

TV Communications

The Professional Journal of Cable Television

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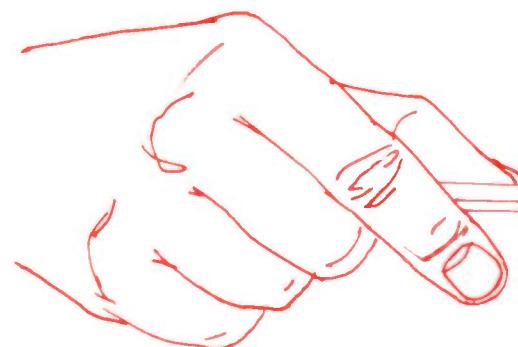


In This Issue . . .

Big City Construction
Evaluating Cable Systems
Choosing Drop Cable

The only multi-tap designed for easy pedestal mounting

MATCHMAKER from JERROLD



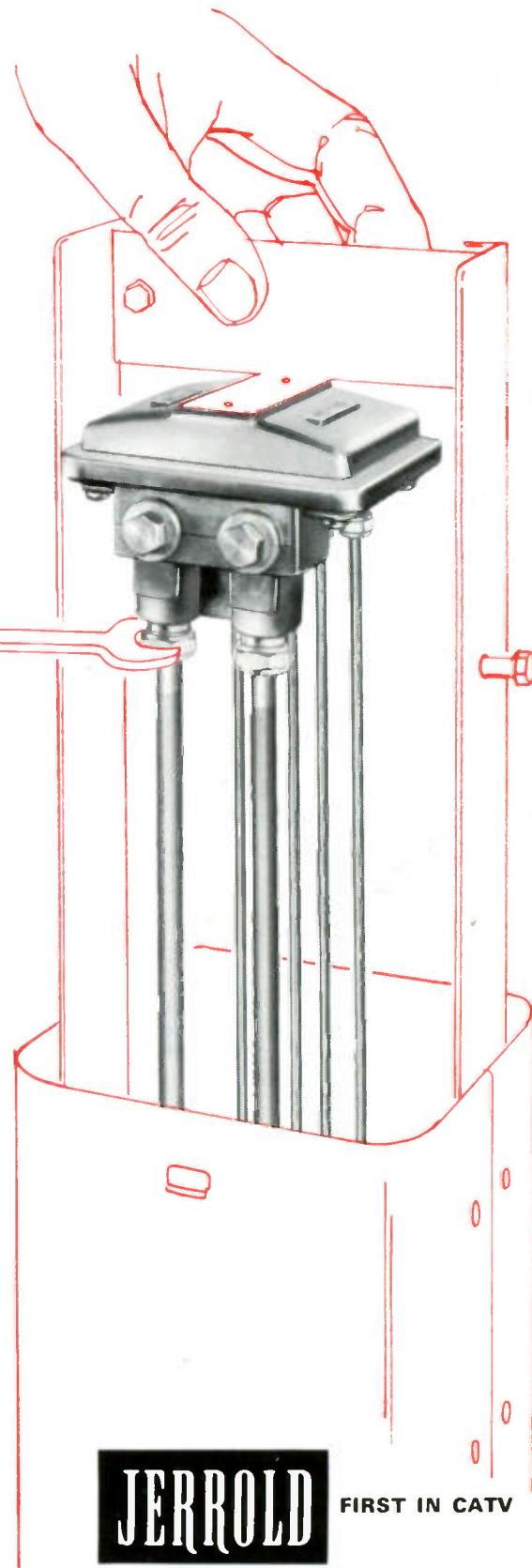
Matchmaker is the only multi-tap with right angle disposition of fittings for quick, easy pedestal mounting. Built-in QF fittings (seized center connectors which accept all .412-type aluminum-sheathed coaxial cables) make the whole job easier. What's more, you can see that the conductors are seized properly by simply removing the plugs. Nothing else to take apart.

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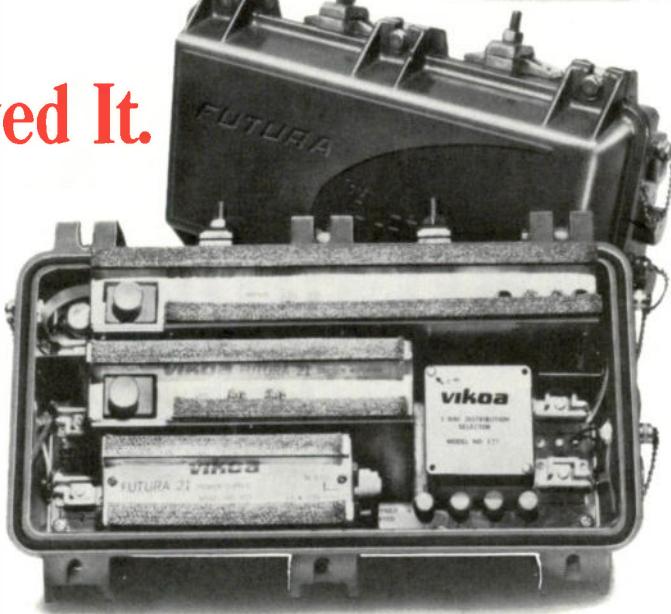
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FUTURA "PUSH-PULL" 21 PLUS — 21 CHANNELS AND MORE — FUTURA 21 MODULES ■ FUTURA 21 TRUNKLINE AMPLIFIER ■ FUTURA 21 TRUNKLINE/AGC AMPLIFIER ■ FUTURA 21 BRIDGER AMPLIFIER ■ FUTURA 21 POWER SUPPLY ■ FUTURA 12 HIGH LEVEL AMPLIFIER ■ FUTURA 12 POWER SUPPLY ■ FUTURA 12 MAINLINE AMPLIFIER ■ FUTURA 12 PILOT CARRIER AGC ■ FUTURA 12 HIGH LEVEL DISTRIBUTION AMPLIFIER ■ FUTURA 12 HIGH LEVEL DISTRIBUTION HOUSING ■ FUTURA 12 HIGH LEVEL BRIDGER HOUSING ■ FUTURA 12 HIGH LEVEL INTERMEDIATE BRIDGING AMPLIFIER ■ FUTURA 12 EQUALIZATION AMPLIFIER ■ FUTURA 12 "ECONOLINE" AGC LINE AMPLIFIER ■ FUTURA 12 "ECONOLINE" BRIDGING AMPLIFIER ■ FUTURA 12 "ECONOLINE" DISTRIBUTION AMPLIFIER ■ FUTURA LINE EXTENDER ■ FUTURA AGC LINE EXTENDER.

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Entron's matched suitcases keep your signal traveling first class.



Here's the solid state transmission equipment that's engineered for unitized effectiveness. Each suitcase gives top level performance on its own, mates perfectly with other units to eliminate system compromises and make-do "adjustments".

Working together, an all-Entron line will give you an edge that adds up to reliable performance and reduced maintenance. Ask your Entron man or write for technical data that shows why the Entron line represents "solid" engineering progress.



Entron's solid state products

Combination Trunkline Bridging Amplifier RB-6T

Trunkline Amplifier R-6T

Intermediate Bridging Amplifier B-3

Low-Cost Line Extender Amplifier E-6C

Universal Tapoff SMT Series



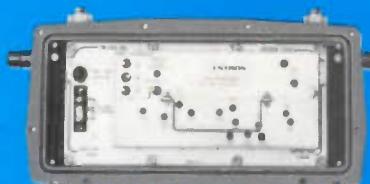
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A Solid State ENTRON Line



Combination Trunkline Bridging Amplifier RB-6T

Up to four outputs. Operating level of bridging module is 35 dbmv on each of four outputs.



Trunkline Amplifier R-6T

25 db, operational gain, ALC. Switchable input pads, fullwave 30-v ac power supply. Remote-powered, through cable.



Intermediate Bridging Amplifier B-3

Inserted in the trunkline, provides up to four distribution outputs. Variable pads on input for flexibility of installation. Operating level is 35 dbmv on four outputs.



Low-cost Line Extender Amplifier E-6C

27 db gain, 10 db gain control, operating level is 42 dbmv.



Universal Tapoff SMT Series

New multiple tapoff is completely waterproof and pressure tight. Tapoffs changed without disturbing thruline signal. Dual thruline openings with seized center conductor for overhead or underground, fits 6" diameter pedestal. High, 20 db minimum isolation, response to 300 MHz.



Remote Power Insertion Unit RPU

Weatherproof. Provides diplexing 30 Vac or dc capability to cable-power remotely located amplifiers.



VHF Preamplifier P-1

Low-noise antenna preamp, all-solid-state, temperature-compensated cable-powered. Gain is 33 db, low band, 26 db, high band.

The Most Respected Name in CATV

IN THIS ISSUE

\$100,000 Grand Opening

In an unprecedented grand debut, Valley cable TV and its star-studded cast attracted almost 40,000 residents of the Rio Grande Valley area to its opening. Many of the professional techniques used and concepts involved can be applied in operations all across the country. For a complete report on the event, see the article beginning on page 42 of this issue.

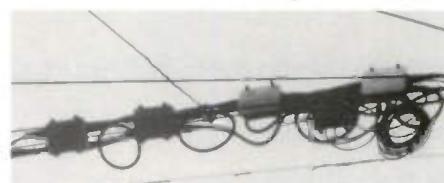


The Big Picture in Advertising

Any cable system's approach to promotion should be carefully planned well in advance. The article by CATV consultant Sam Street provides a conceptual foundation on which you can base your advertising plans for the months and years ahead. Turn to page 52 of this issue for the details.

Wiring Big City Dwellings

What problems are unique to metropolitan cable systems? What methods can be used to wire multiple dwellings?



For answers to these and other "big-city" questions, see the article by S. W. Pai beginning on page 71 of this issue.

To Buy or Not to Buy

Evaluating cable systems for purchase is no simple task, but a great deal of the guesswork and subjective nature of the job can be eliminated by Arthur Einhorn's systematic approach. If you're not presently in the buyer's market, you may wish to use the article to evaluate the worth of the system you operate now. For details, turn to page 60.

(Our Cover:) Internet, Inc. program personalities Elizabeth Livingston and Dick Jiminez, pose for the camera at the firm's Laguna Beach, California headquarters.

TV Communications

The Professional Journal of Cable Television

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40,000 potential subscribers attend Valley Cable debut **42**

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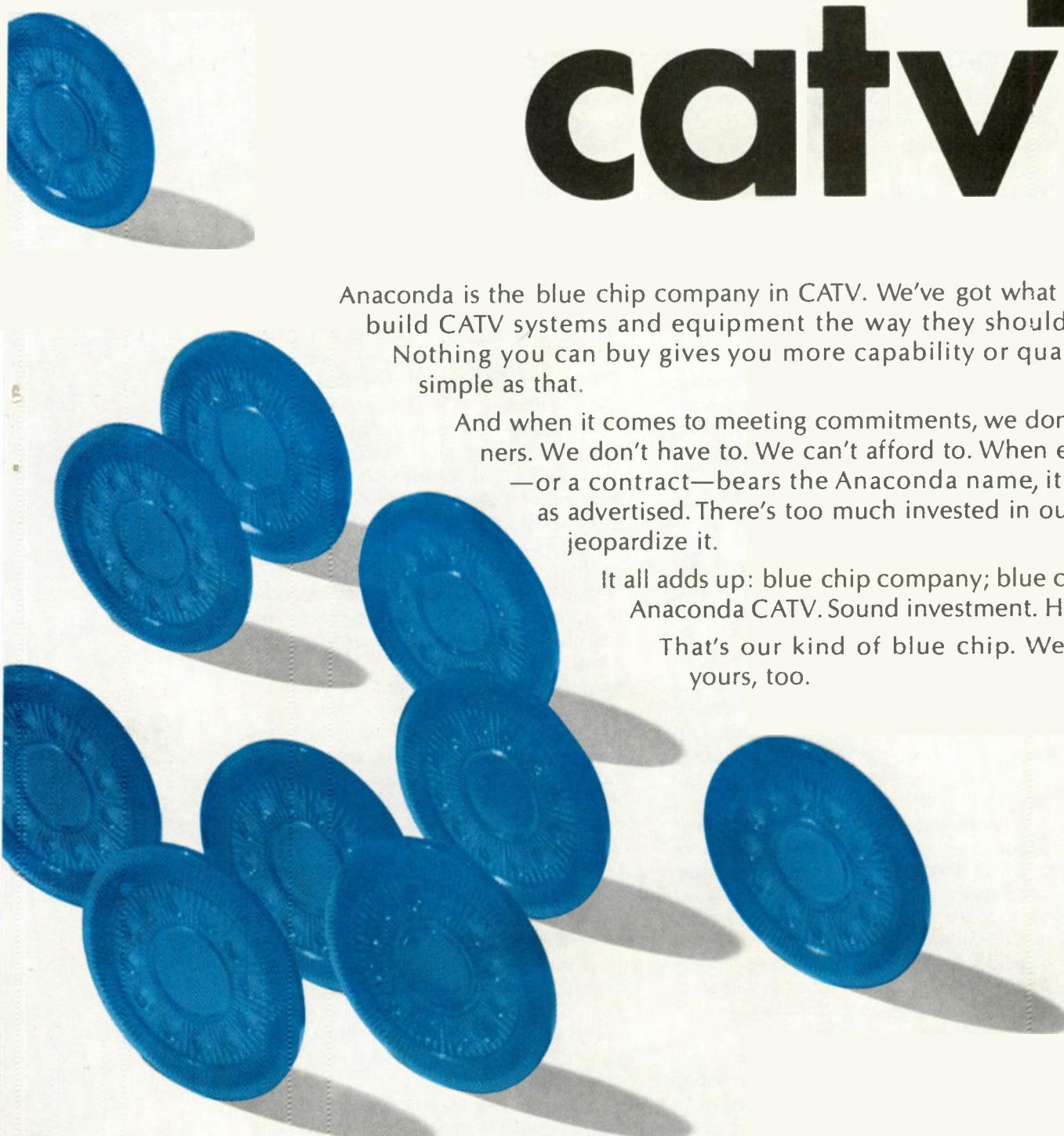
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blue chip catv



Anaconda is the blue chip company in CATV. We've got what it takes to build CATV systems and equipment the way they should be built. Nothing you can buy gives you more capability or quality. It's as simple as that.

And when it comes to meeting commitments, we don't cut corners. We don't have to. We can't afford to. When equipment—or a contract—bears the Anaconda name, it performs as advertised. There's too much invested in our name to jeopardize it.

It all adds up: blue chip company; blue chip CATV. Anaconda CATV. Sound investment. High return.

That's our kind of blue chip. We think it's yours, too.



ANACONDA electronics

The TVC Viewpoint

EDITORIAL



Stanley M. Searle
Editor

Congressional Procrastination a Threat?

The Federal Government, represented by a relatively insignificant bureau known as the FCC, has embarked upon a methodical campaign to cut the life out of an industry called cable television.

We protested the recent commission action to a host of congressmen—even to the President. With what result? Rep. John Moss answered by saying that it is his understanding that “what is being proposed in the case of CATV” is simply a “proposed rule-making under the Administrative Procedures law...” Michigan’s Sen. Robert Griffin assured us that, “The matter is receiving attention.” Three weeks later he forwarded a form letter which he had received from Rosel Hyde’s legal assistant, Robert Cahill.

With a few notable exceptions, this was the pattern. The elected representatives of the people passing the buck . . . falling back on the expertise of the federal agency concerned. Never mind the fact that the agency in question has never been charged with specific authority by Congress . . . or that the federal agency is openly and callously attempting the extralegal denial of the Supreme Court copyright ruling.

Are our senators and representatives naive . . . preoccupied with other matters . . . or do they look the other way, sensing a messy and controversial question? The answer is probably ‘yes’ to all three possibilities. Obviously, our elected officials don’t want to touch our problem with a ten foot pole. No matter which way they go they will ruffle some feathers—and they know it.

But, while your Congressman’s secretary is cranking out short, polite letters to say that he is “looking into the matter with deep concern,” the fate of an important industry swings in precarious balance. In many cases, the

personally signed form letters are just a veiled announcement of the fact that Mr. Lawmaker is abdicating his responsibility. He is leaving you in the hands of the FCC.

After all, Mr. Hyde’s form letter has assured the lawmaker that hearings will be held on the *proposed* rules. The Commission is simply trying to “formulate policies which integrate CATV into the nationwide television system in a fair and appropriate way, so as to obtain benefits of this technology for the public.”

Obviously, there is nothing here to arouse the concern of the congressman. Nothing to concern him, that is, unless he wants to open his eyes to the true intentions and the clear track record of the FCC in dealing with cable television.

Our comments here are not intended to dishearten the nation’s cable operators. Rather, they are dedicated to heightening the CATV industry’s awareness of some not-so-pleasant political realities. Mainly, you should avoid any false sense of security based on a legislator’s carefully non-committal expressions of concern—until and unless he proves that he actually intends to take some action in defense of your vital business interests. You’re trying to get him to pick up a hot potato. And in most cases he’ll carefully avoid doing so if he can.

Your persistence is important. Let your representative know just how concerned you are and why. Make it clear that you are waiting expectantly to see just what he is going to do about the FCC’s abusive and arrogant conduct.

After all, you can hardly expect your congressman—who is in a very sensitive spot—to be more concerned than you are.

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Comm/Scope's team of engineers and technicians are thoroughly experienced in all phases of CATV planning, engineering and construction. For any system of any size, anywhere.

From survey to subscriber, they have the answers — or can get them fast. Feasibility determination? Comm/Scope gives you the facts, including system profitability factors. And they'll make a signal availability survey. And strand mapping. And system design. And acceptance testing.

In addition, they'll handle all details of system construction. Aerial or direct burial. Urban, suburban or rural.

And they'll maintain system efficiency with an exclusive "Monitor Maintenance" program.

When it comes to CATV construction or expansion . . . come to Comm/Scope first!

COMM/SCOPE

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From tower to tube...



Perspective

on the news



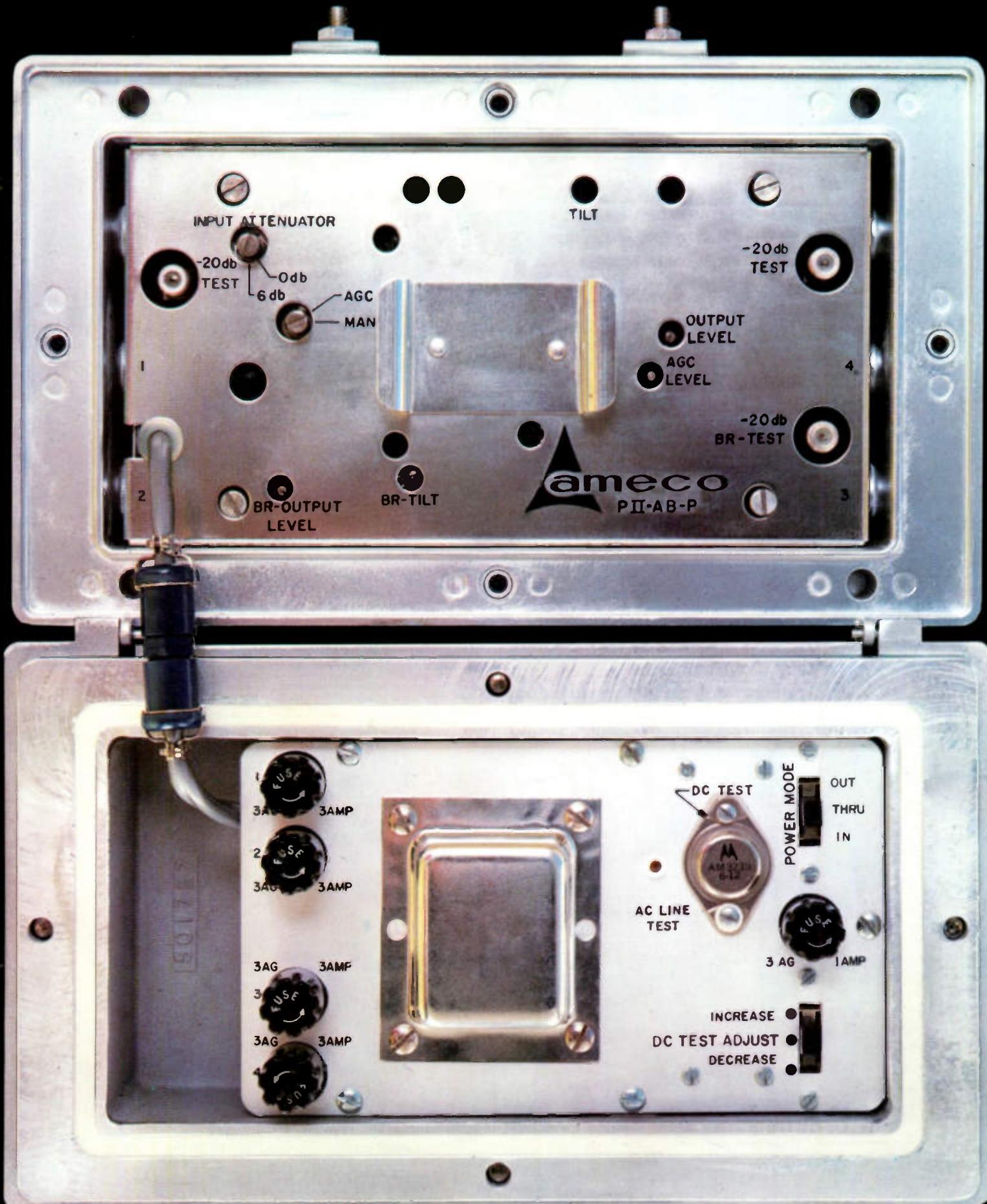
Robert A. Searle
Executive Editor

The cable industry has had more than ample evidence of the FCC's chagrin at their new proposed CATV rules. Seems the distant signal rules didn't even begin to work quite as the Commissioners hoped. When the FCC protested the "helpfulness" of the proposed rules to CATV by requiring retransmission consent from distant stations, no one but the most naive saw it was anything but a freeze. No wonder the bureaucracy was discomfitted when telecasters--especially audience-starved U's--indicated a willingness, even eagerness, to grant blanket letters of consent.

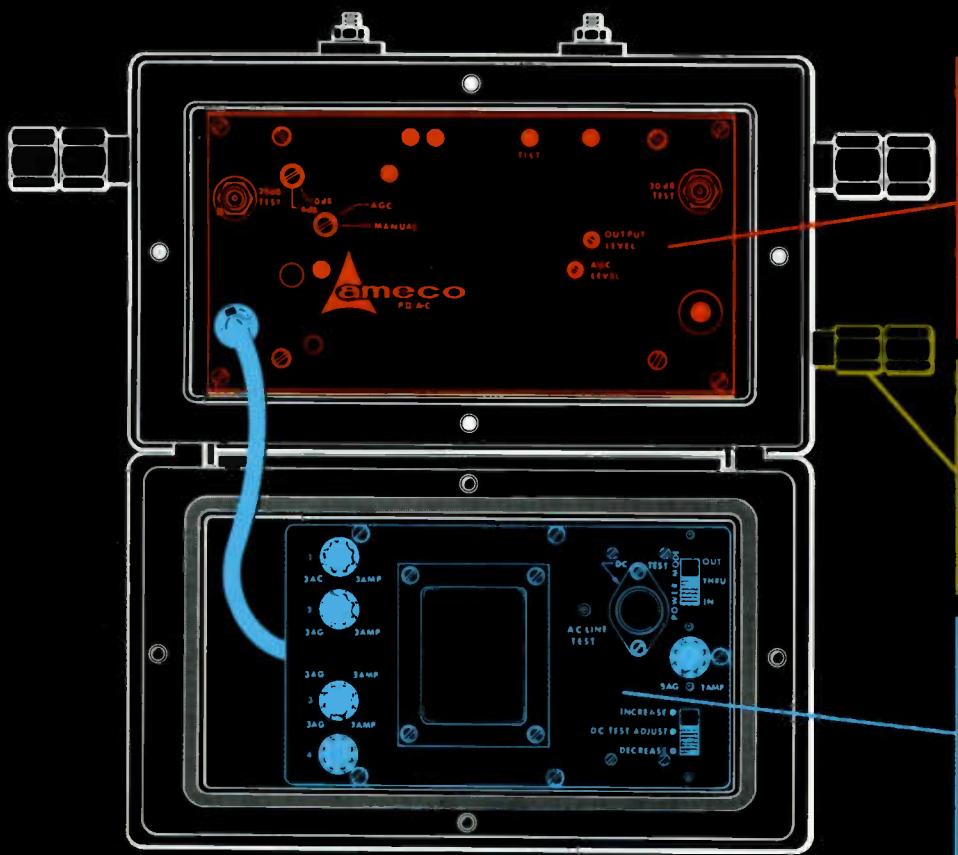
FCC parried with "reclarification" of requirement--well-used euphemism for a new rule. A blanket letter, they now say, is not enough. CATV'ers will now have to come up with program-by-program retransmission consent from--who else?--the tight-fisted copyright owner, if the proposed rules are adopted. Commission action left even some long-time FCC-watchers gaping. Seldom has the thrust of their anti-CATV rulings been so obvious, stripped of the usual self-serving circumlocutions.

This is NCTA's chance to shine. It is just this kind of grave national problem that demands the best efforts of a dynamic, knowledgeable organization. Whether NCTA will meet the challenge with effective action depends largely on how well these professionals have done their "homework"--how strong their contacts and ties are on Capitol Hill, whether they're on top of the situation in all ways. Critical questions will be coming up at the FCC in the next few months. Mandatory origination, multiple ownership, possible common carrier responsibilities for cable systems are among them. 1969 is going to be a year of dramatic change for wired television. The task is to influence those changes to benefit the industry--to act positively and act now rather than wait for a decree and then react.

Even without the spur of the latest FCC action, copyright is ripe for a 1969 legislative solution. Sen. John McClellan seems determined to report some bill out of subcommittee--whether or not the parties can compromise on their differences. He has expressed hope for the "development and future growth of cable television"; but whether or not the final bill is favorable to CATV, McClellan will report it out if only to get the copyright monkey off his back. Thus, it is important that negotiations, even though frustrating and nearly fruitless up to now, continue. CATV needs to present as strong a case as possible to the subcommittee. Again, the treatment CATV receives at the hands of these legislators depends largely on the skill and knowledge of its paid representatives at NCTA.



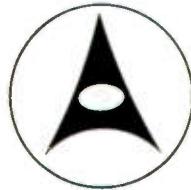
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PLUG-IN MODULES: Eleven different combinations of MGC, pilot-carrier and composite AGC, two- and four-output bridgers for your twenty-plus channel system.

BRIDGER OUTPUT TAP: Trunk amplifiers have built-in tap, 10 dB down from trunk output level. Extra convenience saves your time and money.

X FMR POWER SUPPLY: Three-tap primary, extra surge protection, fused bridger out-puts for extra efficiency, flexibility and reliability.



PACESETTER II

new twenty-seven channel amplifiers

SPECIFICATIONS

TRUNK AMPLIFIER†

BRIDGER AMPLIFIER

BRIDGER SECTION

	Models PIIIM, PIIAP, PIIAC, PIIABP-2, PIIABP-4 PIIABC-2, PIIABC-4 PIIIMB-2, PIIMB-4	Models PIIB-2, PIIB-4	Models PIIMB-2, PIIMB-4 PIIABP-2, PIIABP-4, PIIABC-2, PIIABC-4
Bandwidth	50-260 MHz $\pm .25$ dB	50-260 MHz, .5 dB	50-260 MHz, .5 dB
Max. Gain, Ch. 13	25 dB	42 dB	20 dB (flat)
Manual Gain Control range	± 3 dB	4 dB	3 dB
Cross-mod ratio*	-90 dB @ +32 dBmV	-72 dB @ +38 dBmV	-72 dB @ +38 dBmV
Return loss — in & out	16 dB, minimum	16 dB, minimum	16 dB, minimum
Equalization range	19-25 dB cable	0-12-16 dB cable	—
Manual tilt control	+1.5 dB, -5.0 dB	± 1.5 dB	± 1.5 dB
Input level (typical)	+10 to +13 dBmV, Ch. 13	+10 to +13 dBmV, Ch. 13	—
Input pad, switchable	0-6 dB	—	—
Output level, typical, Ch. 13	+32 dBmV*	+38 dBmV*	+38 dBmV*
Output level, typical Ch. 2	+27 dBmV*	+33 dBmV*	+33 dBmV*
Output test point	-20 dB	-20 dB	-20 dB
Noise figure, maximum	10 dB, Ch. 13	10 dB, Ch. 13	—
AGC range, $\pm .5$ dB	± 3 dB cable equiv.	—	—
Power requirement	20-38 VAC, .7 A, max.	20-38 VAC, 1.12, max.	20-38 VAC, .64, max.

*12 synchronously-modulated channels, 5 dB block tilt, per NCTA standard. †Models PIIIM, PIIAP and PIIAC have built-in bridger output tap, 10 dB down from trunk output level; 12 dB minimum return loss.

LETTERS

Rules Proposals Draw Comments

- My compliments on your very fine editorials in the January 1969 edition of *TV Communications*.

"Molding public opinion" is an old phrase and, for CATV, a massive task. The degree to which that endeavor succeeds shall, indeed, be ultimately determined by both the nature and degree of commitment on the part of every corporation, company, and individual having a stake in the industry. What the challenge calls for perhaps above all, is dramatic regeneration from within of conviction, commitment, diligence, and perseverance.

Members must demonstrate total commitment to industry goals. It is not enough now, if indeed it ever was, to attend regional and/or national conventions, whirl through three days of enthusiasm and excitement, then go home to "business as usual."

What CATV needs more than ever is fighters. Men who have fought to build, who have believed, striven, and achieved...and who are now willing and eager to fight to preserve and perpetuate. There can be no excuse for allowing ourselves to be literally "cut off at the pass" at this juncture. What CATV has done, and the promise it holds for the future, is infinitely worth fighting for. In every conceivable manner. In a reasonable but determined manner. In a gutsy manner. In a manner which demonstrates that a man, or a company, has his convictions where his money is...and where, in a most significant way, the public interest is.

The onus is on us. Let's have at it with renewed vigor.

Don W. Opperman
Global Communications Services
Bellingham, Washington

- Your editorial of January 6th was not only timely, but arrow perfect.

To prepare to fight, you must train with all of your resources and until we have 90% of all the CATV

systems in our (national) association and 100% of the multiple owners we are only partially trained for a main event feature. You have only to look at the makeup of the Board of Directors of the multiple owners to see where a great deal of the muscle could lie in our dealings with Congress.

With the appointment of Bill Adler to head up the Legislative Committee of NCTA we are fortunate to have a man with good, new refreshing ideals to better implement the strength we presently have in our association. He must, however, have help and plenty of it from the membership.

Even with all of the editorials written by such recognized editors as yourself, it somehow appears that there are always people who just don't get the word. Perhaps your best role could be to create a fictional year of 1971 without any change in the direction the FCC is headed: (a) freeze on all new systems; (b) reduction of signals to only those placing Grade A over town; (c) full copyright payment; (d) Public Utility Control; (e) Federal subsidies for satellite-to-earth as well as translators, commercial TV for all municipal governments; and (f) aid in reduction of cost to subscriber by providing telephone company blanket permission using R.E.A. money—"ala Orson Welles."

F. Gordon Fuqua
Executive Vice President
TeleVision Communications Corp.

- Please send *TV Communications* and *CATV* magazine to me at this address. We are a new company with some old-fashioned ideas about our industry. We remember successfully promoting only four channels to the public (who were already receiving two) and hitting close to 50% saturation. I am not leveling down, neither am I against progress and I am certainly not for unwarranted controls in our industry, under the guise of "being in the public interest." The only way to reverse these biased controls is through the state and federal halls of justice.

Let our industry leaders quit playing footsie and politics and maybe get a little mad with the sit-

uation. Let them produce and lead a strong, well-organized campaign through the systems and the subscribers, not forgetting those deprived cities which couldn't meet the deadline. We certainly have the tools and should have the money!

I am sensing an apathetic condition in some of the things I read about and some of the people with whom I talk. Let's all get a little mad, let's all burn the ears of our legislators but *let's all do it together and now!*

As Queen Victoria used to say, "We are not interested in the possibilities of defeat."

John Thomas, President
Americable, Inc.
Lucinda, Florida

- Events have been moving so fast these past few weeks, I am sorry that I have not had an opportunity (to comment on CATV in 1968)... About all that I can offer is that the action of the Commission was the latest of important and significant developments for the industry in 1968. More fundamentally than this, however, were the two decisions of the Supreme Court. I believe that when the Commission comes to understand a little more about CATV, its seemingly destructive proposals will be ameliorated to the point that they will not be unduly harsh. Perhaps this is wishful thinking, and great effort on the part of the industry will undoubtedly be required to achieve a happy ending.

Frederick W. Ford
President, NCTA

National Publicity Suggested

- Do you think NCTA or a group of CATV people might be interested in telling our story to the public with a full page ad in the *Wall Street Journal* or some other publication that gets national distribution? Somehow we should let the public know that the shaft has been delivered and just how it was done... We are definitely the underdog at this point and we should work it to the fullest.

Roy E. Bliss, President
Cable Television Company
Bloomington, Illinois

Optical
Multiplexers

EIA SYNC
Generators

Video
Distribution
Amplifiers



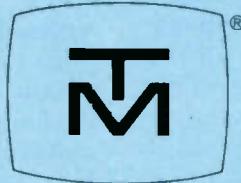
WEATHER™
CHANNEL



TELECTERN™
Overhead
Camera System

Optical
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Passive
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Switchers



Cameras

Pulse
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Amplifiers

Video
Processors

A/V
Distribution
Switchers

CABLECASTER®
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Center



Waveform
Sampler

MESSAGE
CHANNEL

Color
Encoder



Broadcast
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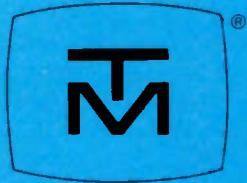


Screen
Splitters

Video
Signal
Generators

Character
Generators

Non-
Duplication
Switcher



... and
more
to come!

MULTICASTER™
Video Control
Center

TeleMation . . .

The CATV local origination equipment supplier!

TeleMation can now offer the CATV industry the most complete line of television studio and control equipment available from any single manufacturer. We can design, supply and install any kind of system from a single-camera automated cablecasting unit, such as WEATHER CHANNEL™, to a complete multi-camera production studio with live cameras, film chains, and all necessary control devices. All of this equipment is available now from TeleMation. We designed it . . . we manufacture it . . . we'll even install it.

Every TeleMation product is built for maximum performance and reliability. In a TeleMation system, equipment is interchangeable without special modifications, providing unprecedented system flexibility. TeleMation equipment either meets or is instantly convertible to EIA (FCC) specifications.

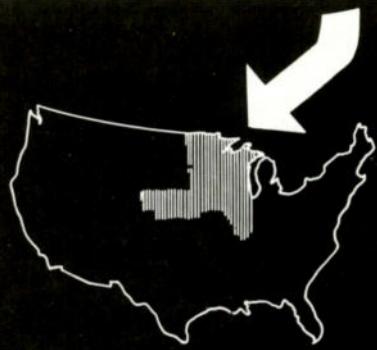
We can also supply a complete line of color cablecasting equipment.

Let us handle all of your local origination needs.



TELEMATION, INC.

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Salt Lake City, Utah 84115
Telephone (801) 486-7564



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414-739-6341



Management Guidelines

Patrick T. Pogue



Successful Borrowing: The Basic Essentials

The ability to obtain money when you need it is as necessary to the operation of your CATV business as is the right equipment, reliable sources of materials, and trained employees.

When you first get together with your prospective lender, he will want answers to these questions:

What sort of person are you? Most lenders rate the character of the borrower as the key factor.

What are you going to do with the money? He'll want specific data here, not just generalizations. If it's to be used for equipment, what kind of equipment is to be purchased and why is it necessary? If for working capital, what specific company goals do you hope to accomplish in a given period?

When and how do you plan to pay it back? Crucial from your lender's viewpoint, he'll want to see a detailed repayment plan with dates and amounts.

Have you allowed for a loan cushion? In other words, does the amount you've requested make suitable allowance for unexpected developments?

What's the outlook for the CATV industry in general and your operation in particular?

Along with these answers the lender will want to see data on your accounts receivable, assets, liabilities, and shareholders' equity. The best way to supply this information is through two

or more balance sheets and profit or loss statements.

Bank loans are generally obtained either as short term (under six months) or long term (1 or 2 years) loans. Short term loans are normally repaid from the liquidation of current assets (such as accounts receivable) which they have financed. Long term loans, perhaps to buy extra equipment, usually are repaid from general earnings.

With any bank loan you will probably be faced with some restrictions which the lender requires as a condition of the loan. Technically known as covenants, these may be either negative or positive in nature.

Negative covenants—things which you can not do without prior lender approval—might include not making further additions to your total debt, the non-pledge to others of your assets, or not issuing dividends in excess of specified amounts.

Positive covenants—spelling out things you must do—might include the maintenance of a minimum net working capital, carrying of adequate insurance, repaying the loan according to contract terms, and periodically supplying financial statements.

A final word of advice: before you sign, shop around. Money is just like any other item you use in your business, and you should negotiate with several suppliers before you take any deal.



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FINANCIAL REPORTS

Adams-Russell Co., Inc. reports per share earnings of \$.85 for the year ending September 30, 1968. This compares with per share earnings of \$.78 for last year. Earnings figures are based on net incomes of \$705,000 and \$614,000 for the two periods respectively.

Commonwealth United Corp. has reported per share earnings of \$.69 for the 9-month period ending September 30, 1968. This compares with per share earnings of \$.22 for the same period last year. Earnings figures are based on net incomes of \$6,593,000 and \$1,294,000 for the two periods respectively. Gross revenues were given as \$112,815,000 and \$80,070,000 for the two periods.

Cornelia Corp. has reported losses for the fiscal year ended March 31, and for the 4-month period ended July 31 of the current fiscal year. For the past fiscal year, Cornelia had a loss of \$942,085.

Fairchild Camera & Instruments reports per share earnings of \$.23 for the quarter ending September 30, 1968. This compares with per share earnings of \$.24 for the same period last year. Earnings figures are based on net incomes of \$2,481,000 and \$1,043,000 for the two periods respectively.

ITT has announced that it is making a secondary distribution of 400,000 Series II shares of common stock of the Communications Satellite Corp. through a general public offering. The offering is being made through a nationwide group of underwriters headed by Kuhn, Leob & Co., and Lazard Freres & Co. ITT is retaining 100,000 shares.

Kaufman and Broad directors have declared a stock split and indicated an increased quarterly dividend rate. The stock split will be in the form of a stock dividend

of one share of common stock for each outstanding share of common stock. At the same time, the directors indicated an increase in the quarterly cash dividend by 9%.

Livingston Oil Company owners of \$.30 convertible cumulative preferred stock, representing 365,453 shares, are offering shares through an underwritten secondary issue managed by Hayden Stone, Inc. of New York City.

LTV Electrosystems, Inc. reports per share earnings of \$.67 for the 9-month period ending September 30, 1968. This compares with per share earnings of \$.81 for the same period last year. Earnings figures are based on net incomes of \$3,792 and \$3,648 for the two periods respectively.

TelePrompTer Corp. has reported per share earnings of \$.89 for the 9-month period ending September 30, 1968. This compares with per share earnings of \$.77 for the same period last year. Earnings figures are based on net earnings of \$888,259 and \$678,787 for the two periods respectively. Gross revenues were given as \$5,299,317 and \$4,958,437.

Tower Antennas, Inc., an MSO serving over 30,000 subscribers, and its proposed merger partner Citizens Financial Corp., a diversified financial holding company, have announced net earnings for the 9-month period ending September 30 of \$628,640 which represents an increase over the 1967 earnings of \$600,151.

United Artists Theatre Corp. reports per share earnings of \$.83 for the 40-week period ending June 4, 1968. This compares with per share earnings of \$.79 for the same period last year. Earnings figures are based on net incomes of \$1,361,067 and \$1,311,071 for the two periods respectively.

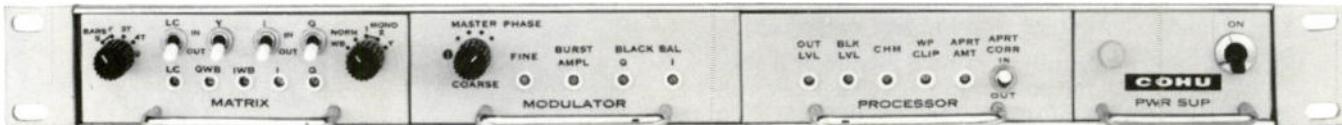
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Late News

"CLARIFICATION" TOUGHENS CATV RULES

In what purported to be a "clarification" of its distant signal importation policies, the FCC has stiffened its requirements even further. In its rule-making notice of Dec. 13, the Commission announced that, at least until permanent rules are adopted, CATV'ers in major markets could import new distant signals only with the retransmission consent of the originating (distant) station.

Faced with unexpected eagerness on the part of stations, particularly audience-starved U's, to grant blanket retransmission consent, the FCC clearly revealed its intention to force copyright liability on CATVs. The Commission declared that blanket quit-claim authorization from a station is not enough. The operator must have "express retransmission authorization" for each program. In addition, said the FCC, any waiver petition must "show how the proposed operation would provide information and experience useful to a resolution of rulemaking, why the particular locality is well-suited for this purpose, and how the proposal differs from other test operations which have been sought or authorized."

At the same time, the FCC made it clear that very few petitions to import distant signals under the new rules--even with the accompanying consent documents--will even be considered. Speaking of markets below the top-100, the Commissioners noted, "To grant authorization on any wide-scale basis would be clearly inappropriate...."

ONLY FAST TALKERS NEED APPEAR

In the same letter which announced its distant signal policy "clarification" (see separate story), the FCC set out its schedule for this month's hearings on the proposed new rules for CATV--a hearing schedule termed "almost ludicrous" by one of the gentler Washington critics.

So short was the notification time granted by the FCC that many interested groups, particularly on the West Coast, did not even have the opportunity to file an intention to appear at the hearings. Those groups and individuals who did indicate their planned appearance were crowded into a short 13-1/2 hours.

Dividing all parties into six major groups, the FCC allotted six blocks of time--and told the parties in each group that they would have to make such time allocations among themselves as best they could.

Group one, consisting of CATV groups and municipalities, is allowed only two hours--although it includes NCTA and more than 20 other groups. All CATV operators (Group three) are limited to two and one-half hours. Microwave companies and telephone companies are lumped together in a meager one-hour segment; and such organizations as the National Association of Regulatory Utility Commissioners, the United Electrical Radio and Machine Workers Union

Late News (Continued)

(representing laid-off Jerrold workers), J. Milton Shapp representing Pennsylvania cable operators, and Westinghouse Broadcasting Co. must share one hour.

TEACHERS GROUP LOANS \$10 MILLION

A \$10.2 million long-term financing program has been announced by Tele-Communications, Inc. and Teachers Insurance and Annuity Association of America. Completion of arrangements was announced by Walter Mahlstedt, executive vice president for the lending group, and by Bob Magness and George Hatch of Tele-Communications, Inc.

Part of the proceeds, according to Magness, will finance construction of 7 new cable systems and 6,143 new microwave channel miles. TCI at present owns and operates 35 CATV systems through subsidiary Community Television, Inc. Another subsidiary, Western Microwave, Inc., serves 14 commercial and ETV stations and 61 CATV systems in 12 western states.

NAB SEEKS BROADCAST UTOPIA

The National Association of Broadcasters' board of directors, meeting in San Juan, Puerto Rico, has left no doubt as to where it stands on the FCC's proposed regulations for CATV--it wants the best of all possible broadcaster worlds.

NAB's official position prescribes much harsher rules in some areas than even the Commission proposes, but it definitely excludes bans on broadcast/cable cross-ownership, divestiture requirements and limits on the number of cable television systems that can be owned by a single entity.

The broadcasters would use a 60-miles-from-post-office radius to define top-100 markets rather than the proposed FCC's 35-mile radius. For markets 101 through 212, that radius would be stretched again to 75 miles by NAB. The burden of copyright clearance would fall entirely on CATVs, and origination (without advertisements, of course) would be strictly limited to public service.

CALIFORNIA TO BOAST LARGEST CATV

Plans for the world's largest CATV system will be coming off the drawing boards as actual construction begins either this month or next. Officials of San Jose (Calif.) Cable TV say work on the first 310-mile phase will begin by April at the latest.

The \$15 million turnkey construction contract--the largest single contract ever awarded in the industry--went to Vikoa, Inc. Robert Baum, Vikoa vice president, said the company will assign six full-time employees.

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NABCAT, a National Broadcasting Company community antenna television subsidiary, is installing in Valencia the first underground dual coaxial cable system with a 40 channel capability. Four new types of cable were developed for this system by Plastoid and NABCAT engineers, including Heavy Jacketed aluminum cable for direct burial and Siamese house drop cables.

If you are installing a new CATV system or extending an old one, remember the Valencia story. NABCAT was pioneering the first new dual cable concept. And they chose Plastoid. Find out all the reasons why.

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News SPECTRUM

FCC Rocks Cable TV Industry With New Proposed Regulations

The Federal Communications Commission shocked the cable television industry and the entire country as well when it released its double-barreled CATV rules/pay-TV authorization announcement (see separate story on pay-TV). The Notice of Proposed Rulemaking and Inquiry relative to CATV was a lengthy, complex document with far-reaching ramifications which will not be fully realized for some time.

Some aspects of the "new look" in regulation will not become effective until hearings are held; others, however, became operative December 20, the date of publication in the Federal Register. The latter category included the rules which govern distant signals.

Major Market Ban

The FCC has divided cable systems into three classifications: The first group comprises systems operating wholly or partially within 35 miles of the main post office of a top-100 market community (defined arbitrarily and permanently as the ARB 1967 top-100 markets). These systems may carry Grade B signals only. No distant signals may be imported—unless the system operator obtains retransmission consent from the distant station and the FCC. Even if consent is obtained, the Commission will consider no more than a dozen such applications "to see how it works out." Under questioning at a press conference, FCC Chairman Rosel Hyde admitted the copyright thrust of this rule. He said it would, "in effect, put CATV in the market place for programs."

In an overlap ("footnote 69") situation, where a top-100 system is in two markets at once—it may carry the local signals of both mar-

kets if it is wholly within the 35-mile zone of both. Otherwise, it can carry only the signals of the market whose central post office is within 35 miles.

Quota in Minor Markets

The second category includes those systems outside the top-100 market areas but within 35 miles of a television station (as measured from the post office). These systems may carry all Grade B signals available. In addition they may, without

obtaining any sort of permission, carry distant signals *if necessary* to round out a quota of three full-time network stations, one independent and an ETV. Distant signals other than those needed to fill the quota may not be imported without retransmission consent of the originating station and consent of the FCC.

Those CATV systems outside any 35-mile zone are not restricted in the signals they may carry, except that they cannot "leapfrog" (that is, carry a distant signal in preference to a closer one with essentially the same programming).

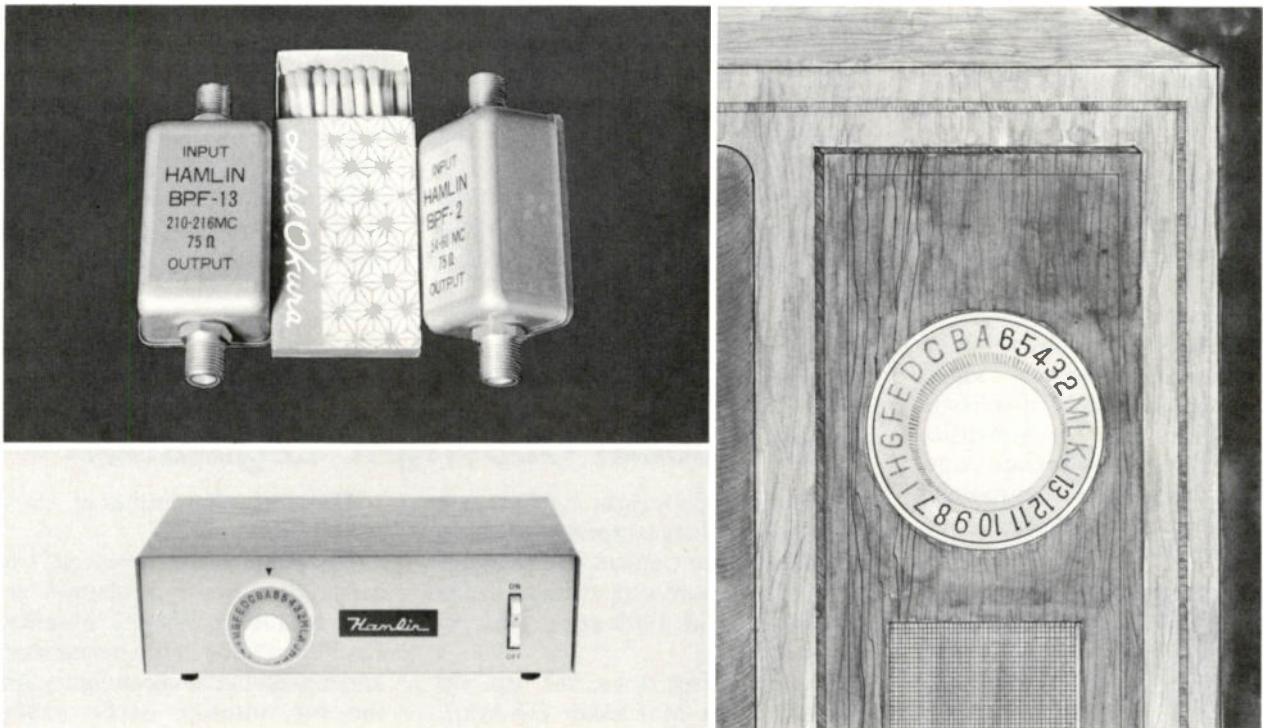
Interim Rules in Force

These proposed rules are also "interim" rules—effective until the rule making is completed. "In order to avoid substantial disruption to CATV subscribers," according to the FCC, cable system service will be grandfathered as of December 20, 1968, effective date of the in-

CATV Names "Man of the Year"



Washington attorney E. Stratford Smith accepts "1968 Man-of-the-Year" award from CATV Magazine for his work on the copyright case last year and for his numerous other contributions to cable television. Left to right: Jackie Morse, CATV assistant editor who wrote the Man-of-the-Year tribute; Robert A. Searle, managing editor of CATV; E. Stratford Smith; and Don Lindmark, CATV art director who prepared the charcoal portrait.



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terim rules. All operators were reminded by their attorneys that the new rules only change the Second Report and Order in the specific areas mentioned. Thus, the provisions for carriage and non-duplication remain in force—as does Section 74.1109 which allows a local broadcaster to file a petition for special relief and obtain an automatic stay of new CATV operations in his area.

Origination Mandatory

Other sections of the FCC notice were equally significant, although not immediately effective. The Commission suggested making program origination mandatory for all CATV'ers except the very small systems. Questions to be discussed further include how to subsidize such operations—whether and under what conditions commercial advertising would be allowed, etc. A further rule would limit cable



FCC Chairman Rosel Hyde admits copyright thrust of Commission's new major market rules.

originations to one channel, not including automatic services such as time/weather. With this restriction, the FCC proposes that the CATV operator act as a common carrier in regard to any remaining channels.

Another proposed rule would prohibit broadcast/CATV cross-ownership in the same community and limit multiple ownership of CATV systems. While no firm guidelines for the latter proposition were put forth, the Commissioners suggested limitations on the total number of

systems, the number of subscribers, the size of the communities served and the regional concentration.

If the Commission rules are adopted, operators will also find themselves reporting on a regular basis to the FCC. Annual filings would give financial data, ownership and operation information. The final area of proposed rulemaking deals with technical standards. According to the Commission, the time has come to make a start in the direction of prescribing "uniform technical standards to further high quality service to the public."

In addition to the proposed rules, the FCC also initiated a general inquiry into the "Commission's responsibilities and national communications policy," relative to CATV. While all questions were not specified, the inquiry will deal with such problem areas as the relationship between CATV and common carriers, the nature of "other services" which might be offered to homes and businesses, control of a cable providing multiple means of communication, relationship of local communications systems to satellites, etc.

Parties Huddle on Capitol Hill Over Model Copyright Legislation

Cablemen, copyright holders and broadcasters met last month behind closed doors on Capitol Hill to again try to hammer out compromise language for a 1969 copyright revision bill.

The meeting was set up by Senator John McClellan (D-Ark.), Chairman of Senate Copyright Subcommittee, when prior negotiations broke down. In preparation for the session, the Subcommittee staff mailed out copies of three different approaches toward solving the problems of liability.

Disclaiming support for any one of the three approaches, staff spokesmen said there was "an effort to include in one or another most of the detailed proposals that have been the subject of recent discussion. In general, alternative A is oriented toward the copyright owner interests, alternative C is oriented toward the interests of CATV operators, and alternative B represents a middle ground.

"This scheme has not been followed in every detail, however, and the drafts are by no means mutually exclusive. Their purpose is to elicit comments and clarify thinking rather than to push any particular viewpoint."

Although the FCC's new proposed CATV rules—and their implications of setting copyright standards—were said not to have been considered in drawing up the drafts, they were obviously considered in the discussions.

These are the details of the three model bills:

Alternative A, oriented toward copyright owner interests, would specify full copyright liability for CATV systems in the major markets and a reasonable compulsory license fee for smaller cable systems. Throughout the drafts, the number of markets defined as major was left blank, as were the precise definitions of a station's coverage area. The rate of the compulsory license fee, to be worked out at a reasonable level and applied across the board, also wasn't spelled out in the drafts.

One interesting aspect of Alternative A is its provision for program exclusivity. Exclusivity protection would be limited to first and second network runs and first non-network runs.

Alternative B would preserve the essentials of Alternative A, and would add a new classification. CATV systems in a segment of the top markets would be allowed a grace period in which they would be under compulsory licensing before becoming fully liable. This presumably would allow a period of time for the system to become profitable before having to negotiate expensive copyright fees.

Alternative C, geared more to the needs and desires of the CATV industry, would provide blanket, across-the-board compulsory licensing with only professional sports telecasts fully liable.



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NYC Finally Gives Green Light to L/O

After much political maneuvering and several delays, the New York City Board of Estimate has given Manhattan cable systems permission to originate public service programming on a one-year experimental basis. And the board's definition of public service was a broad one, excluding only "pure entertainment."

The move was seen as a victory for New York cable system operators, particularly Manhattan Cable Television which had been pressing the board for permission to carry a cultural film series, live concerts of the American Symphony Orchestra and live coverage of Columbia University basketball games. Nevertheless, the decision was not totally unexpected, coming as it did on the heels of the FCC's announcement of new proposed CATV rules. New York City Mayor John Lindsay had been waiting for the FCC to move on CATV, or at least to clarify its position in some areas, before casting his votes as a member of the

Board of Estimate. The FCC's new emphasis on program origination for cable systems undoubtedly influenced the board's final verdict.

Both cable operators in Manhattan hailed the board decision. TelePrompTer president Irving Kahn



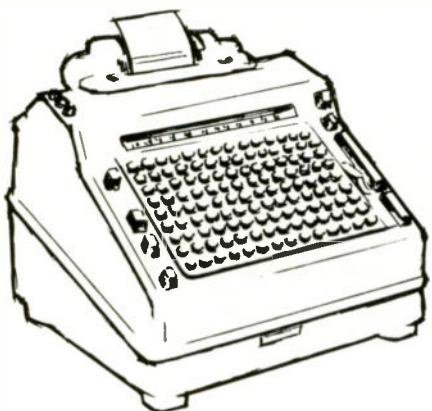
Charles Dolan, Manhattan Cable TV president, looks forward to new programming horizons.

said the decision was certainly in line with his operation although he disclosed no plans to originate programming. Charles Dolan, president of Manhattan Cable Television, said: "We are delighted that the Board of Estimate has authorized Manhattan Cable Television to originate the kind of programs that we feel will make television viewing more interesting and more rewarding."

A spokesman for Manhattan Cable Television said the firm would immediately begin the cultural film series, concerts and basketball game coverage. However, the titles of any movies to be shown must be submitted to the Bureau of Franchises which will rule on the nature of the films (i.e. public service or entertainment); and Morris Tarshis, director of the Bureau of Franchises, has expressed reluctance to authorize movies.

According to Tarshis, "Movies would be the last thing I'd recommend." He did, however, speak approvingly of other originations, such as sports programs presently unavailable to city television view-

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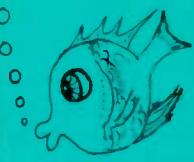
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ers. This category, he said, could include home games of the professional teams if satisfactory arrangements could be made with team management.

The only members of the Board of Estimate to cast dissenting votes

were Controller Procaccino, Brooklyn Borough President Stark, and Staten Island Borough President Connor. With this support, motion picture theater owners will carry their fight against cable system originations to the legislature.

chained by the Federal government without crippling the television industry.

The Task Force Report concluded, after a brief historical survey of broadcasting, that "many of the most important potential uses of television require an expanded multi-channel capability." And as a practical matter, it said, "although a number of methods can be imagined for expanding the number of channels, the most promising is cable television."

The Task Force went on to point out the proven commercial feasibility of CATV and the avenues available to defray the costs of using 20-channel systems. Advertising, it said, would contribute substantially; but, with CATV, the income from subscribers relieves the necessity of trying to find advertising dollars to support all 20 channels. The cable system operator, the report said, "has a positive incentive to offer a varied programming mix, including items which would not attract a commercial sponsor."

President's Task Force Commends Cable Television In Final Report

Although the cable television findings of the Presidential Task Force on Telecommunications are much vaguer in their final form than they were in the staff recommendations, the commendations are just as warm. The hard-headed, practical endorsement of CATV as a prime solution to many U.S. television ills included neither copyright liability nor other market restrictions. In fact, in a particularly pointed remark, the Task Force Report said: "in the absence of restrictive government policy, cable television will probably continue to grow rapidly."

The Task Force was appointed in August, 1967, under the chairmanship of Eugene Rostow, Undersecretary of State for Political Affairs. The report was targeted for completion one year after the group's appointment, and the fact that it was in the White House only four months late is regarded as a major federal feat—and an indication of the urgency of the problems involved.

In the domestic television field, the Task Force recommended that CATV be allowed to flourish as the prime available answer to the need for program diversity and local emphasis. A review of broadcasting history, the report said, "indicates that complete reliance cannot be placed on a system of local over-the-air stations to achieve our goals."

In its cable chapter, the Task Force noted that, "The development of cable television has been slowed by the imposition of restrictive rules," and it outlined the FCC's assumption of authority over the cable. All industries, the Task Force pointed out, can hide behind the unresolved legal status of CATV and copyright, and thus refuse to come to grips with what

needs to be done. The sooner Congress moves to clarify the situation, said the report, the sooner the industry and the country can go ahead.

In the meantime, however, the Task Force also pointed out that anything like a temporary freeze from the FCC (the Commission's new proposed rules had not then been made public) would contain within itself the potential for tremendous damage to the public interest. Throughout its remarks about cable, the Task Force maintained that CATV could be un-

Engineers Inspect New System



Some of the industry's most distinguished engineers make an inspection tour of the new system at Charleston, W. Va. Left to right, James R. Palmer, president of C-Cor Electronics; Larry Janes, chief engineer for the system; Archer S. Taylor, consultant for Malarkey-Taylor and Associates; G. Norman Penwell, director of engineering for NCTA; and I. "Sruki" Switzer, executive engineer for Maclean-Hunter Cable TV Ltd.

Vumore's High Franchise Fee May Not Stand

Although the decision may well be challenged in the courts, the city of Modesto, Calif., has granted a CATV franchise to the Vumore Company in return for promised franchise payments to range from 5 to 37 percent.

Vumore's franchise payment proposal appears to be in violation of a state law passed last year prohibiting annual CATV percentage payments of more than 5 percent. But in the opinion of city attorney Elwyn Johnson, Modesto is exempt from the law because it is a charter city and is permitted more home rule than most other California cities.

California CATV Association general counsel Walter Kaitz intends to challenge the franchise grant. "It's highly likely that the 5 percent ceiling law applies to Modesto, as it would any other city. If it doesn't, we may have to ask the legislature to change the law," Kaitz said.

The Modesto system (called Cablecom General, Inc., owned 80% by Vumore, 20% by local individuals) promised the city a \$32,000 advance payment and 5% of gross in Stanislaus county outside the city limits, in addition to its high franchise payments. Following is a breakdown of promised payments to the city:

Up to \$100,000	5%
On the next \$150,000	15%
On the next \$250,000	20%
On the next \$500,000	31%
All receipts over \$2,000,000	37%

Pay-TV Wins Limited Authorization from FCC

At the same time as the FCC announced its new proposed rules for CATV, it unveiled its controversial plan to authorize a national system of over-the-air subscription television. According to the very limited authorization, either a UHF or VHF television station may offer pay-TV service if it is in a market served by at least four commercial television stations.

The programming is strictly limited to prevent pay-TV operators from bidding for the same programs as regular commercial broadcasters. No motion pictures are to

be shown if they are between two and ten years of age—the prime fodder for the commercial television stations—and locally aired sports programs are also ineligible.

Pay-TV, according to Rosel Hyde, FCC Chairman, will not go into effect until the latter part of June in order to allow time for "congressional and judicial review." The matter has long been pending in Congress. When the FCC advanced a similar pay-TV program in 1967, the House Commerce Com-

mittee, headed by Rep. Harley O. Staggers, passed a resolution requesting the Commission to delay any action until November, 1968. As that deadline approached, the committee again asked the FCC to wait and the legislators promised to hold a hearing on the matter.

If congressmen were unhappy over the action, Zenith Radio Corporation chairman Joseph S. Wright was not. He applauded the FCC for giving "the American people . . . a free choice."

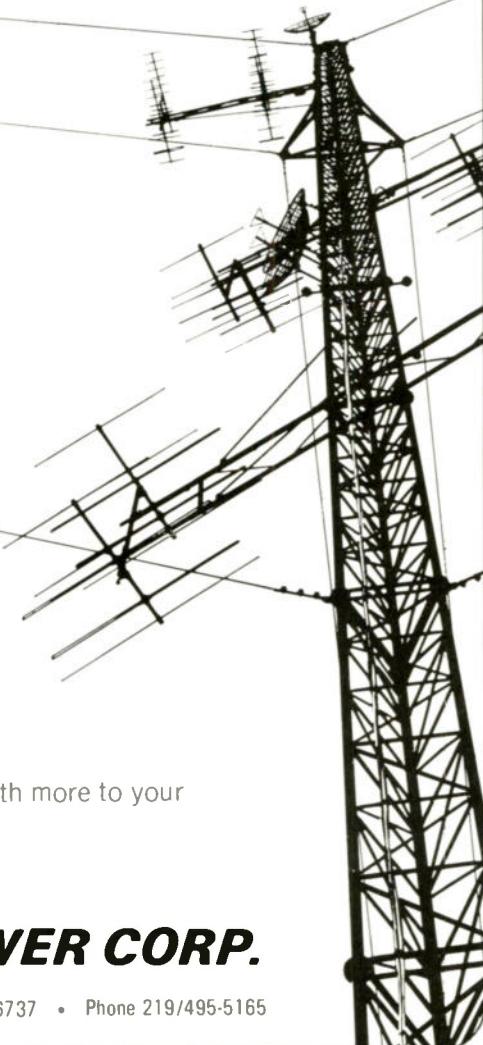
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Dick Gamble Moves Into NTV President's Office

G. R. (Dick) Gamble has been named the new president of National Trans-Video, Inc., Dallas-based MSO, following the resignation of Byron (Doug) Jarvis. Formerly executive vice president, Gamble has been with the organization for over four years.

He holds degrees in both business administration and electrical engineering, and has worked in finance for many years.

Shortly after being named president of NTV, Gamble released his 1969 predictions. "We expect there will be internal growth of at least 10% before acquisitions of other systems," he said.

Concerning the future of CATV



Dick Gamble, new president of National Trans-Video, views 1969 optimistically.

and his own firm, Gamble expressed his enthusiasm. "This is an outstanding growth industry of the future," he commented.

CAB on Way Out in 1969?

At least one cable industry foe may be about to retire from the battlefield. The Committee for the Full Development of All-Channel Broadcasting (CAB) authorization from the FCC will expire next month, and indications are strong that it will not be given another two-year term.

CAB, which has helped to popularize the notion that CATV systems harm the economic potential and performance of UHF television, held its first meeting in 1963 and will probably hold its last in 1969. With few clear victories to its credit, CAB recently asked the Commission whether it should continue to meet.

Commissioner Robert E. Lee, the group's contact at the FCC, kindly stated in a letter to CAB Chairman Lawrence Turent of KEMO-TV, San Francisco: "I have arrived at

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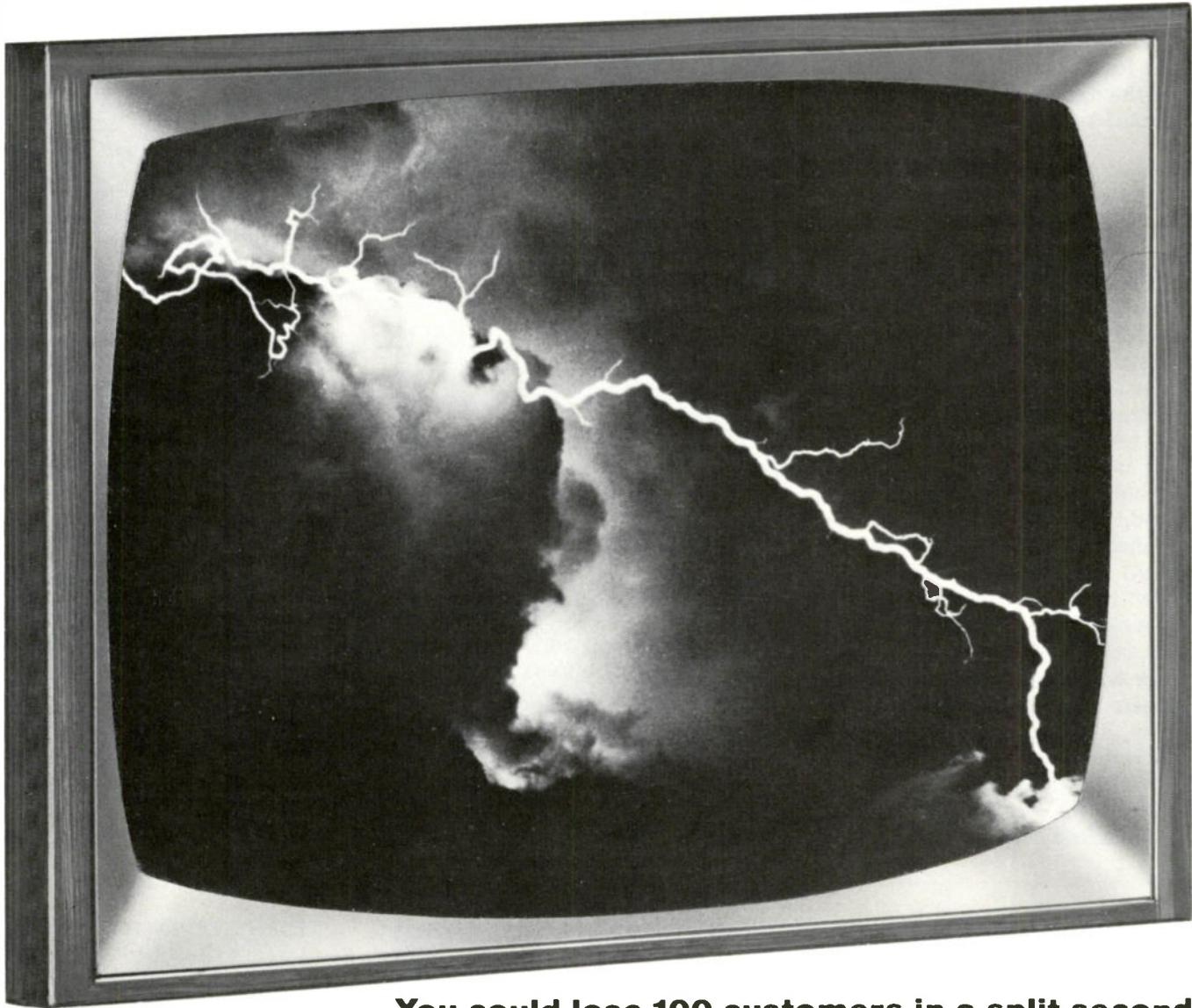
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the view that your group has fulfilled its mission in fostering the resurgence of UHF broadcasting, and should not have its Commission authorization renewed." By law, special study groups such as CAB cannot have a life of more than two years. If convincing arguments are made for a renewal, the FCC would heed them, but such an effort is not expected to be made.

Justice Dept. Presses Media Merger Case

The CATV industry is keeping a watchful eye on developments following a recent successful effort by the Justice Department to scotch a communications firm's ownership of a television station and newspaper in the same town.

Cable operations were not involved, but the FCC's proposed rule making on ownership and increased congressional interest in concentration of mass media control makes the case significant to cable system operators.

The company involved was the Gannett Co., which owns 30 newspapers, 3 television stations and 6 radio outlets in a total of 5 states. In 1963, it bought WREX-TV in Rockford, Ill., and last year bought the Rockford *Morning Star* and

System Sales

Perry Publications, Inc. has purchased 80% interest in **Palm Beach (Fla.) Cable Television Co.** In addition to acquiring the stock from **Burnup & Sims**, Perry also obtained an option for the remaining 20% of stock still owned by the firm. This is the first CATV acquisition made by the Perry organization.

GT&E Communications, Inc. has announced the acquisition of **Sarasota (Fla.) Cablevision, Inc.** Sarasota Cablevision operates cable systems in Manatee and Sarasota Counties, and in the communities of Bartow, Brandenton and Lake Wales, Fla.

Concordia Television Corp., owned by NCTA president Frederick W. Ford, has purchased the Vidalia, La. system from **Concordia Video Co.** The 12-channel system serves 1,100 subscribers. The brokerage transaction was handled by Daniels & Associates, Inc.

Meredith-Avco, Inc. has reached an agreement in principle with **American Television and Communications Corp.** for the sale to the latter of the outstanding stock of Meredith-Avco for a cash price of \$14,000,000. Meredith-Avco operates 8 cable systems with approximately 24,000 subscribers in 5 southeastern states. It also has a 50% interest in Florida

TV Cable, Inc., which operates 2 systems in Florida having approximately 20,000 subscribers.

Mississippi Transmission Co. has purchased the **Houston TV Cable Co.**, serving Houston, Miss., from **M.L. Pate** of Tupelo, Miss. According to E.D. Larson, president of Mississippi Transmission, the aggregate price for the transaction, plus budgeted rework of the system was approximately \$130,000 in cash.

GenCoE, Inc. has agreed in principle to purchase all the stock of the Sedalia, Mo., system from **Livingston Oil**, Tulsa. The system, which was begun in 1966, is serving approximately 3,300 subscribers.

Guymon Television has announced the sale of their firm of **Cablevision of Guymon, Inc.** The system is presently serving 1,300 subscribers in Guymon. The brokerage transaction was handled by Daniels & Associates, Inc.

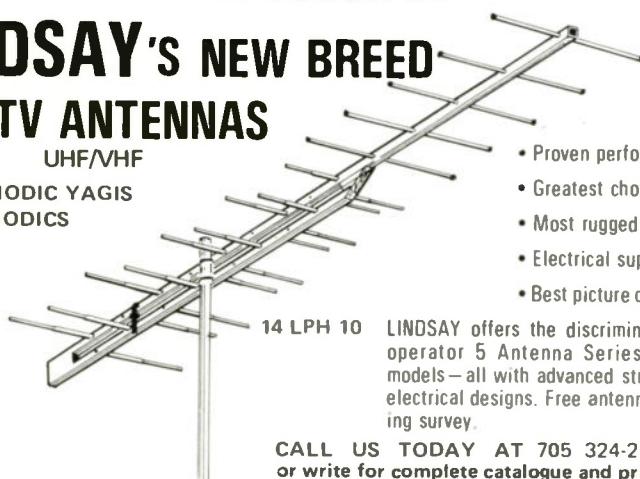
Nation Wide Cablevision, Inc. of Los Angeles has signed an agreement to acquire **Total Telecable, Inc.** of Seattle, Wash. Total Telecable operates several systems in Oregon and Washington.

Vikoa, Inc. has agreed in principle to acquire **Bluefield Cable Corp.** of Bluefield, W. Va. The transaction involves stock, cash and notes, worth approximately \$2 million. The 125-mile, 12-channel system serves more than 4,300 subscribers.

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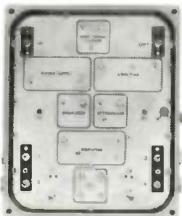
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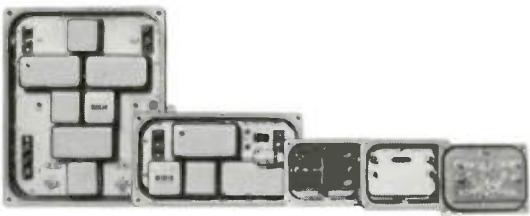
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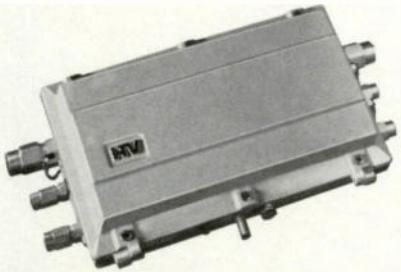
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Register-Republic, town newspapers.

Although the town is served by other broadcast outlets and publications, the Justice Department began applying the pressure which culminated in a Chicago U.S. District Court consent decree. By

terms of the decree, Gannett pledged to sell WREX-TV within 18 months and announced that Gilmore Broadcasting Co. would buy for \$6,850,000.

In signing the decree, Gannett admitted no wrongdoing, merely decided not to fight.

MCI Offers Counter-Proposal To AT&T's Public Broadcast Tariff

Toward the end of 1968, American Telephone and Telegraph filed its expected tariff at the FCC spelling out the terms under which it would furnish another network service, that of the Public Broadcasting Corporation. But in a surprising come-back, Microwave Communications, Inc. filed a counter-proposal with the Commission, claiming it can provide a more diverse and cheaper network service for PBC.

MCI asked the FCC to initiate steps toward the use of special service common carrier and CATV microwave common carrier facilities for the nationwide interconnection of educational television stations and universities.

The AT&T tariff provides two hours per day, five days per week (Sunday through Thursday), while MCI would provide service 24 hours a day, every day to the Corporation. Charges made by AT&T would reportedly work out to be about 20 percent of the commercial rate (AT&T is estimated to have land-line revenues from the three commercial television networks of some \$50 million annually).

MCI officials said the networking cost under AT&T will amount to \$130,500 monthly, excluding the local channel charges for a 150-station network. The microwave company, however, can hook up the 150 stations plus 71 universities for only \$38,940 by simply allowing educators to attach their transmitters to the existing microwave facilities.

MCI's figure is based on a need for 330 national microwave sites at a cost of \$7,000 per site spread out over the equipment's estimated life span of 16 years. Advantages of its proposal, MCI says, are that edu-

cators would keep control of their facilities, would have them at constant call for a minimum cost, and could link universities in a new exploration of educational interchange.

Calendar

February 2-8. National Cable TV Week.

February 5. The Texas CATV Association legislative session will be held at the Sheraton Crest Hotel, Austin.

February 8. The Dempsey Hotel in Macon will be the site of the Georgia CATV association's annual meeting.

February 10-12. The Louisiana Association of Cable TV Operators will meet at the Monteleone Hotel, New Orleans.

March 17-18. The Pacific Northwest CATV Association will hold its annual spring meeting in Spokane, Wash.

March 23-26. The annual convention of the National Association of Broadcasters will be staged at the Shoreham and Sheraton-Park Hotels, Washington, D.C.

March 30-April 2. The Southern CATV Association will meet at the Monteleone Hotel, New Orleans, La.

April 16-18. The Texas CATV Association will hold its annual meeting in the Marriott, Dallas.

May 7-8. The Pennsylvania Community Antenna Association will hold its annual meeting.

May 12-15. The National Community Antenna Television Association of Canada will hold its annual convention in Quebec City, Que.

June 22-25. The NCTA will hold its annual convention in San Francisco at the San Francisco Hilton Hotel.

TVC

HTV Announces Contract

Officials of HTV Systems, Inc., East Rochester, N.Y., have announced that the company has been selected to supply amplifier equipment for a New Jersey CATV system being installed by The Farmers Union Telephone Co. (subsidiary of Continental Telephone Corp.).

CBS Discusses CATV West Coast Acquisitions

Columbia Broadcasting Systems, Inc., which has long experience in the ups and downs of federal regulation, is apparently undiscouraged by the CATV rulemaking proposals of the FCC—it is entering into agreements to buy out three West Coast cable television operators. Terms of any eventual agreements will not be made public until a registration statement on the proposed stock exchanges is filed at the Securities and Exchange Commission.

In exchanging CBS common shares for the stock of the companies, CBS hopes to buy Tele-Vue Systems, Inc., which has CATV systems in California and Washington states, Clear View Cable Systems, Inc. and Marin Cable Television, Inc.

CAS Merges with Avnet

John Campbell, president of the CAS Manufacturing Company of Dallas has announced merger plans



John Campbell, president of CAS.

for his CATV manufacturing firm with Avnet, Inc. Details of the merger, approved in principle, will be announced later according to Campbell, who will continue to direct the activities of CAS.

Heading a list of plans for CAS Manufacturing's operation as a division of Avnet is the establishment of an eastern research, development and distribution facility in Middletown, N.Y.

In addition, CAS reports plans to expand its Texas plant facilities by at least 200 percent to accom-

modate research, development, and increased production beyond that scheduled for the new Middletown operation.

A systems division to be established shortly by CAS will offer engineering, planning and financing for system construction. At the same time CAS will expand its sales organization to provide nationwide coverage through a network of regional offices with western headquarters in Dallas and the eastern operation based in Middletown.

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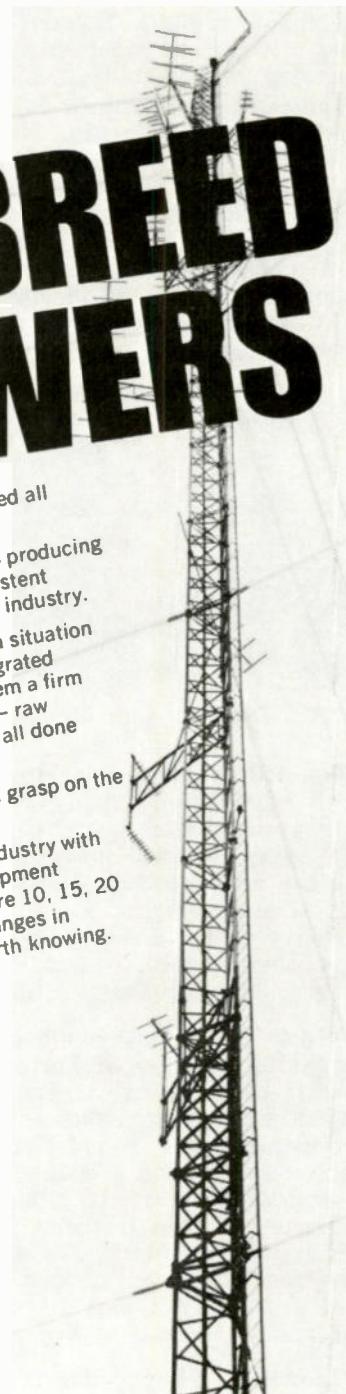
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Systems

American Television and Communications Corporation has announced two new changes in their management staff. Hyman Triller was selected as western regional manager, and in that office will be responsible for operation of ATC's systems in California, Nevada, Washington and Oregon. Prior to this appointment, Triller managed the company's system in Eau Claire, Wisc. Vernon Wible has been chosen as mid-west regional manager and will be in charge of ATC's Kansas, Nebraska, and Missouri systems.



Mr. Triller



Mr. Dunn

Sherrill D. Dunn has joined the staff of Community Television, Inc., group system owner company in Denver. He will be responsible for the coordination of sales and advertising activities of CATV systems owned by the company. Dunn was formerly with Ameco, Inc. as director of advertising.

Hank E. Lockard has been promoted to manager of Perfect TV, Inc., Harrisburg, largest of Jerrold's operating systems. Lockard formerly was the chief engineer of Perfect TV, and is a CATV pioneer having over 16 years experience in the industry. Since joining Jerrold four years ago, he has been employed at Perfect TV and other Jerrold-operated CATV systems.

Lionel P. Simoneaux has been named manager of Rayne (La.)

Cable TV and will direct the company's local offices.

National TransVideo, Inc. has named G. R. (Dick) Gamble as its new president. Formerly executive vice president of the Dallas-based MSO, Gamble has been with the organization for over four years.

Joseph S. Stern Jr., currently a director and the former president and chairman of the United States Shoe Corp., has been elected to the board of directors of Lamb Communications, Inc., a Toledo-based broadcaster and multiple CATV operator. Stern is also a director of the Central Trust Co., of Cincinnati, president of J. S. Stern Jr. & Co., and a professor of business policy at the University of Cincinnati.

Several shifts have been made in the personnel lineup of American Cablevision Company's systems. Robert Smith has been promoted to manager of American Cablevision of Graham, Texas. Dave Kallio was recently moved from manager of the company's Calumet (Mich.) system to manager of the Escanaba system while Bernie Haggard, former technician of the latter system, moved into the position of manager at Calumet. Pat Bresnan, manager of the Soo, Mich., and Soo, Ont., systems is temporary regional manager of all the company's Michigan systems. In another of the company's promotions, Michael Huggins was appointed controller.

Suppliers

Among several new appointments recently announced by Jerrold Electronics Corporation are the following: Clyde Shinazy has been named manager of the far western region by the construction department of the CATV Systems Division. Shinazy will be in charge of building CATV systems in the ten far western states of the U.S. including Hawaii and Alaska. Prior

to joining Jerrold, Shinazy was with Boeing in Seattle working on missile programs. The corporation has selected Richard B. Dow as director of purchases. For the past two years, Dow has been manager of procurement for Waltham and Sudbury facilities of Raytheon's space and information systems division.



Mr. Shinazy



Mr. Einhorn

The appointment of Arthur Einhorn as administrative assistant to the treasurer has been announced by Vikoa, Inc. Formerly business manager for the CATV, syndication and eductasting subsidiaries of Triangle Publications, Einhorn was also active in the formation of Empire Cable TV Co., Inc., Binghamton, N.Y., Triangle's first CATV system.

George W. Henderson has been promoted to chief field engineer at Kaiser CATV. Henderson joined Kaiser in April, 1968. In his new position, Henderson's responsibilities will include field engineering and construction supervision of CATV systems being turnkeyed by the Kaiser CATV Division. He has been a field engineer for the past seven years.

The election of Allen C. Ritz, a practicing certified public accountant, to secretary-treasurer and the board of directors was recently announced by Craftsman Electronic Products, Inc., and Production Products Company, Inc. Ritz will serve as a financial consultant, helping to form policies for the guidance of the two companies in their expansion program.

Charles C. Snider has been selected vice president-international of International Video Corporation. In his new post, Snider will direct IVC's international activities which are being developed initially in Europe and the Far East. Snider was formerly vice president-international, Consolidated Electrodynamics Corp., Sierra Madre, Calif.

ONE MAN; ONE CAMERA, THE IVC-100 □ Internet Television Productions, Inc. of Laguna Beach, California in association with San Clemente Cable TV Co. and Leisure World (a Rossmoor development) desired to produce live pick-up of the San Clemente Surf Club Competition, the Hollywood Hackers Golf Tournament, plus an award banquet for later cablecast to 15,000 Southern California homes. □ Problem? You bet. □ This meant surf, turf and filet mignon—lighting conditions from one extreme to the other—fixed and remote camera positioning—indoor, outdoor and studio locations. □ The IVC-100 color camera and IVC-800 video tape recorder was the only system that could do the job and deliver top-notch color fidelity and registration at realistic costs. □ In three days of bouncing from truck-to-turf, not a single operating adjustment had to be made by the lone operator. Now, this same performance is in pocketbook range of every cablecaster, large and small. See the reverse side for details on the IVC-100 color camera and IVC-800 video tape recorder.



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New design ideas in optics and electronic design have maximized performance. Reduced "lag", high stability, and better registration are the result. The IVC-100 with built-in sync generator and encoder is transportable (one man); easy to maintain and set up. It can be used for remote taping, multiple camera pick-up and film chain functions with proper options. Price—\$14,000.



International Video Corporation

Frugal design engineering by IVC not only cuts cost but delivers more equipment capability for the investment. The IVC-800's built-in electronic editing feature, for instance, contributes to operating efficiency without affecting compactness, mobility and versatility. The IVC 1" format allows an hour of recording time on a small 8" NAB reel tape—30% less tape is used at an average savings of \$15 an hour. The IVC-800 reproduces high-resolution NTSC-type color pictures, or, wideband monochrome pictures with bandwidth exceeding 5MHz. Stop motion is standard. Slow motion is optional. Price—\$4,200 to \$6,200 depending on options.

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Robert Munroe has been selected district sales manager and **Robert Johnson** assumes the post of project engineer in the newly formed CATV division of Aqua Instrument Co., Inc. Munroe has been in sales work for over 15 years and is well known in the CATV field. Johnson, a former engineer at General Electric Co., has long experience in the electronics field.



Mr. Munroe



Mr. Johnson

The Catel Corporation has announced three new appointments. Ray Stewart has been selected to serve as the corporation's new general manager. Stewart comes to Catel from Hewlett-Packard where he occupied the position of manufacturing manager. C. E. Svehla has been named sales manager for

the firm in which position he will be responsible for all sales and marketing duties of the corporation. John Dear has been chosen to fill the newly created position of shop foreman. Dear has been with The Catel Corporation since it was formed.

V. F. Machin has moved up from vice president of marketing at Shure Brothers, Inc. to the newly-created position of senior vice president in charge of marketing and manufacturing. In this office, Machin will direct all Shure manufacturing operations and will continue to supervise all marketing activities for the company. Raymond Ward, formerly distributor sales manager for Shure Brothers, has been named vice president in charge of sales, also a newly-created post. Ward will be in charge of the direction of all domestic and international sales activities for the company.

American Electronic Labs has announced the appointment of Joseph T. Murphy as regional sales specialist for the CATV product line. Murphy will be headquartered in AEL's Mountain View, Calif. sales office where he will direct

CATV sales in the 11 western states.

Robert W. Kuhl has been promoted to national broadcast sales manager for Visual Electronics Corporation. Kuhl's promotion brings with it full responsibility for all Visual broadcast sales and support activity. Prior to the promotion, Kuhl was western regional manager.

Professional

The Tennessee Cable Television Association elected the following officers at its annual convention: **Alvin D. Wood**, Dyersburg, president; **W. Marion Palmer**, Gatlinburg, vice president; and **Kenneth Everett**, Jackson, secretary-treasurer.

Dick Gamble has been appointed to the NCTA Board of Directors to fill the vacancy created by the resignation of Doug Jarvis. Bill Adler has been appointed chairman of the Legislative Committee, and Doug Dittrick succeeds Adler as chairman of the Community Services Committee.

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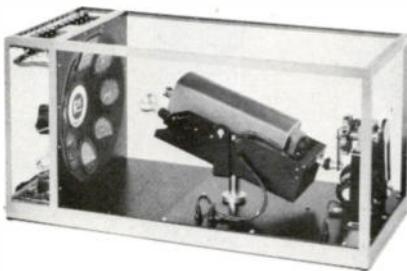


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Built for small spaces—measures only 44" by 20" by 20". Fully enclosed for dust protection. Features a unique one-way circular scanning. Several camera options available. A quality leader for \$4,200.



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Extra-large Texas Instrument gauges for special applications. This versatile unit is sized right for public display of your weather channel. It's the best-selling original RHT unit, and it's priced at just \$4,575.

Spectacular Grand Opening Launches Giant Texas Operation

The four-pronged, \$100,000 debut of the giant-sized cable TV complex attracted nearly 40,000 Rio Grande Valley residents from the 14 Texas border cities to be cabled.

It was like staging a debut for quadruplets . . . in four different cities. Four guest lists, four caterers, four orchestras, four host-hostess teams, and as many ballrooms were required. The Texas-size "coming out" party was a "reception-reception," honoring the advent of 10-channel viewing in the Texas Rio Grande Valley.

Father of the massive CATV network which opened December 12 to serve subscribers in 14 towns along the Texas border was the Jerrold Corporation of Philadelphia. Valley Cable TV, geographically the world's largest CATV system, is also one of the industry's most complex.

The planning and expense which went into its debut are exceptional in the CATV industry. Professional public relations planners were used, and their ideas and techniques proved highly successful in meeting an array of problems.

The first problem facing the promotion team was the overwhelming size of the new system. Each of the 14 towns served—ranging in population from 3,000 to 50,000—manifested its own personality. For this reason, the vanguard of Jerrold's promotion team had recommended that each town maintain its own service office. Four separate division offices were organized under the direction of Erwin Sharp,

vice president and general manager. Each section had a division manager and local staff. The head office was located at Pharr, Texas. Valley Cable TV was intended to belong to each community in a personal way. For this reason, the service divisions were named without a hint of locality identity. For instance, the division headquartered in McAllen, Texas, was called the "Western Division" rather than the McAllen Division.

In planning the grand opening for Valley Cable, it was felt that one large public opening in a centrally located city would hardly justify the expense of its promotion. In the Valley, where life proceeds at a relaxed pace, local citizens would not be inclined to drive 60 miles for a public opening—the lure of prizes, celebrities, and festival aura notwithstanding.

Staging 14 small opening events from local offices only would create personnel problems and would hardly provide the impetus to attract a spectacular number of potential subscribers.

However, it was felt that the opening must not slight any geo-



The Kona Klan, a Hawaiian dance group, added variety to the entertainment by performing at the four Valley Cable Grand Opening sites.

The Weslaco, Texas, subscription sign-up area is typical of the displays used also in Harlingen, McAllen, and Brownsville. 13,000

Valley residents signed up for cable service during opening week.

graphical area of the system after such careful groundwork had been laid. As a result, four became the magic word. Four openings, one in each region, was considered sufficiently alluring to cause potential subscribers to drive 10 miles from neighboring towns. Joel Smith, president of Valley Cable, decided the openings should have equal stature in terms of entertainment, refreshments, guests of honor, and participation by VIP's. To implement such an ambitious four-dimensional festival required the complete effort of the parent company's Systems Operations Division executive staff.

A second problem faced the promotion team: Valley dwellers had developed a "wait and see" attitude toward the concept of a community antenna system. They wanted to find out whether the proposed system would accomplish what it purported in terms of clear channel reception. They also wanted to be sure the operation would maintain continuing service to its clientele. (In the last 10 years, six cable systems had been germinated by the Valley's need for the service, existed briefly, then were abandoned or changed hands). Valley residents had become "cable shy".

Promotion planners set out to change the Valley residents' cautious approach to microwave-cable service. This was to be accomplished by a studied advertising and public relations program and by making



Valley Cable TV a grass roots member of each community.

The word "Cable" was minimized . . . stressed instead was the "microwave" aspect of the complicated system. Cables had failed in the Valley, but "microwave" had not been abused by previous cable companies. Local offices, employing local people, were built with local supplies. Whenever possible, suppliers for the \$5 million project were residents of the Valley.

Even as office locations were being chosen, cable and microwave construction went into full swing; the promotional package was being brought into focus. Under the direction of Dave Brody, Jerrold systems operations division manager,

Brody's assistant, Craig Stevenson, and Stan Ogen, advertising and promotion manager, a four-week opening campaign was planned.

Invaluable aides in the campaign were two resident Texans with a penchant for promotion and an understanding of the Valley, its people, and its resources. They were Erwin Sharp, vice president and general manager of Valley Cable TV, and his radio-TV-groomed promotional assistant, Jim Polk.

The system itself was, from a technological standpoint, one of the most complex of the nation's some 2,200 CATV systems. Three Monterey, Mexico channels 100 miles away were transmitted via two microwave hops to a junction point.



Small children attending the opening were more interested in the colorful balloons than in the 10 channels of television service being offered their parents.

At the junction location they were combined with the Corpus Christi, Texas channels which arrive via a separate four-hop microwave originating near Corpus Christi. The combined signals from Corpus Christi and Monterrey are transmitted as a package to the four Valley relay sites, from which they are dispersed over 500 miles of aerial and 100 miles of underground plant.

To fully introduce this massive new system to local citizens, the four sectional openings were preceded by "VIP receptions," on December 12. Prominent citizenry from the 14 cities received engraved invitations. The press, city officials, and prominent educators, businessmen and their wives were greeted by Jerrold executives and district managers of Valley Cable and treated to a preview of the 10 to 12 channel reception which would soon enhance Valley viewing. A dance band, cocktails, and catered hors d'oeuvres added to the event.

But the tale of four cities was actually told December 13 and 14 when the public showed up—40,000

strong—in Brownsville, Harlingen, McAllen, and Weslaco.

A carnival aura prevailed in the four large warehouses and halls, where vivid flags, fringe, and balloons, complemented the perpetual motion of the more than 300 television sets. Children teased clowns, housewives tried their keys in treasure chests filled with certificates for nearly 2,000 prizes, and hopefuls of all ages registered for color television sets. These enticements, along with Mr. Spock of NBC's "Star Trek", and of recording prominence as Leonard Nimoy, attract thousands to the four locations. A troop of Hawaiian dancers and musicians travelling city to city, and the participation of local talent further served to perpetuate the festive mood.

Many weeks of planning had gone into the \$100,000 promotion to achieve the maximum result. It was decided that a saturation campaign would be necessary to reach TV viewers from the diversified social and economic strata of the Valley. No one medium, it was thought, could adequately present the case for a microwave-cable tech-



Television and record star Leonard Nimoy, Mr. Spock of "Star Trek", signs autographs for admiring fans.

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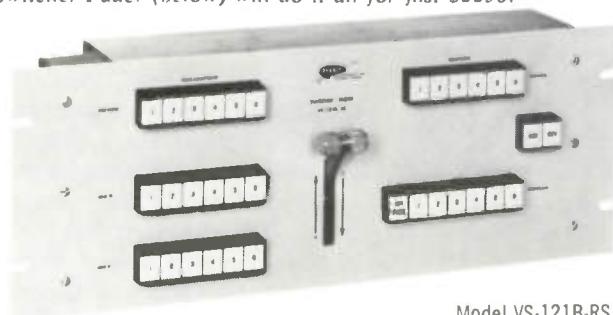
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An attractive hostess awards a potential subscriber one of the 2,000 prizes provided by Valley Cable during the opening.



NCTA Chairman and Jerrold President Robert Beisswenger is greeted at the Harlingen airport by the Six Shooters, who bestowed upon him the title of "Honorary Sheriff".

nology which would provide much-needed service to an entertainment-starved area.

The cable service area rests on the lower rim of the United States, some 150 miles from Corpus Christi, the nearest metropolis, and 210

miles from Houston. Movie theaters in the Valley are not abundant and, while the two local stations have filled a great entertainment void, they were unable to completely satisfy a cross-section of the population.

Very little programming had been geared to the thousands of Spanish-speaking Americans living within walking distance of Mexico. Programming was tight on local stations because of the necessity of staggering broadcasting from ABC, NBC, and CBS; therefore, there was little time for the voice of the community to be heard. An educational channel? That would never happen in the Lower Valley. Valley Cable could fill this void—but how could the people best be told—and once told, how could they be convinced?

Saturation advertising was one means. Every newspaper which reaches Valley subscribers, including four dailies and 12 weeklies, heralded the coming of microwave for four weeks before the opening. Advertising—some salvaged from previous campaigns, but most tailored to the Valley—was marked by “hard sell” copy. The virtues of microwave were extolled, the system explained and re-explained, the 78 permanent employees of Valley Cable TV were pictured, and the promises of prizes and a gala party were made prominent. Subscription blanks published in dailies brought thousands of subscribers into the system.

Included in the promotion budget was a 12-page supplement section which appeared in four dailies just before opening day. The special section contained articles on other cable TV systems thriving throughout the United States, technical explanations on all aspects of microwave and cable systems, features on the educational and entertainment facets of 10-channel viewing, and photos with biographical data stressing local managers and technicians.

Publicity stories were another major means used to reach the public. Throughout the construction of the system, area newspapers were kept informed about its development. For example, one story was published on how high winds prevented hoisting of a 10-foot parabola; arrival of new equipment was the subject of another feature. All area dailies and weeklies were alerted to early story suggestions by Ogen, Sharp, and Polk. Releases on the inception of the system and later on Valley Cable open-



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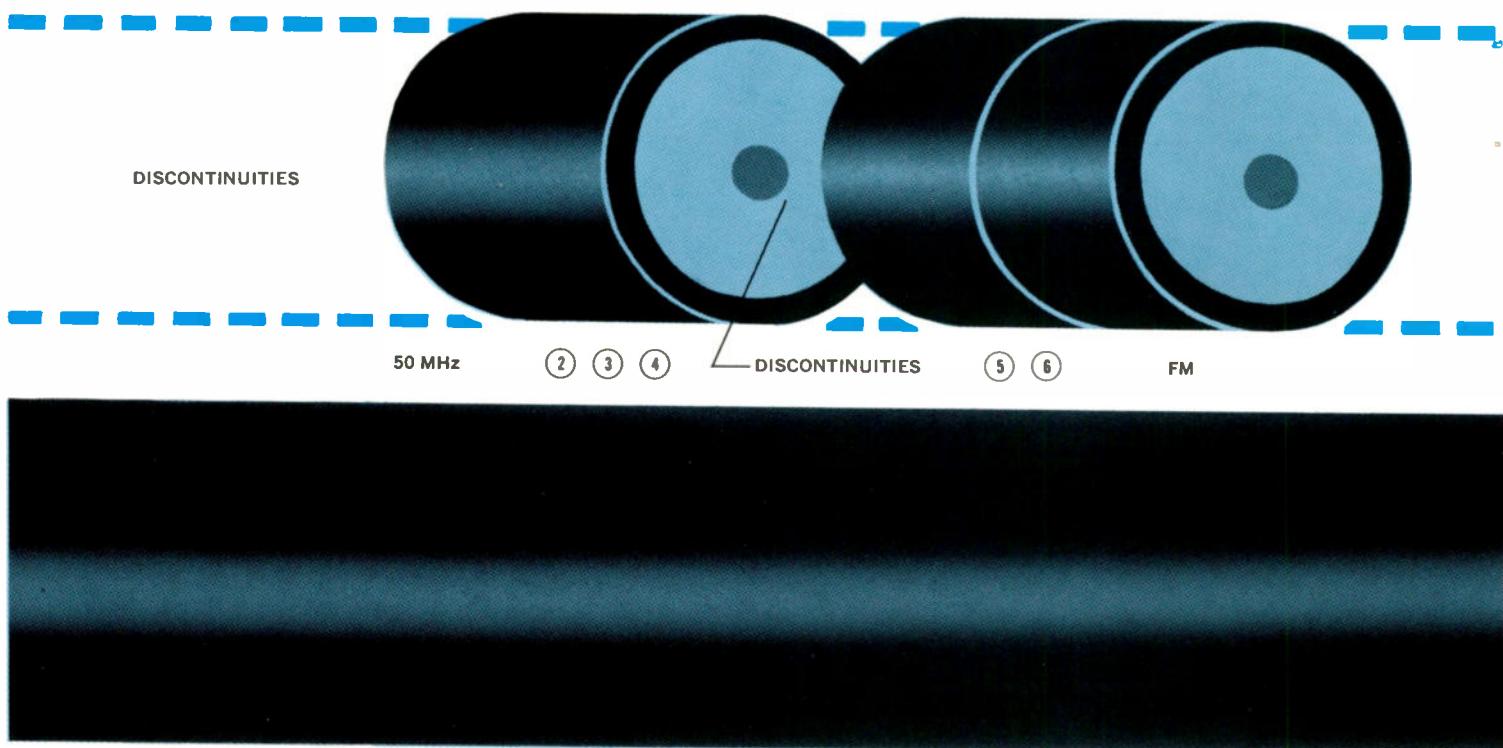


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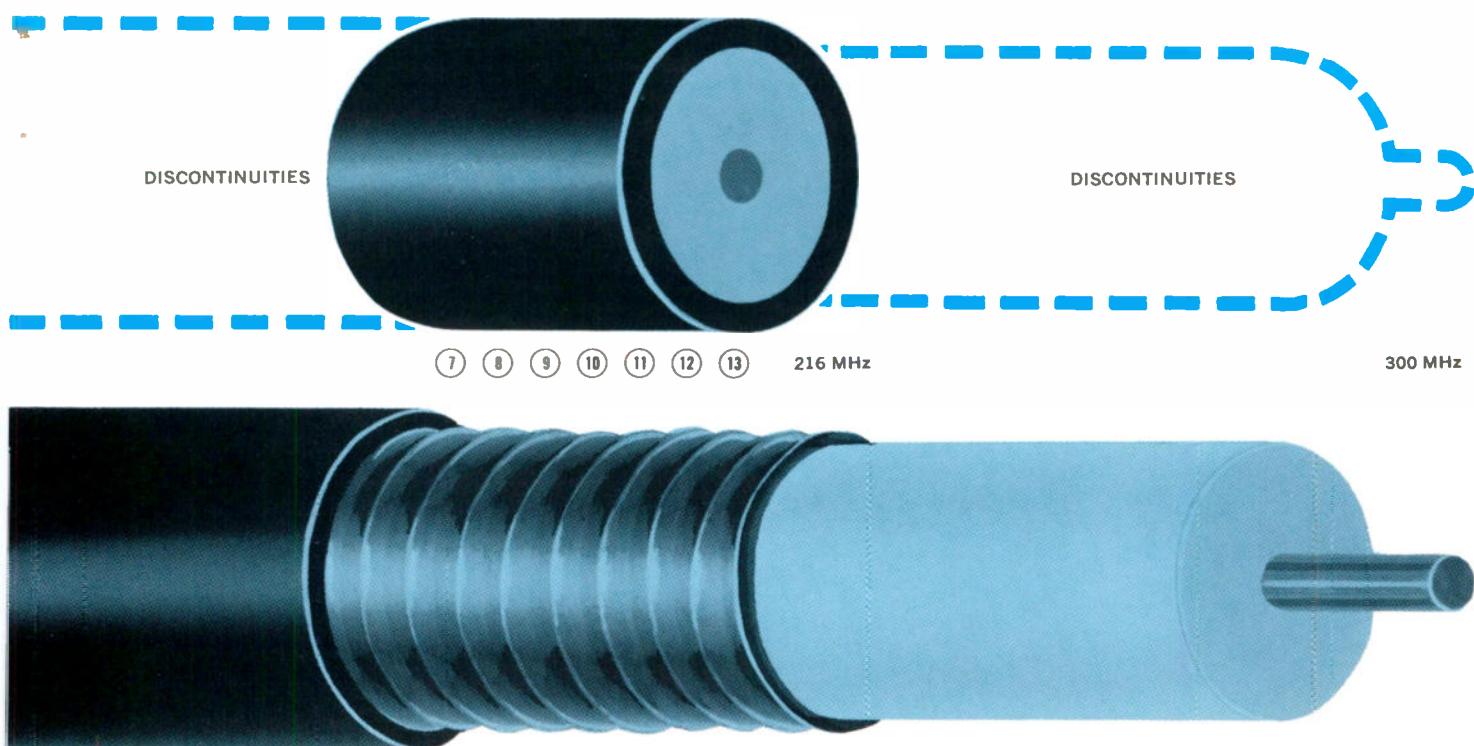
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ings were prepared for national publications and news services by a public relations firm.

Brochures, color-coded according to districts, reached area households the week before opening. They explained the microwave, announced which channels would be available, and delivered a special key which might unlock a treasure chest at the district opening. Supplementary mailers and handbills printed in Spanish alerted bi-lingual Valley residents to forthcoming activities.

Television was, of course, the natural medium for getting the message to potential customers. Videotaped, one-minute spots appeared on local Channels 4 and 5 for four weeks prior to opening. Similarly, 20 radio spots per day—slacking to seven after 10 days saturation—also used the hard-sell approach.

Because of heightened community interest in Valley Cable TV, system manager Sharp was invited to make two appearances on a local talk show—a courtesy of the station. During the 20-minute appearance, Sharp was able to make con-

versational reference to the system and its economic contribution to the communities. Considerable favorable response resulted from these appearances.

The arrival of NCTA Chairman and Jerrold President Robert H. Beisswenger netted additional news coverage, including a 3-minute TV film clip of Beisswenger with his greeting committee, and a community hospitality group donned in cowboy regalia. The Six Shooters presented the executive a certificate naming him "Honorary Sheriff of Six Shooter Junction," a courtesy recently accorded Vice President Humphrey and Vice President Elect Agnew.

Unbudgeted radio coverage was gleaned from an interview with Leonard (Mr. Spock) Nimoy at the McAllen opening and one TV dealer arranged for continuous remote radio broadcasting from the Harlingen opening site. From the Brownsville, Weslaco, and McAllen sites, limited remote broadcasting was also originated.

Billboard space was purchased along major thoroughfares seven

weeks before the kick-off of the system. The signs were auspicious in the Valley, where trees are few and billboards scarce. A teaser query, "Want more TV channels?", was answered in phosphorescent red the week before inaugural festivities with "Microwave Is Here!"

Promotional miscellany included 2,000 door prizes and 12,000 transistor radios as giveaway items for early subscribers. A single-engine commercial aircraft buzzed the 14 towns periodically prior to and during the opening, trailing a 40-foot banner, "Cable TV Via Microwave."

Perhaps the most creative promotion was the coalition formed with area television dealers during a series of pre-opening dinner meetings. The openings themselves provided a setting in which dealers could, from booths partitioned with velvet drapes and backdrops, exhibit and take orders for TV's and cable subscriptions. Seventy-nine participants staged miniature living room settings for their wares, or banked numerous TV sets to emphasize multi-channel viewing. Individual dealers assumed all costs for transporting appliances to and from opening sites and many brought supplementary furniture, rugs, wall hangings and other decorative items. Besides eliciting the personal interest of area dealers, the promotion begot supplementary advertising by participants... who will continue to use 10-channel reception as a selling tool for years to come. Valley Cable provided warehouse space for a week's use, plus booth dividers and other decorations, without charge to participants.

The results of this massive promotional effort and the good will and excitement it generated was a grand opening exceeding even the most optimistic expectations of systems officials. Forty thousand plus people turned out for the openings, and the projected number of subscribers in the fold by March 1, 1969 is now three times what it was prior to the opening. Formerly, the estimate had been 6,000 subscribers; the new projection is that 15,000—25 percent of the 60,000 Valley households—will be served by the gigantic CATV/microwave network.

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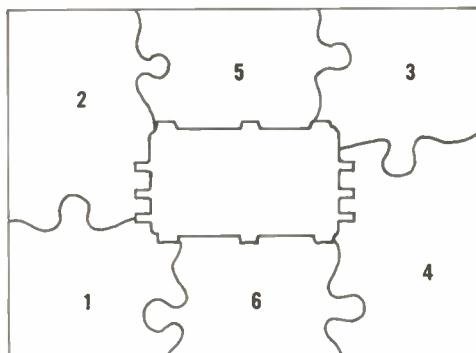
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Subscriber Sales Promotion— Look at the Big Picture

A planned program is essential to the success of any advertising campaign. The following article covers the basics involved in building such a program for your cable system.

By S. S. Street
CATV Consultant

Advertising is expensive. It is expensive if you do it right; it is expensive if you do it wrong; and it is even more expensive if you do not do it at all. In terms of subscribers and, therefore, revenue, cable companies can not afford *not* to advertise.

Most successful cable TV operations become successful largely through the implementation of a strong, consistent advertising and PR plan (Figure 1). Beginning in the construction phase, these cable firms established an advertising goal and budget, then selected the appropriate media to be used to reach that goal. In order to determine which media worked best at any given time, they also set up a workable method for determining the effectiveness of each ad and promotion—a method that provided all necessary data by which to compute costs of production and space, as well as results.

Often, systems that are not reaching their potential are unable to determine why. They think they are doing a good job of selling; they may even be spending a lot of money with the local radio station and newspaper. But they cannot tell you how much business was actually generated by last month's advertising expenditures.

If you do not know and have no way of determining last month's subscriber growth in terms of ads placed and money spent per subscriber, then it is a safe bet your

advertising program is not in good shape. Advertising should make friends and subscribers, but more important, *it should also produce results* in terms of new hookups. If yours is not paying, it will be worthwhile for you to examine some of the basic techniques of a sound advertising program.

Setting Goals

The first step is to decide what you want from your advertising program. You should think in terms of: (1) adding subscribers; (2) building a good public image; and, (3) retaining subscribers. Thus, you have a three-fold goal to achieve.

Next, you will want a plan by which to achieve your established goal. This plan should be projected over the coming year. Why a year—to achieve the continuity necessary for a good public image, as well as a consistently rising subscriber rate. In addition, space, like any other commodity you buy, is cheaper in larger quantities. Advertising is no different than any other business—you must plan, budget and keep records.

Difficulty often arises because advertising is generally thought to be creative and instinctive rather than precise. It is creative, but it is not impetuous. A single brilliant promotion will not carry you for a year. Neither can it replace careful planning and consistent effort. Therefore, when you sit down at

the beginning of your fiscal year to plan and budget, you should also draw up your advertising plans for the coming year.

Determining the Market

To whom are you selling? Determine the number of non-subscribers in your locality. Make certain that your records are accurate. Obtain the current population figures from the local Chamber of Commerce. If your street maps are up to date, study them for new housing developments. To determine new addresses and new residents in old addresses, obtain the weekly or monthly lists from the electric or gas company, which indicate where gas or electricity has been recently turned on or off. If you have been doing this consistently, you should have a fairly accurate list of occupied homes.

Make certain that your mailing lists are up-to-date. Maintain one list for subscribers; another for non-subscribers. These should be checked for accuracy before any mailing or direct sales program is initiated. Next, from your subscriber lists, determine approximately how many second-connects you might make. This procedure provides three basic lists from which to work. You must, first of all, keep existing subscribers happy. Therefore, your list and your advertising plan will include some money and effort directed toward

current subscribers. A second approach will be slanted toward second-connects. Your third approach will be toward non-subscribers. The largest chunk of advertising budget will be spent on this latter group.

Budgeting and Media Selection

In a fairly new system, with good pictures and a reasonable hookup time, schedule a budget allowing for a cost of at least \$5.00 per new subscriber.

There are several formulas for determining advertising budgets. The formula used in Figure 2 is based on 10% of the projected gross income for the first year. (On the chart, see year 1965.) For the second year (1966 in the example shown), 8% of the gross income of the preceding year is allotted. The third year (1967), 5% of gross income for 1966 is set aside for advertising. The pattern continues in the same manner through the years plotted. At the end of six years, you should have reached 80% of saturation, which is about peak.

Your rapid rate of growth, and as a result, your highest cost per subscriber, will occur during the first year, with your budget and subscriber growth rate both decreasing with the years (Figure 3). However, the profit picture continues to steadily grow. Figure 2 illustrates that, although you may be spending more than was anticipated for advertising, it is paying off at a reasonable rate.

After the budget is established, the local media should be evaluated. Newspapers are generally the most

effective medium, but even better results can often be obtained through a combination of media such as: newspaper, radio and direct mail; or, newspaper, radio, direct mail, and direct sales.

Unfortunately, many companies let local newspaper and radio salesmen badger them into purchasing

Repetition and Continuity

One of the basic tools of good advertising is repetition. In an advertising program this means not only a consistent newspaper ad format, repeating identical slogan and symbols, but also repeated use of the same format in all media. If

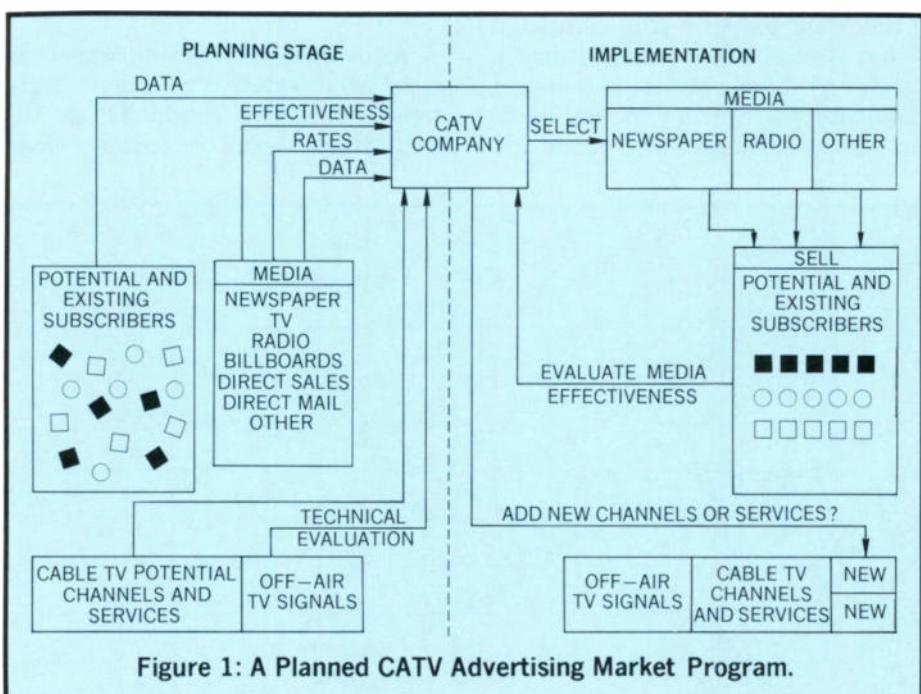


Figure 1: A Planned CATV Advertising Market Program.

time or space, even before they have any idea how they are going to fill it! This is unwise buying, to say the least! You do not buy space just to fill it—you must know exactly what you want to do, *then* you should allocate monies consistent with your overall goal and budget. Once the budget is established, *then* buy your space.

your audience misses your newspaper ad, chances are they will hear it on radio; if they miss both media, surely they will open their mail. One way or another, hopefully in all three media, your message will reach them. If your overall format is consistent and persuasive, you will sign subscribers.

Another important ingredient in

YEAR	SATURATION PERCENT		NUMBER OF SUBSCRIBERS	SUBSCRIBER INCREASE	GROSS INCOME AT \$60 PER SUBSCRIBER	ADVERTISING BUDGET PERCENT OF PREVIOUS YEAR GROSS	ADVERTISING BUDGET	COST PER SUBSCRIBER	INCOME LESS ADVERTISING COST
	CUMULATIVE PERCENT	OF POTENTIAL							
1965	30	30	1500	1500	90,000	10	9000	6.00	81,000
1966	15	45	2250	750	135,000	8	7200	3.20	127,800
1967	10	55	2750	500	165,000	5	6750	2.45	158,250
1968	10	65	3250	500	195,000	4	6600	2.03	188,400
1969	10	75	3750	500	225,000	3	5850	1.56	219,150
1970	5	80	4000	250	240,000	2	4500	1.13	235,500
Totals	80	80	4000	4000	\$1,050,000		\$39,900	\$9.98	\$1,010,100

Figure 2: 6-Year Growth Chart.

"paying" advertising is the use of continuity. From one major ad campaign to the next, keep symbols and slogans consistent and easily identifiable with cable TV.

Following up the Campaign

You might consider using a well-coordinated direct sales program as a follow-up to the media campaign—but do not allow it to become a "tack-on" effort. Make your media campaign preliminary to, and back-up for, your direct sales team. Di-

this approach, it is a good idea to offer a premium and charter subscribership. Everyone likes to be "first". If you can generate excitement about your system and make it seem worthwhile to be "first", you have a "sure-fire" subscriber lure.

Cooperative Advertising

As a rule, advertising expenses tend to be higher in a system's early years, dropping gradually as the subscriber count increases. How-

tive advertising is the "special promotion" in connection with holidays—Christmas, Thanksgiving, Mother's Day, Father's Day, Halloween, Easter—the list is practically as long as the year. Using a holiday on which to "hang" your promotion lends extra glamor, as well as the support of local merchants. For example, let us suppose you are going to offer free turkeys, for a limited time, for a Christmas special. Let's say you are aiming to add 400 new subscribers with this promotion—and the turkeys will cost \$5.00 apiece. With newspaper ads, radio spots and free turkeys, your cost per subscriber will be over the \$5.00 limit you have set for each new subscriber. But, if you give the turkey order to a local market, this creates good will and insures both a good supply of turkeys and perhaps economical cooperative advertising.

In addition, gifts of turkeys to local needy families and service groups help in establishing good community relations, and provide excellent publicity—and publicity is *free* advertising.

Using Simplicity

You must keep your message simple. Make it so easy to subscribe to your service, that the potential customer can do so without difficulty. If you want them to phone in their orders, feature the phone number prominently and say that you welcome phone calls. If you prefer that they fill out a coupon, give them enough room to write the necessary information. One of the most distressing things about many coupon offers is that advertisers frequently don't leave enough room to fill in the necessary information.

Another way to handle the offer, of course, is to run a newspaper ad series in conjunction with a mailing to the non-subscribers, complete with a postage-paid return card enclosed. Whatever reply form you desire, remember to keep it simple, easy to comply with, and easy to keep track of.

Evaluating Results

Also, it is important that you plan the ads and mailers so that

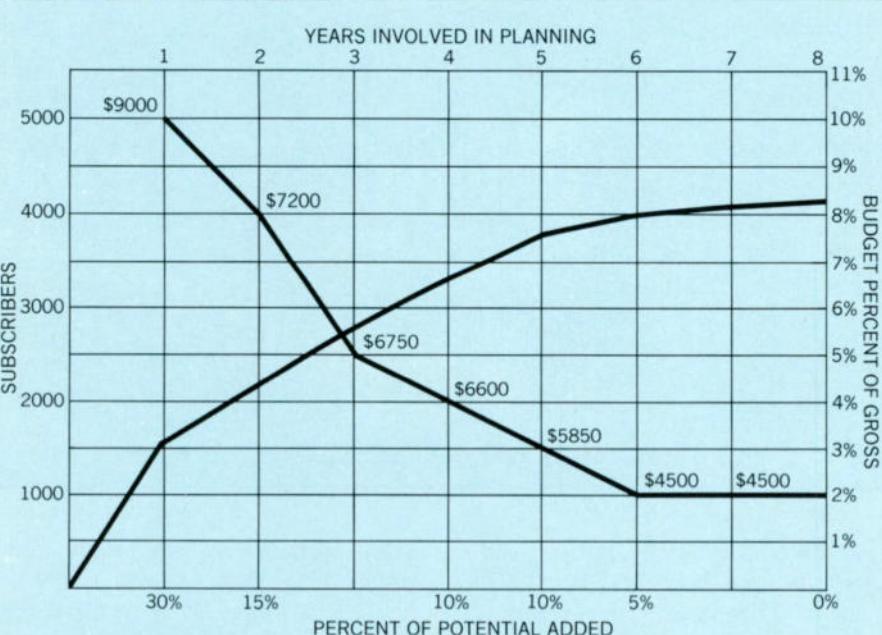


Figure 3: Graphic View of Rising Subscriber Count and Decreasing Advertising Expense. (For System of 5000 Potential)

rect sales programs must be planned carefully; they are very expensive and must produce results. If cablemen charted media results as closely as they watch direct sales results, we would find many more effective advertising campaigns in the cable TV industry.

If you are planning to wire a city by areas, consider using direct sales while the system is under construction. Coordination of newspaper ads with construction offers a perfect springboard to effective direct sales. The ads can feature detailed maps of the area under construction, and have the effect of preparing area residents for the salesman's call. People actually begin to expect the call. When using

ever, there are a couple of means which can always be used to cut costs. One is by use of special promotions, the other by working with TV dealers.

Many cablemen are implementing dealer promotions on a regular basis. The TV dealers are paid a commission for each hook-up they sell. Another interesting angle is to offer free cable hook-ups to exhibitors at home shows. In return, they push cable for you. You are saved the expense of exhibiting while you create extra business for the dealers—and they for you. You must, of course, supply them with point-of-purchase materials for use in selling cable.

Another way to handle coopera-



Fail-Safe

Develop a leaky connector with gas-filled Spirafil II® coax...and it's still waterproof.

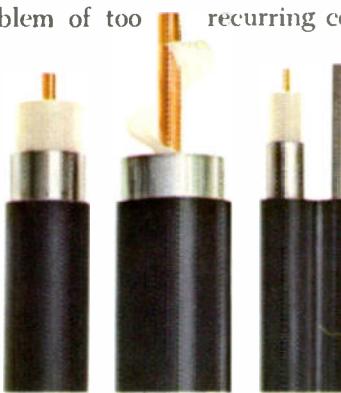
Pressurized SPIRAFIL II air-dielectric coax is a permanent solution to the moisture problem in CATV lines. If a leak occurs, moisture is forced out...not drawn in. What's more, just a few psi give you a positive check on the mechanical integrity of an installation before it is buried or set in place.

SPIRAFIL II also solves the problem of too many cascading amplifiers on long runs. It has considerably less attenuation than equivalent size foam coax...lets you run longer lines for increased coverage from a single antenna head without using microwave links. Then too, SPIRAFIL II has the best return

loss characteristic in the industry (32 dB worst point from 5 to 220 megahertz).

In regards to costs, SPIRAFIL II costs even less than foam cable in some instances. For example, you can use $\frac{1}{2}$ " SPIRAFIL II in place of $\frac{3}{4}$ " foam (attenuation is about the same for both) and save about 20% on cable costs. Pressurization is a non-recurring cost that averages only \$30 per mile.

For full details, contact one of our 35 local sales offices...or Phelps Dodge Copper Products Corporation, 300 Park Avenue, N.Y., N.Y. 10022. (212) 751-3200) Phelps Dodge coax for every CATV need. Exclusive SPIRAFIL II air-dielectric for lowest loss...and FOAMFLEX, the original foam-dielectric cable. Both at competitive prices.



PHELPS DODGE

COPPER, ALUMINUM
AND ALLOY PRODUCTS



GMP keeps your CATV construction costs down

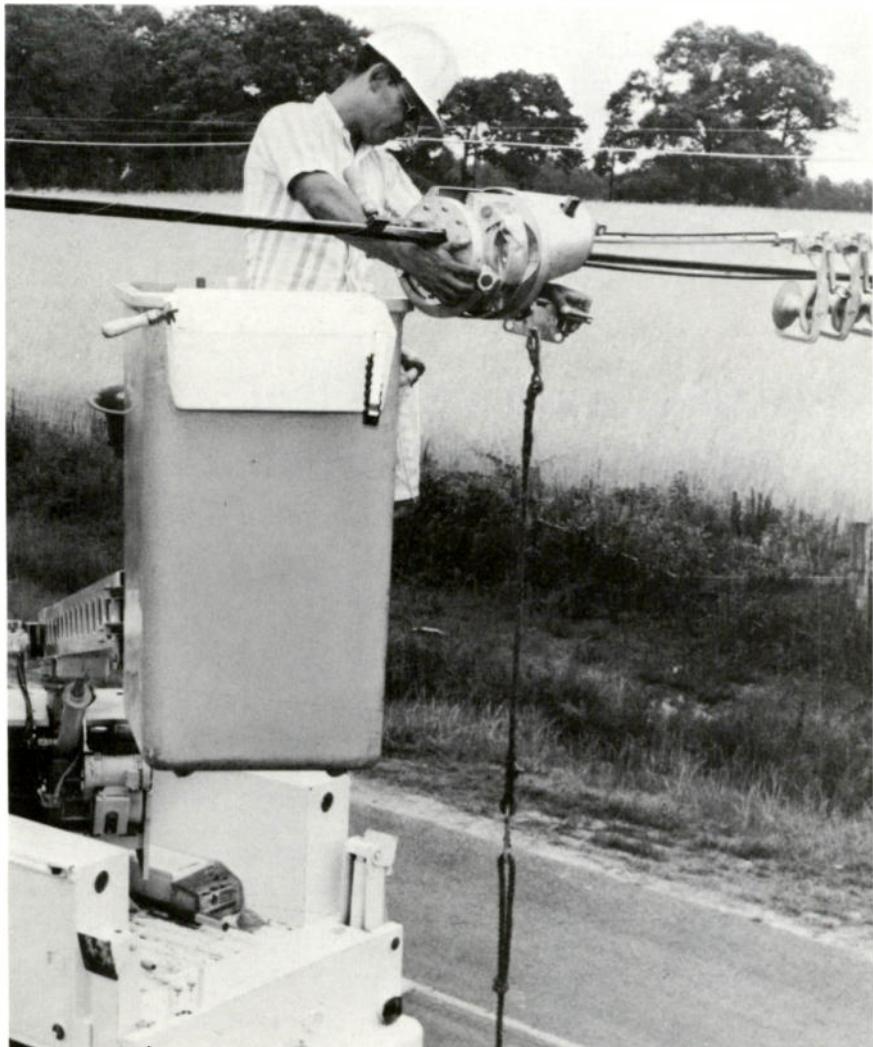
Precision GMP Cable Lashers help you get your CATV lines up fast—and keep your construction and maintenance costs down. Our popular C Cable Lasher delivers rapid, automatic and trouble-free lashing of cable up to $1\frac{1}{8}$ " diameter on strands of from $\frac{1}{4}$ " to $\frac{3}{8}$ " diameter.

This performance-proven unit holds two 1200-foot coils of .045" lashing wire at one loading, providing quick and easy cable installation. A factory modification provides an additional set of tensioning pulleys to accommodate .065" lashing wire.

Equipped with a brake to prevent backroll when lashing cable upgrade, this lightweight, rugged unit weighs only 33 lbs. and is furnished complete with a pulling rope and case.

For lashing cable up to $3\frac{1}{4}$ " diameter, GMP's versatile, automatic F Cable Lasher is the ideal unit. This compact lasher weighs only 43 lbs. and can accommodate two or more cables totaling up to 3" diameter.

Whatever your CATV cable lashing need, rely on the industry specialists—GMP. We have an unusually broad line of cable lashers, lashing accessories, and over 700 other CATV-telephone construction tools and accessories. Our new 50-page catalog has the details on all of them. Drop us a line today for your copy. General Machine Products Co., Inc. Trevose, Pa. 19047. (215) 357-5500.



Specialists in Telephone and CATV Construction Tools and Accessories



later you will know what happened to your money. In evaluating the results of the campaign, keep a record of all costs. In the above case, the expenses included monies spent for turkeys, newspaper ads, radio spots, direct mail, and production costs.

Assuming that the 400 subscribers received turkeys costing \$5.00 apiece, the cost is \$2000. Add another \$1000 for ads, radio spots, direct mail, and production costs, and the total cost is \$3,000. Divided by 400 new subscribers, the cost per subscriber is \$7.50. High, yes, but consider the following: Four hundred subscribers paying \$60 per year will add \$24,000 additional revenue next year. A net added revenue of \$21,000 is acquired when \$3,000 is subtracted for the ad campaign.

An expenditure this year for profit next year makes good sense. And when you itemize it carefully, so that you can see the results of your advertising and figure it out in dollars and cents, you will begin to plan—and chart—your advertising very carefully, and you will probably spend more—to your profit.

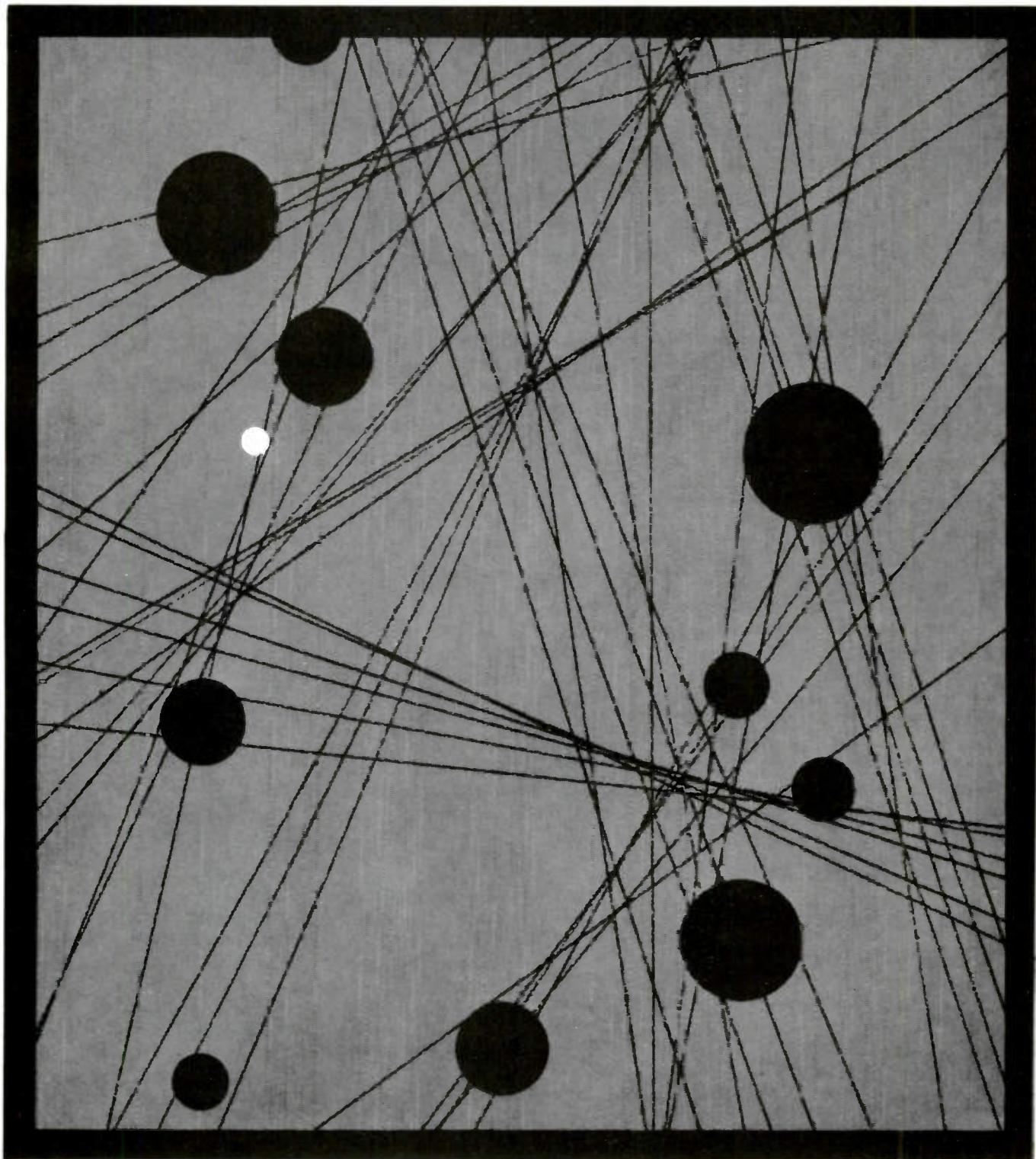
Conclusion

Advertising properly is hard work. You must concentrate on what you are saying, how you are saying it, and to whom you are saying it. You must be consistent in your claims, message and symbols. You must learn that repetition is the key to finally winning those hard-to-get subscribers. You must study people and see what causes them to react.

Above all, while advertising has variables, it must be regarded as a science which can be learned as any other. It is not hit and miss. Do not try first one thing and then another. Plan. Do not be afraid to mix media—innovate. You need not wait until your newspaper campaign is over to begin direct sales or direct mail. They work more effectively in co-operation.

Effective advertising involves a substantial outlay of time and money. But, if you will work at planning and coordinating your campaign, advertising will work for you.

TVC



valuation studies reduce acquisition uncertainties

A supportable valuation study of intangibles, including franchises, plus physical assets, reduces uncertainties when deciding on the sale or purchase of CATV systems. It also becomes a supportable basis for allocating the purchase price and substantiating depreciation for tax purposes. Experienced valuation counsel can be of significant service.

Consultants in Valuation since 1896.



Apartment Dwellings: CATV's Wholesale Market

**As cable TV moves into the larger urban centers,
apartment houses become prime targets for added hookups.
Selling the proprietor, however, requires a special
approach and professional talent.**

By Ray D. Williams
York Cablevision Limited

If the recently-proposed FCC rulings are enacted, a sudden rush of the CATV industry into the top-100 television markets is likely. A top buyer of the services of cable TV will be the metropolitan apartment house owner. For him, cable service will be another special service he can provide to insure 100% occupancy. The successful cable operator, whether in a large metropolis where there is row upon row of apartment dwellings or in a smaller community with one or two such complexes, realizes that the apartment house situation is unique, and that his approach to the marketing of his service must be specialized.

In any discussion of apartment selling we should first identify the basic concept of what makes an apartment different from a household. The apartment house market can be thought of as the "Wholesale Division" of the cable television industry. We must adapt our approach to the kind of fundamental marketing techniques used in selling "carload" lots at carload rates—as opposed to the techniques used in marketing individual items from the carload at the individual item rate. If it's "cheaper by the dozen", then obviously we can sell it cheaper again by the hundred. And, it can be done within the framework of a *proven* formula that still makes it possible for you, the operator, to turn a profit—a *good* profit. This approach can be called the "bulk billing" technique.

The Bulk Billing Technique

Bulk billing has several advantages: your billing department receives and processes only *one* check a month—*on time*. There are less administrative costs due to people in arrears and skip accounts. There is also considerably less cost in the construction of the system. These are but a few advantages of the bulk idea. There are, of course, some disadvantages, but these are minimal when compared to the advantages.

In the various systems and cities in which I have been involved, bulk sales and billing have always prov-

en the best approaches. Each city and system is a separate situation with separate problems, however, I have found that by using a different rate structure in each city, bulk rates do work.

Wherever possible, arrive at one policy for apartment sales and adhere strictly to it. When you have five or six different policies, total chaos is the ultimate result. If this has happened, the public is dictating procedures to you, instead of you to them.

Approaching the Prospect

Apartment prospects can be placed in two specific categories: those whose apartments are yet to be constructed, and those whose units are already built. If the foundation footing has already been dug, you are *almost too late*—the architectural plans have *already* been made, the prime contracts and subcontracts have *already* been assigned. By now, they are getting ready to pour footings and erect steel.

More important, *the planning has been done*, and unless you are extremely lucky, the plans do not include you. How could they—if you haven't seen the apartment house owner—haven't sold the architect—haven't done the pre-selling job that is absolutely paramount to your success?

Your Sales Staff

If you are an operator in a large metropolitan area that has a considerable apartment potential, you should seriously consider appointing a special apartment sales staff. This is a vastly different ball-game from normal CATV selling. It is highly specialized, and it requires unique sales techniques. It is a job that can only be properly done by a qualified sales professional who has a strong background in construction. Look for your man in the building trade industry. He must be a salesman, in every sense of the word. But of equal importance, he must be a man who has worked in the con-

struction industry. He should know the senior men in the builders' community and should be able to talk knowledgeably with the architect and contractor as well as the owner. He will learn the specialized cable TV aspects of his job quickly, but it will have taken him years to acquire his knowledge of the construction industry and the contacts within it. Do not hesitate to pay a high price for him. This is the professional you must have to make your sales organization effective.

Further Steps in Marketing Your Service

Part and parcel of any good sales approach is the building of a community awareness of your service. When possible, join the various associations and groups involved in planning and new construction in the apartment industry. For initial contact, it is a good rule of thumb to send a letter to all appropriate people, especially the architects who are prominent in the apartment designing field. The letter should be followed-up by a personal call by your sales representative.

If you have an operation you are proud of, it is a good idea to offer a "Cook's Tour" of your head-end and office facilities. This quickly creates a visual impression you could not possibly produce otherwise.

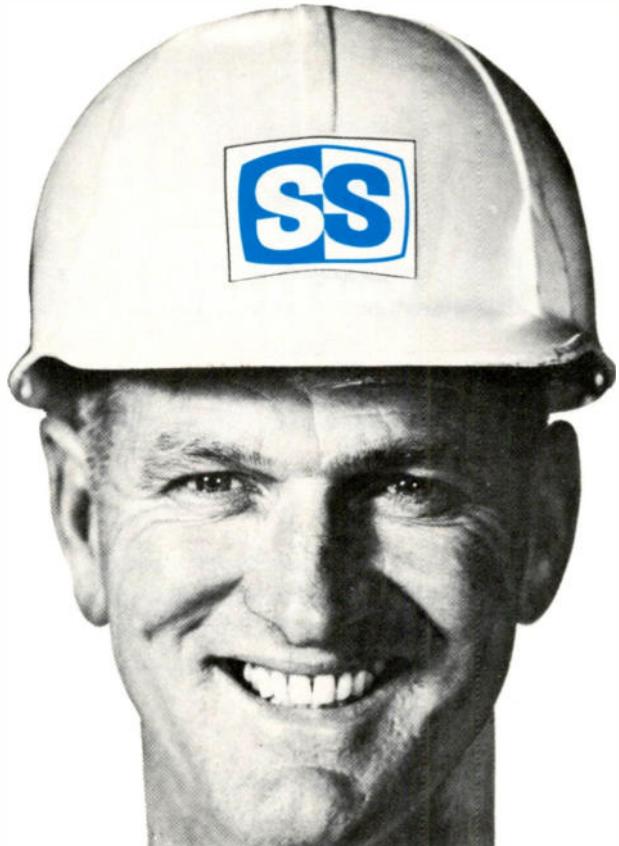
Over the past ten years, apartment owners and builders have made dramatic changes in the number of extra services provided. To insure 100% occupancy, they now build-in elevators, free laundry equipment, swimming pools, sauna baths, game rooms and entertainment suites. CATV is simply another one of the many services they are being obliged to add. Take advantage of this situation: purchase a newspaper ad, once a week, listing the apartment buildings which offer cable service. Make sure cable TV is included in the list of benefits on the sign at the construction site. "For Rent" signs carrying your company name, can be supplied to every building in service.

A Word About Contracts

If you have a saleable package to merchandise, there is no need for any agreement with the apartment house owner to extend longer than 30 days at a time. Five to ten-year contracts are frequent stumbling blocks in acquiring the sale. Also, what may look like a good price today, may not be enough five years from now.

For existing apartment buildings, the simplest way to convince a landlord of the need for cable service is to do a survey of the tenants in his particular building. This survey must be carried out by a qualified sales person. If left to the owner, it winds-up being done incompletely on a very negative basis. Once this survey is done, it gives you the ammunition with which to convince the landlord that he will be adding a prestige service without cost to him.

The apartment house market for cable TV is one of the system operator's greatest opportunities. In metropolitan areas, in particular, it can be a source of substantial income. But it is also a very unique market requiring special treatment. Only the system operator who is willing to make a concerted effort in the direction of specialized sales will reap the potential profits. TVC



We'd like to Work for You!

We're one of the largest, most experienced CATV construction firms in the nation . . . and we'd like to help you build or modernize **your** system! We're independent, we're nationwide, and we have the know-how to build the **finest** quality and **highest** profitability into your system. We'd like the opportunity to review your proposed project. For experienced, professional counsel without obligation—call us—collect!

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A Quantitative Technique for Appraising Cable Systems

Evaluating a cable system for purchase is a highly complex task which calls for the careful application of a systematic approach. Your technique should weigh each relevant factor in an objective, quantitative manner.

The decision to purchase a CATV system has traditionally been based upon the application of several simplified criteria. The most common of these have been some multiple of cash flow, and the number of subscribers multiplied by the going market rate per subscriber, or some combination thereof. While it is certain that many may be using several additional elements in evaluating potential acquisitions, most decisions to buy seem to have been based solely on the aforementioned criteria. Obviously, these criteria alone are not an adequate basis for a good decision. In today's increasingly complex market, a major commitment such as the purchase of a CATV system requires the application of *a number of criteria*, in order to arrive at a sound judgment.

This proposed system does not absolve the need for sound managerial judgment. It is not a magic formula. It is simply designed to break down a complicated problem into its component parts, providing smaller problems which can be solved. The combined solutions to the smaller problems can be used to develop a sound conclusion. Management must maintain a very active role in the application of this approach, as in anything which requires good business judgment.

Admittedly, the proposed ap-

proach is limited, in that every possible factor is not considered. But it does go several steps beyond the "multiple of cash flow" and "number of subscribers times the market rate" criteria. The application is basically simple and involves the following:

(A) The utilization of probability is combined with the weighing of pertinent factors. The decision to purchase the CATV system is thus reduced to an array of smaller decisions, which when taken individually, are more easily solved.

(B) Solutions to the individual factors are combined in order to arrive at several index numbers which represent an overall rating for the potential of the CATV system being considered.

The example presented utilizes for evaluation two major factors: financial and marketing. The first index number is a rating for marketing, and is composed of a number of subfactors: demand for service, population, promotion, origination, signal carriage, franchise status, and system expansion. This is not to say that these comprise a comprehensive list of the subfactors to be considered in arriving at a marketing index. The evaluator may add as many additional subfactors as he deems necessary. He may also add additional major factors beyond that of Marketing and Financial.

The second index number regards

the financial evaluation of the CATV system. This factor is arrived at by evaluating the subfactors of terms of payment, depreciation, cash flow, cost per subscriber, and profitability. Here again, the evaluator can amend the array of subfactors to fit his particular needs.

The major factors are then given a weight (Table II). In this case a weight of .6 has been selected for financial and a weight of .4 for marketing. This is a purely subjective determination, and is affected by the particular situation of the company which is considering the commitment. One company may consider the financial aspects the more important, and therefore weigh the financial factor accordingly. Another company may find the financial factor to be of less importance, and will weigh the marketing factor more heavily.

To begin with, a chart is formulated, listing the major factors and the subfactors which comprise them. The descriptions of each of the subfactors detailed in Table I are then carefully reviewed, and an entry is made in Table III for the "Estimated Probability" (EP) that the CATV system in question will meet the description of "excellent", "good", "average", "poor", or "very poor". Under the subfactor "promotion", the description "virtually none since opening" comes under the heading "excellent", the possi-

bility for an increase in subscribers through promotional activity being very strong, since none has been done. Similarly, the description of "none" for the subfactor "origination" comes under the heading "excellent" also. Although the assigned probabilities are subjective, an opportunity has been provided for each of the critical major and subfactors to be considered in light of their relative importance to each other, and to the entire management decision.

In the example shown the evalua-

tator has decided that there is at least a 60% chance that the demand for cable service will meet the definition of "excellent", and that there is less of a chance that it will meet the definition of "good", and so forth. He has also decided that there would be no chance at all that the definition of "poor" or "very poor" described the demand for cable service. Therefore probabilities of .6 for "excellent", .3 for "good", and .1 for "average" are assigned, allowing no probabilities for "poor" or "very poor". What has been ac-

complished is a more precise statement of the evaluator's best judgment. It should result in a more exact and comprehensive evaluation of the cable system than would have been possible through the casual consideration of any one or two criteria.

The next step in the procedure involves the multiplication of each of the assigned probabilities by the numerical value attached to the rating. Results are then placed in each of the respective columns headed "Expected Value" (EV).

Table I: Major Factors and Subfactors.

A. MARKETING	EXCELLENT	GOOD	AVERAGE	POOR	VERY POOR
1. Demand for Service	Market virtually "black". one channel received poorly.	Two VHF, one UHF, signal reception fair.	Good reception of three networks via VHF, one UHF	Good reception of three networks via VHF, one distant independent, one UHF.	Good reception of three networks via VHF, one distant independent, one educational, one UHF.
2. Population	Dense city or town, gradual population increase, strong apartment house activity.	Dense city or town, stable population.	Fairly dense suburban location, good percentage of young families, moderate rate of home construction.	Sparse suburban area, minimum home construction, few young families.	Rural area, very sparse, no appreciable home construction, no young families.
3. Promotion	Virtually none since opening.	Occasional newspaper add featuring connection special.	Fairly consistent newspaper, direct mail campaigns, featuring various specials.	Strong newspaper, direct mail, and sales people, shopping center promotions, etc.	Strong newspaper, TV, direct mail, and sales people. Heavy participation in local promotions.
4. Origination	None.	Time and weather scan.	Time and weather scan, stock market report.	Time and weather scan, stock market report, feature film and "specials" channel.	Time and weather scan, stock market report, feature film channel, channel for local community affairs, political forum, cablecasting of local sporting events.
5. Signal Carriage	Three networks, one ETV, four imported (3 independent, one educational), local origination channel.	Three networks, one ETV, three independents.	Three networks, one ETV, two imported independents.	Three networks, one ETV (local)	Three networks.
6. Franchise Status	Long-term franchise (20-25 years), reasonable fixed fee to city.	Long-term franchise (20-years), reasonable fee subject to review by city council every five years.	Five to ten year franchise, reasonable fee subject to review by city council every five years.	Short-term franchise (2-5 years), fee in excess of going market rate, subject to review each year.	Year-to-year franchise, fee in excess of going market rate, additional "override" payments to city, subject to review each year.
7. System Expansion	System holds franchises allowing for expansion into contiguous communities.	System may apply for franchises allowing for expansion into contiguous communities.	System may negotiate for franchises to contiguous communities already awarded to others, but not acted upon.	Franchises for contiguous communities already awarded, holders propose to build.	Systems in contiguous communities already built.
B. FINANCIAL					
1. Terms of Payment	Presents no strain on company resources.	Requires partial financing at prime rate, comfortable pay-back period, cash payment within company resources.	Requires partial financing moderately above prime rate, cash payment within company resources, pay-back period reasonable.	Requires majority financing at excessive interest rate, cash payment presents strain on company resources, pay-back period reasonable.	Requires majority financing at excessive interest rate, lender receives equity interest, cash payment presents strain on company resources, pay-back period dangerously short.
2. Depreciation	Little depreciation taken to date, substantial amount available for tax shelter.	About one-third depreciated, continuous program of plant improvement generating further depreciation.	About 50% depreciated, some plant improvement.	About 75% depreciated, very little capital improvement.	Almost totally depreciated, no capital improvements.
3. Cash Flow	Five-year pay-back.	Six-year pay-back.	Seven-year pay-back	Eight to nine years.	Beyond nine years.
4. Cost per Subscriber	Moderately below going market rate, system in early growth phase.	Moderately below going market rate, system in mid-growth phase.	Going market rate, system about three-quarters saturated.	Moderately above market rate, system saturated, little subscriber growth anticipated.	Greatly in excess of market rate, system saturated, no subscriber growth anticipated.
5. System Profitability	System operating in the "black", and has been during most of its existence, substantial subscriber growth ahead.	System operating in the "black", has been for several years, moderate growth anticipated.	System broke even within last year, currently operating in the "black", moderate growth anticipated.	System currently in the "red" since inception three years ago, minimal subscriber growth anticipated.	System currently in the "red", has been in "red" since inception three years ago, no appreciable subscriber growth envisioned.

Again using demand for service as an example, we see that the evaluator has estimated that there is a .6 chance that the demand for the cable system will meet the definition of "excellent", which has a numerical value of 10.0. Multiplying the probability of .6 times 10.0 yields an expected value of 6.0, which is entered in the EV column. The same approach is taken with the other subfactors, and entries are made for each under the column EV.

The expected values for each sub-factor are then added, and the total entered into the column headed "Total EV". An array of decisions and judgments are now being combined in order to arrive at one major index number. The numbers in the total EV column should represent the best numerical estimate of the degree to which the characteristics of the proposed cable system meet the defined characteristics listed as subfactors in Table I.

The expected values in the total EV column are then multiplied by the weights that have been assigned to their respective sub-factors. These results are then entered in the weighted EV column, the total of which represents the marketing value of the cable system as a whole.

At this point the products represented in the weighted EV column must be reviewed for values which would disqualify the entire system from consideration. For example, a system could achieve a total value of 76.0 for its marketing factor, yet the rating for the subfactor "Demand for Service" could be low enough to make the purchase out of the question. Obviously, the same situation could hold true for the major factor "Financial", where a high overall expected value may be

ABOUT THE AUTHOR

Arthur Einhorn is presently employed as administrative assistant to the treasurer, Vikoa, Inc. He was formerly employed by Triangle Publications, where he was business manager for their CATV, syndication and eductasting subsidiaries. His prior position with Triangle was as assistant business manager of the Broadcast Division, which encompassed a total of sixteen AM, FM, and TV Stations. He was formerly associated with General Motors Corp., where he was employed in the finance and accounting department. Einhorn joined the Radio and Television Division of Triangle Publications in 1959, when he was employed at WNHC-TV in New Haven, Conn. In 1961 he became merchandising and sales promotion manager, holding this position until his transferal in 1964 to the division offices in Philadelphia, Pa. He was active in the formation of Empire Cable TV Co., Inc. in Binghamton, New York, Triangle's first community antenna system, of Suburban Cable TV Co., Inc. in suburban Philadelphia, and Lebanon Valley Cable TV Co., Inc. in Lebanon, Pa.

found, but where the expected value for a subfactor may be dangerously low. As an obvious example, a poor expected value for the subfactor "Terms of Payment" may mean that the company faces financial disaster if the system is purchased. Each company will therefore have to establish minimum criteria for the critical factors, based on its own particular situation. A company with heavy financial resources may be able to accept an expected value for the subfactor "Terms of Payment" of 15.0, while a company with less resources will require expected value of 25.0.

The total of the weighted EV column is then entered in column 3 of Table II. The same procedure is followed in arriving at a value for the second major factor, i.e., Financial. The values thus arrived at are

then multiplied by the weights that are given to these major factors. For example, in Table II the financial factor is multiplied by .6, whereas the marketing factor is multiplied by .4. The total at the bottom of column 3 is the index number that represents the final evaluation of how well the cable system fulfills the marketing and financial requirements as understood by management.

Finally one number is derived which represents decisions that have been made on an array of problems, each of which has been evaluated and weighed in light of its importance to the total decision. Management must now decide whether, out of a possible ranking of 100.0, the system has achieved an index number high enough to merit further consideration.

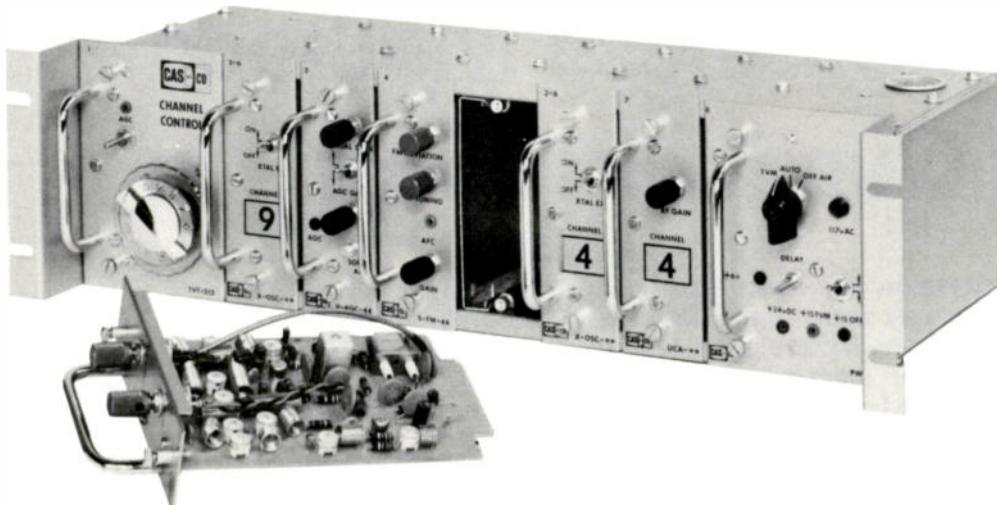
Table II: Summary of Major Factors.

FACTOR	1. FACTOR WEIGHT	2. FACTOR VALUE	3. WEIGHTED FACTOR VALUE
MARKETING	0.4	76.0	30.4
FINANCIAL	0.6	78.2	46.9
	1.0		
Index Number			77.3

Table III: Appraisal Schedule; Marketing Factor

SUBFACTOR	SUBFACTOR WEIGHT	EXCELLENT—10 EP	GOOD—8 EP	AVERAGE—6 EP	POOR—4 EP	VERY POOR—2 EP	TOTAL EV	WEIGHTED EV
Demand for Service	3.0	0.6	6.0	0.3	2.4	0.1	0.6	—
Population	2.0	0.1	1.0	0.2	1.6	0.7	4.2	—
Promotion	0.5	—	—	0.2	1.6	0.5	3.0	0.2
Origination	0.5	—	—	0.3	2.4	0.4	2.4	0.3
Signal Carriage	2.0	0.1	1.0	0.9	7.2	—	—	—
Franchise Status	1.0	—	—	0.5	4.0	0.4	2.4	0.1
System Expansion	1.0	—	—	0.3	2.4	0.6	3.6	0.1
10.0							Total Value—Marketing Factor	76.0

CAS CC-213 CHANNEL CONTROL



The solid state head-end unit that thinks it can do everything.

And it *can*—almost! *Total Versatility* is the term for the new CC-213 CHANNEL CONTROL. There's no need to over-invest in a variety of equipment for standard head-end functions when *one* unit can do the job. The CC-213 gives you these four performance functions in just one basic unit:

■ **Heterodyne Signal Processor**

■ **Complete Origination Modulator**

when switched from OFF AIR to ORIGINATE condition either automatically when the station goes off the air, by remote control or manually.

■ **Duplication Channel Processor**

when switched to ORIGINATE condition for microwave feed, or by use of an external tuner (ET-213) for OFF AIR duplication switching.

■ **Remotely Operated Alert System**

when switched remotely to ORIGINATE condition through CAS telephone system (REAS-12) for telephone audio announcements and antenna site video feed.

Now add the total adaptability of completely modular design. The basic unit is assembled for your system's *exact* requirements. If you ever need to change a module, there's no need

to pull the entire unit off the rack. Just remove the old module and slide in a replacement. And these compact solid-state modules are *easy* to pull, inspect, and replace.

One more thing—we've worked the bugs out on *our* drawing board. The CC-213 is ready to fit right in to your system with flawless solid-state performance. Isn't it time to consider CC-213's for your head-end? You'll experience the dependability and quality of performance only CAS offers. Please write us . . . we'll send you complete specifications by return mail.

CHECK THESE OUTSTANDING FEATURES:

- 44 mc IF system • optional audio or 4.5 mc sound inputs
- all band adjacent operation • simple 19" rack mounting
- solid-state modular construction • regulated power supply • compatible with similar tube equipment • passes full color • operates on 117 vac, + 30 vdc or remote power source • front panel controls and test points • easily removed modules.

Write us...We'd like to tell you about the versatile one!



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Proven Business Methods— Don't Overlook Them

What is the formula for success in the cable TV business? A survey was made and the results tabulated for TVC. Findings indicate that top cable system operators, as other successful businessmen, depend on a number of tested and proven principles.

By Oliver P. L. Prichard

What makes a CATV system operator successful?

There is no one factor which separates those who are successful from those who are not, but a recent survey of American businessmen does shed some light on the qualities it takes to be a winner.

In the survey, 60 businessmen from across the country were interviewed in depth. CATV system owners and managers were well represented on the panel, coming from both small and large systems.

Half of the panel was successful, half was not. (For the purposes of the survey, a "successful" businessman was one whose firm had shown profits for at least several years. An "unsuccessful" businessman was one whose company had not earned profits over his own salary.)

The panel respondents were asked questions under six major topics: economic environment, business operations, employee relations, customer relations, business attitudes, and business environment. To permit the survey to be covered in this one article, the answers given, by the panelists were consolidated to represent the majority opinion.

The successful group felt that economic conditions had a relatively slight effect on their individual businesses. As one CATV operator said, "A successful businessman will be successful regardless of whether the country is experiencing a boom or a recession. In fact, the periods of adverse conditions—such as during

tight-money times—probably bring out the best in those who have already been successful. And an unsuccessful businessman will also be that, no matter what the economic conditions happen to be."

On the other hand, those in the unsuccessful group felt that the economic environment had a great deal to do with an individual's success in business. These men said that any operator would suffer if times were tough.

The successful men in the survey tended to be more systematic in the conduct of their businesses than the unsuccessful group. They were more conscious of—or at least more articulate about—such matters as the need to control operating inventories, the cost advantages of taking all possible discounts, the importance of continually appraising the market situation, and the circumstances under which physical or market expansion would be feasible.

The successful men also displayed greater mastery of the technical skills of buying, selling, and organization of work efforts. They were more resourceful in meeting problems; always seeking a new approach if the first course of action proved unworkable. They "bounced back" after business setbacks; trying new procedures, marketing methods and other means of recovery.

The unsuccessful men showed less resilience. They became demoralized more easily than their

successful colleagues, and they tended to complain rather than take action.

There were other contrasts in the approaches of the two groups. The successful businessmen were able, when necessary, to find additional capital outside the regular market channels. They also understood the restraints they might have to impose on their own living standards in order to plow back into their businesses a substantial share of the profits. The unsuccessful group tended not to be able to strike a workable balance between their personal living standards and the need to reinvest their earnings.

In the area of accounting records and procedures there was no great difference between the groups. Only three of the firms surveyed did not employ an accountant to examine their books and prepare statements at least once a year. Most companies did this on a monthly basis. However, there was considerable difference between the groups in the use to which this information was put.

The successful businessmen used and relied on their accounting data on a daily basis, and they made active use of it to plan future business actions. The unsuccessful men merely received and filed this data, and rarely used it in future planning.

In the promotion area, the successful group used advertising as a means of stimulating demand whenever sales levelled off. The

other group regarded advertising simply as an expense which could be dispensed with whenever they wanted to cut costs. This group tended to do this when business slumped, at exactly the time advertising was needed.

More unsuccessful than successful men thought that not enough funds were available locally to meet their business needs. The shortage was most apparent in the supply of long-term loans, particularly those for general working capital needs, as opposed to those for the purchase of specific items.

Many of both groups did not set a definite profit margin on their services. The general attitude was that profit was largely a function of the need to meet competition, and the majority felt that this need could be met most effectively with flexible pricing policies. This was true for the CATV firms surveyed. Where there was only one CATV firm in a locality, the firm's management tended to set a desired profit margin and then gauge end prices to the consumer accordingly. Where there were two or more CATV systems operating in a locality, the newest firm tended to force the more established firms to modify their subscriber fees.

Most of the firms taking part in the study had at least six employees; the overall average was 14. More than half the total group was unionized, and most of the larger firms queried—including the CATV segment—had two or more levels of supervision.

Few of the employees in either group had been formally trained for their specific jobs. Management simply added employees when necessary, and hoped that experienced employees would successfully indoctrinate the newer employees. But there was a difference once the employees were on-the-job.

The successful group tended to encourage on-the-job training courses, in subjects as varied as salesmanship and safe driving. Most of such courses were sponsored and paid for by the firms, and employees were either given time off from regular duties to attend lessons, or given the lessons during normal working hours. Only two of the unsuccessful businessmen offered their employees such training, and in

both cases employees had to arrange and pay for the courses themselves.

A majority of the businessmen from both groups was willing to go along with the adage that the customer is always—or almost always—right. And even when the customer was definitely wrong they tried to avoid offending him. An important difference between the successful and unsuccessful men was the greater ability of the former to project themselves in the role of expert in their dealings with customers. Unsuccessful businessmen were more likely to be overconcerned with technical skills and not sufficiently aware of the social skills needed in the successful operation of a business.

The unsuccessful businessmen were about equally divided between those who wanted to work for a large company and those who preferred their independence. Among the successful businessmen, however, the great majority—almost 90 percent—wanted to maintain their independence.

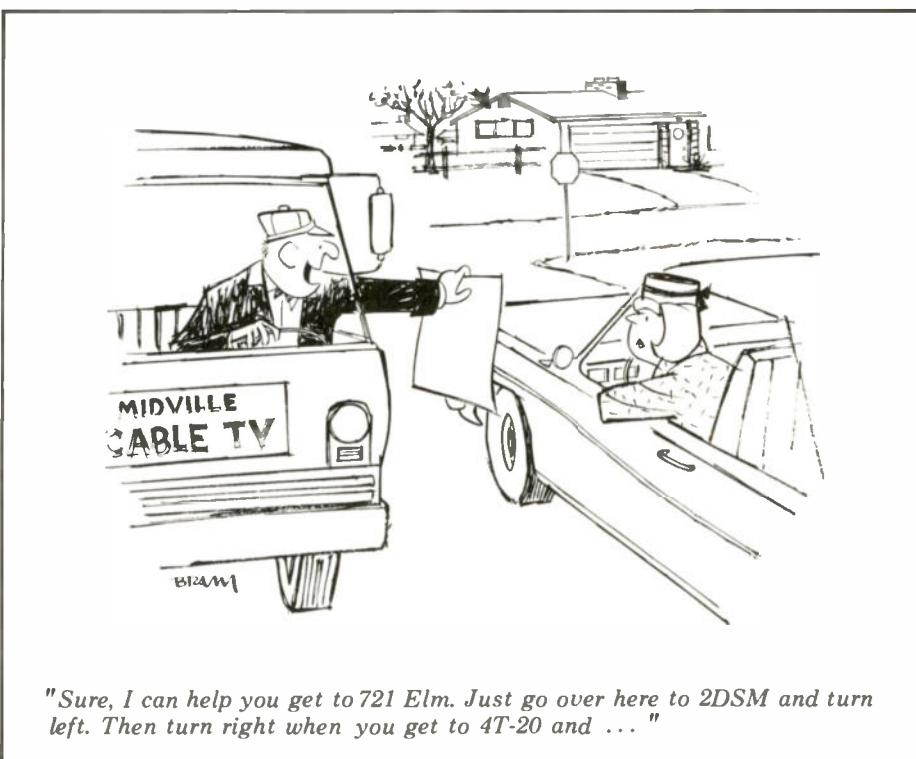
As one successful operator of a small city CATV system said, "I've worked for large CATV systems, and I've worked for small ones. But I like to work for me best of all."

Members of the successful group expressed some envy over the relative security and fringe benefits

available to employees of large companies; but they also made it plain they had no desire to submit to the organizational discipline necessary in a large corporation.

Both groups of men agreed that success in business came to the man who had and practiced the following traits. (The fact that even those who were unsuccessful recognized such traits would indicate that failure in the business world comes not so much from ignorance of successful principles as from unwillingness or inability to apply such principles.) The successful traits were: (1) The successful businessman works long, hard hours, (2) He has the ability to recover quickly and press on in the face of setbacks, (3) He is competitive in both attitudes and actions, (4) He is willing to take a minimal profit out of his business until he achieves an adequate financial position and (5) He masters both the technical and social skills his particular operation requires.

Comments by many of the respondents indicated that there is a point beyond which a businessman's career either takes-off or slides. Beyond this point his motivation is affected by his cumulative experience: success tends to foster success, and failure tends to breed further failure.



Over the past 3 years there has been a marked change in the shortage of qualified CATV technicians.

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As one relatively unsuccessful CATV system owner in a small county seat said, "A businessman who experiences a series of business setbacks becomes discouraged. He loses his resiliency and his enthusiasm for persuading prospects to become customers. Finally he reaches the stage where it is a real burden to even get to the office in the morning."

A marked difference was found between the two groups in their attitudes toward the business environment of their communities.

Those who were successful and who were located in larger cities considered their communities attractive, both as places to live and in which to do business. They believed the future of their area was bright. Successful businessmen in growing smaller cities felt that expansion in their localities was rapid enough to enable them to compete with businesses in larger centers. Those who were successful in stagnant smaller communities were aggressive and, in fact, served a much larger area than would at first appear. They appeared to have realistically assessed the effects of external forces on their areas and to have adapted to these situations.

The unsuccessful businessmen in the larger cities were generally critical of the failure of their communities to attract more industry. They complained of too much unionization or too much competition. The unsuccessful operators in smaller, non-growing cities were much less willing to evaluate their situations realistically and to take action to meet the challenges of a changing environment.

Many successful respondents said that, in return for the benefits they had received, they owed a share of their time and energy to the community in which they lived and did business.

Not one unsuccessful businessman made a similar point about his civic responsibilities.

Unlike the recent, popular play, success in business does not really come without trying. It takes skill and effort and patience. For those businessmen who currently are not successful, knowing and acting on the points mentioned above can not help but move them closer to the group who is successful.



What You Can Learn About PR From the Phone Company

Although many phone company policies regarding CATV leave much to be desired, the cable industry can learn some important lessons from the corporate giant's way of handling some of its specific PR problems.

By Charles Wigutow
CATV Consultant

The American telephone system is one of the few in the world which is not owned by its national government. Governmental ownership is a characteristic even of the major free-world countries. If you say, "it couldn't have happened in the United States," then consider the post office, a country and world-wide communications system which, in many respects, parallels the services of the phone companies. Americans take it for granted that the government will operate the postal system. In the same manner people in the European nations take for granted national ownership of the telephone networks.

Yet chances are that our official hands-off policy is not so much the result of a commitment to private enterprise as it is due to a wholesale, continuing application of good public relations principles. Whatever your opinion of the methods used by AT&T in their dealings with the cable television industry, (that they aren't exactly one of the closest allies of CATV is understood) you have to acknowledge their persistent concern about the attitudes of the public they serve.

The telco emphasis on public relations, as a company policy, dates back to the 1870's when Theodore Vail became president of the young phone organization. He polled operators of independent telephone companies for answers to these questions: Is the telephone satisfactory to the public? Are prices satisfactory to the public for the facilities and services rendered? Would it help to furnish the same service at a lower rate? What would be the most practical way to provide service at a rate which would be within reach of families? Are relations between public and local companies improving? What have been causes of conflicts between local exchanges and the public?

Today, some 85 years later, cable television stands on practically the same ground. The same questions, almost word for word, could be asked of cable TV systems. Vail, with his enlightened view of the importance of public opinion, lost out to a board of directors favoring higher charges to customers and increased dividends. It did not take long to lose the goodwill built by Vail's principles. His resignation was followed by

his recall to head up the phone companies nine years later. His job then was to fight against a growing sentiment for federal ownership.

With very few lapses, AT&T since that date has worked at gaining and keeping the favor of customers, employees and government agencies. Kappell, another Bell leader, once sharply protested a government investigation of Telco's rates, but the company had to back down. However, Kappell is the same man who another time said, "While being a private enterprise, we are . . . not opposed to regulation, we are *for* it, particularly for our kind of company without competition." Romnes, who followed Kappell as the top executive went one step further by stating, "Our experience of a half century of regulation tells us that the best defense against too much regulation, unduly restrictive regulation, is performance." If you must have regulation because of the nature of your monopoly position, get the public on your side so they do not demand tight controls.

How far does the phone company go toward securing the goodwill of the public? L.L.L. Golden in his book, *Only By Public Consent*, notes that AT&T employs 74 full-time speakers, and 5,000 other part-time people. In addition, employee participation in community activities is strongly encouraged. Membership of telephone company employees on such groups as city councils is stressed, and phrases such as, we must "conduct ourselves as people who deserve the trust and esteem of our fellow citizens," come from the top echelon and are echoed down through the ranks. Employees who meet the public by voice or in the home are indoctrinated with the idea that they *are* the telephone company in the eyes of the customers.

The many thousands of repairmen and installers are taught by film, lecture and example of supervisors to be neat, to go about their business efficiently and courteously, and to wipe from their minds any idea that customers are "cranks". This is something about which cable management should be concerned. Television has become such an important part of the home life of Americans that they are apt to be very demanding.

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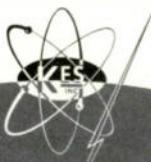
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It is easy for a technician to be annoyed by someone who seems to be too particular. But it is extremely dangerous for a cable company which is dependent on voluntary purchase of cable services to allow even a single customer to be labelled a "crank". Such an attitude can spread from technician to call-taker and even to the manager. At the very least, the manager should hold onto a "sneaking suspicion" that maybe the customer is right. And he should remember that, even if not justified, a scorned person's hostility can spread like an epidemic. It is always best to attempt to satisfy a discontented subscriber. The choice is often between building a salesman for yourself or a bitter detractor.

In choosing an office employee who takes customer complaints over the phone, you can also learn from the telephone company. Only one out of one hundred applicants is selected for the job of Service Representative to answer questions about bills and service. Of this 1%, 15% are dropped during the training program.

The future Telco representative must like talking with people. Using this as a base, she is trained from 22 to 40 days what to say to the public and how to say it. When she graduates to a place in the organization she does so with a thorough understanding of the company, its policies, and its work.

Cable systems, generally, are not as large as telephone offices; therefore they cannot afford the expense of a long training period. But even for on-the-job training, the manager can prepare a list of preferred answers to often asked questions. If it is a small office, the manager should help the novice phone receptionist by handling the more difficult calls himself.

Some customers insist on knowing the hour that a service call will be made. After the first call a man makes for the day, the company cannot chart the times for succeeding stops. Yet, if a promise is made, everything possible must be done to keep that promise. If it cannot be kept, the customer should be informed ahead of time. An honest explanation as to why you cannot pinpoint the time of a service call is the best way to keep goodwill.

There is still more to learn from the telephone company's drive to satisfy its public. Complaints are not simply filed away. Neither should cable companies do this with their completed service forms. Such complaints can be a safety valve in locating growing problems. Count the number of complaints that were caused by the set, or by the system. The percentage of all service calls is important. Note which are time consuming, and which crop up again calling for repeat visits by technicians.

If paying attention to customers' attitudes makes you an advocate of subscribers' views, that is good. It falls in line with another quote from telco, "... built into the fibre of all managers is the belief that the public interest is paramount."

How has the policy described worked for telcos? The answer lies in another quote, "As AT&T can only operate if the public permits it, so will the public, thinking it is serving well, support it against those who would make it into a branch of the government."

Cable television is, at present, in no danger of being nationalized, but the industry still has the same need for public goodwill if it is to achieve its potential. 

February 1969

TV Communications

CATV Technician



Quality Control at C-Cor Electronics, Inc.

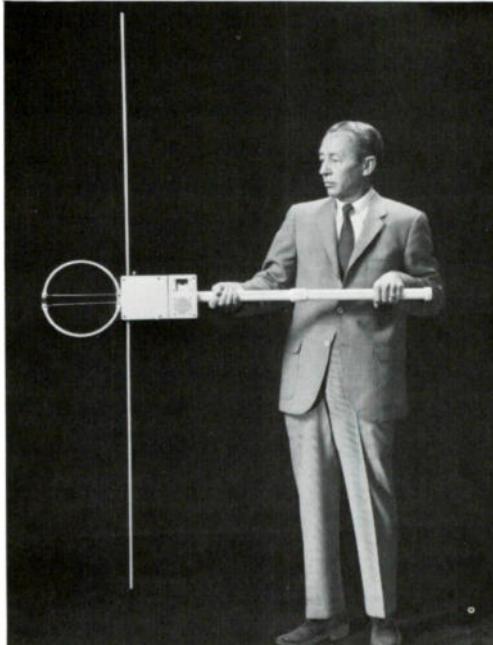
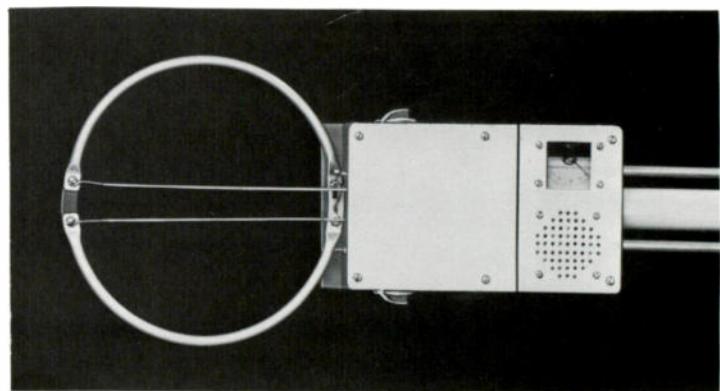
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The Model TNL2 Noise Source Locator is a light and portable instrument which uses a new and unique approach to the problem of determining and pinpointing the source or sources of interference to TV and Communications reception. The unit weighs only 5½ pounds and is designed to be hand-carried by the operator. Power is supplied by self-contained flashlight cells, which will operate the instrument for 75 to 100 hours before replacement is necessary.

With this instrument it is possible to tell quickly (without triangulation) the direction from which noise impulses are being propagated along any given power line. The operator can go immediately in the direction of the noise source, and will know, from the indications of the instrument, exactly when he has passed it. Once it is located, corrective action can be taken, and the result of the action monitored while the work is in progress. In a similar manner, it can be used to locate interference caused by faulty industrial machinery.



In operating the Noise Source Locator, the operator stands under the power line which is suspected to be the source of trouble, and determines very quickly the direction of the noise source with respect to his position. He then can walk in the direction of the source until it is found. As, for example, the noise is caused by minute arcs in the line hardware on a pole, the TNL2 indication will quickly decrease once the pole is passed. In this way little time is lost in finding the source of noise. Once such a source is located, the operator can monitor the work of the linemen, and know whether he has fixed the trouble.

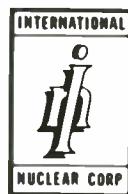
The sensitivity of the TNL2 is such that noise sources on power lines which cause interference to TV reception a half mile or more away can be located. The instrument output is indicated by a meter having a decibel scale. In addition, a loud speaker allows the operator to hear the character of the noise, and enables him frequently to separate multiple noise sources. The TNL2 sells for \$595.00 each, F.O.B. Nashville.

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The Problems of Wiring High-Rise Urban Dwellings

"Big City" construction of CATV plant has its own set of unique and difficult technical problems. Cablemen able to handle these problems can grow with the industry in the urban markets.

*By S. W. Pai
Vice President, CATV Division
Aqua Instrument Co., Inc.*

CATV was conceived in the late 1940's to provide better television for outlying communities which were unable to receive adequate TV signals with roof-top antennas. A cable system with a few hundred to a thousand house

drops was not uncommon at that time. The cable carried only a few channels, and utilized only the area of the frequency spectrum between 54 MHz and 88 MHz in most cases. Only a few years ago, CATV engineers broke the low-band barrier

and made the 12-channel system a reality. At that time, however, the application of CATV was still limited to the smaller outlying communities.

Now, CATV has moved into some of the large cities, with mammoth systems well-established in a few U.S. and several Canadian metropolitan areas. And, the currently-proposed FCC rulings indicate that a significant jump of CATV to the top-100 markets may be on the horizon.

With the advent of the metropolitan CATV system has come a host of unique technical problems. In some cases, metropolitan cable systems have to be constructed in a sea of skyscrapers and serve some customers whose TV sets are only a few hundred feet from the powerful TV transmitter. An example of such a situation can be found in downtown New York City, where parts of Manhattan Island are being cabled by three CATV firms.

In New York, a gigantic broadcast antenna situated atop the Empire State Building is covered with an array of transmitting antennas. At the present time this tower is a broadcast center for nine TV stations, thirteen FM stations, educational TV stations, four paging systems, a microwave facility and a few experimental transmitters. The advantages in locating the transmitting antenna atop a tall build-

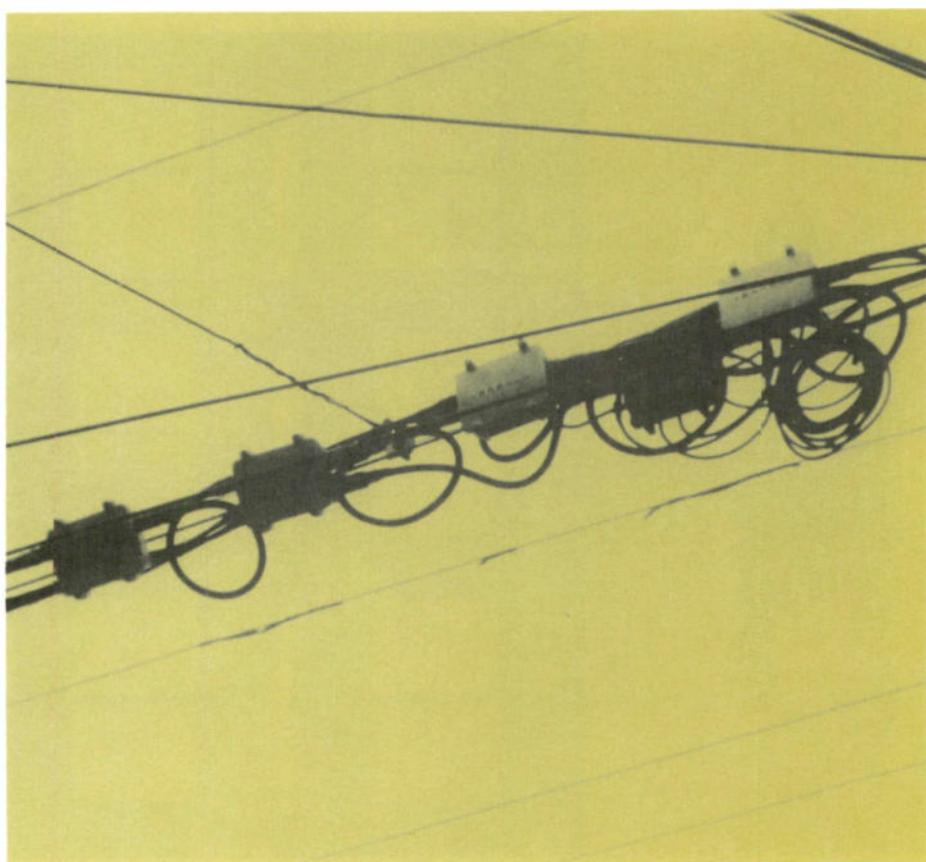


Figure 1: A Typical Metropolitan Feeder Line Arrangement

ing are obvious. However, in this particular case, TV reception is far from perfect. The mountain tops and deep canyons formed by the tall buildings make good TV reception almost impossible.

A large building a quarter of a mile away from the Empire State Building is a classic example. At the side of the building facing the Empire State, one finds an extremely high signal level which causes over-loading on many TV sets. But on the opposite side of the building, the same off-the-air signal is attenuated by the building to 30 or 40 dB on one path and to only a few dB on another path. Consequently, good off-the-air reception is impossible.

The need for CATV in metropolitan areas such as New York City is obvious. However, the installation of a cable inside or outside a large building or even on the street is by no means an easy task. In addition to the massive size of the system, the CATV system designer runs into problems which result from the extremely high concentration of drops per mile. Figure 1 illustrates a typical situation. Here, there are five 4-way taps with

20 house drops within 10 feet. This produces tremendous distortion in the feeder line.

In addition, after the system is in operation, the ghosts caused by strong off-the-air pick-up are constantly haunting system engineers. The signal received from the cable and the one from off-the-air do not arrive at the TV set at the same time and at the same level. In many instances the signal strength from the off-air pick-up is 10 or 20 dB

higher than the signal provided by the cable. In these cases, the undesirable signal becomes the main image and the desirable signal produces the ghost image. In some cases, the problem has been so severe as to require the purchase of an expensive set-top converter to eliminate the ghosts.

These are only some of the problems that make the task of wiring a large city monumental. However, the job must be done. The purpose

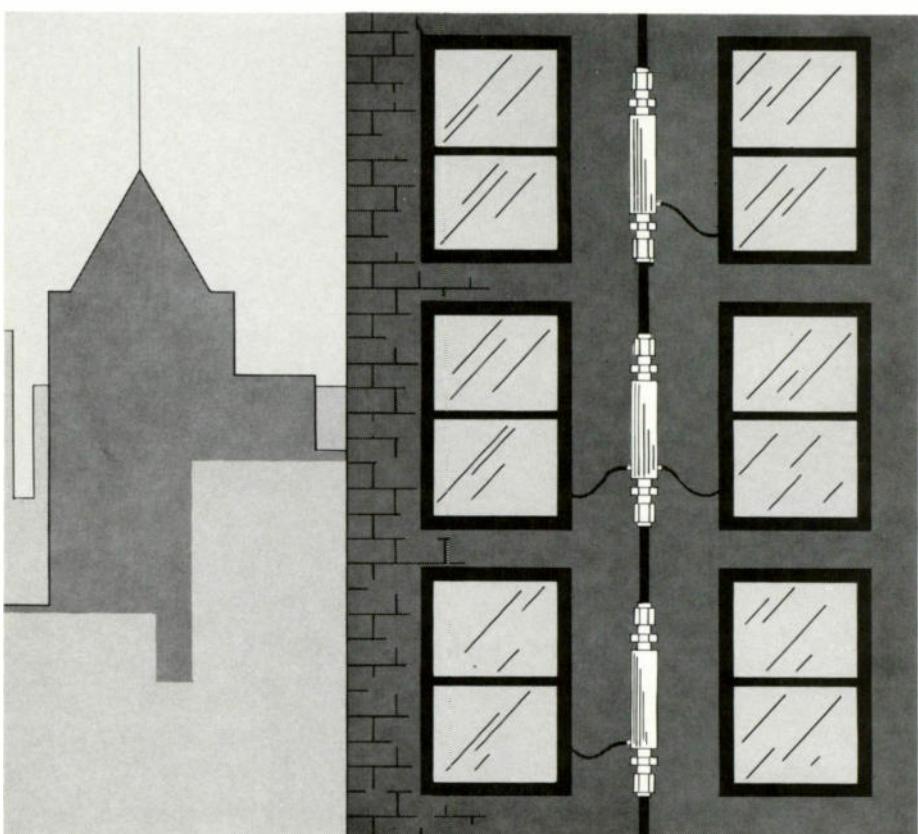
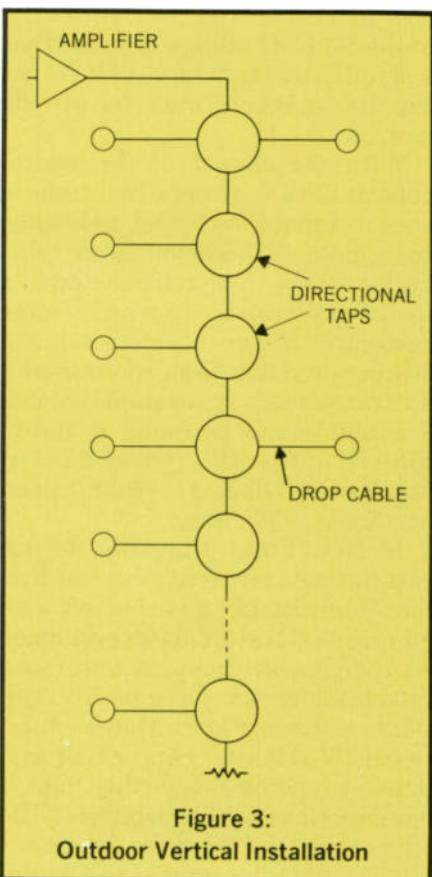
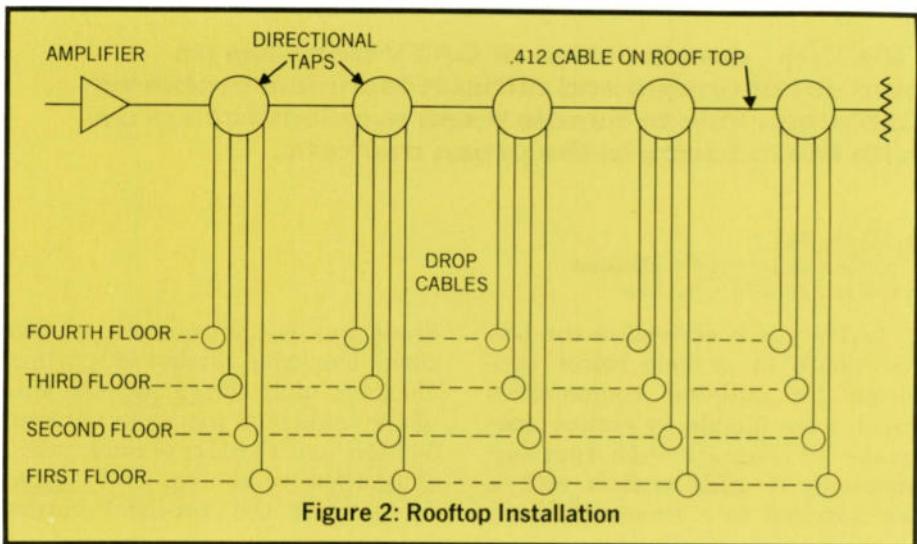


Figure 4: Vertical Installation

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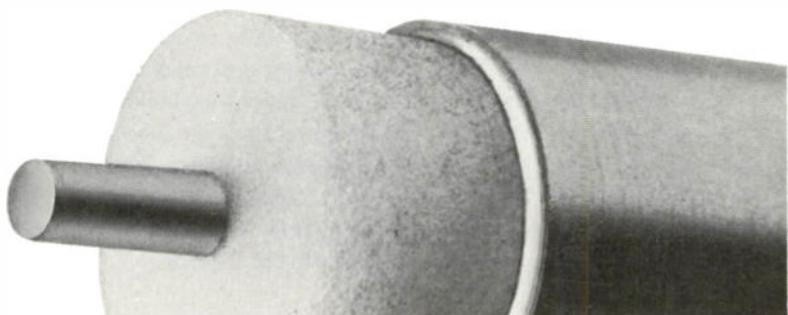
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of the remainder of this article is to present some methods and techniques which might prove helpful in metropolitan system design.

Roof-Top Installation

In roof-top installations (Figure 2), most conventional directional taps can be utilized. The tap can be installed along the edge of the roof-top with .412 cable. From the tap, drops of different lengths can be made to the various floors with well-shielded RG 59/U. This particular installation technique is recommended for buildings less than 10 stories high. In taller buildings, the signal loss in drop cables becomes excessive.

This method is also recommended because of the ease with which the system can be constructed. From the roof, the drop cable can be conveniently lowered to the customer's window where the drop can be drawn inside the building. In many instances, a scaffold is not required. Furthermore, disconnections can be made easily at the tap on the roof-top, and a locking device can be

installed to make the tap tamper-proof.

Outdoor Vertical Installations

This method is recommended for buildings taller than 10 stories. Small outdoor directional taps and cylindrical taps (Figures 3 and 4) are generally utilized. The installation is similar to conventional

CATV feeder line construction but is positioned vertically. Here, as in the roof-top installation, construction is fairly easy. However, the difficulty of disconnecting due to customer non-payment should be considered. For installation and disconnects a scaffold is generally required. To avoid the problems associated with disconnects and re-connects some special arrangement

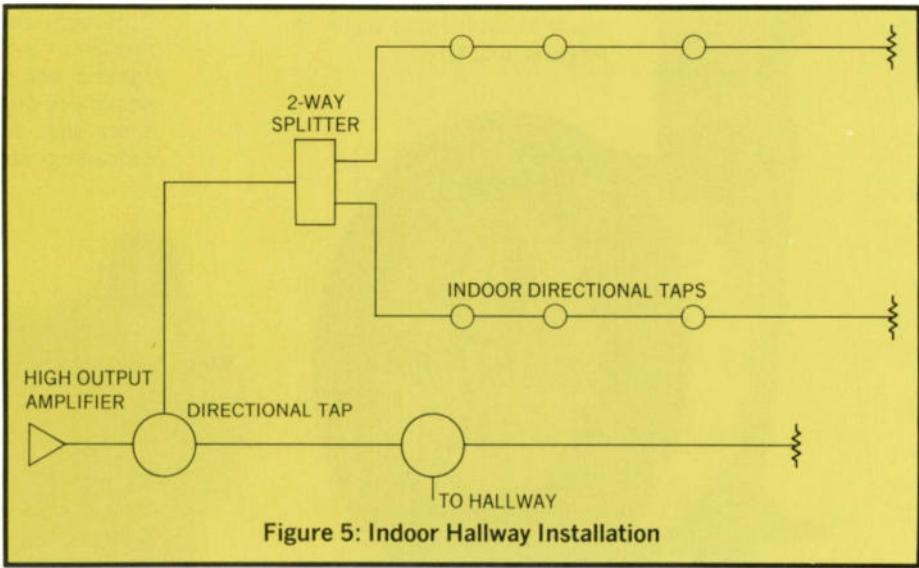


Figure 5: Indoor Hallway Installation

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will have to be made with the building owner whereby all tenants pay a flat fee for cable service.

Indoor Installations

The indoor installation method (Figure 5) described utilizes directional taps and directional wall plates. In Figure 6 the indoor tap has been installed at the edge of the ceiling just above the door of each apartment in the hallway. This method of installation requires a minimum amount of labor and is very easy. However, running the cable through the inside of the building on the outside of the wall produces an appearance problem.

In buildings under construction and in some existing buildings directional plates (Figure 7) can be utilized. Ideally, the system should be laid out before construction begins and the wall plates installed during construction.

In the future, perhaps, some standard centralized distribution method will be developed in the industry. This would greatly simplify service and many other problems.

In densely populated areas, 8 or more outlet outdoor directional taps are desirable (Figure 8). Especially useful are taps which are designed to be self-linked to provide an almost infinite number of drops. This kind of tap is not only easy to install, but it also introduces a minimum amount of distortion to the feeder line.

Dual Cable Systems

In some cases, dual cable systems have been constructed to increase the channel-carrying capability of the system and to help eliminate off-the-air signal pick-up. In dual cable construction, two independent cable systems are built and two separate house drops are made to each TV set. A high isolation coaxial switch mounted on the back of the TV set is used by the subscriber to select whichever set of channels he wants.

One dual cable system has been in operation more than a year. The results obtained have been excellent, and other dual cable systems will soon be in construction. Drop and tap devices designed especially for

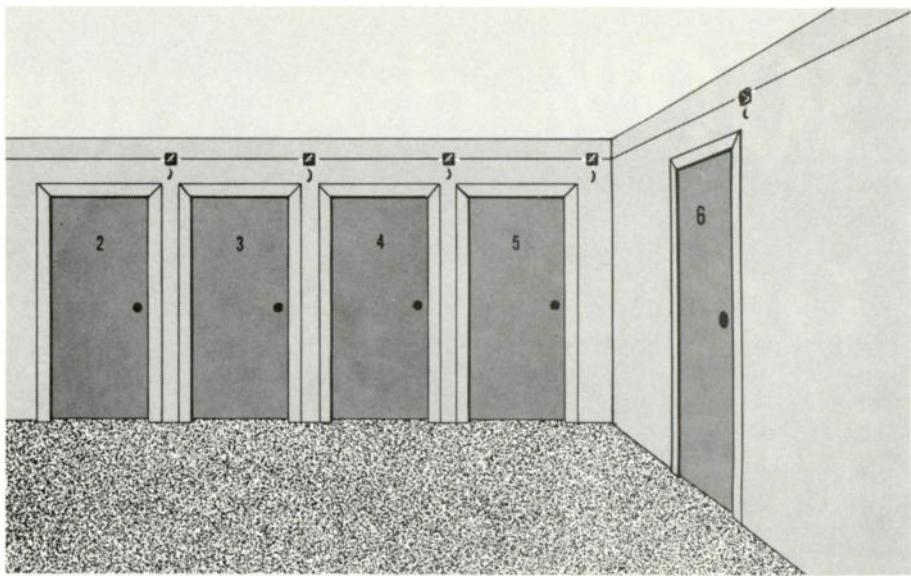


Figure 6: Hallway Installation

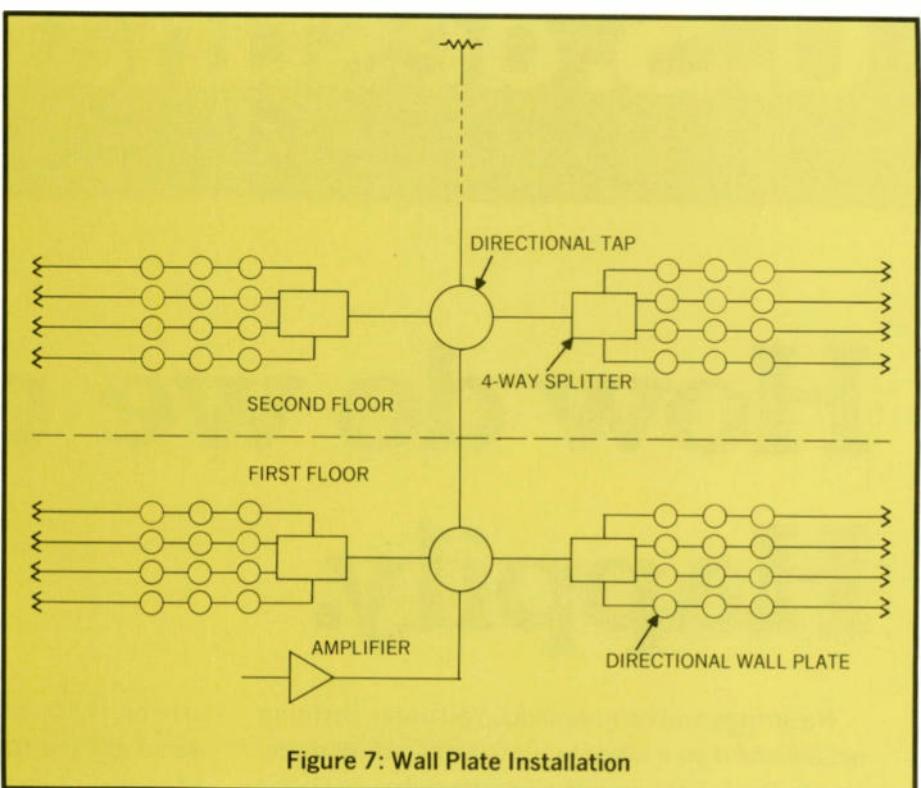


Figure 7: Wall Plate Installation

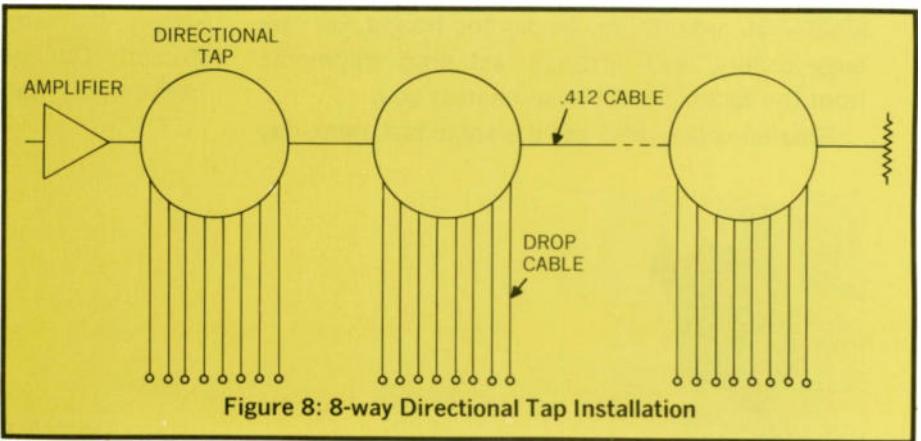


Figure 8: 8-way Directional Tap Installation

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One of the basic reasons Cable TV Operators are burying cable is to protect it from high wind, heavy rain, snow and sleet, from wide temperature variations and from falling branches. What's more, they find that subscribers and city fathers appreciate the quality performance of buried cable and its contribution to neighborhood beauty.

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twin cable systems are gradually beginning to appear on the market.

Eliminating Off-The-Air Pick-Up

In order to eliminate off-the-air pick-up and the resulting ghosts, some CATV operators have been forced to utilize expensive set-top converters. Obviously, this also increases the initial cost of construction. Service calls, although not usually due to faulty operation of the converter, have to be made much more frequently. Readjustment of the TV set fine tuning usually eliminates the problem. Nevertheless, additional service calls have to be made.

Encouraging results have been obtained with the use of an experimental matching transformer which is used in conjunction with the higher input signal. In some cases where conventional matching transformers are used, off-the-air pick-up significantly distorts the picture. The utilization of the experimental matching transformer mentioned above has resulted in the elimination of distortion in many

cases. This device may provide a workable solution to the direct pick-up problem if more than 12 channels are not an immediate requirement. At the present time, however, the directional tap does not always perform adequately enough to eliminate the need for a converter. However, it should replace the converter in about 25% of the cases.

Another method of eliminating direct pick-up is to connect coaxial cable directly to the tuner. Of course, this does involve the risk of buying the customer's set! However, if the proper procedure could be established, such as contracting the wiring job to a TV service shop, the method could be used successfully.

Several other suggestions may prove useful to Metropolitan CATV systems designers:

(1) Use well shielded drop cable to eliminate RFI pick-up.

(2) Ground the cable properly.

(3) Maintain a good match between the feeder cable and taps. Since the number of taps used in a given length of cable is greatly increased, mismatch could be accumulated rapidly, and the return echo

time should not be overlooked.

(4) Maintain a high isolation between any tap port, because feedback from the tuner or converter, especially when short drop cables are used, is possible. Higher isolation between sets is very desirable.

(5) Carefully check amplifier gain and tilt characteristics. Because of the large number of taps being used on one feeder line, flat loss is increased and cable loss decreased. In some cases, conventional CATV amplifiers may not be suitable. On the other hand, the sloped directional tap inherently provides a type of through loss which is similar to a length of cable.

Conclusion

Metropolitan areas hold great promise for CATV. Especially in the distant future. Adequate wiring of these markets, however, will require a great deal of careful planning and research. CATV engineers and technicians should begin thinking in "big city" terms immediately in order that the industry might grow with the opportunities.

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Automatic Video Switcher Handles "Part-time" Stations

UHF stations which broadcast on a part-time basis have produced a vacant-channel problem for some CATV operations. This unit is one solution to such a switching problem.

By Don Cantrell, Chief Technician
Total Television, Santa Rosa, California

Cable television has played an important role in popularizing UHF broadcasting. In addition to providing extended coverage, cable systems usually convert UHF to more easily tuneable VHF channels. These services have helped produce an increase in the number of UHF stations that is little short of fantastic. At the time of this writing, no less than four UHF channels have been introduced this past year in the San Francisco area alone!

Along with the advantages of new programming come a few problems for the system operator. The greatest of these is the legal priority of the local UHF over distant VHF's presently being carried. Another, relatively minor problem, is the fact that most UHF's wait until late afternoon to begin transmission. This leaves an empty channel during normal installing and servicing hours, making it difficult to tune customer's sets and to troubleshoot.

Ideally, the channel being used for the UHF signals should be utilized by distant VHF or time/weather programming during the U's non-broadcast hours. This arrangement provides maximum utilization of the channel and, should the U cease to broadcast or the system increase channels, it could prevent the necessity for re-application for the distant station.

The diagram shown on this page illustrates a switch which has been devised to carry out this switching operation. The completed unit can also be used to operate emergency equipment or to switch on "Please Stand By" signs. The switcher has been in use for more than a year at Total TeleVision.

The circuit described was designed for simplicity and economy. There are few components to fail and the unit can be junked, when no longer needed, at negligible loss to the company.

Video switching is accomplished by a transistor driven relay. This is activated by the presence of video at the triggering input.

To prevent accidental triggering a series resonant circuit distinguishes between line-rate video and transients that often occur. This signal is fed to two high back-resistance diodes where it's rectified and applied to the base and emitter of a general purpose transistor. This voltage is also shunted by a capacitor and a variable resistance. The capacitor provides a switching delay while the variable resistance adjusts the unit to the input level and desired time delay by setting the transistor bias and "bleeding" the storage capacitor. The transistor, in turn, triggers the relay.

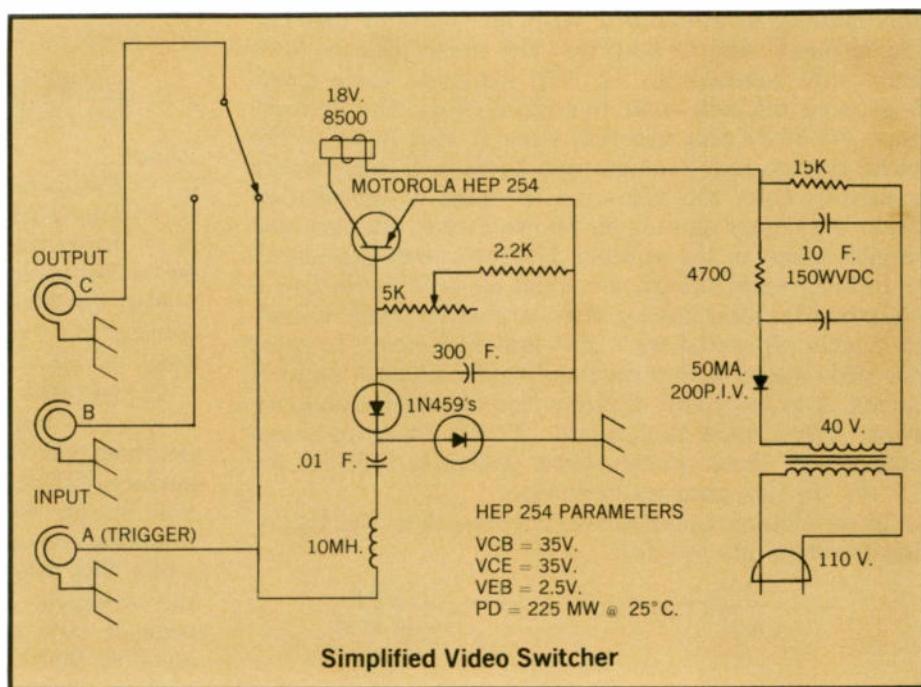
Power is supplied by a simple half-wave rectifier with an R.C. filter network.

The unit can be constructed in a 5" x 4" x 3" mini-box or mounted on a rack panel.

Input levels should be around 1 Volt P-P and the control adjusted for an "on" delay of about $\frac{1}{2}$ second and an "off" delay of about 15 seconds to keep the other channel from switching in during a short transmitter interruption.

If a more sophisticated unit is desired, a remote controlled over-ride switch can be installed and separate level and delay controls added. A field-effect transistor circuit would permit wider operating ranges and longer time delay.

TVC



Facts You Should Consider Before Choosing a Drop Cable

Many variables influence your decision on what kind of drop cable you select for your system. The following synopsis of the variables involved can help you make this decision.

By Sidney A. Mills, Vice President
Production and Engineering
Ameco Cable, Inc.

Referred to by many names such as "drop cable", "droop cable", "lead-in cable", "RG cable", "house drop cable", and several other equally romantic phrases, the umbilical link from your highly engineered cable communication network to the customer's viewing media, is a combination of metal and plastic, semi-quasi engineered into a configuration measuring less than a quarter of an inch in overall diameter.

This particular system component has, over the years, taken its share of the knocks. This has been partially due to attempts to reduce installation costs, and partially due to a lack of understanding of the components and construction of drop coax.

In the pioneer days of CATV, pieces of "off-the-shelf" bare wire, building wire, or even twin lead wire, were used between the cable tap and the TV set. While these seemed to do the job, they also provided the surrounding neighborhood with an excellent generating antenna, and in addition, the noise pick-up level was quite substantial. To help eliminate these problems, a switch was made to coaxial cable. The military type RG-59/U was selected, since it met most of the basic system requirements and because it was readily available. Over the years, as the cost of installation became a bigger and bigger known factor, changes and modifications in the military RG-coax were generated.

In basic terminology, a coaxial cable is defined as a transmission line having two conductors with a common axis separated by a low loss dielectric. To meet the wide range of electrical and environmental requirements, a great many different coaxial cable constructions have been developed. From an impedance standpoint, these constructions generally fall into 50, 75, 95, or 125, ohm classification.

In developing coaxial cable construction, the following formulae are helpful:

$$Z_0 = \frac{138}{\sqrt{e}} \log D/d \quad C = \frac{7.36 e}{\log D/d}$$
$$V = \frac{1}{\sqrt{e}}$$

Where:

Z_0 = Characteristic Impedance (ohms)
 C = Capacitance (picofarads/ft.)
 V = Velocity of Propagation
 d = Inner Conductor Diameter
 D = Diameter over Dielectric
 e = Dielectric Constant

The basic equation for attenuation of a high frequency cable is expressed as follows:

$$a = 8.68 \left[\frac{R}{2Z_0} + \frac{GZ_0}{2} \right] \text{ dB/1000 ft.}$$

Where: R is the effective loop resistance in ohms/1000 ft.; Z_0 is the characteristic impedance in ohms; and G is the insulation conductance in ohms/1000 ft.

When the appropriate expressions for R , G , and Z_0 are substituted, the expression for attenuation can be written as follows:

$$a = \frac{0.02387}{\log D/d} \left[\frac{\sqrt{efpi}}{d} + \frac{\sqrt{efpo}}{D} \right] + \frac{15.062 f e M}{\log D/d} \text{ dB/1000 ft.}$$

Where:

f = Frequency in MHz
 M = Dissipation Factor
 pi = Resistivity of inner conductor (microhm-cm)
 po = Resistivity of outer conductor (microhm-cm)

For CATV drop cable applications, the inner conductor is either solid copper or solid copper-clad steel. Table I lists properties of these materials.

Copper-clad steel conductors are suitable for CATV drop cable applications since at the frequency levels involved, the skin effect confines the signal to the outer surface of the conductor. Copper-clad steel wire is available in two conductivities, 40% and 30%; and in two tempers, annealed and hard-drawn. Annealed wire has a pliability approaching that of copper with about twice the strength. For .0253" conductor size, the conductance of 30% conductivity copper-clad steel becomes equal to that of solid copper at about 6 MHz.

From Table I, it can be seen that the breaking

strength of solid hard-drawn copper is about the same as that of annealed 30% copper-clad steel. Where soft solid copper wires are used in unsupported drop cables, their size should be restricted to .032" or larger.

Solid polyethylene or foamed polyethylene are the basic materials used as the dielectric for CATV drop cables. Keeping in mind the formula for characteristic impedance, the D/d ratio for solid polyethylene must be maintained at 6.8 and 4.6 for foamed polyethylene if a 75-ohm cable is to be obtained. It is for this basic reason that .0253" conductors are generally used in constructions having solid polyethylene dielectric, and .032" conductors used in those having foamed polyethylene dielectrics. By doing so, the diameter over the dielectric and the overall cable diameter can be maintained at the same figures. This combination of larger center conductor together with a lower loss dielectric makes possible a drop cable having lower attenuation values while maintaining the standard overall finished cable diameter.

While lower attenuation values are possible with a foamed dielectric, it should be remembered that the solid dielectric constructions are more rugged, moisture resistant and crush resistant. In many drop cable installations, these advantages in handling properties outweigh the electrical advantages of the lower loss foamed dielectric.

Shielding

By definition, a shielded conductor is one in which the insulated conductor is enclosed in a conducting envelope, and so constructed that substantially every point on the surface of the insulation is at ground potential or at some predetermined potential with respect to ground.

In the course of designing and manufacturing cables for the electrical industry, the need for shielding frequently arises, sometimes because of inductive interference and sometimes because of high voltage considerations. In CATV work, shielding for high voltage consideration is not necessary, but is of importance in providing efficient electrostatic isolation for the inner conductor.

In communication networks, the ratio of the received signal to the received noise is of more importance than the absolute value of either the signal or the noise. Therefore, if enough amplification is available, the circuit length possible is generally limited by the total noise. This noise component is in a large part derived from induction into the cable circuit.

In open wire lines, noise may be reduced by transposing the conductors. In a multi-pair cable, such as used by the telephone industry, the conductors are continually transposed by varying the length and direction of twist of the individual pairs. Noise due to electrical disturbances can be reduced further in twisted pairs by surrounding the pair with a conducting or semi-conducting media.

At frequencies up to about 4 MHz, the effects of electrical disturbances can be divided between electric field effects and magnetic field effects. Electric field effects are a function of the capacitance coupling or mutual capacitance between the disturbing and the

disturbed circuit. Magnetic field disturbances are proportioned to the magnetic coupling or mutual inductance between circuits.

At frequencies above 4 MHz, energy is emitted from the disturbing source in the form of radiation, which increases as the square of the frequency, and becomes one of the predominant factors for causing disturbances. This form of energy penetrates the cable shielding by passing through the interties or openings in the case of a braid, as well as by passing through the shield material itself. In a coaxial cable of course, the outer conductor acts also as the shield.

The degree of protection from external interferences increases with the amount of shielding. For CATV drop cables, the degree of shielding required depends upon the location of the system. In rural isolated areas, shield coverage may be kept to a minimum (80%); while in areas where there are strong local signals, heavy industry, or other types of generated interference, the amount of shield coverage must be increased.

For many years, the basic form of electrostatic shielding on coaxial cables was a metallic braid. Today, a variety of materials and forms of shielding are available, with the choice dependent upon the application of the individual coaxial cable. In particular, the following types of shielding are available: (1) metallic braids, (2) spiral metallic wraps, (3) metallic foil wraps, (4) bonded jackets, (5) seamless aluminum and (6) conductive vinyls.

Metallic Braids: Probably the most commonly used type of shielding for coaxial cable is of the metallic braid construction. Theoretically, a shield braid configuration can be calculated to give 100% coverage of the underlying core. However, in actual practice, single braid coverages greater than about 98% are not feasible or possible due to the mechanical limitations of manufacturing equipment.

The action of a braiding machine can be explained by comparing its action to that of children dancing around a Maypole. The insulated wire to be covered by the shield braid can be compared with the pole, and the braider carriers with the dancing children, half of whom move in a clockwise direction and half of whom move

Table I: Comparative Properties of Solid Copper and Solid Copper-clad Steel Drop Cable.

	COPPER			COPPER-CLAD STEEL (30%)		
	.0253"	.032"	.040"	.0253"	.032"	.040"
WEIGHT (lbs/M')	1.95	3.10	4.92	1.78	2.84	4.51
D.C. RESIS. (ohms/M')	16.45	10.34	6.505	54.9	34.5	21.7
BREAKING STRENGTH (lbs.)						
ANNEALED	19.5	31	49	35	56	89
HARD	34	54	85	64	110	170
AVERAGE TENSILE (psi)						
ANNEALED		35,000			60,000	
HARD		65,000			135,000	
AVERAGE ELONGATION (%)						
ANNEALED		25			12	
HARD		1			2	
VOLUME RESISTIVITY		1.724			2.8	

in a counter clockwise direction. The one obvious difference is that in the children's game, the Maypole remains stationary and the ribbons interlace themselves down the pole; while on the braider, the wire travels at a constant speed away from the point where the interlacing takes place. Therefore, the braid material coming from the carriers always converges about the wire at a fixed point on the machine. In a 16-carrier machine, eight carriers rotate clockwise and eight carriers rotate counter clockwise. Likewise, on a 24-carrier machine, twelve carriers rotate clockwise and twelve carriers rotate counter clockwise.

In designing a shield braid for coaxial cable, there are two important factors that should be considered: (1) shield braid angle (see figure 1) and (2) shield braid coverage.

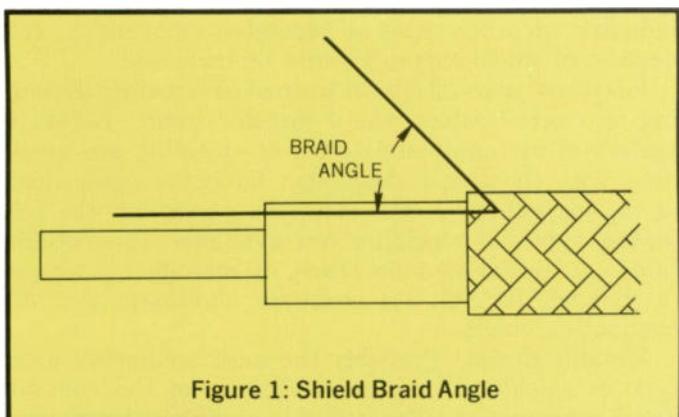


Figure 1: Shield Braid Angle

The percent coverage of shield braids can be calculated from the following formula:

$$K = (2F - F^2) \times 100$$

Where:

K = percent coverage

a = angle of braid with axis of cable

Tan a = $2\pi(D + 2d)/P/C$

d = diameter of individual braid wire (inches)

D = diameter of cable under shield (inches)

C = number of carriers

F = NPd/Sin a

N = number of ends per carrier

P = picks per inch of cable length

The percent coverage is affected by the following factors: (1) number of carriers—Usually 16C or 24C. In CATV work, 16C machines are most generally used, (2) number of ends per carrier—Usually 5, 6, or 7, for CATV drop cables. Variations in the number of ends per carrier can affect both attenuation and push-back characteristics. (3) picks per inch—Usually kept between 8 and 14 for CATV drop cables. From a production standpoint, it is advantageous to keep the number of picks per inch to a minimum, since the braider output varies inversely with this factor. In any coaxial cable, consideration must be given to the braid angle. Best physical and electrical characteristics are obtained when the braid angle is kept between 25° and 60°. The braid angle, which is governed by the number of ends and picks, is defined as the smaller of the two angles formed by the shielding strand and the axis of the insulated wire being shielded (See Figure 1). The

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braid angle will lie between 0° and 90°, approaching 0° when the number of picks is small, and 90° when the number of picks is large. A large braid angle increases attenuation in coaxial cables. However, a large braid angle is more desirable from a pliability and service life standpoint when a cable is subject to continuous flexing. (5) diameter of the individual braid ends—# 34 AWG (.0063"), # 35 AWG (.0056"), or # 36 AWG, (.005"), can be found in CATV drop cable constructions.

Table II shows the percent coverage and shield copper weight per 1,000 ft. of drop cable for various constructions of braid wire sizes and various numbers of braid ends per carrier. These calculations are based upon a standard drop cable core diameter of 0.146" and utilizing a 16-carrier machine. The picks per inch shown are those obtainable from a standard type braider.

From Table II, we see that as the individual wire size and the number of ends per carrier are increased, the percent coverage of the underlying core is correspondingly increased. For example, a shield braid using 5 ends of # 34 AWG copper would give 81% coverage and the total copper weight would be 11.30 lbs/M'. Using 7 ends of # 34 AWG copper with the same number of picks, the percent coverage increases to 95.6% and the total copper weight is proportionately increased to 15.80 lbs/M'.

It is evident that *all* the component aspects of a shield braid must be taken into account if a true picture is to be obtained. It is not satisfactory to describe a braid construction simply as a 7-end braid and expect

Table II: Shield Braid Data; 16 Carriers; Core O.D.—.146".

	STRAND SIZE / NUMBER OF ENDS								
	34/5	34/6	34/7	35/5	35/6	35/7	36/5	36/6	36/7
PICKS/INCH	8	8	8	8	8	8	8	8	8
Braid Angle	26.5	26.5	26.5	26.3	26.3	26.3	26.1	26.1	26.1
Percent Coverage	81.0	89.5	95.6	75.5	84.7	91.5	70.3	79.3	86.5
Copper Wt. ^a	11.3	13.5	15.8	9.0	10.7	12.5	7.1	8.7	10.0
PICKS/INCH	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93	8.93
Braid Angle	29.0	29.0	29.0	28.8	28.8	28.8	28.6	28.6	28.6
Percent Coverage	82.3	90.6	96.0	76.5	85.7	92.4	71.7	80.7	87.7
Copper Wt. ^a	11.7	14.0	16.4	9.3	11.1	12.9	7.4	9.0	10.4
PICKS/INCH	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1
Braid Angle	32.2	32.2	32.2	32.0	32.0	32.0	31.8	31.8	31.8
Percent Coverage	84.0	91.8	97.0	78.2	86.9	93.2	73.1	82.1	89.3
Copper Wt. ^a	12.2	14.6	17.1	9.7	11.6	13.5	7.7	9.4	10.9
PICKS/INCH	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Braid Angle	34.8	34.8	34.8	34.4	34.4	34.4	34.2	34.2	34.2
Percent Coverage	85.1	93.0	98.0	79.7	88.4	94.7	74.2	83.4	90.4
Copper Wt. ^a	12.7	15.2	17.7	10.1	12.1	14.0	8.0	9.7	11.3
PICKS/INCH	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
Braid Angle	37.2	37.2	37.2	37.0	37.0	37.0	36.8	36.8	36.8
Percent Coverage	86.0	94.0	99.2	81.2	89.7	95.6	76.4	85.1	92.0
Copper Wt. ^a	13.2	15.8	18.5	10.5	12.5	14.5	8.3	10.0	11.7
^a Lbs / M ft.									

95% shield coverage. As can be seen, 7 ends of # 34 AWG copper applied with 8.0 picks/inch gives 95.6% coverage, but if 7 ends of # 36 AWG copper are applied with 8.0 picks/inch, the percent coverage obtained is only 86.5%.

Increasing the picks per inch can increase the percent coverage, but it also increases the manufacturing costs. Not only is more metal used, but the speed of applying

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the braid varies inversely with the number of picks applied.

Spiral Metallic Wraps: In this type of construction, copper strands are served (applied in one direction only) over the conductor dielectric. There are no braided stitches and all shield wires lie parallel and adjacent to each other. This type of shielding can be applied at faster speeds than a conventional braid. This, coupled with some material savings, makes for a cheaper type of shielding.

Spiral wrap shields are generally considered suitable only for audio frequency applications. By the application of one or more underlying copper strands applied in the opposite direction to the spiral shield, this type of shielding permits use at slightly higher than audio frequencies.

Metallic Foil Wraps: With the introduction of polyethylene terephthalate tapes by the plastics industry several years ago, the possibility of film-foil shielding became more practical. These film-foil constructions generally consist of a .001" or .002" thickness of plastic tape to which has been laminated a .00035" to .001" copper or aluminum foil. This composite tape is usually longitudinally folded around the conductor with a sufficient overlap of the tape edges to provide 100% physical coverage of the underlying conductor.

Most cables employing this type of shielding usually have incorporated into their construction one or more strands of copper wire. Where aluminum foil tapes are used, it is recommended that the copper strands be tin-coated for metal compatibility. These individual strands of copper wire, commonly called drain wires, provide a path for carrying off any accumulated static charges from the shield. In many cable applications, these drain wires provide the means for terminating the cable shield. Because of the type of terminations used in CATV drop work, it is somewhat questionable as to how important these additive copper strands may be in CATV cable constructions. However, they do provide a means for "bridging the gap" in case the metal foil cracks or breaks open due to in-service mechanical fatigue.

This type of shield construction does make possible a lighter weight and smaller diameter cable. It has had considerable success for applications in the audio frequency range, but its shielding effectiveness decreases as the frequency is increased. However, the thin metallic thickness of these tapes is prone to crack under mechanical stress.

Bonded Jackets: In 1963, the U.S. wire and cable industry was introduced to the concept of "bonded jacket" shield constructions. Cable designs were advocated in which an adhesive copolymer material was used to obtain a structural bond between a metallic shield and an outer plastic jacket. The bonding action also sealed the overlapped seam of the shield. This type of construction differs greatly from the previously discussed film-foil construction in that the aluminum shielding tape used is .008" in thickness and, when correctly processed, the shielding tape and overall jacket are homogeneously bonded together as a unit.

This philosophy of cable construction is now being pursued for many drop cable constructions. Because of possible patent infringement problems, slight devia-

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ISOLATION BETWEEN OUTPUTS (dB)	25	15	12	12

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tions from the original concept have been made by some manufacturers. For example, in some cases these drop cables are manufactured with a polyvinyl chloride jacket in lieu of a polyethylene jacket. In doing so, some advantages in cable flexibility and handling are obtained, but some sacrifice in moisture resistance and mechanical protection are introduced, due to a reduc-

Table III: Comparison of Shielding Efficiency of Various Drop Cable Constructions.

CONSTRUCTION	EFFICIENCY
16C, 5 ENDS, 34 AWG, 81% COV.	32 dB
16C, 7 ENDS, 34 AWG, 95.6% COV.	40 dB
24C, 5 ENDS, 34 AWG, 97% COV.	42 dB
16C, 7 ENDS, 36 AWG, 90% COV.	36 dB
SOLID COPPER TAPE PLUS BRAID 100% COV.	85 dB
SOLID ALUMINUM TUBE, 100% COV.	120 dB

tion in the overall bonding efficiency between the shield and jacket.

Like film-foil constructions, the bonded jacket constructions do make possible smaller and lighter weight cables. But also, like film-foil constructions, the thin aluminum tape is prone to metal fatigue and cracking when subjected to continuous vibration and flexing.

From an electrical standpoint, bonded jacketed constructions, when correctly installed, will perform satisfactorily. However, extra care is needed in handling and installing such drop cable constructions to

prevent the formation of wrinkles in the shield.

Seamless Aluminum Sheath: As an extension of the trunk and distribution cables, CATV drop cables are now available having an overall seamless solid aluminum sheath as the outer conductor. This construction affords 100% shielding coverage.

Compared to the .001" aluminum thickness in film-foil constructions and the .008" aluminum thickness in bonded jacket constructions, the outer conductor thickness for seamless aluminum sheathed drop cables is about .018".

With this type of construction, some sacrifices in

Table IV:

COMPOUND	TENSILE STRENGTH (PSI)	PERCENT OF ELONGATION	RETENTION OF ELONG. (7 Days@ 1000°C)	BRITTLENESS TEMP. (°F)	COST \$ / lb.
General Purpose PVC Compound	2000	250	75%	+5	0.16
Compounded for Improved Weathering Properties	2900	250	85%	-40	0.23
Compounded for Improved Low Temperature Properties	2000	300	90%	-60	0.26
Non-Contaminating Jacket Compound	1850	400	95%	-65	0.45



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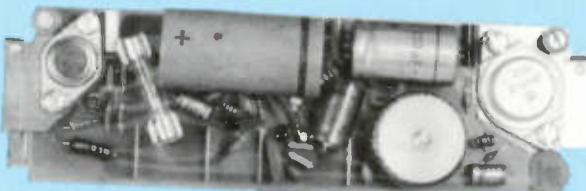
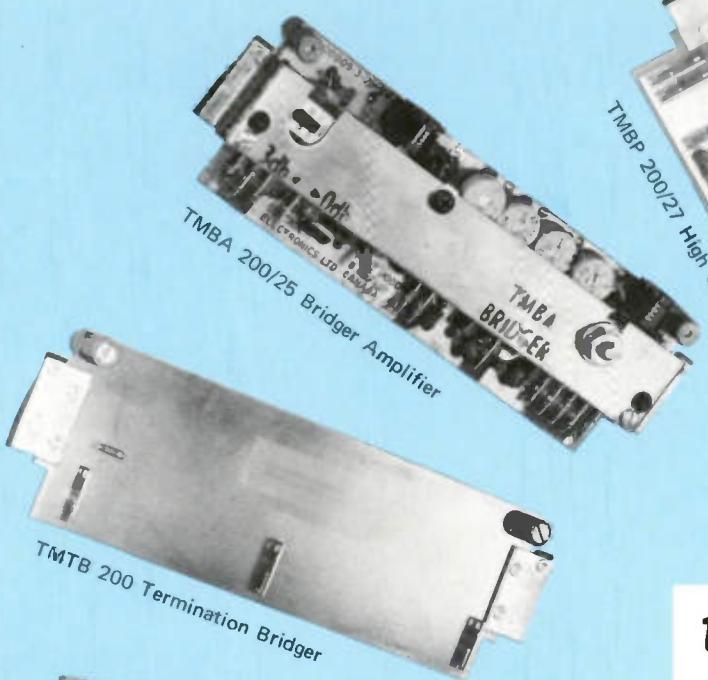
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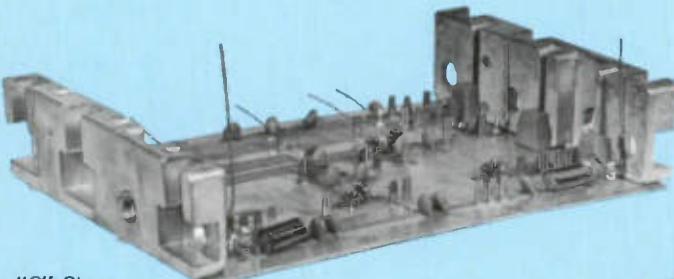
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flexibility and handleability must be expected. Care must be exercised during installation to maintain suitable bending radii. When installed aerially, proper support should be given to the cables, and when used in underground installations, the aluminum sheath must, of course, be covered with a suitable protective jacket.

Conductive Vinyl: Conductive vinyl compounds have recently shown some prospects of acceptability in the areas of anti-static devices, aircraft static eliminators, microphone, and other specialized cables. They have also been considered as material for possible use in CATV cables.

Overall reduction in cable weight and diameters, together with improved flexibility, are possible with the extruded conductive material. Reported tests indicate that, compared to metallic braids, radiation losses are not significantly different up to about 25 MHz. At frequencies above 25 MHz, the conductive vinyl loses its shielding effectiveness rapidly.

In several cases, combinations of various types of shielding have been employed to improve their overall effectiveness. For example, in areas of extremely strong local signals, drop cables having two shielding braids, one imposed directly over the other, or a shielding braid combined with a longitudinally folded metallic tape have been used with success.

The effectiveness of one particular type of shielding as compared to another is very difficult to measure due to termination problems, etc. As indicated above, there are some types of shielding that are limited in their frequency range. As a guide, some comparisons, reported for a few primary constructions used in CATV work, are given in Table III.

Jackets

Jackets on electrical cables should: (1) Provide adequate mechanical protection to the underlying components both during and after installation, (2) Be satisfactory for use aerially, in ducts, or buried directly in the earth, (3) Resist weather and soil conditions, (4) Have adequate moisture resistance, (5) Be easy to handle and install, (6) Be flexible enough for installations at sub-zero temperatures and (7) Be durable and homogeneous.

In the CATV industry, jacketing materials used for drop cables have been generally limited to either polyvinyl chloride (PVC) or polyethylene. Normal CATV installations do not justify the added costs associated with other types of materials such as Neoprene, Teflon or Polyurethane.

Both polyvinyl chloride and polyethylene are available in a wide choice of grades and types. Therefore, reference just to the words "PVC" or "Poly" can be somewhat misleading.

In the cable industry, the polyvinyl chloride compounds used are a formulation of many ingredients. By compounding the basic vinyl polymer together with a choice of various stabilizers, plastizers, fillers and lubricants, a wide variety of physical and electrical properties can be achieved. A comparison of four basic PVC jacketing compounds are shown in Table IV.

As with PVC, a wide variety of polyethylene com-

pounds are available for use as cable jackets, but unlike PVC, only a minor quantity of compounding ingredients are added. These ingredients include an antioxidant or heat stabilizer and pigment for weather protection.

Polyethylene, because of several unique properties, is ideally suited for jacketed coaxial cable applications. It is highly resistant to moisture and to most chemicals and oils, and in addition, it possesses outstanding mechanical properties. However, for jacketing applications, it is recommended that the polyethylene type, commonly referred to as high molecular weight polyethylene, be used because of its added resistance to environmental stress cracking.

PVC jacketed cables are generally more pliable and more flexible than those having polyethylene coverings. It is probably from this factor, that the terminology "hard and soft" jackets to mean polyethylene and PVC respectively, were originated. In addition, PVC compounds are considered flame retardant, while polyethylene will support combustion.

Polyethylene jacketed cables will weather better than PVC jacketed constructions, but because of their inherent added stiffness, they are more difficult to work with, especially in cold weather. Because of their superior moisture and chemical resistance, polyethylene constructions are recommended for underground installations.

PVC compounds can be prone to bleeding, especially if installed in areas of high ambient temperatures. This bleeding, a leaching out of the plastizers from the compound, not only makes the compound become brittle, but effects the overall dielectric constant of the underlying core. In time, this aspect will have considerable effect on the cable's electrical properties. The degree of contamination is a factor of both the grade of PVC compound used and the environment in which the cable is installed. The non-contaminating type PVC compounds tend to minimize this particular problem. However, the type of manufacturing process required to extrude non-contaminating PVC is of such a nature that the compound tends to imbed itself into the interties of the shield braid. This factor can create termination problems.

For outdoor aerial installations, only black jackets are recommended, unless the particular jacketing compound has ultra-violet inhibitors included in it. For indoor installations, not subject to direct sunlight, colored PVC jackets can be utilized effectively to harmonize with the surrounding area.

Conclusion

The proper selection of drop cable, like that involving many other CATV system components, is not a simple matter. Drop cables are an important working element and should be given serious consideration in any cable system layout.

In the future, there will probably be generated a single drop cable design that will be satisfactory and ideal for all types of installation. Until that time, it is quite evident that there are many factors and many combinations of components that are worthy of consideration.

PRODUCT REVIEW

NEW COMPONENTS FOR CABLE TELEVISION SYSTEMS

PACESETTER II AMPLIFIERS ANNOUNCED BY AMECO

A new series of eleven wideband trunk, bridger and combination amplifiers has been introduced by Ameco. Dubbed the Pacesetter II line, the new amplifiers operate over a 50-260 MHz bandwidth and are designed to carry as many as 27 program channels. Cross-modulation of the trunk amplifier units is specified at -90 dB for a



+32 dBmV output, measured according to NCTA standards. Other characteristics listed by the company include a noise figure of 10 dB and input and output return loss of 16 dB. The plug-in modules are designed to fit a common waterproof housing, with built-in transformer-type power supply. Available modules include optional AGC operating from pilot carrier or from composite signal levels.

For further information on these new products contact Ameco, Inc., P.O. Box 13741, Phoenix, Arizona 85002.

STANDARD AND EMERGENCY POWER SUPPLIES BY RICH

Two new power supply units have been produced by Rich Laboratories. A standard transformer power supply, the PS-300, features a 30 volt, 8 ampere output. An emergency power supply, the PS-200, is designed to operate in conjunction with existing units already installed. The PS-200 supply can be converted to the company's present PS-100 system by combining the PS-300 and PS-200.

For further information on these

new products contact Rich Laboratories, Inc., 138 Fern Street, Santa Cruz, California 95060, (408) 426-3570.

FAIRCHILD INTRODUCES SYNC GENERATOR

Fairchild has introduced a new television synchronizing signal generator. Known as the model FR-20, the new unit is said to offer waveforms in accordance with EIA standards RS-170, RS-330 and RS-343 to meet the requirements for broadcast, industrial and high-resolution cameras. The FR-20 is 1-3/4" high by 8-11/16" wide and 9-7/8" deep. The solid-state unit is engineered for modification of the horizontal line frequency by changing a pre-wired interconnection plug. Four output signals are provided—horizontal drive, vertical drive, mixed blanking and composite sync. The composite sync signal includes equalizing pulses and vertical serrations.

For further information on this new product contact Fairchild Space and Defense Systems, 300 Robbins Lane, Syosset, L.I., N.Y. 11791, Phone (516) 931-4500.

GBC WEATHERPROOF CLOSED CIRCUIT CAMERA

A new weatherproof solid-state CCTV camera designed for operation outdoors where there is rain, or in-



doors where there is dust and humidity, has been announced by GBC Closed Circuit TV Corp. The unit is surrounded by an aluminum shield to protect it from rain, snow, moisture,

dust, etc. Other features include small size and weight and use of a standard pan and tilt mechanism. The camera lens can be changed and provision is made for zoom lens installation. The housing has its own lock. The camera utilizes solid-state circuitry and has outputs for video and RF, switchable to either video monitor or to standard home TV receiver.

For further information on this new product contact GBC Closed Circuit Corp. 74 Fifth Avenue, New York, N.Y. 10011.

SEMCOTRONICS INTEGRATED EIA-SYNC GENERATOR

SEMCOTRONICS is manufacturing a new EIA-Sync Generator, model ST 600 for CATV systems. The unit is self-contained and generates composite Sync, mixed blanking, horizontal drive and vertical drive pulses in accordance



with standards established by EIA-Specifications RS170. The model is said to be capable of operation in any one of the following modes: int., crystal, line, color or sync lock. For color operation it accepts a phase locked 31.5 khz signal from a color standard ST 500 or equivalent. In sync lock mode it can be locked to an external video signal via a sync lock unit ST 1300 or equivalent. List price is \$595.

For further information on this new product contact SEMCOTRONICS, 521 Marine View Avenue, Belmont, California 94002, (415) 593-4752.

BOOM MIKE STAND FROM ATLAS SOUND

A portable boom microphone stand, designed for studio applications and "on location," is now available from Atlas Sound. Porto-Boom Model BS-37 extends out to a maximum of 18 feet, but is collapsible to seven feet for transportation by car. Maximum height extension is nine feet, collapsible to 5-1/4 feet. The Porto-Boom is designed to be "knocked down" or re-assembled without tools. Another feature of the stand is a 2-position, dual control microphone "gunning device," which rotates the mike through a 360 degree arc. A base guide handle designed to offer the operator a means of moving the base on the 4-inch ball-bearing rubber casters is also offered.

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The unit weighs 73 pounds, including the 22-pound removable counterweight.

For further information on this new product contact Atlas Sound, 10 Pomery Road, Parsippany, N.J. 07054, Phone (201) 887-7800.

NEW TERMINATED TAP DESIGN

C-COR Electronics has introduced a new terminated tap unit, the Model TTM-4-7. Features include: directional coupling, hybrid design, a bandpass of 50 MHz to 300 MHz, and attenuation figure of 6-1/2 dB. The tap is designed



for installations where signal loss would normally require the addition of a line extender. Price is \$14.

For further information on this new product contact C-COR Electronics, 60 Decibel Road, State College, Pennsylvania, 16801, (814) 238-2461.

BETWEEN SERIES ADAPTER

Two new adapters have been introduced by Davco Electronics Corporation. They are two of the most popular combinations, "UHF" Male to "F" Female and "BNC" Male to "F" Female.



For further information on these new products contact Davco Electronics Corporation, P.O. Box 861, Batesville, Arkansas 72501.

GC ANNOUNCES TAPE HEAD CLEANER

The availability of a new aerosol-type cleaner for audio and video magnetic tape heads, guides, and film gates, has been announced by GC

Electronics. The new product, Audio-Video Tape Head Cleaner, is said to be safe for use on all types of recording heads and to remove dirt, film, and oxide build-up. The new cleaner is being offered in a 16-ounce aerosol can, equipped with a 6" spray extension designed to enable the user to point the spray at hard-to-reach tape heads. Suggested price is \$2.35 per can.

For further information on this new product contact GC Electronics, 400 South Wyman Street, Rockford, Illinois 61101.

COAXIAL FITTINGS ALLOW THREE-DIMENSION MOVEMENT

Two new coaxial fittings designed to allow movement in three dimensions in hookups using rigid coaxial air dielectric lines are being produced by Hewlett-Packard. The fittings are said to preserve the stability and repeatability of air-dielectric lines while introducing flexibility. One of the new devices is a rotary joint (Model 11588A) which allows rigid air line to be "bent" through a 360° range. The other is a rotary air line (Model 11606A), a section of air line that can



be twisted through 360°. When used together, these devices are engineered to permit movement in all three dimensions. Insertion loss of either of the new components is rated at less than 0.5 dB over a frequency range of dc to 12.4 GHz with SWR less than 1.1.

For further information on these new products contact Inquiries Manager, Hewlett-Packard, 1501 Page Mill Road, Palo Alto, California 94304, (415) 326-7000.

NEW TPI CONVERTER FINE-TUNING CONTROL

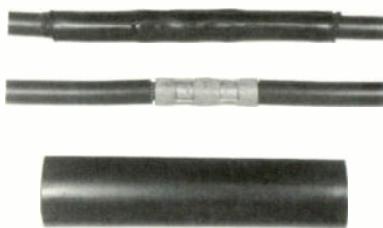
A new fine-tuning control for cable television converters has been developed by Television Presentations for use on TPI Focus 12, Plus 13, and Gamut 25. The TPI fine-tuning device is designed to provide a limited range of adjustment of the output mixer oscillator, making it possible to compen-

sate for drift in the subscriber's TV receiver without disturbing the adjacent channel trap protection provided in the converter itself.

For further information on this new product contact Television Presentations, Inc., 375 Park Avenue, New York, N.Y., Phone (212) 421-9666.

RAYCHEM PRODUCES CABLE SLEEVES

A revised series of Thermofit heat-shrinkable cable sleeves for splice protection has been announced by Raychem Corporation. These heat-shrinkable sleeves contain an internal



mastic coating and are available with both standard and heavy wall thicknesses. Upon applying heat, the sleeve is designed to shrink to conform tightly to the splice while the mastic melts and flows to provide a watertight seal.

For further information on these new products contact Raychem Corporation, 300 Constitution Drive, Menlo Park, California.

BELDEN INTRODUCES 82-CHANNEL COAXIAL CABLE

A shielded 75-ohm coaxial cable suited for UHF MATV distribution systems is available from Belden Corporation. The cable is said to be applicable to VHF black and white or color TV systems. The 8228 Dufoil cable is designed to provide a small outer diameter and termination with standard F-type connectors. Greater flex life for the 82-channel cable is claimed through spiral-wrapping the four drain wires for equal distribution of stress. The shield is a polyester film with an aluminum laminant on both surfaces. The cable is available in 1,000, 500 and 100-ft. spools.

For further information on this new product contact Belden Corporation, P.O. Box 5070A, Chicago, Ill. 60680.

TECH PROBLEMS?

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"The cable TV trend, like all wire services to the home, is to underground construction,"
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"An underground TV system is also less liable to damage, is not exposed to temperature fluctuations and requires less maintenance but more important, the cable TV owner has complete control of his system."

Bill Daniels and Bob Clark, president of Cablecom-General, Inc. have recently completed the world's largest underground cable television system (over 400 miles of plant) in Colorado Springs.

The prime contractor, Douglas Jardine, used eight Davis Task Force 300 trenchers equipped with Hydra-Borers to install more than 16 miles of underground cable a week.

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Construction Reports

Northeastern States

Millville, N.J., Holy City, added 3 channels. . . . Kingston, N.Y., Kingston Cablevision, rebuild completed. . . . Elizabethville, Lykens, and Williamstown, Pa., Lykens, rebuilding nearing completion. . . . Northumberland and Sunberry, Pa., BKP Television Systems, 3 channels added. . . . Punxsutawney, Pa., Punxsutawney Cable, rates increased .95. . . . Williamsport, Pa., Citizens Cable, rates up .50. . . . Montpelier, Vt., Montpelier TV, rebuild completed. . . . Beckley, W. Va., Beckley Tele-Cable, expansion nearing completion.

Midwestern States

Lewiston, Idaho, American Cablevision, rebuild planned. . . . Monticello, Ind., Total Communications, tower in, construction progressing. . . . Spencer, Iowa, Spencer Community Antenna System, 400-foot tower up. . . . Albion, Neb., Midstate Community, house-drops begun. . . . Gordon, Neb., See-More, tower completed. . . . Lincoln, Neb., T-V Transmission, first phase completed, 7 channels. . . . Baraboo, Wisc., Baraboo, house-drops, 8 channels. . . . Viroqua, Wisc., Cable TV Signal, Vikoa awarded \$168,000 system contract.

Southern States

Mountain View, Ark., Mountain View Telephone construction underway. . . . Homerville, Ga., Continental Transmission, system energized. . . . Joyce, La., Winn Cable, construction begun. . . . Opelousas, La., Cablevision, cable installation begun, 12 channels.

Ocean Springs and d'Iberville, Miss., General Electric Cablevision, system contract to Kaiser. . . . Oxford, Miss., T.V. Cable, under construction. . . . Pontotoc, Miss., Mississippi Transmission, 10 channel system completed. . . . Hannibal, Mo., General Communications, hook-ups underway.

Midland, Tex., Tall City, house-drops being made, 10 channels. . . . Perryton, Tex., GenCoE, rebuild near completion. . . . Silsbee, Tex., Great Western, construction begins soon. . . . Smithville, Tex., Cable TV, tower begun. . . . Van Horn, Tex., Van Horn, construction underway on new system.

Western Mountain States

Douglas, Ariz., Douglas TV Co., added 5 channels. . . . Montebello, Calif., Nationwide, construction underway. . . . Sonoma, Calif., Storer Cable, hook-ups underway. . . . Tracy, Calif., General Cablevision, Kaiser CATV contractor for system under construction. . . . Brush, Colo., Community TV, construction underway. . . . Walsenburg, Colo., Walsenburg Televents, construction underway.

Junction City, Ore., Liberty TV Cable, construction begun. . . . Vernonia, Ore., Vernonia CATV, construction underway. . . . Auburn, Wash., S. M. Electronics, tower in, construction underway. . . . Ephrata, Wash., Empire Cablevision, extensive rebuilding underway. . . . Wenatchee, Wash., Mission Ridge, new Seattle channel added for business and financial news.

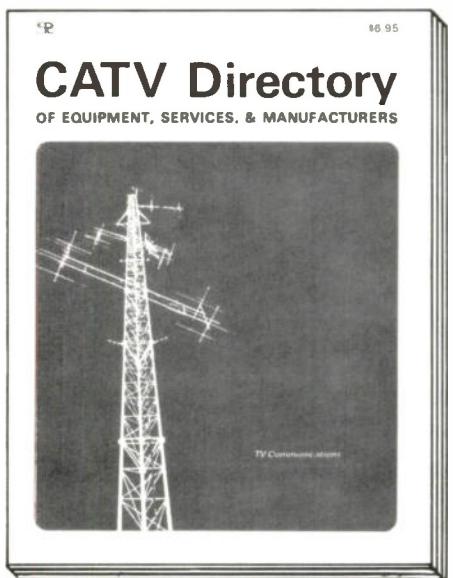
Canadian Systems

Simcoe, Ontario, Clearview Cable Television, Ltd., first phase energized.

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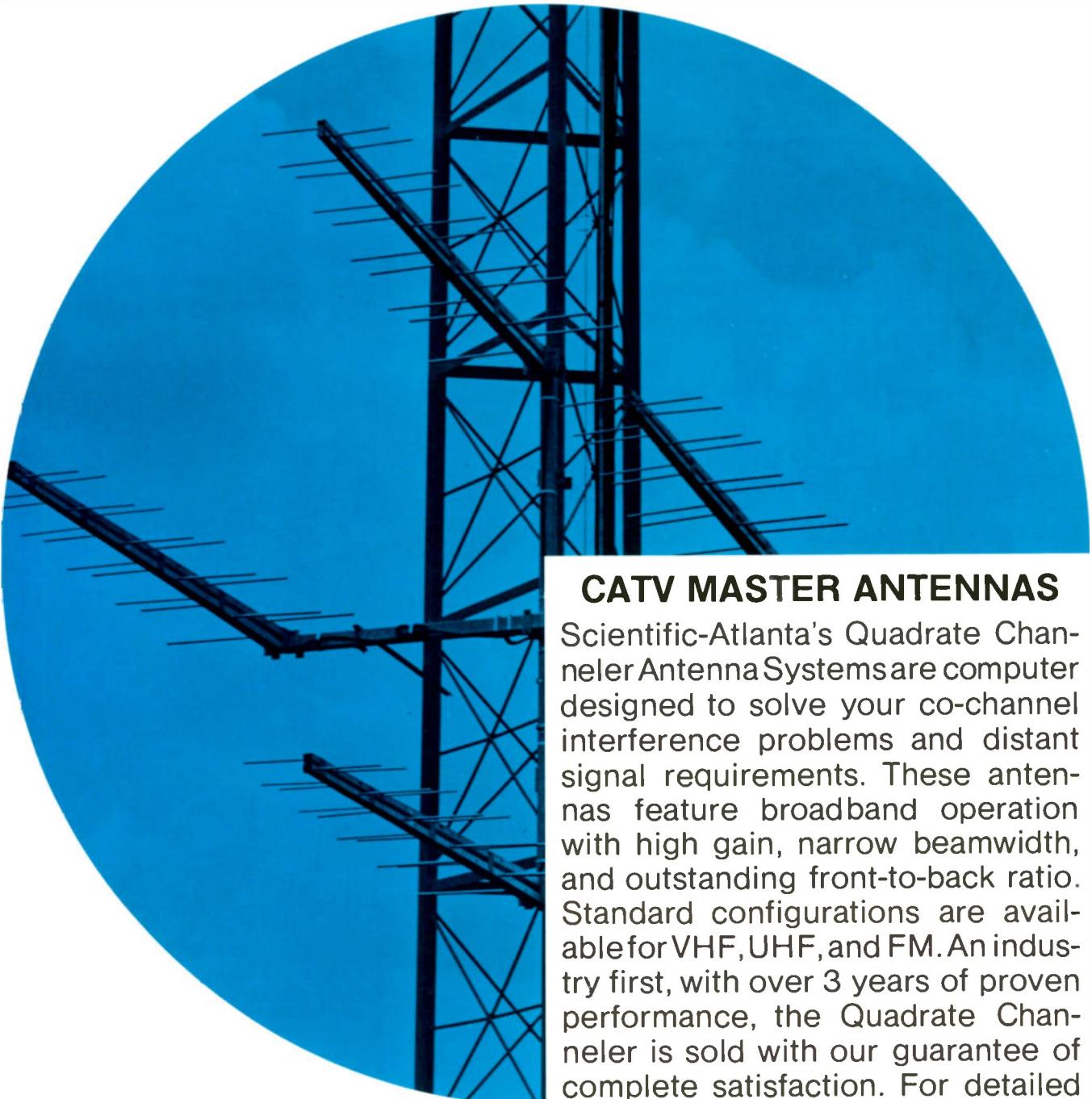
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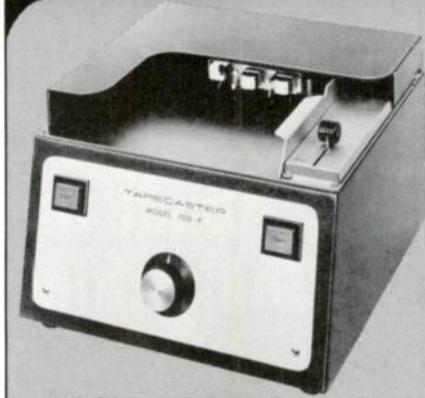


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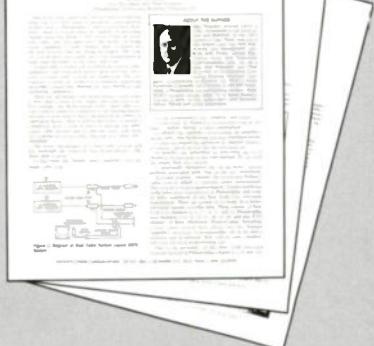


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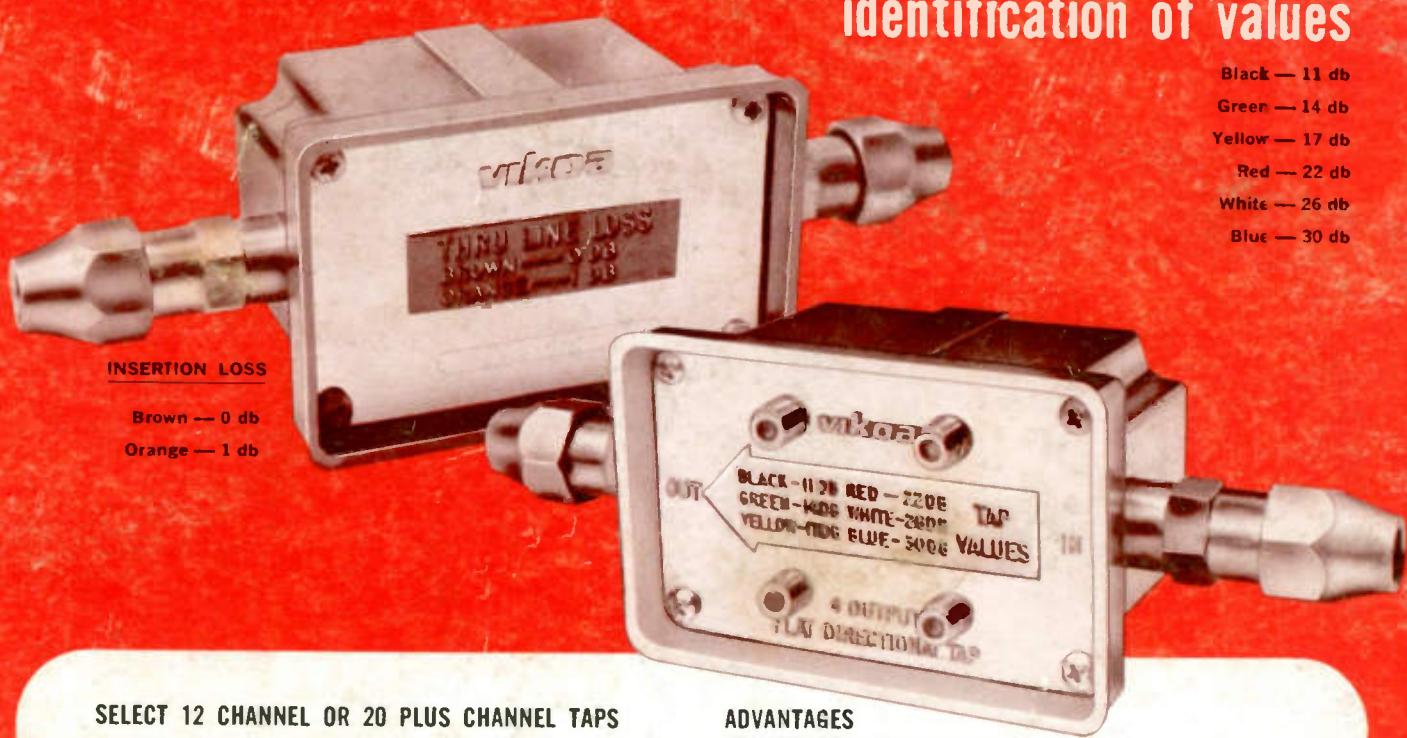
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