Mrs. Stan Searle at Annual Banquet. Seated at head table in background (l to r) Bob Tarleton, Archer Taylor, Frank Thompson and Bruce Merrill.



FOR THE LONG PULL...



Look to Plastoid . . . Strain your solid sheathed aluminum coaxial cable by Plastoid. Tug at it. Put it under pressure. Bend it. You'll find the highest tensile strength cable that also gives you lower db loss than similar seamless aluminum coax. The Plastoid sheath is actually **stronger** because of its weld.

Made under similar exacting quality controls as established by Military Specifications, Plastoid cable employs superior materials, electronically tested for uniformity of gauge before seaming. Thin or weak spots are detected and eliminated. Then, the sheath is welded in a bond that is invisible yet stronger than the parent metal. Proven by the ASTM cone test. Special hydrostatic tests bear out Plastoid strength. **"Under hydrostatic pressures in excess of 2,000 pounds, neither the sheath — nor the seam — split or burst."**

Delivered on sweep tested reels ranging from 1,000 to 5,000 feet in continuous lengths, here is a semi-flexible cable that gives you ease and economy of handling while you enjoy improved electronic characteristics. You get **lower** attenuation across the breadth of the entire band. Longer continuous cable lengths assure fewer splices, less chance for moisture penetration, minimum cable waste, plus reduced connector and labor costs. For extra long life in special environments, Plastoid aluminum sheath also available with an overall Polyethylene jacket.

PHYSICAL AND ELECTRICAL STANDARDS							
TYPE	NOM O.D. Conductor	NOM O.D. Dielectric	NOM O.D. Unjacketed	NOM O.D. Jacketed	NOM. Attenuation (db per 100 ft.) Channel #6	NOM. Attenuation (db per 100 ft.) Channel #13	Shipping Weight Lbs. per M
TA4	.0752	.362	.412	—	.96	1.60	66
TA4J	.0752	.362	.412	.480	.96	1.60	90
TA5	.0980	.450	.500	—	.78	1.26	102
TA5J	.0980	.450	.500	.580	.78	1.26	132

For immediate delivery or special pricing information about these longer-length, long-pull trunk or distribution CATV cables, wire or write . . .

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JERROLD

QUALITY TRANSISTORIZED

Experienced operators agree that transistorized CATV gear with Jerrold quality and reliability is what they've been waiting for. Don't be fooled by equipment specs; they're meaningful only when they relate to gain and output capability at *usable* system operating levels. Jerrold's new solid-state devices have the highest operational capabilities in the industry, yet are conservatively rated in accordance with our high engineering standards. This is the type of equipment performance you need to keep your subscribers satisfied, your system expandable and trouble-free . . . and this is what you get when you use Jerrold CATV equipment.



NEW SOLID-STATE INTERMEDIATE BRIDGING AMPLIFIER

MODEL TBA-2: Incorporates design features and functions of both the TML-1 and TBA-1. Creates feeder lines at locations between two TML-1 amplifiers. Features built-in directional coupler, 1½ db max. insertion loss, 26 db gain to each of two outputs, variable gain and tilt controls; has the same output capabilities as the TML-1. Mounts in a weather-proof housing and is cable-powered. Internally voltage-regulated and current-limited. Each output fused for fault-protection.



NEW SOLID-STATE FEEDER-LINE EXTENDER



MODEL TLE-1: Mounts directly on the messenger, in line with the coaxial cable. Provides a minimum 18 db gain at channel 13, and is designed for use with 18 to 28 db of cable. Compact, lightweight, features a high output capability of 33 dbj* for 12-channel operation. Separate gain and tilt controls can be set and locked in position. A two-position switch opens or closes power pass-through circuit.

Heavy-duty weather-proof aluminum housing clamps to messenger and utilizes the seized-center-conductor principle for permanent connection to either solid or flexible cables.

*0 dbj = 1000 microvolts across 75 ohms.

NEW "CHANNEL CHAMP" SOLID-STATE PREAMPLIFIER

MODEL TPR- : The most impressive *picture improver* since the development of the famous Jerrold Channel Commander. Features lowest noise figure in the industry (4 db low band, 5½ db high band). AC-powered to eliminate electrolysis problems. Zener diode regulation eliminates signal fluctuations due to voltage changes. Trouble-free transistor circuit enclosed in thick cast aluminum housing will provide like-new performance year after year.



UNANIMOUSLY ACCLAIMED AT THE SHOW!

CATV EQUIPMENT



HERE'S THE BEST-PERFORMING TRANSISTORIZED EQUIPMENT IN THE INDUSTRY!

NEW SOLID-STATE ALL-BAND CASCADE

MODEL TML-1: A six-transistor all-band mainline amplifier designed for rock-steady, trouble-free performance in extremely long cascaded runs. Features high gain (24 db min. full gain; 22 db operational gain); high output capability (44 dbj* per channel for 12 channels at -57 db cross-mod.); flat response ($\pm 1/4$ db); low noise figure; matched inputs and outputs.

Operates from a 19 to 30 vac source either direct or via coaxial cable. Internally voltage-regulated, current-limited; supplies power to an associated line-bridging amplifier (Model TBA-1). Built-in equalizers and tilt control compensate for varying cable lengths. Gain control accomplished with plug-in pads and variable pot. Heavy solid copper heat-sink chassis.

NEW SOLID-STATE BRIDGING AMPLIFIER

MODEL TBA-1: For establishing feeder lines at main amplifier locations. Similar in construction to Model TML-1, from which it obtains power. Provides 14 db gain to each of four outputs. Features both coarse and fine gain control; high output capability (42 dbj* per channel for 12 channels at -57 db cross-mod.); and 16 db min. isolation between outputs. Each output is fault-protected with a fuse.



Community Systems Division • 15th & Lehigh Ave., PHILA., PA. • Area Code 215 226-3456

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Area Code 617
828-0767

PITTSBURGH, PA.
1301 Highland Bldg.
121 S. Highland Ave.
Area Code 412
441-3050

SAN CARLOS, CALIF.
1042 Terminal Way
Area Code 415
593-8273

DENVER 22, COLO.
2110 S. Ash St.
Area Code 303
756-6283

DALLAS, TEXAS
4924 Greenville Ave.
Area Code 214
368-1911

YAKIMA, WASH
Ward Building
1 N. First St.
Area Code 509
248-1717

CONVENTION OUTING

Following a full week of the busiest convention schedule in NCTA history, a relaxing outing was provided for cable operators. Hosting a picnic day at nearby Ramblewood Country Club in New Jersey was TeleSystems Corp., Glenside, Pennsylvania.



TSC's Sam Street demonstrates the Utilift to lovely "co-pilots" Arlene Rocek and Rochell Mindell of the NCTA staff.

Thoughtfully scheduling a wide variety of activities, our hosts for the Friday outing had arranged for use of the 7,000 yard championship golf course along with the club's three pools. A clambake and ox roast buffet included cooling refreshments appropriate to the hot weather. Boiled lobsters and clams, a tremendous roast of beef, fresh corn on the cob and fresh clam chowder and clam fritters were served throughout the day.

A popular attraction was the Utilift on the lawn in front of the club house where many of the more adventurous women and children took hydraulically controlled joy rides in the bucket. Bill Karnes officiated as "Flight Coordinator" for the sky ride.

Fred Lieberman and Jack Crosby, along with their able TeleSystems staff, must be credited with a unique post-convention gathering that provided a very welcome change of pace for the more than one hundred guests who were able to stay for the outing. Theirs was an excellent idea for ending the highly successful convention on a very pleasant note.



Shown after a round of golf on the Ramblewood course are Dick O'Barsky and son with Mr. and Mrs. Gene Schneider.



Hosts at the TeleSystems outing included: Jim Stilwell, Fred Weber and son, Tom Johnson, Bill Karnes, Joe Sutherland, Charlie Wigutow, Glenn Scallorn, Fred Lieberman, Lisa Lieberman, Jack Crosby and son.



An abundance of food and fun for all!



Ben Hughes (center) product manager for Phelps-Dodge and associate discuss low-loss coax.



Commissioners Lee (l) and Ford (r) with Frea Stevenson.



H. J. Sawyer, Delta Electronics (c) with Eugene Marteney of SKL (l) and SKL President Donald Spencer.



Al Slater (l) shows Ampex video tape equipment to Is Lieberman, Washington, D. C.



Kerwin McMahon (l) and Julian Weiss, both of Plastoid.



Indoor TV Distribution Equipment



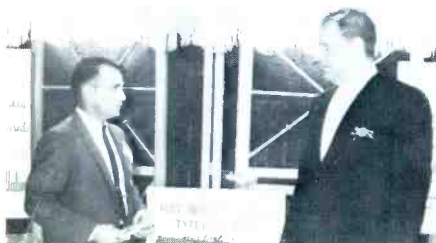
Bill Daniels (r) with Arthur and Mrs. Baum.



Joseph Conowall in Jerrold suite.



Mr. and Mrs. Sel Kremer backstage with Robert Goulet



Tommy Moore (r) and Ed Moyer, both of Ft. Worth Tower.

TV & COMMUNICATIONS

Stevenson Presents Annual Report
 Outgoing National Chairman Fred J. Stevenson of NCTA lauded the Executive Committee, Board of Directors and Association members for their support in his annual report before the NCTA Convention. Stevenson alluded to the "number of dangers we

had safely warded off, with the real accomplishments made, and the positive gains which had been registered."

Reviewing the activities of the year, Stevenson reported that upon assuming the office of Chairman, he was faced with the immediate problem of selection of a new President when

TRY!

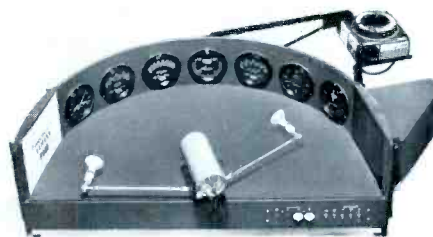
We claim that we have anything you need for a CATV system SO TRY US.

Make it hard for us. Order something that you've been trying to get your hands on for months and months, or something that everybody else is out of. If we can't get it to you, forget it. But the point is: we WILL get it to you, and get it there faster than anyone. However, that hard-to-get item is probably already in our catalog, just waiting to be ordered. Why not send for the catalog (100 plus pages, indexed, illustrated) and save yourself a lot of headaches?



REMEMBER: WRITE FOR OUR CATALOG: IT'LL MAKE LIFE A LOT SIMPLER

WEATHER CHANNEL is your Profit Channel!



HIGHEST QUALITY ★ MOST RELIABLE ★ FIELD PROVEN

USED BY TOP OPERATORS THROUGHOUT THE NATION. In addition to being the foremost manufacturer of time/weather equipment, we are distributors of most of the top video equipment lines—over 50 TV equipment manufacturers represented. See us for a package engineered to your exact requirements.

- RECORDERS ★ VIEWFINDER CAMERAS ★ MONITORS ★ FILM CAMERAS
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William Dalton announced his desire to resign from the Association. The Board of Directors met last August to determine the status quo—defined by Stevenson as “the mess we’s in.” He related, “And, believe me, by August, things were in a mess.”

One area in which the NCTA was “in a mess” was FCC inaction on microwave applications. Some members “wanted us to introduce our own bill and to take on the FCC, the NAB and everybody else . . .” Mr. Stevenson said. However, the Board decided to exercise patience and to try to obtain more meetings with the Commission. A fact-finding committee was appointed to meet with an FCC panel to continue the discussions. The two

panels “came within a hair’s breadth of final agreement.” Requests by the National Association of Broadcasters to present views of their own have temporarily called a halt to an attempt to finalize the language of the proposed legislation.”



Vic Nicholson (1) greets visitors to the Jerrold display.

NCTA’s reaction to TAME was reviewed. The Chairman reported that NCTA has kept itself informed of all TAME activities. He stated that the charges made by the group “organized to stop the development of CATV and to harass existing CATV systems” were being brought to the attention of the public and federal and state officials. He informed members of plans to give them the true facts with which to resist their (TAME) efforts.



George W. Michalski of National Theatre Supply.

GUEST EDITORIAL

The Cloak of Confusion

by Bruce Merrill



Mr. Merrill

Non fumum ex fulgore, sed ex fumo dare lucem cogitat.

His thought is not to give flame first and then smoke, but from smoke to let light break out.

Horace
65-8 B.C.

The smoke emitted in voluminous amounts by those who would harangue and main the CATV industry has long served to cloud and conceal the real issue. And there can be but one real issue in the final analysis . . . the preference of the public.

Some would lead us to believe that the public needs to be protected. Yet none can point to a single case where, when the public has had a fair choice, the public has made a poor choice.

Still the smoke pours forth to settle on and completely obscure this issue in a nebulousness of selfish interests that have become so desperate they cry out for preferential protection through legislation.

There is no real flame to their cause. The public is destined to an eternal billow of smoke stoked by \$50,000 . . . \$500,000 . . . \$5,000,000.

Do not the stokers realize that the CATV industry has thrived and will continue to survive for one reason? . . . it is the will of the public. The simple truth is, the cable systems are giving the public something they want. Something broadcasting is not giving them.

“Off the air” or “on the cable”—this is the choice each man should have a right to make. This is a personal preference. This is America at its best. This is all that CATV asks.

Let the smoke cease. Let the preference of the public prevail. Let the light break out!

EDITOR’S NOTE: Guest editorialist this month is newly elected Chairman of the NCTA, Bruce Merrill. It is suggested that there is much food for thought for the NAB (and those many broadcasters who do not belong to the NAB) in Mr. Merrill’s remarks.



George Acker shows off lashing wire at Aberdeen Company booth.



Lenkurt Sales Engineer, Jay Naugle, Jr. at the California Company’s booth.

“We can be justifiably proud of the accomplishments of this year,” Stevenson concluded, “but we must continue our studies to keep them on a current basis and we must persist in giving to officials and to the public, facts when our opponents seek in one way or another to curtail the fine service which the CATV industry renders to the public.”

**MORE CONVENTION PHOTOS
NEXT MONTH**

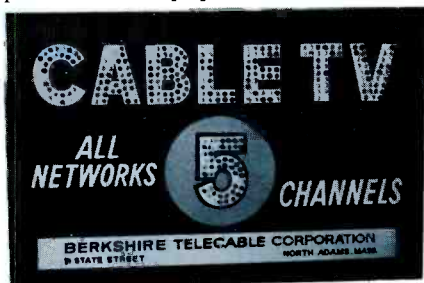
An expression that I have heard too often is, "Everybody in town knows we are here. When they are ready to come on the cable, they'll come to us."

This may appear to be the substance of common sense. After all, it is expected that in the smaller cities everybody should know of most businesses; especially when a business offers a product as much in demand as television reception.

Neighbors are on the cable. The rates are no secret. The number of channels delivered over cable are known. Cable trucks bearing the company name, daily criss cross most streets. Then, why spend good money on advertising?

But subscribers do not flock to the cable system simply because they know what it has to offer. People need constant urging. This means that no opportunity should be lost to get the company name across, accompanied by some sales message.

It doesn't mean that all these messages need be of the urgent variety. Rather the effect sought should be the cumulative result of total planning. Each vehicle for publicity should be used within its persuasive capabilities. The best part of this is that a good deal of this activity can be accomplished without much cost by making use of company controlled premises or equipment.



This sparkling sign is brief, informative and stands out.

Start with a tasteful, but arresting sign hanging in front of the office. Your name, and a plain statement, for example; 8 channels on the cable, will do. Be sure every word is easily read from a distance.

For a window display you can have eight sets, each set tuned to a different channel. Some shielding against daylight glare should be devised. There is an attractive excitement about a working display of television sets in the quantity. A sign card should show the call letters, city of origination,

and dial setting for cable reception on each of the channels.

A good window slogan over the display is,

"On the cable

It's your choice of any of these 8 channels at all hours of the broadcast day or night."

The office, itself, should be professional in appearance. It is the com-

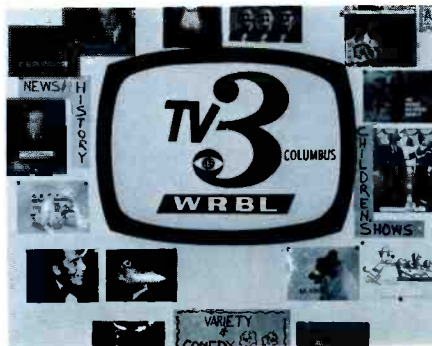
YOUR ADVERTISING IS SHOWING!

by Charles Wigutow,
TeleSystems Corporation

pany showcase to the many potential and actual subscribers who come to seek information or transact business. The front office is certainly no place to dump tools, antennas or equipment. Glossy photos of TV personalities, obtainable from broadcast sources make for good office decoration. These personalities are the substance of what we sell to the public.

The customer counter should be a place of distribution of company literature. The NCTA booklet, "Over the Horizon," is a good give away piece. It is desirable to have on hand a brochure written specifically for your system. Bare mention of numbers, or "more to see" is not enough. Your printed matter should impart some of the feeling of watching programs, pleasurably; and with the wide choice provided by cable.

Do you have a special purpose truck; one equipped with a mechanical lift or bucket? In operation, this



Office display of cable television merchandise.

in itself is a show stopper. People will pause to watch it go through its gyrations. Here is a good chance to do more than paint your name on the side of the truck. "Bringing home 8 channels of TV pleasure by cable" is short enough and apt.

It should be unnecessary to say that all company vehicles should look trim. What a shame it would be if these moving company sign boards should take something away from your reputation, rather than add to it.

All of these means of advertising are comparatively free. You own or control these media. What you are doing is using your working property as part of your public relations program.

Your assumption should be that the whole public never knows enough about cable television. Yours is a campaign of instruction. You have available many tools in addition to outright advertising. As a manager, you can personally volunteer an interesting half hour to each of the service



Manager Marshall Henderson gives cable TV story to community group.

clubs. The NCTA film on cable television, or your own slides will stimulate lots of questions and discussion. Generally, entertainment committees are hungry for ways to fill that after-the-meal slot, and will welcome your participation.

You will effectively have reached your community opinion makers. The clubs are gathering places for the substantial citizens: the business, professional and political people. They are the ones who exert influence. Even though the process may be unconscious, what these leaders do or say becomes a pattern for the rest of the community. When service club members are on your side your drive for subscribers is properly directed.

Talks to clubs and other organizations bring a secondary reward. It's like a pebble thrown into a pond, and creating a widening ring of ripples. The local newspaper publishes reports of club activities. Frequent news ap-

(Continued on page 35)

The availability of commercial amplifiers capable of delivering high output levels, opens new avenues of systems' design for—

CATV SYSTEMS FOR LARGE CITIES

THE primary objective in the design of a television distribution system is to produce a television picture on a standard TV receiver which the subscribers will find acceptable. This objective can best be achieved by separating the trunkline system from the distribution system. The purpose of the trunkline system is to carry a clean signal to points from which distribution can be originated, and the purpose of the distribution system is to deliver the signals to the subscriber taps. In the following, the trunkline systems will be analyzed first, and the distribution systems, second.

CONSIDERATIONS WHICH DETERMINE TRUNKLINE REPEATER AMPLIFIER SPACING AND LINE LEVELS

Repeater amplifiers are required to offset signal losses due to cable attenuation. The most economical system will be the one which is designed after careful examination of cable and repeater amplifier costs. Higher priced, lower loss cables do not require as many amplifiers as lower

priced, higher loss cables. A reduction of the number of amplifiers will result in the following advantages:

1. Installation cost savings.
2. Operational cost savings due to less maintenance.
3. Improved system performance.
4. Improved system reliability.

Maximum output power-handling ability, determined by the state of the art of amplifier design and radiation limitations, establishes operational output level.

The difference between operational output level and operational input level represents the operational gain or spacing.

PRACTICAL SPACING OF REPEATER AMPLIFIERS

As stated above, the primary objective in the design of a television distribution system is to produce a television picture on a standard TV receiver which the subscriber will find acceptable. However, the term, "acceptable" denotes an opinion rather than a fact, and it is extremely difficult, if not impossible, to design a system on the basis of opinions. The designer requires a set of facts and figures indicating exactly how the system is supposed to perform. Therefore, it becomes necessary to translate the term, "acceptable" into figures by specifying the various systems' characteristics.

The Television Allocations Study Organization (TASO), in its report to the Federal Communications Commission (FCC) of March 16, 1959, made available information accumulated during extensive tests with various groups of television viewers. TASO effectively graded the television viewers' opinions, thereby providing the interpretation from opinions to figures so urgently needed by systems' designers. Since the TASO figures, (1, 2), are based on tests and measurements which are the most extensive ones conducted to date, they will be used as a basis

1. **Random Noise Interference**—Different grades of picture quality were first established as follows, (1):



Author Blum has been head of Entron's engineering and research and development departments since 1953. Prior to this he operated his own engineering office in Berlin, Germany, for four years. He is a graduate of "GAUSS" Engineering School in Berlin, and a member of the Institute of Electronic and Electrical Engineers; and the Institute of Motion Picture and Television Engineers.

Number	Name	Description
1	Excellent	The picture is of extremely high quality; as good as you could desire.
2	Fine	The picture is of high quality providing enjoyable viewing. Interference is perceptible.
3	Passable	The picture is of acceptable quality. Interference is not objectionable.
4	Marginal	The picture is poor in quality, and you wish you could improve it. Interference is somewhat objectionable. The picture is very poor, but you could watch it. Definitely objectionable interference is present.
5	Inferior	The picture is so bad that you could not watch it.
6	Unusable	

Pictures with various signal-to-noise ratios were presented to a randomly selected group of viewers who rated the pictures as follows:

Grade	Signal-to-Noise Ratio
Excellent	42 db
Slightly Less Than Excellent	38 db
Slightly Less Than Fine	32 db
Passable	27 db
Marginal	23 db
Midway Between Marginal and Inferior	20 db
Inferior	18 db
Unusable	(approx.) 10 db

The preceding results are based on black and white, as well as color observations, and grading of picture quality versus signal-to-noise ratios varies immaterially between black and white and color transmissions.

Therefore, a signal-to-noise ratio of 42 db has been established as a systems' objective.

2. **Co-Channel Interference**—Using the same grades of picture quality as given in Paragraph 1, pictures with various degrees of co-channel interference were presented to television viewers who rated the most critical pictures as follows (2):

Grade	Signal-to-Interference Ratio
Excellent	47.3 db
Fine	42.6 db
Passable	37.2 db

Co-channel interference appears on the television receiver's screen as an interference similar to the one caused by cross-modulation.

Therefore, a signal-to-cross-modulation-interference ratio of 48 db (0.4%) has been established as a system's objective.

CORRELATION OF SYSTEM'S PERFORMANCE STANDARDS AND EQUIPMENT SPECIFICATIONS

In order to obtain a signal-to-noise ratio of 42 db at the output terminal of the last amplifier, the following two



\$295
complete with carrying case and batteries.

SADELCO'S "New Model FS-2" TV-FM Field Strength Meter

- Glass epoxy main chassis.
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- VHF-TV/FM in two ranges (54-108 Mc & 174-216 Mc)
- Peak reading, Carriers marked.
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- AGC and Temperature compensated.
- Calibrated in 1 db div. from minus 33 to plus 60 and volts from 10 microvolts to 1.0.
- Accuracy plus or minus 1.75 db or better.

This is the fastest and easiest to read Field Strength Meter available today.



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conditions must be met.

1. At any point in the system, the signals must be of sufficiently high amplitude.

2. The noise generated by the system's components must be of sufficiently low amplitude.

Both criteria can be determined from the equipment specifications. The equipment manufacturer generally specifies the noise figure in db of the individual amplifier. This noise figure can easily be used to determine the actual noise voltage generated by the amplifier across its input terminals by employing Eq. 1, (3), (4):

$$E_n = \sqrt{KTRBF} \quad (\text{Eq. 1})$$

in which

E_n = root mean square noise voltage, referred to input terminal of amplifier;

K = Boltzmann's constant 1.38×10^{-23} joules/degree Kelvin;

T = absolute temperature in degrees Kelvin (generally $293^\circ\text{K} = 20^\circ\text{C} = 68^\circ\text{F}$);

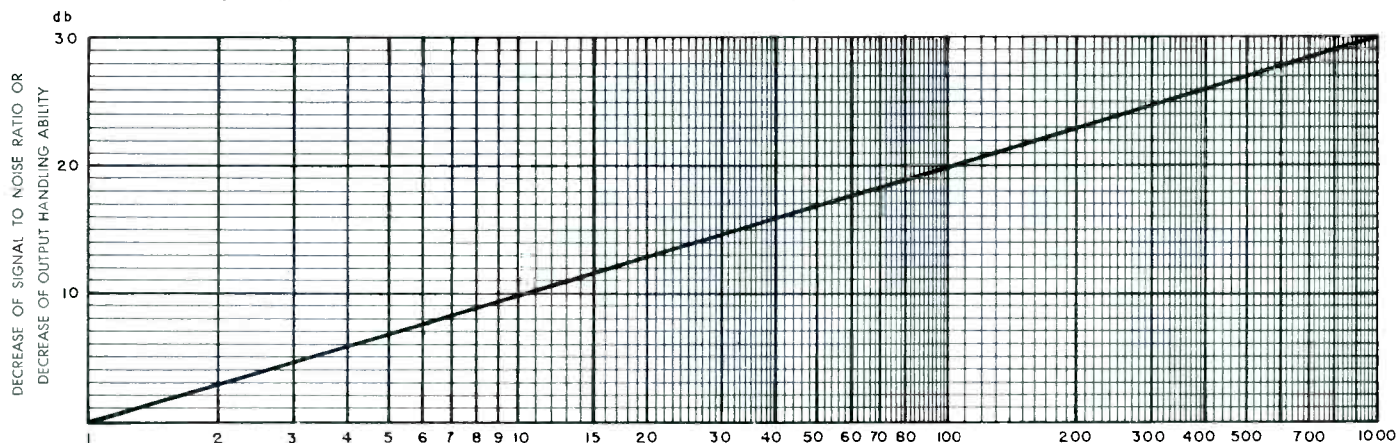


Figure 1. Decrease of signal-to-noise ratio and output handling ability versus number of cascaded amplifiers.

R = characteristic input impedance of amplifier in ohms;

B = 3 db bandwidth in cps;

F = noise figure, linear, not expressed in db; and

F = noise figure in db $= 10 \log 10 F$.

Example

An amplifier has a 3 db bandwidth $B = 60$ mc (50-110 mc) and a noise figure $F = 8$ ($F_{db} = 9$ db), therefore the noise voltage generated by the amplifier at its input terminal is

$$E_n = \sqrt{KTRBF} = \sqrt{1.38 \cdot 10^{-23} \cdot 293 \cdot 75 \cdot 60 \cdot 10^6 \cdot 8} \quad (\text{Eq. 2})$$

$$= 12 \text{ uv} = -38 \text{ dbmv}$$

This noise voltage, however, would be measurable only with a 60 mc-wide voltmeter, covering the same frequency range as the amplifier to be measured. CATV systems divide the total bandwidth into a number of channels. If the average receiver bandwidth (channel) is assumed to be 4.5 mc, the noise voltage across one channel can be calculated as follows:

$$E_n = \sqrt{KTRBF} = \sqrt{1.38 \cdot 10^{-23} \cdot 293 \cdot 75 \cdot 4.5 \cdot 10^6 \cdot 8} \quad (\text{Eq. 3})$$

$$= 3.4 \text{ uv} = -49 \text{ dbmv}$$

A field strength meter (FSM) should be used for measuring signal levels. The FSM most widely used in the

CATV industry has a specified 3 db bandwidth of 0.6 mc. If this meter is being used to measure the noise level generated by the above-mentioned amplifier, the noise voltage would be

$$E_n = \sqrt{KTRBF} = \sqrt{1.38 \cdot 10^{-23} \cdot 293 \cdot 0.6 \cdot 60 \cdot 10^6 \cdot 8} \quad (\text{Eq. 4})$$

$$= 1.2 \text{ uv} = -58 \text{ dbmv}$$

This last figure can easily be verified by measuring the output noise level of an amplifier having a noise figure of 9 db, using a field strength meter of the above-mentioned type and subtracting the gain of the amplifier from the obtained reading. During this measurement, any pickup of extraneous noise or signals must be avoided.

Each amplifier in a cascaded amplifier system, (for example, in the trunkline of the CATV system) adds to the noise in the system. Whenever the total number of amplifiers in cascade is doubled, the noise power present in the passband is doubled. This means that the signal-to-noise ratio decreases by 3 db, as shown in Figure 1.

Considering the previous requirement of maintaining a signal-to-noise ratio of 42 db, the individual amplifier's performance requirements can be established by the following steps:

- Step 1. Locate the number of cascaded amplifiers on Figure 1. Example, 32.
- Step 2. Determine the "Decrease of S/N" in db. Example, 15 db.
- Step 3. Add the figure found in Step 2 to the required signal-to-noise ratio of 42 db. Example, $15 \text{ db} + 42 \text{ db} = 57 \text{ db}$.
- Step 4. Determine the individual amplifier's input level by adding the figure found in Step 3 to the noise level generated by the individual amplifier. Example, $-49 \text{ dbmv} + 57 \text{ db} = 8 \text{ dbmv}$.

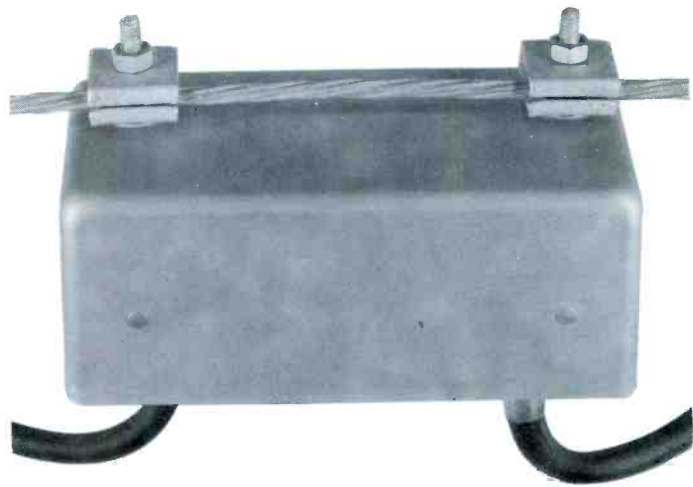
Therefore, it can be seen that the input level of each amplifier in a system of 32 cascaded amplifiers has to be at least plus 8 dbmv when amplifiers having a noise figure of 9 db are being used.

In order to obtain a signal-to-cross-modulation ratio of 48 db at the output terminal of the last amplifier, the signal-to-cross-modulation ratio must be better (more) than 48 db at any point ahead of the last amplifier.

Unfortunately, specifications indicating the amount of cross-modulation that can be expected from CATV equip-

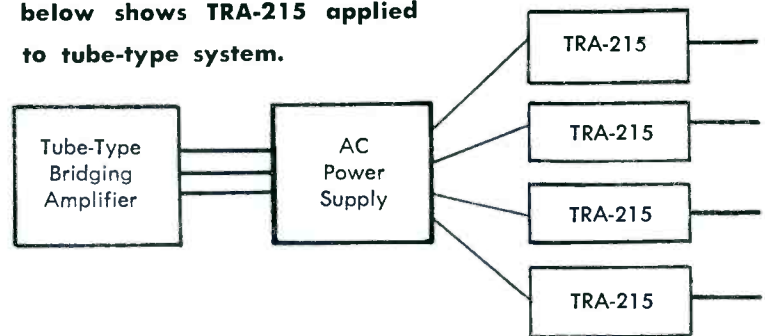
*The value of -49 dbmv was obtained from Equation 3.

TRA-215 TRANSISTORIZED CATV All-Band Line Extender



TRA-215

THE TRA-215 may be used with either tube or solid-state trunk line equipment. Block diagram below shows TRA-215 applied to tube-type system.



The CAS TRA-215 All-Band Line Extender employs the unique CAS distributed output, which provides the best output capabilities (45db max.) of any Extender on the market today.

To further utilize these output capabilities the TRA-215 can be used as a distribution amplifier by driving a 2 or 4 way splitter.

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CAS MODEL TRA-220**



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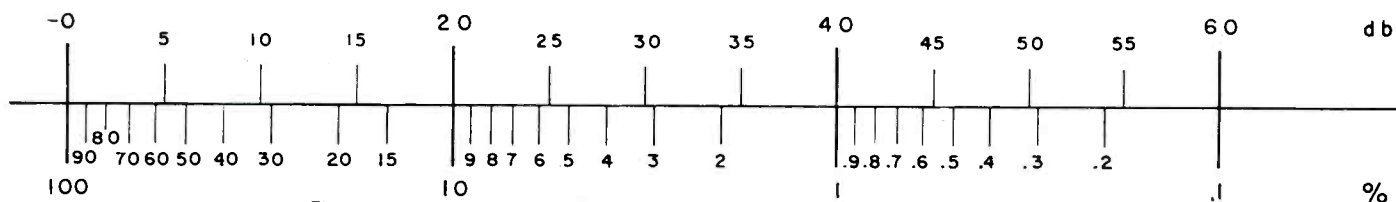


Figure 2. Negative Ratio Expressed in db versus Ratio Expressed in Percent.

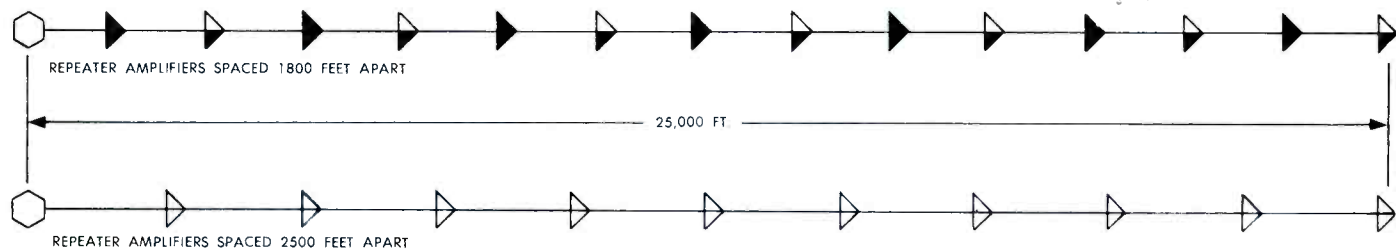
ment are not uniform. The system's designer wants to know under which conditions he can expect the cross-modulation level to be 48 db below the signal level. Therefore, some equipment manufacturers indicate on their specification sheets either (a) the maximum output level that a single amplifier can handle before cross-modulation becomes noticeable as per TASO standards, that is, the level at which the signal-to-cross-modulation ratio is 48 db; or (b) the signal-to-cross-modulation ratio expressed in db, or as percentage at a given output level.

handling ability and ALC action in the majority of applications.

3. **Computation of Spacing**—The difference between output and input levels is the operational spacing of the amplifiers.

COMPARISON

An arbitrary community antenna trunkline section is shown in Figure 3. This section is shown equipped with low level repeater amplifiers spaced 1,800 feet apart and high level repeater amplifiers spaced 2,500 feet apart. A



SYMBOL	AMPLIFIER MODEL NO.	INPUT		GAIN		OUTPUT		TOTAL NO. OF AMPLIFIERS	
		HI dbmv	LO dbmv	HI db	LO db	HI dbmv	LO dbmv		
▶	LRA-40D		+ 9.4		28.6		+ 40	7	21
	HRA-400B	+ 6.8		25.2		+ 32		7	
▶	HRA-406B	+ 6.8	+ 24.7	25.2	2	+ 32	+ 26.7	7	
▷	LHR-45	+ 10	+ 10.75	35	21.25	+ 45	+ 32	10	10

1/2" ALUMINUM CABLE
8.5 db/1000' AT CHANNEL 6
14.0 db/1000' AT CHANNEL 13

Figure 3. CATV Trunk Section with Low and High Output Level Repeater Amplifiers.

If specification (a) is given, the maximum output handling ability of each individual amplifier in a cascaded amplifier system can be determined as shown in Figure 1. The decrease of output handling ability can be read directly as a function of the number of amplifiers in cascade. It can be seen, for example, that each amplifier should be operated at 12 db below its output handling ability specified according to (a) if 16 amplifiers are cascaded.

If specification (b) is given, figures should be converted to db for ease of calculation. For example, as shown in Figure 1 an amplifier rating of plus 47 dbmv maximum at 0.3% cross-modulation equals a rating of plus 47 dbmv at a signal-to-cross modulation ratio of 50 db.

Maximum output levels of individual amplifiers in a cascaded system can be computed in a manner similar to the minimum input level computation.

It should be realized that proper functioning of Automatic Level Control (ALC) devices will force the equipment manufacturers to specify an operational output level selected to obtain the best compromise between output

section of 25,000 feet total length has been analyzed in Table 1.

	Low Level Equipment	High Level Equipment	Savings
Tot. No. Bridging Amplifiers	4	4	-
Tot. No. Extender Amplifiers	8	0	8
Tot. Installation Cost (\$50/Sta.)	\$600	\$200	\$400
Tot. Amplifier Cost	\$2130	\$948	\$1182
Number of Tubes	80	44	36
Tube Complement Cost	\$184	\$224	(\$40)

Table 1. Comparison Between High and Low Level Equipment—Feeder Line Section.

The total number of amplifiers, total number of tubes, installation cost and amplifier cost have been decreased. The use of highly reliable 10,000-hour tubes resulted in an increase of tube complement cost. The figures for reliability, maintenance cost, signal quality, and simplification of layout cannot easily be shown on a comparison table, but the decrease of amplifier stations with fewer amplifiers in cascade permits the construction of longer systems with

better signal-to-noise ratio and with low intermodulation distortion.

DISTRIBUTION LINE

PREVIOUSLY USED BRIDGING AMPLIFIERS AND SUBSCRIBER CONNECTION DEVICES

Bridging amplifiers serve as originating points for distribution or feeder lines, without materially affecting the quality of the trunkline signal. The physical location of the bridging amplifiers (whether immediately behind the repeater amplifier stations or further away from them) determines whether a bridging amplifier with, or without gain, has to be used. While in the early days of community television, bridging amplifiers without gain were generally used, bridging amplifiers with gain soon became popular because they may be inserted at any point along the trunkline, without regard to the trunkline signal level.

It has always been the objective to feed the highest practical signal level into the distribution line in order to feed the largest number of subscribers. For a long time, a bridging amplifier output level of plus 40 dbmv has been considered as the ultimate, and is presently used in most of the systems.

Both types of bridging amplifiers (with and without gain) provide the isolation necessary between the output terminals and trunk terminals.

In order to keep the trunkline signals extremely clean, the trunkline terminals must present an excellent match to the trunkline's characteristic impedance. In other words, the generated Voltage Standing Wave Ratio (VSWR) should be kept to a minimum.

The output terminal has to feed a line which is mismatched by insertions of pressure-type taps. These taps cause reflections which are sent back to the output of the distribution amplifiers, where they are absorbed to a degree, depending on the impedance match of the output terminals. Well matched output terminals (low VSWR) absorb most of the reflections and, in turn, do not reflect them back to the subscriber tap. Mismatched output terminals would reflect the reflections, thereby causing double images and smear.

It is apparent, at this point, that cables with reasonably high losses will act in favor of the system's operator by providing isolation between taps. Unfortunately, they also attenuate the desired signals. The maximum number of taps permissible on one distribution line is therefore governed by the signal level available at the beginning of the distribution line, by the attenuation characteristic of the feeder line cable, by the insertion losses of the tapoff units, and by the reflections caused by the tapoff units. As soon as high band systems were used, the effects of the pressure tap on the frequency response of the distribution line became apparent. Various methods of reducing the effect of reflections by critical tap spacing were suggested and are presently being used.

EXTENDER AMPLIFIERS

Whenever the signal on a distribution line is reduced to a level of plus 15 dbmv, the line is either terminated or an extender amplifier is inserted. The residual level of plus 15 dbmv is required to maintain sufficient isolation between subscribers' receivers so that local oscillator feedback would not introduce distortion in other TV receivers.



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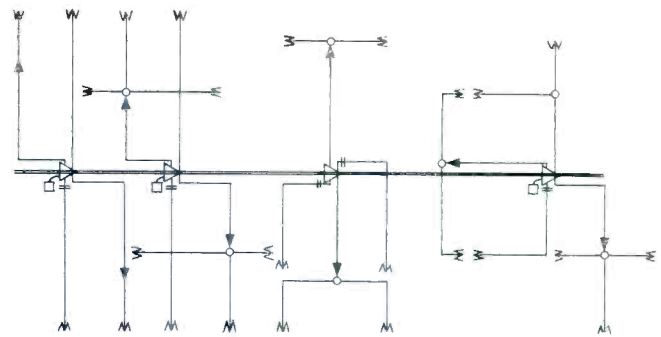
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Extender amplifiers became more necessary with the advent of high band distribution. Remote powering was incorporated to reduce the cost of extender amplifier installation. Remote power, fed over the coaxial cables, is carried along with the television signals.

The input VSWR of an extender amplifier is as important as the input VSWR of any other amplifier in the system. The output VSWR of an extender amplifier is as important as the output of VSWR of the bridging amplifier mentioned above.



QUANTITY	MODEL NO	SYMBOL
2	LHB-154R	
2	LHB-254R	
8	ABX-640	
4	RPT-625	
8	AIC-11B	
4	LS-211	
3	HYT-311A	
	FX-38-75	
26	RTW-11	



Figure 4. Low Level Bridging Amplifiers.

HIGH LEVEL DISTRIBUTION SYSTEMS

The experience gained with low level distribution systems revealed certain advantages which were incorporated into high level distribution systems. One of these advantages was the use of a bridging amplifier with gain. Another advantage was the isolation between the output terminals and the trunkline. Considerable savings can be realized by using an amplifier able to deliver higher signal levels into the distribution lines. The isolation between output terminals and trunk, as in the bridging amplifier previously used, was further improved by inserting a directional coupler to feed the bridging amplifier. This resulted in additional advantages. First, it is possible to build directional couplers with exceptionally good VSWR. A VSWR in the order of 1.1:1 was possible, where previously a VSWR of 1.2:1 was considered good at the input of an amplifier. Second, the amplifier could be serviced without interrupting the trunkline itself, and without interrupting the service of the subsequent subscribers. Third, any reflections occurring beyond the directional coupler are isolated from the input of the distribution amplifier by the backward isolation of the directional coupler. Therefore, reflections occurring in the trunkline beyond the directional coupler will not be visible in the distribution lines fed from the distribution amplifier.

Low loss cables, together with the high output levels of the distribution amplifier, require the solution of another problem. Since the higher output levels obtainable from the new amplifier permit the design and construction of longer distribution lines with a larger number of taps, and since the loss between the tapoff units and the output terminals of the distribution line amplifier was considerably decreased, reflections caused by the tapoff had to be reduced. Therefore, the output terminals of the distribution amplifiers were impedance matched to the distribution line. The VSWR achieved here was in the order of 1.5:1. It should be pointed out at this time that the ratings of output handling ability of the new distribution line amplifiers apply under matched output conditions. Furthermore, the taps were replaced by matched subscriber connection units, which introduce only one discontinuity for every four subscribers. These devices, known as MULTEE taps, are avail-

(Continued on page 36)

CAPITAL
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Community Antenna Television Industry

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pennsylvania growth investment corporation
Two Gateway Center, Pittsburgh, Pa. 15222
A SMALL BUSINESS INVESTMENT COMPANY

All Band "Know How"




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You can be confident of getting the most from your investment by consulting the established specialists in All Band CATV. The knowledge gained through a decade of successful system design and operation is now available to you. We feature the best of all major equipment lines—as well as complete layout and installation service. Call on the company that is truly "of CATV people—by CATV people—for CATV people!"

"From A Single Tap To A Turn-Key System"



144 Lakeside Ave. Est 9-1798
Seattle, Washington 98122

DC Power for Microwave

by Roland Yount,
Engineering Specialist on CATV
Systems, Collins Radio Company,
Dallas, Texas



Manufacturers tore a page from the past when they began building microwave systems designed for dc powering.

The first commercial electric power systems used dc but through evolution ac power was

employed. Now, to achieve greater reliability with modern equipment, there has been a shift back to dc power supplies, operating from modern batteries float-charged across ac mains.

Even a brief interruption of power can be costly to a microwave user in terms of lost service and maintenance. For instance, there can be delay in getting the microwave back to the correct operating frequency if ac power is used. But when the system is battery operated there never is a question of this.

TV station operators who have only a studio-to-transmitter link often ask, "Why have battery power?" "Why keep the microwave link operating if a power failure has taken the station off the air?" At first glance this seems to be a substantial argument. But the answer is that microwave should be kept running if at all possible so that it will be instantly available when the station is back on the air.

An analogy might be made between a car going down a highway at 50 miles an hour and rarely experiencing difficulty. Actually, most failures occur when trying to start an automobile.

The same is true of microwave; few outages are encountered when the equipment is in operation. It is in start-up that most failures occur.

Once remote, unmanned repeater stations are introduced, as is more often the case for ETV and CATV systems, the reason for using dc power

from batteries is more obvious. Power to a remote repeater station (20 or even 50 miles away) is entirely independent of the transmitter site. If repeaters are located near sources of prime power generation then reliability is indeed high. But more often than not, repeaters are located remotely from prime sources such as substations. And many things can happen on the line to cause power failure, especially during inclement weather.

Operations which already use batteries can be hooked directly to the battery source. Microwave power supplies are regulated to stand a normal 10 per cent variation in battery voltage without affecting the microwave operation.

Long-life battery banks float-charged across the ac mains can be provided for less than \$1,000 per microwave station to protect against short term ac line outages and less than \$2,000 per station to provide protection against much longer ac power outages. This has been standard practice for some years in the telephone companies both for message and video relay (microwave) systems.

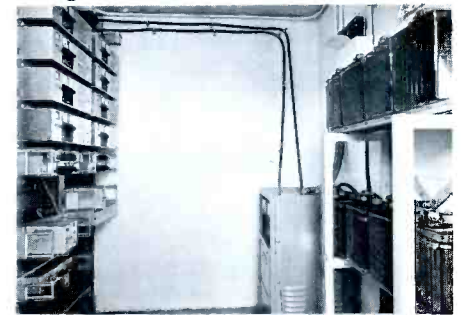
Modern battery plant requires little maintenance. In terms of maintenance effort, it uses only a few minutes every few months per station of a technician's time.

The microwave dc power system consists of twelve lead acid cells, series connected to yield the necessary 24 volts (24 cells are employed for 48V systems) together with a battery charger which is parallel connected across the series string. During normal operation when ac power is available the charger supplies the load current to the microwave equipment and also the small amount of current needed by the cells to maintain them in the fully charged condition. This is the "float" mode of operation as, under these conditions, the battery cells are floating across the dc power bus.

Modern stationary, telephone type cells will yield years of trouble free service life when operated in this manner. Twenty years life expectancy is commonly accepted and achieved.

During the periods of ac power failure the battery supplies current to the microwave equipment enabling it to continue operating until the power stored in the battery is consumed. This time interval, selected according to expected duration of ac outages, can be made long or short simply by installing the appropriate size battery cells.

After ac power is restored the battery charger will of course immediately begin operating, supplying dc current to the microwave equipment and simultaneously recharging the battery. In a matter of a few hours, the battery will be fully recharged and again floating across the dc bus, ready to assume the load when the next ac outage occurs.



Repeater for a multi-hop video relay system with lead acid batteries and charger.

The dc output voltage from the charger is adjusted and regulated to a constant value, usually 2.17v per cell during the float mode or 26.04v to the microwave equipment (52.08v for 24 cell battery systems). Characteristics of the charger are such that this voltage does not vary more than plus or minus 1/2 per cent despite plus or minus 10 per cent variations in ac line voltage and wide fluctuations in line frequency.

The charger and battery together form a large "inertia" element in the powering system effectively isolating the microwave equipment from the vagaries of the ac power and contributing substantially to long and reliable service.

In summary, the number of outages on microwave systems for ETV, CATV and STL applications can be reduced by as much as 30 per cent by switching to float-charged battery supplies as a power source. □

"We were talking about Transistorized Line Extender Amplifiers and the name CRAFTSMAN came up"...



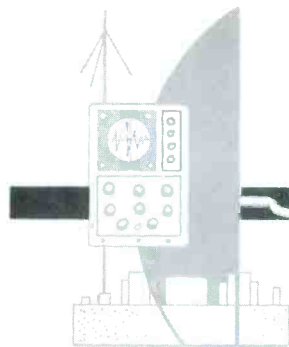
CRAFTSMAN'S MD-2100 is an all-band, fully transistorized, line extender, housed in a cylindrical, cast aluminum, weather-proof container. Housing is also designed to drain heavy condensation. The MD-2100 is cascaded and usable as a line amplifier or in motels, hospitals, etc. In a small CATV system, it could be used as a main line amplifier. A test point for testing RF input is power isolated and -15DB below the RF input signal. May be powered with either 20-30 VAC or 20 VDC. When powered by 20-30 VAC, a self-contained, well regulated power supply provides -15 VDC to the transistor amplifiers. Chassis can be removed for tilt adjustment and response alignment, and to connect jumper wires for DC or AC powering other amplifiers in cascade. Special Neoprene ring insures water-proofing.

Model MD-2100



CRAFTSMAN
ELECTRONIC PRODUCTS

133 W. Seneca St. Manlius, N.Y.



MICROWAVE ANTENNA MOUNTS

The Technical Appliance Corporation has announced the development of a complete line of microwave antenna mounts for roof installation. These mounts are of galvanized steel construction and are designed to provide greater rigidity, ease of installation and accurate alignment. Available in horizontal or tilt roof models, the mounts will accommodate reflectors up to 12 feet in diameter. Threaded adjustment on all three supports provides a 5 degree adjustment in either plane for accurate alignment and peak signal.



TACO tilt roof mounts feature ball joint three point support, and adjustment for both planes. They are adjustable to 45 degrees in elevation, plus or minus 5 degrees in azimuth.

Complete technical data, including prices and delivery are available from **TACO, Sherburne, New York.**

ENTRON PRICE LISTINGS CORRECTED

Incorrect prices were inadvertently listed for several Entron, Inc. products in the March TV&C Directory. Correct prices are as follows:

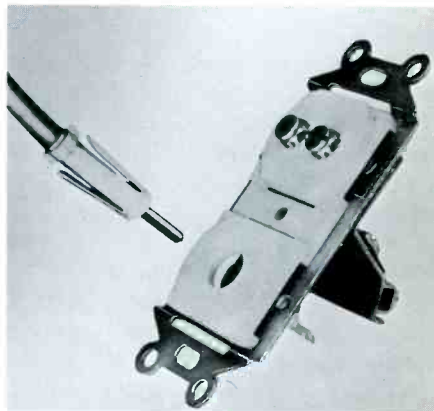
ABX-640B Line Amplifier	\$185.00
APH-D Headend Amp., Single ch., hi-band	\$195.00
APL-D Headend Amp., Single ch., 10-band Mod.	\$185.00
BA-254 Bridging Amp., lo-band, 20 db gain	\$121.45
CHL-D VHF Converter, Xtal Controlled ..	\$378.60
CUL UHF-to-VHF Converter	\$428.60
DBR-26 Dbl. Band Relection Filter	\$207.15
DL-21A Indoor 2-Way Line Splitter, UHF ftgs.	\$8.95
DL-29A Indoor 2-Way Line Splitter, 59 type	\$5.75
DL-29PA As above; with push-on 59 type ftgs.	\$5.40
DL-41 Indoor 4-Way Line Splitter,	

PRODUCT REVIEW

UHF ftgs.	\$11.95
DL-49 As above; 59 type threaded ftgs. ..	\$8.65
DL-49P As above; 59 type push-on ftgs. ..	\$7.90
DRPB Single Channel Preamplifier	\$80.00
FA-283B Broadband Amp., hi & lo VHF & FM	\$110.00
FTB-405 FASTEE Outdoor Tapoff	\$1.35
FTB-460 As above; for dbl. shielded cable ..	\$1.35
LHB-254 All-band Bridging Amp., 25 db gain	\$210.00
LPB-5 600-Watt Load Center, 4 outlets ..	\$42.15
MUE-5 Electronic Low Band Mixer	\$225.00
MUE-11A Electronic All-Band Mixer	\$360.00
MUH-4 Electronic High Band Mixer	\$200.00
MUP-41 High Band FM Passive Mixer	\$136.00
SA-23B Broadband Amplifier	\$100.00
SB Single Ch. Amp., Ch. 2-13 & FM	\$100.00
SC-U UHF-to-VHF Converter	\$160.00
TDA-114R Line Terminating Amp., Local Pwr.	\$143.00
TVT-5000 Television Transmitter	\$1320.00

FLUSH-MOUNTED MATV TAPS

Blonder-Tongue Labs has introduced a series of flush-mounted, color-matched wall taps that can be installed before the rooms of a hotel or motel are painted. Called Versa-Taps, they enable an installer to check out an entire MATV system as soon as power is turned on in a building.



Versa-Taps do away with the problem of matching decor because they enable outlets to be covered with standard AC wallplates. Featuring snap-off "ears," they can be easily mounted in any standard AC outlet box.

According to the manufacturer, Versa-Taps are especially versatile because of their modular construction and they can also be ganged. Versa-Taps are available for VHF, UHF or FM systems. Information is available from **B-T at 9 Alling St., Newark 2, N. J.**

(Advertising continued)

pearances, when favorable can do as much for you as a series of paid advertising.

Employees on the road are ambassadors. Any person associated with the company should be on his best behavior. Courteous driving must be the standing rule. You cannot afford to anger someone because a company driver has been inconsiderate. All your best public relations efforts can be invalidated at this point.



Cable participation in the pleasanter aspects of community public relations, Burlington, Vt.

Courtesy, as well as neatness goes with your service man into the home. Planning for community approval requires representation by considerate employees.

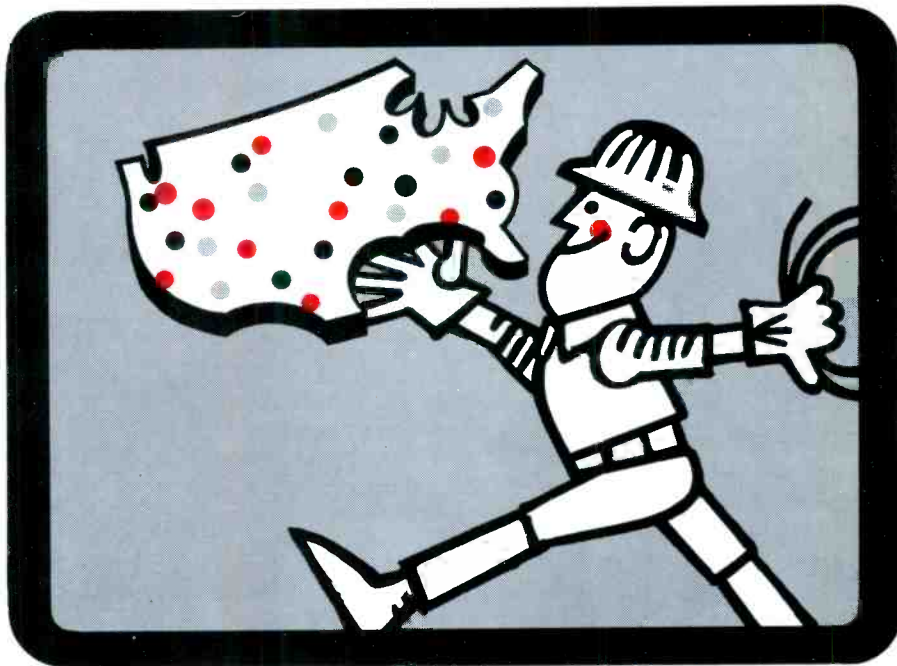
Advertising, because it is your decision on how much to spend, what to say and where to place it should never be haphazard. Too often an ad is placed in the paper, or a commercial is given to a radio station only because a salesman has called.

Plan and direction in advertising cannot be urged too strongly. You want to saturate your town? Then think of monopolizing attention as far as television is concerned. Let the cable company be the local authoritative source of TV information. Make yourself *Mr. Television* to the community. A weekly column of television comment written by the manager has proven itself to be a sound base for establishing such a reputation. Feed your local editor with program information as you find out about these from the broadcasting periodicals which you should be reading. Any news story acknowledging you as the source will be rewarding to your business.

The old advertising adage, "Sell the sizzle rather than the steak," is no less true even though it has been repeated over and over again. The enjoyment of viewing television by cable should be the central theme. The effect should be cumulative; the goal should be to bring new subscribers to the cable, and keep them there.

TV & COMMUNICATIONS

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(CATV for Large Cities continued)

able in various values of attenuations and can easily be installed in the distribution line, and the subscribers can be connected to the four output terminals whenever subscription is desired.

The extended use of plus 40 dbmv output level systems has led many people to believe that higher output levels could not be handled for a various number of reasons. First, it was thought that presently available amplifier tubes could not handle a higher operational output than + 40 dbmv. While this was true for most tubes available in the past, the progress of the vacuum tube industry has led to the development of the "Compactron" tubes which exhibit excellent electrical and physical characteristics. These tubes deliver output levels which are in the order of 10 db higher than the ones obtainable previously with standard receiving type tubes. Second, it was felt that the radiation limits set by the FCC would not permit the handling of any higher signals than had been handled previously.

The Rules and Regulations of the Federal Communications Commission state, under Paragraph 15.161, "Radiation From A Community Antenna Television System," describe radiation limits thus: "Radiation from a community antenna television system shall be limited as follows:

Frequencies (mc)	Radiation Limits (uv/m)		
	Distance (ft)	General Requirement	Sparse Inhabited Areas ²
Up to and including 54	100	15	15
Over 54 up to and including 132	10	20	400
Over 132 up to and including 216	10	50	1,000
Over 216	100	15	15

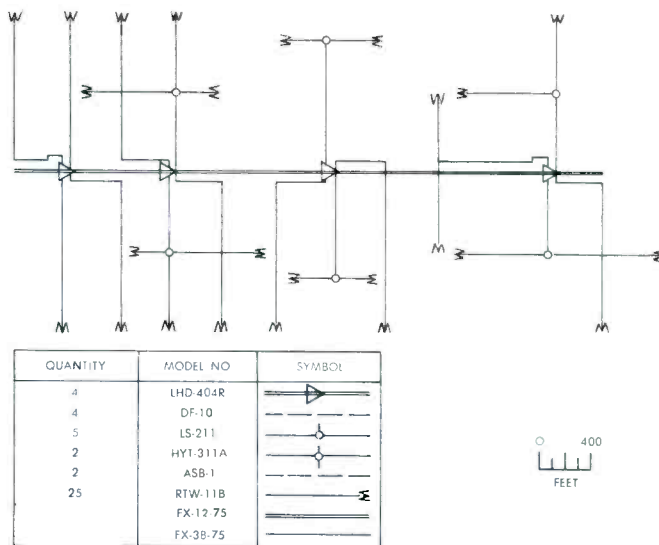


Figure 5. High Level Bridging Amplifiers.

Radiation tests conducted on Entron-constructed plus 40 dbmv systems indicated that when either double-shielded or aluminum-jacketed cables have been used, the actual radiation levels were found to be more than 20 db below the ones permitted by the FCC. This will permit the increase of output signal levels from plus 40 to plus 50 dbmv with still some reserve as far as radiation levels are concerned.

COMPARISON

An arbitrary community antenna system section is shown in Figure 4, using conventional low level bridging amplifiers, and the same section is shown in Figure 5, using high level bridging amplifiers. The letters used in

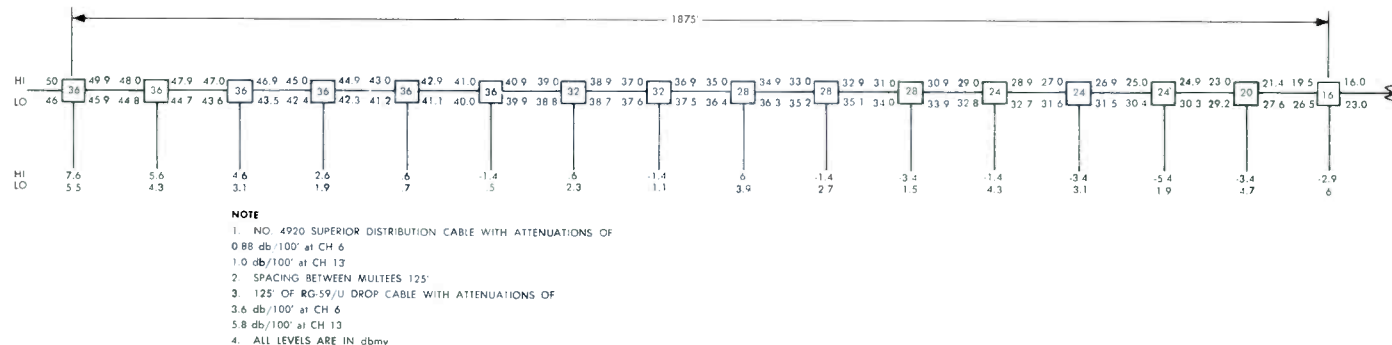


Figure 6. Typical Feeder Line, Using No. 4920 Superior Cable.

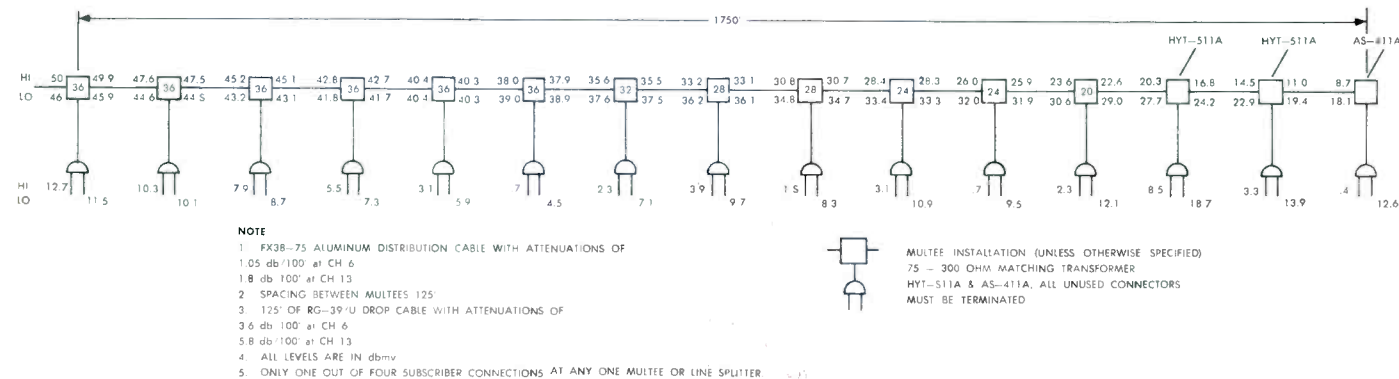


Figure 7. Typical Feeder Line, Using 3/8" Foamflex Cable.

¹For the purpose of this section, a sparsely inhabited area is that area within 1,000 feet of a community antenna television system where television broadcast signals are, in fact, not being received directly from a television broadcast station."

the legend indicate amplifier models available from Entron, Incorporated.

In Table 1, the sections as per Figures 4 and 5 have been analyzed showing the savings obtained in the number of amplifiers, in the initial amplifier cost, and in the initial installation cost. The number of tubes in the high level system have been reduced considerably from the quantity required for the low level system. Highly reliable and 10,000-hour tubes are used throughout, resulting in a slight increase of total tube complement cost. The figures for reliability, maintenance costs, signal quality, and simplification of layout cannot easily be shown on a comparison table. However, it is a well known fact that the reliability and the signal quality are inversely proportional to the amount of equipment used in an installation and that the maintenance cost is approximately directly proportional to the number of tubes and amplifiers used in an installation.

	Low Level Equipment	High Level Equipment	Savings
Tot. No. of Amplifiers	21	10	11
Tot. No. Power Stations	14	10	4
Tot. Inst. Cost (\$50/Sta.)	\$700	\$500	\$200
Amplifier Cost	\$5092.50	\$4000	\$1092.50
Number of Tubes	147	130	17
Tube Complement Cost	\$311.71	\$642.50	(\$330.79)

Table 2. Comparison Between High and Low Level Equipment for 25,000 ft. Trunkline Section.

The high level system, therefore, presents additional advantages. Comparing Figures 4 and 5 again, it can be seen how much simpler the layout is. The number of power stations, the number of amplifier stations, the number of remote power transformers and the remote power lines are considerably reduced in the high level system.

In order to take full advantage of the high level amplifiers and low loss cables, impedance-matched subscriber connection devices should be used. Figures 6 and 7 show sample layouts for presently widely used cables with an average spacing between subscriber connection devices. A thorough analysis of the distribution line loading should be made before a system is designed to permit the installation of subscriber connection devices at the proper places and provide for adequate subscriber levels.

SUMMARY

In this discussion we have shown that with the recently developed tubes, the state of the art of the CATV field has been sufficiently improved so as to make high and low band distribution feasible. All band signals can now be distributed at qualities which equal or even exceed the quality of previously installed low band systems. Maintenance is being kept to a minimum, and the reliability is the same as that of any well constructed low band system. We can, therefore, finally say that we can design and construct high-low band systems which will live up to the reputation which low band systems have built for themselves during the past years. □

References

1. TASO Report, Pages 453, 464, 465, 534, 543.
2. TASO Report, Pages 465, 466, 467, 535, 538, 539, 540.
3. Reference Data for Radio Engineers, Fourth Edition, Page 768.
4. "Electronic Amplifier Circuits Theory and Design," by Joseph Mayo. Pettit, PH.D. McGraw-Hill Book Company, Inc., 1961, Page 285.

EVER CONSIDER THE PROFITS YOU CAN MAKE ON VACANT CHANNELS?



By supplying background music to local merchants over a vacant channel, the CATV operator can add a big plus figure to his P & L statement — and do it with a minimum of capital outlay. The Tape-Athon LIBRARIAN tape player is just the ticket for supplying real professional background atmosphere. No vocals, no commercials, no interruptions for station breaks. It's fully automatic and built for 24-hour-per-day operation. Available right now under a convenient lease-purchase plan.

And under Tape-Athon's exclusive lease exchange program you can be assured of a continuing supply of fresh new music — music designed for the greatest listener appeal — music you can profitably sell to industrial plants, supermarkets, department stores, professional offices and a broad variety of commercial customers.

Write or call today for details on the LIBRARIAN Background Music System.

Send me details on the LIBRARIAN for CATV service.

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523 South Hindry

Inglewood, California

ORegon 8-5359

CAN YOU IMAGINE



A PLANELOAD OF AMPLIFIERS . . .

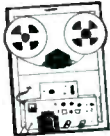
. . . A TRUCKLOAD OF CABLE



A CUSTOM HEAD-END . . .



A COMPLETE



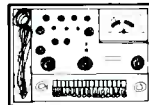
MUSIC SYSTEM . . . A POSTHOLE DIGGER,



HOIST,



CABLE LASHER, TUBE

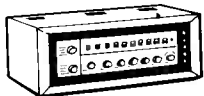


TESTER,

MEASURING WHEEL,



. . . STAPLE GUN,



FM TUNER,

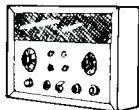


ANTENNA,

SPECIAL CONNECTORS,



TRANSFORMERS,

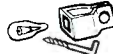


AUDIO AMPLIFIERS,

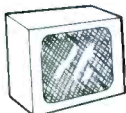


SOLDERING GUNS,

POLE HARDWARE,



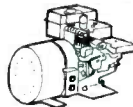
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LETTERS

Editor:

After reading the last few issues, I realized that I am now taking a magazine devoted almost 100% to Cable TV. I liked your previous magazine which was devoted to 2-way communications. Has my name been accidentally changed from this old magazine to this Television issue? If this is all you have to offer, I wish to cancel my subscription.

J. Kent Wood

Wood Communications Co.
Tulsa, Oklahoma

• Kent, we have a new magazine devoted entirely to two-way radio. As indicated in TV & COMMUNICATIONS, readers may transfer their subscription to the other publication, COMMUNICATIONS Magazine. We have transferred your subscription to the two-way publication.

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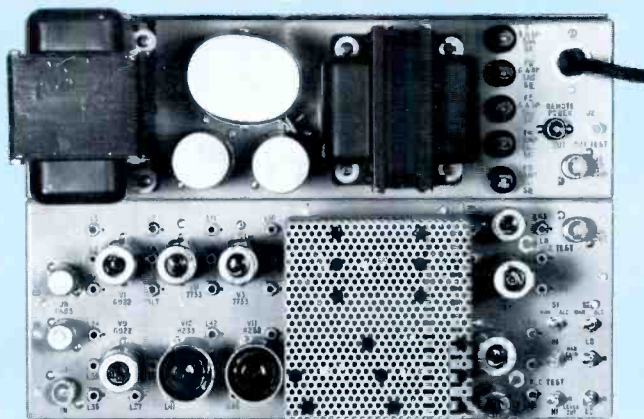
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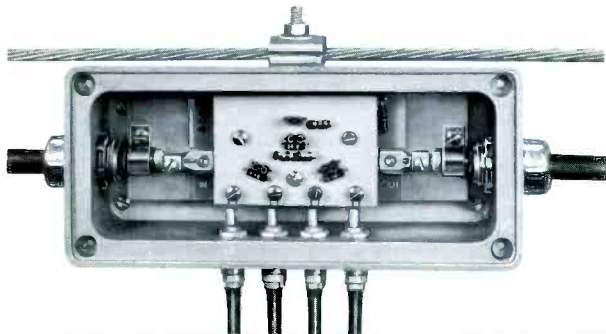
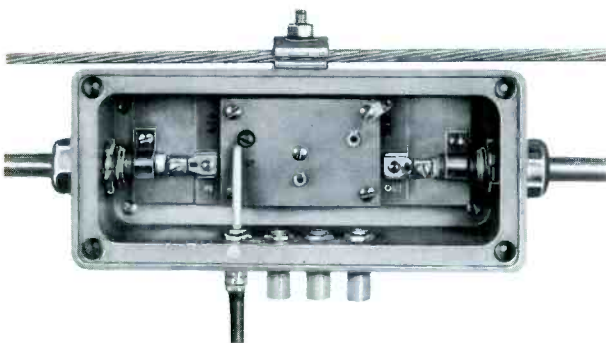
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- WEATHER-TIGHT DIE CAST HOUSING
- ADAPTS TO VARIOUS FEEDER CABLES
- PRINTED CIRCUIT TAPS AND ADDERS
- COMPLETE — NO MATING PARTS TO BUY

SKL was the first to introduce the multiple output directional coupler line tap. Now we are proud to announce a newly engineered version of our Multitap — professional in design, proficient in performance and profitable for you in price.

Retaining the electrically superior directional coupler principle in a compact printed circuit tap and tap adder combination, SKL Multitaps are available in values of 10, 16 or 22 db tap loss. They mount easily to the messenger strand, and their adjustable input and output fittings accommodate any feeder cables from 3/8" to 1/2" O.D. Tap adder inserts serve up to four subscribers from one location with *one* low through loss.

The Multitap combines top quality with real economy. When serving four subscribers, it costs only \$3.125 per tap. Try some in your system. After you do, we think you'll want a lot more!

SPECIFICATIONS

Multitaps

TAP LOSS FREQUENCY RESPONSE: Combined with 50 to 80 feet of RG-59/U cable, no more than ± 1.5 db from average value in VHF TV bands.

IMPEDANCE: 75 ohms at all three terminals.

RETURN LOSS: 20 db min. at all three terminals.

Model	Tap Loss At 216 mc	Insertion Loss 54 - 216 mc
410	10 db	1.5 db max.
416	16 db	1.0 db max.
422	22 db	1.0 db max.

Tap Adders

FREQUENCY RESPONSE: Same as Multitap by itself.

TAP LOSS: Sum of Multitap loss and splitting loss (see below).

FEEDER LINE INSERTION LOSS: None.

IMPEDANCE: 75 ohms at all terminals.

RETURN LOSS: 16 db min. at all terminals.

	Model 402	Model 404
No. of Outputs:	2	4
Splitting Loss:	3.5 db max.	7.0 db max.
Isolation between Outputs:	23 db min.	26 db min.

SKL

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