APRIL 1966

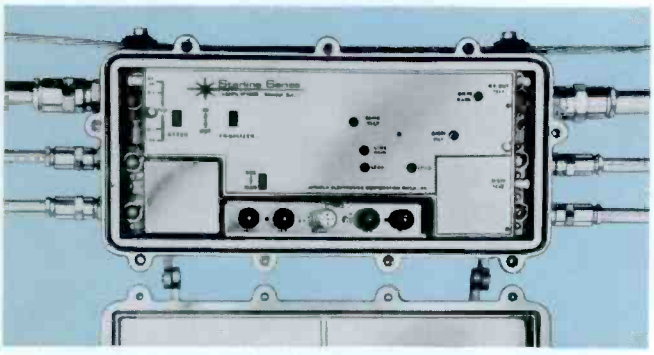
TV & Communications

The Professional Journal of the Cable Television Industry

MISS AMERICA AT SYSTEM OPENING

Look to Starline

50 amplifiers? 60 amplifiers? 120 amplifiers? Without highest picture/sound quality at the end of the line, cascadability promises mean nothing!



Fully-loaded main-trunk station Model SA-1. ALL active equipment for any specific main-trunk location fits into a similar compact housing. No costly jumpers; no separate housings.

This is why Jerrold says: "Look to Starline." Starline cascadability specifications insure *quality* picture/sound reception at *every* TV receiver connected to the distribution system.

You can carry 12 TV channels through a cascade of 50 Starline amplifiers with complete confidence in subscriber satisfaction. System cross-modulation will be down at least 57 db at the last amplifier with system signal-to-noise ratio in excess of 40 db. These are real-number specifications for truly-measurable performance.

Superior cascadability is but one of many Starline advantages. Starline is the *Unitized Station* CATV Distribution System that also features maximum flexibility, reliability and economy.

JERROLD Starline

JERROLD

To insure the finest end-of-line performance — rely on Starline. For details, call or write:
CATV Systems Division, JERROLD ELECTRONICS CORPORATION, 401 Walnut St., Philadelphia, Pa. 19106

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

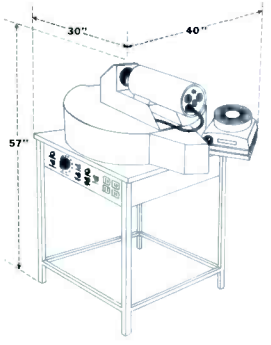
viking HAS DONE IT AGAIN!

TWO NEW SERVICES TO MAKE YOUR SYSTEM MORE PROFITABLE

WEATHERAMA

SMALLEST IN SIZE . . . BIGGEST IN PERFORMANCE!

"So Compact, It Requires Almost No Space At All!"



The Viking 'WEATHERAMA' is a revolutionary engineering design that fulfills the requirement for high-quality time and weather information service as provided in conjunction with video or RF television distributing systems. 'WEATHERAMA' offers 24 hours continuous television service of accurate time and weather information, displayed by precision-made and easy to read gauges.

- 10 station indexing (time, temperature, wind velocity, wind direction, barometer, rainfall, relative humidity, calendar, live and slide).
- Camera focuses on each of the ten gauges for a full period of 4.8 seconds with a refocusing time requirement for the next gauge of 1.2 seconds for a total of 6 seconds.
- No camera scanning.
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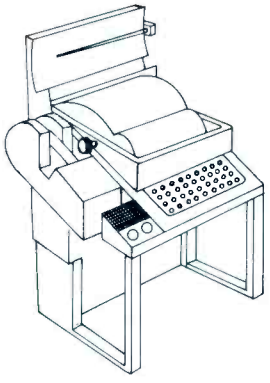

"NEWS-A-RAMA" is the new media of 24 hours continuous and instantaneous news coverage and service as reported and transmitted via United Press International (UPI) news wires from all points of the world and brought directly into the home of the CATV subscriber ... as the news is happening.

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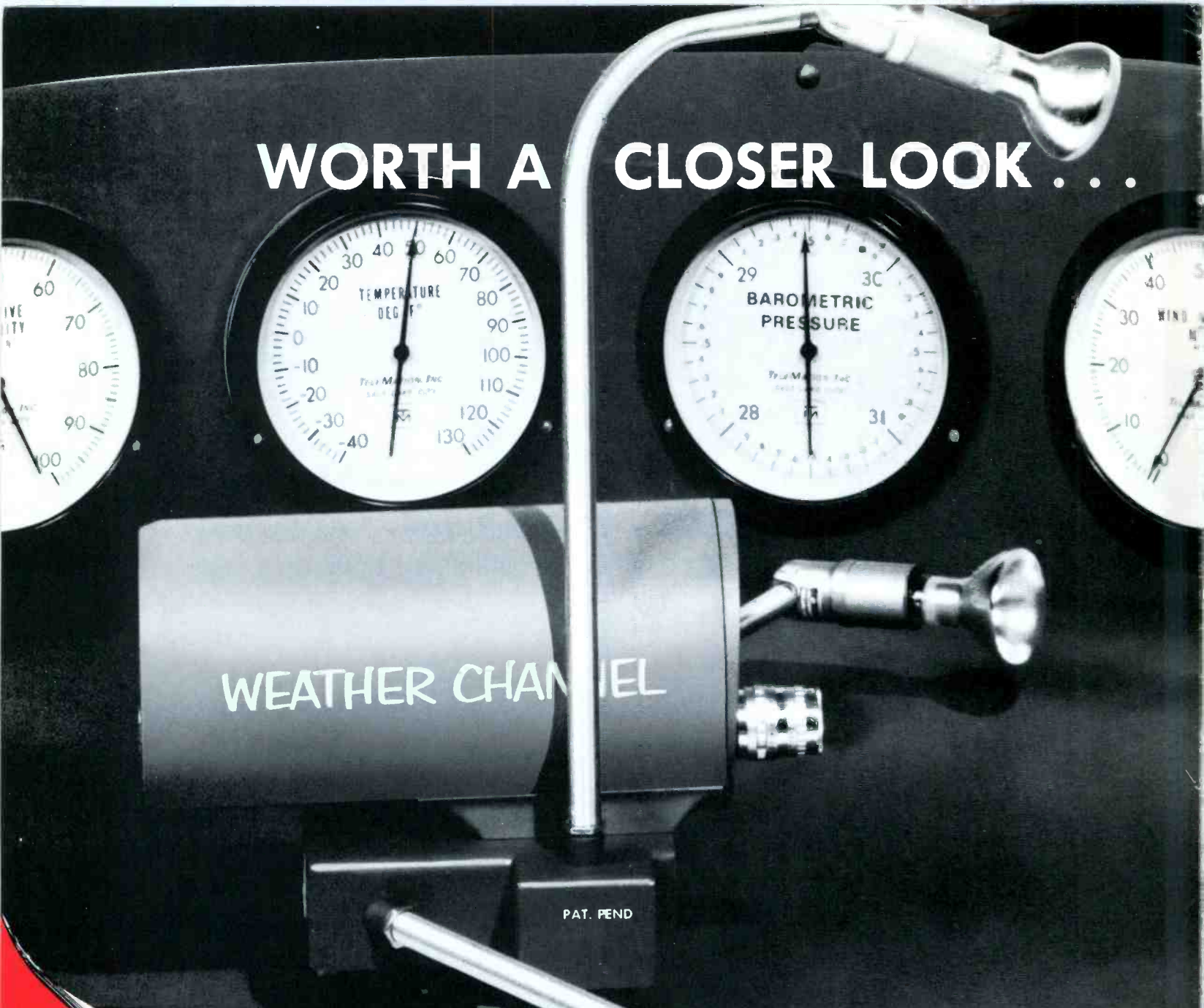
WORTH A CLOSER LOOK . . .



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IN THIS ISSUE

COVER STORY

System personnel signed up subscribers to the tune of calliopes as the citizenry of Parsons, Kansas, turned out for a real bang-up celebration in honor of the Kansas CATV system opening there. The system, which serves a medium-sized market, is a pioneer in the use of the troposcatter antenna in the U.S. Aiding in Parson' royal welcome to CATV was Miss America, who is the subject of this month's cover photo. Read about this unusual and successful system opening on page 26.

TOWER SITE SELECTION

The antenna support tower, although minimal in cost when compared to that of the total plant, is the "hub" of the CATV system. For this reason, the system builder should exercise extreme care in selection of the tower site. Basic conditions which should be taken into account before final decision on a site are discussed by author Tommy Moore on page 41.

S/N AND NOISE FIGURE

The terms noise figure and signal-to-noise ratio (S/N) are used everyday by system operators and technicians. However, the relation between individual repeater amplifier noise figures and system signal-to-noise ratio degradation is not immediately evident. This article develops a relationship which determines system noise figure from individual amplifier noise figures. Ameco chief design engineer Gay Rogeness is the author—see page 50.

Stanley M. Searle, Patrick T. Pogue PUBLISHERS

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TV&C

April, 1966
Volume 3, Number 4

TV & COMMUNICATIONS

THE PROFESSIONAL JOURNAL OF THE CABLE TELEVISION INDUSTRY

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

TABLE OF CONTENTS

DEPARTMENTS

TV&C **CIRCULATION**: TV & Communications is circulated through United States and foreign mails on the tenth day of each month, to individuals and firms dealing in products and services for closed circuit and community antenna television, television broadcast, and microwave. A detailed circulation breakdown is available upon request. **SUBSCRIPTIONS**: TV & Communications subscription rate in the North American continent is $5.00 per year for surface mail. Subscriptions outside continental North America are $7.00 per year, remittances to be made by bank money order or check, negotiable in United States banks. TV & Communications is published 12 times per year. **ADVERTISING**: Commercial display advertising is accepted from manufacturers and suppliers of electronics equipment and allied services, at the discretion of TV & Communications management. Advertising rate card and circulation breakdown are available upon request.

TV & COMMUNICATIONS (title registered at U.S. Post Office). Second-class postage paid at Oklahoma City, Okla. Subscribers should allow six weeks for change of address. **PUBLISHERS**: Patrick T. Pogue and Stanley M. Searle. **GENERAL OFFICES**: 1839 N.W. 16th, Oklahoma City, Okla. 73106, (405) JA 8-3523. **WEST COAST REPRESENTATIVE**: Albert D. Shonk Co., 681 Market Street, San Francisco Calif. 94105, Phone: San Francisco 392-7144, Los Angeles 388-2981.

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Ameco 70 Series CATV amplifiers offer the latest in etched circuit, cable powered, all-band, solid-state capabilities. Low noise figure, high output gain, increased operational stability over wider temperature ranges, and fine cascadability contribute to the 70 Series excellence.

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OFFICES IN ALL PRINCIPAL CATV AREAS

EDITORIAL

By Stanley M. Searle

Fair Comparison of Standards

When telephone company personnel argue their case for lease-back facilities, in place of system-owned CATV facilities, they invariably encounter the fact that their lease plan costs the operator more money. So they naturally shift their emphasis to **"other benefits that you will receive from leasing CATV services from the Telephone Company."** The following quotes are typical of the telco lease-back: **"Reduced investment of capital . . . technical Bell System 'know how' by experienced TV engineers . . . Quality material and craftsmanship for better service and reliability . . ."**

The implication is clearly that cable system technicians and engineers are less experienced than phone company personnel; that plant and service of privately built cable systems are inferior to telephone company facilities. In fact, a favorite topic of many telephone company spokesmen is the alleged lack of safety considerations on the part of cable operators.

The fact is that telephone company crews and CATV construction crews are both comprised of humans—who undoubtedly make errors in judgment. But the performance and safety procedures of typical CATV crews are neither sub-standard nor inferior to phone company practices. There have been isolated incidents of cable television systems which do not conform to normal, high standards in construction and maintenance. And there are cases of telephone people conspicuously failing to follow the established safety and quality standards of the telephone industry.

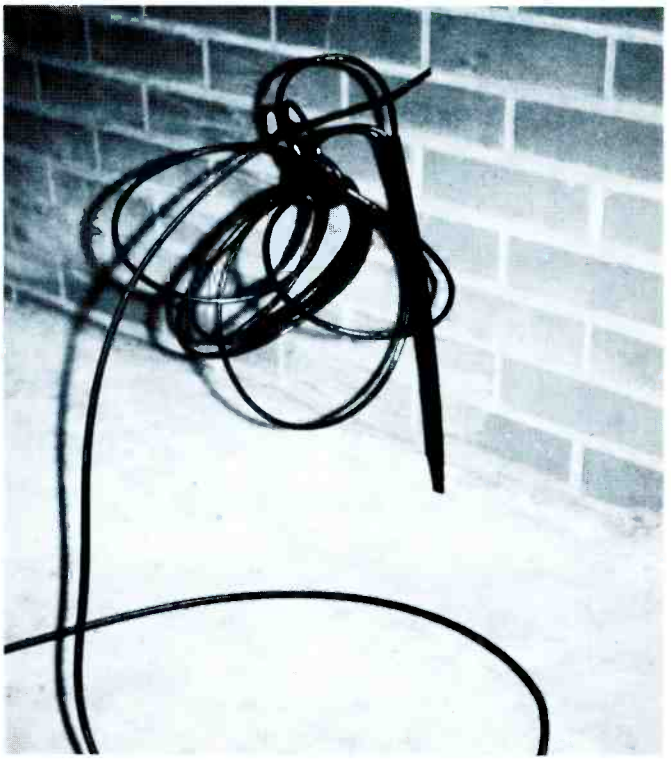
For example . . . a Southwestern Bell crew installed telephone service in my new home about two months ago. For some unknown reason the service cable was left lying on the ground across the back yard. The cable crosses a sidewalk which is used daily by several children. And, to make matters worse, there are several loops of the cable at this point constituting an extra hazard.

It would be irresponsible to suggest that this type of careless workmanship typifies Southwestern Bell's installations. Similarly, the advocates of telephone lease-back and higher pole rentals should abandon their unfair and unfounded charges that CATV plants are usually sub-standard.

There is actually some evidence that CATV installers are more proficient, in general, than telco personnel. CATV is not an essential public utility and, therefore, cannot rely upon a monopoly status to keep its customers. Cable service has to be consistently good. Careless workmanship or other types of bad public relations have a far more devastating effect on a CATV operation than upon public utilities. Consequently, from a practical standpoint, the cable company needs to adhere to higher standards of safety, performance and public service, than does the telephone company.

If telephone industry executives persist in their claims of telco technical superiority, we **could** consider publishing a full collection of photographs of telephone crews' mistakes. (I really don't believe that it would be much of a job to collect the photos).

But rather than trade indictments with telephone people, we should work to develop respect and understanding between telephone and CATV interests. The point is not that one industry or the other is superior . . . but that both share some common problems, including occasional human blunders in plant construction. Certain common interests and overlapping technologies of the cable television and telephone industries, along with the necessity for public utilities sharing space on their poles, make mutual understanding between CATV and the telephone interests a worthy and important objective.

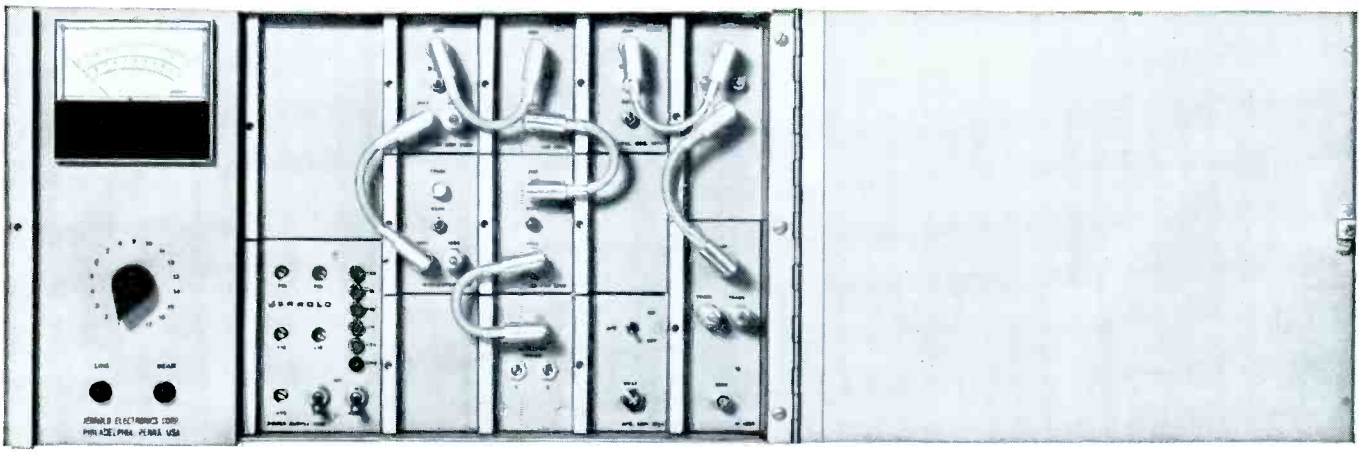


Telephone cables protrude from sidewalk and wall, creating unsightly hazard to persons using sidewalk. 75 ft. of cable is strung from this entrance across the ground to "buried cable" pedestal.

Telephone propogandists who unfairly impugn the technical standards of cable operators are doing a disservice to their own industry as well as to CATV interests.

Stan Searle

the shortest distance between two points



new 440 solid-state microwave by Jerrold

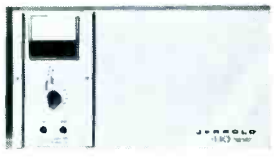
One point is your head end, the other a remote program source. Your requirement . . . melt the distance and deliver a first-class video signal. Solution? Specify Jerrold 440 Microwave.

This compact and ultra-stable equipment provides sharp, strong pictures over longer distances. Need only a short hop? The extra power and stability lets you use smaller antennas for overall reduction of system cost.

"Solid state—high-output klystron" design provides maximum reliability plus greater fade margins. In a word, the 440 Series by Jerrold is the finest microwave gear available from any manufacturer, at any price. Check the specs—then check the cost.

If you're considering a system in either the 6gc common-carrier band or the new CARS (Community Antenna Relay Service) 12gc band, speak with Jerrold first.

Write today for complete data.



440 features (6-8 gc)

1-watt (min.) transmitter output • 12mc baseband, flat within ±0.25db • Frequency stability ±0.005% • Individually self-contained power supplies • Modular construction throughout • Receiver fully solid-state—no klystron • Vapor-stabilized transmitter klystron • Compact—only 10½ inches high.

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A man works hard to get a CATV franchise

He needs a cable that will help make it profitable

TIMES
CATV CABLE & CONNECTORS

Timatch® perfect match connectors

After the battle for the franchise is won, the battle for customers and profits begins.

Times can help you win that battle on both fronts with its seamless sheath CATV cable in continuous lengths up to ½ mile, and its matching connectors that install instantly. Both are designed for long-term high efficiency use.

Why ½ mile lengths? Because that's the average distance between amplifiers, and ½ mile lengths mean fewer splices. The fewer the splices, the fewer the trouble points, the less maintenance needed. And the less labor cost and more profit over the longer life of the system.

Times builds in other advantages to keep performance quality high and customers happy. Times cable is water and vapor-proof, so it won't let the signal stop short of target. You can also count on guaranteed 30db minimum return loss and guaranteed maximum attenuation.

Coaxial Cable: Available in seamless lengths up to ½ mile

All in all, you get improved electrical performance from Times cable and matching Timatch connector. Long after so-called economy cable has been replaced (and re-installing always costs more than the original installation), Times cable will still be a top performer — even while you're upgrading your system.

You've put your best into getting the franchise. Now Times helps you put your best into the system. Why settle for anything less?

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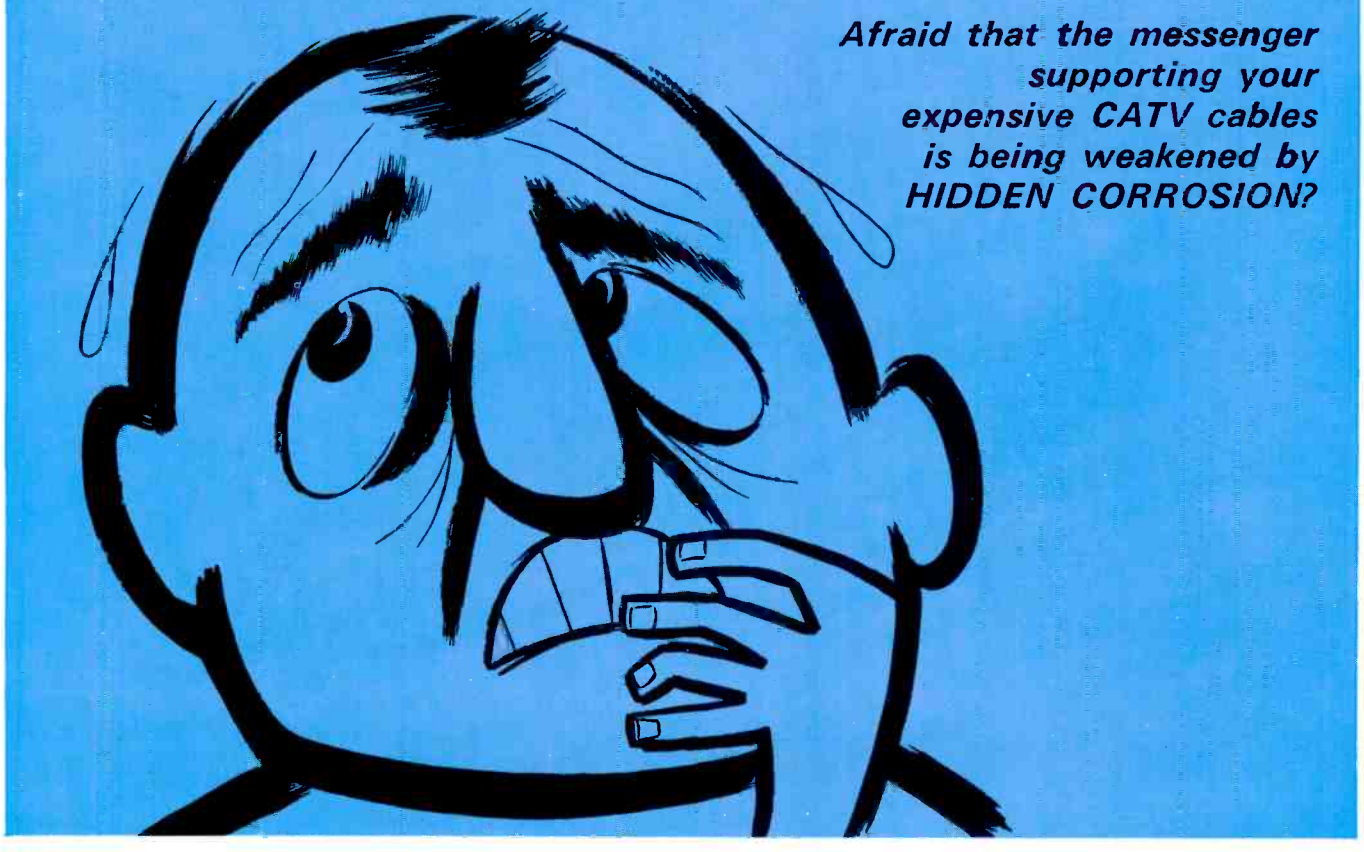
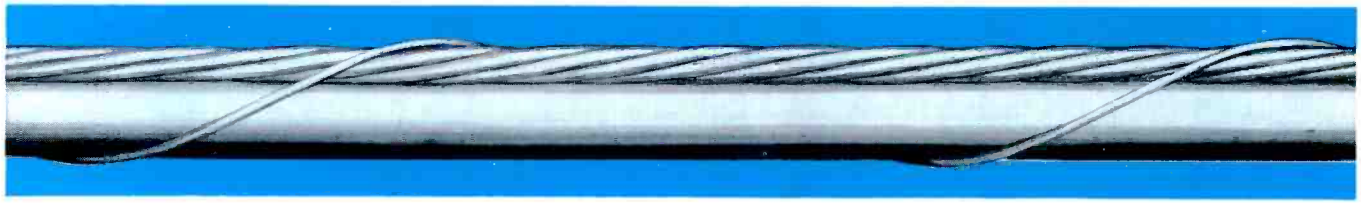
WORRIED?



Afraid that the messenger supporting your expensive CATV cables is being weakened by HIDDEN CORROSION?



Stop Worrying—Start Using ALUMOWELD®—*the long-life messenger*

7-wire

3-wire

1-wire

Alumoweld® messenger will last as long as your CATV cables. Completely compatible with aluminum-sheathed cables, each wire consists of a thick cladding of pure, ductile aluminum—no less than 10% of the radius—permanently welded to the steel core. This protective jacket is thicker than that provided by any other aluminum-coated and any zinc-coated steel wire.

Alumoweld stays strong because there's no place for hidden corrosion to start. That's why it's used all over the world for supporting cables. Once you install Alumoweld, your messenger worries are over. Because of its permanent strength, it will always keep your CATV cables up in the air. For complete information on Alumoweld messenger, write us today.

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WIRE AND CABLE DIVISION, Glassport, Pa.

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

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FAST SHIPMENTS from our warehouse stocks in New York, Chicago, Pittsburgh, Memphis, Reno—and from warehouses of leading distributors

LETTERS

ESSENTIAL SERVICE

Dear Mr. Searle:

We cannot effectively operate without regularly receiving *Cable Television Review*. News of the industry, especially the information regarding governmental regulation, is necessary to our daily operation.

Wayne R. Hauser
Community Cablevision Co.
Irvine, California

Dear Sir:

Will you please advise the subscription rates for *Cable Television Review*. Thank you.

Richard Kolling
Eau Claire Abel Cable
Eau Claire, Wisconsin

• *One year*, $50 (*includes exclusive Annual CATV Directory*). *Trial offer*, 13 *weeks for* $15.

GARY WANTS CATV

Gentlemen:

Will you kindly indicate in your publication that the City of Gary, Indiana, a city of 185,000 is interested in the granting of a CATV franchise. A local resident has formally made application for such a franchise and the Board of Public Works & Safety has it under consideration. While the matter of franchising cannot, in Indiana, be exclusive and certainly we will not solicit bids, etc., we would like to have a cross sampling. . . .

At any rate we shall appreciate your mentioning this in your next publication and you have our sincere thanks.

Paul G. Wallace,
City Attorney
City of Gary, Indiana

LIKES MAGAZINE

Dear Stan:

There is something that I have been wanting to tell you for several months —but have not taken time to dictate a letter—outlining the many advantages *TV & Communications* gives, not only to the people who have been connected with this industry for many years—but especially to the many who are entering the field. As you know, we are in contact with many potential customers who plan to acquire franchises, build and operate systems. I have recommended your magazine as *the* factual book that these newcomers can use to acquaint themselves with the CATV industry. Your articles are interesting,

beneficial and factual—on all subjects of concern to our industry. I want to congratulate you and your staff on the fine service you have rendered to the industry. We look forward to receiving *TV & Communications* for many years to come.

Randy Wright,
Rep-Tronics, Inc.
Dallas, Texas

● *Your encouragement is appreciated. Our staff is being steadily enlarged to provide a magazine of consistent high quality and meaningful content, in keeping with the dynamic industry which we serve.*

OPINION POLL

Gentlemen:

We think that your magazine is the best and a must for anyone in the cable TV industry. We would like to see "cable" substituted for "community" in NCTA.

J. B. Dyer
Tillamook Television, Inc.
Tillamook, Oregon

Dear Mr. Searle:

In regard to your editorial in the January issue of your magazine may I say that the people here in our corporation are opposed to the name change—"community" to "cable."

We here at Southtowns are concerned with small villages and to us the community is our livelihood, not the cable. Cable is only an inanimate object—it is the community and our place in it among friends, which gives us our good name and allows us to grow and expand.

It would seem to us that this time is a particular inopportune one to destroy the image which the industry has built so carefully for so long. The name "cable" may be all that the large companies think of when they calculate their long term plans—to us it is the community which helps us plan, and that we're not going to quickly forget.

James R. Treble
Southtowns Communications Corp.
Liverpool, N.Y.

● *Thank you for your votes, gentlemen. In the January editorial, readers were invited to vote: (1) FOR the change, (2) AGAINST the change, or (3) DON'T CARE by virtue of no comment. The invitation still stands.*

Letters may be addressed to:
Editor, TV & Communications,
P.O. Box 63992, Oklahoma City,
Oklahoma 73106

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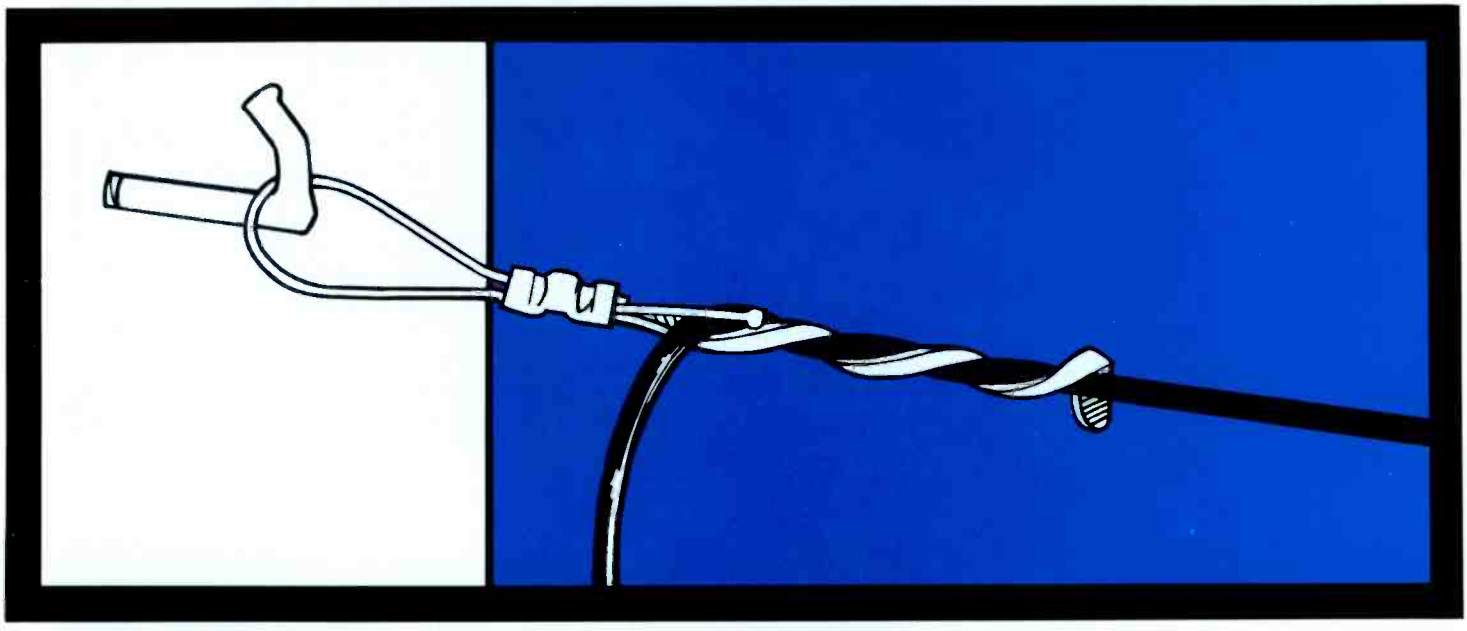
It's trouble free!
It costs less!



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A DIVISION OF SMITH-SCHREYER & ASSOCIATES

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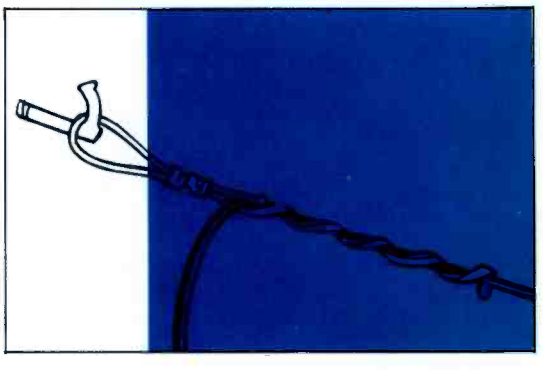
FAST—One-piece stiff construction makes installation faster than any other grip. No tools required, no parts to assemble to drop.

TROUBLE FREE—Made of lifetime lasting stainless steel or aluminum the TV-S GRIP has been laboratory and field tested to withstand strains far in excess of any occuring in regular use. Crimp-wire at head and extended leg at end make cable pull-out or spin-out impossible. Gentle, non-kinking grip never tightens—makes removal and re-use practical indefinitely. Will not crush cable nor affect dielectric properties.

COSTS LESS—Lowest original cost, fastest installation and total freedom from service calls combine to make TV-S GRIP most economical over any length of time for pole, tap or house connections.



S WIRE GRIP for all Neoprene jacketed telephone drop wires. Gentle grip, distributed over 7" of wire holds all reinforced wires, including new Super Strength wires to their full breaking strength. Stainless steel, fully reuseable. Proven by over 300,000 in service up to 10 years.

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1-9 Cases	$20.00 c
10 Cases or more	$19.00 c

ALUMINUM (recommend for use only in areas not subject to corrosive action)	
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10 Cases and over	$17.00 c

Packed 300 per case F.O.B. Seattle — freight prepaid on 10 cases or more.

PRUZAN COMPANY, 1963 First Avenue So., Seattle, Washington 98134

Please ship order below at once

Quantity

_____ Stainless Steel TV S Wire Grips

_____ Aluminum TV S Wire Grips

_____ Stainless Steel S Wire Grips (Telephone) @ $21.00 per c

☐ Please send free sample of TV S Wire Grip

☐ Please send free sample of S Wire Grip for telephone drop wires

☐ Please send your complete Catalog-Stock List.

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Communication, CATV & Power Line Supplies

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MANAGEMENT CORNER

INCREASING PERSONAL PRODUCTIVITY

Most of us know at least one busy CATV executive, already involved in a myriad of projects, who always seems to be able to summon up the additional time and energy for one more assignment. He's the fellow who's active in regional CATV association affairs, in addition to his own job. How does he do it?

Actually, it's not likely that he possesses an abnormal amount of energy or intelligence. He's increasing his personal productivity by using normal supplies of energy in the most effective possible ways. Industrial psychologists estimate that the average executive uses only about one-third to one-half of his energy productively. It's entirely feasible for an executive to better this average by absorbing and using a few simple principles of performance and motivation.

One of these principles is that *change* is *rest*. Boredom is a much greater thief of productivity and efficiency than is fatigue. The best way to avoid being slowed down by staleness on a particular job is to switch to another task where revived interest will sharpen up your mental processes and renew the energy that seemed to be lagging.

There are, of course, hazards in the use of this technique but none is as serious as it sounds at first. When changing from job to job is suggested, system managers inevitably ask whether they won't forget important projects in the process, whether their minds won't be left a hodge-podge of unfinished tasks. There is little danger of forgetting. Psychological research indicates that memory for unfinished tasks is over 10 times as great as memory for completed ones. A good way to make the transition is to end current activities with a resumé or status report to yourself, either dictated or jotted down. This procedure also helps to overcome inertia when returning to that activity. Reading the Resumé will tend to snap the problem back into focus.

Another energy-channeling technique is to schedule the most important jobs, for your own periods of greatest work efficiency. According to tests, an individual normally has two energy peaks a day for mental work. They are, roughly, between 10 and 11 in the morning, and 2:30 and 3:30 in the afternoon. There is, however, a wide variation among individuals, and the efficiency peaks are heavily affected by living habits. (Occasionally a system manager must summon considerable energy at highly unusual hours . . . in order to keep his subscribers happy!)

An effective way to create a favorable environment for greater personal productivity is to deliberately associate with people equal or superior to you in ability. The self-satisfaction an executive may feel because he's more competent and alert than most of his friends isn't going to stimulate him to any greater efforts. Constant association with active minds and active careers, however, gives ambition and pride—that added stimulus that leads to higher personal productivity.

These tricks are not recommended for cable system executives who have not already learned to plan and organize a specific project. Over-motivation and switching from task to task can be disastrous unless backed up by real ability and organized habits. Used judiciously, however, these techniques will enable an already efficient CATV executive to dig deeper into energy reserves and increase his usefulness to his company and to himself. Unquestionably cable television has plenty of room for managers and supervisors whose productivity parallels the rapid growth and energy of the entire industry. □

News SPECTRUM

CATV RULES FINALIZED

Date Set For Start Of FCC Jurisdiction Over All Systems

The Second Report and Order issued by the Federal Communications Commission March 8 placed the CATV issue squarely in the hands of Congress. Having exerted jurisdiction, recommended legislation, and issued formal regulations, the Commission had accomplished its first steps toward bringing the industry under governmental control.

The rules, to take effect generally on April 18, contained no surprising divergence from the outline announced by the Commission February 15. They are extremely detailed—to the tune of 86 pages of text, 36 pages of appendices, and 15 pages of separate comments by individual commissioners. Copies of the Second Report and Order, published in both the Federal Register and the Commission's reports, can be obtained from the Superintendent of Documents, Washington, D.C. 20402.

Highlights of the rules are that the FCC assumes jurisdiction over all CATV systems except those serving less than 50 subscribers and master antenna systems for apartment houses. CATV systems must carry all local stations, but the Commission was careful to note that it does not want to disrupt present service and will be lenient if systems ask for exemption with proof that they can not technically alter their service to carry local stations without disrupting service. CATV outlets have to provide same-day nonduplication of local shows, but not if they are in color and carried in Monochrome locally. The Commission pointed out that the new rules apply to primetime network shows only if they are shown during local primetime, and the FCC also noted that if other arrangements have been satisfactorily worked out between CATV's and their local stations, those agreements will be honored by the Commission.

The Commission also reaffirmed its top 100 market policy. New CATV's in the top markets that want to import distant signals will have to justify their proposals before an FCC hearing, as well as existing systems that want to expand with distant TV signals. Such restrictions won't be put on CATV's in smaller markets, although petitions for hearings will be considered.

The following is the information that all CATV systems must submit on or before May 18: "(1) The names, addresses and business interests of all officers, directors, and persons having substantial legal or beneficial ownership interests in each system. In stating the ownership interests in a corporation which has more than 50 stockholders, only those stockholders need be considered who are officers or directors or who directly or indirectly own one percent or more of the outstanding voting stock. (2) The number of subscribers to each system both currently and as of Feb. 15, 1966. (3) The television stations carried on each system. (4) The extent of any existing or proposed program origination by each CATV system. (5) All existing systems located within the predicted grade A contour of stations in the top 100 TV markets are also required to submit a map showing the location of cable lines which were being used to serve subscribers on Feb. 15, 1966."

VERMONT UTILITY BILL KILLED

A bill which sought to place Vermont's CATV systems under the control of the Public Service Board died in that state's Senate. The bill, which had previously received a favorable vote in the Vermont House of Representatives, had been in the Senate Banking and Commerce Committee. That committee passed it on to the Senate floor with an unfavorable recommendation.

RKO BIDS FOR CONTROL OF H&B

RKO General, Inc., has taken another step in attempting to take over H&B American. RKO, which has been purchasing stock in H&B for some time, filed an application with the FCC asking the Commission to approve the transfer of control of a number of microwave relay licenses held by H&B. Estimates indicate that a merger of the two would result in the largest CATV system group owner.

COPPER SHORTAGE CRITICAL

CATV suppliers are keeping a watchful eye on the increasingly critical world copper shortage. The problem, already under the scrutiny of government officials, has most recently been abeted by striking laborers in the U.S., Zambia and Chile. However, authorities are confident that the long range prospects for copper are good, if the military effort does not cause additional amounts to be set aside, and if the internal strife can be eliminated.

Sources indicate that through August, commercial copper should be available, but at a premium of 75 to 80 cents per pound on the open market, as compared to the normal price of 36-40 cents per pound.

Applied to CATV specifically, any marked price increases would probably be reflected most in drop cable prices. One leading manufacturer contended, however, that although the situation will be "tight" from August, 1966 to July, 1967, an excess of nearly 7 percent is expected by the end of 1970, when capacity to produce will gradually overtake projected consumption.

ATLANTA TO BE WIRED

Georgia Cablevision Corp. has received a franchise in Atlanta, Georgia, currently the 19th ranked TV market. Disclosure of the franchise was made in a join announcement by J. Leonard Reinsch, president of Cox Broadcasting Corp. (80% owner of Georgia Cablevision) and John Stembler, president of Georgia Theatre Co. (20% owner). Reinsch said the grant to wire Atlanta was made prior to the FCC assumption of control over activities in the top 100 markets.

BLACK HILLS RECEIVES MODIFICATIONS

Black Hill's Video Corp's request for modifications of microwave license conditions has been denied, with only a few exceptions. Recent action on the request includes modification by the FCC of carriage and non-duplication requirements to exempt network colorcasts not carried in color locally; modified non-duplication requirements to same day basis for the system serving Ellsworth AFB; deferred consideration of waiver request until license renewals were considered; and denial in all other respects Black Hills' request for modifications of license conditions.

Black Hills Video filed a detailed and documented report with the FCC early in February on two microwave-served CATV's. The report showed a loss of over 30% of the total number of subscribers during a four-week period in January, 1966, due to comliance with the FCC regulations.

CATV LEGISLATIVE SCENE

The tumultuous state of CATV fairly boiled in Congress the week FCC issued its Second Report and Order. The House Small Business Subcommittee, submerged in its probe of FCC's effect on small business, wasted no time in scheduling CATV hearings early on its agenda. The same day that the FCC issued its formal rules and the House Subcommittee held its CATV hearing, Senator Paul Fannin (R-Ariz.) rose on the floor of the Senate to introduce resolutions asking the Commission to hold back on the rules. The week before, Rep. John Ashbrook (R-Ohio) had taken the floor of the House to call for CATV legislation.

CONGRESS—NOT THE FCC

Ashbrook, who received 600 to 700 letters from CATV subscribers in the recent Congressional mailing campaign, stated that: "There are legitimate rights of both CATV and local television stations which must be considered and protected, but we should not allow the FCC to enter a jungle where bureaucratic regulations and not the intent of Congress dictates."

He noted the CATV hearing held last year by the House Commerce Committee and said: "Unfortunately, the Commission to date has not held similar hearings in which the various parties to the CATV controversy could be heard and examined. Nor has the Commission deemed it necessary to conduct a full-scale investigation of the factors involved in this issue." He later said that "while it is generally conceded that some guidelines are necessary in the CATV industry, FCC jurisdiction over the CATV's should be subject to congressional authority and direction." He concluded that "bureaucracy should not be allowed to arrogate to itself arbitrary power through our inaction" and that "nothing short of a full congressional debate will suffice."

The resolutions introduced by Sen. Fannin had already been adopted by the Arizona State Legislature for forwarding to the Commission. Arizona formally asked the FCC to let Congress decide the fate of CATV. Sen. Fannin doesn't always introduce such state "memorials," but the importance of CATV in his home state convinced him he should in this case. He told his Senate colleagues that CATV "is especially important in my state of Arizona. It provides many isolated communities with television reception which they otherwise could not enjoy. In addition, an important industry for the manufacture of components used in CATV systems has developed in Arizona and provides employment for hundreds of our citizens."

FORMAL FCC LEGISLATIVE REQUESTS

The legislation suggested by the FCC is nothing surprising, except perhaps that in so many areas it merely asks for Congressional guidance without recommending an FCC majority position. As expected, the bill asks for specific authority to regulate all CATV, exempting systems with fewer than 50 subscribers and apartment house master antennas. It also says: "No community antenna system shall transmit over its system any program or other material other than that which it has received directly or indirectly over the air from a broadcast station, except that the Commission may, upon an an express finding that it would serve the public interest, authorize by general rule limited exceptions to permit such transmissions without any additional charge to subscribers." This ban on program origination, as the FCC explained in a text attached to the bill, thus won't necessarily outlaw CATV systems carrying news, weather and time services, and perhaps some other programs. The Commission's bill also says that local governments can continue to regulate franchises and rates, etc., the same way they have been doing all along so long as they don't conflict with federal regulation.

In the explanatory text, the FCC said "We believe it highly desirable that Congress amend the communications act" to give the Commission CATV regulatory jurisdiction "and to establish such basic national policy as it deems appropriate." the FCC asked for "the broad approach . . . because of the dynamic and relatively new future of the CATV field." Future requirements may be very different from today's, the Commission said.

The recommendations took the no stand on whether CATV systems should be required to obtain the consent of stations before their signals can be carried, but the text asks Congress to decide. "The matter is one of such a nature that we believe it should be more appropriately considered by the Congress," the FCC said, including the questions of whether "there should be special provisions for the CATV systems operating in a small community," how the consent rule would work as a practical matter and whether the rule, if adopted, would apply to existing CATV systems. The Commission asked Congress to hold hearings on these subjects.

Program origination by CATV systems would be banned by the bill as possibly letting pay TV in by the back door, time, weather and news, however, should be excluded from the origination ban, the Commission implied, and a Commission source later indicated that certain non-commercial public service shows also might be allowed.

FCC Commissioner Robert T. Bartley dissented. "I believe," he said "that telling the public it cannot receive broadcasts it wants and its willing to pay for via CATV is unsound public policy." CATV regulation to protect TV stations, he added, can only foster more regulation. He called simply for a ban on CATV program origination by law, since "the heart of concern over CATV is its possible evolution into pay television." Commissioner Lee Loevinger repeated his position that the FCC doesn't have jurisdiction over CATV, but he said the legislation "is the best compromise that can now be agreed on."

Small Business Hearings

When the House Small Business Subcommittee opened its doors to the FCC inquiry late in February, the Commission still had not sent its proposed CATV legislation to Congress. In fact, the hearings were slated as a probe into all FCC matters relating to small business. CATV was not scheduled for in-depth discussion until March 8, but subcommittee members made it clear

that the industry would be prime on the list of subjects under discussion, and Chairman John Dingell (D-Mich.) noted that he wanted to get the FCC's opinions on CATV while he had the Commission before him.

FCC TESTIMONY

Some of the internal FCC conflict over CATV regulation was aired at the hearing, although Chairman E. William Henry did not mention CATV at all in his prepared statement. Commissioner Lee Loevinger, however, repeated his argument that the Commission has no jurisdiction over CATV systems, and frequently disagreed with Henry on other areas. When the subcommittee asked Henry about the Commission's new CATV rules which stipulate hearings for CATV applications in the top 100 markets, the FCC chairman admitted that details of rankings had not yet been worked out.

The FCC head also indicated that few waivers of the new rules were likely to be granted. "We don't intend to grant many waivers, with a lot of people being treated differently," he asserted. "Patchwork" rules would be no good, he said, and perhaps after some hearings on the top 100 markets' CATV applications the Commission would be able to formulate new general rules for the big cities.

In reference to CATV program origination and the possibility that weather and news service channels might be banned, Henry had encouraging words for the industry. "I haven't given that a great deal of study," he said of the news and weather programs, but he indicated that they seemed like "very worthwhile" services. The Commissioner would not commit himself to exclude news and weather from any proposed program origination ban, however.

A deep Commission split was apparent on whether the new rules forbid CATV systems from dropping a local station's ads and inserting its own. Rep. Charles Weltner (D-Ga.) asked if the rule that a CATV would have to carry local signals without degradation would outlaw the ad tampering. Henry said Congress would be asked to clarify it, but that the rules as adopted do not forbid ad changes. Commissioners Kenneth Cox, Rosel Hyde and Loevinger quickly disagreed, saying that local signals could not be tampered with at all. Henry replied by stating that if CATV systems were in the future brought under the copyright law or otherwise charged a fee for program use, then they might have eevry right to carry their own advertisements. He said that as far as he knows, only one or two CATV systems are now blocking out ads. He also noted that CATV franchises have been granted, are sought, or are being talked about in 44 of the top 100 markets in the country.

NCTA TESTIMONY

Ironically, the FCC chose March 8, the date of CATV's appearance before the subcommittee, to issue its formal report on CATV regulation. (See related story in this section.) The new rules were not in the hands of the subcommittee or those who testified, but all concerned were well aware of their substance. Frederick W. Ford, president of the National Community Television Association, testified in defense of the industry.

The NCTA president gave the classic defense of CATV as a means to better TV service. Outlining the history of FCC regulatory efforts and Congressional legislation in the CATV field, he noted that the NCTA had at one time reached tentative agreement with the National Association of Broadcasters on what form CATV regulation should take.

Stating emphatically that NCTA does "not believe that the Government either through regulation or legislation should prohibit or limit the right of people to receive television signals either directly off the air or through community or master antenna systems

unless essential and limited to the preservation of television broadcast services," Ford presented a critique of the FCC's assumption of jurisdiction over CATV. He then referred to the economic reports on CATV prepared by Dr. Martin H. Seiden for the FCC and Dr. Franklin M. Fisher, who was commissioned by the NAB. "Based on these overall figures," he said, "I believe a proper inquiry will show that CATV, even with very little restraint on the duplication of programs, has stimulated television viewing, improved television service and the financial health of television stations." He also spelled out his belief that "these conclusions by two noted economists—one retained by the FCC, the other by the NAB — show conclusively that there is absolutely no basis for allegations that CATV is an adverse factor in the potential development of UHF television in large cities."

On the subject of pay-TV, he argued that "CATV systems as they exist today are unsuited for pay-TV." He even predicted that if CATV systems ever engage in pay-TV it will be because broadcasters force them by their pay-TV activity to engage in the business." Ford said that "I feel certain that if Congress decides to prohibit pay-TV or limit it drastically by radio frequencies as well as cable, there would be little objection by CATV operators." He also made a spirited defense of public service local program originations by CATV systems. Many TV stations, he said, can't afford to truly serve each of the communities their signals blanket, and CATV's should not be barred from covering city council meetings, for example.

Ford concluded: "We believe that whatever impact CATV has on television stations is more than balanced by the benefits to the public of increased program competition between broadcasters. In case there is proof that CATV has caused any proven substantial economic injury to broadcasters we believe that the FCC should have authority on a case-by-case basis to grant broadcasters any additional protection needed to preserve their service. We are agreeable to requirements that we carry the 'local' station, although we do not believe a station 75 miles away is a local station, and to requirements that we refrain from carrying signals on our systems which simultaneously duplicate programs on the local station and certain time zone requirements."

Under subcommittee questioning, NCTA General Counsel Robert L'Heureux, who accompanied Ford, outlined current NCTA negotiations with telephone companies over their pole-line policies. He said that AT&T and General Telephone seem close to agreeing to a policy that will not put the CATV operator in the position of having to lease CATV systems from the phone companies, and he promised to keep the subcommittee posted on devolpments.

AMST TESTIMONY

AMST's Lester Lindow stressed the need for local TV service and the development of UHF stations, then discoursed on the "threat of certain CATV practices to the free locally-oriented television system." CATV can capture the audiences of local stations, he said, and thus undercut their revenues, and "if CATV were to replace local broadcasting stations we would be well down the road to a pay-TV system in place of the present free system." The FCC's one-day nonduplication requirement is not stiff enough, he said.

Existing CATV's in the top 100 markets should not be permitted to expand except in rare cases, Lindow argued, and only after a "convincing showing" should a CATV even be allowed to have a hearing for important distant signals into the top markets. Smaller markets should also have restrictions on the importation of distant signals, he said. "If CATV systems,"

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he concluded, "are permitted to originate their own programming and advertising material as well as carry the signals of free television stations, the demise of local and area stations will be hastened, and we will soon reach the time when viewers will be required to pay for television they are now receiving free."

Lindow noted that "There are three principal respects in which the Commission's distant-station regulation for the top 100 markets is inadequate: (a) The importation of distant station signals into the Grade B contour of local and area stations is not regulated by rule. Yet most stations derive substantial support from their audiences located beyond the Grade A but within their Grade B contours. Hence, failure to prevent unlimited importation of distant signals into these areas can seriously dilute the local stations' audience and thus impair their ability to serve the public.

PAPERNOW'S STATEMENT

Leon Papernow said the CATV industry "lies today under the yoke of stifling and oppressive regulation which, if not eased, will surely throttle this lusty infant in its cradle." He criticized the various groups pushing for stiff shackles on CATV, then outlined legislation he advocates. The FCC should have to give equal weight to both CATV and TV, he said, in protecting the public's right to receive programs. "Stations should not be accorded the right to grant or deny CATV pickup rights," he added, and copyright laws should be updated to take cognizance of CATV and amended to give free and unlimited public access to TV programs at the time of broadcast."

Papernow also called on Congress to "clarify for the states and cities that CATV is not a public utility." Noting that the FCC would set for hearing any CATV application to import distant signals into the top 100 markets, he had these comments: "The Commission's announced intention to deprive 90% of the public of CATV service should be modified by amending the '100 markets' criterion to permit CATV development in such markets subject to a ceiling on the percentage of homes that can be served. I would recommend that at least 20 to 25% of the homes in these top 100 markets be permitted to view distant signals." He also plugged for allowing CATV program origination, "subject to restrictions on pay-TV and to the usual fairness and equal time requirements," and asked that the program non-duplication requirement be lowered from the present 24 hours to simultaneous.

KAHN SPEAKS TO EIA

Community antenna television offers "both a great opportunity and a great challenge" to electronic equipment manufacturers, leaders of that industry were told by Irving B. Kahn, chairman and president of Tele-PrompTer Corp. Speaking before the executive committee of the Electronic Industries Association at a seminar in Washington, Kahn remarked, "I believe that television and electronic communications are now on the threshold of one of the most exciting growth situations in history. The opportunity — and the challenge — are there to be grasped firmly by your segment of the industry as well as ours."

COPYRIGHT PUBLICATIONS READY

The complete, official text of the hearings last year on the revision of the existing copyright law, which included considerable argument for and against including CATV under the copyright law, is now available in three volumes. All testimony to the House Copyright Subcommittee is included, plus separate statements and submissions. Volumes one and three cost $2 each, and volume 2 costs $2.25. They are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

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Systems

Caywood C. Cooley, Jr., has been promoted corporate vice president for engineering at TelePrompTer Corp. Cooley's responsibilities will be in connection with TelePrompTer's New York City system.

Samuel P. Thrower has been re-elected president of the Oak Ridge (Tenn.) CATV system. Frank E. Pellegrin was named chairman of the board and treasurer.

Seibert Worley, member of the NCTA auxiliary committee and mayor of Shamrock, Texas, has announced that he is a candidate for State Representative from the newly-formed 84th district. Worley owns systems in Texas and Oklahoma.

R. E. James is president of the new Enterprise (Ala.) Cable Television system. Howard Quattlebaum is vice pres., and Mrs. R. E. James is secy.

Ray LaRue has been appointed vice pres. in charge of operations for Gulf Coast Teleception, Port Charlotte, Fla. LaRue was formerly with Jerrold Electronics.

Leonard Tow has been advanced to the position of director of administration and planning at TelePrompTer Corp.

Bernard Zeldin has been elected president of the Bosco Cable Co. Robert Weisberg is the new vice pres., and Herman Diamond will serve as secy-treas.

Lansing B. Lindquist is now serving as general manager of General Cablevision systems in Cocoa Beach and Canaveral City, Fla.

Clyde Fette has joined American Cable Television, Inc., as director of technical affairs.

Jim Davidson, owner of the Batesville (Ark.) Community Antenna Company, has been selected area director for a national emergency plan. Davidson will develop data and plans for airlift and evacuation purposes.

Harvey Ingham has been named vice president and general manager of the Philadelphia Community Antenna Television Co.

Robert H. (Hank) Symons has been promoted to general manager of the CATV division of TelePrompTer Corp. John Thomas succeeds Symons as director of operations.

Conrad A. Bastow has been appointed general manager of T-V Transmission Inc.

E. Newton Wray, president and general manager of KTBS (Shreveport, La.), has announced the establishment of a CATV department to be headed by Ray I. Boze of Blanchard, Louisiana.

Philip G. "Phil" Wilcox has been named general manager of Community TV Antenna Corp.

Vernon Bossley has been appointed general manager of Garden State TV Cable Corp.

Rodric M. Smith has assumed the position of director of financial analysis and control for Storer Broadcasting.

Alfred J. Stelk has been appointed manager of the Kankakee TV Cable Co.

Clarence Ross, manager of the Pontiac (Ill.) TV Cable Co. has been named manager of Ottawa (Ill.) TV Cable Co.

Eddie Bookout Jr. has been named general manager of the new Lamesa (Tex.) Cable TV Co. Bookout had worked for Hobbs Cable TV Co. for 8 years.

Gregg Cablevision has announced the purchase of 12 "Weatherama" time/temperature information devices from Viking Industries.

Robert Mathews is the new manager for Lawrence Cablevision, Inc. (New Castle, Pa.) Richard T. Morgan has been named chief technician.

Bill Dunbar has been appointed manager of Micom Cablevision, Inc., which will serve Miami, and Commerce, Okla.

Suppliers

Joel P. Smith has been named assistant to the president of the Jerrold Corp. Smith was formerly manager of the community operations division. Elmer Metz has been named to that post.

Samuel S. Street has joined Viking Industries as director of marketing. Formerly director of advertising and public relations at Ameco, Inc., Street has also been a partner in the consulting firm of Adler, Street and Associates.

Charles H. Wright, president of Spencer-Kennedy Laboratories, has been designated chief executive officer. Donald Spencer, chairman, will devote his full time to the management of the company-owned CATV systems. Wright recently announced the initiation of a second shift at the Boston plant, and the opening of a sales office in Phoenix, Arizona.

George T. Griffin has been appointed controller and general manager of Stan Socia Corp. Griffin will be responsible for the financial planning and overall company policy.

G. W. Bates, F. P. Ciambrone and P. R. Seng have been named as vice presidents of engineering, operation, and finance respectively at Dynair Electronics.

Charles A. Anderson has been named manager of sales control for the CATV systems division of Jerrold Electronics.

Lawrence Vlasblom is now serving as system design supervisor at Kaiser-Cox Corp. Vlasblom, who grew up in Holland, previously worked for Famous Players.


Caywood Cooley, Jr.


Joel Smith


Sam Street


Charles Wright


Donald Spencer


George Griffin

J. R. Woods, president; Sidney A. Mills, vice president-production and engineering; William G. Witzigman, product development manager; and Joseph J. Duffy, production manager will head the administrative team of Ameco Cable, Inc. The cable plant, to be located at 47 Ave. and Van Buren St., Phoenix, Arizona, is a newly-formed subsidiary of Ameco, Inc.

J. L. Robb, president of Superior Cable Corp., announced the formation of a new sales subsidiary, Electronic Distribution Sales Corp. J. H. Bowman, Superior's vice-president in charge of marketing, will serve as president of the new corporation; O'Connor Bailey has been appointed executive vice-president.

Don W. Hoffman, vice president-finance of Ameco, Inc., has been elected vice pres.-contract sales. Richard W. Peterson, who recently served as sales manager for Superior Cable Corp., was selected as a director.

George C. Kanen has returned to Entron to assume the post of director of sales administration.

Charles L. (Bill) Dietderich has been selected to be international sales manager for Cascade Electronics Ltd. The Port Moody, B.C. company. has also appointed Joseph L. Derocher as director of systems engineering and construction, and Robert D. Ashby as director of advertising.

John G. Russell has joined Tele-Mation, Inc. as national CATV sales manager.

Hy Triller has been named as marketing manager of Spencer-Kennedy Laboratories, Inc. Prior to assuming his new position, Triller had served as general manager of Cable-Vision, Lafayette, Calif., and of the Wisconsin Video Corp., Eau Claire, Wisconsin.

L. Kenneth Powley, southeastern field representative for Superior Cable Corp., has been promoted to the position of district sales manager.

Professional

Raymond V. Schneider and George Leibowitz have announced the formation of a new management services company. The firm, Leeder Consultants, Inc., will assist in the acquisition of franchises, design and construction of systems and in financial, management and technicial problems of system operation. Schneider has been prominently associated with CATV since its infancy. His background includes affiliation with the Williamsport (Pa.) Cable Co., National Theaters and Television, Inc., TelePrompTer Corp., Meredith-Avco, Inc., and, most recently, National Broadcasting Co. Leibowitz, a CPA, joined TelePrompTer Corp. in 1961 and for the past 3 years has served as secretary and treasurer of that firm. He is a member of the NCTA Budget & Audit Committee.

Offices for Leeder Consultants, Inc. are located at 39 W. 55th St., New York City.

TWO NAMED BY TV&C

Publishers Stanley M. Searle and Patrick T. Pogue have announced that John D. Bryant, Jr. has assumed direction of the circulation department of Communications Publishing Corporation. Bryant, who joined the firm last July, will continue to serve as office manager in addition to his new capacity, which will include supervision of subscription fulfillment and statistical research. Bryant holds a BBA degree from the University of Oklahoma.

John Bryant

Wayne Wilson

R. Wayne Wilson has also joined TV & Communications magazine and Cable Television Review as promotion manager. According to publisher Stan Searle, Wilson's duties will include preparation of marketing data on the CATV industry, and supplying advertising assistance to manufacturers and advertising agencies. He holds a Master of Arts degree in Communications from the University of Washington.

CALENDAR

April 21-22 The Mid-America CATV Association will meet at the Sheraton Motor Inn, 6th & Main, Kansas City, Missouri. A display hall will be available. Contact R. W. Baker, 11 South 5th Street, Manhattan, Kansas.

April 28-29 The North Central CATV Association will hold its spring convention at the Wagon Wheel Inn, Rockton, Illinois. Contact Richard Krolling, 415 South Barstow St., Eau Claire, Wisconsin 54702; ph. 834-3151.

May 9-12 The National Community Antenna Television Association (NCATA) of Canada will hold its 1966 Convention and Trade Show at the Bayshore Inn, Vancouver, British Columbia, Canada.

May 27-29 The Mid-Atlantic Community Television Association will meet at the Daniel Boone Hotel in Charleston, West Virginia. For details contact Buford Saville, pres., Potomic Valley TV Co., 100 South Liberty, Cumberland, Maryland, ph. (301) 722-6540.

June 26-30 The NCTA National Convention will be held at the Americana Hotel, Miami Beach, Florida.

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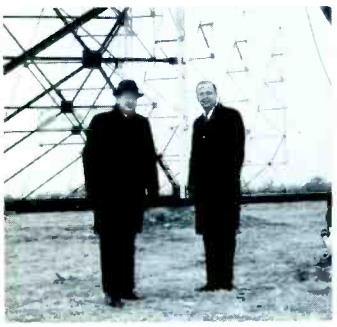
SELLING CABLEVISION IN PARSONS

On November 22, 1965, eleven billboards in and around Parsons—a town of 13,000 population in the southeast corner of Kansas—suddenly proclaimed: "Cablevision—Your Best Entertainment." A presumptuous statement, perhaps, in an area which was receiving grade-A television signals from Pittsburg, Kansas and Joplin, Missouri.

With but minor modification, however, the message remained on the boards until February 1, 1966. And in less than sixty days after the appearance of this initial advertisement, Kansas CATV, Inc., known as Cablevision in Parsons, had signed nearly 1,500 of a potential 3,500 households to its service!

The billboards marked only the beginning of a promotion the likes of which Parsons had never witnessed—and which it will not soon forget. Before it wound up, just three months later, the promotion had involved hundreds of Parsonians, including virtually every Parsons merchant, the Chamber of Commerce, the Jaycees, Rotary, Kiwanis, Retail Booster, the Mayor and a number of city and county officials, and Kansas Governor William H. Avery.

It brought to Parsons several celebrated personalities, a number of high school bands from neighboring towns, two circus calliopes and a string of antique automobiles which substantially contributed to a parade nearly four miles long. And it created a fervor and excitement which encompassed several other communities.



Alvin Hartman (left) and Monroe Rifkin at the Parsons parabolic antenna site.

Miss America Debbie Bryant being greeted at the airport by "Miss Cablevision" contestants.

The subscriber campaign in Parsons utilized a number of modern promotional techniques—as well as a few of the classic Peanuts, Popcorn & Ballyhoo methods. And like all such successful campaigns, the money expended was minimal in comparison to the "free" air time, newspaper lineage and man-hours contributed by a gracious community which welcomed cable television with open arms.

Kansas CATV, Inc. (KCATV), is headed by Alvin H. Hartman of Providence, R.I., vice-president of Narragansett Capital Corp. Narragansett is one of the larger group owners

Cablevision manager Bob Pace, Tom Johnson, Miss Bryant, and assistant system manager Bob Rhodes.

Other Cablevision guests, shown with Miss America, are her mother, Mrs. Irene Bryant, and Kansas Governor William H. Avery.

of CATV systems, with eleven operating systems in seven states. KCATV is administered for Narragansett by the Daniels Management Co., Denver, Colorado. Monroe "Monty" Rifkin is president of Daniels Management Co., a division of Daniels and Associates.

"The first hookup on the cable marked the end of nearly three years of effort by the Parsons City Commission and other interested parties to effect a cable service," Rifkin says. He explains that on May 20, 1963, the City Commission let a franchise to Kansas Cable TV of Independence. On December 21, 1964, a second franchise was granted Trans-Video of El Cajon, California.

Although the need for CATV service in Parsons was readily apparent, Rifkin says, nothing constructive happened until mid-1965, when Narragansett acquired both outstanding franchises, together with the nearby operating systems in Chanute and Independence. "To Parsonians,

CATV meant the promise of Kansas City television (145 miles away). KCATV started construction of the system late in 1965, utilizing a parabolic antenna for its Kansas City pick-up."

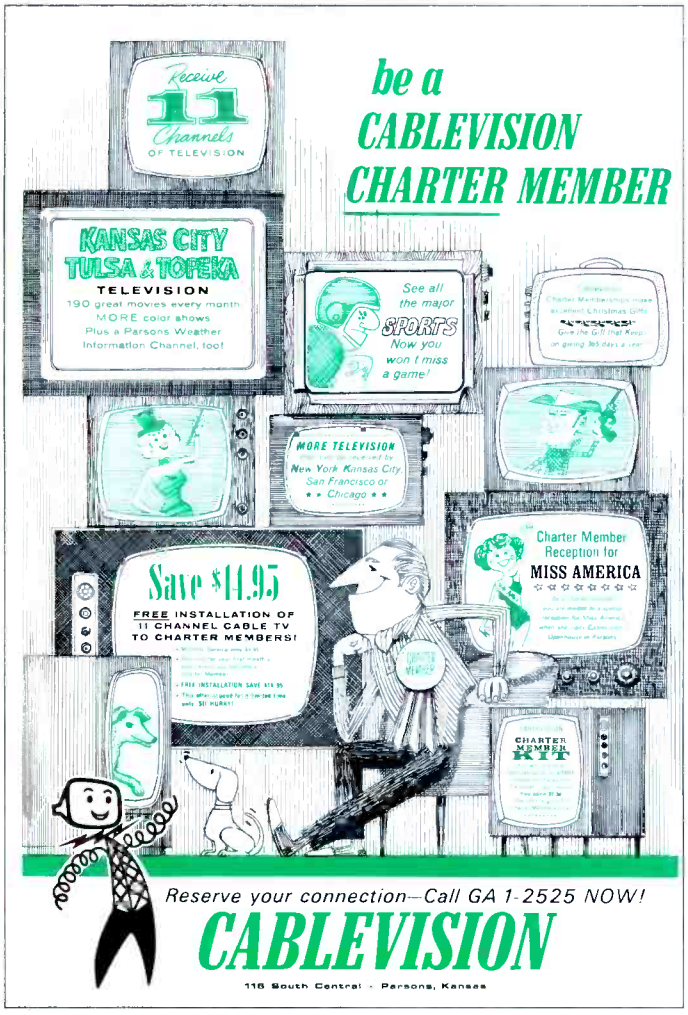
The parabolic antenna erected by Cablevision is the invention of a Canadian engineer, and is the first of its kind to be installed in the United States. It consists of 71 miles of antenna wire strung on 10 towers, 60 feet high, with a curved reflector 270 feet wide. It has a plane surface of 13,500 square feet.

The antenna makes use of trans-horizontal tropospheric propogation to collect troposcatter signals which are focused ahead of the reflector. Terminal receiving antennas are located at the focal point of the reflector, virtually at ground level, and are enclosed within a small building. The building also houses all head-end equipment.

A 300-foot tower was erected at the site also to support a number of antennas, including a 600-pound Quadrate Channeler built by Scientific Atlanta, Inc. Combined, the antenna system at Parsons gives residents more television choice than is available in New York City!

"With our project planned," Rifkin says, "Our next move was to attempt to regenerate—through the use of advertising and promotion—a favorable reception for the long-promised cable service." Rifkin handed this assignment to Tom Johnson who specializes in sales promotion and public relations for Daniels & Associates.

Upon arriving in Parsons, where Cablevision had already set up temporary offices, Johnson met with Robert L. Pace, manager of Cablevision, and Bob Rhodes, Pace's assistant.



One of the full page ad layouts used prior to the Parsons system opening celebration.

Pace was responsible for much of the detailed engineering going into the installation of the cable, and Rhodes became Johnson's team-mate in meeting with business and civic leaders and the press, and in attending group functions where they spoke and showed films on cable television.

On November 11, the Ginn Construction Co. of Parsons began pouring concrete piers to anchor the parabolic antenna towers. The site, on farmland about 4 miles south of town, had become a beehive of activity. Curious townspeople, in numbers, began driving by the location.

Johnson and Rhodes, meanwhile, were calling on merchants—especially TV dealers and technicians—outlining for them Cablevision's plans and encouraging them to participate. They also reserved the billboards for the message that Cablevision offered the best entertainment.

A few days following the posting of the billboards, the newspaper campaign began stressing heavily the fact that Cablevision would bring 11 channels to its subscribers. The ads, running at spaced intervals in both the daily *Parsons Sun* and the weekly *Parsons News*, began with a "teaser" format: See More Color! All the Big Sports Programs! 190 Movies Each Month! Watch the Mail for Details!

Miss America attracted crowds everywhere she appeared in Parsons. Here she signs autographs at Cablevision's TV dealer open house.

In a short period of time, the 3,500 households in the cable area had received Cablevision's first direct mail. This consisted of a covering letter signed by Pace, outlining the magnitude of Cablevision's offering to TV viewers, and encouraging the recipient to take advantage of a "Charter Membership." The Charter Membership provided free installation—a saving of $14.95—with the advance payment of the first month's service fee of $4.95. Charter Members and their families also would be guests of Cablevision at a private reception and show in honor of Debbie Bryant, Miss America of 1966. Deadline for Charter Membership: January 22, 1966.

A postscript, taking advantage of the season, added: "Cablevision Charter Memberships make good Christmas Gifts. Give the gift that keeps on giving—365 days a year."

A pamphlet, entitled "Cable Television & You: Questions and Answers For Your Information," anticipated the usual How's What's Why's and When's of Cable TV. It also listed the 11 channels promised to subscribers.

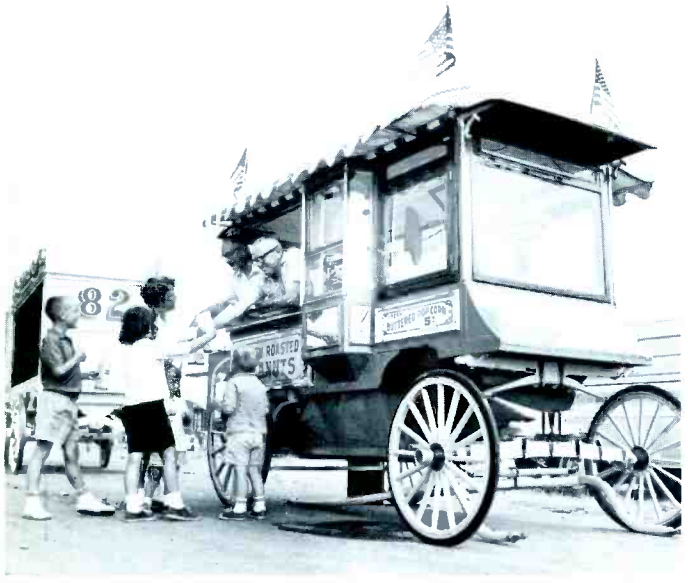
Included in the literature were two return coupons—one a Cablevision Charter Member reservation, the other a Cablevision Christmas Gift Membership—and a return envelope.

With the direct mail in the prospect's hands, full page ads were immediately placed in the *Sun* and the *News* with the added incentive of a "Charter Member Kit," which included an autographed picture of Miss America, tips on the maintenance and operation of a TV set, a Cablevision clipboard and a certificate which entitled charter members to a free second cable hookup in the same household.

At this point, contacts with TV dealers and technicians had evolved into an agreement on their part to sell Cablevision subscriptions. In turn, Cablevision agreed to pay $2 each for subscriptions up to the first twenty, $3 each for subscriptions between twenty and forty, and $4 each for every subscription over forty that the technicians and TV dealers sold. (One dealer sold 175 subscriptions in less than two months.)

In order to create extra enthusiasm, and make the competition keener, Cablevision offered the person who sold the most subscriptions each week a "night on the town."

At the same time, beginning with the dealers and technicians, Tom Johnson placed posters in every shop window around town, proclaiming again the great wealth of viewing pleasure to be had by subscribing to Cablevision.



A variety of authentic circus wagons were used to build the excitement and glamor of the grand opening activities.

He then bought time on radio for 1-minute spots, which began musically with the opening lines, "Everything is up to date in Kansas City. They've gone about as far as they can go." At which point the music segued under the announcer who averred, Yes, they had gone about as far as they could go in Kansas City, but Parsons was going even *farther* than Kansas City—or New York City, for that matter—with the advent of Cablevision, which would bring eleven—count 'em—eleven channels into Parsons' living-rooms. Johnson placed 105 of these announcements between Nov. 29 and Jan. 22.

Concurrent with the start of radio advertising, they mailed a contemporary style card to potential subscribers not yet heard from. The card said, in substance, "You're so smart, so suave, so alert—we'd like you to be one of us!" The inside of the card revealed a grouping of cartoon figures, one of which held a sign reading, "Cablevision Charter Members." The mailing was followed by ads in both newspapers, listing a myriad of programs available on the cable—illustrated with photographs of the stars, and carrying clip-out coupons.

Bumper stickers began appearing on automobiles, stating simply: More to See on Cable TV. The Jaycees, the distaff Jaynes, and the Organization of Business and Professional women got into the act since the commission arrangement on the sale of subscriptions furnished them with the needed funds.

Johnson developed the idea of staging a Miss Cablevision contest—the winner to be crowned by Miss America herself. Small newspaper ads were placed, advising Parsons' young ladies of the competition and furnishing entry blanks. A local photographer devoted his studio's windows to the contest promotion, and the space eventually contained framed photographs of the fifteen finalists.

The Parsons Retail Boosters, with a membership of 42 retail outlets, got behind Cablevision in full force. Virtually every newspaper ad, up to and including double-trucks, carried a picture of Miss America and a reminder to the reader to register for hundreds of dollars in prizes (ranging from a $10 merchandise certificate to a $995 25" color television AM-FM stereo combination) to be given away in conjunction with Cablevision's windup celebration.

CATV suppliers to Cablevision began placing congratulatory advertising in both papers, and the newspapers editorially followed each new development of the Cablevision promotion. Each stage of the construction at the antenna site was worth pictures and cutlines and the completion of both the parabolic antenna and the 300 foot tower garnered considerable lineage.

The *Sun* ran three complete multi-page supplements devoted to Cablevision during the promotion period, and the weekly *News*, not to be outdone, came up with three supplements of its own.

Pictures and biographical sketches of Pace and Rhodes were published, as well as pictures of the three women who staff the Cablevision office and an artist's rendering of the firm's permanent home which was being constructed.

Lesley Karen Fleenor, who represented the State of Missouri in the 1965 Miss America Pageant, agreed to join with Debbie Bryant in reigning over the Cablevision festivities. Miss America and Miss Missouri, and a bevy of lovely young ladies vying for local acclaim and the Miss Cablevision crown! The media responded enthusiastically and generously.

"Every movement or function connected with Cablevision became important," Johnson recalls. "Many pictures and cutlines were devoted to Cablevision principals. The *News* reprinted nearly an entire article, complete with photographs, from *TV & Communications* (July, 1965) entitled, "The Lions Share in Bill Daniels' Den."

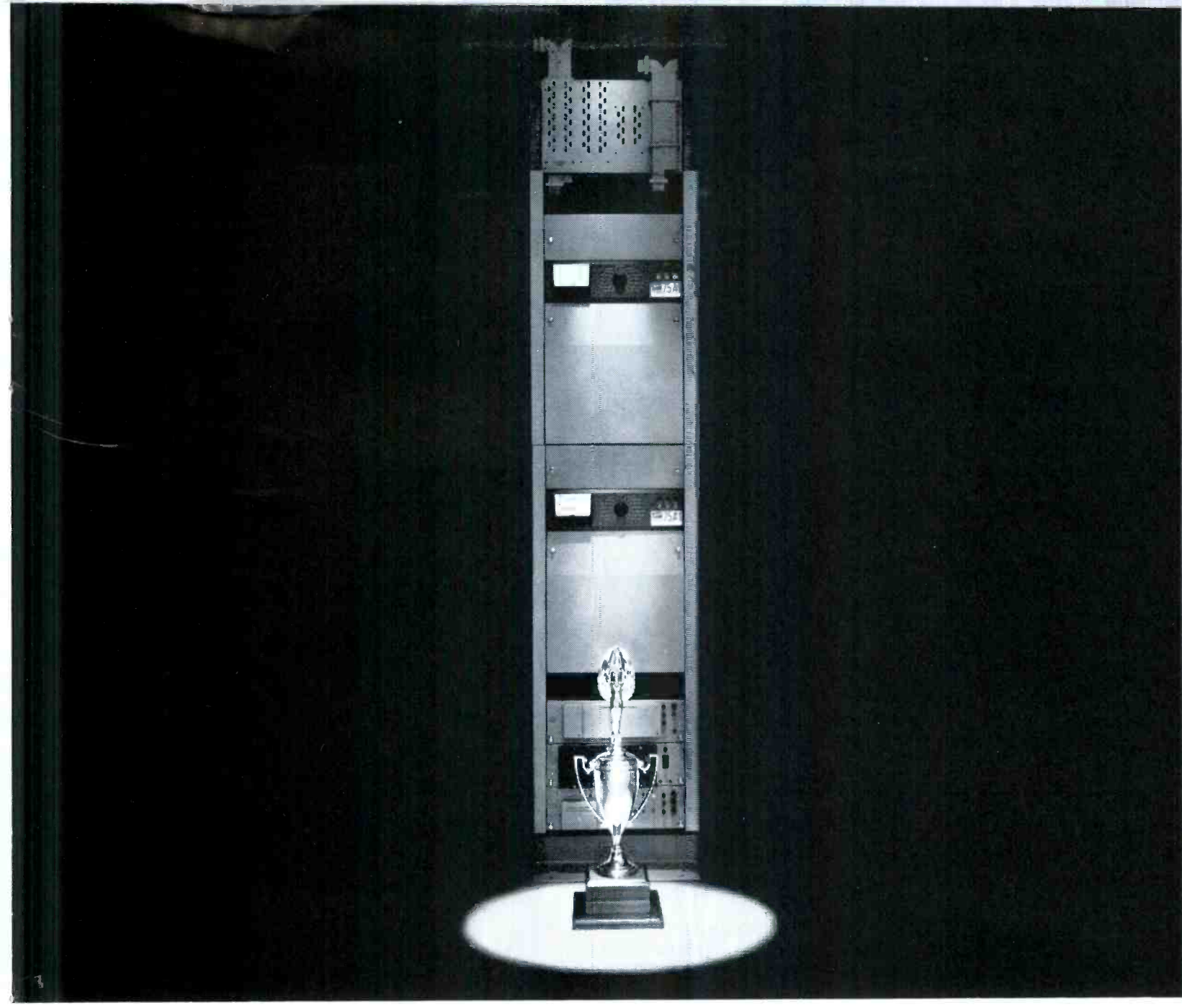
Indeed, there had been generated an electric charge of anticipation that surged throughout Parsons. "Although—as expected—many people had a 'wait and see' reaction to the cable," Johnson says, "we found an over-whelming number of willing hands at every turn. There was such a 'community spirit' allied with our efforts, it was difficult at times for us to remember *we* were organizing the promotion."

The local Pepsi-Cola bottler, in addition to furthering the cause through newspaper advertising, hosted a Pepsi Party—the prime purpose of which was the decorating of the Municipal Building's basement and auditorium with crepe paper streamers and balloons, in preparation for the celebration.

Huge cloth banners were strung across Main Street—welcoming Cablevision to Parsons.

At 10:45 A.M., Friday, Jan. 21, the Central Airlines flight from Kansas City blocked at Tri-City Airport. The crowd, which has braved Parson's coldest weather of the season, surged forward expectantly. The plane door opened, and Miss America came down the steps to be met by Mayor Barton Dean, Cablevision principals and other dignitaries. Debbie was accompanied by Hartman and Rifkin, who had met the flight in Kansas City.

The official welcome of Miss America to Parsons was immediately disrupted by the exuberance of the predominantly teenage crowd. They pressed in upon Debbie and besieged her for autographs, which she graciously gave. The Retail Boosters managed to thrust two dozen red roses into her arms. Members of the working press, meanwhile, shouted



Will success spoil 75A?

Never.

75A is our rugged, reliable, long-haul, heavy density microwave radio. And, although it's our newest system, 75A has already made its mark. For instance, the 75A heterodyne system is used in a heavy-density toll network in the province of Alberta, Canada. (Proving yourself there, home of some of the most stringent operating conditions on the continent, is hardly a cinch.)

75A has also been used in the AUTOVON system, for a major educational TV system in the mid-west, and for a long-haul telephone network on the West Coast. It has been selected for use with a COMSAT system and for CATV networks in New York and Pennsylvania.

Do we sound like we're bragging a little? Well, we are. But, why not? The 75A has quickly proved itself as the perfect radio for backbone applications. It offers many outstanding features including extremely low distortion, 5 watt output power, and frequency diversity operation or one-for-three path protection.

Also available are a program channel for TV, IF auxiliary amplifiers, variable equalization for group delay and time delay, IF patching facilities, and baseband regulators. And provision is made for bridging off a video signal at any repeater making the 75A ideal for TV networks.

If you'd like to find out more about 75A and how it has succeeded in the communications business without even trying, write or give us a call.

Lenkurt Electric Co., Inc., San Carlos, California. Other offices in Atlanta, Chicago, Dallas, and New York City.

LENKURT ELECTRIC

SUBSIDIARY OF
GENERAL TELEPHONE & ELECTRONICS GT&E

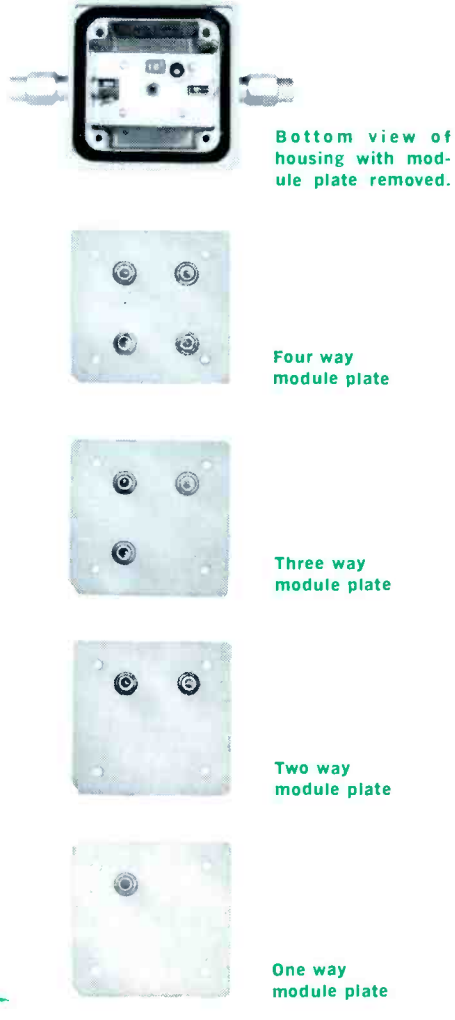
THE NEW CRAFTSMAN MODULAR DIRECTIONAL TAP

Here's one way to keep your labor costs down, profits up. Craftsman's new Modular Directional Tap, shown above, is one proven way to easily, surely, service subscriber line changes using labor that can change connections from one to four subscribers in less than five minutes, tops. Here's all there is to it.

Don't Disconnect . . .

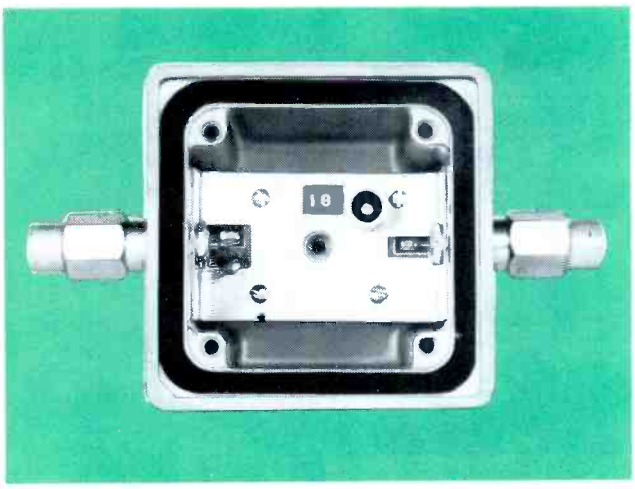
INTERCHANGE!

The four plates shown here are the outlet connecting plates for use with our new Modular Directional Tap. They are easily interchangeable in the bottom of the housing, a simple matter of unscrewing four permanently held screws, removing one plate and replacing it with another. Each bottom plate has a cut-off corner which allows it to be connected in only one way—the right way. They provide a perfect connection every time, even when the subscriber is not home. Each unit has a radiation-proof gasket to prevent signal leakage. And these new Craftsman Modular Directional Taps provide extremely low through loss (only .25 db for 18 db tap attenuation), and high return loss. Try a few of these Modular Directional Taps on for size in your system. We believe you'll find they are among the most significant advances ever made in CATV. We'll be glad to send you more technical information. Just write to us at the address below or call us collect.



CEP

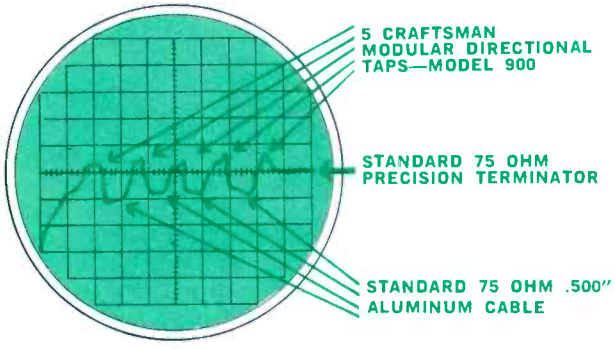
CRAFTSMAN ELECTRONIC PRODUCTS, INC.
133 WEST SENECA ST., MANLIUS, N.Y. 13104 AREA CODE 315—OVerbrook 2-9105



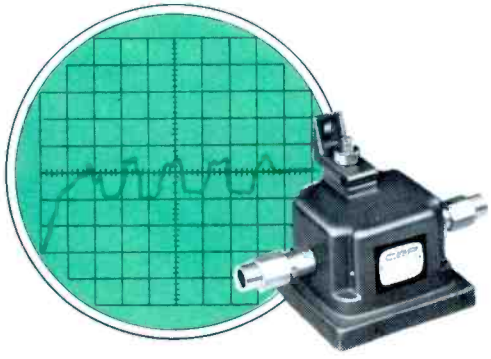
Bottom view of housing with module plate removed illustrating RFI gasket.

THE CRAFTSMAN QUALITY STORY...

Aside from the prospects of faster service, lower labor costs, and resulting higher profit margins for subscriber service changes, perhaps the most intriguing features of the new Craftsman Modular Directional Taps are the extremely low through loss (only .25 db for 18 db tap attenuation), and high return loss. We feel the easiest and most believable way to show this to you is to show you a TDR test simulating actual field conditions, terminated and unterminated at the tap.



In the top scope trace, 5 Craftsman Modular Directional Taps (14, 18, 22, 26, and 30 db tap units) are connected to a section of standard 75 ohm .500" aluminum cable. They are unterminated at the tap port. Notice how the peaks representing the Modular Tap Units are closer to the ideal 75 ohm reference line than the .500" aluminum cable. Thus we may reasonably state the Craftsman Taps are more ideally matched than the cable itself.



In the bottom scope trace the only difference is the tap off ports of the five units are terminated. As you can see, the difference between the two scope traces is negligible. No appreciable impedance mismatch is introduced to the feeder line in either case.

Now add this to the lower labor costs, and faster changeover from 1 to 4 units (less than five minutes), and you'll begin to see why we believe this Craftsman Modular Directional Tap is a uniquely significant advance in CATV. We'll be glad to send you more technical information. Just write to us at the address below or call us collect.

CEP
CRAFTSMAN
MANLIUS, N.Y.

CRAFTSMAN ELECTRONIC PRODUCTS, INC.

133 WEST SENECA ST., MANLIUS, N.Y. 13104 AREA CODE 315—OVerbrook 2-9105

questions, made notes and popped flashbulbs. A police escort led the way to the Parsonian.

At around 5:00 P.M., Mrs. Irene Bryant (Miss America's lovely mother), Gov. Avery and Bill Daniels arrived by plane. Each had a police escort to the hotel.

At 5:30 P.M., approximately 75 persons sat down to a special banquet in the Parsonian, marking the official beginning of the Cablevision celebration. Included in the group were the governor, the mayor, city and county officials, Cablevision principals, business and civic leaders, members of the press, the three top subscription salesmen and their wives, and the entire entourage of the reigning beauty queens.

The governor and the mayor each made welcoming speeches, directed to Cablevision primarily, but including the Misses America and Missouri. Pace introduced Hartman, Rifkin and Daniels, and Miss America spoke briefly, answering questions posed by the attendees and by the press.

Cablevision's Open House at the Municipal Building began at 7:00 P.M. The gaily decorated basement, with a circus theme, soon filled with nearly 2,000 curious and delighted persons who were treated to the latest designs and developments in television sets, stereos, and saw themselves on closed circulit television. (Dealers and booth exhibitors later confirmed that response was far above expectations.)

The crowd also ate free popcorn—popped before their eyes by Johnnie Marietta of Pittsburg, Kan., in his antique popcorn wagon (circa 1910)—drank countless gallons of free Pepsi-Cola, and listened to two circus calliopes, taking turns playing traditional circus airs.

"The greatest thing about the open house," Johnson says, "was the chance to demonstrate for the people of Parsons *exactly* what Cablevision service would bring them. We had

Glamor and showmanship play an important part in the successful system opening. Above left, Miss Missouri, Miss Cablevision and Miss America. At right, the scene of the Cablevision stage show.

eleven television sets on display, each tuned to one of the channels promised. Fortunately, during the two days of the open house, many programs were broadcast in color. They (the people of Parsons) had never seen color programming so sharp." Needless to say, the Cablevision subscription booth did a lively business.

Upstairs in the auditorium, meanwhile, another 2,000 persons—Charter Members of Cablevision and their families—were enjoying themselves in a slightly different fashion. Pat Perrin of Joplin acted as master of ceremonies for a program which included "The Other Five," a rock 'n roll group; folk singer Sonny Zetmeir; vocalists Kay Lawrence and Robert Kelly; show drummers Danny Lucas and Marilyn Holford of Coffeyville, and Jungle Jon, personality from WIBW-TV, Topeka. Miss America spoke to an attentive

audience and Miss Missouri sang several numbers. Entrants in the Miss Cablevision contest paraded on a runway and posed on stage with Miss America in the finale.

On Saturday morning, hundreds of chilled spectators lined Main Street to see a smiling, waiving Miss America leading the Cablevision parade; the end of which was some four miles behind her.

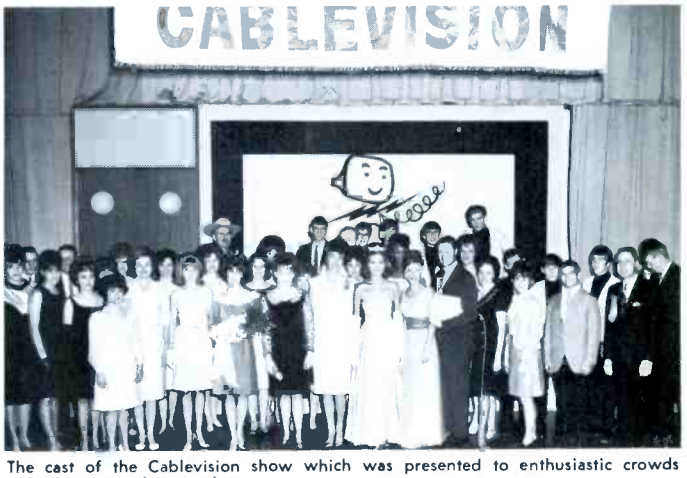
Following were other automobiles, bearing Miss Missouri and the Miss Cablevision aspirants. The parade included bands and drum and bugle corps from Coffeyville, McCune, Chanute and Edna, as well as Parsons' own. There were clowns, with balloons and candy for the children, a Mizra Shrine Temple motor patrol, calliopes, television personalities, and several commercial entries. Cablevision's loudspeaker-equipped truck blared invitations to attend the Open House at the Municipal Building, beginning at 11:00 A.M., and the evening program starting at 7:30 P.M. Behind these entries came a string of antique cars.

Open house at the Municipal Building drew an unusually large crowd. "We gave away a lot of popcorn, Pepsi, coffee and donuts," says Johnson. "Especially coffee. The temperature went down to 12 degrees Friday night, and never got above 25 degrees on Saturday. But the people really seemed to be enjoying themselves."

The Open House continued until 5:00 P.M., then resumed from 7:00 to 10:30 P.M. More than 2,000 persons attended Saturday night's program in the auditorium. The audience was primarily comprised at that point of non-subscribers to Cablevision.

The program was similar to Friday night's with two exceptions: the drawings for hundreds of dollars in prizes contributed by the Retail Boosters, and the coronation of Miss Cablevision.

The promotion—at least the fanfare, the noisy, colorful, circus-like showmanship promotion—had come to an end. "At that point, we had signed almost 45 per cent of the potential subscriber-households to the cable service," Johnson says. "We felt good, and our subscribers felt good—because they knew exactly what they were going to receive. This wasn't a 'pig in a poke.' They had seen convincing proof of Cablevision's ability to deliver."



The cast of the Cablevision show which was presented to enthusiastic crowds on two consecutive evenings.

Immediately following the first hookups, Cablevision launched an aggressive door-to-door campaigns which, in one month's time, produced nearly 300 additional subscribers, putting the new system's saturation level at more than 50 per cent. This represents one of the highest penetrations thus far in a multi-Grade-A signal market area, and was accomplished in less than 120 days! □

MODEL FM-I FIELD STRENGTH METER

Input	75 ohm F type connector
Accuracy	± 1.5 db All TV channels
Voltage Range	10 microvolts to 1 volt
Db Range	—30 to + 60 dbmv
Frequency Coverage	Ch 2 to Ch 13 One Range
Batteries	(2) 9 volt 2mn6 (meter)
	(2) "C" cells (pilot lamps)
Voltage Scale	one
Db Scales	four
Measurement Method	True peak value of sync pulse
Weight including carrying case	5⅛ lbs.
Size without case	4¼" x 5" x 5¾"
Size with carrying case	4¾" x 6½" x 7"
Carrying case	Genuine Leather

$295.00

Complete with carrying case and batteries.

Video Instrument Corp.

The Model FM-1 is completely transistorized and has many advantages over meters now being used for CATV. The circuit is extremely stable through use of silicon transistors of an industrial grade. Shielding is thorough and complete, certain areas are double and triple shielded. Microammeter is one of the finest types available. Illuminated meter and dial are powered by a separate "C" cell batteries. Video detector output is provided for oscilloscope monitoring of video. Bandwidth is limited only by the .5mc I.F. carrier. (Earphones not supplied.) Image rejection is quite good, and error due to side channel overload is minimal due to the use of a double tuned bandpass filter that tracks with the oscillator across the dial. The carrying case is constructed of genuine leather, the same thickness as the ¾" shoulder strap and is lined with velvet covered board for added strength and rigidity. A snap holds the cover completely open in either horizontal or vertical position.

LIMITED QUANITIES AVAILABLE FROM:

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HOW MUCH PER SUBSCRIBER?

By Arthur Einhorn
Triangle Stations

Companies acquiring going CATV systems face the prime question of how much to pay per subscriber. A recent report submitted by CBS to the FCC indicates that systems are selling in a range of $220 to $343 per subscriber. Is $200 a 'good buy' and, conversely, is $500 per subscriber exorbitant?

You can answer more easily by remembering you are not buying a number of subscribers *per se*, but hopefully a going business. Evaluate the price to be paid for the system on the basis of what it is currently producing in profit, tempered by its near and far future potential, thus reverting to the standard criterion of "return on investment." A system selling for a tempting $200 per subscriber may yield a return of 4 per cent, while the system selling for $500 yields 9 percent.

Evaluating CATV in the same manner as any other business, with no single item like cost-per-subscriber being the determining factor, there are four major criteria useful in determining the price you are willing to pay:

(1) *Current Condition* — Some CATV systems are 10 to 15 years old, with no capital improvements. You can expect additional investment for replacement of tap-off lines, conversion to solid state amplifiers and replacement of portions of the distribution system. If the market receives three networks plus UHF stations, then you must include facilities for broad band reception as an upcoming capital investment. Add all necessary capital investments to the purchase price; it's the best guide for determining your return.

(2) *Degree of Saturation* — How much of the market has the system reached? Analyze the signal reception to see what the potential market really is; then compare to current saturation. This 'indicator of coverage' reveals how much additional subscriber activity can be sought. A system ten years old may have done no promoting after its initial campaign. Buyers who are well oriented to publicity, advertising and promotion can find exceptional value in such virtually untapped systems.

(3) *Market Potential* — Determine market growth by rate and size. $400 per subscriber can be reasonable in a market which will expand population by 20 percent in the next ten years, while $250 can be too high in a static market. Such estimates can be implemented by U.S. Bureau of Census information, local Chamber of Commerce and several statistical forecasting techniques. Major retail chains take a similar approach, locating in currently under-developed areas with promising futures, even operating at a loss for some period of time.

(4) *Cash Flow* — A system selling at a cost per subscriber of $175 but whose total sales price is nine times cash flow would not be as attractive as one selling at $250 with a sale price of five times its cash flow. When CATV first caught investor interest, 3 to 5 times cash flow was considered a good guide to purchase price. Speculative interest has somewhat declined, current purchasers tending to want to secure a permanent place in the CATV industry. Payout periods have thus lengthened to the point where sales prices hover around 6 to 7 times cash flow. How much further the sales price can safely be stretched as a multiple of cash flow is questionable, since the industry is still in the formative stage and faces obstacles which could alter its profit picture.

These four items are chief factors in evaluating the sales price, but there are other considerations such as: how the pending purchase fits into the company's marketing and financial goals. This internal alignment can outweigh factors that relate directly to the CATV system alone.

No one factor will provide the total answer, no magic indicator can tell a prospective buyer whether he's paying a fair price. CATV is a legitimate business offering a service. Systems must be evaluated by the normal factors which affect all service businesses. □

We Pay for Tech Tips

Short (or long) technical articles on any aspect of CATV maintenance, construction or equipment modification . . . can be worth extra dollars to you. Submit typed, double-spaced material to:

Bob Searle, Managing Ed.
TV & COMMUNICATIONS
P.O. Box 63992
Oklahoma City, Oklahoma

CATV IN CANADA

By Kenneth J. Easton
Secretary, NCATA of Canada

Community Antenna television made its North American debut in the United States in 1949. It was not long after the first television broadcasting stations went on the air that it became very obvious that the original FCC channel allocation plan of 1948, which was based on an assumption that television signals could not be received at distances of more than about 35 miles, proved to be totally inadequate. A freeze on the licensing of any new stations was therefore imposed while the problem was studied, and this lasted for some two years until the FCC introduced a new and more realistic allocation plan in 1952. This freeze left large areas of the United States without any television coverage, and since inevitably the first stations were built to cover the larger cities, it was the smaller communities remote, in a television sense, from these cities which were left without any television service and with no certainty as to when they might get any.

Thus it came about that in the United States CATV started, and received its first big impetus, during the transmitter freeze, as a means of bringing television to the smaller communities shadowed by mountains or too far from the big city stations to receive television by means of domestic antennas.

In Canada, television broadcasting started in 1952, and by the time the first station was on the air in Montreal, the largest city in Canada, a cable system had already been built in that city covering an area of 60,000 homes, and had been distributing closed-circuit programming until off-air programs were available!

This illustrates the first major difference between CATV in Canada and CATV in the United States. Whilst CATV in the United States was basically a small-town entrepreneural business in its earlier formative years, in Canada big city CATV with substantial capital investments involved has been a feature of the industry since the early days as the following examples will show:

City	Population	CATV Started
Montreal, Quebec	2,300,000	1952
Shawinigan, Quebec	47,000	1953
Sherbrooke, Quebec	72,000	1954
Three Rivers, Quebec	55,000	1955
London, Ontario	180,000	1952
Hamilton, Ontario	290,000	1955
Peterborough, Ontario	54,000	1956
Kitchener-Waterloo, Ontario	110,000	1961
Port Arthur-Fort Williams Ontario	95,000	1959
Vancouver, B.C.	800,000	1954
Victoria, B.C.	150,000	1961
Guelph, Ontario	44,000	1953

Why this difference in the development of CATV between the two countries? To find the answer to this question we have to look at the differences in the basic broadcasting systems and policies. In any national television broadcasting system the program production demands and the economics of television make it virtually essential that there will be a considerable degree of program sharing between stations serving different areas of the country. This leads to networking or cooperative linking of stations, so that programs can reach a much larger audience than that available to any one station and thus reduce the cost per viewer. In the United States this networking has been on a strictly competitive, free-enterprise basis with several networks each striving to reach the largest audiences with programs of greatest popular appeal. Inevitably therefore as a network-owned or affiliated station is built in a large city, other stations affiliated with competing networks are built in the same city, so that very quickly these populous areas are provided with a choice of program fare. By the same laws of competitive economics the less populous areas are not given the benefit of multiple services at least until the networks are starting to scrape the bottom of the barrel in the comparitive striving to increase their potential viewing audiences.

This is another major reason for the rapid development of CATV in the smaller communities in the United States, since CATV is able to bring the multiple-program fare provided in the big cities to these smaller communities and thus give them the facilities otherwise denied.

In Canada the competitive development of television broadcasting has been much more closely controlled by the Federal government and the natural forces of free enterprise have not been allowed free reign. When television broadcasting commenced, responsibility for its initial development was given to the Canadian Broadcasting Corporation, a government corporation responsible to Parliament. Although the

ABOUT THE AUTHOR

It is probably safe to say that Ken Easton has been in the CATV business as long as anyone else in the world. He joined Rediffusion in London, England in 1947, and shortly after designed and installed the first cable television relay system. From this sytem has evolved what is now a very large and flourishing CATV industry in England which, although technically different from that in North America, serves the same purpose. In 1953 Ken transferred to Canada to become Chief Engineer of the first big CATV system in Canada built by Rediffusion in Montreal.

In 1960 he joined Famous Players Canadian Corporation Ltd. in Toronto as Executive Engineer to take charge of the experimental Telemeter pay-TV system. In May 1963 he was appointed Vice President, Communications Operations of Famous Players and in this position is now responsible for interests in CATV systems serving nearly one third of all the subscribers in Canada.

Ken Easton helped found and organize the NCATA of Canada in 1957 and has been very active in all the Association's work as Secretary.

CBC obtains revenue from commercial advertising this only meets part of its operating costs, and the balance of these costs and its entire capital expenditure is subsidised from the Federal treasury. In order to develop a television service across Canada as rapidly as possible the CBC was authorized to build stations in the major cities and to create a program network. Private broadcasters were licensed to build stations in other areas but were required to affiliate with the CBC network and carry a substantial amount of the network programming. No competitive stations were allowed during this build up period from 1953 to 1960, so that by the end of this period some 95% of the population had a single Canadian television service. In 1960 the government decided that since this first aim had been achieved, a second competing service could be introduced in order to provide a program choice and second choice stations were licensed in the larger centres to private broadcasters linked together by a second network also privately owned and operated.

This plan for the orderly development of broadcasting in Canada was very rational, giving priority to the availability of a television service to as many Canadians as possible before making a choice of programs available as a second priority. Unfortunately it did not take into account two basic facts of life in Canada. (1). It is basic human nature in Canada, as anywhere else, that once the novelty of television has worn off, the man who has only one program available wants a second, and the man with two wants a choice of three, etc.; and (2). The population of Canada is strung along the international border, and more than 50% of Canadian homes are more or less within reception distance of television stations in the U.S. border states.

It was inevitable, therefore, that the government-imposed limit of one station per market and one national network during this initial seven year period should have created a strong urge to obtain a wider choice of programs by looking to U.S. stations, and this urge was just as strong in the big cities as it was in the smaller towns. Hence the fact that all the roof-top antennas in cities like Toronto, Oshawa, Hamilton, and Vancouver are pointing, not at the local stations, but across the border. And where reception of these U.S. stations is inadequate or requires fairly big antennas, CATV has developed to improve the quality of reception.

This explains why for some years now CATV has been serving larger cities in Canada as well as the smaller communities. Until early 1961 these cities had only one local station each. Since then, generally speaking, they have had not more than two. So CATV has been able to satisfy the public demand for a wider program choice than that provided by the available Canadian broadcasting stations.

Another factor has contributed to this demand for a wider program choice. In 1958 the Board of Broadcast Governors was established as the Federal authority for regulation of all broadcasting in Canada—roughly equivalent to the F.C.C. in the United States. Part of the mandate given to the BBG by the government was to encourage a distinctive Canadian culture in television broadcasting, and the board chose to do this by making it a condition of every television license that at least 55% of the program schedule had to be "Canadian in content and character." This legislation of culture by quantity rather than quality has inevitably resulted in some degradation of program quality, at least in terms of popular appeal. At the same time the limitation on foreign program content has resulted in many popular U.S. network programs which might have been aired by Canadian stations not being available through these outlets. This has only served to encourage public interest in reception of available U.S. stations.

For these reasons CATV has developed in Canada even more rapidly than in the United States. There is now a total of some 300 systems serving 310,000 subscribers. This repre-

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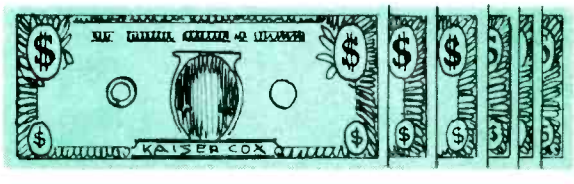

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sents 6½% of all television homes in the country, compared with approximately 3% of the television homes connected to CATV systems in the United States. Canadian operators in common with their colleagues in the U.S. are now faced with threats of tighter government regulation.

Here again, in the political field, the situation is quite different in Canada. Every broadcast receiving station operated for gain requires a license from the Federal Department of Transport, and since the head-end feeding a CATV system is a broadcast receiving station operated for gain, the system as such is subject to licensing. By the terms of the Radio Regulations under which these licenses are issued, the Federal authority may authorise the height and location of the tower, the stations which may be received, the channels on which they may be distributed if there are conversations involved, the use of type-approved amplifier and head-end equipment, and certain technical standards governing the quantity and quality of signals delivered to subscriber's receivers.

As in the United States there have been frequent rumblings from the broadcasters to the effect that CATV systems are a competitive element and can have serious economic impact on local broadcasting stations, particularly in smaller single-station markets. In June 1963 the Board of Broadcast Governors conducted a public enquiry into the effect of CATV on broadcasting. A strong case for CATV was presented by the National Community Antenna Television Association of Canada both in written submissions and in verbal evidence, but there was little proof of economic impact submitted in evidence given by the broadcasters, including the CBC, and the results of the inquiry were quite inconclusive.

Then on December 31, 1963, the Minister of Transport, in whom is vested the licensing authority, announced a "freeze" on all new CATV licenses, with no additions or amendments to existing licenses, while the government considered what further regulation if any should be imposed on CATV systems.

During 1964, while the freeze was in effect, it became known that the government was considering changing the definition of the term "broadcasting" so as to include CATV, thus bringing these systems under the Broadcasting Act and so legally under the jurisdiction of the Board of Broadcast Governors. This proposal was opposed very strenuously by the NCATA which argued that reception is not tranmission, and that in the public interest, each must be considered separate from the other, and that it would be a dangerous concentration of authority to permit the same agency which controls broadcasting also to control that which may be received. It was also argued that it is a basic right of the public to listen to and view stations of their choice, and that any action on the part of any authority to curtail the exercise of this right constitutes censorship.

In July 1964 the Minister announced that the "freeze" would be lifted, but that, whilst the BBG had no jurisdictional authority over CATV systems and could not therefore hold public hearings on license applications as they do for broadcasting licenses, he intended to refer such applications "informally" to the Board for their recommendation as to any possible effect on broadcasting. At the same time he amended the Radio Regulations to limit non-Canadian ownership in CATV to not more than 25% and require all share transfers representing change in ownership interest to be subject to Ministerial approval.

Since then a number of license applications have been denied on the advice of the BBG for one of two reasons, (1) that the CATV system in question would have an economic impact on a local broadcaster, or (2) that the system would inhibit the establishment of a second network service. In no case, to the knowledge of the CATV interests, has any evidence been presented to substantiate these claims, and indeed in several cases the circumstances are such that a strong case could be made for refuting the claims if the evidence could be presented before an agency able and willing to make an impartial judgment.

The BBG is not happy with this arrangement of informal referral and the Minister of Transport would gladly legalise their jurisdiction. But the NCATA is very strongly opposed to this because, as a broadcasting board, they cannot be expected to be entirely impartial when considering receiving licenses. And the Association believes very strongly that transmission and reception should not be regulated by the same agency.

This is still very much the situation today. In May 1964 the government appointed a Committee of Enquiry to investigate the whole field of Canadian broadcasting and make recommendations for possible changes and new legislation. The Committee (known as the Fowler Committee) brought out its report in September 1965, and its recommendations were highly unpopular to both the CBC and the private broadcasters. CATV was specifically excluded from the Committee's terms of reference and for this reason the CATV industry made no submission to the Committee either written or verbal, nor were any submissions invited. In spite of this, the report devoted four far from impartial pages to the subject of CATV, and referred to the "virtually unanimous representations received on the need for regulation."

A committee of the Federal Cabinet is now considering the Fowler report, and with it the question of CATV, and the NCATA has made a submission to this committee. In the meantime the Canadian CATV industry continues to grow, but not perhaps as healthily as it could if it were freed of the exasperating chains of regulatory uncertainty and vacillation which have shackled it for the past two years or more.

There was one bright light kindled in all the regulatory darkness of the last two years. This was a firm win for CATV on the subject of Provincial regulation. In 1962 the Attorney General of the Province of British Columbia ruled that under the B.C. Public Utilities Act, CATV systems were a public utility and should be regulated as such by the Public Utilities Commission. The PUC immediately informed all systems operating in the Province that they would have to apply for a certificate of public convenience and necessity, but the NCATA stepped in and arranged for a moratorium on this requirement for all members of the Association while the ruling was tested in the Supreme Court of B.C. Finally in 1965 a unanimous decision by all five judges of the court upset the Attorney General's ruling and held that CATV was not a public utility and came under the jurisdiction of the Federal government for regulatory purposes. Being a unanimous decision it is likely that this would form a strong precedent for any similar action which might be brought against CATV in any other Province in Canada. □

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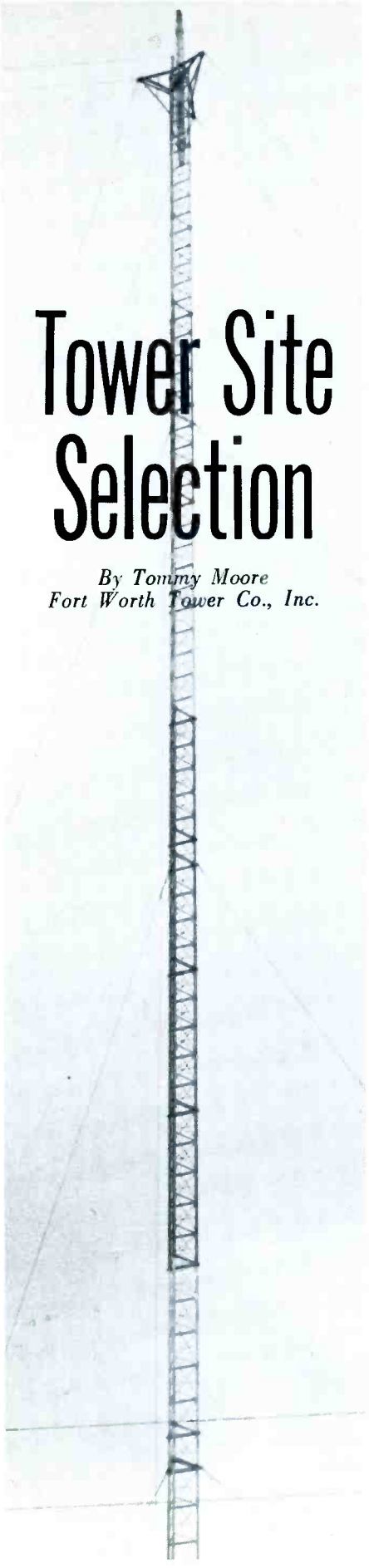

Tower Site Selection

By Tommy Moore
Fort Worth Tower Co., Inc.

The initial objective in the construction of a CATV System is the survey necessary to determine feasibility and potential of the area, receipt of franchise and any required local state and federal permits.

Once these requirements have been met, the system owner is in a position to proceed with necessary material procurement and construction scheduling. Although the value of the antenna support tower may represent only a small percentage of the total system cost, it is the "hub" of the entire system and for obvious reasons, extreme care and evaluation must be given to the ultimate selection of the proposed tower site.

When the owner has selected a town or city for the planned system and obtained a franchise authorizing construction, a complete survey of the surrounding area should be made to determine the most desirable location for the tower. Initially the greater portion of the information can be obtained through topographic maps, which are available from the United States Geological Survey Department, and which will indicate items such as earth curvatures, land elevations and other data which will largely govern the most desirable site location as well as determining the height tower required for the system.

When the operator has selected a tentative tower site, numerous conditions enter the picture which will determine the feasibility of the location. Several of these conditions, together with comments, are set forth in the following paragraphs to assist in making final selection of the tower site.

Sufficient Area

When a tower height has been determined and a site selected, it is necessary to determine if sufficient area is available to accommodate the guying arrangements of the proposed tower. Standard triangular guyed towers are usually guyed in three directions with the guys spaced 120 degrees apart, and with the outermost anchor located at a distance from the base equal to approximately 80% of the tower height. For ease in determining the required space, it is suggested that the most desirable area be a square plot of ground with side dimensions representing the tower height multiplied by 130%. It is not intended that this formula be considered as the final determination, for a tower of a given height can often be installed in an area of varying dimensions and sizes. However, when such a condition exists, it is advisable to furnish the tower manufacturer with the area dimensions and the tower height to allow their engineering dimensions to plot the area and lay out the tower anchors in a pattern that will allow the tower to meet the design requirements of the system specifications.

Soils & Surroundings

Prior to actual acquisition of a selected area, serious consideration should be given to the condition of the soil as well as existing obstructions. Soil having a bearing of 4000# PSF is considered "normal" and is most desirable from a construction and economical standpoint. Should an anlysis of the area reveal abnormal conditions such as excessive rock formations, swamp, or high water tables exist, the ultimate cost of the foundations may be prohibitive and a second site, more economical but just as effective, should be given consideration. As second feature of the proposed location, which should be given serious consideration, is that of existing structures, hills or tree formations which would affect the signal path, and which could result in excessive and prohibitive cost of clearing and removal or in the construction of a much taller and more expensive support tower.

Accessibility

Site accessibility is another item of consideration, for, of necessity, the area must be clear and accessible to bring equipment and vehicles in all types of weather in order to accomplish final tower erection and to provide for future inspection and maintenance requirements. However, the cost of construction such as "all weather access" road could actually exceed the value of the selected location and thus necessitate a less desirable but sufficiently effective location.

Availability

Price and availability of the selected site is important and the initial contact with the land owner is necessary to determine if the land is available and the current market value. This market value is important for the cost may not fall within the system cost estimates. (Caution should be exercised in negotiating with the property owner for it is not unusual for the value, regardless of the status of conditions or appraisal value, to suddenly increase when the ultimate use or need becomes known.)

There are, of course, only basic considerations in determining the final tower location, and it is suggested that the owner solicit the services of a consulting engineer, attorney and the tower supplier in finalizing the most desirable and economical tower location. □

ACCOUNTING PROCEDURES FOR FIXED ASSETS

By James F. Cavanaugh

(The purpose of this article is to foster within the industry a discussion and an exchange of information on CATV fixed asset accounting in order to; (1) Improve our collective position in dealing with regulatory and taxing agencies on matters involving fixed asset acounting; and (2) Provide the participants in this exchange of information with examples and ideas on how they might improve management controls through better fixed asset accounting.)

DEFINITION OF FIXED ASSETS

The term fixed assets is used here in its normal context. That is, fixed assets are tangible assets of a permanent nature which will contribute to the earning capacity of a company over a period of years. The cost of these tangible assets will be matched against future income by means of depreciation charges running over the course of several years. The depreciation period selected is based on the estimated useful lives of the fixed assets.

Fixed assets, then, as used in this article is limited to: real property (land and buildings); personal property (machinery, equipment and fixtures); and this does not include intangible assets (franchises, easements, and agreements); or other assets (organization expense).

TYPES OF CATV FIXED ASSETS

Broad categories or types of fixed assets normally found in a CATV operation are listed below. These categories are fairly distinct both in their physical characteristics and their estimated useful life.

The categories listed below were not developed as the result of any industry wide survey or census but rather represent the writers' understanding of the fixed asset grouping techniques generally used in the industry.

A further basic assumption has been made throughout this article that the vast majority of CATV fixed assets are accounted for on a composite basis, as opposed to an identified item basis. That is, the vast majority of the individual assets are grouped by category, depreciated by category, sold or retired by category and, to the extent possible, physically controlled by category.

CATV Fixed Asset Categories

(1) Plant (includes: head end; tower, electronic gear distribution system; cable, electronic gear, pole taps; cable and tap off material)
(2) Test Equipment
(3) Automotive Equipment
(4) Leasehold Improvements
(5) Office Equipment
(6) Buildings
(7) Land

The Plant category comprises approximately 90 to 95 percent of the dollar value of most CATV companies. Moreover, the physical characteristics of the Plant pose accounting and contol problems not associated with the other less unique and specialized types of CATV fixed assets. These problems arise because many of the indiviudal assets classified as Plant lose their identity in the absence of elaborate and costly records. Historically such records have not been maintained in the CATV industry and furthermore there is no reason to expect such records will be developed in the near future.

The remainder of this article will deal exclusively with the Plant category of fixed assets because of its dollar value importance and special accounting and control problems.

LIFE CYCLE OF A TYPICAL CATV PLANT

In order to touch upon most of the accounting considerations of a CATV Plant and so that this might be done in a fairly orderly and logical manner, a typical CATV Plant will be followed through its life cycle of: (1) Construction, (2) Additions and expansion, (3) Normal operations, and (4) Major rebuild and replacement.

Construction

Construction of a CATV Plant can be handled in one of two ways. The construction can be undertaken and managed by the franchise holder himself possibly with the help of subcontractors or the construction can be handed over to an outside concern under a turnkey contract.

Briefly, under a trunkey contract the initial fixed asset accounting is performed by the the outside concern as part of the turnkey contract. The degree of detail on the original cost of construction will vary depending upon the turnkey company engaged and the wishes of the owner.

When the construction is undertaken by the owner, possibly with the help of equipment vendor layouts and outside construction crews, the construction costs should be accurately accounted for in order to provide overall day-to-day control of the physical progress and the cost of the work and in order to provide meaningful Plant book-values which will withstand future audits.

The following items are costs of construction: planning, engineering and layout; pole clearance; contract labor; special insurance that may be required during the construction; material including freight and a reasonable number of spare parts; payroll and direct payroll expenses; and overhead expenses directly associated with the construction.

If the construction is being done by an owner who has other operating systems, decisions on the allocation of certain common overhead costs will arise. A portion of these common costs, like the direct construction costs listed above, are part of the Plant cost. Understandably, the overall corporate tax situation will be a factor in reaching such decisions. However, material and unsupportable allocation or lack of allocations stand a good chance of being redone later for tax purposes.

What type of detail records will be available in support of the general ledger account, "Millville Plant — $400,000" once the construction is completed? The following will probably be the case.

There will be compiled some sort of cost summary breaking the total cost down among the main categories of direct construction costs. There will be

ABOUT THE AUTHOR

James F. Cavanaugh is Vice President and Controller of Television Communications Corporation of New York City. He also serves as a member of the NCTA Budget and Audit Committee. A graduate of the University of Pennsylvania, he was employed until 1961 with Price-Waterhouse & Co. in that firm's New York office.

additional detail for material. The sub detail of material might include feet of cable and strand by size and type; and listings by vendor of antennas, electronic gear, pole line hardware, connectors and tap off material.

This detail of original cost will most probably not be set up in a fixed asset ledger and updated over the years for additions, replacements and retirements. Furthermore, most probably there will be no accounting breakdown of the Plant by physical location (i.e., street, section of town, etc.) because to develop such a breakdown and then to maintain it over the years would be too costly.

Additions and Expansion

The additions and expansion referred to here is the opening up of a new section of town as opposed to the gradual extensions of distribution runs and the continuous installation of new house drops. The latter two types of gradual system additions and expansion will be discussed under "Normal Operations."

The accumulation of construction costs during the period prior to the system's official opening is a relatively simple matter. The cost of construction will include all or almost all of the material, labor and direct overhead expended during this period. Once a system is put into operation, the accumulation of construction cost for additions and expansions becomes a somewhat more difficult job. This difficulty arises because material, labor and direct overhead must be separated between construction and system operating expense. What should be done to insure that expansion is properly accounted for and that current operating costs are not distorted?

To meet this problem, large statewide utilities have, partly because of PUC requirements, adopted elaborate and expensive cost accounting techniques. Their procedures include detailed inventory records and material charge out procedures as well as detailed payroll breakdowns and overhead allocation. All of this is usually handled by a centralized computer installation. Obviously a CATV system of 2500 subscribers should not and can not attempt to adopt such elaborate and detailed procedures. However, the obvious differences between a CATV system and a public utility cannot be used as an excuse for making no attempt towards proper accounting.

Some of the accounting techniques necessary for a proper breakdown of expenditures as between capital and expenses are within the capabilities of most system operators. For example: (1) A time sheet for each man, covering the entire pay period and which provides a breakdown of total hours by type of work performed, can serve as the basis of pricing out of the payroll and charging it to the proper accounts. Such a system is preferable to adopting guide lines such as; always charging the payroll for one or two specific employees entirely to capital accounts or initially charging all payroll to operating expense and then backing out a portion of this cost based on estimates of feet of system extension and/or the number of new house drops installed. The benefits of time reports, and payroll distributions broken down by type of work actually performed are: *First*, it can be done quickly and inexpensively (time worked can be rounded to not less than half hours and the total system payroll for the period can be distributed based on total hours for all employees). *Second*, this system is easier to justify under audit than rule of thumb or guide-line allocations of payroll cost. Doing it the right way initially will save the time and expense of proving the reasonableness of rules of thumb in future years. *Third* the breakdown by type of labor for each man will provide, as a bi-product, better management controls over the payroll which is single largest dollar expenditure of a CATV system.
(2) Materials for the extension should be ordered separately allowing proper account coding from the point of the purchase requisition through to the cast disbursement. Any sizeable useage of material already on hand and not specifically ordered for the extension should be accounted for.
(3) Large expenditures incurred specifically because of the extension, such as contract labor, should of course be charged to Plant.
(4) If material amounts of system overhead, such as a vehicle expense, are diverted to the extension project there should be a reasonable allocation of these costs to Plant.

Historically this industry has tended to "over expense". This was justified initially when the future of the entire cable concept was uncertain and when the size of the cable operations was small. These circumstances have changed over the last ten years. Furthermore the introduction of the investment credit in the early 1960's has or should have caused a change in the basic approach to capital expenditures.

In addition, as the industry comes of age and moves into larger markets, the necessity of sound fixed asset records prepared in accordance with generally accepted accounting principles becomes increasingly important. This is true for at least two reasons. In the

future our rates and rate increases will be questioned more and more from the basis of invested capital, similar to the approach taken toward public utility rates. Also in the future, our tax returns will be questioned with greater frequency and in more depth.

Normal Operations

Even in the absence of large scale system expansions, additions to Plant regularly take place. Distribution and feeder runs are extended a block at a time, new house drops are continuously installed, and additions are made to the head-end. Usually these additions are done entirely with your own labor and concurrently with normal system repair and maintenance.

Briefly, technique that might be taken to insure correct account classification as between capital and expense include: time sheets for each man, which cover the entire payroll period and which provide an analysis of total hours by type of work performed (construction, tap off repair and maintenance); and purchase requisitions coded as to capital or expense at time of issue will provide the necessary account distribution at time of payment.

Other accounting considerations faced in the course of normal operations are:

(1) What constitutes capitalizable "tap off time? i.e., should time spent reconnecting existing taps be coded as "tap off" and capitalized?
(2) How should the cost of time and material used to repair storm damage be distributed?
(3) Should time and material spent in making pole change-over's required by the utility company be capitalized?
(4) How should stock items physically put into inventory be accounted for?

It is important that each operator recognize these and other Plant accounting grey areas, arrive at supportable procedures to handle these questions, and then consistently follow his adopted procedures.

Major Rebuild and Replacement

If a seven year old low-band system being depreciated over ten years is high-banded, with the result that a substantial part of the original Plant is replaced, what accounting should be made? Most will agree that a portion of the original Plant cost and a proportionate share of the accumulated depreciation should be relieved from the accounts. The problem is how to arrive at the dollar values to be relieved.

MANAGEMENT CONTROLS

The need for consistent and meaningful fixed asset accounting goes beyond the self defense aspect. As this industry grows up and becomes more

competitive it becomes increasingly important for each of us to know the business facts. Major construction programs must be cost controlled to avoid immediate over runs and, more importantly, to prevent a repeat of budgeting, financing and operating errors. The current operations of a system which is undergoing a major expansion program should not be unfairly penalized to the point that unwise interpretations and business decisions are made. It would pay to know, for example, that in city A an expenditure of $400,000 in additions and expansions over the last few years resulted in only x number of additional subscribers. This and similar information, so necessary to intelligent business decisions, will not be available in a hit or miss accounting setup where operating and capital expenditures are cooked down into one undecipherable lump.

In summary improvements in CATV fixed asset accounting will lead to a more efficient business operation and will at the same time help to provide the answers to the legitimate questions of various govermental agencies.

Turning once again to a public utility for an idea as to how other industries meet this problem, we find in this case a term called "retirement units." Because an interconnected and continuous string of cable, strand, and electronic gear tends to lose its physical identity, standard units of measurement called retirement units are adopted. Without getting into the volumes of retirement units as set up by a typical public utility, it is possible for us to estimate the average cost per 1000 yards of Plant replaced and relieve the accounts on this basis. The average cost applied to the replaced footage will vary depending upon what type of rebuild is undertaken (new strand, delash-relash, or overlash).

In summary, the fixed asset accounting problems of the CATV industry arise because the largest category of our fixed asset Plant is a complicated animal and because the relative small size of operating CATV companies, means economic limitations which preclude a textbook accounting approach to the problem. While this set of circumstances will occasionally be recognized by outside agencies as justifiable reason for loose and inconsistent fixed asset accounting, we can not hope to use this excuse indefinitely. We can, even with our limitations, make progress with our fixed assets accounting problems. We can, as a group, discuss our common problems and arrive at a consistent approach to them. This will reduce the possibility of our methods being played one against the other in the future. □

CABLE SYSTEM SAFETY

by Jack Pruzan, The Pruzan Company

Ladders

Two serious causes of CATV accidents are the use of improper ladders and the improper use of ladders.

Ladders for CATV work should not be aluminum or magnesium type, because these metals are conductors and add to shock risk. Aluminum rungs may be used safely with wooden or fiberglass rails. And they should not be the light household or builder varieties. Both the safety of employees and the efficient length of ladder life requires the stronger industrial grade construction.

Two basic kinds of ladders are needed for all CATV work. One is a long extension ladder for working on cable, and the other is a shorter extension or step ladder for use at amplifiers and house drops. The number of ladders required will vary with the size of operation, but minimum equipment should include a 28' extension and a 12' to 16' shorter ladder.

Extension ladders can be any size over 20', with 24', 28' and 32' being the most common. They should also be equipped with feet that allow the ladder to swing. Such feet provide much higher safety than the simple rubber shoe type. Extensions should include a rope hoist, and cable hooks for use against the messenger strand.

Wooden ladders should be the fully rodded heavy-duty type. These should not be painted, but should be penta treated with a material such as Woodlife.

Fiberglass ladders cost about twice as much as wood, but they give much longer life. Being a total nonconductor, they provide complete protection against electric shock. Some types of fiber glass ladders are considerably lighter than wood.

If the ladder is used against a pole, a pole grip will add strength and safety. This puts the strain on the strong canvas strap rather than the top ladder rung. Ladder supports are used to hang ladders from the strand so that workmen will not have to work at the very top of the ladder. Ladder stands make stable working steps. For hilly areas, a ladder leveler makes one leg longer than the other to fit the terrain and provide added safety.

Most stepladders and installer's ladders are wood rather than fiber glass, and have here again the use of an industrial grade ladder is important both for the safety of the employee and the life of the ladder. □

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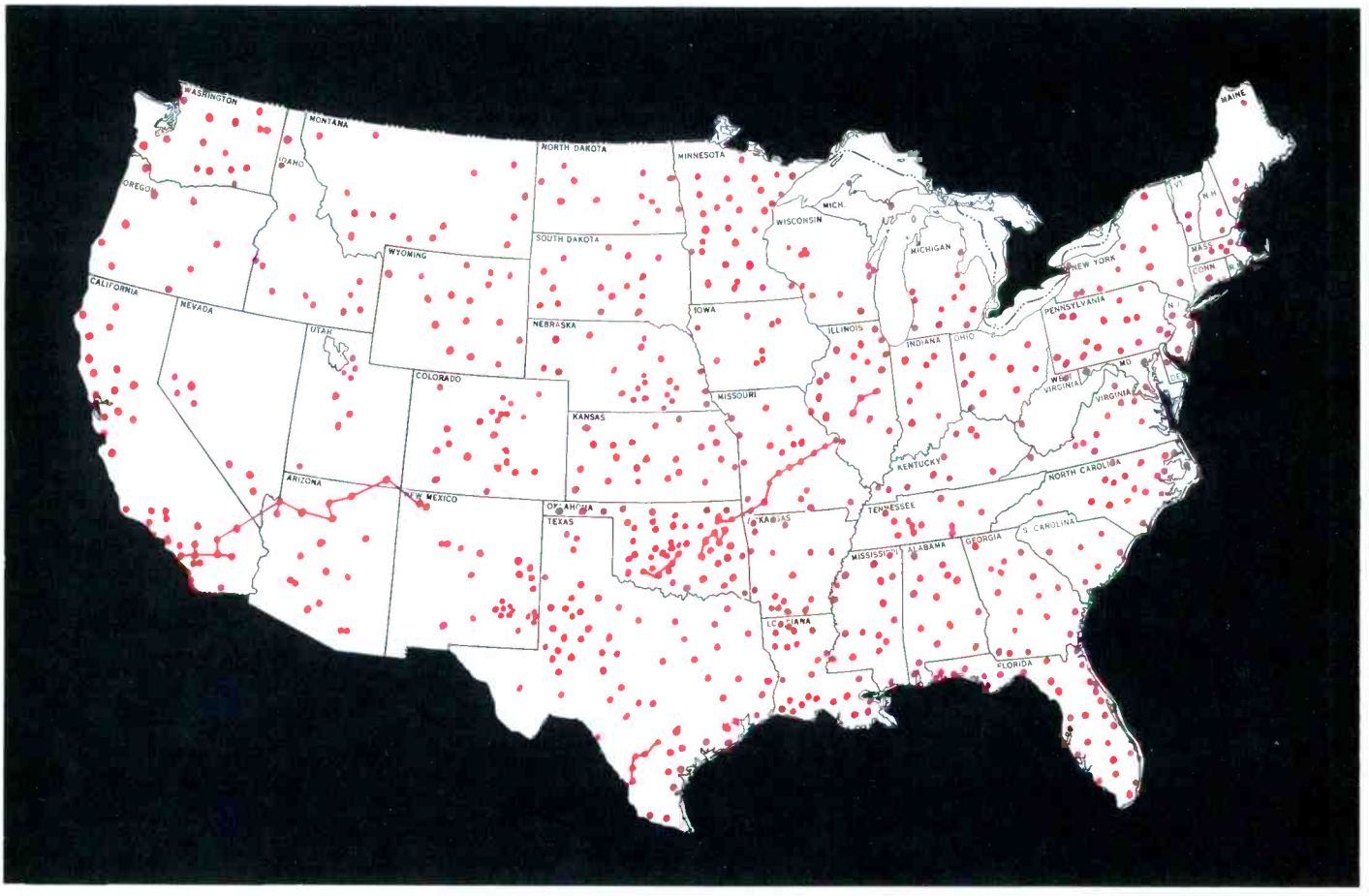
CATV TECHNICIAN

Photo courtesy of Channell Splicing Machine Co.

- Impedance of TV Receivers
- S/N and Noise Figure
- Wind Loading and Tower Height
- New CATV Products



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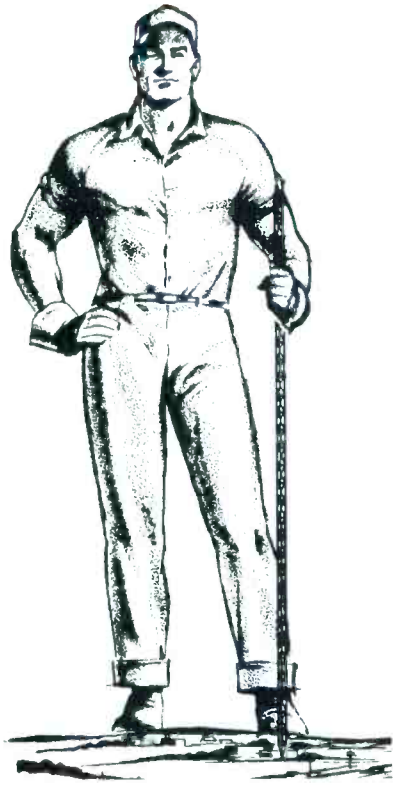

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Impedance of Television Receivers

By I. Switzer

CATV system technicians often overlook the characteristics of the subscriber's television receiver as part of the complete CATV system. Receiver input impedance is an important characteristic which affects the performance of the CATV system.

Television receivers are normally considered to have an input impedance of 300 ohms. Ordinary receivers do indeed present a nominal 300 ohm impedance to the transmission line feeding them, but only on the channel to which they are tuned. They present a bad mismatch at other frequencies and are an important source of troublesome reflections in the CATV system.

The matching transformers commonly used to connect the 75 ohm subscriber drop cables to the 300 ohm input terminals of the receiver provide an effective match between the drop cable and the nominal 300 ohm receiver impedance and provide efficient transfer of energy from line to receiver on the channel to which the receiver is tuned. At other frequencies the set acts as a mismatch reflecting energy back into the drop cable.

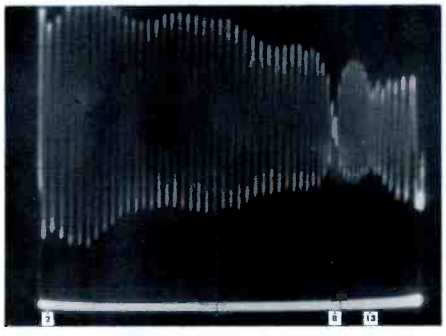


Figure 1. Broad band display of input impedance of television receiver.

Figure 1 illustrates this characteristic in a typical television receiver. The photograph was taken from display of VSWR using a piece of RG59/U cable as a delay line in place of the termination on the detector. The end of the delay line was connected to an ordinary matching transformer and television receiver. The receiver was tuned to channel 8 and shows a fairly good match at this channel but a very bad match at all other frequencies. Quality of match may be estimated from relative heights of maxima and minima in the display. For purposes of comparison Figure 2 shows display with matching transformer terminated with 300 ohm resistor and Figure 3 shows display with unterminated matching transformer. Residual mismatch in Figure 2 is due to inaccuracy in the match provided by the particular matching transformer used and the ordinary resistor used to provide termination.

Results are similar when the set is tuned to other channels. The set presents a good match only on the channel to which it is tuned.

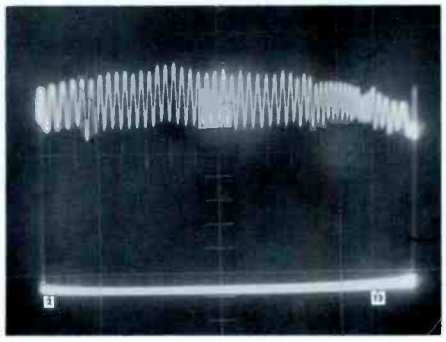


Figure 2. Broad band display of same test setup, matching transformer terminated with 300 ohm resister.

Since the CATV system must be designed to operate on all channels simultaneously, the subscriber's television receiver must be considered as a 100% mismatch on the end of the drop line and the system must be protected against the resultant reflections. Reflections originating at the subscriber's set can affect other receivers in the same household which are connected to the same drop line and can also get back into the distribution cable to affect other subscribers. If there is a mismatch at the output of the subscriber tap device, the reflected energy can be re-reflected and come back on the drop line to appear as a ghost on other sets on the same line. In this way, other sets on the same line can be affected by reflections coming direct from the reflecting set and passing through the multi-coupling device and by reflections which are re-reflected at the tap device.

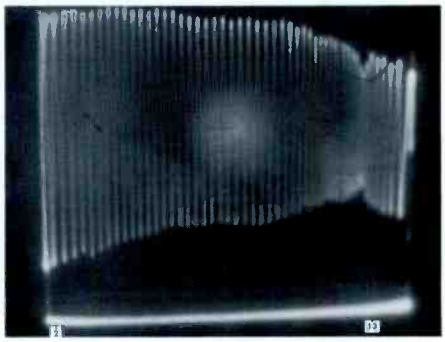


Figure 3. Broad band display of same test setup, matching transformer unterminated.

The distribution system must be protected from the subscriber's receiver by providing adequate isolation. Isolation can be provided by the attentuation of the drop line, isolation of the tap device, and back matching of tap and multi-coupler devices. Isolation qualities of hybrid type devices are dependent to a great extent on the quality of impedance match at the hybrid ports and this should be considered when considering the effectiveness of such devices. □

S/N and Noise Figure

By Gaylord G. Rogeness
Chief Design Engineer, Ameco, Inc.

The purpose of this article is to clarify the meaning of the terms signal-to-noise ratio and noise figure as applied to CATV cable systems. In so doing, a relationship between individual repeater amplifier noise figure and cascade signal-to-noise ratio degradation is derived. A comparison of two basic repeater amplifier designs is also made on the basis of signal-to-noise ratio (S/N) degradation at the cascade output.

Random noise voltages which are generated in repeater amplifiers produce "snow" in the background of television pictures if the TV signal is not many times greater than the noise voltage. Hence, one of the important CATV system specifications is the TV signal-to-noise ratio throughout the system. Noise figure is a measure of the S/N degradation experienced in going through an amplifier, or cascade of amplifiers. The signal-to-noise ratio is smallest at the output of the last amplifier in a cascade because at this point the noise contribution by all of the preceding amplifiers is present. When the specified minimum S/N ratio is reached, useful cascade length has ended.

Signal-to-noise ratio is signal power divided by noise power:

$$\frac{\text{Signal power}}{\text{Noise power}} = \frac{S}{N}$$

In the case of a TV signal, as long as a minimum S/N ratio exists, an acceptable picture results. Note that it is the signal power compared to the noise power and not the noise level alone which effects the final picture. However, if the noise level is made small, then the signal level can be reduced. Reducing the signal level out of a CATV repeater amplifier also reduces the cross-modulation components, so that something is to be gained by operating at the lowest possible noise level. Noise figure is a measure of the "noisiness" of a system. It is a direct measure of the S/N degradation in passing through a system.

The following relation:

$$\frac{S_o}{N_o}\ (\text{output}) = \left[\frac{1}{F}\right]\left[\frac{S_i}{N_i}\right]\ (\text{input})$$

is a definition of noise figure[1]. This equation may be rewritten in terms of decibels (db) as

(1)

$$\frac{S_o}{N_o} = \frac{S_i}{N_i} - F$$

As an example, if the input S/N is 50 db and the noise figure is 10 db, the output S/N is 40 db.

The noise figure of a cascade is determined by three factors; the cascade length (or number of amplifiers), the individual amplifier noise figure, and the noise level out of the head-end equipment. For any given minimum S/N, there exists a given noise power. If this noise power exceeds the thermal noise threshold power of kTB, then the effect of the noise added by each repeater amplifier is lessened. Let us first consider the noise figure of an individual amplifier before calculating this effect. Refer to Figure 1.

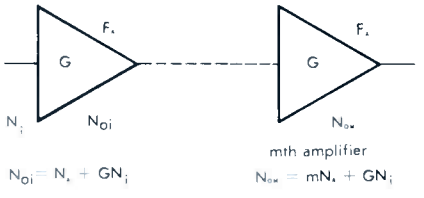


FIGURE 1. Repeater Amplifier Cascade

The noise figure of a single amplifier is

(2)

$$F_a = \frac{N_{OI}}{GN_i}$$

where N_{OI} is the noise power at the amplifier output, G is the gain of the amplifier, and N_i is kTB, the noise power available from the source.

The output noise power is

(3)

$$N_{OI} = \underbrace{N_a}_{\substack{\text{Noise Contributed by Amplifier}}} + \underbrace{GN_i}_{\substack{\text{Amplified input noise}}}$$

Therefore, F can also be written:

(4)

$$F_a = 1 + \frac{N_a}{GN_i} \qquad \text{(Numeric)}$$

Note that in a noiseless system $N^a = 0$ and F = 1 (10 log 1 = 0 db), so that the output S/N is equal to the input S/N.

For the measurement of F_a, The input noise power N_i is normally kTB for the thermal noise power in a specified bandwidth at room temperature. This means that an amplifier with an F = 10 db (F = 10) is generating noise power

(5)

$$N_a = (F_a - 1)\ (GN_i) + 9\ (GN_i)$$

or nine times more noise than the threshold thermal noise at the amplifier output.

Remember that F is the factor by which the output S/N is reduced with respect to the input S/N. Referring to equation (4) note that the amount of noise generated by a given amplifier is N_a. Now if the input noise power N_i is increased above the thermal noise threshold of kTB by a factor H, the noise figure becomes

(6)

$$F = \frac{N_{OI}}{GN_i} = \frac{N_a + GHkTB}{G(HkTB)}$$

where $N_a = (F_a - 1)\ GkTB$

so that

(7)

$$F = \frac{F_a - 1 + H}{H} = 1 + \frac{F_a - 1}{H}$$

Since H is greater than one, the S/N at the output will not be reduced by F_a (the noise figure of the amplifier) but by F which is less than F_a. Therefore, if H is large, which corresponds to a noise level higher than kTB, the output S/N is reduced only a small amount by the noise generated in the amplifier. Equation 7 is plotted in Figure 2 for various values of amplifier noise figure F_a and shows F as a function of H (H is plotted as a voltage ratio). When H = 1 or 0 db, then F_a = F. The signifiance of this result is illustrated by the following numerical example.

Assume an input noise level of —59 dbmv, which is $\sqrt{kTBR}$ for $k = 1.38 \times 10^{-23}$, T = 290°K, R = 75Ω, and $B = 4.2 \times 10^6$ cycles. Then for an amplifier noise figure of 10 db, and input S/N of 50 db, the output S/N is

S/N (output = S/N (input) − 10 db
= 40 db

Note that the total amplifier F_a subtracts from the input S/N to produce a lower S/N at the amplifier output.

Now consider the case of the first amplifier in a CATV system cascade. Assume an amplifier F_a = 10 db, an input S/N = 50 db, and an input signal level of +13 dbmv. This means that the noise level is —37 dbmv. The H factor is then

H = —37 — (—59) = +22

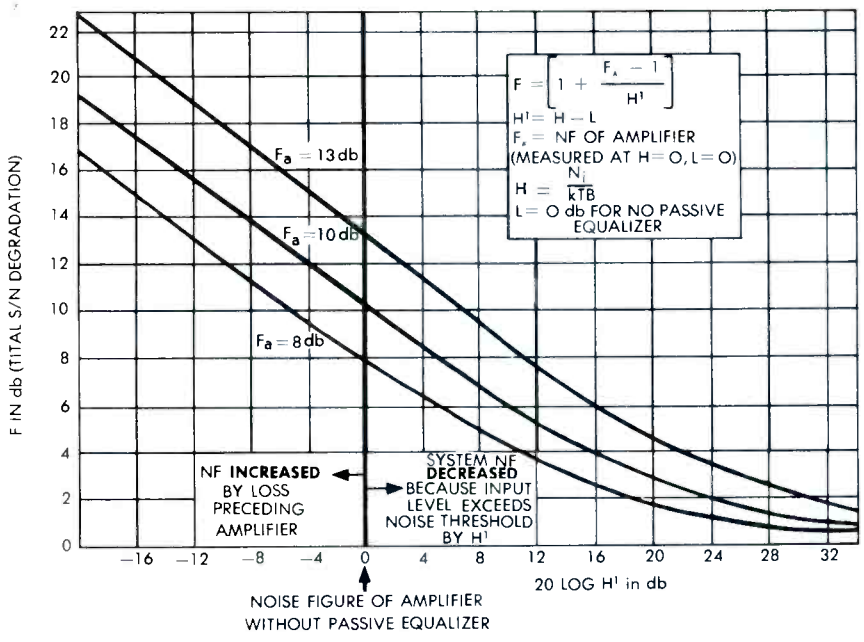
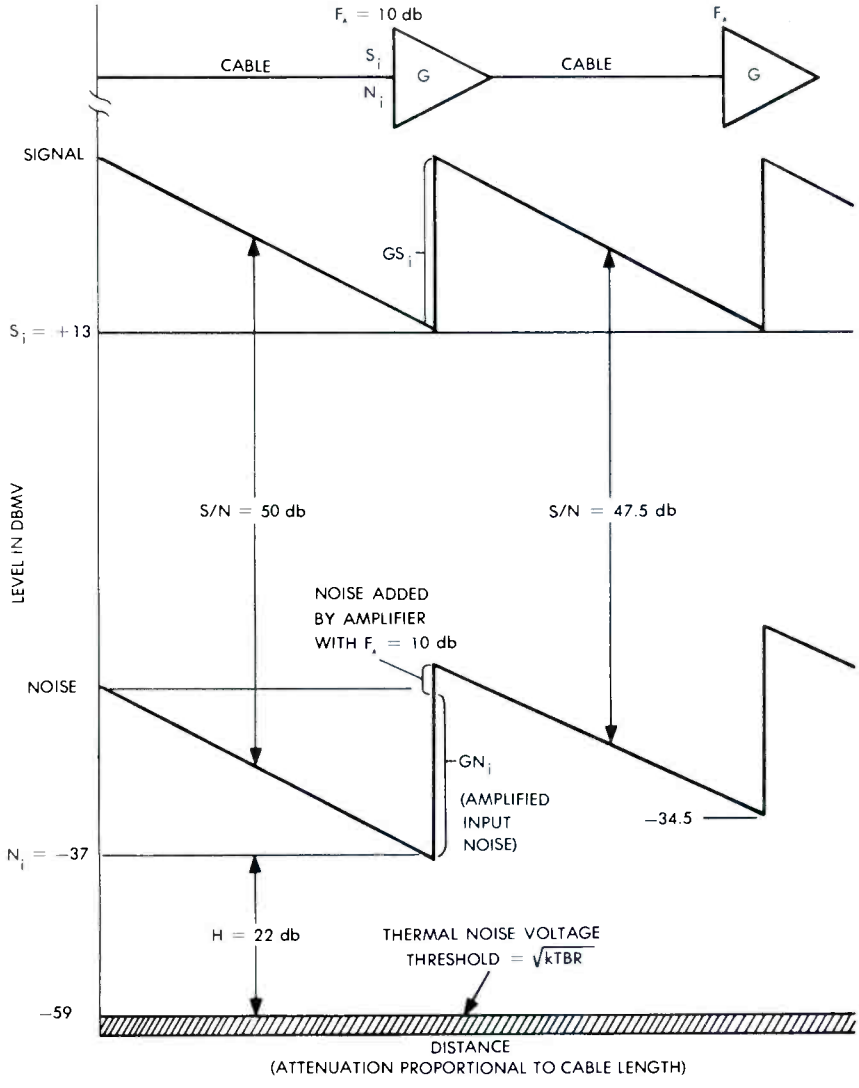


FIGURE 2.



Effect of Noise Power Generated By Repeater Amplifier On System S/N For Example in Text.

FIGURE 3.

The effective noise figure F is determined from Figure 2 for an F_a = 10 db and an H = 22 db and is 2.5 db. The output S/N is now

$$S/N \text{ (output)} = S/N \text{ (input)} - F$$

$$S/N \text{ (output)} = 50 \text{ db} - 2.5 \text{ db} = 47.5 \text{ db}$$

In this case, the output S/N is 47.5 db compared to 40 db for the preceding case.

The results of this example are shown in Figure 3.

Note that because of the higher signal and noise level at the input, noise contributed by the amplifier has less effect in degrading the signal-to-noise ratio at its output. This is the situation which normally exists in most CATV systems. Therefore, the CATV system noise figure is a function of both the individual amplifier noise figure and the signal level at which the system is operated.

MULTI-AMPLIFIER CASCADE NOISE FIGURE

CATV cable systems are usually laid out for equal amplifier spacing, with each amplifier compensating for the loss in the cable preceding it. This is a unity gain system. In a unity gain system, the noise power contributed by each amplifier is equal (assuming equal amplifier noise figures). Therefore, the noise output of the mth amplifier is m times equation (5);

(8)

$$N_{om} = m\,(F_a - 1)\,GkTB$$

The system noise figure, for m amplifiers and input level HkTB is, (from equation 5 and equation 6);

(9)

$$F_m = 1 + \frac{m}{H}(F_a - 1)$$

This equation is plotted in Figure 4 for various values of amplifier noise figure F_a and various cascade lengths m. H is plotted as the ratio of input noise voltage to thermal noise voltage.

Equation (9) can be simplified for $F_a >> 1$ and $(m/H)\,F_a >> 1$ to

(10)

$$F_m = \frac{m}{H} F_a$$

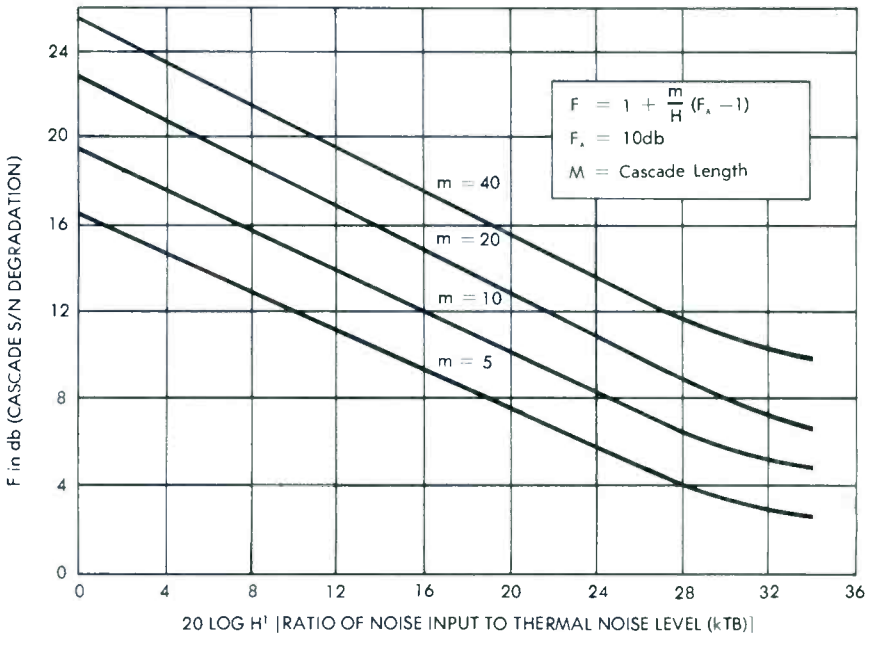


FIGURE 4. System Noise Figure VS Input Noise Level

Writing equation (10) in terms of db,

(11)

$$F_m \text{ (in db)} = 10 \log m + 10 \log F_a - 10 \log H$$

The cascade output signal-to-noise ratio can be written.

(12)

$$\frac{S_o}{N_o} \text{ (in db)} = \frac{S_i}{N_i} - F^m$$

As an example consider the case for F^a + 10 db, m = 10, and an input $\frac{N_i}{S_i}$ = 60 db; for H = 1 and H = 10

For H = 1 (0 db)

(13)

$$F_m = 10 \text{ db} + 10 \text{ db} = 20 \text{ db}$$

$$\frac{S_o}{N_o} = 60 - 20 = 40 \text{ db}$$

For H = 10 (N_i = 37.5 dbmv)

(14)

$$F_m = 10 \text{ db} + 10 \text{ db} - 10 \text{ db} = 10 \text{ db}$$

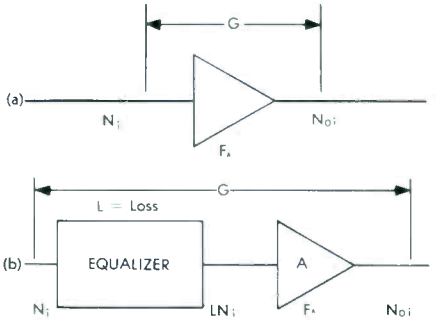
$$S^o/_{N^o} = 60 - 10 = 50 \text{ db}$$

Note that by operating at a higher level (H = 10 db), the cascade output S/N, for equal F_a's is 10 db higher.

COMPARISON OF TWO REPEATER AMPLIFIER DESIGNS

Two repeater design techniques are shown in Figure 5. Figure 5a shows an amplifier with the cable equalization contained in the amplifier itself. Figure 5b shows a passive equalizer with loss L followed by a flat amplifier. The overall gain G is the same for both units shown.

Each repeater amplifier must provide gain which compensates for the loss of the coaxial cable preceding it. The overall amplifier response must provide more gain at high frequencies compared to low frequencies because of the cable characteristics. Basically, this can be accomplished by two techniques shown in Figure 5.



(a) Cable equalization distributed repeater amplifier.
(b) Flat amplifier preceded by passive equalizer.

FIGURE 5.

The repeater amplifier of Figure 5b obtains its desired response by compensating for the cable slope with a passive equalizer as shown in Figure 6a followed by an amplifier with a flat response as in Figure 6b. The combined response is shown in Figure 6c.

The repeater amplifiers obtain the identical response of figure 6c by distributing the required cable equalization throughout the amplifier. This design technique results in a lower repeater amplifier noise figure and hence lower cascade noise figure. The proof of this statement is derived in the following paragraphs.

Equation (9) previously derived is valid for the amplifier with distributed equalization. To obtain an expression

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1. Write in your present trunkline amplifier spacing _____db

2. Write in cost of one trunkline amplifier.....$_____

3. Write in Channel 13 cable attenuation of your present ¾" cable .....db/1000'

4. Multiply Item 2 by Item 3 and divide the result by Item 1. This gives the amplifier cost per 1000' of your present ¾" trunkline cable. Write it here .....$_____

5. Channel 13 attenuation of Rome Unifoam ¾" cable.....8.6 db/1000'

6. Multiply Item 2 by Item 5 and divide the result by Item 1. This gives the amplifier cost per 1000' of Rome Unifoam ¾" cable. Write it here .....$_____

7. Write in the number of feet of trunkline to be installed _____. Now, ÷ this figure by 1,000. Put answer here_____

8. Subtract Item 6 from Item 4 and write answer here $_____

9. Multiply Item 7 by Item 8 and write it here.

It's your prize! $_____

Now collect: just order Rome Unifoam CATV cable and save the amount of money you've just calculated.

Example:

Trunkline amplifier @ $350: 22 db gain
Typical ¾" cable Channel 13 attenuation: 11 db/1000'
Required: 1 amplifier every 2000'
Amplifier cost: $350/2 = $175/1000'

Rome Unifoam Cable Channel 13 attenuation: 8.6 db/1000'
Required: 1 amplifier every 2,550'
Amplifier cost: $350/2.55 = $137/1000'

Savings (prize): $175 – $137 = $38/1000' of trunkline

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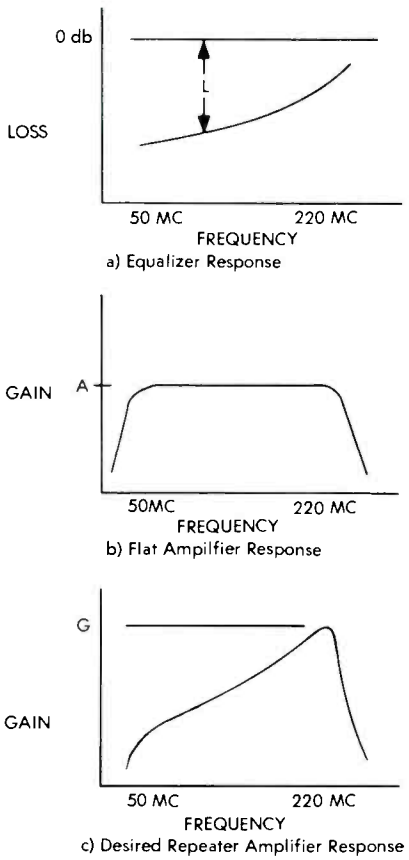


FIGURE 6

for the passive equalizer—flat amplifier, refer to Figure 7. The flat amplifier gain is A, and L is the loss of the passive equalizer. The loss L is a function of frequency, and AL = G.

(15)

$$F' = \frac{N_{01}}{(AL)N_i} = \frac{N_a + (AL)HkTB}{(AL)\ HkTB}$$

(16)

$$N_a = (F_a - 1)\ AkTB$$

(17)

$$F' = 1 + \frac{F_a - 1}{H}\frac{1}{L} = 1 + \frac{F_a - 1}{H'}$$

where H' = HL and F^a is the noise figure of the flat amplifier.

Note that the noise figure is increased by the loss of the equalizer. The curves of Figure 2 can be used to obtain F' by using the value of H' for H on the abscissa.

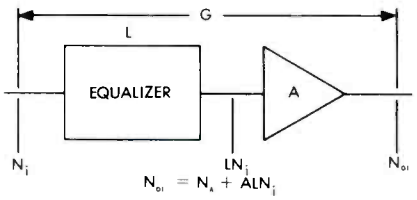


FIGURE 7. Passive Equalizer - Flat Amplifier

It follows directly that the noise figure of an m amplifier cascade of passive equalizer-flat amplifier repeater amplifiers is

(18)

$$F'_m = 1 + \frac{m}{H'}(F_a - 1)$$

A useful approximate relation is obtained for equation 18 when F^a 1, and $\frac{m}{H'}(F_a - 1)$ 1.

(19)

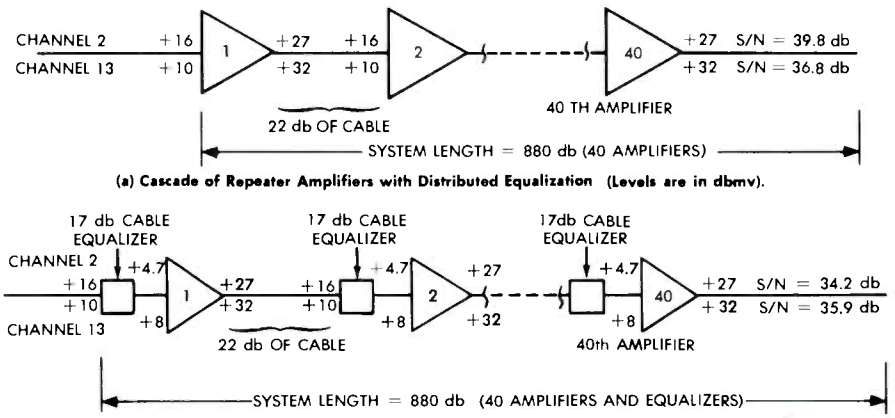
F'_m (in db) = 10 log m + 10 log F_a — 10 log H + 10 log L

This equation should be compared to equation (11), which is the expression for cascade noise figure using amplifiers with distributed equalization. Note that the system noise figure is higher for the passive equalizer-flat amplifier repeater system by the loss of the passive equalizer. Stating this result in another way, for equal system output S/N, the passive equalizer-flat amplifier system can only be 10 (log m — log L) in length. A numerical example should clarify these results. Consider a unity gain system with the following specifications:

Amplifier Spacing 22 db
Input Level to Repeater Amplifier
Channel 2 +16 dbmv
Channel 13 +10 dbmv
S/N at First Repeater Amplifier Input (both channels) * +56 db
Cascade Length (number of ampls.) m = 40

* S/N is the ratio of peak picture carrier voltage to the rms noise voltages in a 6 mc bandwidth. The S/N normally measured in the field reads higher than 56 db since the bandwidth of most available field strength meters is around 0.6 mc. The appropriate correction factor added to the fsm noise voltage reading, for a given signal received at the antenna, could result in an actual S/N of 56 db.

Performance of the two types of repeater amplifiers in the above system is compared. The overload characteristics of the two amplifiers are considered equal. The flat amplifier and amplifier with distributed equalization are assigned 10 db noise figures for both Channel 2 and Channel 13. The passive equalizer compensates for 17 db of cable with the remaining equalization accomplished by a tilt control in the flat amplifier. The passive equalizer is assumed to have 2 db of flat loss. The system levels are shown in Figure 8.



(a) Cascade of Repeater Amplifiers with Distributed Equalization (Levels are in dbmv).

(b) Cascade of Repeater Amplifier Utilizing Passive Equalizer - Amplifier Technique (System Levels Specified in dbmv).

FIGURE 8

Referring to Table I, note that the cascade output S/N for Channel 2 is reduced 5.6 db more by the repeater

TABLE 1 S/N Calculation for 40 Amplifier Cascade

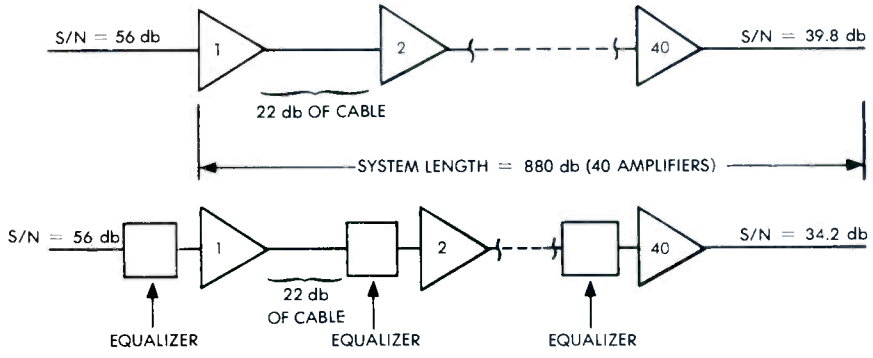
	Passive Equalizer-Flat Amplifier	Repeater with Equalization Distributed Throughout Amplifier
Channel 2		
N^i	—46 dbmv	—46 dbmv
Equalizer Loss (20 log L)	2 db	----------
H' (20 log H')	11 db	13 db
System F (from Fig. 3)	20.1 db	19.2 db
S/N at output of 40th amplifier	35.9 db	36.8 db
Channel 13		
N^i	—40 dbmv	—40 dbmv
Equalizer Loss (20 log L)	11.3 db	----------
H' (20 log H')	7.7 db	19 db
System F (from Fig 3)	21.8 db	16.2 db
S/N at output of 40th amplifier	34.2 db	39.8 db

amplifier with the passive equalizer than the one with distributed equalization. The difference between the two systems at Channel 13 is very slight because the passive equalizer has a loss of only 2 db.

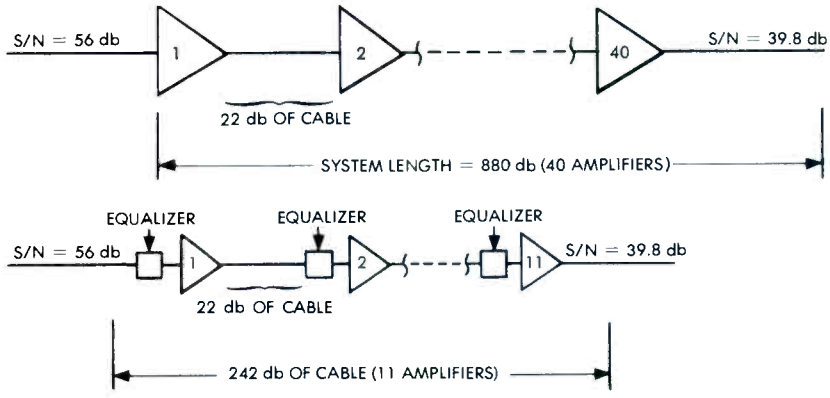
If the passive-equalizer system were to provide an output S/N of 39.8 db at Channel 2, the amplifier cascade could be only 11 amplifiers deep. This result is calculated by the use of equation 18. It can be read approximately from Figure 4 by interpolating between the lines of m = 10 and m = 20 for a system F of 16.9 db and H' — 6.2 db. These results are summarized in Figure 9a and 9b.

repeater utilizing the passive equalizer is due to the loss of the passive equalizer. This means that, for a given cascade output signal-to-noise ratio, the repeater amplifier which distributes the cable equalization on an interstage basis can provide a longer cascade.

Another conclusion, which is implicit in this discussion, is that cascade length is maximized by operating at the highest possible signal levels. System noise figure is directly related to system levels (see Figure 3) and is reduced as the system levels are increased. This means that the random noise added by each amplifier is a smaller percentage of the total noise



(a) Comparison of System S/N at Channel 2 for Equal Length Cable (Equalizer are for 17 db Cable).



(b) Comparison of System Length for Equal Output S/N at Channel 2.

FIGURE 9

CONCLUSION

Expressions have been derived (equations 9 and 18) which relate amplifier noise figure and system noise level to the overall amplifier cascade noise figure. The cascade noise figure is a measure of how much the cascade input S/N is degraded or reduced by a cascade of amplifiers.

Two basic repeater design approaches were compared on the basis of S/N degradation. The passive equalizer-flat amplifier repeater degrades the signal-to-noise ratio more than a repeater amplifier which distributes the cable equalization through its interstages. The additional S/N degradation of the power already present. The maximum level at which an amplifier can operate is limited by its overload characteristic. Hence, the choice of system levels is a compromise between maximizing S/N ratio and minimizing cross modulation products.

Graphs relating system noise level to cascade noise figure for various repeater amplifier noise figures and cascade lengths are shown. The use of these graphs can be applied to specific systems using the methods discussed in the text.

Reference

1. H. T. Friis: "Noise Figure of Radio Receivers", Proc. IRE Vol. 32, No. 7, July, 1944; pp 419-422.
2. Mischa Schwartz: "Information Transmission, Modulation, and Noise", McGraw-Hill, 1959, Chapter 5.

TOWER TOPICS

BY J. BENNETT

WINDLOADING & TOWER HEIGHT

Wind is so highly indeterminate it is impossible to predict exactly what it will do. But by utilizing all of the available information in the design of a tower, a better, safer installation will result.

Wind velocity increases with tower height. Anemometers were installed on a few tall towers and the wind velocity measured at different levels during high wind periods. There was a rapid increase for the first few hundred feet then at approximately 1000 ft. it became more uniform. This is due to the slight viscosity of the air and drag produced by the earth's surface.

If the wind is clocked at 100 MPH at the base of a tower, at 400 ft. it will be in the neighborhood of 140 MPH—a significant increase.

A few city and county building codes specify this type of loading on a tower; most do not. It is therefore left up to the designer to make the necessary adjustments.

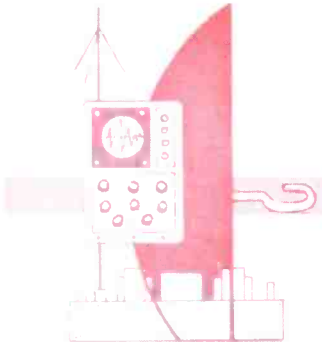
Shown below are suggested design loadings at various heights for different wind velocities. In coastal regions the wind speed increases more rapidly with height, so more consideration should be given to towers in these areas. □

INLAND AREAS

Basic Wind Velocity M.P.H.	85	90	95	100
50'— 150'	100	105	110	120
150'— 400'	115	125	130	140
400'— 700'	130	135	145	150
700'—1000'	140	145	155	160

COASTAL AREAS

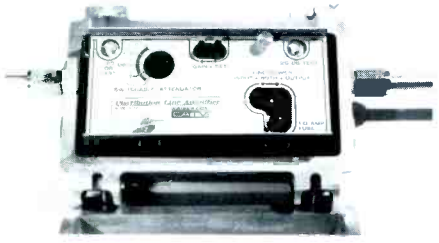
Basic Wind Velocity M.P.H.	85	90	95	100
50'— 150'	110	115	120	125
150'— 400'	140	145	150	155
400'— 600'	170	175	180	185



PRODUCT REVIEW

KAISER-COX LINE EXTENDER

Kaiser-Cox Corporation has announced its new Model KCLE super line extender. The KCLE is designed primarily for extending feeder lines but can be used for a variety of feeder line applications. Its die cast aluminum housing has a built-in clamp for strand mounting. According to the manufacturers, this line extender has up to 20 db gain and 43 dbmv out-put at —57 db cross-modulation for 12-channel operation.



It has lightning and surge protection and variable controls for gain (3 db range) and tilt compensating for 12 to 18 db of cable. It has a switchable pad input attenuator in steps 0, 3, 6, 9 and 12 db, as well as a line power source selection switch. The KCLE requires 18 to 30 volts RMS, 0.45 ampere, maximum and uses two Model KCHA housing-to-cable adapters. For complete specifications, contact **Kaiser-Cox Corporation, P.O. Box 9728, Phoenix, Arizona 85020.**

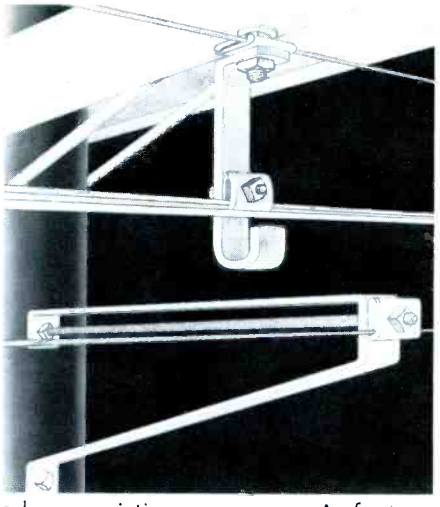
VIKING 59/U CABLE

Viking Industries has made available new Rainbow Series colored jacketed 59/U 75 ohm coaxial cable, available in grey, white or beige jacketing. Rainbow Series promotion is for the purpose of "dressing up" sales appeal for second T.V. set installation. For additional information, contact **Viking Industries, 830 Monroe Street, Hoboken, New Jersey.**

NEW PRUZAN BRACKETS

Two new brackets have been designed by the Pruzan Company. One is a pole clearance extension bracket which provides the 15" pole clearance now required in many areas. This enables operators to use existing poles without adding crossarm. The bracket requires 9" of mounting space.

Also announced was a Figure-8 cross-arm bracket which allows one or more Figure-8 cables to be mounted on existing crossarm. A feature of this bracket is that cable can be rested on it while being strung. Further information can be obtained from the **Pruzan Company, 1963 First Avenue South, Seattle, Washington 98134.**

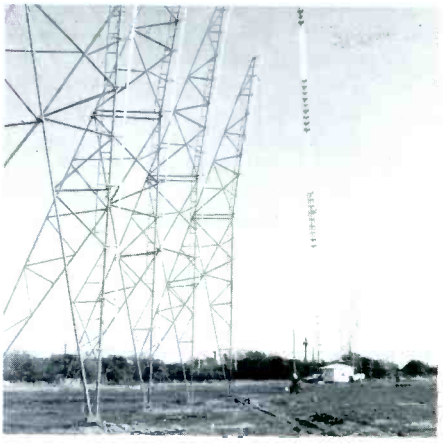


NOVACOR BRIDGING AMPLIFIERS

C-Cor Electronics has announced the Novacor bridgers, first in a series of new amplifiers. NOVACOR bridging amplifiers are modular in design and the electronics chassis unplugs for maintenance. The amplifiers feature a radiation-proof housing and are available in 12 different models. For additional information, write for complete data sheets. Contact **C-COR Electronics, Inc., 60 Decibel Road, State College, Pa. 16801.**

FORT WORTH TROPO-SCATTER

Fort Worth Tower has announced the addition of a new Tropospheric Parabolic Scatter Antenna System to its line. The system is said to offer an efficient and economical answer to long range and trouble free TV signal reception.



Utilizing two separate parabolic antenna arrays located approximately 100 wave lengths apart and interconnected with a highly diversified automatic switching arrangement, this array is said to eliminate fadeouts. For full information, contact **Fort Worth Tower Co., Inc., P.O. Box 8597, Fort Worth, Texas.**

NEW CAS CATALOG

A new CAS Manufacturing Company CATV System Equipment and Accessories catalog is available on request from **CAS, P.O. Box 47066, Dallas, Texas 75207.** The new catalog includes complete operating specifications and descriptions of the CAS product line, in addition to complete price lists.

LADDER AVAILABLE

An electrically safe "Type D" extension ladder has been announced by Gamble Brothers, Inc. Basic construction is rails of spruce reinforced with hickory, and rungs of aluminum alloy. The ladders weigh 45 pounds (24-foot size) and 54 pounds (28-foot size). For additional information, contact **Gamble Brothers, Inc., Louisville, Kentucky.**

RE-ENTRY ENCLOSURE

Sigma Industries has announced a new self-sealing re-entry enclosure for sealing and protecting CATV splitters. The model SSE-40 can be used above and below ground, under water, or flush mounted. Sealing is accomplished with heat-shrinkable legs on cap of unit, and O-ring for seal of chamber. For complete specifications, contact **Sigma Industries, Inc., 1115 O'brian Drive, Menlo Park, California.** □

CLASSIFIED SECTION

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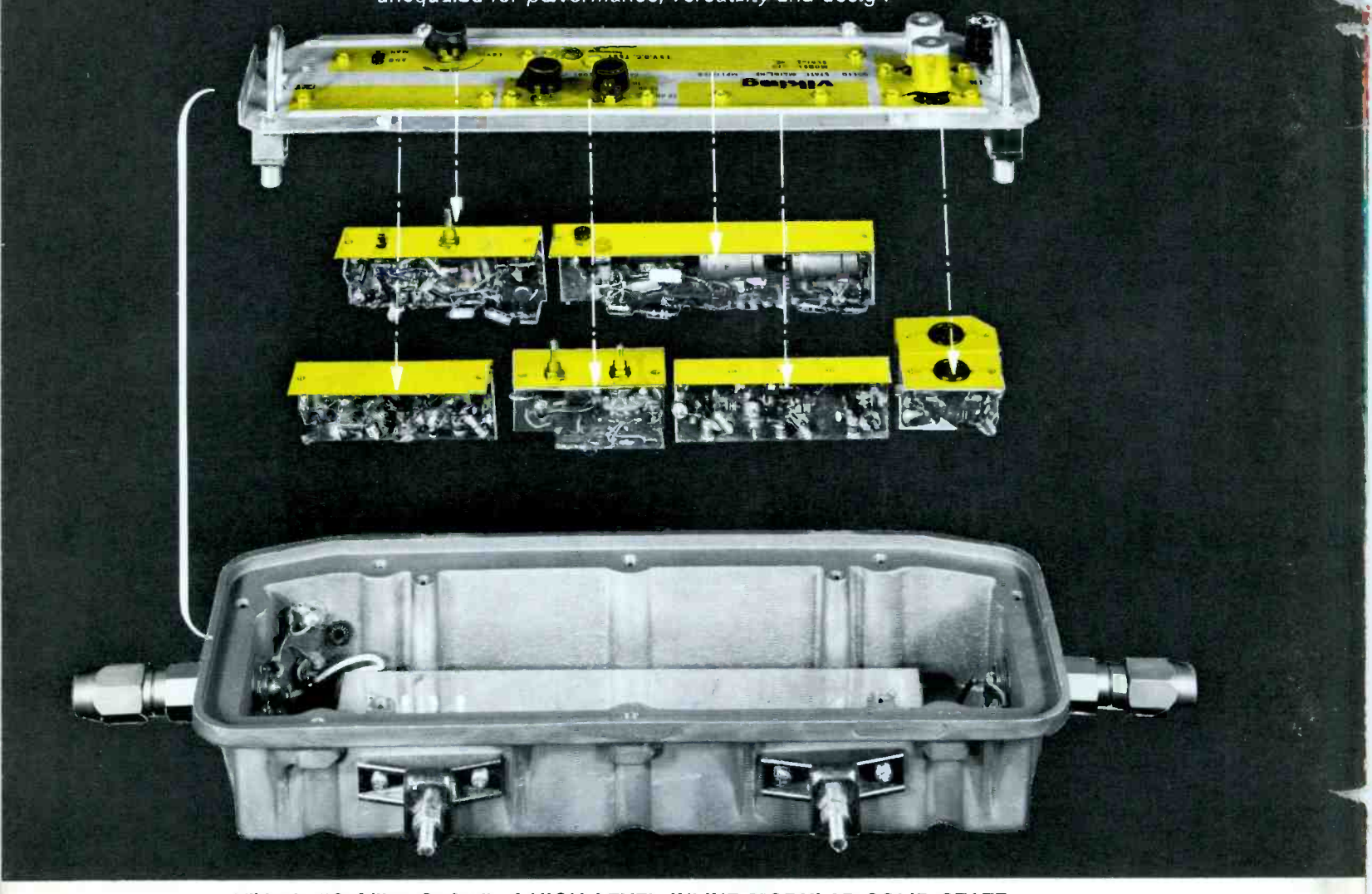

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