



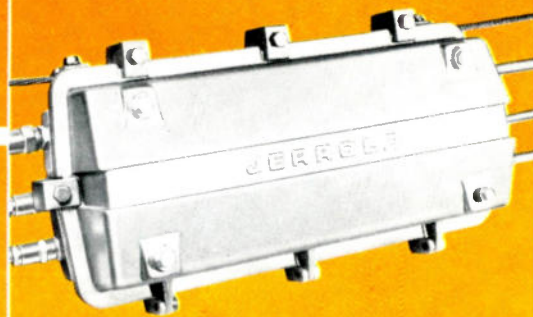
November 1987

TV Communications

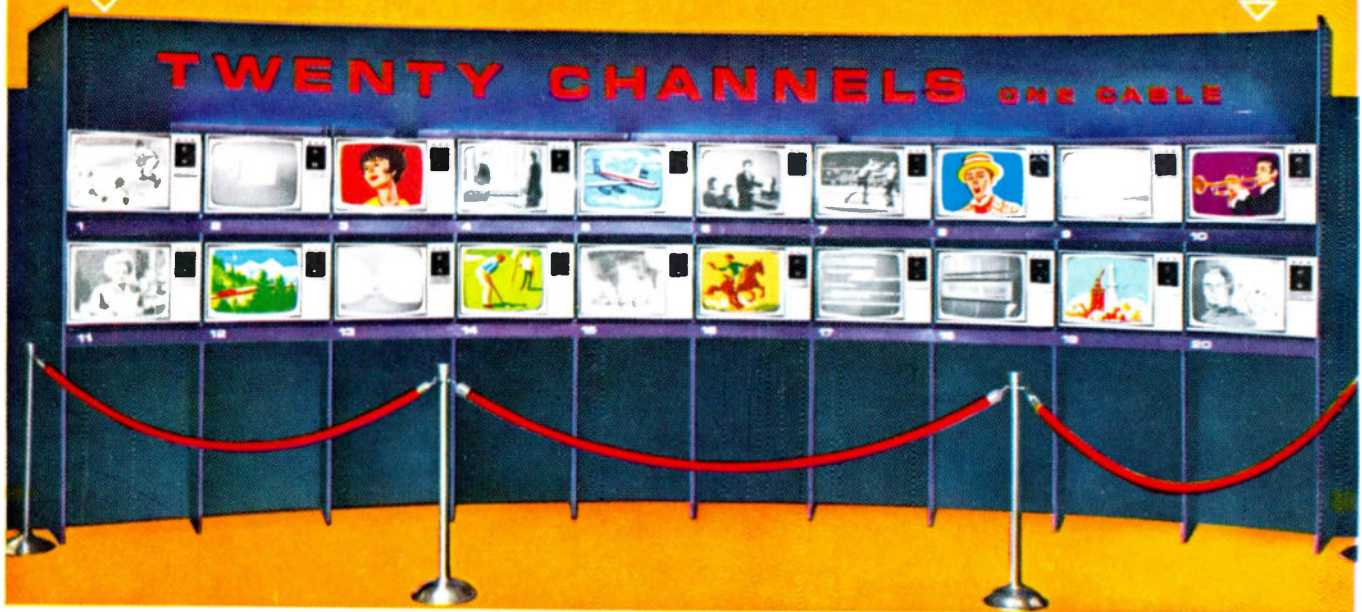
The Professional Journal of Cable Television



Emphasis on Head-Ends



New Jerrold Starline Twenty delivers all this...



...or superb
12-channel operation

Set up for 20-channel operation or 12, the Starline Twenty distribution system will be tough to beat. It's not just solid state. It's *reliable* solid state. And the proof will show up at the subscriber's set—not just for months—but year after year.

Jerrold electronic and mechanical innovations assure superb distribution by the Starline Twenty right down to the last subscriber on the line. Cascade-ability is unequalled (71 amplifiers for 12-channel operation). And the rugged construction assures low-cost opera-

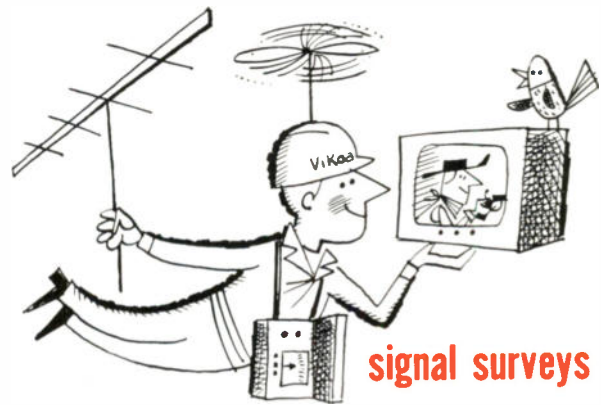
tion. What's more, Starline Twenty offers greater flexibility in system layout.

Assure every subscriber of crystal-clear black-and-white or true living color pictures, and the potential for 20-channel program variety with Jerrold Starline Twenty—the unbeatable solid-state CATV distribution system. For more information on Starline Twenty, write CATV Systems Division, Jerrold Electronics, 401 Walnut Street, Philadelphia, Pa. 19105, or phone: (215) 925-9870. TWX 710-670-0263.

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FIRST IN CATV

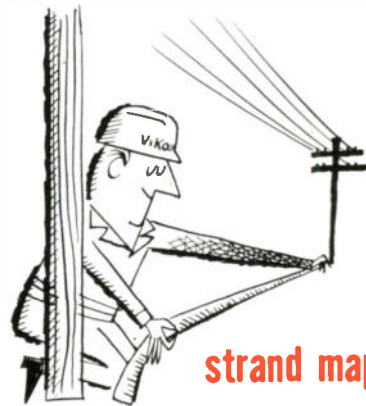
**vikoa gets you
from franchise
to profitable
CATV system
.....FAST!**



signal surveys



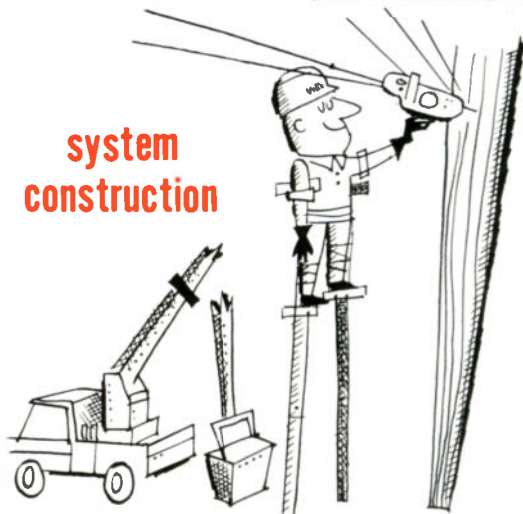
**most advanced, reliable
cable and equipment**



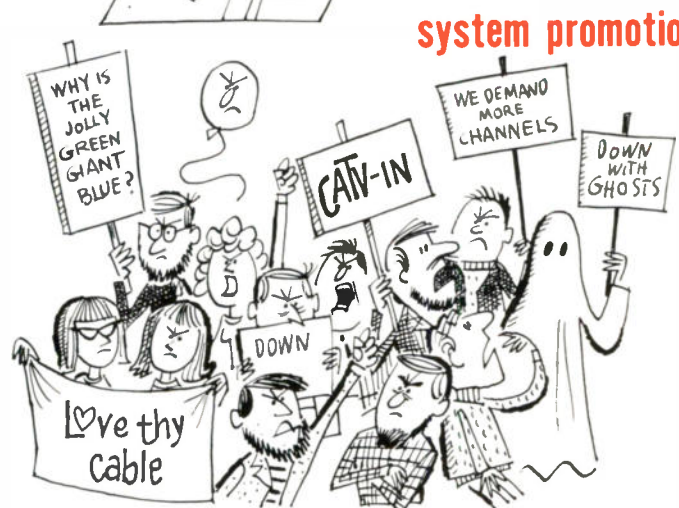
strand map surveys



system design



**system
construction**



system promotion

and...we give you service after the system is turned on!



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IN THIS ISSUE

VITS for CATV Applications

Authors Monnier and Reiser, both Hewlett-Packard design engineers of considerable experience, present an in-depth study of continuous TV signal monitoring with vertical-interval test signals. Beginning on page 40, they describe the use of "VITS" signals transmitted in TV broadcast channels for continuous checking of signal quality. TVC Technical Associate I. Switzer adds his comments on CATV applications of VITS, rounding out this informative technical article.

Laser Distribution Coming

The concept of laser distribution of television, specifically for "trunk" applications in CATV, has been translated into a working system proposed for use in one of the New York City cable operations. The technique, developed by Ira Kamen's Laser-Link Corporation, will be tested this month, with an eye toward commercial manufacture of the necessary transmitting and receiving equipment. For a special report on these developments, see page 48.

Better Local Advertising

A majority of cable system managers are involved directly in the planning, production and execution of local advertising campaigns. Of these functions, actual production of high quality ad copy very often presents a problem — especially in smaller communities where less professional assistance is available. As a result, a basic knowledge of ad production is a valuable asset to most system managers. Toward that end, author Sam Henry covers the principles of newspaper ad layouts, beginning on page 51.

A Regulated Future . . .

Cable television's future is that of a regulated industry, states Nicholas Johnson, and CATV'ers must carefully study their potential role in the overall communications system, he concludes. Johnson, the newest member of the FCC, goes into detail in his view of CATV and its "proper role", in extensive comments prepared for delivery at the NCTA regional meeting held in Philadelphia last month. The Commissioner's remarks necessarily effect all cable operators, and are published in full beginning on page 56.

TV Communications

The Professional Journal of Cable Television

Continuous Signal Monitoring with VITS

Checking channel quality with vertical-interval test signals 40

Laser Distribution for Cable Systems

A special report on Laser-Link's proposed distribution technique . . . 48

Producing Better Newspaper Ad Layouts

Techniques for system managers for improved local advertising 51

The Future of CATV as a Regulated Industry

A major speech by FCC Commissioner Nicholas Johnson 56

A Success Formula for Cable Operators

The importance of a balanced emphasis in system management 68

Three Roads to Liquidity for CATV Owners

Methods of financing cable system operations 73

Reaching the Housewife with Subscriber Promotions

Effective sales psychology can boost system saturation 76

CATV TECHNICIAN SECTION

Signal Propagation Theory for Technicians

A basic review of television propagation principles 81

CATV Technical Standards

A report and analysis by Archer S. Taylor 86

DEPARTMENTS

Editorial	8	Financial Report	38
Industry Perspective	10	Meeting Calendar	38
Letters to the Editor	14	Construction Starts	78
Management Corner	16	Subscription Data	89
Late News Briefs	19	New Product Review	92
News Spectrum	22	Advertisers Index	95
CATV System Sales	32	Statement of Ownership	95
Focus on People	34	Classified Advertising	96

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GO **vikoa** FOR LOCAL ORIGINATION

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Includes 6 position rotating sign holder for Advertising, Local News and Public Service.

The "Cadillac" of Weather-Time News channel originators. Eight viewing positions: rotating sign holder, clock, barometer, thermometer, wind direction indicator, wind velocity indicator, rainfall indicator and humidity indicator.

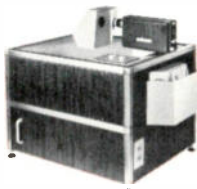
You can easily pay for this unit with advertising revenue.

Complete with easily attached outdoor weather sensors. With GE Model TE20 Camera shown, only \$4200. With Vikoa Model ST 1000 camera, Only \$3550.

CLIMATECASTER

Includes 5 time/weather instruments plus six sided rotating card holder.

Compact, table model—Time - Weather - News - Advertising channel originator. Six viewing positions: Six sided rotating card holder, clock, thermometer, humidity indicator, barometer and date indicator. Complete with outdoor sensors and ST 1000 camera. Only \$2195.



MODEL ST1000 SOLID STATE VIDICON CAMERA for local origination studios

24 Transistor, 17 diodes
Completely self contained and easy to operate, this 500 line resolution camera is ideal for



CATV local origination. 4000 to 1 automatic light compensation maintains excellent picture quality. 120 day warranty.

Includes both video and RF (tunable ch 2-6) outputs. Only \$295.

COMPLETE LINE OF LENSES

Including F1.4 and F1.9, wide angle (12.5mm), standard (25mm) and Telephoto (50mm and 75mm) lenses. Also, manual zoom and remote controlled zoom lenses. Ask for our complete specification sheet and prices.

SAMSON FRICTION HEAD AND TRIPOD WITH ELEVATOR

Handles loads up to 25 pounds.

Tilts up 45 degrees, down 360 degrees, pans 360 degrees. Heavy duty torsion springs. Only \$116.00.



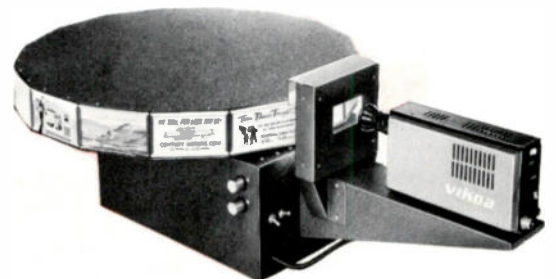
SAMSON DOLLY

Makes camera mobile for smooth programming. Casters with brakes, folds to 6 1/2" x 7 1/2" x 21 1/2". Only \$45.00.

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16 sided News, Public Service, Advertising Channel Originator.

Easiest way to provide an automatic, locally originated channel. 16 sided rotating card



holder accepts 3" x 5" cards which can be prepared on an ordinary typewriter. Complete with ST 1000 camera only \$1100.

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The TVC Viewpoint

EDITORIAL



What's It All About?

The purpose of cable television is to take television signals to people. Or is it?

Aware cable operators learn sooner or later that they're *not* in the business of delivering decibels . . . or even channels. Rather, from the customer's viewpoint (the only one that counts) a cable supplies entertainment, knowledge, diversion.

Assuming that there is agreement on this idea — that CATV is the business of bringing entertainment, knowledge and diversion — where do we go from here? As cable operators perfect their equipment and techniques and raise their sights, they are looking for ways to expand subscriber services. Naturally, understanding the difference between dB's and entertainment is the first step.

What is the appeal of television over other forms of communication? The answer is probably related to the fact that color TV is more captivating than black and white. Television — or a movie, for that matter — can completely captivate the viewer, involving him in the story until in his mind he is a spectator at a real life situation. Color television involves — and entertains — the spectator even more than black and white TV because it more closely simulates the *real experience*.

So the spectator more fully *experiences* what he is looking at because it is in color, just like a real live situation.

Television entertainment then, in general terms, could be called simulated or re-created *experience*. Perhaps this points to the ways in which the medium could be further perfected from its present form to make it a more valued service to the subscriber. Perhaps as John E. Lewis suggested in his excellent article on CATV marketing concepts (July '67 TVC) the future of cable television is related to the idea of bringing the experience to the person . . . as opposed to our established practice of transporting the individual from one location to another to be involved in different experiences.

Cable television is the obvious means for making the *facsimile, re-created or simulated* experience more convincingly like the real experience. How? Just as life-like color is dramatically more *real* than black and white reproductions, a three-dimensional presentation is dramatically more life-like than conventional mono-plane portrayal.

Further, with the multi-channel ability of coaxial cable, the sounds accompanying a television show could emanate from any number of different speakers, so that the spectator is *sonically surrounded* in the three-dimensional presentation he is viewing.

Three-dimensional television is only one of a vast number of technical innovations which will come about through coaxial cable. Those companies and individuals who are presently involved in the cable television business are natural heirs to the exciting future of cable TV. But they will participate only to the degree that their imagination and creativity can depart from traditional concepts of CATV service. Naturally, no one can now predict precisely what coaxial cable services of the future will be. At the same time, however, it would be naive to suggest that the cable television service of 1975 will be the same as the CATV service of 1967. The possibilities are both exciting and dramatic. But it is a sad fact that most of the long-range thinking in this area is not being done by cable television operators. Rather, it is being done in the laboratories and board rooms of major broadcasting, motion picture and telephone companies. In all likelihood, the cable television system of 1987 will resemble a classic CATV system very little. We reiterate that the shape of future developments will be dictated by the fact that the function of cable television is not to deliver decibels — but to serve people.

On this basic premise, an imaginative and far-sighted cable television industry can build a marvelous future.

Stan Searle

Superior's Video Pairs produce high-definition transmission



... from studio to head-end ... from remote pick-ups to head-end ... from remote pick-ups to studio to head-end

Superior Video Pairs are individually-shielded balanced pairs. They eliminate AC hum on origination. Minimize extraneous interference. Maintain studio-quality picture transmission under adverse conditions. Video Pairs also raise performance levels in any closed-circuit TV system. Superior Video Pairs. Single pairs or combined in composite constructions. Ask about them now.

Frequency vs. Attenuation

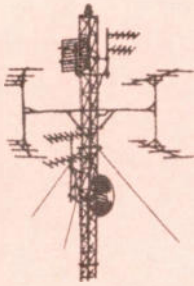
Frequency	db/100 ft. @ 68° F
3 MHz	2.8
5 MHz	3.7
10 MHz	5.2
15 MHz	6.4

For information, write Superior Sales and Service Division



SUPERIOR CABLE

SUPERIOR CONTINENTAL CORPORATION / P.O. BOX 2327
HICKORY, NORTH CAROLINA 28601 / TELEPHONE 704/328-2171



CATV Industry **PERSPECTIVE**

State and regional CATV associations are continuing to grow in both the effectiveness and scope of their programs. Latest example is the highly constructive ETV-CATV conference which the California Cable Television Association sponsored last month in Los Angeles. The conference, which was attended by a blue-ribbon panel of guests, was arranged by the CCTV's Educational Television Committee in an effort to improve communications between ETV entities and cable system operators within that state. Prompting this particular association activity was a lack of understanding among many educational telecasters where CATV is concerned--a situation not at all unique to California.

Another example of the effective and diversified activities at the state association level is that of the New York group which is currently sponsoring state-wide cablecasting of a film supporting the New York Transportation Bond Issue to be voted on this month. The association expects to bring the filmed presentation into approximately 140,000 homes as a result of its origination on state cable systems. Warren Fribley of Corning, N. Y. presented the program to the group at their annual fall meeting last month. Fribley has been involved in development of the film, and is supervising its distribution to individual systems, along with portable cablecasting equipment where necessary.

Effective programs of this type are becoming typical of many state cable operators' groups, and point up the increasing importance of such associations in developing CATV as a mature national industry.

Pay-TV hearings again raise the question of what should be done with the vast, unused UHF-TV spectrum. Some proponents of pay-TV argue for a system which would utilize UHF channels, stating that this will lead to a fuller utilization of that spectrum. On the other hand, the public safety, business and industrial users of radio communications are raising increasingly more insistent demands for re-allocation of portions of the unused UHF spectrum to them. Their argument is that their communications must be "over-the-air" because radio-equipped vehicles are moving. Mobile radio users--who have only 4.7% of the spectrum between 25 and 890 MHz--are pointing to the cable as one solution to their pressing need for more spectrum. Undoubtedly they will fight any attempts to give UHF frequencies to a pay-TV system which could be transmitted over the cable instead.

The U. S. Supreme Court has recently begun its fall term--a term which could see action on two major questions concerning cable television operators. The FCC has asked the court to overturn a decision of the Ninth District Court of Appeals in which it ruled that the Commission improperly asserted jurisdiction over the CATV industry. Also on tap is the Fortnightly-United Artists copyright cast appeal. If the Supreme Court decides to take this case, it will mean a review of a District Court ruling which held CATV distribution to be an additional "performance", rather than merely a relay technique. The stakes in the latter case run in the millions; acceptance of the case by the nation's highest court is only the preliminary hurdle.

You think your system is good?

CATViewers don't like snow... And we know, from Entron's considerable experience, odds are even that your otherwise top-notch system has one or more channels somewhat snowy.

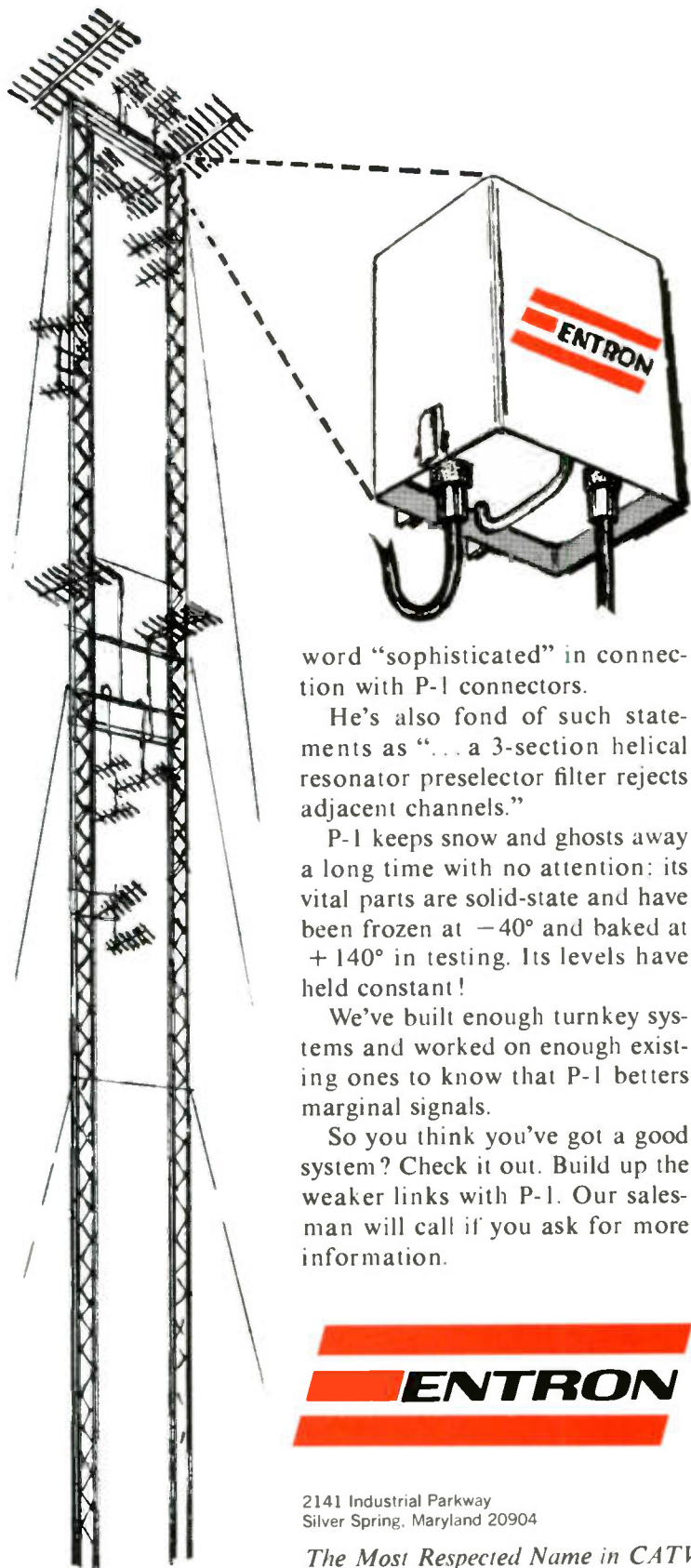
We also know your technicians get sick and tired of climbing your tower to change tubes in old-fashioned pre-amplifiers!

Spend \$195 (includes power supply) per channel and make your subscribers (and your technicians) happy. The price is for the pre-amplifier we designed—the P-1 (it's all solid state).

Who decides how much snow a subscriber should swallow? We're taking the stand that anytime a systems engineer reads much less than 0 dBmV into the headend, your signal is six-sided marginal. The subscriber may not know exactly what's wrong, but he knows he has a bad picture. If you're a technical man, you know where snow comes from and you also know that headend ALC gets loose unless signal level is above 0 dBmV.

P-1 provides 30 dB minimum gain on low-band and 24 dBmV on high-band, while noise figure is held to a very low 4 dB. It's got to be mounted next to the antenna or else you'll be amplifying cable loss. The gain's worth the climb.

Ghosts? P-1 with its top-grade matched connector provides the best impedance match on the market. One of our people uses the



word "sophisticated" in connection with P-1 connectors.

He's also fond of such statements as "... a 3-section helical resonator preselector filter rejects adjacent channels."

P-1 keeps snow and ghosts away a long time with no attention; its vital parts are solid-state and have been frozen at -40° and baked at $+140^{\circ}$ in testing. Its levels have held constant!

We've built enough turnkey systems and worked on enough existing ones to know that P-1 betters marginal signals.

So you think you've got a good system? Check it out. Build up the weaker links with P-1. Our salesman will call if you ask for more information.



2141 Industrial Parkway
Silver Spring, Maryland 20904

The Most Respected Name in CATV



CABLECASTER™

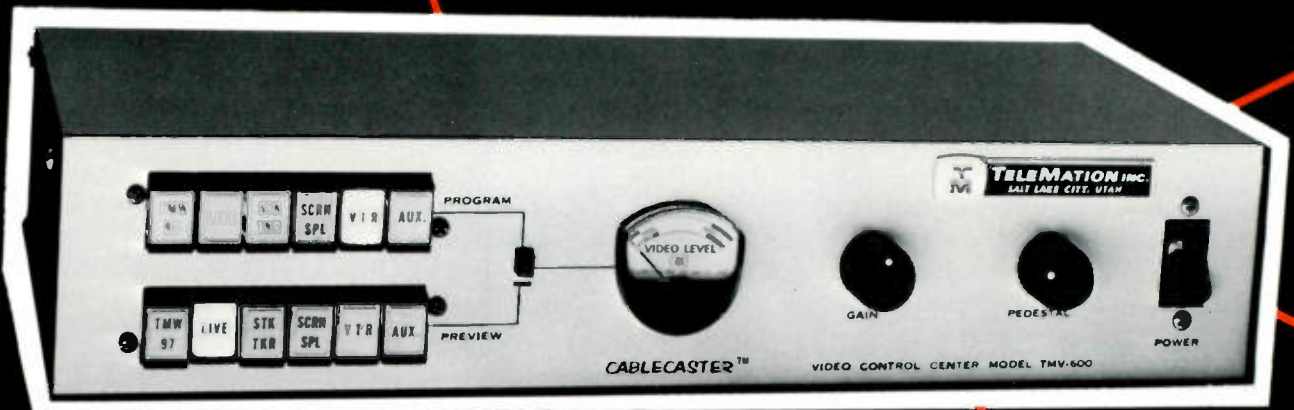
Live Cameras



In CABLECASTER® systems inexpensive industrial cameras with TeleMation modifications are converted to full broadcast specifications. Yet they will instantly revert to self-contained 2:1 interlace operation if fitted with TeleMation's industrial sync generator. All cameras are automatically synchronized for smooth professional switching. A single cable carries all signals and power, adding greatly to the appearance and convenience of operation.

CABLECASTER™ Video Control Center

Heart of the CABLECASTER® system, the TMV-600 can be operated in three modes: synchronous industrial, external EIA, or with optional internal EIA sync generator. Smooth switching and accurate control are provided in all modes. The video level meter and video gain control, plus the smooth vertical interval switching of the TMV-600, will let you project a truly professional image or your local origination channel.



WEATHER CHANNEL™ '97'



Pat. Pending

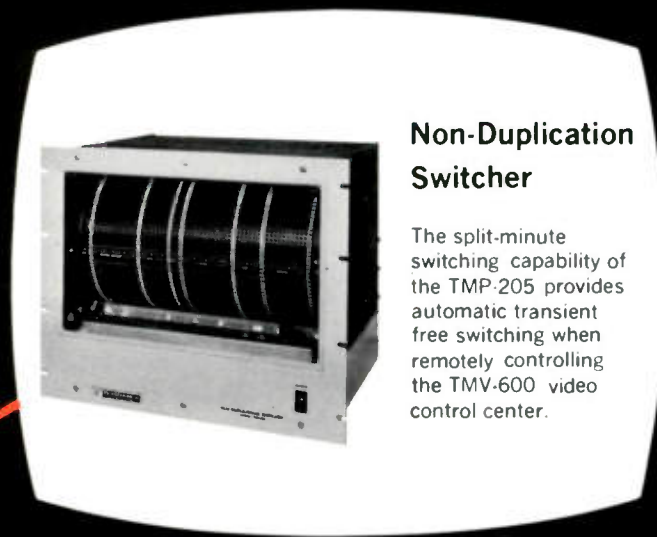
CATV operators can now take full advantage of the many plus features of the TMW-97 WEATHER CHANNEL® . . . remote mirror positioning, remote slide change, 16 mm film accessory, and split screen presentations are all easily accomplished. Your WEATHER CHANNEL® old or new is converted to broadcast specs when operated with a TMV-600 video control center using EIA sync.

Video Tape Recorders



The "VTR" output of the TMV-600 can be switched to either preview or program switcher buss, permitting recording sessions without disturbing "on-air" operation. Video outputs of each VTR connect to separate switcher inputs.

The most significant development ever for CATV program origination.



Non-Duplication Switcher

The split-minute switching capability of the TMP-205 provides automatic transient free switching when remotely controlling the TMV-600 video control center.

Here's Why:

Representing an entirely new approach in the design of TV synchronizing and control apparatus, the CABLECASTER* concept provides the advantages of professional broadcast equipment but at a cost only slightly higher than the crude industrial systems it replaces. TeleMation furnished cameras, whether old or new, are easily converted to full broadcast specifications. Control and metering of video level, essential to multiple source programming, is provided along with perfect vertical interval switching.

Call us collect to learn how this professional equipment can be integrated into your CATV local origination system.



NEWS/CHANNEL™

NEWS CHANNEL®, the exciting 24-hour-a-day AP news service may be CABLECASTER* modified for integration with other local origination equipment or for split screen presentation with stock ticker service. Also facilitates automatic presentation of locally produced news.

U.S. Patent No. 3,320,363 / Canadian Patent Pending

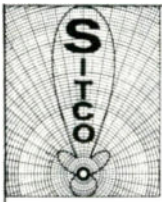
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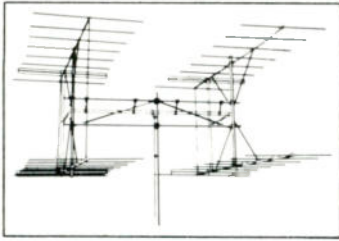
where experience powers pace-setting products!



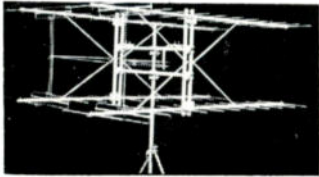
SITCO

Antennas

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



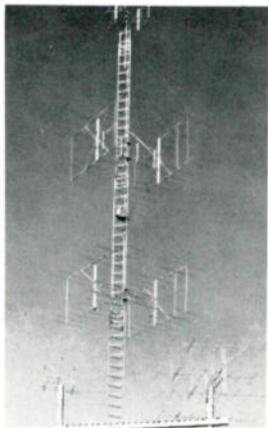
Model No. SHD 32-4



Model No. SHD 48-4 Channels 7 to 13

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

HEAVY DUTY QUADS AND YAGIS



Ask about SITCO MD Series Antennas
WRITE FOR FREE SITCO CATALOG

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



PATENTED SITCO
WEDGE SCREW FASTENERS

SITCO

Antennas

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PORTLAND, OREGON 97220

LETTERS

FRANCHISE FEE ESCALATION

● NO, you are not alone in "decrying franchise taxes that devour a major chunk of CATV profits." And, NO, you are not in error "in thinking that a 6% hidden tax on cable service is exorbitant." But even more pertinently, you are dead center on target in saying that these so-called incentives to communities could work to the detriment of the people CATV should serve. . .

We assume that CATV has something to offer. In the instance of Lerner Communications, we are making certain that this will continue to be the case by setting up a research and development laboratory, where we are shooting many years ahead on possible new techniques. A city license fee should be in line with licenses for other types of business—not the highest cut obtainable by competitive bidding. As a public relations consultant, I can tell you that we cannot build or sustain a good public image for CATV by some of the things to which you take exception in your excellent editorial, "Franchise Fee Escalation."

S. I. Neiman
Public Relations Affiliates
Chicago, Illinois

● I heartily approve of the stand you have taken on franchise fees. Stay with it! I do not have to tell you of *all* the benefits to a community of being served by a well maintained CATV system, especially one in a poor reception area. Therefore, I can see no justification for having to pay a "franchise fee" of any amount for the "privilege" of performing this service.

Loren Chamberlain
Cuba Cable Company
Cuba, New York

INCORRECT TERM USED

● In editing your publication of my paper, "The Mid-Band Tech-

nique for Multi-Channel CATV Systems," on page 54 of the September 1967 issue, I notice that you misprinted the term "signal-plus-noise to noise ratio" as "signal plus noise ratio." Most technical readers will probably read this as though it were "signal-to-noise ratio"—although this is not quite the same as the intended "signal-plus-noise to noise ratio." Signal-to-noise ratio is applicable to CCTV, audio systems, and situations where the basic noise-free signal is known or measureable at the input. In CATV we usually do not have this basic quantitative term available for a reference; but must use, instead, the signal-plus-noise which we measure at the output of the device or system under test.

I hope you agree that we should all strive for a more professional use of applicable technical terms and give your technical editor a "rap on the knuckles" with his slide rule.

G. C. Kleykamp
Director of Engineering
Kaiser CATV Corporation

MEMBERSHIP WELCOMED

● We are very pleased to welcome Communications Publishing Corporation to Associate Membership in the National Community Television Association.

This year is an exciting one for the CATV industry and one in which the future shape of our industry may be determined by several actions now pending. The interest and support of companies such as yours is most gratifying to us at this time.

Wally Briscoe
Managing Director
NCTA

● As the NCTA Associate Representative, I am pleased to welcome your company's membership in NCTA. I will be serving on the Convention and Standards Committee again this year and would be glad to receive any suggestions that you may have regarding these. If I can be of any help, please contact me at my office in Dallas.

John G. Campbell
NCTA Associate Representative



COLORVUE PROBLEM SOLVING CAPABILITY

A new dimension in CATV equipment

When you buy COLORVUE CATV equipment, you don't buy problems . . . you buy solutions to your problems! COLORVUE has the solutions to these problems:

- TEMPERATURE
- TRANSISTOR FAILURE
- MOISTURE
- RADIATION

plus all the many other problems that give you gray hair!



CATV DIVISION

American Electronic Laboratories, Inc.

RICHARDSON ROAD, COLMAR, PA. • Phone: 215-822-2929 • TWX: 510-661-4976
Correspondence: Post Office Box 552, Lansdale, Pennsylvania 19446

Yes, I'd like to know more about COLORVUE

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COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Dept. 011



How to Save Time

There is never enough time in a day to do everything that has to be done. Interruptions, meetings, telephone ringing, conferences with employees, visitors, and a myriad of other thought distractors make concentration almost impossible in most offices. Add bad work habits to this list and the problem is greatly compounded.

Taking everything in consideration, the question is then, how can I utilize my day more effectively? How can I accomplish more in spite of the interruptions and insure maximum performance and growth for my system? Here are a few suggestions to better organize the day.

The first suggestion is to use a calendar or planning book to list out the day's activities. Determine the first thing in the morning how your day is lining up, and what has to be done first. The time left can then be planned. Although the plan may not be followed in its entirety, it sets up the objectives, like a written speech. It helps you stay on the track.

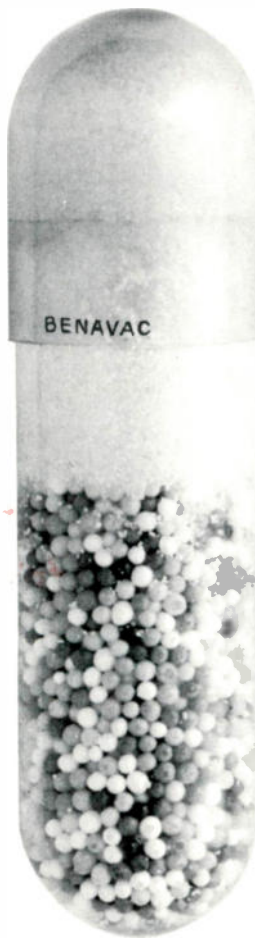
Answer letters as soon as they arrive, and handle subscribers' complaints promptly. How often does a system manager's desk become cluttered with correspondence he feels can wait while he attends to more important matters. You send letters out everyday and expect prompt replies, and yet you may not extend the same courtesy to those who write to you. Not only does immediate attention improve the image of your operation in the community, but it also helps clear up your desk so there will not be an accumulation that will require frenzied responses with little thought.

Use form letters when possible. Many letters received are of such a nature that they only require a routine answer. One of the most valuable assets along this line is your secretary. After she has been with you for a while, she recognizes the nature of your correspondence, and in many cases can set up routine letters for your signature. Let her assume some of the responsibility. You will be surprised how competent she can be.

Handle your hardest tasks at your best hours. Some people have a difficult time getting started before 10:00 a.m., while others accomplish three-quarters of their work before then. Set a schedule that suits you best. But remember, no matter how good your intentions are, after you have had a busy morning, there is a tendency to sag in the afternoon. In most cases those things that are put off to the afternoon are never attended to until the next day . . . and in the morning at that.

Ration your time with visitors and employees who drop in to chat. Done pleasantly, no one will be offended and people will be compelled to get right down to business. If you are like most operators, when the visit is over, ten minutes have gone and it becomes increasingly difficult to get back on the subject at hand.

Remember, you have just as much time as the most successful manager in the industry — 24 hours a day — learn to redeem this most limited of all commodities.



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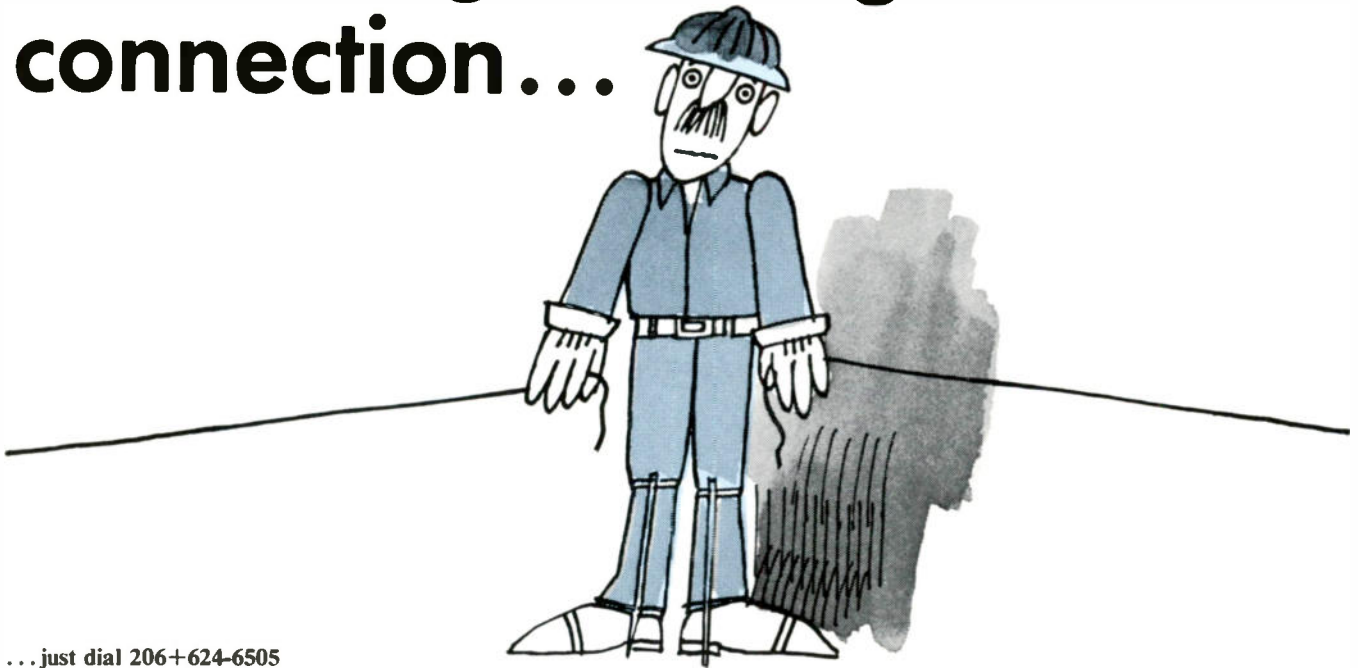


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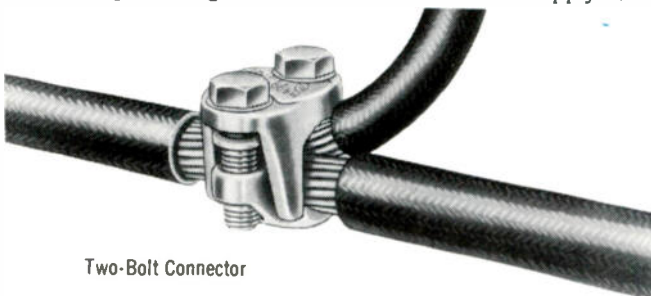


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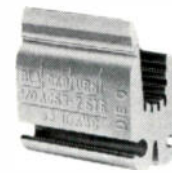


Two-Bolt Connector

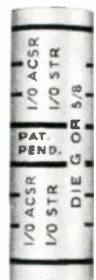
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Late News

SENATE APPROVES COPYRIGHT EXTENSION BILL

The Senate has passed by a wide margin a bill which would put a one-year extension on copyrights expiring this year. The resolution, proposed by Senator John L. McClellan (D-Ark.), is designed to curb the possible effects of lawsuits which could be filed against CATV systems during the period pending completion of Congressional action on copyright revision. It would provide for "a temporary suspension of judicial remedies for copyright infringement by CATV systems," and a "moratorium on such law suits during the period of this interim copyright legislation," Senator McClellan stated. The proposed legislation would also protect the substantive rights of the copyright holders by tolling the statute of limitations, and preserving all causes of action.

The Senator further noted that some degree of agreement had been reached between the NCTA and parties in control of about 95% of the copyrighted material used on CATV. The agreement provides that the copyright owners will refrain from instituting legal action against CATV systems while the parties are negotiating contractual arrangements and discussing appropriate legislative formulas. It was also agreed that in the event negotiations are terminated, no infringement suits would be filed for a period of 90 days against the systems involved. Using this temporary agreement as ammunition, and reminding the Senate of the complexity of the CATV copyright situation, the Senator urged the legislators to withhold copyright legislation for now, except that which has to do with extension of existing copyrights.

Senator McClellan later addressed the cable industry (in a special message relayed to NCTA regional meetings) promising that he would "oppose any effort to use the copyright statute for the purpose of obstructing the service which you render to millions of our citizens." McClellan called the pending copyright revision "one of the most complex measures" of his 29 years in Congress and added, "no section of that bill is more difficult than the provisions relating to CATV systems." To insure a sound bill, the Senator wrote, "I earnestly recommend that you exert every effort to reach understanding with both the copyright interests and the broadcasters."

FORD BLASTS AMST

NCTA President Frederick W. Ford recently declared in a letter to NCTA membership that "certain broadcast interests envy and perhaps covet the very effective, mutually beneficial relationship that exists between the cable industry and ETV." Ford further declared that other interests would like to drive a wedge between the CATV industry and educational television interests, stating that this action springs from the attitude that "further growth of ETV threatens to fragment the commercial broadcast audience . . ." Ford spoke more specifically and leveled his sights on the AMST, saying that AMST opposition to automatic distant-signal waivers for ETV stations was definite evidence of tactics designed to impair the "unity" between ETV and CATV. He went on to say, "The AMST charge that the proposed rule change would erode support for educational television and delay its full development is not only directly contrary to the facts but ignores completely a situation embarrassing to AMST — that no significant objection to our carriage of ETV signals has been raised in most top-100 market cases to date."

CATV TECH TRAINING SCHOOL FORMED

A correspondence school with courses "specifically designed for the cable technician who desires to improve his CATV technical background," has recently been formed, it was announced by president Patrick T. Pogue. The

Late News (Continued)

school, named the National Cable Television Institute, has been planned "to alleviate to some degree the acute shortage of trained cable technicians that exists today," and proposes to offer a curriculum comprehensive enough to cover "everything a cable technician might need." To be included in the curriculum are five courses: (1) CATV Installer/Technician; (2) General Electronics and Communications; (3) CATV Chief Technician; (4) CATV Field Engineering; (5) Microwave Field Engineering. An advisory board made up of twelve industry leaders in the technical aspects of CATV will be responsible for directing future developments of the school which is slated to begin operations in the immediate future. School administrator is to be George James, CATV engineer of "more than 22 years experience." A brochure offering more complete information on the school is being prepared and will soon be available.

BELL ACCUSED OF MONOPOLY DESIGNS ON CABLE TELEVISION

The Bell System and other phone companies were accused recently of attempting a "takeover" of the cable television industry by means of "lease-back" agreements. The charge was leveled by the National Community Television Association in a 71-page petition filed with the Federal Communications Commission. The NCTA called on FCC hearing examiner Charles J. Frederick to find the phone companies in violation of Section 214 of the Communications Act for their failure to obtain FCC certificates of convenience and necessity before offering "leaseback" service to cable operators.

The NCTA petition drew a parallel between Bell's rise to a dominant position in telephone communications and present developments in cable television. "The primary basis for securing control of the telephone industry was the use of the contract service agreements based on the existence of patents owned by Bell," NCTA declared. "These prohibited any meaningful competition. In the CATV industry the substitute for patents is, 'exclusive access to poles.' Bell often has this, by means of joint-use agreements, even for poles not owned by it. This exclusive access should not allow the telephone companies to monopolize an industry where there is no rationale for it," the statement went on to say.

Insisting that certificates of convenience and necessity should be a prerequisite for phone company involvement in cable TV, NCTA recalled the recent testimony of an AT&T vice president that "from the standpoint of marketing service . . . I know of no burden that it (obtaining such certificates) would place on the marketing department in its sale of the services." Further, NCTA noted that the Bell System currently has committed more than \$43.2 million to the installation of cable TV trunk and distribution lines in various communities — "not an insignificant sum for a regulated public utility to spend and commit without prior certification."

TRIANGLE MAKES SECOND BID FOR IMPACT STUDY

The FCC has been asked by Triangle Publications, Inc. to convene a conference of "interested parties" to reconsider the proposal for an experimental operation of a CATV system in the Philadelphia television market. The new petition modifies the original proposal in several respects: Two cable systems would be involved instead of seventeen. The population involved would be 14,000 people instead of the original 90,000. The proposed experimentation would be for a period of six months instead of the original three to five years. Also the study would be conducted by an independent research organization. Triangle urges "all interested parties" to participate in the conference, if approved by the Commission, and specifically mentions NAB, AMST, and NCTA.

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Court Says Burden of Proof Rests on Broadcasters

The U.S. Court of Appeals for the District of Columbia has told broadcasters twice recently that they have the burden of proof when they claim economic injury from CATV.

In the first case the court upheld the FCC in a waiver of hearing requirements to allow three CATV systems to bring New York City signals into Auburn and Oswego, N. Y., and in a grant to two micro-wavers to furnish the service. It was the first decision on a waiver appeal under the Commission's top-100 rule that says a cable system in a large TV market may not bring in outside signals without a hearing to show it is in the public interest, particularly affecting local UHF service.

The case was brought to appeals court by Channel 9 Syracuse Inc., which operates in the 35th largest U. S. TV market, alongside two other VHF's and one UHF, with another UHF under construction, all opposing the microwave grant last February. Intervenors were Eastern Microwave Inc., New York-Penn Microwave Corp., Auburn Cablevision Corp., General Electric Cablevision Corp. (Auburn system) and Unicable Inc. (Oswego system).

The court found that FCC regulations "clearly provide for waiver of the rules when warranted by the circumstances." It said, "Both Auburn and Oswego are separate communities from Syracuse and both are without television stations of their own.

The affirmation did have reservations. "We affirm the Commission's orders in these cases in deference to its expertise in its assigned area," the court said, but added, "We do suggest however, that in the emerging field of CATV,

with respect to petitions for waiver of evidentiary hearings, the Commission should require greater factual specificity in petitions for waiver and in the proof, and its decisions should more clearly articulate the public interest considerations on which it determines to waive.

"We affirm here partly because the appellant failed to demonstrate to the Commission, by counter-affidavit, petition for reconsideration, or otherwise, the need for an evidentiary hearing." Channel 9 Syracuse failed to show the FCC that CATV in Auburn and Oswego would have a significant adverse impact on Syracuse TV, although the waiver requests imposed an obligation to do so, the court said.

In the latest case, the Appeals Court affirmed FCC denial of a petition by two Cedar Rapids-Waterloo, Iowa broadcasters seeking a hearing on addition of outside signals by the H & B Communications Corp. cable system in Dubuque.

Although Dubuque does not come within the top-100 TV market rules of FCC, the Cedar Rapids-Waterloo stations sought to have the rules applied because one station, KCRG-TV, has a permit for facilities that would put a Grade A signal over part of Dubuque when the work is done. The two stations reasoned that this would bring Dubuque into the Cedar Rapids-Waterloo market, 74th ranking on the ARB TV list. Then the hearing rules on outside signals in the top 100 would apply. FCC administration is "geared to" actual operating facilities rather than plans, the court said in denying the petition for review. The judges found that the stations "made no activity in their service areas."

Justice Dept. Takes New Interest In Ex Parte Case

Immediate past General Counsel of NCTA, Bob L'Heureux will soon tangle with the FCC on behalf of Multivision Northwest, Inc. in the Fifth Circuit Court in New Orleans. Henry Geller will be the target because not only was he directly involved in the ex parte talks with AMST, it is alleged that he also wrote the memos for the Commission.

There is an interesting development in this case. Usually when such action is filed in the circuit court the Attorney General is served as well as the FCC. Normally, the Department of Justice replies and acknowledges receipt but lets the FCC attorneys defend the case. In this case, however, Justice has given notification that they plan to file separate briefs from the FCC.

This would indicate that the Attorney General's office could be concerned over Mr. L'Heureux's charges that broadcasters have been trying for years to stymie the growth of CATV.

Bluefield's Candor Leaves Much To Be Desired

Bluefield (W. Va.) Television Cable Corp. won one point but had to keep pursuing another in two FCC orders recently.

The first was dismissal as "meet" of an old "show cause" order on distant signals that Bluefield discontinued carrying last July.

The second order called for continuance of proceedings on an old waiver request. It appears Bluefield must still haggle with the FCC on the rule which requires it to carry the Grade B signal of WCYB-TV. Bluefield admits that the tower does lie within the predicted Grade B contour of WCYB, but contends that the signal received is not of Grade B quality. However, the FCC said, "The critical issue with respect to the applicability of Section 74.1103 is not whether a Grade B signal is received in Bluefield, but whether the community lies within the Grade B contour of the television station."

The whole matter is complicated

even further by the fact that the FCC appears to have less than complete trust in Bluefield's claims. "Bluefield Cable's candor in its representations to the Commission leaves much to be desired," the FCC declared, adding that "any explanation offered by Bluefield Cable must be weighed in reaching a determination" as to waiving the carriage rule. The Commission grounds its distrust in Bluefield's past behavior: Bluefield first asked waiver of the rule in June 1966 because of interference with Bristol reception from the transmitter of WHIS-TV, Bluefield. The cable company said it was moving its antenna and would carry WCYB-TV if technically possible after the move. The waiver was granted until changes were completed. A year later Bluefield again petitioned for waiver, saying it still had interference in the new antenna site and there was no adequate site available at which WCYB-TV signal could be received.

Bluefield said it never intentionally misled the FCC, but the Commission said "Not until it filed its petition for reconsideration on June 13, 1967, which was months after the new facilities were constructed and operational, did Bluefield Cable disclose that it had completed negotiations for a new head-end site before the waiver request was submitted. Had this information been timely disclosed, the Commission could have required the applicant to conduct tests to determine whether reception of the WCYB-TV signal at the proposed site was possible and, if not receivable, to make a showing that no other suitable site was available."

Commissioners Robert T. Bartley and Kenneth A. Cox each concurred in part and dissented in part. Commissioner Bartley said, "In my opinion, the CATV rules are invalid and waivers are not necessary. However, assuming their validity, I would here grant full relief as requested by the CATV." Commissioner Cox said he believed that Bluefield's claims that WCYB-TV does not reach Bluefield should have been advanced in earlier pleadings and should not be allowed now.

(News continued on next page)

TV Communications

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Broadcasters and CATV'ers Reach Agreement on Impact Study Site

A concrete result of the ad hoc meeting between a group of broadcasters and CATV'ers (October TVC) was the selection of Goshen, Indiana, as a possible test site for a penetration-impact test. Cablecasters and broadcasters agreed that an impact study is a good idea and that a suitable market should be within the Grade A signal of a top-one-hundred station. At the cablecaster-broadcaster gathering George Hatch, Salt Lake City broadcaster and co-chairman of the meeting, said that the impact study committee had considered "a subscriber base that is small enough not to look like something that will endure beyond a test. The committee talked about a town with four-thousand subscriber homes." Alfred Stern, CATV co-chairman and president of Television Communications Corp., added that "Impact is the biggest problem the FCC has had to face with CATV . . . The Commission

itself has a lot of facts we would like to get them to bring to bear on the problem."

Now Valley Cablevision Corp., with the committee's backing, intends to ask the FCC for temporary authorization to bring Chicago signals into the South Bend-Elkhart market. South Bend-Elkhart was within the 97th ranking television market a year ago when Valley Cablevision first asked the Commission to waive its rule on non-local signals in the top-one-hundred markets. It is hoped that putting the petition on a test basis will move it out of the long waiting line of requests. There have been exploratory staff meetings at the FCC among the CATV Task Force and General Counsel on the matter, and the next move is up to Valley.

Valley and the ad hoc impact study subcommittee see the Goshen petition as one having something

the recently-denied Philadelphia request didn't have; broadcaster backing. Valley is owned by the companies that own the three South Bend-Elkhart stations. One of the stations even had a representative on the ad-hoc impact study committee. The site is also considered ideal because the market is covered by three UHF stations representing the three major networks.

Proponents of the Goshen test regard it as "fairly complete" in regard to the Second Report and Order. The market has three network affiliates with no reception problems and Goshen only represents two per cent of the market so the test would be very unlikely to cause damage to anyone.

An impact test would make it possible to study viewer habits both before and after they became CATV subscribers. Relative viewership of network, local and outside programming and other unknowns of cable impact could also be investigated. Valley proposes to put an Indiana University marketing professor in charge of the study.

Johnson: Cable Eroding Foundations of Broadcasting

Fruits of a summer-long study of CATV by FCC Commissioner Nicholas Johnson were apparent in his remarks recently at a conference on use and regulation of the radio spectrum. The conference was co-sponsored by Resources for the Future Inc. and Brookings Institution at Warrenton, Va. He ranked "the explosive growth" of CATV second among five forces that are "eroding the foundations" of traditional broadcasting.

Cable TV systems he said, are carrying up to 12 (soon to be 20) channels to more than 2,000,000 homes. Although at present, according to him "the cablemen forswear any intention to originate programs on their own . . . there is no inherent reason why CATV cannot in the future enter the programming market. After Congress resolves the question of the cablemen's copyright obligations to the broadcasters, and after the FCC replaces its temporary quasi-ban on the growth of CATV in major

market areas with a permanent policy, the cable operators might even make good on TelePrompTer President Irving Kahn's promise to wire up 85% of the nation's homes."

First-ranking in the Commissioner's list of change-making forces was UHF, "which appears, like 'The Little Engine That Could,' to be climbing steadily toward the top of the mountain." Viewer options are doubling in large metropolitan areas, Mr. Johnson said.

The Commissioner counseled the conference to plan for "the total home information-entertainment environment of the 1970's." Broadcasting, as now organized, is here to stay, he said, adding, "The only difference will be that it will be available as one of many more options to the homeowner than he has now, a matter of choice rather than compulsion."

Among other forces that will bring the new options, the Commissioner listed the synchronous

communications satellite. "Now that a single satellite can be 'parked' 22,000 miles over the equator, and from that vantage point 'see' one-third of the globe, it is clear that satellites will soon be, if they are not already, efficient instruments of domestic broadcast transmission.

Fourth on the Commissioner's list of forces for change was CBS Labs' discovery "how to convert TV sets into visual phonographs — at 'popular prices' . . . Such cameras, recorders and players promise to eventually multiply almost infinitely the variety of items and kinds of information, visual, aural and print, which will be available on the home console a few decades hence.

"The fifth innovation, though technologically possible," he said, "is not yet upon us: a cable-video tape library-computer retrieval-closed circuit television combination" This would make it possible, the Commissioner explained for the

viewer to use a computer connector-telephone to contact a library for a tape to be cable-sent to his home, where he might want to record it and keep a copy.

Commissioner Johnson spoke strongly in favor of a Public Broadcasting Corp. as envisaged in the Public Broadcasting Act pending before the House of Representatives. "Public broadcasting," he said, "is, historically speaking, a response to the defects of our present mass communications system." He spoke enthusiastically of President Johnson's communications message to Congress in August and called it "fortuitous" that the Warrenton conference group was considering "many of the questions currently before the President's Task Force" on communications.

Cable TV Complex Proposed For Colo.

A regional cable television system featuring a combination of commercial channels and educational facilities has been recommended to a committee of Greeley, Colo. officials.

"This might be our one chance to develop a truly beneficial television communications network in Northern Colorado," the committee was told by Preston Davis, head of the audio-visual department at Colorado State University.

Named to study desirable features of a regional cable distribution system for Greeley, Loveland, Fort Collins and Longmont, Davis outlined some of his thoughts toward awarding permits for a system. Stressing the importance of educational channels in the system, Davis commented that many cable television systems in operation today has provisions for education channels but nothing has been done to implement them. "It seems that in the beginning people were more interested in seeing commercial television than in planning for the unique benefits available through educational television in each community."

Similar committees are operating in Fort Collins, Loveland and Longmont. Commissioners of Larimer, Boulder and Weld Counties are taking part in the talks.

FCC Announces Final Decision on AT&T Rates

The Federal Communications Commission recently made public the details of a \$100 million reduction in some long distance telephone charges — but at the same time it included a \$15 million hike in others. The cuts are the result of FCC's order of July 5 following the end of the first phase of its investigation into the financial structure of American Telephone and Telegraph Co.

The new rates, which will become effective November 1, will reduce charges for most station-to-station and person-to-person calls beyond 468 miles. But the Commission noted that interstate telephone calls up to 24 miles distant will be increased by \$15 million with the hikes to amount to 5 cents for the first three minutes. An FCC statement said the short haul increases are designed to improve the relationship between rates and the costs of providing short distance telephone service and will particularly benefit independent telephone companies which handle much short haul traffic and which apply Bell System rates.

New Name and Two New Addresses in Washington

The new name of the CATV trade association is now all but official, following a membership vote. Of 209 members counted after the Sept. 4 deadline (out of 875 system members and 100 associate members), only two voted against the name okayed by directors at the June convention: National Cable Television Assn. One last step remains before this formally supplants National Community Television Assn. This is filing and approval by the Recorder of Deeds for the District of Columbia.

Two other Washington changes involve addresses. The Federal Communications Commission is on the move and will take several weeks to go uptown from 12th and Pennsylvania Ave. to 1919 M St. The CATV Task Force was in the vanguard of the move and is now set up for business at the new address. The 24-person CATV crew had been scattered on the sixth floor of the old FCC quarters. Now they will be together.

The National Assn. of Broadcasters occupies new temporary quarters at 1812 K St. NW now.

Larger Task Force Needed

A larger CATV Task Force at the FCC may be the answer to complaints of inadequate regulation, Sol Schildhouse, chief of the force, implied at the annual broadcast symposium of the Institute of Electronic & Electrical Engineers in Washington. In an exchange with a complaining UHF broadcaster after his cable panel presentation recently, Mr. Schildhouse said the task force is still the same size as when it was created last year.

David Baltimore, vice president-general manager of WBRE-TV Scranton-Wilkes Barre, had complained that his station won some cases against cable operators, but "they just don't comply." Answering a question from the floor, he estimated WBRE-TV had about 25 cable cases pending before the Commission. Representing the All-Channel Television Society, Mr.

Baltimore said that program "triplication" and other losses have cost his station a third of its market. He said there are more than 100 CATV systems in his 70-mile radius and no duplication protection. "The local CATV operator won't give non-duplication unless we are willing to guarantee his losses, which we can't afford to do," according to Mr. Baltimore, who explained that cable systems make more money than his station.

Another panelist, Archer S. Taylor, Montana cable operator (Northwest Video Inc., Kalispell) and Washington engineers (Malarkey, Taylor & Associates), advocated cooperative broadcaster-CATV tests. This would be an exchange of expertise in transmission and reception, he said, explaining that each is weak in the other's specialty.

(News continued on page 28)



Introducing the first city in the

Early in 1968, Nationwide Cablevision, through its Belmont CATV Franchise, will be installing the ITC Plus 13 in many Belmont CATV homes.



The ITC Plus 13 is a shielded channel expander that makes it possible to add up to 13 new, interference-free channels to any CATV system.

Plus 13 receives (at its input) 9 new channels in the range from 120 to 174 MHz, plus 4 more new channels in the range from 216 to 240 MHz.

This handsome new ITC unit is easily connected between the drop cable and the subscriber's TV set.

The result for Belmont: 7 new channels with outstanding frequency stability, perfect color reception, and better than 100 db isolation against unwanted outside signals. 7 new, crystal-clear channels. And so Belmont, California, will soon be the first city in the world with 19 CATV channels.

For the people of Belmont, a greatly expanded range of programming possibilities. And for Nationwide Cablevision, added sales and a service first to point to when applying to city councils for new CATV franchises.



Is there a step beyond the Plus 13? If your franchise (new or existing) is ready for channel expansion, consider the



world with 19 CATV channels.

ITC Gamut 25. This unit incorporates all the engineering features of the Plus 13. It adds the potential of 13 new, interference-free channels, and clears the ghosts from your existing 12 channels.



If channel expansion is not of immediate concern, but your current 12 CATV channels are haunted by interference from strong local television stations, check out the ITC Focus 12.

Recently selected for installation in New York's concrete jungle by Manhattan Cable TV, Focus 12 is a heavy shielded, 12 channel V to V converter that completely eliminates direct signal interference, ghosts, and flip-flops.

All three ITC units offer the big bonus of performing as fully transistorized remote tuners. All three are easy to buy, easy to install, and they increase your sales. Write for full specifications on each unit, or call us at (213) 478-7751.

Whether you'd like to give up the ghost in your CATV system, or expand your channel capabilities, ITC has the answers. We're waiting for your questions.

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\$458,000 Suit Filed By Marion TV Cable, Inc.

Ameco, Inc., Phoenix based CATV equipment manufacturer, has filed a petition in the U. S. Court in Asheville, N. C., seeking transfer of a \$458,000 suit filed against the Arizona firm in McDowell County Superior Court by Marion TV Cable, Inc. Ameco says the case should be tried in the Federal Court because of the amount in controversy and the diversity of citizenship of the parties to the suit.

Marion filed the suit against Ameco on July 24, alleging that the Arizona company had violated the terms of a contract drawn Feb. 11, 1966. The contract, according to the plaintiff, specified that construction of a cable television system in Marion was to begin within 15 days of the date certain preliminary work was completed. The preliminary work was finished at the time of the signing, the plaintiff alleges, but the Arizona company did not begin actual construction for six more months. Workmen worked sporadically at the job until January of this year, the suit alleges; then the company completely abandoned the site after finishing no more than five to ten per cent of the work.

The Marion firm says it paid the Arizona builder \$9,308.67 at the time the contract was signed. It seeks to recover actual damages set at \$249,200 punitive damages of \$200,000 and the sum paid.

General and Jerrold Boards Say "Yes" to Merger

Boards of Directors of General Instrument Corp. and Jerrold Corp. have approved the acquisition of Jerrold by General Instrument on the basis previously announced. The formal merger documents, which call for General to issue seven-tenths of a share of its Common Stock for each outstanding share of Common Stock of Jerrold, were signed recently. The boards of directors called special meetings of the stockholders of each company to convene on November 21, 1967, and fixed October 20, 1967, as the record date.

FCC Lobbying Practices Criticized

Dr. William C. Pallas, head of the Red Bank-White Oak Cable TV Corp. of Tennessee, leveled a sharp attack at the Federal Communications Commission and at national broadcasters who, he said, have waged a lobbying program to prevent competition in the TV industry.

Dr. Pallas accused the FCC of bowing to the lobby of national broadcasters in prohibiting CATV from bringing in other than local stations in "Class A" areas and from bringing in any distant stations in "Class B" areas.

Dr. Pallas declared, "we feel the

FCC has been influenced by the broadcasters" which have waged a "big lobbying program" and the FCC is "trying to protect the broadcasters" from competition "despite what is good for the consumer."

He said, "more public pressure" is needed to alter the position of the FCC and added, "if we get enough public opinion to the congressmen" the FCC might be forced to change its stand. The FCC, he charged, is "not letting the people decide" what they want in TV.

He said the FCC took no action against television to protect radio in the early days of TV and that the FCC should not be stepping in to protect local TV monopolies against cable TV operations.

Smoke Issue Keeps FCC Fires Burning

Two broadcaster interests are appealing the FCC fairness doctrine on cigaret commercials. WTRF-TV Inc., Wheeling, W. Va., and the National Assn. of Broadcasters have filed with the U. S. Court of Appeals in Richmond, Va., a petition to review the ruling that gives equal time to anti-smoking forces to counter cigaret commercials. The Tobacco Institute has written stations to ask for equal-time to answer "any so-called public service announcements or other statements with reference to claimed hazards of smoking."

Meanwhile the FCC has told an inquiring broadcaster group, Metromedia Inc., it does not have to give cigaret spokesmen equal time to equal the time given anti-smokers to answer cigaret commercials. Commissioner Lee Loevinger said the whole thing should be thrown out for something "less prolix and logically more rigorous."

Someone else who feels the issue is a little smoky is Grover C. Cobb, board chairman of the National Association of Broadcasters. Cobb said recently that "the present flap about cigarettes" is only one part of the problem posed by the Federal Communications Commission's "Fairness Doctrine" — "though it does dramatically illustrate the dangers and the absurdities to which unwise regulation can lead."

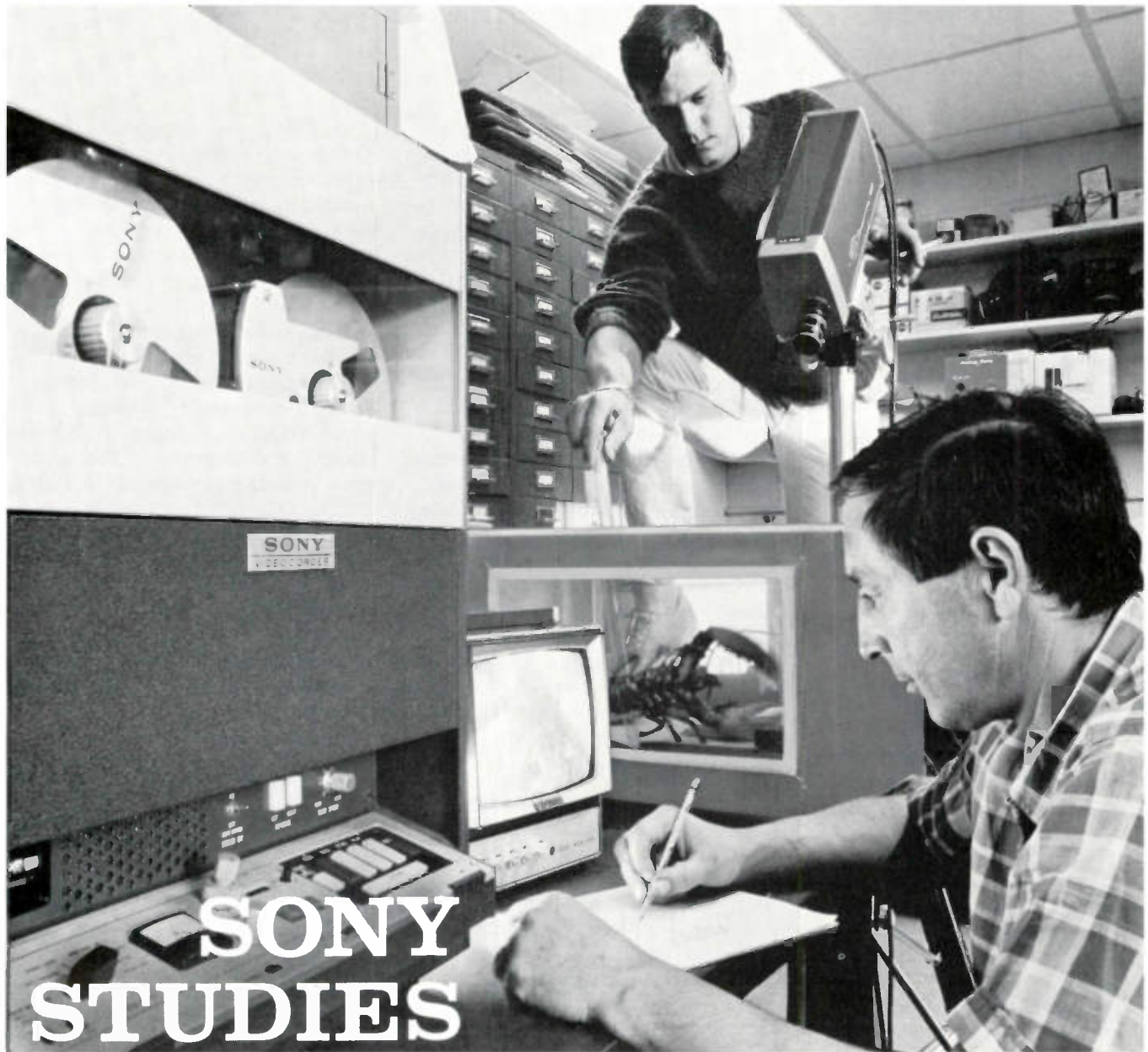
Meanwhile on the other side of the fence anti-smokers are still discontent, and have complained in the U.S. Court of Appeals. John F. Banzhaff III, the New York lawyer who brought the original complaint that resulted in application of the fairness doctrine to cigaret commercials, has appealed saying that the June 2 ruling is not adequate because it does not guarantee that "substantially equal amounts of time" be given for anti-smoking announcements. This came a day after the FCC affirmed the ruling Sept. 8, denying requests for reconsideration by TV networks.

Concurrently the cigaret issue was kept hot on two fronts. While health crusaders were publicizing their side of the smoking argument at a World Conference on Smoking and Health in New York, Sen. Robert F. Kennedy (D-N.Y.) introduced legislation in Washington that would practically snuff out cigaret ads.

One bill would have the FCC limit cigaret advertising on radio and TV to late night. Another would impose a warning in advertising: "Cigaret smoking is dangerous to health and may cause death from cancer and other diseases."

All this leads us to believe it will be a long while before the smoke clears off on the smoke issue.

(News continued on page 30)



SONY STUDIES

THE SEA



— AT
THE
UNIVERSITY
OF
RHODE
ISLAND

The "laboratory" of Dr. Howard E. Winn, professor of oceanography at the University of Rhode Island, is the sea itself. Under a government agency grant, Dr. Winn is studying bio-acoustics and their effect on marine behavior with the help of a Sony PV-120U Videocorder® system.

With this system, Dr. Winn records the natural behavior and sounds made by specific marine animals. Then he plays back the animal's own sounds and records on video tape its actions in response to those sounds. These investigations could lead to increased fish harvest, control of marine behavior and even to actual communication with porpoises and other species.

Most conspicuous advantages of this system are immediacy, selective recording and re-usability of tapes. Dr. Winn states, "We see what we're getting during the actual shooting, and we can edit and re-use the tapes for up to 1000 runs."

This is only one of the hundreds of applications of Sony Videocorder systems in education, research and training for science, industry and government.

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Delaware Regulation Bill

A bill to place community antenna television systems under regulation of the state public service commission has been introduced in the Delaware state legislature. The commission would be authorized to establish subscriber rates and to order extensions or improvements of service in areas covered by the systems. The measure further would forbid any CATV operator to discontinue service to any part of his system without permission for the state commission.

Huntington Franchise Race May be Settled

Huntington, W. Virginia officials have decided to reconsider the franchise bid of Multivision, Inc. due to the withdrawal of a bid by International Telemeter Corp. Just as the city council was about ready to accept the ITC offer the company reconsidered its proposal which called for a \$5,000 earnest fee payment and immediate construction, pending FCC waiver. ITC originally felt that improved reception of the existing three channels would attract enough of a market to sustain it in the interim. The Multi-Channel bid originally called for a \$4,000 earnest payment and \$2,000 yearly to the city until the FCC waived distant-signal rulings. Now the company, sole bidder for the franchise, has decided to try to provide three-channel service to poor reception areas before obtaining FCC approval on outside signals.

Guide to CATV Now Available

Many questions municipal officials and others are asking about cable television are answered in a new publication, "A Municipal Guide to CATV", just released by the Colorado Municipal League, Boulder, Colo. The 45-page book was prepared by the league's general counsel, Charles B. Howe. Contents include controls on the medium by federal, state and local government; legal considerations of licensing and regulation of rates and charges; and use of municipal poles and other equipment.

Congressman Promises Copyright Aid

Chairman Harley O. Staggers (D-W. Va.) promised aid on the copyright problem when he addressed the West Virginia Mid-Atlantic CATV Assn. at White Sulphur Springs. After the speech, listeners saluted the Congressman's "keen understanding" of CATV.

Speaking of the Fortnightly-United Artists suit pending before the Supreme Court, he said, "It may well be that after final judicial determination of CATV's obligations under copyright laws, some legislative action will be required." Copyright doesn't fall under his committee's jurisdiction, he said, but added, "However, cable television involves matters that are under the jurisdiction of the Commerce Committee. I hope to work closely with my friends on the Judiciary Committee to insure that millstones will not be placed

around the necks of any single interest."

Alluding to unofficial CATV-broadcaster committee work on the question, he said, "The spirit of mutual concern and mutual respect seems to be working out within your ranks. Your own efforts to solve this copyright problem seem to be bearing fruit."

Rep. Staggers commended CATV for relaying educational TV to schools and added, "In the near future, you may have an even greater opportunity to contribute to educational television. We anticipate, with the passage of the Public Broadcasting Act of 1967, a significant expansion of educational television." He agreed with Commissioner Nicholas Johnson that "in some ways, it may be *the* most important bill of the year" and predicted favorable House action.

Cable Operator Fined for Taping Local Meeting

Don Hancock, local attorney and owner of the Ruidosa Cable TV Co., Ruidosa, N. M., was given a split verdict on two charges brought against him by a Ruidosa hospital. The first charge, unlawful entry of a public facility, was dropped by Judge Edward E. Triviz, presiding judge of Third District Court. However, the charge of "disturbing a lawful assembly" was upheld and Hancock received a \$100 fine plus costs. The charges were filed because Hancock allegedly entered a regular hospital board meeting through a door marked "No Admittance" and the second charge was brought because he refused to turn off a tape recorder. Hancock plans an appeal.

Cablecaster Sells Broadcaster Part of System to Settle Complaint

The FCC has okayed a broadcaster-cablecaster alliance between KCKT, Great Bend, Kan., and Cobb & Associates, which operates in Great Bend, Hoisington and Larned, all of Kan. KCKT had originally asked the FCC for relief,

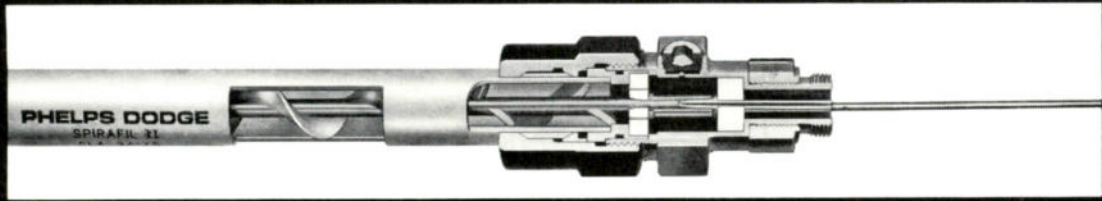
because of economic impact, from import of distant signals by Cobb, KAYS Inc. of Hays, Kan., and United Transmission of Russell, Kan. The FCC designated it for hearing, but by the prehearing stage last spring, Cobb had introduced in evidence an agreement to sell a minority interest, less than 10%, to KCKT. KCKT was to withdraw its objections to the CATV operations. Last week the FCC said it approved the deal and also the operations of United and KAYS as proposed.

Pacific Northwest Holds Three Day Meeting

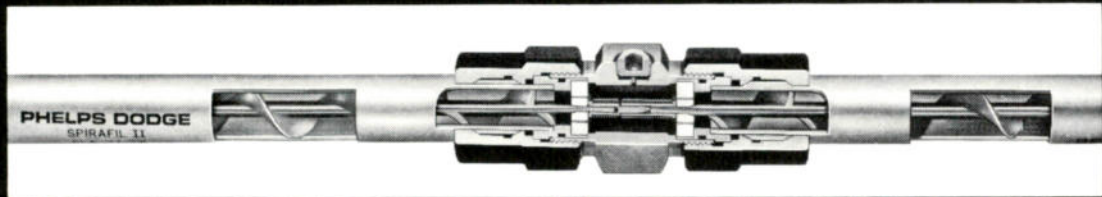
The Pacific Northwest Community Television Association elected new officers at its fall meeting in the Hilton Hotel in Portland, Ore., recently. Elected to a second term as president, was Clay White, Kennewick, Wash. Ian Elliott, Bozeman, Mont., was named management vice-president.

Special speaker was Archer Taylor of Washington, D. C., who spoke on CATV technical standards. A conference call to NCTA headquarters was a special highlight of the three day meeting which drew 175.

(News continued on page 32)



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cial threaded center contact grips and locks the cable center conductor preventing loss of contact due to expansion and contraction.

Splices and Amplifier-Entry fittings for Spirafil® II cable are available in .412 inch, ½ inch and ¾ inch sizes.

Can we tell you more about these new connectors or Spirafil® II, the air dielectric coaxial cable specifically designed for CATV application? Write, wire, TWX or telephone, Phelps Dodge Copper Products Corporation, 300 Park Avenue, New York, New York 10022 (212) 751-3200 (TWX) 212-867-7455.

NCTA Projects Decrease in New Systems

The National Cable Television Assn. projects only 67 new CATV systems this year, compared with 350 in 1966 and 200 in 1965. A tabulation in the NCTA Membership Bulletin blamed the slowdown on "rigid controls" of the FCC Second Report & Order. The association compared 1967 with 1965, the last complete year before the controls, putting the current rate at only a third of 1965. The 1966 total of 350 resulted largely from a rush to beat the March starting date of regulation.

System Sales

Auburn TeleCable Corporation of Auburn, Ala. has purchased the Lee County TV Cable Co., Inc. of **Opelika, Ala.** Management of the Auburn and Opelika systems has been combined and will trade under the name of Auburn-Opelika TeleCable. Purchase of the Opelika system brings to six the number of systems operated by TeleCable.

The North American Communications Corporation (NAMCO), Minneapolis, recently announced the purchase of Fergus Cablevision, Inc., **Fergus Falls, Minn.** The purchase was for an undisclosed amount of cash from Gross-Leighton, Inc.

Mid-Continent Telephone Co. of Elyria, Ohio has acquired **Valley Master Cable Inc.**, Kittanning, Pa.

Transfer of the controlling interest in Halifax Cable TV, Inc., which holds the **Daytona Beach, Fla.** franchise, has been approved by the city commission. **Gulf and Western Industries, Inc.**, New York City, will receive 80.1 per cent of Halifax Cable's stock, and have agreed to put up approximately \$1 million to finance construction of the system. Once the financing is complete, construction is expected to move quickly.

The Jefferson-Carolina Corp. has obtained controlling interest in **Cablevision of Gaffney, Inc.** M. H. Crocker of Greensboro will be president and treasurer of the new corporation. □

General Sells H&B Stock

General Tire and Rubber Company, parent company of RKO General which in turn has a major interest in CATV through Vumore Company of Oklahoma City, has sold all 758,600 shares of its H&B stock at \$13.00 per share.

Temporary Waiver Granted

RV Cable-Vision Inc., Harrodsburg, Kentucky, received a temporary waiver of the program exclusivity ruling from the FCC last week. The system brings into Harrodsburg the signals of WLEX-TV and WKYT-TV from Lexington; WHAS-TV, WAVE-TV, and WLKY-TV from Louisville; WLWT, WCPO-TV and WKRC-TV from Cincinnati. The Commission granted the request until two new TV stations, one educational and one network, go on the air in Lexington.

Malarkey & Taylor to Appraise Zanesville

An \$8,500 plus contract has been signed by Zanesville, Ohio, city officials with Malarkey, Taylor and Associates of Washington, D. C., for a complete cable television appraisal. The evaluation will include equipment design, capability, and performance.

Zanesville Becomes CATV Battlefield

An initiative petition has been filed in Zanesville, Ohio, to grant a CATV ordinance to Neptune Broadcasting Corp. The petition has 571 more valid signatures than the 1,322 required by law as 10% of the electorate. The petition will now be submitted to Zanesville City Council for action. If the council does not act on the request within 30 days, the question of the granting of an additional franchise for cable television will be decided by the voters at the November election.

In May, the city council granted an ordinance for a cable television system to Vikoa, Inc. At the time, Neptune Broadcasting of Steubenville asked for a franchise, offering to provide the service at a lower figure to homeowners. The vote by council was 6-1 for Vikoa.

President of Motion Picture Association Condemns CATV Attitude on Copyright

Jack Valenti, president of the Motion Picture Association recently spoke out in Variety magazine on the CATV-copyright issue and condemned CATV in a rejoinder to an article by Fred Ford in an earlier issue of the same publication. Mr. Valenti holds that "There is really but one issue involved in the controversy between copyright owners and CATV owners." The issue, according to him, is whether or not a man's property can be taken from him without his being paid for it. In the article Mr. Ford is alleged to have portrayed CATV as beset by powerful opposition, which is not possible to bargain with because copyright owners are too numerous. Valenti went further to accuse CATV of being unwilling to enter true bargaining and alleged that senators and representatives in Congress had been imposed upon and asked to "strip away the rights of these copyright owners to bargain at all over the use of their properties by the CATV systems."

According to Valenti there are fewer than 40 distributors of copyright material who regulate most of the material of interest to CATV. He further affirmed that, "... the members of the Motion Picture Association, who are substantial owners as well as distributors of copyright material, are ready and willing sellers of their properties," and that, "They welcome CATV systems as new and important customers . . ."

Translator To Go "Live"

In a CATV-related broadcast action, the Commission waived the rule to allow a translator station to broadcast visual announcements for seven days. It said the information acquired may be helpful in rule making relating to distribution of TV signals by CATV. The grant was to Leeco TV Inc., licensee of UHF translator stations at Immokalee, Fla., both of which are relayed by other translators at Fort Myers. Programs of WCKT and WLWV, both of Miami, are re-broadcast by the translators. Leeco may beam slides to solicit public financial support. □

Now from Standard Kollsman Industries

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to an unused channel on the TV receiver for crisp,
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TV viewers in strong signal areas need never see double again! New Imagicon's transistorized tuner selects and converts any of 12 standard VHF channels to 40 MHz. Then a fixed frequency converter converts the 40 MHz signal to one channel, 12 or 13, through a power output connection to the TV receiver. Unwanted station signals, no matter how strong, cannot interfere with picture reception. The result is a clean, crisp picture completely clear of double image interference. New Imagicon can be placed on the TV set or up to 30 feet away. Switched output receptacle provided for TV receiver. Compact Imagicon is styled in handsome beige, blends with any decor. Installation is quick and easy. U.L. approved. For complete details about new Imagicon, write or phone.

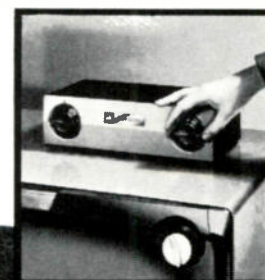
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FOCUS

... On People

Systems

William Stone has been elected vice-president by the board of directors of Unicom Incorporated. He joined Unicom in 1965 as chief engineer of the corporation. Stone has been active in CATV since the early days of 1951.

Marvin L. Conn, former manager of KBZZ, has assumed duties as sales manager for Community Television Inc., based of Denver, Colo.

William A. Pitney, for the past three years manager of Ohio Cablevision with headquarters in Findlay, Ohio, has been appointed general manager of Cleveland Area TV, operator of a CATV system in Lakewood, Ohio.

Douglas Fuller formerly chief technician for Cablevision Incorporated, Sedalia, Missouri has been appointed chief technician for the new 250-mile system belonging to St. Joseph (Missouri) Cablevision.

Robert E. Cowley, general manager of Flagstaff Television & Cable Company and vice-president of Harriscope Cable Corporation has been named a vice-president of Harriscope Broadcasting Corporation, parent company of Harriscope Cable.

Centre Video and C-COR Electronics have announced the appointment of **Henry V. Kemp** as regional manager for the Pittsburgh



Mr. Cowley



Mr. Kemp

area. Kemp will be responsible for the overall administration of the Color Cable and Steel Valley Cablevision systems.

Eugene Cole, Silverton, Ore., was elected president of Cable Vision, Inc. at their annual meeting. Cable Vision operates a system in the Weeme, Rhododendron and Alder Creek area.

Jack L. Williams has been appointed to the position of system manager of the TelePromptTer system in Liberal, Kansas. Williams comes from radio station KLIB, Liberal, where he was manager. He is replacing **Leo Levisay** who has gone to Greenwood, S. C.

John A. Sullivan has been promoted to TelePromptTer microwave administrator, it was announced recently. Sullivan has been system manager of TelePromptTer of Oregon, a position which will be filled by **Robert Morrison** who has been managing a system in Great Falls, Montana.



Mr. Sullivan



Mr. Morrison

Charles Heath has become construction superintendent for the Oklahoma Cable operations in Lake Charles, Louisiana, it was announced recently by **Clifton H. Gardiner**, president of Oklahoma Cable.

Patrick Bresnan is the new system manager at American Cablevision in Soo, Michigan.

The appointment of **George W. Green** as general manager of Jefferson-Carolina Corp., Greensboro, N. C., was announced recently. Green comes from Spencer-Kennedy Laboratories, Inc.

Edward E. Worrell has been named manager of technical operations and chief engineer of the Frederick Cablevision, Inc. system in Frederick, Md.

Wayne Yandell, Princeton, Ky. has been appointed manager of Princeton Cablevision Co. Yandell has served as chief technician for the past year.

Suppliers

William A. Rheinfelder has re-joined Ameco, Inc. as a staff scientist. Rheinfelder is coming from Anaconda Astrodata. He has published two books and more than 50 technical papers on communi-



Mr. Rheinfelder



Mr. Meny

cations equipment and the physics of solid-state devices.

John J. Meny has been appointed to the newly created position of marketing vice-president of CAS Manufacturing Company. Mr. Meny will head the CAS CATV marketing program.

Superior Cable Corporation has recently announced a name change and some new divisions, headed by new personnel. The firm is now **Superior Continental Corporation**. The new Sales and Service Division is to be headed by **J. H. Bowman**; the new Communications and Apparatus Co. is to be managed by **R. F. Apple**; and the Continental Telephone Laboratory is to be directed by **Warren Bender**.

Jerrold Corporation has announced the promotion of **Selman M. Kremer**, former director of advertising and public relations, to the position of manager of the distributor sales division. Kremer has been with Jerrold since 1953.

John B. Mandle has been appointed director of quality control for Memorex Corporation, Santa Clara, California. He has been associated with Memorex for two years as manager of the product test laboratory.

Gay Rogeness has left Ameco, and is now at Anaconda Astrodata. He is now director of research for CATV products and telephone communications equipment.

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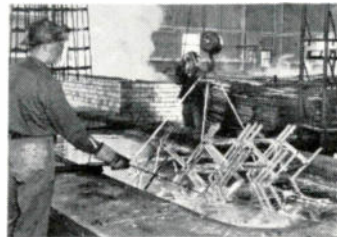


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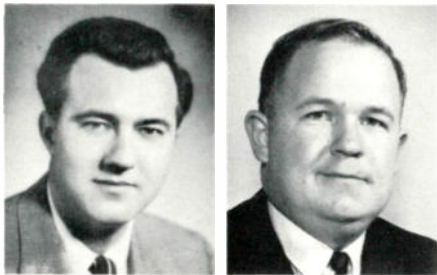
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Thomas A. Keefe, Jr., has been appointed to the sales staff of the Brand-Rex Division, American Enka Corp. Keefe will be responsible for sales in West Virginia, and western Pennsylvania.

Richard L. Paullus has replaced Robert N. Vendeland as vice-president of marketing for Dynair Electronics, Inc.

Jon Westfield has been appointed the regional sales manager for the western portion of the United States by Cascade Electronics.



Mr. Paullus

Mr. Westfield

Westfield will headquarter in Broomfield, Colo.

Four new executives have been named to staff the recently opened Vikoa Cable Plant at Freehold, N.J. Peter De Graziano has been named

plant manager, Al Fletcher has been promoted to the post of director of engineering, Hillet Spanget has been appointed director of purchasing to fill Fletcher's vacated post, and Mike Columbo will serve as plant superintendent. De Graziano comes to Vikoa from Essex Wire and Spanget comes from ITT. Columbo was formerly manufacturing manager for Vikoa.

William J. Lauritzen has joined Ameco, Inc. as CATV equipment sales representative in Oregon, Washington and Idaho.

Charles Leyrer has been appointed sales engineer for the Michigan area by the CATV Systems Division of Jerrold Electronics Corporation. Leyrer has been in the MATV and CATV industry for more than 3 1/2 years.

Superior Cable Corp. announces the appointment of Lester L. Key to the position of facilities engineer. In his new position at Superior, Key will be responsible for planning, engineering, estimating, and supervising all construction projects and plant expansion.

Donn C. Nelson, vice president,

general manager, and a director of Cascade Electronics Ltd., has announced his resignation from the Canadian firm. Nelson, a



Mr. Nelson

Mr. Oldfather

founder of the two year old company, states that his action was prompted by personal reasons.

Professional

Gail E. Oldfather was recently elected vice president of the Economy Finance Corporation. Oldfather joined the firm in 1959 as an auditor, was named credit manager of the accounts receivable financing division in 1962 and began working with CATV financing that same year as manager of the communications finance division where he has been until the recent appointment. □

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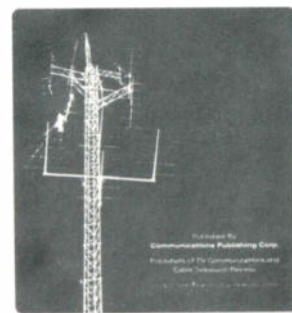
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Use the postage-paid card to order - just turn to page 89.



Whose hues?



They're Collins', of course. Yours, too, when you relay color programming via Collins' new 5-watt, i-f heterodyne microwave system. Perfect color hues require low differential phase and gain. For the best color TV long-haul performance in the industry, specify Collins' new MW-109E microwave system.

The MW-109E is the most advanced microwave video system available today. In addition to excellent color performance provided by i-f heterodyne repeater techniques, a high-powered traveling wave tube provides superior propagation reliability and signal-to-noise ratio. Rack space and power consumption have been greatly reduced by all solid state circuitry (except TWT's) to ensure equipment reliability and low maintenance costs.

For technical information, call, write or wire Collins Radio Company, Microwave Marketing, Dallas, Texas, Area Code 214, AD 5 9511.



FINANCIAL REPORTS

H & B American Corp. showed share earnings of 31¢ per share and revenues of \$5,915,970 for the year ending July 31. This compares with share earnings of 25¢ per share for the same period last year with revenues at \$5,114,137. Net income for the period was \$806,306 as compared with \$636,019 last year.

Vikoa, Inc. showed a net income of \$62,000 on sales of \$3,070,149 for the quarter ending June 30. This compares with a net income of \$312,000 on sales of \$4,307,000 for the same quarter last year. These figures represent per share earnings of 5¢ for the 1967 quarter as compared with 25¢ for the 1966 quarter. Per share earnings for the six-months period ending June 30 were 18¢ as compared with 43¢ last year. Net income for the half-year was \$238,000 on sales of \$6,455,788 as compared with a net income for the same period last year of \$558,000 on sales of \$8,075,000.

Cox Broadcasting Corp. recently declared a regular quarterly cash dividend of 12½¢ per share on the common stock. The dividend was payable October 16, 1967 to stock holders of record of September 22, 1967.

Reeves Broadcasting Corp. reported per share earnings of \$.22 for the six-month period ending June 30, 1967. Net income for the period was \$403,400 and gross revenues were \$5,106,600. Per share earnings for the same period last year were \$.23; net income was \$362,000; gross revenues were \$4,578,300.

United Utilities, Inc. restated their report for the six-month period ending June 30, 1967 to include companies merged on a pooling of interests basis. Per share earnings for the period were \$.58 as compared with \$.51 for the same period last year. Revenues for the period were \$73,670,000 as compared with \$67,340,000 last year, and net in-

come was \$12,727,000 as compared with \$11,182,000 last year. United also reported per share earnings for the 12-month period ending June 30 at \$1.17 as compared with \$1.02 last year. Revenues for the period were \$145,225,000 and net income was \$25,650,000. These figures compare with revenues of \$130,756,000 last year and net income last year of \$21,997,000.

Conductron Corporation reported a net loss of \$14,841 for the six-month period ending June 30, 1967. Sales for the period were \$31,212,092. This compares with per share earnings of \$.34 for the same period last year based on the net income of \$833,686 and sales of \$24,322,878.

Continental Telephone Corp. reported share earnings of \$.55 for the half-year period ending June 30, 1967. The earnings were based on a net income of \$8,599,340 and revenues of \$75,766,416. Share earnings for the same period last year (adjusted to include companies subsequently acquired on a pooling of interests basis) were \$.48 per share based on a net income of \$7,377,555 with revenues at \$63,765,283. The figure given for the net income excludes net special credits or \$956,529 equal to \$.06 a share.

Ampex Corporation sales for the quarter ending July 29, 1967, were \$52,749,000. This is a 14% increase and compares with last year's sales of \$46,212,000. Net earnings for the period were \$2,072,000 or 22¢ per share as compared with \$1,880,000 or 20¢ per share last year for the same period.

Collins Radio showed a net income of \$12,093,000 for the year ending July 28, as compared with last year's net income of \$7,677,000. Sales for the two periods were \$438,962,000 in 1967 and \$388,177,000 in 1966. Per share earnings for 1967 were \$4.42 as compared with \$3.36 for 1966. □

Calendar

NOVEMBER 5-8. The National Association of Educational Broadcasters will hold its 43rd annual convention at the Denver Hilton in Denver, Colorado.

NOVEMBER 9-10. NCTA Regional Meeting in Dallas, Texas at the Marriot Hotel.

NOVEMBER 12-15. NCTA Regional Meeting in San Diego, California at Vacation Village.

NOVEMBER 16-17. NCTA Regional Meeting in Portland, Oregon at the Portland Hilton.

NOVEMBER 28-29. The NCTA Executive Committee will meet in Washington, D. C.

JANUARY 12-13. The Rocky Mountain Cable Television Association will hold its annual meeting at the Holiday Inn in Albuquerque, New Mexico.

JANUARY 22-23. The NCTA Executive Committee will meet in Washington, D. C.

MARCH 18-20. The NCTA Board of Directors will meet.

MARCH 24-26. The Southern CATV Association will hold its spring meeting in Atlanta, Georgia at the Callaway Gardens.

APRIL 4-5. The NAEB will hold its Region II Conference in Atlanta, Georgia at the Cabana Hotel/Motel.

MAY 7-8. The NCTA Executive Committee will meet in Washington, D. C.

JUNE 3-5. NCTA Board of Directors Meeting.

JUNE 4-6. Microwave Exposition/68 will be held at San Francisco in the San Francisco Hilton Hotel. For further information contact Leonard D. Belzer, Microwave Expositions, Inc., 100 Avenue of the Americas, New York, N.Y. 10013.

JUNE 30 - JULY 3. The NCTA 17th Annual Convention will be held in Boston, Massachusetts. □



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Continuous Signal Monitoring With Vertical-Interval Test Signals

This article, written by Ralph R. Reiser and Richard E. Monnier, both design engineers for Hewlett-Packard, is reprinted from the *H-P Journal*, with concluding comments on CATV applications by *TV Communications Associate Technical Editor I. Switzer*.

To provide a picture acceptable to the average viewer, a television transmission system must meet rigorous standards. This is especially true for color signals, which are more complex than black-and-white signals and subject to more types of distortion.

Keeping picture distortion within desirable limits requires frequent testing of the transmission channels which carry TV video signals. Until recent years, this was done during the idle periods when no programs were being transmitted. Now, the increasing popularity of color television calls for more frequent checks, but increased use of television has reduced the time available for testing. The result has been the development of methods and signals for continuous, in-service monitoring of transmission quality.

In 1963, television broadcasters and the Bell System agreed on the general form of test signals which would accompany the normal video signal for continuous checking of the network and associated facilities under actual operating conditions. These signals are now being broadcast. Known as Vertical-Interval Test Signals (VITS), they are a combination of several test waveforms developed by television broadcasters, carriers, and manufacturers in the United States and Europe over a period of many years.

THE TELEVISION VIDEO WAVEFORM

The composite video signal is broadcast on an amplitude-modulated carrier with minimum carrier amplitude representing white and maximum carrier amplitude representing black. One complete picture is called a 'frame'. In the National

Television Standards Committee system, there are 30 frames per second, each consisting of 525 lines. To reduce flicker in the picture presented to the viewer, each frame is scanned in two fields of 262½ lines each, and the lines of the second field are interlaced between the lines of the first.

Fig. 1 shows the detected video waveform near the beginning of each field. The interval between the last picture line of one field and the first picture line of the next field is called the 'vertical blanking interval'. The 21 lines in this interval do not contain any picture information; they produce a black area at the top of the picture which is

normally not seen by the viewer. It is during this interval that the new test signals are inserted. Thus the viewer at home can see the effect of these signals on two lines of each field if he reduces his picture size or mis-adjusts his vertical hold control to cause his picture to roll.

The first several lines of the vertical blanking interval contain equalizer pulses and vertical sync pulses which return the beam to the top of the screen. Lines 16 through 20 can safely be used for test signals, but line 21 remains free of signal as a guard interval before the start of the video signal. Although other arrangements are being considered by the television industry, Vertical-

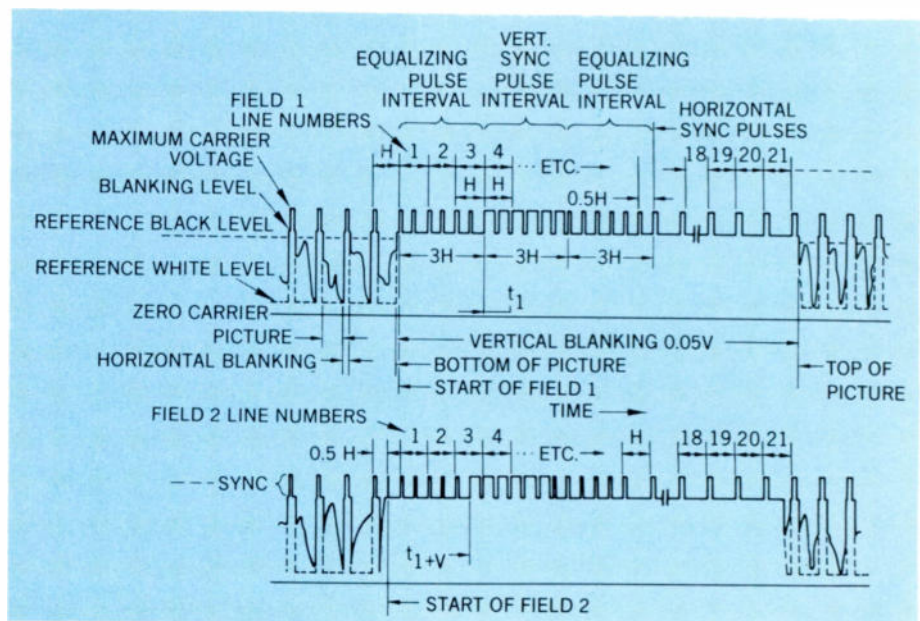


Figure 1. Video waveform after detection (carrier removed) for black-and-white television. Figure shows portions of video waveform near vertical blanking interval. Each complete picture, or frame, of 525 lines is scanned in 2 interlaced fields of 262½ lines each. Top waveform shows end of field two and start of field one, and bottom waveform shows end of field one and start of field two. Each line or picture consists of horizontal sync pulse followed by picture information which is used to modulate intensity of picture tube beam as it scans across the screen. Vertical blanking intervals of 21 lines produce black area at top of TV picture. New Vertical-Interval Test Signal are inserted in lines 18 and 19.

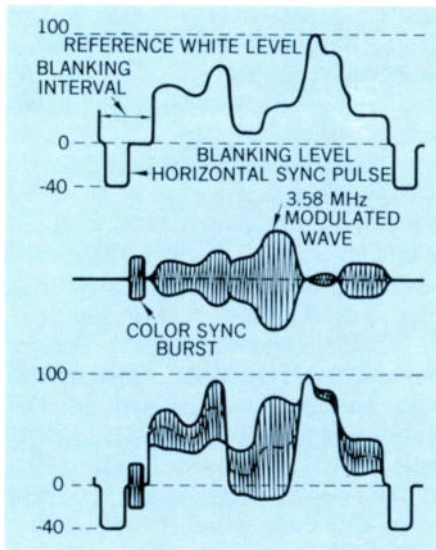


Figure 2. Development of composite color signal: (a) typical luminance of monochrome signal for one line of picture, (b) chrominance and color sync signals. To a first approximation, amplitude of 3.58 MHz sub-carrier represents color saturation (e.g., deep red or pink), and phase with respect to sync burst determines hue (red, blue, green). (c) Composite color signal is sum of (a) and (b). Black-and-white TV receivers extract only luminance signal.

Interval Test Signals are now inserted only in lines 18 and 19 of each field. Lines 16, 17, and 20 are reserved for possible future use.

The Color Signal

The video signal for color programs is slightly more complex than for black-and-white TV. Fig. 2 shows how the composite color signal is developed. In both color and black-and-white, the brightness signal between the horizontal sync pulses is called the 'luminance' or 'monochrome' signal. Fig. 2(a) shows how the luminance signal might vary during one line. To this luminance signal is added a chrominance signal in the form of a phase and amplitude-modulated color sub-carrier of about 3.58 MHz, shown in Fig. 2(b). To a first approximation the amplitude of the subcarrier determines color saturation (whether a red is a deep red or a pink) and the phase of the subcarrier with respect to the color sync burst determines the hue (red, green, or blue). The composite color signal, consisting of the sum of the various components, appears as shown in Fig. 2(c). Note that the effective

axis of the chrominance signal may vary through the luminance range since this axis coincides with the level of the monochrome signal component. Black-and-white sets filter out the color subcarrier to recover the original luminance signal.

The amplitude of the composite signal is measured in IRE units. 140 IRE units is defined as 1 volt peak-to-peak, which is the standard interface video signal maximum amplitude.

Types of Distortion

Both black-and-white and color television are degraded by distortion in the following characteristics of the transmission system:

1. FREQUENCY RESPONSE (amplitude vs. frequency).

High frequency rolloff which starts at too low a frequency or occurs at too fast a rate causes the TV picture to look soft and lack detail. Color TV viewing tests have indicated that viewers can detect amplitude variations of only 1 or 2 dB in the frequency response, if the variations occur near the color subcarrier frequency.

2. PHASE RESPONSE (phase vs. frequency).

The phase response of a transmission system should be linear with frequency (constant time delay for all frequencies) up to 4.2 MHz and beyond. Deviations will cause lack of clarity and, in color, hue shift. Phase delay distortions as small as $0.1\mu\text{s}$ at the higher frequencies are easily detected by viewers.

3. TRANSIENT RESPONSE

Transient response includes both amplitude and phase response. If the phase characteristics of the system

are not ideal, a black bar may appear at the leading or trailing edge of a sharp black-to-white transition. In a color picture, hue will be shifted with respect to outline: the red of an apple will be shifted with respect to the outline of the apple. Poor low-frequency response may cause streaking in the picture.

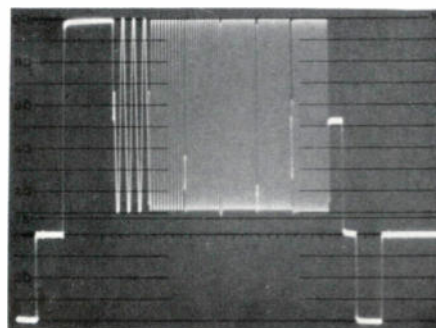
4. DIFFERENTIAL GAIN AND DIFFERENTIAL PHASE (gain and phase vs. signal amplitude).

Variations in gain with signal amplitude will cause white or black areas to shift towards gray, or color desaturation and a washed-out appearance. Variations in phase with amplitude are most harmful to color signals, and result in hue shift as a function of signal amplitude: saturated yellow, for example, may appear green or orange, so that a dress which appears yellow in dim light may change to green or orange in bright light.

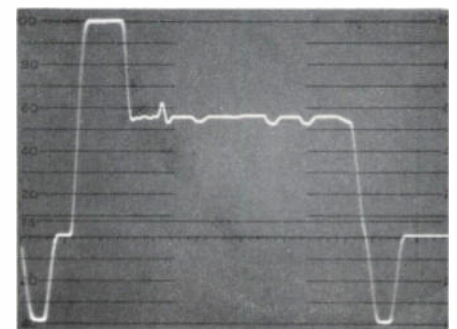
In the VITS system, frequency response is checked by a 'multiburst' signal, phase and transient responses are checked by the 'sine-squared pulse and bar', and differential gain and phase are detected by modulated stairsteps. These signals, along with black-and-white reference levels, are inserted at the program origin.

Multiburst

The multiburst signal (see Fig. 3) is inserted on line 18 of field one. It consists of a 'white flag' used to establish the reference white level, followed by bursts of frequencies of 0.5 MHz, 1.5 MHz, 2.0 MHz, 3.0 MHz, 3.6 MHz, and 4.2 MHz. If the system has a frequency response characteristic which is flat through the 4.2 MHz range, as it



(A)



(B)

Figure 3. Oscillograms made with TV Waveform Oscilloscope displaying Vertical-Interval Test Signals. (a) Multiburst signal consists of 'white flag' and burst of frequencies of 0.5 MHz, 2.0 MHz, 3.0 MHz, 3.6 MHz and 4.2 MHz. If frequency response of channel is correct, all bursts are reproduced with same amplitude. Sweep speed is $8\mu\text{s}/\text{cm}$. Vertical amplifier is in FLAT filter response position. (b) Same signal with LOW PASS filter response, showing base line of multiburst.

should be, the amplitudes of the bursts will be the same, and vice versa. There are obviously large gaps between the multiburst frequencies where deficiencies could occur. This test is very useful, however, because it provides a spot check on the overall system response which can be evaluated visually in a few seconds.

The multiburst signal can also be used to detect frequency-selective distortion, such as amplitude nonlinearities at the burst frequencies. Filtering out the burst frequencies with a low-pass filter leaves only the base line, or average value (Fig. 3b). If amplitude nonlinearity exists at one of the burst frequencies, the burst will be distorted and will contain a dc component which will cause a shift of the base line.

To permit making checks on the multiburst signal, a TV waveform oscilloscope provides switches for selecting line 18 of field one. A lowpass filter, selectable with a front-panel control, is built into the instrument and enables checking for base-line shifts.

Sine-Squared Pulse and Bar

The sine-squared pulse and bar (Fig. 4a) are inserted on line 19 of field one. The pulse and bar are really two separate test signals, but they are similar in that they subject the system to the same type of transient signals that are encountered during picture transmission.

When the finite-diameter beam of a camera tube scans across a black-to-white transition, the change in output voltage is not a perfect step, but is more S-shaped, closely resembling a sinusoidal peak-to-peak transition. The frequency of the sinusoid is limited by the system bandwidth, which is about 4 MHz. If such a system were tested with a faster-rise impulse or step voltage, overshoot, ringing, and phase shift might occur even in an adequate system because of excessive high-frequency components in the test signal. The sine-squared pulse is a more realistic test signal; it has accurately controllable frequency components which can be limited to the band of interest. It also has the advantages of being

easily generated to an accuracy of 1% or better, and of being mathematically tractable.

The sine-squared pulse is shown in more detail in Fig. 4(b). This is a 0.125 microsecond (half-amplitude width) pulse, known as a 'T' pulse, which has the shape of one cycle of a 4 MHz sine wave. The frequency spectrum of this pulse is shown in Fig. 4(d). The half-voltage point is at 4 MHz, and there is little energy beyond 8 MHz. Thus, most of the test energy is contained in the frequency range of interest. A '2T' pulse, with a half-amplitude width of 0.25 μ s, is often used for tests where the main interest is in the 0.5 to 2 MHz range. A 'T/2' pulse is also available for use when wider test bandwidth is desired. Fig. 4(b) shows typical T, 2T, and T/2 pulses.

The sine-squared pulse reveals deficiencies in the high-frequency transient response of the system. Its amplitude will be reduced if the high frequency rolloff of the system occurs at too low a frequency. It is also particularly sensitive to phase distortion, because its phase characteristic is linear to a frequency well above the highest video frequency. Another way of saying this is that the group delay or envelope delay characteristic of the sine-squared pulse is constant to a high frequency (> 16 MHz for the T/2 pulse). Hence, if the system does not delay all frequency components by the same amount, the sine-squared pulse will be distorted; it will no longer be symmetrical.

The other test waveform on line 19 of field one is the sine-squared bar or 'window'. This is a flat-topped pulse with a duration of one-half line. Its leading and trailing edges have a sine-squared shape corresponding to the 2T pulse. The bar is sensitive to distortions at middle frequencies: droop appearing at the top of the bar is related to streaking in the TV picture, and as little as 2 to 5% droop will indicate streaking that is readily detected by viewers.

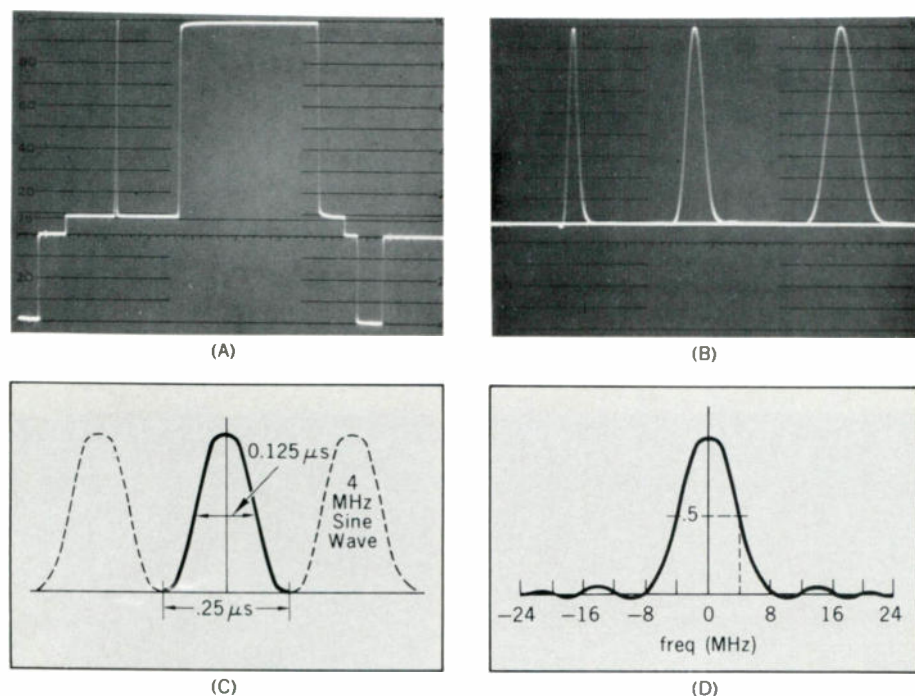
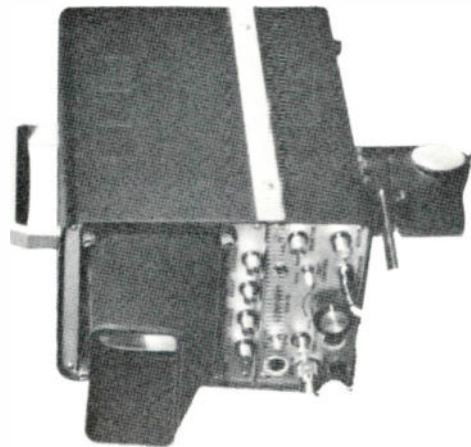


Figure 4. (a) Oscilloscope of sine-squared pulse and bar used for testing transient response of channel. Sine-squared pulse subjects system to same type of transient as is encountered in picture transmission. Pulse tests high-frequency transient response and phase response. Bar tests mid-frequency response. Sweep speed 8 μ s/cm. FLAT filter response of oscilloscope. (b) Triple exposure showing T/2 pulse (0.0625 μ s sine-squared pulse), T pulse (0.125 μ s), and 2T pulse (0.25 μ s). Sweep speed is 0.3175 μ s/cm, repetition rate is 30Hz. FLAT response. (c) Drawing of T pulse. T pulse is one cycle of 4 MHz sine wave. (d) Spectrum of T pulse is down by factor of two at 4 MHz and is zero at 8 MHz.

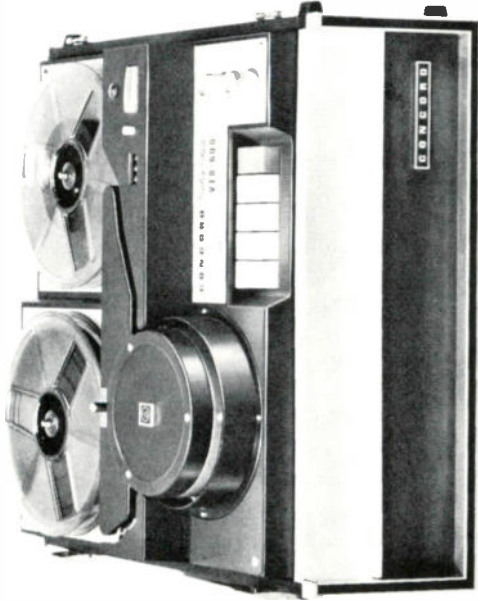
Modulated Stairstep

The modulated stairstep used in detecting differential gain and phase is inserted on line 19 of field two. It consists of a 10-step stair-step signal going from black to

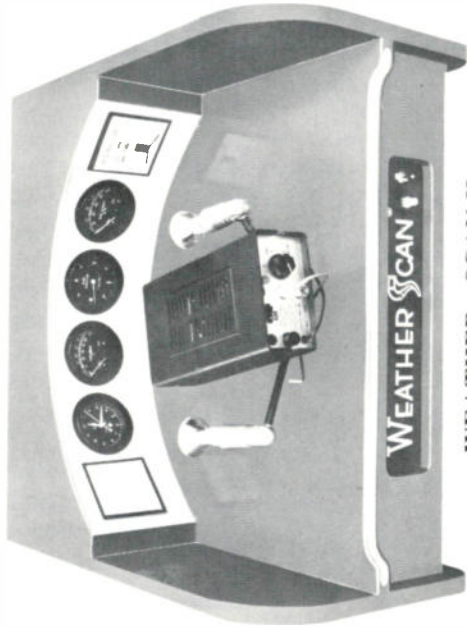
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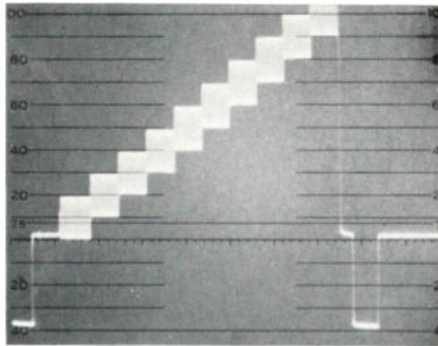
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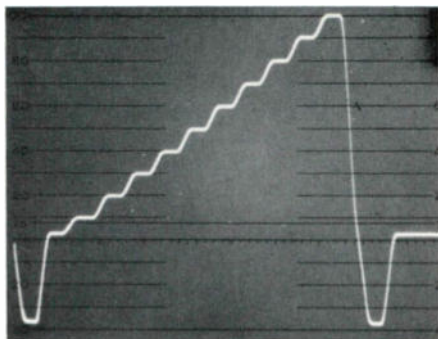
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white, with a 3.58 MHz sine wave superimposed on each step (see Fig. 5a).

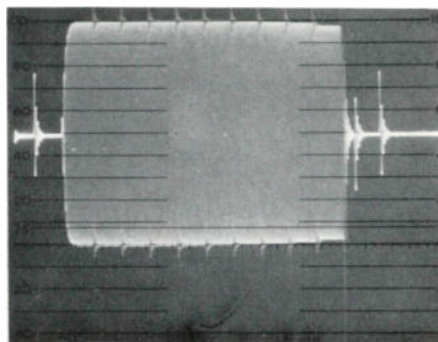
Differential gain is the variation in the gain of a transmission system as the luminance signal varies between the values for black and for white. In a properly-operating system, changes in luminance voltage should produce no change in either the height of the steps or the amplitude of the sine wave.



(A)



(B)



(C)

Figure 5. Oscillograms of VITS made with Model 191A. (a) Modulated Stair-step signal used for detecting variations in gain and phase with signal amplitude. There are 10 steps, each with 3.58 MHz burst superimposed. FLAT filter response of Model 191A. Sweep speed 8 μ s/cm. (c) Modulated stairstep with Model 191A DIFFERENTIAL GAIN filter response. This response provides bandpass filtering centered at 3.58 MHz, plus 14 dB amplification.

Low-frequency differential gain can be detected by removing the sine wave from the modulated stair-step with a low-pass filter and checking the steps for equal height (Fig. 5b). High-frequency differential gain can be detected by removing the steps with a band-pass filter centered at 3.58 MHz; this puts the 10 bursts of sine wave on the same line and permits easy comparison of their amplitudes (Fig. 5c).

Differential phase is the variation in the phase characteristic of a system as the luminance level changes from black to white. The modulated stairstep can be used in conjunction with a synchronous phase detector to check for this type of distortion. Phase shifts of 1 degree can be detected in this manner.

Applying VITS to CATV Applications

Such phase detectors are available with a vector display oscilloscope from Tektronix. The usual TV waveform monitor does not include phase detectors and a separate "Vectorscope" instrument must be used.

TV waveform monitors suitable for precision observation and measurement of Vertical-Interval Test Signals (VITS) are available from Hewlett-Packard as the model 191A, and from Tektronix as the model 529. Both models provide for observation of standard waveforms and for quick positive selection of the desired vertical-interval line. Selection of vertical-interval line is impossible on other general purpose oscilloscopes unless they are provided with very versatile sweep delays, and even then positive selection of the desired field is usually not possible. Use of a waveform monitor designed for this purpose is strongly recommended.

CATV systems using microwave have direct access to video as delivered by their microwave system. Waveform monitors can be used directly to observe TV waveforms and VIT signals. Observation at various points in the system will point out where deficiencies arise. Polaroid photographs are useful for reference purposes.

CATV operators should not assume that the TV broadcasters and

the networks feeding them are paragons of transmission virtue. VITS deficiencies can often be traced back to TV broadcasters and their network feeds.

Demodulators used in feeding CATV microwave systems should be carefully checked for alignment. Improperly aligned demodulators will introduce phase distortions and bandpass deficiencies which will affect multiburst and sine-squared and bar displays.

In systems using direct off-air pick up a TV waveform monitor can be advantageously used in conjunction with a good quality demodulator. The demodulator must be in good condition and alignment and should be checked against transmissions of known quality. This test can often be arranged through the co-operation of a local broadcaster. Performance of the test demodulator can be checked against the station's monitor diode demodulator right at the station and Polaroid photos taken to show demodulator performance on known test patterns under optimum conditions. The demodulator/waveform monitor combination can then be used to check performance of the CATV system antenna, head-end equipment and cable transmission system by monitoring at various points in the system. Inadequate bandpass and phase distortion in head-end equipment would show up in response to multiburst and sine-squared tests. Ghosts developed in the system or in the off-air transmission path will show up in the bar signals.

A further refinement may be added by eliminating the question of quality in originating station and network. CATV systems can equip themselves with standard video test pattern generators. In conjunction with good quality modulators, performance of the CATV system can be checked during off service hours. Equipment is also available to permit a system to generate its own VITS signals and insert them at its own head-end. This requires very elaborate equipment and is probably beyond the means and resources of most systems. Large scale CATV microwave operators might consider such systems as an aid to maintaining their transmission system quality. \square

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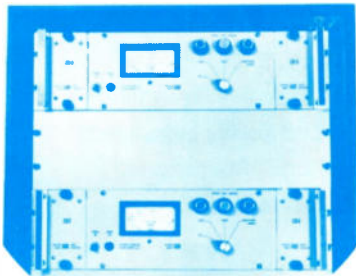
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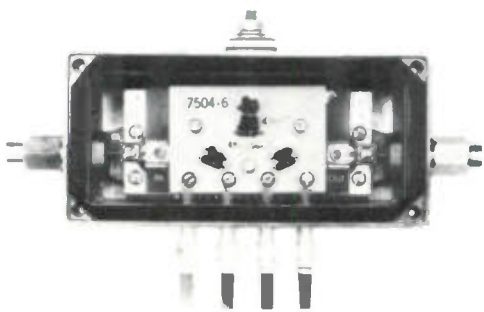
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Laser Distribution for CATV: Initial Testing This Month in NYC

A new concept in signal transmission for CATV has been developed by the Laser Link Corporation. The method involves the use of a laser beam as the medium for the transmission of broadband signals and may have special significance in the area of metropolitan CATV systems where it can be utilized to receive undistorted signals off the air and rebroadcast the processed signals to receivers atop apartment houses.

According to Ira Kamen, president of the developing corporation, the laser transmission system will have the capability of solving some of the complicated problems of urban CATV over short distances, such as adverse weather conditions due to high concentration of smog and heavy rains. It is also expected to be able to overcome the high linearity problem generally characteristic of microwave systems, and is said to be capable of handling a wide range of frequencies. The disperse beaming characteristics of the new laser system precludes damage to personnel, birds, etc. that may be in its path.

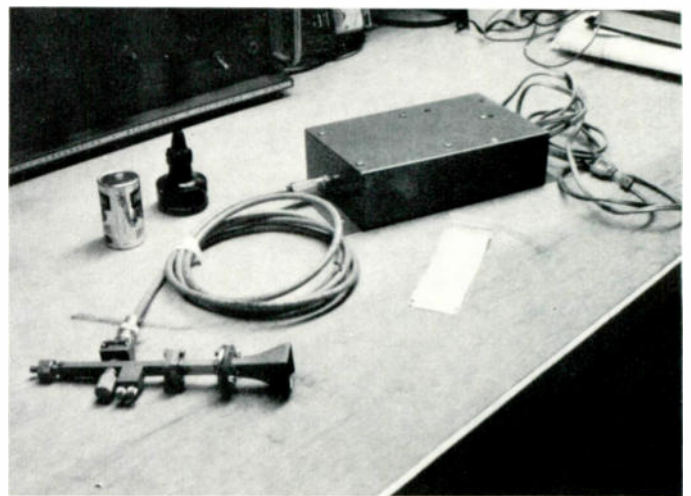
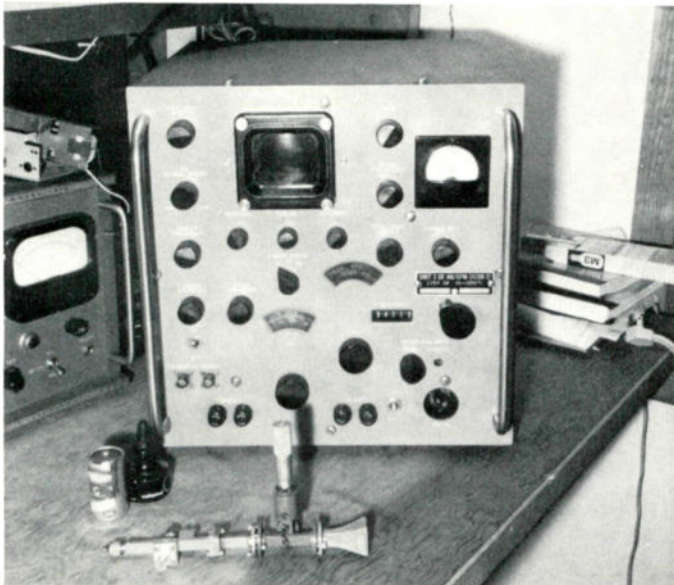
If the system proves to be effective and feasible, it could be used to solve a lot of urban CATV ills. Of prime importance is the problem which arises due to municipal regulations which require that all wires and cables be placed underground. Coupled with the enormous expense of underground plant in urban areas is the stalemate with telephone companies who own the ductwork already in existence in most cities. In addition Telco's cannot guarantee access to multiple dwellings.

The laser link system provides equipment that can be owned, operated, and maintained by the system owner himself and thus frees him from telco control.

The laser system might also prove valuable in rural and suburban areas where topographical conditions necessitate stretches of underwater plant. In many areas of Florida, for example, laser links across one or two mile stretches of water could save valuable plant installation time and protect the system owner from costly maintenance expense later on.

The system is scheduled for a demonstration during the third week of November in New York City atop a penthouse owned by Bartell Media Corp., the firm which will have exclusive marketing rights in Brooklyn, N. Y. Transmission of three network color channels will be involved in the demonstration which will simulate smog and rain with smoke bombs and heavy water spray. The actual transmitting apparatus will be a millimeter microwave system and will be at 50 GHz, 10 GHz above the FCC spectrum control area. Later, a dispersed beam laser will be employed.

Laser Link Corp. is headed by Mr. Kamen and Mr. Harold R. Walker, both engineers, and Daniel J. Riesner, a financial consultant and attorney. The actual role of the firm is to develop the system, which, after the demonstration, will quite likely be purchased for manufacture by a major electronics manufacturing concern. The communications and master antenna equipment to be used are produced by JFD Electronics □



Laser Link's 50 Gcs transmitting unit (at left) and receiving unit (above) are shown alongside standard dry cell and ink bottle for size reference.

Crimp out signal failure for the life of the cable.



AMP's CATV crimp fittings deliver constant 75-ohm impedance from head end to set. No conversions anywhere. No damaging torque. Fittings will last for the life of the cable with low insertion loss, high return loss and low VSWR.

AMP's fittings are quickly applied to the cable by a patented crimp with matching tools for uniformity of connections time after time. The complete line includes connectors, splices, wall receptacles and grounding blocks—the only line of coaxial crimp fittings designed specifically for CATV.

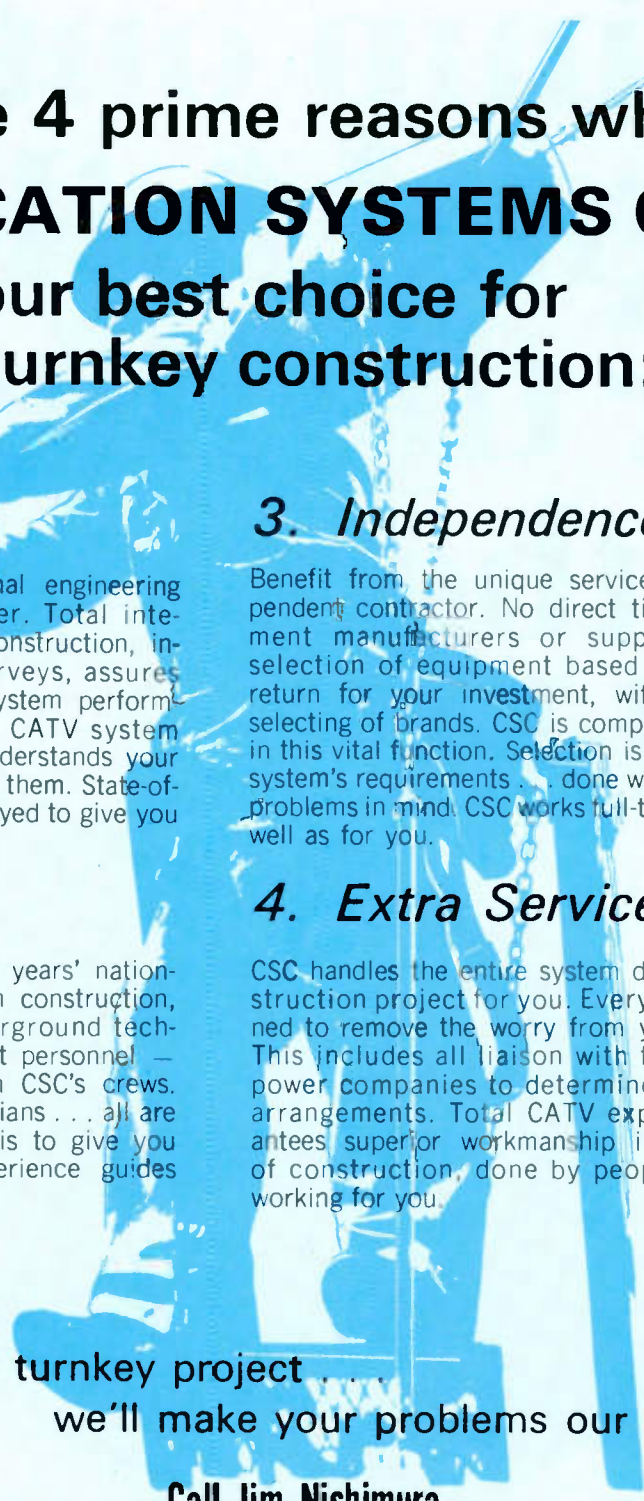
Engineered by AMP Incorporated, leader and pioneer in compression-crimp techniques. For full information, contact us directly.

api[†]
AMP

AMERICAN PAMCOR, INC.
VALLEY FORGE, PENNSYLVANIA

A subsidiary of AMP Incorporated
In Canada—Aircraft-Marine Products of Canada, Ltd., 49 Gervais
Drive, Don Mills, Ontario.

[†]Trademark of American Pamcor, Inc.
^{*}Trademark of AMP Incorporated



Here are 4 prime reasons why
COMMUNICATION SYSTEMS CORP
is your best choice for
CATV turnkey construction:

1. Engineering

CSC utilizes its own professional engineering department to serve you better. Total integration of system design and construction, including complete head-end surveys, assures efficiency in building, highest system performance. CSC specializes in total CATV system design and construction . . . understands your problems . . . knows how to solve them. State-of-the-art design concepts are employed to give you the most for your investment.

2. Construction

CSC backs every project with 6 years' nationwide experience in CATV system construction, including both aerial and underground techniques. Only full-time, permanent personnel — people that know CATV — form CSC's crews. Surveyors . . . linemen . . . technicians . . . all are craftsmen whose only standard is to give you maximum quality. Veteran experience guides every step of construction.

3. Independence

Benefit from the unique services of an independent contractor. No direct ties with equipment manufacturers or suppliers assures selection of equipment based on maximum return for your investment, without arbitrary selecting of brands. CSC is completely objective in this vital function. Selection is made for your system's requirements . . . done with your unique problems in mind. CSC works full-time with you as well as for you.

4. Extra Service

CSC handles the entire system design and construction project for you. Every detail is planned to remove the worry from your shoulders. This includes all liaison with telephone and power companies to determine pole line arrangements. Total CATV experience guarantees superior workmanship in every phase of construction, done by people who enjoy working for you.

Let CSC handle your turnkey project . . .
we'll make your problems our problems.



Call Jim Nishimura

COMMUNICATION SYSTEMS CORP.

140 EAST MAIN STREET • HUNTINGTON, N.Y. 11743 • (516) 271-1262

COMPLETE SYSTEM CAPABILITY

Producing More Effective Newspaper Advertising Layouts

By Samuel J. Henry
Samuel Henry & Associates

Being more an art than a science, advertising puts a high premium on the work of creative people. With 1,500 advertising messages per day fighting for attention (twice the rate of 10 years ago) the artist's contribution looms larger and more important than ever. All through history, the artist has sought and found fresh new answers to old problems, has explored the mystery of what makes men tick, and held in his imaginative mind and hands the ability to best interpret (and project) man's hopes and dreams.

In this 'turned-on', fast-changing era of McLuhanism (the medium is the message), psychedelic shows (I prefer the old-fashioned kaleidoscope), and subliminal appeals (now you see it, now you don't), expounding rules for good advertising layout is a dangerous game. Even riskier is the task of helping cable system managers to become layout experts. There are as many techniques and devices for getting and holding the reader's attention — and graphically building the company's image — as there are creative advertising ideas, illustrations and headlines to convey them. *What an ad suggests, or infers, can often be as important as what it actually says.* A little thought given to this sudden fact-of-business-survival will serve to emphasize the necessity of getting good advertising layouts, competently prepared.

Right at the outset, then, get yourself a qualified layout man if you can.

Realizing however, the scarcity of competent commercial artists in many CATV communities (and having yet to find a really good packaged ad service for newspaper) your indulgence is earnestly beseeched while we try to pass as a creative expert.

Before attempting to set forth the customary rules and principles, it is perhaps best to list the actual purposes served by the advertising layout. These alone will help to avoid costly mistakes and advertising dollars wasted.

An effective layout is supposed to accomplish three things:

1. Catch the eye, hold the attention of the right people.
2. Make it easier to absorb and accept the message.
3. Most importantly, suggest to the reader the idea

(1) The author has long taken the position that the savings resulting from the use of packaged newspaper advertising services is not great enough to compensate for loss of local flavor, that cable systems can and should build their own special image etc. and that these can best be accomplished through the use of regular newspaper ads.

that the product or service advertised is worthwhile, and worthy of his further investigation. (This is what the research man means when he says an ad is "memorable".)

This Rule-of-3 is somewhat contrary to most businessmen's concept of the layout man's function — the mistaken notion that all he has to do, really, is make sure the ad gets attention. (A quaint Madison Avenue story makes the point that a loud belch, emitted in mixed company at a social gathering, may get attention but is hardly good advertising.)

The design of an ad should serve not only to invite the eye. It should proclaim, in effect "Here is something that should interest you. What's more, you won't have to work hard to find out what it is. When you DO find out, you'll be glad you did."

A large order for *any* layout. And one which places a stern responsibility on the system operator who wants immediately measurable, profitable returns on his newspaper dollars, while hoping also to create a lasting image of quality and service in the community.

In all too many instances, system owners and managers tend to ignore or overlook advertising's most valuable function — namely building an image. Many CATV newspaper ads have a 'cut-rate drugstore' look. Yet there is little mystery attached to making your ads look the way they should.

Most of the basic principles involved in achieving better ad layouts have been learned as the result of millions of dollars spent testing the various elements (illustrations, photos, headlines, formats, sizes and types of each etc.) that go into the finished advertisement. They can be yours for the learning.

The samples of good and bad layout shown here represent degrees of taste and judgment in using the various elements. It is hard to find a 100 per cent good or bad layout. By knowing the fundamentals of sound advertising design, by being alert to the simple psychological and engineering principles involved in good layout, you can make your newspaper advertisements more productive. You can make those hard-earned advertising dollars deliver far greater return, both in understanding readers and interested prospects.

In planning your layout, decide first just what idea, impression or specific message you wish to impart. Decide also, on a dominant mood for each ad. Is it to be one of excitement — the anticipation of more enjoyable TV entertainment? Perhaps you want to convey a serious thought in connection with TV's

One PSA flight is worth a thousand words... like lovely beautiful glamorous friendly congenial ravishing vivacious smiling delicious delectable wow!



This is the face (or one like it) that launches 600 flights a week between Los Angeles/San Diego and the San Francisco Bay Area. (Far more flights than any other airline.) Other sweet-sounding words: lowest air fares. San Francisco or Oakland or San Jose Electra Jet \$11.43, 727 Fan Jets \$13.50, San Diego all flights \$6.35, New Sacramento service: Electra Jet \$13.33, Fan Jets \$15.24. Here's something else you'll discover on your first flight. One PSA stewardess is worth 1000 looks. Los Angeles 776-0125, Hollywood Burbank 787-4750 or call your travel agent.



PSA
A 'different' layout - almost a vertical billboard - this PSA ad shows clean, simple design even with a 20 word headline. It sells the idea of sampling the service.

Toyota
A tight, carefully balanced layout, combining advertiser's name, price and product in use, in efficient billboard style. There is no mistaking who is talking.

Get Your Hands On a TOYOTA

Why? Toyota Corona 4-door sports sedan gives you every driving pleasure you want. *Spirited performance!* 90-hp, 1900 cc engine goes 0 to 60 in 16 seconds. Effortlessly cruises up to 90 mph, quietly. Power-smooth automatic transmission is an option hard to pass up. *Economy!* Owners report up to 30 miles per gallon. Low suggested retail price includes 47 safety and comfort features. Get your hands on a Toyota today. You'll be amazed how much you get for so little money! **\$1760** MSRP

While side wall tires, accessories, options, freight and taxes extra.

TOYOTA CORONA

TOYOTA MOTOR DISTRIBUTORS, INC., Western Division 2955 West 190th Street, Torrance, California 90561 • MID-SOUTHERN TOYOTA LTD 1640 N. La Salle Street, Chicago, Illinois 60614 • TOYOTA MOTOR DISTRIBUTORS, INC., Eastern Division 231 Johnson Avenue, Newark, New Jersey 07102



You'll Never Let Go!

Toyota, Japan's No. 1 Automobile Manufacturer.

Thursday night!
the most zowie show in the west!
LOOK-IN: CAMPUS '67

it's the fashionworks! Disco setting!
Two terrific musical groups! Lightworks!
Terrific models! Recording and television stars!
And every girl* receives a bright tote brimming with gifts... door prizes, too...
be with it at 7 o'clock Thursday evening
I. Magnin Los Angeles 3240 Wilshire Boulevard
*no dates, please

I. MAGNIN & CO

no charge for tickets, obtain them from the office manager of any I. Magnin store

Ready vacation replacement

I. Magnin, Cory Coffee Service, Manpower
Three workmanlike layouts, I. Magnin dispenses with all illustration, relies on exciting headlines, white space and matching copy, to assure reader of delivering on overall promise. Cory and Manpower ads made good use of single column space and bold typography, though inclined to be a bit 'busy'.



skilled, experienced specially trained office help
Call for the GIRL IN THE WHITE GLOVES from MANPOWER
THE VERY BEST IN TEMPORARY HELP
An Equal Opportunity Employer
264-0237
3500 N. Central
G.B. Square

New! On-the-job coffee break!

Finest quality fresh ground coffee... brand of your choice... brewed right in your office or place of business —with CORY, world's finest automatic coffee brewing equipment.



For only 5¢* a cup!
cream and sugar included.

- No capital investment!
- Free installation!
- You pay only for number of cups consumed!

*For large users, as low as 3¢ a cup
Call or write:

CORY COFFEE SERVICE PLAN, INC.
2930 N. 30th Ave.
Phoenix, Ariz. 85017
Phone: (602) 278-8571
Rush details about the Cory Coffee Service Plan.

NAME _____
COMPANY NAME _____
ADDRESS _____
CITY _____ STATE _____
TELEPHONE _____
© 1967 Cory Coffee Service Plan, Inc.

WHAT'S
1
Mile
High,
a 2
Hour
Drive
&
WIN
A
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D
G
E

Lodge at Lake Arrowhead
A good example of 'art gone wild'. There is very little right about this ad. Headline type is 'busy', hard to read. Tiny pine trees, in body copy, also slow down reader.



CALL AVIS FIRST!

An Avis car is ready to go day and night—ready as only Avis can make it ready! Try Avis first for a new Plymouth, Dart, GT or other fine car. Rates include gas, oil, insurance. Major Credit Cards Honored.



1207 West 3rd Street
Los Angeles
California
Avis rents all makes of cars... features PLYMOUTH.

HOT REAR WINDOW ?

NEW AMAZING SCREEN OF DUPONT MYLAR FOR ALL CARS. ALL SIZES ROLL UPS FOR DOORS. NEW REAR WINDOW TYPE TAKES UP NO HEAD ROOM. FOR YOUR VACATION TRIP KEEP THE FAMILY COOL. ENJOY THE VIEW WITHOUT THE HEAT. PERFECT NIGHT VISION, REDUCED HEADLIGHT GLARE. PREVENTS UPHOLSTERY FADING AND ROTTING.

Free Installation

1723 W. CAMELBACK

SHADOW SCREEN Co.

10% OFF WITH THIS AD!

SCE, Shadow Screen, Avis
Three interesting, medium size newspaper ads. SCE and Avis ads are professionally produced. "Hot Rear Window?" violates most rules of good layout, typography, etc. but with headline promises to solve a specific problem and makes specific offer.

The Gas Company lowers your rates for the 6th time in 5 years.



(And soon you'll be getting refund number seven.)

SOUTHERN CALIFORNIA GAS COMPANY

Three minimum size layouts. A to Z calls on heavy border and outline of heart to catch eye. It could have used a headline. GB ad is straight billboard style with proper emphasis on 5 per cent interest. If you have one thing to sell, SELL IT! Even a mediocre cartoon will get attention on a busy newspaper page, especially if it offers humor and conveys an idea.

A to Z, GB, SH&A

How to...
A to Z...
GB...
SH&A...

Lodge
AT LAKE ARROWHEAD
RENTAL CENTER

BEAUTIFUL LAWNS are made with love and the right equipment. Borrow mowers, tillers, sweepers, edgers, pruners. Borrow anything else your heart desires from A to Z.

EVERYTHING you need for professional landscaping from us!

A TO Z RENTAL CENTER

OPEN DAILY 8 to 6 — SUN. 9 to 3
3630 SO. SAVIERS ROAD
OXNARD — Phone 487-5491

TOP DOLLAR SAVINGS PLAN

5% DAILY INTEREST

GB

GUARANTY BANK
Phone: 254-9696 (all offices)
MEMBER F.D.I.C.

SUPER TV
400 Main Street
Anytown, U.S.A.

CABLE CUTIES...

GEE MOM, THIS CAKE DOESN'T TASTE NEAR AS GOOD AS IT LOOKS ON THE CABLE.

If you argue that the above ads have nothing to do with selling Cable TV (with one exception) it only proves you may be

in a rut. Creative advertising leans heavily on the association of ideas.

growing coverage of world-wide news and sports. Or it might be simply variety — the basic idea of wider program choice — more channels etc. which CATV delivers. Whatever main idea you want to get across, you have to decide in advance: you have to make a commitment

to one central theme, and one dominant mood. Once these are decided, the rest is largely a matter of combining technique and common sense; of understanding the conditions and limitations under which your newspaper advertising must function. Remember

Hints on Layout

Choose illustrations (photos or drawings) that show real people doing interesting, believable things. If it's not possible to take your own, there are good stock photos on every conceivable subject which can be bought for \$5 to \$10 from commercial photographers in most large cities.

Avoid trying to crowd too many ideas or illustrations, too much copy, into an ad. Even when it's a full page, you scare readers off.

Use white space to give ads a cleaner, inviting look.

If your budget can afford it, use ads large enough to 'dominate' the page (4 columns by 12" or more). This works to create an impression of a strong, stable, successful business in the minds of some people. If you cannot afford 1/4 to 1/3 page units, the adept use of white space, typography and borders can somewhat offset the disadvantages of small space.

In general, avoid the typical layout devices which have been so overused in retail store advertising, i.e. reverses (white on black), complicated or unjustified

borders, bullets and other graphic symbols (unless used with restraint), headlines that tilt or run around the sides of the ad, and similar tricks. Most of them serve no real purpose and only make more work for tired eyes.

Work hard to get a happy 'blend' of basic idea, illustration and headline. Remember that these, plus a balanced, unified layout, are all indispensable elements in achieving effective newspaper advertising.

The most important words in your ad are your company name, and Cable TV. Use them in the headline if it can be done in an easy, unstilted manner. If not, at least make sure the person who 'reads and runs' will know at a glance who is advertising, and what is being advertised.

Finally — it's not what you put into your ads but what your reader gets out of them that counts. That means giving him something to remember you by — ideas he can use, delivered in the right dress. An old Chinese proverb says, "Quality, like a beautiful woman, easy to recognize, hard to find, harder to keep." Making your subscriber advertising look like Quality is the best way I know to sell CATV.



CATV Construction and Engineering

Consider the requirements of your CATV system.

Henkels & McCoy, Inc. provides you with skilled personnel, the latest equipment and valuable experience in:

- Outside Plant Engineering
- Transmission Engineering
- Installation of Head End Equipment
- Clearance Make-Ready
- Pole Line Construction
- Aerial Line Construction
- Underground Construction
- Placing Electronic Components
- Placing House Drops
- System Balancing

Eighteen years in CATV systems construction, and over 40 years in utility construction and practices have taught us what is needed—well versed in installation of all types of cable and electronic components.

This experience and capability as the nation's largest independent telephone and CATV contractor is available to you. Discuss your needs with your Henkels & McCoy, Inc. district office, or send for a brochure describing H & M services.

East Coast

Jolly Road
Blue Bell, Pa. 19422
Tel. (215) Mitchell 6-8000

Central States

1800 Johnson Street
Elkhart, Indiana 46514
Tel. (219) 264-1121

West Coast

14531 E. Garvey Street
Baldwin Park, Calif. 91706
Tel. (213) 962-3271

Southeast

3629 45th Avenue, North
St. Petersburg, Florida
Tel. (813) 525-1482



HENKELS & MCCOY, INC.

your ad (even a full page) never stands alone in the newspaper. It must compete with all sizes and kinds of ads on the same or facing page. Is your illustration striking enough, your headline large enough to stand up to the competition of other ads? It *always* helps to strive for a clean, uncluttered look, with sufficient white space "framing" the message. And if your budget can't afford a large ad, be sure your headline is bold enough to stand out. Sometimes a special border helps.

There is only one way to be sure your layout is competitive. Place the actual rough on a newspaper page and see how well it stands out against all the other advertisements. In the process, ask yourself these questions:

1. Does the ad say "CABLE TV" in clear and unmistakable terms?
2. Does it illustrate people enjoying CABLE TV?
3. Does the name of your system also stand out, making it clear just who it talking?
4. If you are making a special offer, is it featured in a box, with a coupon, or how? (Be sure your copy answers the what, when and how much of the offer.)
5. Finally, does the layout pull the eye to the right spot — somewhere slightly above and just left of the center?

Look at the sample layouts and ad examples to see how they direct and guide eye movements in proper sequence. All this, of course, takes practice. But even if you never aspire to being an expert layout artist, you should know the good and bad points to look for in an advertisement.



**BEAVER
TELEVISION
ASSOCIATES**

- BEAVER LOG C.A.T.V. ANTENNAS
- BEAVER PARABOLIC ANTENNAS
- ANTENNA ENGINEERING
- TOWER MANUFACTURERS
- "TURNKEY" CONSTRUCTION OF HEAD END SYSTEMS

"Last year Beaver representatives, travelled 125,000 miles serving the North American Continent."

288 EDDYSTONE AVENUE
DOWNSVIEW, ONTARIO, CANADA
TELEPHONE 416-635-0320



“We’d like to put our 20 years’ tower experience to work for you.”

For two decades Fort Worth Tower Co., Inc., president T. W. “Tommy” Moore has been building high quality communications towers. His experience, coupled with state-of-the-art design and manufacturing techniques, is your assurance that a Fort Worth tower is the most reliable tower you can buy.

Since the early days of CATV, Fort Worth Tower Co. has **specialized** in CATV towers and support equipment. Properly supplying the growing CATV industry is a full time job . . . not a side line. Every tower is individually engineered to fit each system’s unique requirements — and at economical prices.

TV Communications



Fort Worth Tower Co. offers a complete array of support equipment, including headend buildings, micro-

wave reflectors, equipment lifts, and many other related items. You get maximum performance with a per-match of equipment and accessories.

Wide experience . . . specialized products . . . economical prices . . . All reasons why Fort Worth Tower Company is still **LEADER IN ITS FIELD**. For full information, write or call collect today.

Fort Worth Tower Co., Inc.

P.O. BOX 8597 / 5201 BRIDGE STREET
 FORT WORTH, TEXAS 76112 (817) JE 6-5676
 DALLAS PH. (214) AN 4-2822

Commissioner Johnson: The Future of Cable Television as a Regulated Industry

Nicholas Johnson, newest member of the FCC, recently made what is considered to be a major speech on CATV and its future as a regulated industry. His remarks, entitled "Taking Hold of the Future: Issues in Cable Communications Policy," which were delivered last month at the NCTA regional meeting in Philadelphia, are published here in full.

The cable television industry has written one of the most exciting chapters in the history of American enterprise. For years we have heard forecasts of a revolution in communications. In eager anticipation, we look to the armies of scientists laboring in corporate, government, and university laboratories. Their contributions have been substantial. But it is you — not these great collective institutions — that have turned out to be the advance guard of our communications revolution. You have made its promise real — in terms of service to the hamlets, suburbs, and cities of America. Ten years ago you served a mere 300,000 subscribers. Today, in spite of severe regulatory restraint, over 3 million subscribers willingly pay for your service. And in achieving this success you have challenged assumptions and habits of thought which have for decades shaped federal policy.

A Common Challenge

NCTA Chairman and former FCC Chairman Fred Ford has chastised the Commission for not "properly preparing itself and its staff for assuming the responsibility for the CATV industry that its claim of jurisdiction would thrust upon it." I agree. On the other hand, at least a part of the blame must fall on you — on the cable industry itself.

Take a case in point. In July of 1966, Philadelphia's Suburban TV Cable Company requested that the Commission authorize the conduct of an experiment designed to test the impact of CATV activity in four nearby Philadelphia suburbs. Last

month, the Commission rejected Suburban Cable's proposal outright. I dissented from that decision. I especially regretted the FCC's reluctance to shed the strait-jacket of judicialized procedures, engage in experimentation, and plan with you for the future the way an administrative institution ought to. But can it not also be said that Suburban Cable's proposal was too little and too late? Why are such suggestions only now reaching Commissioners' offices? Might they not have received a warmer reception before the FCC committed itself to its present policies than afterwards?

You have come so far, so fast, that it cannot be surprising that the FCC was not quite ready for you — just as the American Telephone and Telegraph Company and the broadcasting industry were not ready for you. In fact, I think you may not yourselves have been ready. You

may not even now be altogether prepared to cope with the implications of your own explosive growth. Originally, CATV operated only at the periphery of the television broadcasting system, in West Virginia's foothills and on Montana's plains. Success has ended that. The prospect of putting 12, 20, 40, or more channels into virtually every home in America, at costs of thousands of dollars per linear mile, resembles CATV's first incarnation about as closely as the SST resembles a Ford Trimotor.

Your future presents problems radically different from your past. Problems which are not simple. Problems which we cannot by any means ignore. And, I wish to emphasize, problems which both of us, the Federal Communications Commission and the cable television industry, have in common. We both need to decide where to go from here. We both want to predict and to shape the communications system which will be operating five, ten, twenty years hence. You want to ensure for yourselves the largest possible role in that system. The FCC wants to ensure that the system that eventually comes into being will be the one best designed to serve the public interest.

Under these circumstances, your long-run interests should not diverge substantially from those of the Commission. Specifically, it seems to me that we share interests in two very important objectives. First, we both want to see the future of CATV determined by research, analysis, and rational planning, rather than by the present combine of emotional arguments, political squabbles, factual ignorance, obsolescing policy-assumptions, and lawyers' speculations. Second, we want to see cable television acquire a wholly distinct



Commissioner Johnson.

identity — not just as a technique, but as an end-product; that is, we want to see cable systems become a source of information and entertainment for the home which simply cannot be had through any other medium.

In a moment, I will elaborate my conception of our common interest in pursuing these objectives, together with some thoughts on specific steps which the cable industry and the FCC might consider in their achievement. First, however, I would like to give you a sketch of my view of the full range of issues raised by the success story which has brought us to this point.

The Issues in Cable Television: An Overview

Like any new wave of communications technology, "cable television" carries in its wake a vast assortment of technological, economic, political, legal, and social questions which neither you nor I can ignore. Let's look at some.

1. What is "cable television"?

Many of your judgments, and ours, about your future turn on our conception of your mission and capacity. What is "cable television"? On our answer to that question turns a great deal.

Technologically, cable television is just another wire, like the telephone wire, coming into the home. It isn't much bigger than a telephone wire. And yet comparing its capacity to move information with the telephone cable is like comparing a river with a garden hose. Today it carries television signals. But it can also carry the signals necessary to print a newspaper in a home, connect a home information center (or teaching machines) with a distant computer, or provide closed circuit television signals for visiting with friends or "window shopping" from home.

The telephone company offers a similar service — with less capacity. Are we creating a new "telephone company"? The telephone system is just lots of wire, a system for switching calls, and microwave interconnection of cities. All that you cable television men lack is the switching system.

On a more limited scale, how

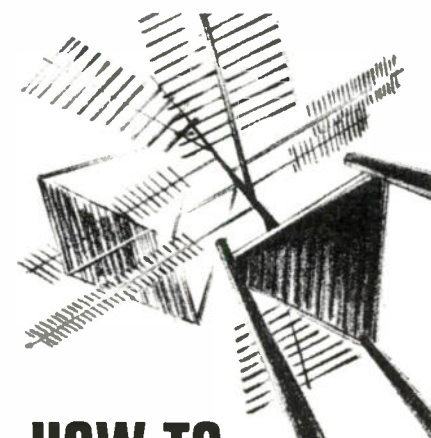
deeply are "cable television" men in the "television" business? Today you serve the functions of a telephone company and local station: you distribute pictures across the country by microwave, and you carry the signals from local outlets to viewers. Should you also consider entering the programming business: creating ideas for shows, recruiting and employing talent, financing and producing, and contracting with "affiliates"? One-third of the CATV systems are engaged in limited local programming. But the fact is that "cable television" is still trying to find itself, and does not have today a defined conception of its mission.

2. What is the significance of cable television for our present system of local broadcasting?

Whatever you cablemen may someday become, you provide today little more than an alternative source of present-day television programming, and are thought of as such by the broadcasters and the FCC. Although there is little economic data to justify their fears, broadcasters have argued that CATV unleashed would bring the demise of local broadcasting stations (and impede the growth of UHF independents) and their substantial contribution to the local democratic process. Some areas receive broadcast signals that would not receive cable — most especially the rural areas. Are they to be left without service? The odds are some broadcasting stations will always be left (none have yet gone under from cable), and even if not, "translators" could be used to cover the less populated areas.

Perhaps we can reduce the high per-mile costs of laying cable to the extent that wiring sparsely settled areas could become feasible. Or perhaps the short-hop microwave facility developed by Hughes Aircraft and TelePrompTer could make extension of a cable system to outlying areas economically viable. Perhaps not. It may be vital to know. (To the extent cable television is desired because it will free up frequencies for industrial and public safety uses in the cities, the rural areas don't suffer the same frequency shortages.)

What about "cable radio"? There



HOW TO PICK YOUR CATV TARGET AND HIT IT

Thinking of CATV? Or maybe a rebuild or expansion of your current system? Whether it is one mile or a thousand... wherever your location is throughout the nation... Robert G. Owens, Inc. can provide expert assistance.

From concept to completion... any portion... or an entire turnkey job... we focus more than eighty management years and thousands of miles of actual aerial and underground design and construction experience on your needs.

As an independent contractor, we guarantee you the finest selection of components and materials to fit your individual requirements as well as continuing management, engineering, and consulting services.

Specialists since 1957 in CATV construction and telephone contracting.

ROBERT G. OWENS, INC.

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are far more automobile and portable radios than television receivers. Would they lose the present service? So far, at least, cable has been limited to television. And radio takes little frequency space anyway; little would be saved by putting it on cable. (All AM radio broadcasting occupies a little more than one sixth the frequency space required by one TV channel.)

Can cable TV actually become a vigorous originator of a new genre of programming? Where are the programs to come from? Network programming may cost hundreds of thousands of dollars an hour to produce. Advertisers believe the expenditure warranted only because of the tens of millions of viewers in a television audience given but three choices. There does not appear to be a surplus of wasted talent under the present system. If we have difficulty keeping three outlets filled 18 hours a day today, how do we propose to provide high quality diversity on 20 channels?

Even if the talent were available, how is the programming to be paid for? Broadcasters argue that cable television is merely another form of "pay TV": charging for what broadcasters supply for free. This is something of an over-statement in view of the \$20 billion the viewing public has invested in equipment, and the \$3 billion they pay for goods each year to cover the added cost of advertising on radio and television — a rather steep price to pay for "free" television. Nonetheless, American television viewers today, including large numbers of our poverty-ridden, do not have to pay an itemized, additional monthly charge for television programming. Obviously, this is a far less serious problem so long as broadcasting stations are not run off the air, and the viewer has a choice between cable service (with its improved quality and additional channels) and "free" broadcasting service. So long as the choice remains, the viewer also has the option of cancelling the CATV service once installed.

As its exponents tell us constantly, cable offers the potential of much greater diversity than broadcasting — with its potential of 20, or more, channels. Such increased diversity offers the oppor-

tunity both for programming directed to "minority" audiences, and increasing the potential means of expression for large numbers of citizens. Television can take on more the character of radio — with its dozens of outlets in large metropolitan areas — once 20 or more channels into the home become reality. Programming for specialized splinter groups becomes possible. Educational programming in the formal and informal sense is easier. But can cable TV really deliver on this potential? Are the ideas, money, talent and audience support available to exploit its technical capacity for variegated programming.

And finally, what about copyright? So far, the cable companies have acquired their programming product for nothing — off the air, like viewers. Many stations and advertisers did not originally complain; they got greater coverage and exposure of commercials. Now broadcasters are pushing for copyright protection. CATV will have to buy its product for redistribution. This will increase cable's operating expenses, with pressures for increasing the monthly fee; it will also increase the pressure for development of CATV's own programming product.

Whatever their merits, arguments about the "local expression" of local stations, the value of "free" television, and the wide area service of broadcasting (especially to rural areas) have been at the heart of the FCC's limitations on cable's growth and cannot be ignored.

3. What are the implications of, and for, future technology?

Ultimately the public pays for any massive private investment. And once the investment is made, it heavily tips the scales against future innovation. The possibility of direct satellite-to-home telecasting will very shortly be upon us. It promises to be much cheaper than any present system for national distribution of programming. It has been, so far, successfully opposed by the broadcasters, ATT and Comsat — all of whom stand to lose from this public benefit. Once millions, or billions, of dollars have been invested in a national cable television system, there will be yet

another industry to join in the pressure against change. And both cable and satellite investment have implications for the next wave of technology: the even more efficient land-based wave guide and laser beam system.

If we are to have a national cable system, perhaps we should give some attention to standards, and build a system for the 1970's and '80's. If we want 20 channels (or more) nationally they will have to be prescribed. Cable offers the potential of switching systems to and from the viewer: programming directed to a precinct or block; viewers "voting" in surveys, turning television into two-way communication. (At the very least it would be possible to have precise audience surveys, with computers sampling, and tabulating, each viewer's program choice many times a second.) Cable systems do not now possess these capabilities. If they are desired, it is far cheaper to build such features into systems as they are constructed than to add them later.

4. What are the needs for government regulation, or other protection of the public interest, regarding cable television?

No one likes, or proposes, government regulation for its own sake; it is never more than second best, and yet sometimes indispensable, when consumers (or an industry) are not fairly treated by market forces. Are there needs for regulation of cable television?

At the outset, one must note that there are significant differences between present cable television owners (and systems) that affect our answer and analysis of that question. Systems' customers may vary from 100 or so in an apartment house to 20,000 in the largest system (San Diego). Some merely provide clearer signals of local stations (New York); some bring in nearby signals to provide a full range of all networks' programming; others import signals from hundreds of miles. Some have three channels; others twelve. Some provide programming (usually just weather, or "news" from a camera on a news ticker); most do not. Ownership differs widely. Most systems are owned by local small businessmen. In-

ingly systems are being acquired by multiple-system owners, equipment manufacturers, telephone companies, newspapers and others in the print media, broadcasters (possibly serving the same area as the cable system), and large conglomerate industrial concerns. Cable television now includes CBS, GE, Kaiser Industries, General Telephone, RCA, Time, Inc., and more than 100 independent telephone companies among its ranks.

What is the public's interest in this new enterprise? Picture quality, for one. There must be some standards, procedures for checking — and for processing complaints.

Pricing, for another. Most cable systems are, or soon become, monopolies. If they should not be permitted to charge what the market will bear, how (and by whom) should their rates be regulated? Should they, for this purpose, be limited to a "reasonable rate of return on investment" like the telephone and electric companies? Or should competition be required as a check?

There are engineering standards and compatibility-of-systems requirements for telephone and electric companies. Should there also be for cable television companies?

How about the rate of introduction of new technology? The added investment costs may require rate increases, but improve service. Should the companies be left to make these judgments without public participation?

Historically the public (through the FCC) has been quite concerned about the ownership and programming of local broadcasting stations. Competition and program diversity have been required by law and Commission decision. No one can own television stations with overlapping signals. Newspapers are not favored as broadcast property owners. No one can own more than five VHF and two UHF stations. Do not similar considerations apply to the owner of the only twenty-channel CATV system in town — especially if he also owns most of the systems in the state, and a string of newspapers?

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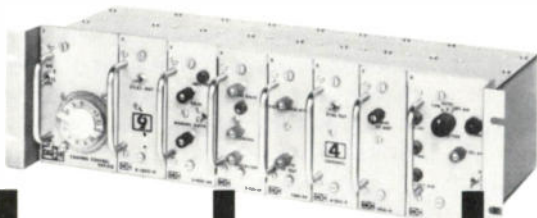
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vision may have little more economic incentive to start or continue such programming than local broadcasting stations. Should the public insist upon an equivalent obligation being imposed upon you? Will such local programming be seen by fewer viewers on one of twenty channels than on one of three or four today? How will it be promoted by CATV?

How about the law providing that stations must provide "equal opportunities" to political candidates once having afforded time to their opponents, and must treat with "fairness" all sides of "controversial issues of public importance"? Why should cable operators be exempted from such canons of decency? It does not necessarily follow that this regulatory job should be done by the FCC. Perhaps the public would be better served by state agencies, or local. Perhaps a system can be devised with adequate public protection utilizing competition in the market place. Possibly the industry could design self-regulatory schemes. But the public's interest in a properly functioning cable system is substantial and real and is ignored or rebuffed by the industry at its peril.

Few of the issues I have sketched will strike you as totally new. And I confess to having answered even fewer. But I think it useful to at least begin our dialogue with some level of agreement about the questions before us. And this is my offering. I welcome yours. Now let us turn to a selected few, and consider some proposals.

Coping with Technological Instability: Some Suggestions for the Businessman

The issues before us are enormously complex, intertwined, and virtually limitless in their implications. They are a heady brew to digest. Yet they must be digested if one wants to chart a future course for the cable television industry. How can the cable television industry cope with this uncertainty? What should be your response to the challenge of continued growth and prosperity, poised as you are on the brink of radical change in your technical

and business environment? Let me offer three suggestions.

1. What's in a name?

First, I would like to suggest that you consider changing your name. I offer this suggestion only half-facetiously. Indeed, I note that in your short history you have changed your name once already. Originally the "National Community Television Association," you are now the "National Cable Television Association."

What's in a name?

"A rose by any other name
Would never smell the same
And canny is a nose that knows
An onion that's been called
a rose."

Nor is a business or other institution the same by any other name. Consciously and unconsciously, a title shapes your conception of mission and purpose. A "container" company has less difficulty adding plastic containers to its product line of tin cans than a "can" company. A "steel" company will be slower to move into the aluminum business than a "construction materials" company.

Your recent rechristening records the fact that you have progressed beyond the business of simply piping television signals from central antennas to underserved communities. But is not "cable television" also too limited? After all, a cable which carries 20 or perhaps many more channels can bring more than simply "television" to its customers. Perhaps you should think of yourselves as members of the "cable communications" industry. But that may be a misconception as well.

Coaxial cable is no more than a technique, a technology. There are, or will be, other ways of doing the jobs cable can do. Perhaps better ways, cheaper ways. For example, many of you are already using microwave relay in your "cable" television operations. Maybe it would be more prudent to consider yourselves in the "home information and entertainment" business, or in what Robert Sarnoff has called the "knowledge industry." If you do not now adopt some such functional definition of your task, and continue to think of yourselves as "cable television"

men, you may be outflanked by someone else's communications system. What is the role of cable in a world of laser beams, pulse-code modulation, electronic switching, communications satellites, and wave guide techniques? Smell the difference when we give this rose another name?

2. Public planning: a boon for cable television

Second, I would suggest that you support the development of meaningful planning capacity by the FCC. The cable television industry and the FCC share a desperate need in this respect. We operate in an environment in which developments are to a great extent planned — but not by you or me. Professor John Kenneth Galbraith has recently argued (in *The New Industrial State*) that the ability to plan has brought great economic and political power to the nation's great corporations. Nowhere is his analysis more relevant than when applied to the communications industry.

None of you can create a 15,000-man Bell Laboratories. None, can very often or in significant depth, ask a John Diebold for advice concerning the business implications of research and development activities being conducted by your giant competitors. Few can contract out development functions to a Hughes Aircraft. But don't feel alone. Neither can the FCC.

The government cannot even identify, let alone defend, "the public interest" unless it can begin to match the planning capability of the large corporations it "regulates." Ignorance of the future inevitably induces fear of change. Inability to plan ties a regulatory agency to the *status quo* — sometimes defined as "the mess we're in now." It ensures that innovation will be introduced only when it suits the interests of those who do have the wherewithal to plan. Such a situation is fully as inimical to the interests of your industry — which depends for its prosperity on the introduction of change — as it is to the interests of the public in general. If the FCC is to be freed from practices and policies of passing relevance, you must help the FCC free itself.

3. Program origination: the best guarantee of security

Finally, I want to suggest to you what I conceive to be your surest form of insurance against technical obsolescence and the antagonism of public authorities. You must turn your attention, as indeed you have begun to do, to program origination.

The latest statistics indicate that 527 CATV systems, 36% of the total, are today becoming involved in program origination. I realize, or course, that most of these efforts do not appear enormously impressive if compared, for example, with the ABC network's recent four-hour feature on Africa. The cable television industry is not now equipped to enter show business on a grand scale — though in truth, almost no one in television except for the networks and the movie producers and the New York and Hollywood program companies can be said to be in show business in any meaningful sense. But weather, news, and movies add up to a start, and an encouraging one. I expect bigger things to supplement them. Or perhaps I should not say "bigger." For one of the most exciting contributions of cable television may be the discovery that useful and popular information and entertainment need not cost hundreds of thousands of dollars an hour to produce.

In this connection, I wish to emphasize something which your trade publications and others have already emphasized. Cablecasters can give serious challenge to the local broadcaster on his own terrain — local expression. You, too, can bring into local homes the views of local political candidates, the play-by-play of high school football games, or the activities of local civic and social action organizations. Great amounts of money are not necessary to put such matters on your cable; vast audiences are not necessary to justify the investment. And the goodwill you will earn thereby is an asset of immediate and enduring value.

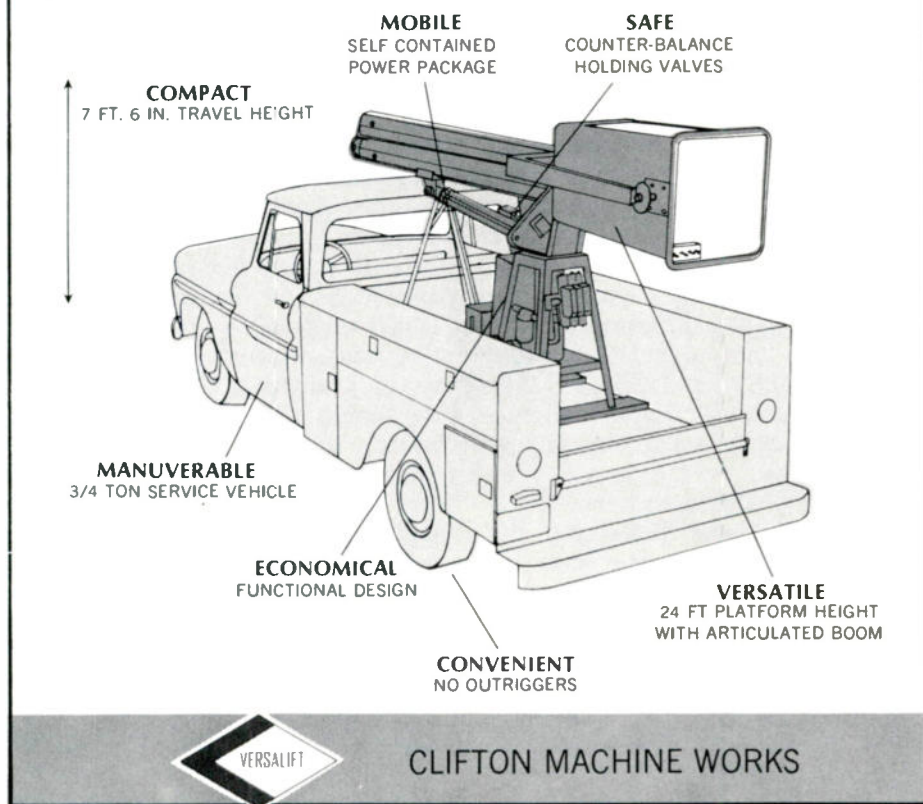
Most important, cable television offers a technical and economic basis for charging with real meaning the hackneyed term "program diversity." Diversity has always

been one of your great selling points. But generally it has meant simply the addition of an extra network or independent station. And now that most systems provide six to twelve channels, all too often it simply means providing multiple outlets from the same networks. The economics of broadcasting induce all stations to aim their programming at the largest possible vast undifferentiated mass. There is little opportunity or reason to seek out discrete groups within the mass of regular

viewers, or to appeal to groups whose interest in the broadcaster's product is so slight as to leave them altogether outside the regular TV audience.

For example, a television station in Buffalo may want to produce a program of interest to citizens of Polish descent. There may not be a sufficiently large potential audience for the program in Buffalo; however, Detroit and Cleveland might be able to provide the additional audience necessary to justify the program. As things stand now,

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the Polish program would in all likelihood never be shown. Our present system of broadcasting apparently does not induce station owners to find the means for thus linking minority groups within their own community with smaller groups in other areas.

Cable may be able to change all this. It has two technical advantages of great potential importance. First its channel capacity virtually obliges the simultaneous carriage of a wide variety of programming aimed at a wide variety of audiences. Second, a cable system could, if so designed, reach selected geographic portions of a city which correspond to particular social and economic groupings. Technically, it may be possible to have different areas of a city receive their own particular combination of channels. Perhaps cable could become a viable medium for inter-city interconnection of what would in effect be a number of large closed circuit systems. Whereas a local broadcaster may not be able to justify programming aimed just at the intellectuals in his market, or at the local Negro community, or at aficionados of sports cars, a regional or even a national cable network might be developed that could enhance its appeal significantly through such specialized programming.

These are stirring vistas. Some may seem presently beyond the reach of the cable television industry. But they do not seem to be obviously so. And, in any event, I can say without reservation that it is worth your while to test your ability to fulfill them. Our present broadcasting scheme is a spectacular achievement and a marvelous vehicle for mass communication. But it is a cumbersome medium for serving the variety of interests that make up the public interest. To the extent that you can refine its capacity in that regard, you will contribute mightily to your own prosperity — in 1967, 1977, and, no doubt, 1987.

The FCC and CATV: Planning for Diversity

If the cable industry is to take seriously its potential for changing the face of television programming,

the FCC must take that potential seriously also. I am aware that this is not now the case. I am not happy about that situation. On the other hand, it is not easy for an institution created in 1934 to adjust overnight to the radical developments transforming communications in 1967. It is a complex matter to decide how entrenched assumptions, policies, and procedures need to be changed. After a brief survey of the setting in which communications policy is being formulated, I would like to offer some suggestions about the direction that some of those changes might take.

1. The current regulatory environment

On a narrow view, federal cable television policy is determined by the votes of seven FCC Commissioners working in conjunction with the Commission's CATV Task Force. But the place of cable television in the nation's communications system is affected by virtually all aspects of communications policy and hence by the activities and deliberations of a broad range of federal institutions. Congress, of course, has a big hand in the process. It retains an option to rewrite the Commission's cable policy at any time, either by amending the Communications Act of 1934, or through other legislative action. Presently, as we all know, Congress is actively considering a bill to define the copyright obligations of CATV systems, which includes provisions touching on most of the same concerns motivating the FCC's current CATV rules. On August 14 of this year, the President established a Task Force on Communications Policy. Its mandate includes an order to undertake a comprehensive review of the nation's over-all communications policies, and to recommend changes in the 1934 Act. The deliberations of the Task Force may well significantly affect the future of cable television.

Other federal agencies have responsibilities which bear significantly on the interests of your industry. The Office of the Director of Telecommunications Management in the Executive Office of the

President allocates frequency space among government users, negotiates with the FCC on the division of frequencies between government and private uses, and concerns itself generally with analyzing the future requirements of the nation's communications system and the alternative means which will be available to meet those requirements. The Bureau of the Budget has a continuing responsibility to coordinate and supervise the work of all executive departments and agencies. At this moment it is conducting an inquiry into the possibility of restructuring the federal government's machinery for making communications policy, in response to the President's Communications Message of August 14th.

Virtually every institution in the government has occasion to use television to promote its policies or interests in ways that could be of great significance to the cable industry. The Department of Health, Education, and Welfare, for example, is responsible for discovering and furthering educational uses of television. The Office of Economic Opportunity might be able to use cable television to communicate with its constituency about its programs and services. But for the moment at least, the FCC has found itself the leading actor on cable's stage. The role has not been entirely welcomed by the Commission.

Until very recently, the FCC was mainly engaged in quietly dotting the map with broadcast stations in accordance with its 1952 plan for a nationwide television system in accordance with its Sixth Report and Order. Then, like a genie, CATV sprang up to challenge the Commission's design. Now the Sixth Report and Order is under siege. Not only CATV, but a veritable barrage of technological changes threaten its carefully set priorities. Commissioners face a confusing welter of new inquiries, rulemakings, and hearings. Many of these proceedings, as you well know, vitally affect the interests of the cable television industry.

As we add proceeding after proceeding to our docket, our right hand is too often unaware of what our left hand is up to. At least

ten important rulemakings and inquiries of relevance to you are currently in process. The subject matter of each of these is intimately related to all the others. Yet the flow of petitions, memoranda, and notices associated with each of these matters passes through the corridors of the Commission, from one office to the next, according to its own individual and internal rhythm.

Last week we heard oral argument in Docket No. 11279, our 12-year-old inquiry into subscription television. Simultaneously, we press on with the gigantic task of administering the limitless petitions for waiver and for special relief under the rules for CATV in the Second Report and Order — which is not considered subscription television only because we have chosen to call it something different. In July we launched our Study of New Specialized Communications Developments, a major effort at crystal ball-gazing into the miraculous devices that must soon be absorbed into our plans and programs, such as pic-

ture-phones, facsimile reproduction of newspapers and magazines, and merchandizing via communications media. While this massive study is in its infancy somewhere at lower staff levels, the domestic satellite inquiry will pop up on the agenda of the Commissioners. Meanwhile a *Further Notice of Proposed Rule Making and Notice of Inquiry* concerning the use of translators — a technological alternative to cable as a means for extending a television station's service area — is awaiting the comments of interested parties. And somewhere in the FCC's cavern is a general inquiry into the communications needs and implications of the growth of computer interconnection; possible on your cables.

These separate proceedings are illustrative of the Commission's many windows on the future. By refusing to put them in a common perspective, as some of you recently urged, we deliberately put ourselves in the position of the proverbial blind men seeking to divine the nature of an elephant. There is little reason to expect that rational

policies will emerge from so disjointed a process.

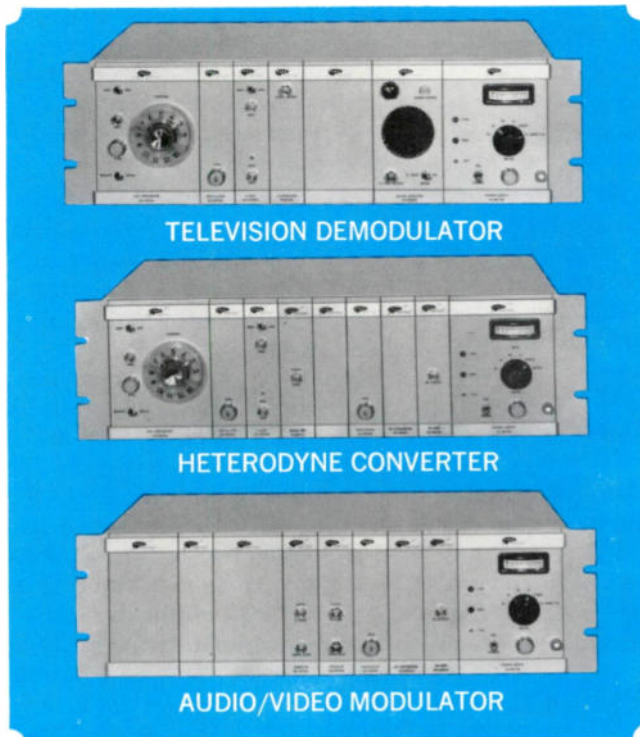
2. Towards an updated TV blueprint

I cannot now offer a detailed scheme by which to order the full array of problems the Commission must face regarding the implications of cable TV. But I would like to offer some suggestions about one set of those problems. It is high time the FCC determine how to use cable television to diversify the range of services the nation receives from its television system.

As a starter, the Commission must reexamine some of the goals and assumptions behind the Sixth Report and Order of 1952. In 1952 the Commission decided to chart the future of television by a polestar denominated "local service." In 1967, it is clear that the means of promoting that value have radically changed. The kinds of services electronic communications can provide have radically changed. And, perhaps most important, the meaning of "local" has changed.

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autonomous, as the Sixth Report assumes? Or do they identify with regional groupings of similar communities, or as satellites of larger urban centers? Do suburbanites identify themselves as members of a metropolitan community, of a school district, or of their block? To what extent is geography simply irrelevant to the kinds of group associations which Americans seek, and which our communications system promotes, in this last third of the Twentieth Century? A professional man today, living in a satellite bedroom suburb, may have far more in common with his "community" of colleagues in the central urban area, or even London or Tokyo, than with his next door neighbors.

What distinctive roles are played by different media? Do newspapers have one function, local broadcast stations another, and cable television yet a third? How will this variety of interests be served when these different services are provided to individual homes over a single integrated complex involving, perhaps, cable and satellite systems linked to computers and switching centers? We cannot answer these questions until we admit that they exist. And we cannot do that until we stop looking upon the Sixth Report and Order as a sacred text. Faith in some aspects of the Sixth Report is fading at the Commission, I believe. But its erosion is occurring silently. No explicit confrontation with the issues involved has been forced. As a result, the dead-hand control of ideas no longer appropriate remains powerful and pervasive.

Outdated assumptions can be found in parts of the text of the Second Report and Order of 1966 on policy toward cable television. Ostensibly, the Second Report's decision to blunt the growth of CATV was designed to give the FCC time to plan. This is assuredly a laudable objective.

But, I fear, the Commission has not used the Second Report to plan. It has passed the buck to Congress. It is hoped that we will have a copyright law soon, and that that law will somehow "resolve" the place of cable television in our communications system.

We cannot expect copyright to solve our basic problems for us. And we certainly must not support copyright provisions which would seriously restrict our freedom to design solutions — such as the limitations on program origination by cable systems contained in the copyright bill presently before the Senate. Our present posture, and the Second Report and Order on which it rests, is to be regarded as purely a sometime thing. We must begin now to consider how we will supplant the restrictions of the Second Report with rules designed not to stifle CATV, but to channel its growth along lines responsive to social needs, in harmony with the other means available for serving those needs.

Ultimately, television, like any other economic activity, must find its justification in the value of its product. The product of television is programs. Its value lies in the degree to which these programs deliver the full range of information, enlightenment, and entertainment demanded by a civilized and democratic society. If cable television can enhance the value of that product, it is up to the FCC to determine how, and to foster appropriate technical, economic, and regulatory changes.

Conclusion and Some Proposals

Few communications problems have proved more vexing during my first 15 months as an FCC Commissioner than those involving cable television. In these remarks I have attempted to share with you some of my present thinking about the issues that lie before us, and the paths that appear most profitable. Here, by way of conclusion, is a summary of some of the proposals I would offer at this time.

(1) The FCC and the cable industry must undertake immediately an intensified effort to comprehend the present facts and future potential of cable. This effort can be undertaken on a number of fronts:

- gathering, analysis, and publication of relevant data from present cable operators;

- a coordinated undertaking of hearings, inquiries, and informal seminars and conferences bringing together the industry, government, academic and research communities;

- the preparation and distribution of contracted or in-house policy papers attempting to analyze the alternatives before us and the consequences of each.

Especially should our research and analysis efforts be directed at the question of how the introduction of cable television into the present system of broadcasting can be used to expand the capacity of the system to serve a wider diversity of programming needs.

(2) Experiments should be designed and carried out to test the economic impact of cable television on local broadcasting stations, especially UHF. They should be designed, with the consultation of the ablest scientific talent available, so as to obtain the maximum amount of relevant information with the least possible cost and disruption of present markets.

(3) A research and development program in cable and alternative technologies should be undertaken to assure the installation of cable systems with capabilities and costs best serving the public interest.

(4) The FCC should do everything within its power to encourage the cable industry's interest in program origination, particularly respecting kinds of programs not now available from networks and local stations.

(5) The Commission should give highest priority to the resolution of its inquiry into ownership patterns now developing in the cable industry and proposals for standards in this area.

Most important, you can use your imagination to seek out new kinds of markets and new sources of program supply for the potential channel capacity of your cables. The best demonstration that a need exists is that someone will pay to have it met. Finding and serving unfilled needs has been your business from the beginning. The job may be a harder one from now on. But it is no less important. And it need be no less profitable. □

The guarantee of QUALITY CERTIFIED construction of every tower has made Utility Tower Company the *quality leader* in CATV tower manufacturing. Unequaled in stability. Unmatched in performance. Utility CATV towers are better engineered, better built. Perfected, time-tested methods are used by experienced craftsmen to fabricate towers for every CATV application. Every tower is tested and re-tested to insure QUALITY CERTIFICATION. Foremost, Utility Tower Company has concern for it's product.

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So if you're thinking seriously about buying a CATV tower . . . think of Utility . . . the company that is serious about building and erecting for you the finest CATV tower you can buy. Investigate the durability of QUALITY CERTIFIED TOWERS. Call Utility today.



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COMPANY

A Formula for Success In Cable System Operation

By Robert M. Melton, Jr.
Cosmos Cablevision Corporation

Cable television is a challenge. This perhaps explains the entry of so many far sighted organizations into its somewhat bewildering, always exciting development. Is there a universal formula for success in the cable television industry? Do the same principles apply in all signal areas, or is the degree of success relative to the market? Why do some systems struggle along while others thrive under apparently similar of circumstances?

Yes, there is a formula! Success and profit will come to any system regardless of size, age and location if the formula is recognized and applied. Simply stated it is:

SHOWMANSHIP + BUSINESS +
COMMON SENSE = SUCCESS

Example: During the first year of operation public response to your system was gratifying. In fact, contrary to popular conception, you did not spend a bundle on promotional gimmicks and advertising. You relied on man's natural interest in something new, paid careful attention to billing and credit on the subscriber rolls, and felt sure your good service would sell itself in a TV deprived community. Result: You have one of the cleanest operations in the industry and also one of the smallest. The initial excitement is gone, the telephone is silent and you are hundreds of customers short of what you projected to be the first plateau. Your system has a severe case of "second year death" that can be cured only by time and an all new promotional effort.

Example: In an effort to capitalize on the high interest of the new fall TV season, your system mounts an intensive promotional effort, utilizing radio, newspaper, and direct mail, coupled with an active direct sales

About The Author

Robert M. Melton, Jr., a native of North Carolina, attended San Antonio College and the University of South Carolina. After four years in military communications with the U. S. Air Force, he spent one year in Customer Engineering with GE X-Ray Corporation; one year self-employed in the radio-TV service business; and four years in electronic distributor sales and management. He is now a branch manager (Cablevision of Sumter, S. C.) with Cosmos Cablevision Corporation, an entity of Cosmos Broadcasting Corporation, and has been affiliated with Cosmos since August of 1965.

canvass. The theme is professional. Multimedia execution of the advertising plan is flawless. A rate break and reduced installation charge add emphasis. Sales begin to come in and extra service men handle the connection load. No sloppy customer service allowed. Excitement and enthusiasm builds and 600 new accounts sign on in a 60 day period. The epitome of success? Not quite. Two months later your system is deep in the throes of a disconnect problem. Delinquent accounts are outrageously high and the cost per subscriber of the excellent promotion is still accelerating.

Example: Your office secretary's conversation with a prospective new subscriber this morning chilled the marrow in your bones. It went something like this. "Good morning, Cable TV. Yes, we can put it in today, what time will you be home? Installation charge? Yes, it's \$9.95. Your neighbor got it for \$.99? Last month it was \$4.50 but \$9.95 is the regular price. Oh, next week we will probably have another special. OK, but do call us back . . ." Not only has the indiscriminate use of rate reductions reflected a limited application of good common sense, it has put the entire staff on the defensive and customers and prospective customers in the dark. Suddenly you wonder how this reflects in your high disconnect rate . . .

Did either example sound familiar? There are many variations but they all show up as one or more weaknesses in the basic formula. Success is derived when the ingredients showmanship, business, and common sense compliment each other. They are to be applied in *equal parts*.

Practice showmanship every day. This doesn't necessarily mean a full page newspaper layout, a massive direct mail campaign, or a press release. Although advertising and public relations programs are necessary tools, the brand of showmanship in our formula sets the stage for the entire operation. The best kind of showmanship begins with an excellent product and the pride it generates within an organization. Your system never has a "complaint call" only requests for "technical assistance".

When asked into a customer's home to evaluate reception, look upon it as an opportunity to cement relations, sell an additional outlet, or a chance to prompt your customer to endorse cable TV when in the company of a non-subscriber. You can also communicate regularly with the hundreds of subscribers who never call on you with an inexpensive monthly

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Field-proven on anchor locations of high tower guys, BIG-GRIP dead-ends are gaining favor among design engineers and contractors for strength, reliability and ease of application. More and more BIG-GRIP dead-ends are used at the top of the tower, as well as at the anchor.

Before you specify any dead-end fitting, top or bottom, why not review the many advantages of BIG-GRIP dead-ends:

- High rated holding strength.
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- No strand wastage.
- Proper application easily checked by visual inspection.
- Uniform application on all guys.
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Write for complete technical information to PREFORMED LINE PRODUCTS COMPANY, 5349 St. Clair Avenue, Cleveland, Ohio 44103; dial 216/881-4900.

BIG-GRIP, the dead-end with plenty of holding power for big holding jobs.

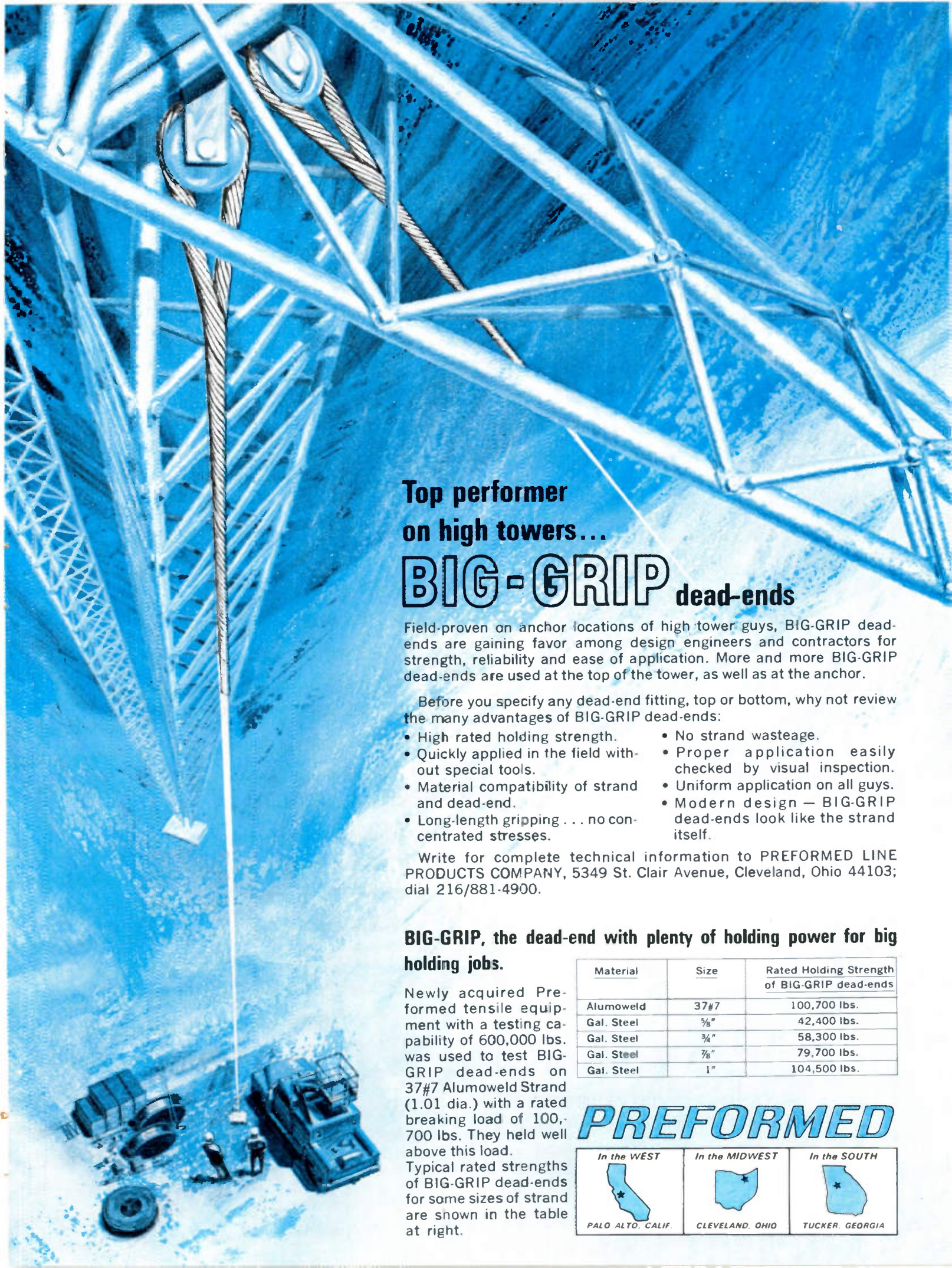
Newly acquired Preformed tensile equipment with a testing capability of 600,000 lbs. was used to test BIG-GRIP dead-ends on 37#7 Alumoweld Strand (1.01 dia.) with a rated breaking load of 100,700 lbs. They held well above this load.

Typical rated strengths of BIG-GRIP dead-ends for some sizes of strand are shown in the table at right.

Material	Size	Rated Holding Strength of BIG-GRIP dead-ends
Alumoweld	37#7	100,700 lbs.
Gal. Steel	5/8"	42,400 lbs.
Gal. Steel	3/4"	58,300 lbs.
Gal. Steel	7/8"	79,700 lbs.
Gal. Steel	1"	104,500 lbs.

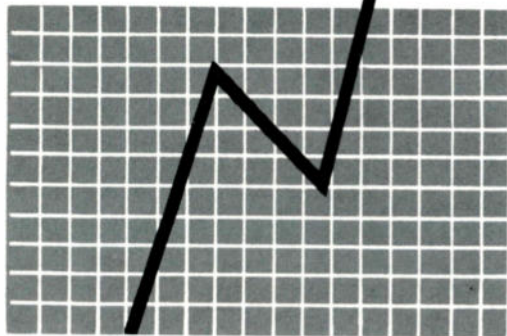
PREFORMED

<p><i>In the WEST</i></p>  <p>PALO ALTO, CALIF.</p>	<p><i>In the MIDWEST</i></p>  <p>CLEVELAND, OHIO</p>	<p><i>In the SOUTH</i></p>  <p>TUCKER, GEORGIA</p>
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newsletter mailed at billing time, to say, "thank you and please remain a subscriber."

The most profitable facet of showmanship is personal contact. Stars need publicity to remain stars; and yet many cable systems seem to endorse the "get'em and forget'em" doctrine. Never forget that your service is subject to cancellation every day. You are continually in competition with hundreds of other goods and services, tangible and intangible. You must continually solicit the allegiance of your subscribers.

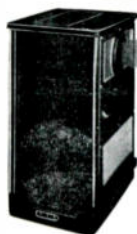
And what about the non-subscriber? I have heard about scores of excellent promotional efforts that would have been even better had the system involved laid the aforementioned groundwork. Showmanship begins when the manager walks into the office each morning, when the receptionist answers each phone call, and when the service man drives to the farthest customers house to find the TV set unplugged.

Remember that business is profit and loss. Multiply your average monthly rate by your current subscriber roll. It should reflect your deposit, not the deposit you wish you had! Judging the success of your operation by the number of customers rather than the cash you are actually receiving is not an uncommon trap. As cable operators, we work hard every day for *one more subscriber* but we sometimes fail to remember that "nothing is sold until it is paid for". By all means promote, but be certain that you are promoting a sound business image. Uncover the real cost per new subscriber in your past efforts. Does it pay to bring on 10 new accounts if your failure to establish the true value of your service loses seven of them back for non-payment or apathy? Don't sell your own service short! Bind showmanship and good business practices together with a strong adhesive, common sense and you will have created a success formula second to none. Your own common sense will tell you when to promote and when not to; when to reduce your installation fee and when not to; when to expand your system and services and when not to. Rely on it.

Cable TV will continue to be a challenge. We are a young industry, with many rules still to be written. The basic ingredient for a successful industry nationally is a successful system locally. Make the formula work. □

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SEVERAL TERRITORIES AVAILABLE FOR DISTRIBUTORS

Just about every piece of electronic gear made these days seems to be described as "modular". Anything in which one part plugs into another is "of modular construction".

In itself, the idea is a good one. A complex device is built as a number of small sub-assemblies . . . or "modules". The main advantage is in servicing speed and convenience. If the unit develops a fault, the offending portion of the circuit can be quickly and easily replaced with an identical module. The unit goes back into service immediately, and the removed module can be repaired later.

Getting around to CATV amplifiers (as you knew we would) some designers have made almost the entire workings of their amplifier as one so-called "module", which simply plugs into the waterproof housing. Others have created modules in various-sized little metal boxes which fit together inside the housing.

Donn Nelson and his talented team of design engineers burned gallons of midnight oil developing a truly modular amplifier to bear the name "CASCADE".

They started by designing solid-state amplifiers with a unique thermistor-controlled Temperature Compensation system. Determined to build the best, they cut no corners, and came up with six different "computer card" modules.

a cascade innovation: MODULAR MODULES

The engineers ordered more oil, and designed this beauty:

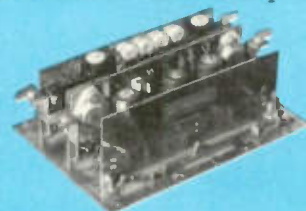


We call it a "C" (or chassis) board. It will accept three of the modules, and become a trunk, bridger, or combination amplifier.

Here's how to do it: Start by plugging a Power Supply module in the middle slot . . . like this:



To make a Trunk Amplifier, add a Trunk Amplifier board in the upper slot, and a Termination board in the lower position.



You now have a Trunk Amplifier. *continued*



#1 is a Trunk Amplifier module.



#2 is a Bridge Amplifier module.



#3 is a High-Gain Preamplifier



#4 is a Low-Gain Preamplifier



#5 is a Power Supply module.



#6 is a Termination board.

Obviously, these modules, in various combinations, would serve in any trunk line application. The brain-bursting part of the job was the design of an interconnecting system that would let you program the function of the unit by simply plugging in the appropriate boards.

CASCADE

CASCADE ELECTRONICS LTD., PORT MOODY, B.C.



continued

If you want a High-Gain Bridger, put a Bridger board in the lower position, and a High-Gain Preamp board in the upper.

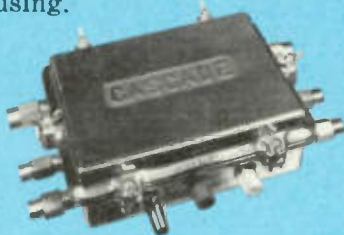


Or, if a Low-Gain Bridger will do the trick, just use a Low-Gain Preamp module in the upper slot.

You want a Trunk Amplifier and a Bridger Amplifier? OK. Put a Trunk module in the top, and a Bridger module in the bottom. Your combination amplifier will look like this:



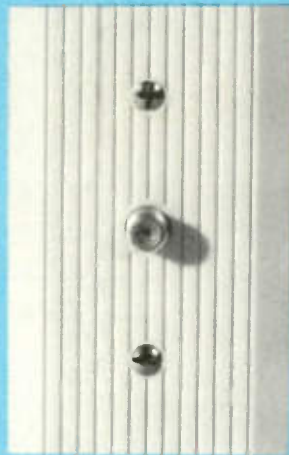
Whatever function you program for, the boards and their chassis all fit this compact, weatherproof, cast-aluminum housing.



This is CASCADE'S idea of "modular": interchangeable, replaceable, flexible. It also means less down-time, less overtime for the maintenance crew, and fewer phone calls from subscribers.

With CASCADE modular amplifiers, you and your system are always ready to take advantage of the latest technology, and you can always redesign your system without obsolescence. For example, these same Trunk and Bridger modules can readily be aligned for low-band-only operation at full gain. Later, if you wish, they can be realigned to 12-channel specifications. To go all the way to twenty channels, just replace them with CASCADE 20-Channel modules. The choice is yours . . . and you can always change your mind later.

Aren't you glad you use CASCADE? Don't we wish everyone did?



CEDW-1

directional coupler WALL PLATE

Be a hero! Free your apartment, motel and institutional subscribers from cable reflection ghosts, pilot carrier beats and local oscillator interference from nearby TV sets.

Now you can save time, save money, and reduce subscriber complaints with this new CASCADE Wallplate Coupler. It incorporates a true transformer-type directional coupler with a high degree of isolation and directivity, accurate 75-ohm impedance matching, and flat frequency response. Unusually low insertion losses mean longer runs and fewer amplifiers.

Installation is quick and neat. The CEDW-1 mounts in a regular outlet box with room to spare, and accepts standard F59 fittings for input, output and tap connections. Rugged and reliable, it features circuitry on a rigidly-mounted glass-epoxy board.

As more and more cliff-dwellers switch to color sets, their tolerance to ghosts and beats goes down. Keep them happy with this high-performance coupler. It's new from CASCADE research! Price \$6.50.

SPECIFICATIONS:

MODEL	Top ± 1db	Maximum Top Slope*	Insertion Loss (Max)	Tap Response Ripple (Max)†	Return Loss Min.			Minimum Directivity
					In	Out	Tap	
CEDW-1/8	8db	.5db	1db	.50db	20	20	12	16db
CEDW-1/12	12db	.5db	.5db	.50db	22	22	16	18db
CEDW-1/16	16db	.5db	.5db	.50db	22	22	18	18db
CEDW-1/20	20db	.5db	.5db	.50db	22	22	18	16db
CEDW-1/24	24db	.5db	.5db	.50db	22	22	20	16db
CEDW-1/28	28db	1db	.5db	.50db	22	22	20	16db

*Linear relationship between Ch. 2 and Ch. 13 levels.

†Maximum peak to valley deviation over bandwidth 40-250 MHz.

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EAST: Dick Yearick, Sales Manager
2395 State Street
Harrisburg, Pa. (717) 232-4111

W. Oneonta, N.Y. Phil Colone
(607) 432-4743

Decatur, Ala. Mason Hamilton
(205) 353-7400

WAREHOUSE: 2395 State Street,
Harrisburg, Pa.

WEST: Jon Westfield, Sales Manager
1085 Emerald Street
Broomfield, Colo. (303) 466-0911

Tacoma, Wash. Joe Derocher
(206) 795-0396

Rohnert Park, Cal. Tom Goodall
(707) 795-3151

Orange, Cal. Steve Richey
(714) 541-2345

WAREHOUSE: 244 South A Street
Santa Rose, Calif. 95401

IN CANADA: Fred Welsh Antenna Systems

5594 Cambie Street, Phone 321-2621
Vancouver, B.C.

90 Beaubien Street W., Phone 276 6363
Montreal, Quebec

LITHO IN CANADA

Three Roads to Liquidity for Cable System Operators

By Horace I. Poole
President, Term Capital for Business, Inc.

Outright Sale

When a business expands very rapidly and cannot be financed internally its sale is often advisable. When the owner of a business advances in age certain events can take place that make it advisable to sell. Estate planning can also dictate the conversion of all or part of an owner's interest in a closely held business to cash or marketable securities.

How to value the business? A business with a poor earnings record is best valued on the basis of its assets and competitive worth. One with substantial and growing earnings can be priced on a ratio of earnings to asking price.

The formulation of a basis for a price vs. earnings ratio should not be left to chance or guess. A comparative study must be developed to assure the best results. Industry study, comparative analysis, profit ratios and projections should be presented in an attractive and authoritative form.

How to sell? Most large companies today want to pay cash for smaller concerns that they acquire. Many variations of a cash transaction can be developed upon the price vs. actual physical assets and the seller's tax position. Sales are made at a round figure payable in all cash immediately, cash equal to book value with the balance related to earnings, a mortgage for the plant value repayable out of earnings, cash and convertible debentures of the buyer and even a sale of the complete business with a leaseback.

Price can depend upon terms. Generally a business in existence for a period of years and solidly entrenched in its community will bring ten times earnings. Management and depth of management becomes a factor and where a single

personality has been responsible for the operation of the business.

The Merger Route

Many CATV owners will be attracted to this "tax free" exchange method of selling their business. Through merger with a public company and the exchange of shares they attain liquidity and at times a greater "quoted" value than they would be selling for cash.

Further, they pay no tax until they sell their shares; receive dividends from earnings coming from more diversified sources; and associate themselves with officers and directors whose experience and capabilities broaden the personal and business life of a seller.

Why do companies which are already successful choose to merge? In the last analysis they do it to increase their own earnings per share. If their stock is selling at ten times earnings their objective is, aside from special situation, to acquire by merger a company for eight times earnings.

Going Public Stock

Where there is need for additional capital to expand a profitable CATV operation, the sale of stock should always be considered. Owners like to be public: to have their stock listed on an exchange or publicly traded is a source of pride. In cases where earnings are large enough to command respect, going public through the sale of shares for the account of the business and the sale of part of the owner's holdings may be desirable. Among the factors to consider in making a decision on this matter are:

- (1) Type of financing best suited to the company.
- (2) Value or penalty for having an open market for the stock.
- (3) Possible profit or loss based

on what the stock would sell for after the offering.

Factors involved in an underwriting:

- (1) What type of underwriter can be obtained for the offering?
- (2) What are the costs of registration likely to be?
- (3) What price can be obtained for the stock in relation to estimated value?
- (4) How long will it take to go through registration?
- (5) What procedure is followed in preparing a registration statement?
- (6) Do the principal shareholders wish to sell part of their holdings?

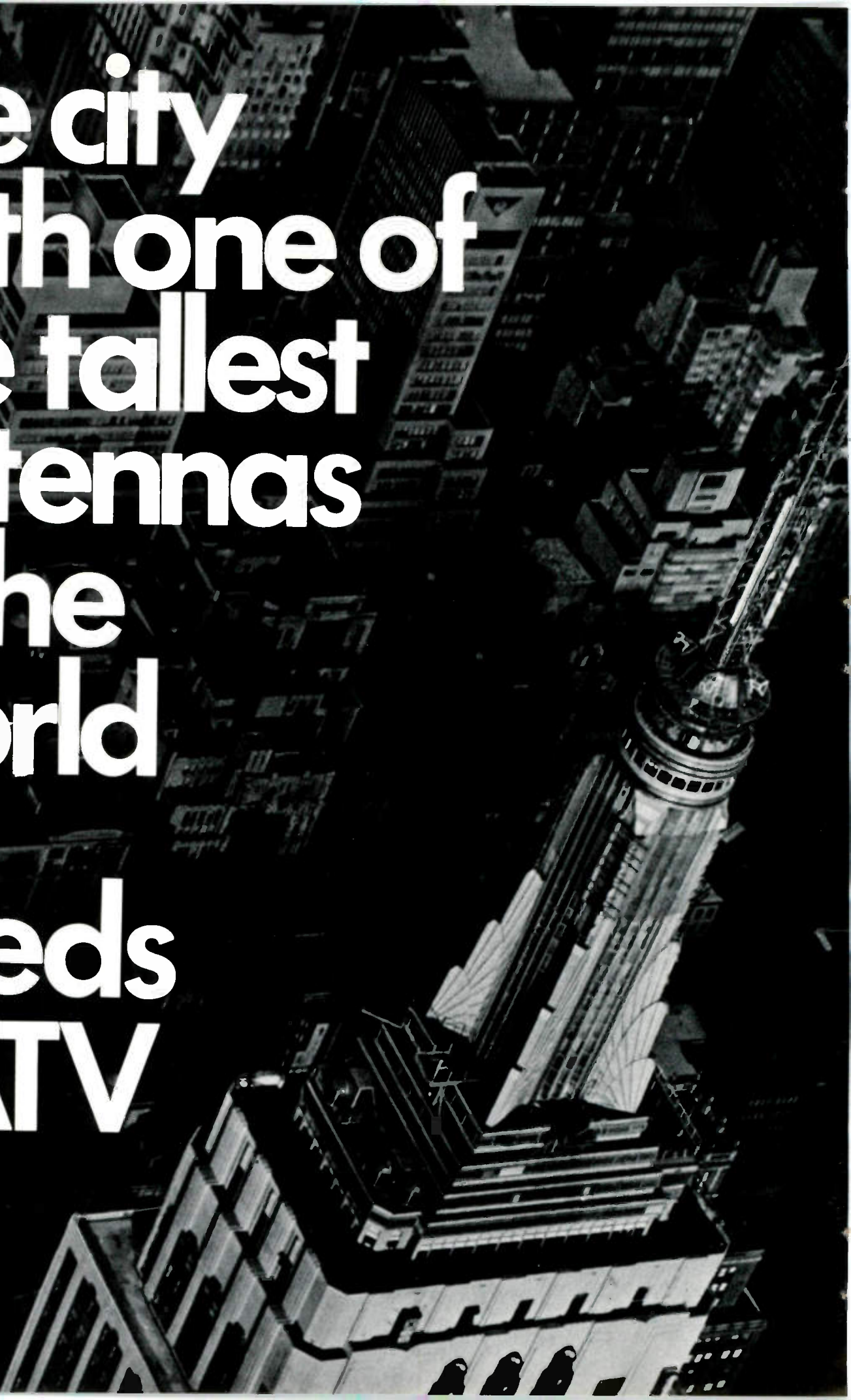
Requirements of the Underwriter

The underwriter will want to see your company in a strong position in the industry. He will want to see an industry that has favorable future prospects. The underwriter will want to see a company with a growth of sales and earnings that compare favorably with the rest of the industry, a company whose development program is progressive.

Approach to the Market

The businessman, large or small, usually goes through a period of frustration when he ventures alone into the capital market. Wall Street is a complex mechanism which includes many different kinds of underwriters. The seeker of capital who comes unprepared and poorly introduced seldom achieves the connection most favorable to his cause. Establishing contact with the right source of funds often requires the engagement of financial counsel whose connections can be used to great advantage. The formulation of a favorable design of capital structure is a must, and each case requires a tailor-made structure. □

**The city
with one of
the tallest
antennas
in the
world
still
needs
CATV**



Both systems under construction use Alumifoam®

You'd think New York could get ample TV signal coverage from the top of the Empire State building—or the new and higher Trade Tower coming up. But a lot of apartment dwellers lodged in canyons between steel and aluminum skyscrapers wouldn't agree.

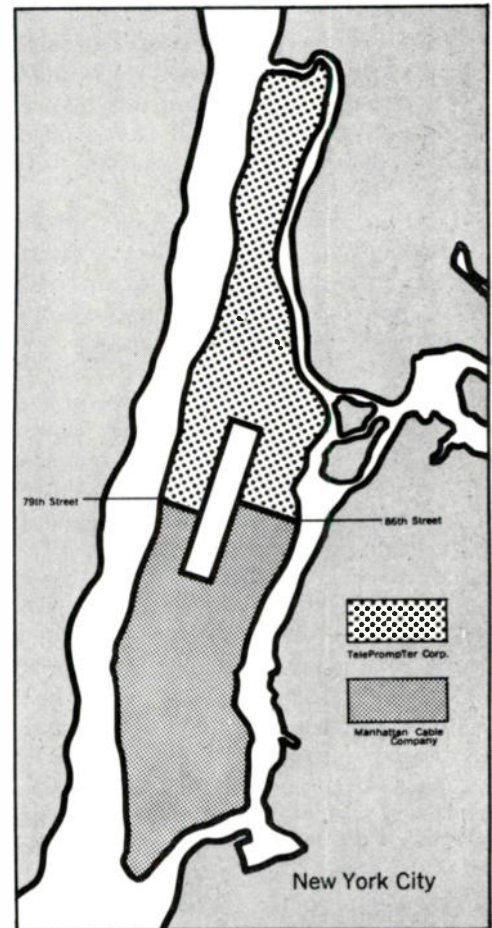
That's why TelePrompTer and Manhattan Cable TV are tunneling their cable under city streets and avenues, installing the CATV systems that will bring ghost-free, non-fading, clear-channel color and black and white reception to families that want it.

We'd like to point out that both of these franchise owners are using Alumifoam® Cable—the trade name for our seamless aluminum tube sheathed coaxial cable. And they give us potent reasons for their choice. The performance of Alumifoam is unsurpassed. A consistent 30db return loss is guaranteed, and it averages better than that. The aluminum sheath eliminates outside interference. Long life is assured because of seamless tube construction. There is no internal ridge to create a path for the longitudinal transmission of water or water vapor. Color signals are carried without degradation. Manhattan Cable has attested to the quality of the cable, based on shipments to them of up to 60,000 feet per week.

Another thing, as TelePrompTer points out—the cable is not limited in its usage to merely 12 channels, but is capable of many additional channels that they plan eventually to carry.

It's this kind of performance that's convincing more and more CATV companies to maintain the quality of their signal from reception to home set—with Times Alumifoam CATV cable.

Even in New York.




**TIMES
WIRE & CABLE**
DIVISION OF THE INTERNATIONAL SILVER CO.
Wallington, Connecticut



ALUMIFOAM®—New low loss trunkline

Reaching the Housewife with Subscriber Promotion Campaigns

By E. K. Ganley

Many housewives are remarkably immune to any type of sales techniques, whether by mail, in person, or on the telephone. This is, of course, due to the fact that most of today's advertising is aimed at the woman buyer.

Women are much like cats. You coax, and flatter, and sooner or later entice her to buy. She wants to feel as though you want her to buy because you like her and want to please her, not because you feel she needs the product.

She needs a really good reason to get on the cable. Vague claims of better reception are not enough. Like most men's promises (lower taxes, or mink stoles, as an example) women distrust them. Something concrete, with tangible rewards, is needed to persuade her. She'll be getting two, three, four extra channels? That sounds pretty good, because she's been wanting to see that new program on Channel 12 that her best friend on the other side of town has been raving about. But still, she thinks, she hasn't enough time anyway for her housework. How will she ever manage to squeeze in more daytime programs? You must offer her something she thinks she can't afford to miss; a giveaway program on the time/weather channel, for instance, with a free pair of nylons every hour. Or a five dollar bill. Or — and better still — a bag of groceries.

But what you have to realize, when you aim your sales at women, is that you are selling a vague idea. Most women have only the barest inkling what cable television is; like automobile engines and electronics in general, the mechanics of cable TV are one of those mysteries that belong to a man's never-never land of wires and thingamabobs and doohickeys. How can you expect a wife who can't even find the circuit box, much less change a fuse, to grasp amplifiers, house drops, or microwave? You have to explain it in her terms, and at the same time get her to "adopt" it. If she takes it to her heart, like little league baseball or the Cancer Drive, you will have won her loyalty forever, plus her business.

What is in reality a group selling project can be disguised as a Ladies Day at the cable office. Send personalized invitations to a relatively small group of housewives in one area — perhaps a certain city block. But here there are dangers — chief among which is The Enemy. Where one lives, they have friends; they also have enemies. The best insurance for a flop is the blithe statement, "Everyone on your block has been invited." This smacks of the shotgun approach, and makes it appear it doesn't really matter whether you show up at all (if, after all, everyone

else has been invited.) Give Mrs. Doe the impression that her attendance is of the greatest importance; that you personally will look for her to be there; and that she was selected personally, not at random. Better by far to say, "Several selected women in your area . . ."

On the day of the event provide a free babysitter in a good big sturdy room, and punch and cookies in another. Present a layman's explanation of how cable TV works, and show them the kind of color reception they can get, on the demonstration set. Offer a door prize — three months of free cable, for instance. Let them ooh and aah and be duly impressed by your incomprehensible electronic doodads.

A woman's primary motivation is a desire to be needed. Fulfill it. Ask their advice. Tell the group you're considering a contest for women on one of your spare channels, but can't decide which of two or three choices would be most popular. What would they watch, if it were up to them? Besides finding out which they prefer, you have also flattered them, and engendered enthusiasm for the projected contest. There's no better mode of advertising than an enthusiastic woman, and you'll be surprised how many contacts a woman has.

For a nominal expense, plus three or four hours of your time, you will have made as many as thirty supporters who will regale their husbands with cable over the dinner table. They have seen what good reception cable gives, and poor hubby will hear about it all evening long, while he adjusts and readjusts the set. Chances are good that by the next afternoon you will have received a large percentage as customers.

A particularly good prime contact source could be the woman who sells cosmetics, part time, door-to-door. She does not have customers, as such, but friends — women with whom she is familiar, and sees about every three weeks. What better ready-made house to house representative could a CATV system manager ask for? Here is a sales trained individual who is a lifelong expert at women's psychology. She needn't actually sell cable hookups, either; supply her family with free service, so that she may become sufficiently impressed about your product, and pay her \$15 a month to give one of your leaflets to each customer. Thus the woman of the house is not really being "sold" something; rather, she was "tipped off" by a "good friend."

Telephone sales are really a sticky wicket. Nothing arouses a housewife's fighting instinct faster than to

have a squirming baby in one hand, a toddler clinging to her knees, a pot of stew boiling over on the stove, and a salesman giving her a fast-paced pitch over the phone. Or you may get her out of the tub — in which case you had best just pack up and sneak quietly out of town.

One authority claims you must call in the morning, once she has the children packed off to school, kissed her husband goodbye, and is sitting there in her picture book kitchen sipping coffee. If the truth were known, she is probably down on her hands and knees mopping up the raw egg she dropped during breakfast, or nursing injured feelings from the jibes she received over her coffee. Or just possibly, only that minute, got the colicky baby to sleep.

Direct mail sales techniques are probably among the most effective; which is to say, from the customer's aspect, the best of a bad thing. It helps, when possible, to personalize the addresses. Mailers sent to "occupant" are begging to be filed in the wastebasket. A standard joke with mothers is, "Junk mail? Oh, the kids love it."

Free samples are always welcome, naturally. But it has been found rather difficult to send a sample of cable service through the mail. Of course, a free trial period is a highly effective method of achieving just that. And it has the added benefit of being one of the most attractive sales techniques ever, to the female of the species. "Something for nothing," she thinks. So she takes it now, without the slightest intention of becoming a paying customer. But, come judgement day, and the time to take away those extra channels, to break away from that rapidly-becoming-a-favorite program . . . the moment of truth . . . and she exercises her woman's prerogative. She changes her mind. You have made a sale on the basis of the familiarity syndrome: it's "hers" now, even if she doesn't own it, and she'll pay for it before she'll give it back.

As to that other well-touted medium, radio: there is nothing nearly so exhausting to someone who listens a good part of the day (as a large percentage of women do) as the incessant pounding of a given commercial. The first time, it is interesting. The second time, you pick up the details of this fantastic offer. The third time the offer is not so fantastic. The fourth time it's irritating and the fifth time — if the radio is still on — it's infuriating. Instead of being a shot in the arm for your business, it turns out to be a shot in the head.

Through many years of practice in hunting bargains, careful shopping, comparing prices and package sizes, the average modern housewife has become a pretty shrewd buyer, no matter what Congress has to say. She disposes, one way or another, of a great part of her husband's paycheck, and she wants to get the best product for her money. Thus, she is wary of all advertising. She has been bombarded from all sides by bright red packages, sparkly cellophane wrappings, "new, improved, better-than-ever claims." She supports an army of Madison Avenue soothsayers. Bigger and better products appear on the shelves every year, springing up like mushrooms in a damp forest, and all clamoring for her attention. Don't put yourself in the same league. Treat the ladies gently, with consideration, and you'll most likely have a staunch ally when it comes time to persuade her husband to part with some cash. □

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CATV System Construction

Bonita, Fla. — Southwest Florida Cable TV Inc. has received a final go-ahead from the FAA to erect a 720-foot tower in Bonita.

Marianna, Fla. — H & B Communications of Beverly Hills, Calif. has posted a \$100,000 performance bond, according to city officials, to insure completion of the Marianna system within eight months. According to the bond agreement, applications must be filed with the FCC and FAA within 60 days and service must be in operation six months after the date of the applications.

Punta Gorda, Fla. — Crews are working on a barge to lay a cable under the Peace River from Charlotte Harbor to Punta Gorda, Fla. Gulf Coast Teleception, which has its headquarters in Port Charlotte, estimates that the work of getting the system across the river will require 30 to 45 days.

Sullivan, Ind. — Cable television serv-

ice is ready for Sullivan residents, according to a recent announcement, and it is presumed that service will be available to residents of nearby Linton in the near future.

New Iberia, La. — An extension of 45 miles is being made on the New Iberia system, recently acquired by Entron, Inc. The new plant has a potential of 4,800 subscribers, bringing the total system potential to 6,600. Plant miles will total 65 after the extension is completed.

Eveleth, Minn. — Construction of a 400-foot tower in Eveleth was started early in September. Carl Bloomquist and James Parise are president and vice-president respectively. Hook-up of customers is planned to start in December.

Rockingham, N.C. — The Jefferson-Carolina, Corp. which owns the local franchise, has been acquiring property easements and has contracted with Queen City Construction Co. of Charlotte for the necessary work, according to M. H. Crocker, president.

New York City, N. Y. — Cable television will soon become operable in sections of Manhattan served by the TelePrompTer Manhattan CATV Corp.

Hines, Oregon — Final installation has been completed on the new plant in the Hines and Burns, Oregon area. The new system replaces the original cables installed 11 years ago.

Greensburg, Pa. — Mel Goldberg, owner of Cable Vision, Inc. of Greensburg has promised residents that they will have the system in operation by January of 1968.

Marion, S. C. — Construction of the Marion, S. C., cablevision system was scheduled for completion during the month of September. Gregory Electric Company in Columbia has been responsible for construction of the distribution system.

Parsons, Tenn. — The construction of a cable television system in Parsons began recently, according to Larry Odle, president of Tennessee Telephone Company. Odle stated that all details of the program had been worked out and service was scheduled to begin by November 1st of this year.

Charleston, W. Va. — Capitol Cablevision Corp. has awarded Ameco, Inc. a contract to build 306.4 miles of CATV system in the Charleston metropolitan area, population 85,000. Subscriber potential is estimated at 27,000. □

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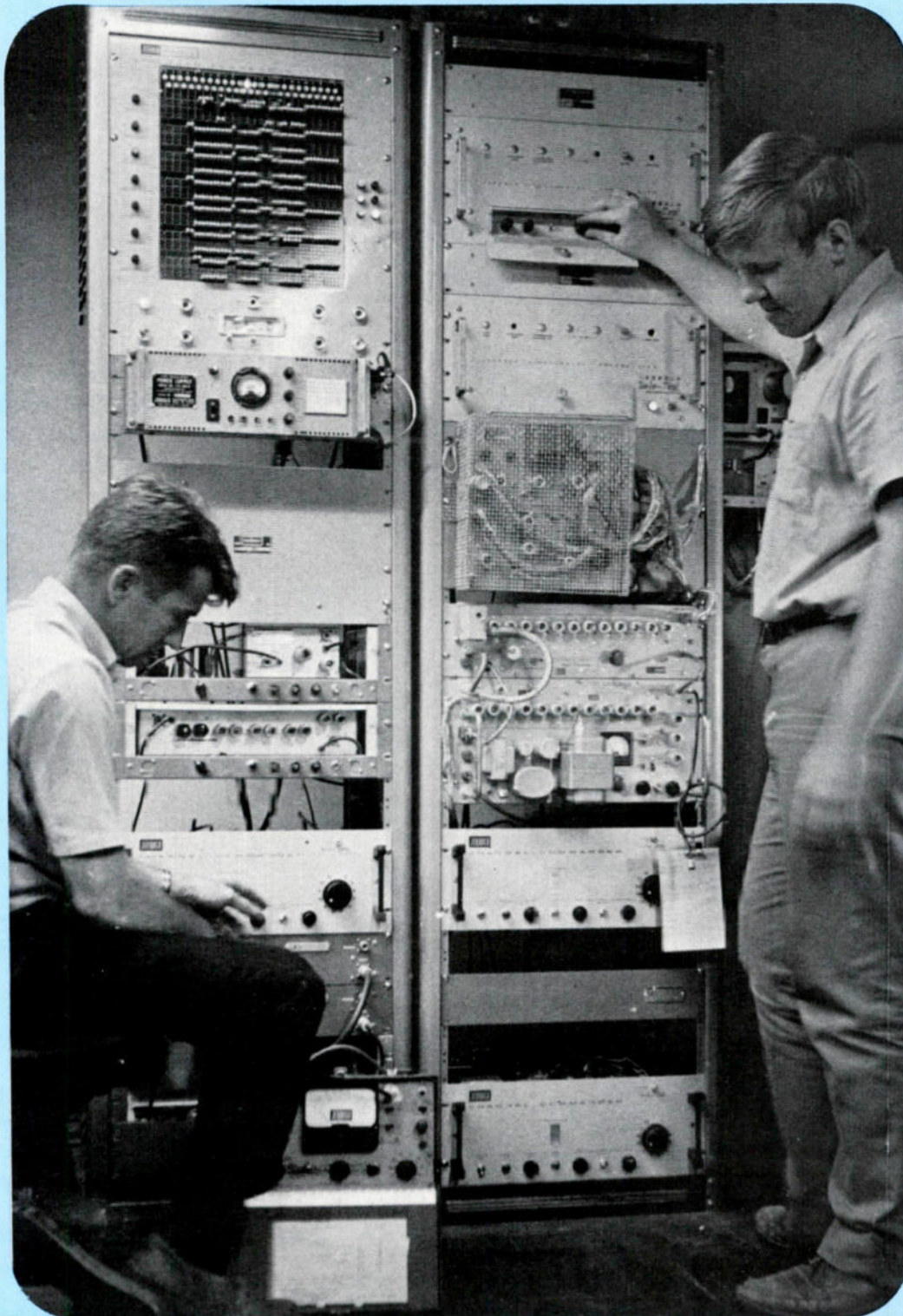
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CATV TECHNICIAN



- Propagation Theory for CATV Technicians
- The Search for CATV Technical Standards
- CATV Product Review

Technicians Kevin Gossman and Thomas Tolstad are shown checking head-end gear on American Cablevision's Rochester, Minnesota system. (Photo courtesy Rochester Post-Bulletin.)

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Signal Propagation Theory For Cable System Technicians

By T. D. Smith
Manager, Antenna & Microwave Products
Scientific-Atlanta, Inc.

Cable technicians need a knowledge of the propagation of television signals when performing signal surveys, locating head-end sites, determining sources of interfering signals, and in the designing or specifying of antenna arrays. The purpose of this article is to review basic propagation theory with the hope it will provide better understanding of the propagation of television signals. First, this article defines and discusses the various regions of propagation. Second, the propagation medium and its influence on signals levels is discussed.

Regions of Propagation

For convenience, the distance from the transmitting antenna is divided into several regions; the boundaries of the regions cannot be sharply defined. The names given to the various regions denote some pertinent property of each region.

The region immediately next to the transmitting antenna is known as the "line-of-sight" region. This region extends out to radio horizon. The distance from the transmitting antenna to the radio horizon is given by the formula:

$$D = \sqrt{2h_T}$$

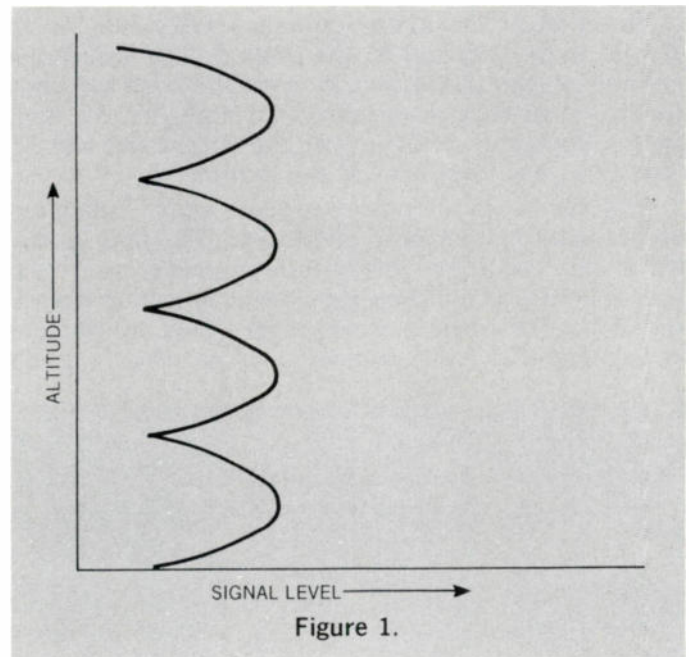
where D is the distance to horizon in miles and h_T is the height of the transmitting antenna in feet. The radio horizon is assumed to be on the ground, if the earth is a relatively smooth sphere. Any obstruction along any given path must be taken into consideration.

If the receiving antenna is also elevated, the maximum line-of-sight is given by the formula:

$$D = \sqrt{2h_T} + \sqrt{2h_R}$$

where h_R is the height of the receiving antenna in feet.

If the propagation path in the line-of-sight region is sufficiently free from objects that might absorb or reflect radio energy, this region can be further subdivided into a region known as "free space." The free-space region is seldom realized, because of the presence of the earth's surface. Briefly, the usual condition is such that one wave travels directly from the transmitter to the receiver. A second wave from the same transmitting antenna strikes the ground between the two antennas and then is reflected to the receiving antenna. In this instance, the ground acts as partial reflector and as partial absorber. The ground-reflected wave has traveled farther, therefore the phases of the



two waves at the receiving antenna are different. The result of this phase difference is an oscillatory signal level whose amplitude and frequency vary with respect to the height and distance from the transmitting antenna. As the energies of these two paths unite in phase, the resultant is a maximum. As they unite out of phase, the resultant is a minimum. A typical plot of signal level of height for "line-of-sight" conditions is shown in Figure One.

The space beyond the line-of-sight region is known as the "beyond-the-horizon" region. This region is shadowed from direct rays by the curvature of the earth, or other obstruction. Beyond-the-horizon region is subdivided into the diffraction region and scatter region.

The diffraction region lies adjacent to and below the radio horizon. This is the region in which most CATV towers are constructed. Energy reaching this region must be bent or reflected by some process. One such process is diffraction, which is a fundamental property of wave motion. Sharp shadows, such as would be created by a beam of light striking a solid object, are not created when RF waves encounter large obstructions. Reception is possible behind the obstruction for a short distance, but there is a shadow which is some-

what fuzzy and there is a gradual transition in signal level, rather than a sharp transition as there is in very short wavelengths such as light. While diffraction does make transmission beyond the line-of-sight possible, it introduces large losses. In the diffraction region the mean field strength decreases approximately exponentially with distance; while the mean field strength increases exponentially with antenna height.

In the past, diffraction was considered the only mechanism whereby VHF and UHF energy was supplied beyond the horizon. However, during World War II and into the late Forties, other mechanisms were discovered. One of these mechanisms is known as "tropospheric scatter." Tropospheric scatter is caused by random irregularities of the dielectric constant of the atmosphere, or "blobs."

These blobs are always present and cause faint signals to be reflected to the ground. The reflections fall well beyond the horizon in much the same way that the overhead light beam of a searchlight can be seen from the ground, or the lights of a distant city can be seen as a glow from beyond the horizon.

It should be noted that two types of signal fading are encountered in scatter propagation. The first is the rapid fade caused by multi-path transmission in the atmosphere. The multi-path condition is caused when a signal is reflected from many blobs which are random in location and have random motions. The received

signal is the sum of these random reflected signals. The received signal may change from maximum to minimum and back to maximum in a matter of seconds. Fast multi-path fading tends to reduce the allowable bandwidth to less than five MHz. This reduction in bandwidth is caused by the time delay associated with the different paths.

The second type of fading encountered in scatter propagation is slower. It has a period of hours, or even days. These slow changes in signal level result from a combination of variations in atmospheric refraction from day to night and of humidity and temperature changes along the scatter path.

There is one other important mechanism by which waves are propagated beyond-the-horizon. Waves can be propagated by reflections from a portion of the ionosphere known as the "Sporadic-E" layer. Occasionally, clouds of very high ionization are found in the region of the E-layer. The effects of these clouds are quite well known — their cause, however, is still subject to speculation. Sporadic-E skip distances vary from a minimum of 500 miles to a maximum of about 1,400 miles for a single hop.

The Propagation Medium

For purposes of discussion, the atmosphere is divided into various layers or regions; these are troposphere, stratosphere, and ionosphere as shown in Figure 2. The

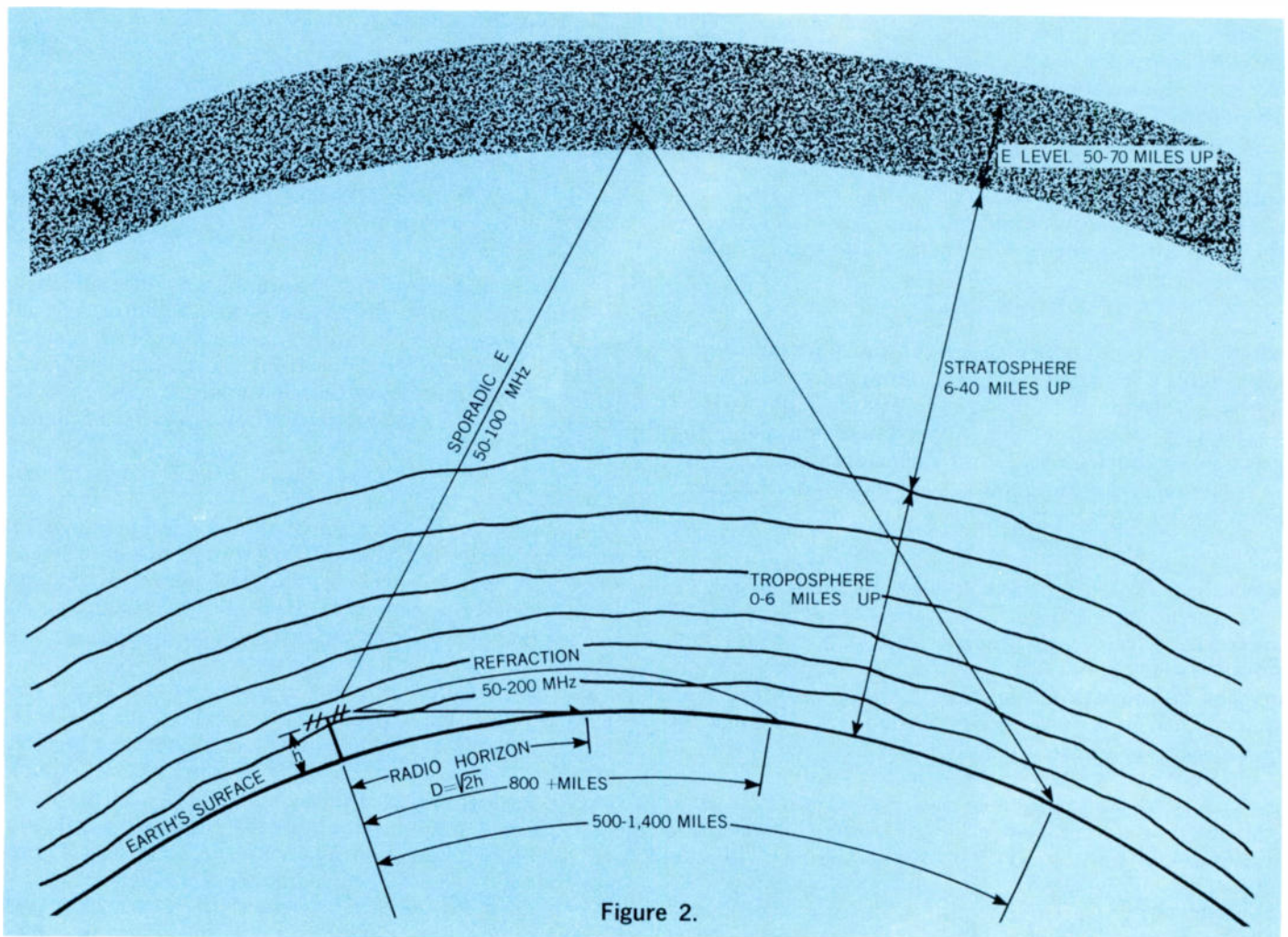
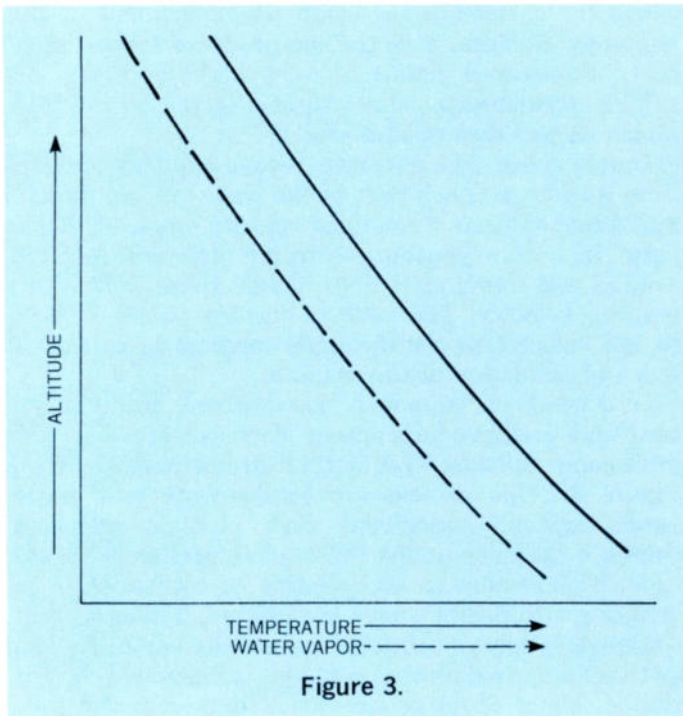


Figure 2.

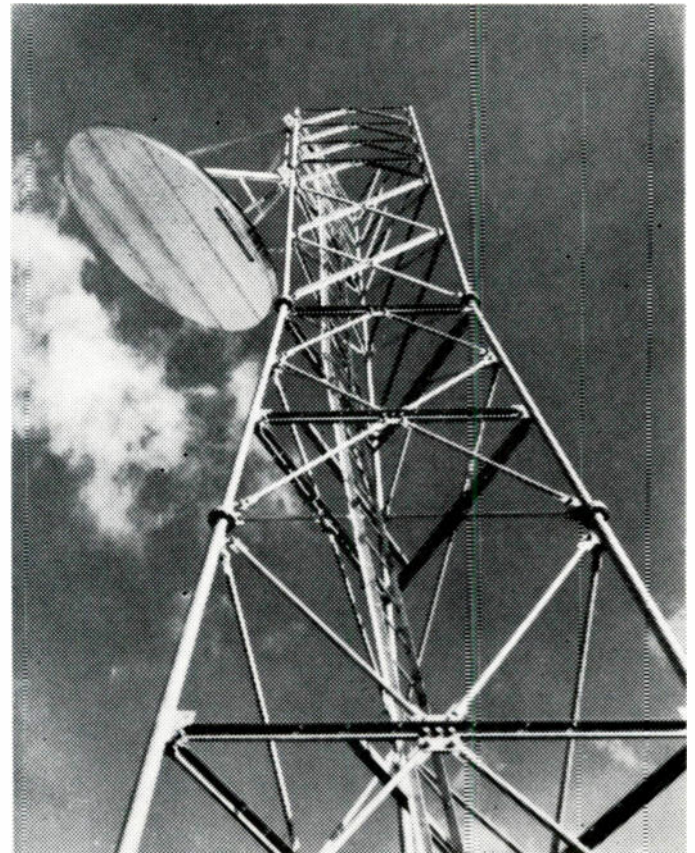
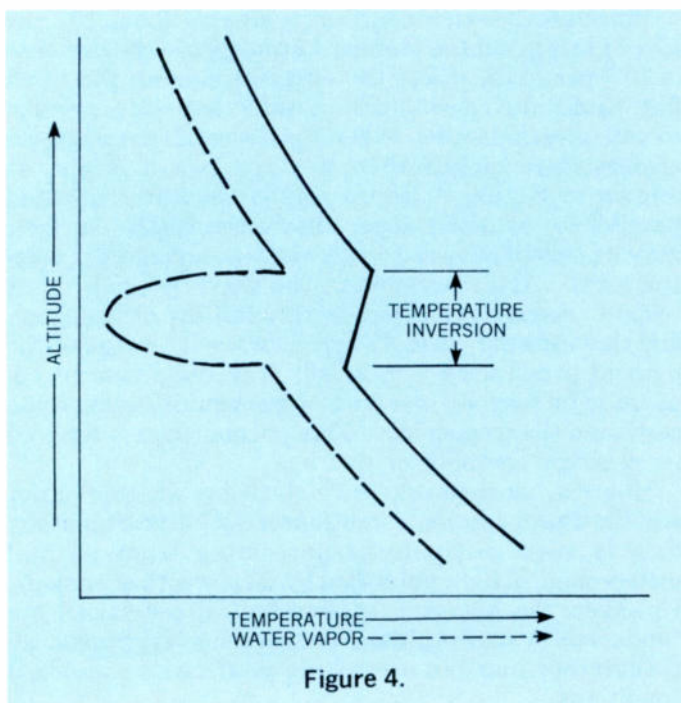
Clean, quality towers



portion of the earth's atmosphere extending from sea level to a height of about six miles is the troposphere, or weather layer. This is the region of winds, storms, and rain. The temperature of the troposphere decreases about 20° F per mile of increasing altitude and reaches a minimum value near 58° F at the upper limit of the region. Meteorological changes in this part of the atmosphere are responsible for many variations in the received signal levels.

Directly above the troposphere is the stratosphere, or constant-temperature zone. The stratosphere extends to a height of about 40 miles. This region has little effect upon UHF propagation.

The E-layer of the ionosphere is located 50-70 miles



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above the surface of the earth. Bombardment of this region by radiation from the sun produces ionized molecules. Sometimes clouds of very high ionization are sufficiently dense to reflect signals in the 50-100-MHz range, as was discussed above.

In free space, or a vacuum, a wave expands outward from its source. Each part of the wave travels along a radial line and has a constant velocity equal to that of light. In a homogeneous, isotropic dielectric medium, a wave will travel as it does in free space, but with a reduced velocity. The ratio of the free space velocity to the velocity in the dielectric medium is called the index of refraction of the medium.

In a windless "standard" atmosphere, the temperature and water-vapor content decrease steadily with increasing altitude. This normal gradient is shown in Figure 3. This decrease in temperature and water-vapor content, associated with altitude increases, causes a decrease in the index of refraction with altitude. This results in the velocity of transmission increasing with height above the ground, and as a result the wave is bent or refracted toward the earth. As long as the change in dielectric constant is linear with height, the net effect of refraction is the same as if the wave continued to travel in a straight line, but over an earth whose radius is $4/3$ (1.33) times the true radius.

Most technicians have noticed that signal strengths are higher in the evening and early morning than during mid-afternoon. This phenomenon is caused by the following conditions: as the sun goes down, air immediately adjacent to the earth cools rapidly, while the air at higher altitudes cools much more slowly. This causes the dielectric constant of the air near the earth to increase, thus creating a greater change in dielectric constant with altitude. With this increasing dielectric gradient, the effective earth radius increases. In the early morning hours, the sun warms the air at higher altitudes before the air adjacent to the earth is warmed. Consequently, the effective earth radius is again larger than 1.33 times the true radius.

When the dielectric constant decreases about 10^{-7} per foot of height (in the standard atmosphere the decrease is 10^{-8} per foot), it has the effect of making the earth flat. Under such a condition, a wave that starts parallel to will remain parallel. When the dielectric constant decreases more rapidly than 10^{-7} per foot of height, as shown in Figure 4, radio waves that are radiated parallel to, or at an angle above, the earth's surface, may be bent downward sufficiently to be reflected from the earth. After reflection, the wave is again bent toward the earth as it passes through the atmosphere, and the resulting path of a typical wave is similar to the path of a bouncing tennis ball. The radio energy appears to be trapped in a duct or waveguide between the earth and the troposphere. This phenomenon is referred to as either trapping or ducting.

How can one determine on a given day whether or not standard propagation conditions exist? Unfortunately, this is very difficult to determine from normal meteorological data published by local weather bureaus. However, the following meteorological conditions are conducive to non-standard or trapping conditions, although they may not necessarily produce non-standard conditions.

1. A barometric high
2. Calm or light winds
3. Clear skies
4. Nocturnal cooling of ground with clear skies
5. Flow of warm dry air over colder air producing a temperature inversion

The following conditions are conducive to standard propagation conditions:

1. Barometric low
2. Strong winds
3. Overcast skies

Conclusions

A detailed study of propagation theory allows one to draw the following conclusions about the propagation of TV signals.

Over propagation paths where the earth can be considered a relatively smooth sphere, and at times of near standard atmosphere or known atmospheric conditions, signal levels can be calculated with good accuracy by the method described in National Bureau of Standards Technical Note 101, Revised May 1, 1966, entitled *Transmission Loss Predictions for Tropospheric Communication Circuits*. Over mountainous paths, it is usually necessary to resort to actual on site signal-level measurements, because calculations which take into account the effect of rough terrain are complicated.

When signal surveys are being made, the survey should be conducted over a sufficient length of time to allow for the possibility of non-standard propagation conditions that can exist for one or more days. Otherwise, erroneous or misleading data would be obtained.

Sporadic-E can cause severe co-channel interference on Channels 2-6 only. Instances of the E-layer being sufficiently dense to reflect signals of frequencies higher than 100 MHz have not been confirmed. Consequently, Sporadic-E cannot account for severe co-channel interference on Channels 7-13. In order to have interference via Sporadic-E, the interfering stations must be a minimum of 500 miles away. As a consequence, the co-channel beat can be either 20 kHz, 10 kHz, or 0. Sporadic-E occurs most often in the spring and fall. While Sporadic-E can occur anytime during the day, it occurs most often in the late afternoon. Little, if anything, can be done in the selection of a head-end site, or receiving antenna array design, to minimize Sporadic-E interference.

Most co-channel interference of a prolonged and constant nature on Channels 2-6, and all co-channel interference on Channels 7-13, is caused by propagation through the troposphere. This type of co-channel interference will usually occur from stations within 200-300 miles of the receiving antenna. In most cases, there will be a 10- or 20-KHz beat associated with the interference, and on rare occasions a 0 beat. Proper design of the receiving antenna array and selection of the head-end equipment will minimize this type of co-channel interference.

With a thorough understanding of propagation theory, and a knowledge of its influence on the level of received signals, a technician can better determine which channels can be received with reliable, high-quality pictures. □



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CATV Technical Standards

By Archer S. Taylor

When I was first exposed to the idea of a "Glossary of CATV Terms" I found myself a little impatient. Why work out definitions for gain, level, tilt, output and so on? We all know what they are, so why waste time trying to explain them to each other when there are so many more important things that need doing?

But hold on! Would you believe a difference between "tilt" and "slope"? Or do you use these terms interchangeably? Consider that you can "tilt" signal levels through a perfectly flat amplifier simply by "tilting" the input levels; and you can adjust the "slope" of an amplifier to eliminate a "tilt" in input levels.

"Slope" is the frequency response characteristic of an amplifier or cable; while "tilt" refers merely to the relation between signal levels however produced. We have found examples of poor performance which could be traced to a failure to understand the difference between "tilt" and "slope".

So definitions are important. And there are more.

What kind of cable do you use for house drops? I'll give you odds that most operators think they use "RG-59". Or maybe you use "foam 59" which is like talking about a "silver nickel" or a "round square". If it has foam dielectric, or double shield, or polyethylene jacket, it is not RG-59/U, nor even "59 type". We need to have some standard designations for cable, and some standard test procedures (and the NCTA Standards Committee is working on it).

After much travail, the Standards Committee has finally abandoned the concept of "output capability" because it can so easily mislead the unwary. Instead, we have adopted a standard definition and method of measuring non-linear distortion products. It is a flexible *definition and procedure* which can be applied with laboratory precision at high cost or can be used for field measurements with practical reliability at modest cost. I hope cable operators will require suppliers to specify equipment in accordance with the NCTA Standard Definition.

The Committee is now considering the typical specification of "40 dB signal-to-noise ratio". What does it mean? It means one thing if measured on a 704-B or 727 selective voltmeter (incidentally, the 704B is not a field strength meter), but another thing on a Nems-Clarke 107-A Professional Field intensity meter, with 300 kHz band width and quasi-peak indicator. We need to standardize the definitions and procedure so we can compare performance meaningfully without having to use a particular meter.

Then we have a project under way to develop a

standard set of drawing symbols to represent CATV components on layout drawings. The panel was startled to find that no two manufacturers used even one symbol alike.

Many have urged our committee to adopt a standard allocation plan for TV cable channels other than those designated by FCC for broadcasting use. The "Twenty Channel" showings at Chicago have left many operators confused, hoping that the NCTA Standards Committee would straighten it all out by adopting an allocation plan.

Of course, NCTA is not the FCC (fortunately, I might add) and has no enforcement power. It seems obvious that neither members nor associates are likely to (or should) allow an impractical allocation to hamstring progress, regardless of how prestigious the Standards Committee may or may not be.

Let's look at a few of the more obvious problems. First the frequencies from 108 to 118 MHz should never be used on a CATV system for any purpose. These are allocated for automatic air navigation aids, and inadvertent radiation — perhaps due to a broken cable resulting from a truck taking out a utility pole — could be catastrophic. Actually, it would probably require an incredible chain of coincidences for real trouble to occur. Yet the consequences are so dire, and the inconveniences so slight, that there is simply no merit in taking the risk. CATV has enough adversaries without adding aeronauts to the list.

However, it must be remembered that all of the spectrum from 118 to 174 MHz and from 216 MHz up to channel 14 is heavily used by a multitude of services more or less sensitive to interference. Any channels we use involve risk both of interference to sensitive services and of interference to cable TV service. Thus it is my opinion that as soon as we move off the channels allocated to TV by FCC, we increase the risk of interference, and must of necessity increase our vigilance against inadvertent radiation.

Besides interference, there is the problem of the second harmonic of channels 2 to 6 which fall between 108 and 174 MHz. One manufacturer claims to be operating successfully without visible degradation due to second harmonic. I suspect, however, that maintenance will be more exacting than if an octave allocation were used, and more demanding than many operators may expect.

So, if we use a 2-to-1 band, and we need 20 channels of 6 MHz each, we must think in terms of 120-240 MHz, or higher. The problem then becomes one of the band

width capacity of amplifiers and the performance of cable and passive devices above 220 MHz.

I do not believe it would be wise to even try to adopt a standard allocation for 20 channels at this time. Here is why. There are three (3) ways I know of to get more than 12 channels.

1. Use channels UHF 14-83.
2. Use two or more parallel cables with a switch.
3. Use non-standard channels and a converter.

When all the chips have been counted, we may find UHF distribution is the most satisfactory. I doubt it, but if so, then an allocation plan is unnecessary.

Multiple cables do not eliminate the direct pick-up problem, and the cost of a satisfactory switch at the customer's receiver is a serious hurdle. Still no allocation plan is needed.

If an allocation plan is necessary, so also will be a device in each subscriber's home designed to use the non-standard channels. Finding space on the cable for additional channels is the easiest part of the problem. This was clearly evident at the NCTA meeting in Chicago.

The plain truth is that a "set converter" is a backward step back to the days of a booster on top of the set, or a UHF converter, or an antenna rotor control. The converter is not pretty; at least it doesn't match the French Colonial or Early Antique decor of the living room. It has wires. Wires break. Wires collect dust. The kids trip over wires. That clever little supersonic remote control gadget is worthless with a set converter. Oftentimes, CATV subscribers are compelled to use "fine tuning" for the first time when they connect to the cable. Now, with a converter, you complicate things by telling them to change channels on the converter, but use the "fine tuning" on the set! Don't touch the selector on the set, though. Seems to some that an engineer's license is required to tune in the cable.

The obvious answer is a CATV receiver with built-in capability of tuning 20 or 30 channels, with detent or push-button tuning. The possible cabling of close to a million homes in Manhattan suggests, for the first time, a market large enough to attract a manufacturer's attention. Before an allocation plan for 20 or more channels is adopted, we must find out where receiver designers would prefer to have the channels. I have a strong hunch they will demand that there be no harmonically related frequency assignments.

If you have to use a converter anyway, there is no technical reason why any channels need to be assigned to the standard TV frequencies. The plan which has been demonstrated using the so-called mid-band spectrum is designed to expand the capacity of existing systems without major modifications.

This has considerable merit, particularly for those of us who have just built new plant or rebuilt old plant. But for systems yet to be built, I would prefer to leave the door open to new developments not necessarily tied to broadcast channel assignments.

There are, in fact, a number of possibilities which might be considered if we will explore and use the vast spectrum availability of cable.

For example, if we could allocate a guard band between channels of a half to one or two megacycles, it would relieve the adjacent channel interference

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problem. Less stringent stability requirements might permit less costly converter or set design. Greater separation between visual and aural carriers would improve picture quality by easing the requirements of the sharp sound notch filter and its inherent phase distortions.

Or how about a high fidelity channel 18 MHz wide, with double sideband modulation carrying up to 6 or 8 MHz video? Pictures would not be quite movie quality, but could certainly be studio monitor quality.

Maybe equipment designers could find ways to use frequency modulation. Properly handled this might make possible 100 mile cascades, and economical rural service.

The upshot of all this is that the allocation of appropriate channels for more than 12 channel cable television probably involves equipment not yet designed. The allocation would have to be influenced by the problems of TV set and converter designers, since new equipment is required in each subscriber's home; by cable manufacturer's problems, since the allocation is almost certain to require transmission up to 250 or 300 MHz. or higher; by CATV equipment designers; and by R & D dreamers looking for new or better mousetraps in the CATV industry.

The NCTA's Engineering Sub-Committee has already initiated steps for discussions of the problem with representatives of TV set manufacturers. But no one should expect that they will soon be protected from a confusing hiatus period while the industry is testing the market to determine economic feasibility. □

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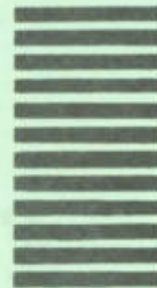


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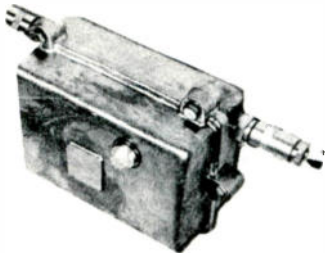
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PRODUCT REVIEW

NEW COMPONENTS FOR CABLE TELEVISION SYSTEMS

NEW LINE EXTENDER

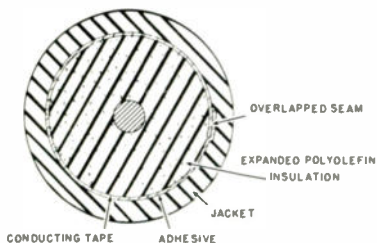
A new line extender, Model C 701, has been announced by Conduccion Corp. The unit is solid-state and features four-screw modular construction. Manufacturer's specifications list the minimum full gain at 25 dB and the tilt range at 0-4 dB. Typical noise figures are given as 14.5 dB at Channel 2 and 9.5 dB at Channel 13. Channel 13 output capability (12 channels) is listed as 44 dBmv with a -57 dB cross modulation.



For further information on this product contact Conduccion Corp., 3475 Plymouth Road, Ann Arbor, Michigan 48107.

NEW CO-AX FROM ANACONDA

A new type of coaxial cable has recently been announced by Anaconda Wire and Cable Co. The new cable utilizes a plastic adhesive material which bonds to both metal and plastic. The bond prevents the formation of moisture pockets between the jacket and outer conductor, according to the manufacturer. This, in turn, is said to

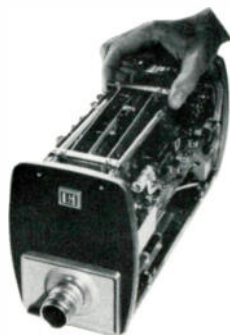


make possible the use of a much thinner outer conductor, which results in a light, flexible cable. The cable is also available in twisted video pairs which are said to be suitable for direct connection to TV cameras.

For further information on these new products contact Anaconda Wire and Cable Co., 605 Third Avenue, New York, New York 10016.

PACKARD BELL CAMERA

A self-contained, transistorized television camera with positive 2:1 interlace has been announced by Packard Bell. The model, designated 920 Sync-Lok, utilizes two counters (21:25) which include dual inline integrated circuits except for the power supply, for which silicon transistors are utilized. Employing a 12-megacycle bandwidth, the 920 Sync-Lok produces 650 lines of horizontal resolution, according to the manufacturer.



For further information on this new product contact Packard-Bell Co., Lawrence and Arnold Drive, Newbury Park, California.

NEW VTR FROM SHIBADEN

Production of a new video tape recorder, Model SV-800U, has been announced by Shibaden Corporation of America. The unit features a built-in 9-inch receiver monitor and an audio-video modulator. It employs two rotary heads and operates on the helical scan recording principal. According to the manufacturer the unit has a response of more than 3.5 MHz, more than 300 lines in horizontal resolution, and 42 + dB in signal-to-noise ratio. Additional features include stop-motion viewing of a single frame and head over-ride switch. One-half inch wide video tape permits up to 60 minutes of continuous recording on a 7-inch reel at 7.5 ips. The built-in receiver

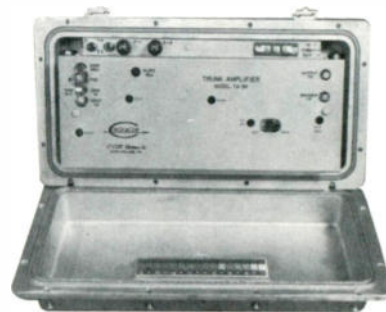
monitor shows the operator what is being recorded on tape and also serves as a TV screen for instant playback.



For further information on this new product contact Shibaden Corp., 58-25 Brooklyn-Queens Expressway, Woodside, New York 11377.

NEW LINE GEAR FROM C-COR

C-COR recently announced a new trunk extender amplifier, designated Model TA-34. According to the manufacturer, the unit is designed for 34 dB spacing and has a recommended operating output level of 43 dBmv at -87 dB cross-modulation. Noise figure is given as 8 dB maximum at Channel 13. The unit also has automatic level control with automatic tilt operating from either Channel 13 picture carrier or a 22 MHz pilot signal.



Hybrid tap units for CATV systems, featuring seized center conductors and a die cast housing, have also been announced by C-COR. The four-outlet



tap, utilizing hybrid directional circuitry, offers a flat response instead of the usual humped response, according to the manufacturer. Tap attenuation values are from 11 to 45 dB, feeder to



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outlet, in five dB steps. Return loss is said to exceed 20 dB on all connections.

For further information on these new products contact C-COR Electronics, Inc., 60 Decibel Road, State College, Pennsylvania 16801.

NEW UNITS FROM TELEMATION

TeleMation, Inc., has announced the development of a six-input video control center, the Multicaster. The unit is said to operate in three modes: synchronous industrial, external EIA, or internal EIA. The Model TMV-650 features two program buses with solid-state crosspoint switching and a split-arm fader control. The Multicaster ties as many as four industrial type vidicon cameras to one central system for synchronous switching. Drive pulses generated at one master camera are carried to all other cameras for synchronous industrial 2:1 interlace operation. Looping jacks in the unit can route the video from each camera to other system equipment, or each input

may be terminated in 75 ohms by switch. Also featured are a video processor, video level meter, two solid-state vertical-interval program switching buses and separate preview bus.

A miniature monochrome or color EIA sync generator, the Porta-Sync, featuring all-digital circuitry, is also now available from TeleMation, Inc.



The unit is a broadcast synchronizing generator electrically identical to TeleMation's TSG-2000 series, but about half the size. Timing of all wave form transitions is derived from clock pulses in the logic circuitry. Integrated circuits are used for all counting and logic functions. The manufacturer reports that phase jitter is less than 0.5 nsec.

For further information on these new products, contact TeleMation, Inc., 2275 South West Temple, Salt Lake City, Utah 84115.

NEW TRUNK EXTENDER AMPLIFIER FROM AEL

American Electronic Laboratories has developed a new trunk extender amplifier which utilizes hybrid micro circuitry. Labeled Model CT-E the unit incorporates a plug-in amplifier module and a line-powered dc supply module in a housing designed for mounting on a messenger cable. According to the manufacturer the model CT-E boosts and equalizes signals over a bandwidth of 50 to 270 MHz with a ± 0.5 dB response flatness. Gain and tilt controls are accessible by unscrewing two bolts and opening the hinged lid of the housing. Operating gain is given as 24 dB and with tilt equalization up to 24 dB of cable. Tilt correction is obtained through continuously variable control from 0 to 7 dB, to which may be added 3, 10 or 17 dB of cable compensation by using a plug-in equalizer. Gain is attenuated through a 0 to 6 dB variable control, which may be extended in steps of 3, 6, 9 or 12 dB using a plug-in head.

For further information on this new product contact American Electronic Laboratories, Inc., Colmar, Pennsylvania.

NEW ERICSSON TUBE

6EV5/CATV, a new long-life version of 6EV5, is now included in the line of LM Ericsson Longlife Tubes. It is a sharp-cutoff tetrode of 7-pin miniature type, intended for service in CATV amplifiers and other equipment. A service-life expectancy of over 40,000 hours has been reported by the manufacturer.

For further information on this new product contact State Labs, Inc., 215 Park Avenue South, New York, N. Y. 10003.

ORTHICON VIEWFINDER CAMERA SYSTEM

Maryland Telecommunications, Inc., recently announced a new Model Orth IX viewfinder camera system. The unit is portable, compact, and lightweight according to the manufacturer, and features solid-state regulated circuitry. The camera head weighs approximately 40 pounds and is adaptable to the 3" image Orthicon tube and a variety of both fixed and zoom lenses.

For further information on this new product contact Maryland Telecommunications, Inc., York and Video Roads, Cockeysville, Maryland.

SETCHELL CARLSON MONITOR

Setchell Carlson has recently announced a new monochrome TV monitor which features an aluminum chassis. The unit has a viewable picture area of 125 square inches



(15V), according to the manufacturer, and provides full power transformer operation and plug-in high voltage transformer.

For more information on this new product contact Setchell Carlson, Inc., St. Paul, Minnesota 55112.

ENCLOSURE FOR BURIED PLANT

A watertight, re-enterable enclosure for underground or direct-buried CATV plant has been announced by

Contractors Listed

Two omissions were made in the Construction Contractors Listing which appeared in our September issue. The listing should have included:

Vikoa, Inc.; 400 Ninth St., Hoboken, N.J. 07030, ph. (201) 656-2020. Complete CATV construction services including signal surveys, strand map surveys, system design and construction, and sales promotion.

Cable T-V Construction Co.; P.O. Box 307, Iola, Kansas, ph. (316) 365-2177. Handles all phases of CATV system construction.



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Memphis, Tenn. 38112
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Call on us for CATV supplies and equipment
we represent the major manufacturers.

Sigma Industries, Inc. Designated the SSE 60-R, the new submersible enclosure combines a glass-filled phenolic structure with Sigmaform heat-shrinkable splice covers. The two-piece threaded unit is eight inches in outside diameter and twelve inches long, with 300 cubic inches of space. The six legs protruding from the top section of the SSE 60-R are designed to be tailored in the field for different specific applications.

For further information on this new product contact Sigma Industries, Inc., 1115 O'Brien Drive, Menlo Park, California, 94025.

AERIAL LADDER

An aerial ladder, designated type CR Keystone Spasaver, is now available from Cam Industries, Inc. The truck-mounted unit features hydraulic elevation and single joy stick control. The design of the unit mounting is such that it allows the space in the truck bed to remain free. The unit also features continuous 360° rotation and is available in platform-to-ground heights of 23', 27' and 31'.

For further information on this product contact Cam Industries, Inc., Hanover, Pa. 17331.

NEW VIBRATORY PLOW

A new Model VP60 vibratory plow attachment, converting the Ditch Witch R60 trencher to a vibratory plow, is now available from Charles Machine Works, Inc. The 60-horsepower unit is said to be capable of laying URD lines at a rate of 40 feet-per-minute and to depths of 30 inches under average soil conditions. With the attachment, the Ditch Witch in-

stalls wire, pipe or flexible tubing up to 1-1/2 inch in diameter, by direct feed or pull action.



For additional information on this new product contact Charles Machine Works, Inc., 2701 Elm Street, Perry, Oklahoma 73077.

NEW AMPEX TAPE

A new low noise mastering audio tape for use with professional and consumer recorders has been recently announced by Ampex Corporation. The Ampex 404 Series mastering tape features a new uniform oxide binder formula which is said to result in true low noise characteristics in addition to providing higher frequency response and improved undistorted dynamic range.

For further information on this new product contact Ampex Corporation, 401 Broadway, Redwood City, California 94063.

AMECO BROCHURE

A list of product lines and complete capability description is contained in a new brochure available from Ameco Cable, Inc., P.O. Box 6760, Phoenix, Ariz. 85005.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Act of October 23, 1962: Section 4369, Title 39, United States Code).

1. Date of filing: September 29, 1967.
2. Title of publication: TV Communications.
3. Frequency of issue: Monthly.
4. Location of known office of publication (street, city, county, state, zip code): 207 N.E. 38th, Oklahoma City, Oklahoma 73105.

5. Location of the headquarters or general business offices of the publishers (not printers): Same as above.

6. Names and addresses of publisher, editor and managing editor:

Publisher (name and address) Communications Publishing Corporation, 207 N.E. 38th, Oklahoma City, Oklahoma 73105.

Editor (name and address) Stanley M. Searle, Oklahoma City, Oklahoma.

Managing Editor (name and address) Robert A. Searle, Oklahoma City, Oklahoma.

7. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given.)

Stanley M. Searle, Oklahoma City, Oklahoma.

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B. Paid circulation:

1. Sales through dealers and carriers, street vendors and counter sales: None.

2. Mail subscriptions: (Average number of copies of each issue during preceding 12 months) 5,216. (Single issue nearest to filing date) 5,216.

C. Total paid circulation: (Average number of copies of each issue during preceding 12 months) 5,216. (Single issue nearest to filing date) 5,216.

D. Free distribution (including samples) by mail, carrier or other means: (Average number of copies of each issue during preceding 12 months) 398. (Single issue nearest to filing date) 398.

E. Total distribution (Sum of C and D): (Average number of copies of each issue during preceding 12 months) 5,614. (Single issue nearest to filing date) 5,614.

F. Office use, left-over, unaccounted, spoiled after printing: (Average number of copies of each issue during preceding 12 months) 386. (Single issue nearest to filing date) 386.

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I certify that the statements made by me above are correct and complete.

(Signature of editor, publisher, business manager, or owner)

Patrick T. Pogue

ADVERTISER INDEX

Allison Coupon Co., Inc.	59
Ameco, Inc.	4,5
American Electronic Labs Inc.	15
American Pamcor, Inc.	49
Astro Structures, Inc.	59
B.C. Cable Contractors	36
Beaver Television Associates	54
Benco Television Corp.	16
Canon	23
CAS Manufacturing Co.	60,61
Cascade Electronics, Ltd.	71,72
CATV Equipment Co.	77
CATV Weekly	91
Charles Machine Works	88
Clifton Machine Works	63
Collins Radio Co.	37
Communications Systems Corp.	50
Craftsman Electronic Products, Inc.	21
Davco Electronics Corp.	98
Dynair Electronics, Inc.	65,78
Dynamic Radio	70
Economy Finance Co.	70
Entron, Inc.	11
Ft. Worth Tower Co., Inc.	55
Henkels & McCoy, Inc.	54

Hosken Cable TV Antennas	87
International Telemeter	26,27
Jerrold Electronics Corp.	C-2,C-3
Kaiser CATV Corp.	39
Line Material Industries	18
Master Appliance Corp.	88
Microlect Co., Inc.	83
Phelps Dodge Copper Prods. Corp.	31
Plastoid Corp.	93
Preformed Line Prods. Co.	69
The Pruzan Co.	17
Robert G. Owens, Inc.	57
Rohn Manufacturing Co.	35
Scientific-Atlanta, Inc.	45
Sitco Antennas	14
Sony Corporation of America	29
Southern Telephone Supply	94
Spencer-Kennedy Labs., Inc.	46,47
Standard Kollsman	33
Superior Cable Corp.	9
TeleMation, Inc.	12,13
Telesignal Electronics	84
Times Wire & Cable Co.	74,75
Tucker Sno-Cat	85
R.H. Tyler Co.	43
Utility Tower Co.	67
Vikoa, Inc.	3,7,80,C-4

THE CATV CLASSIFIEDS

Reply to Dept. T113, TV Communications, 207 N.E. 38th, Oklahoma City, Okla.

Rate for classifieds is 25 cents per word for advertising obviously of a non-commercial nature. Add \$1.00 for Box Number and reply service, per issue. Advance payment is required; minimum order is \$4.00. Classified rate to commercial advertisers is \$30.00 per column inch (2 1/4" col.). Deadline for all classifieds is 1st of preceding month.

CATV TECHNICIAN

Experienced in CATV installation, operation and management desires position with growing system or MSO with bright future. Resume on request. Reply Dept. T111, TV Communications.

FOR SALE

Following modulator units: one Dynair TX-4-A, new with under 25 hours use; channel 4, \$525, available immediately. Following TeleSystem's tube-type modulators, in regular use now, available approximately December 1st; Channels 2, 4, 5, 7, 9 with one complete spare for parts: \$300 each of \$1,400 for lot of five plus spare. Tahoe Systems, Inc., Box 815 Kings Beach, Calif. 95719.

MEN WANTED

Tower erection foreman and erection personnel. Year 'round employment—wages—per diem—retirement plan. Must be capable of traveling. Apply Ft. Worth Tower Company, Inc., P.O. Box 8597, Ft. Worth, Texas 76112, Phone: 817/536-5676.

REPRINTS

Reprints of all advertisements and articles appearing in TV Communications are available as promotional aids in quantities of 500 or more. Call Patrick T. Pogue at 405/528-3523 or write TV Communications.

Place your own classified message before the national CATV market . . . Just fill out the coupon below and mail with your check to TV Communications. Do it today for quick, effective results.

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TV COMMUNICATIONS

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Must have first or second FCC license with cable television experience. System has 9,000 subscribers and is located in sunny Palm Desert — Palm Springs, California. Good salary. For further details contact Keith Burcham, Coachella Valley Television, or phone 714/346-8157. All replies in strict confidence.

W-A-N-T-E-D

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TECHNICIANS SYSTEM MANAGERS
REGIONAL MANAGERS INSTALLERS

SEND RESUME AND SALARY REQUIREMENTS
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TV Communications

WANTED — CHIEF TECHNICIAN

Relocate with group owner Southern California. Twelve channel system, 3,800 subscribers. Must know head ends, construction, system maintenance—second class phone desirable, but not a must. Ability to direct personnel a must. Good salary and benefits. Send resume and references to Dept. T112, TV Communications.

WANTED

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FOR SALE

1/4" seven wire galvanized steel strand; 6000# Breaking Strength. Total footage 74250 ft. on three reels of 24750 ft. each. Priced \$20.00 per M Ft. FOB Fort Worth, Texas. Call or write: FORT WORTH TOWER COMPANY, INC. P.O. BOX 8597 FORT WORTH, TEXAS 76112 A/C 817 — JE 6-5676

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Share your successful subscriber promotion ideas with cable system operators all over the country . . . in TV Communications. A brief description of the promotion can be fashioned by our staff into a most helpful article for other TVC readers. Standard editorial rates will be paid. Send materials, or write for more information to: Bob Searle, Managing Editor, TV Communications.

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. . . Use 'em for fast action.

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 Time & Life Building
 Rockefeller Center
 New York 10020

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Dept. T114
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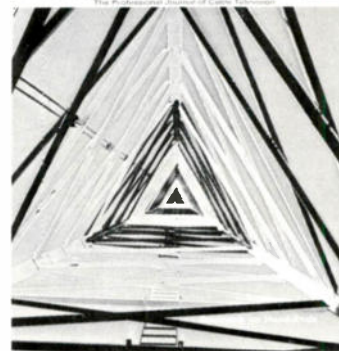
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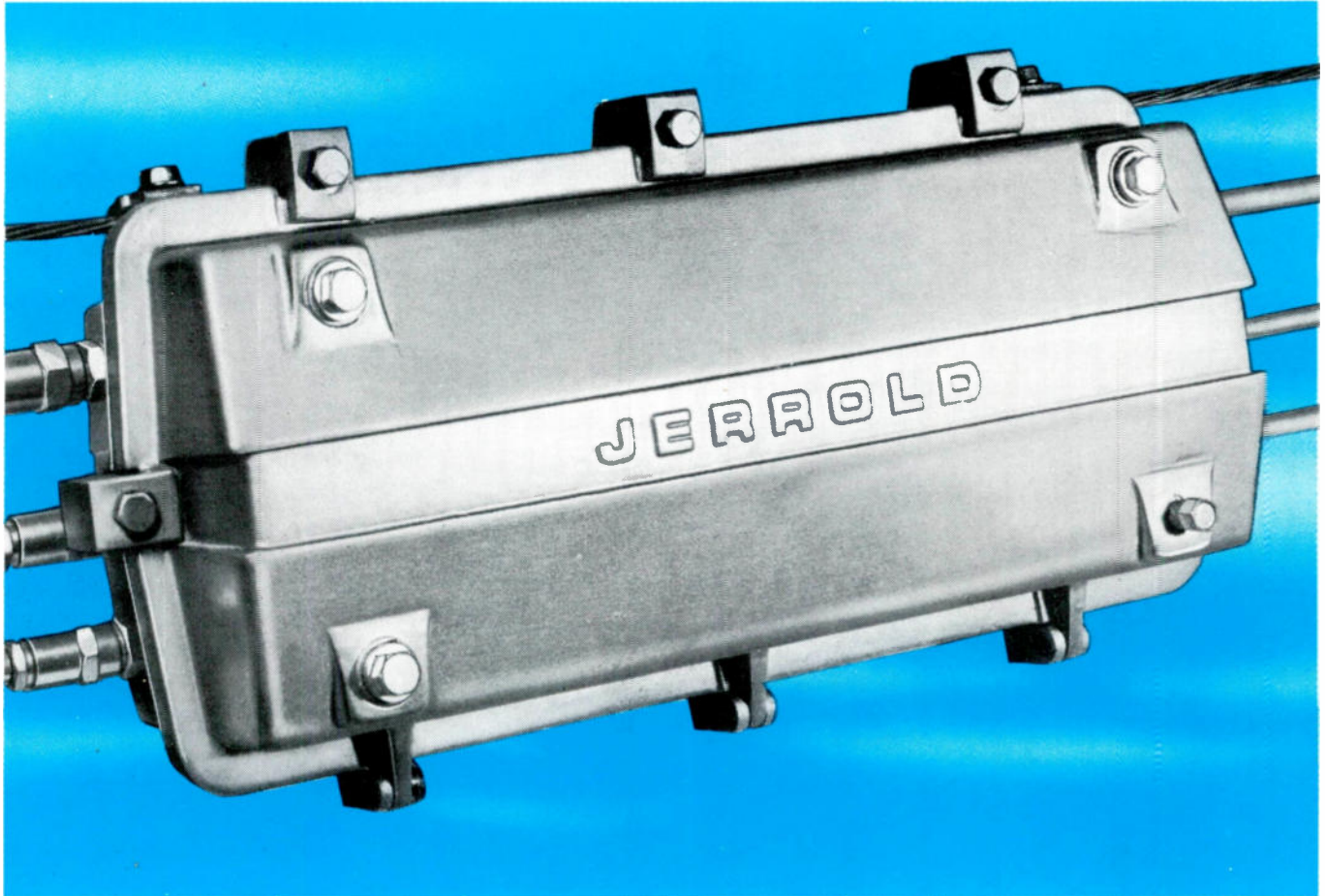
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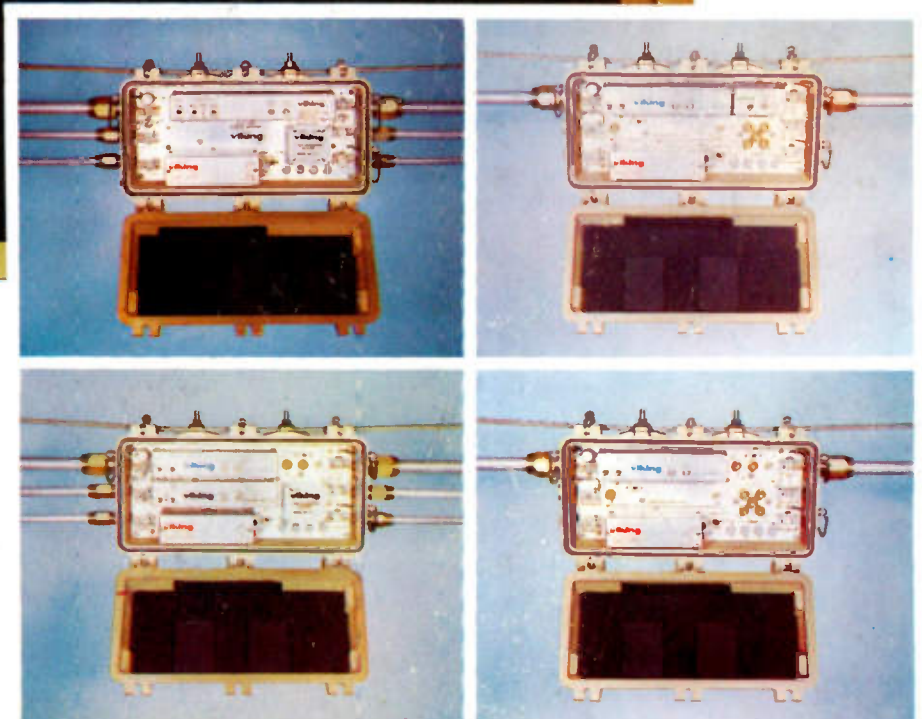
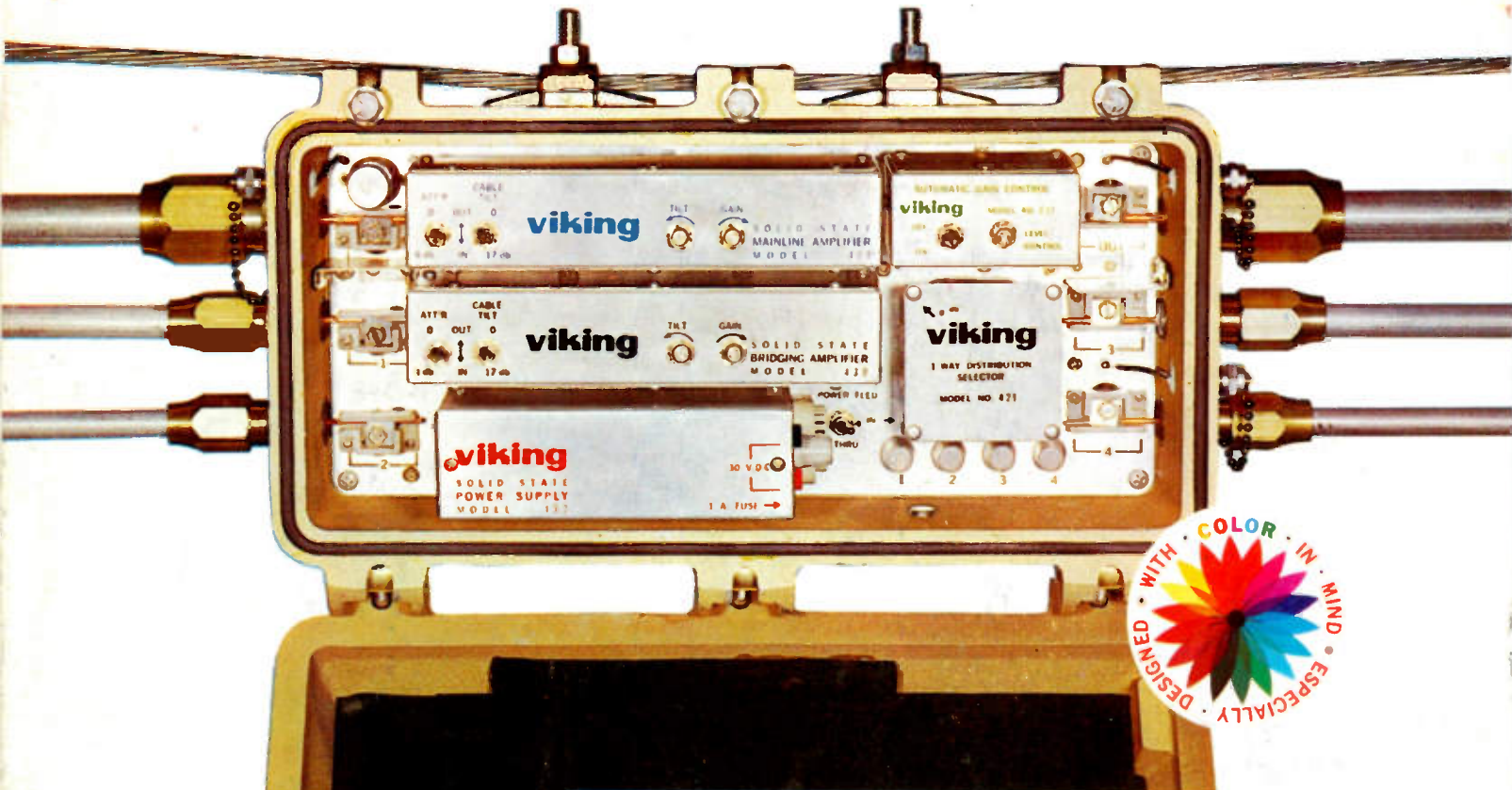
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