



March 1968

TV Communications

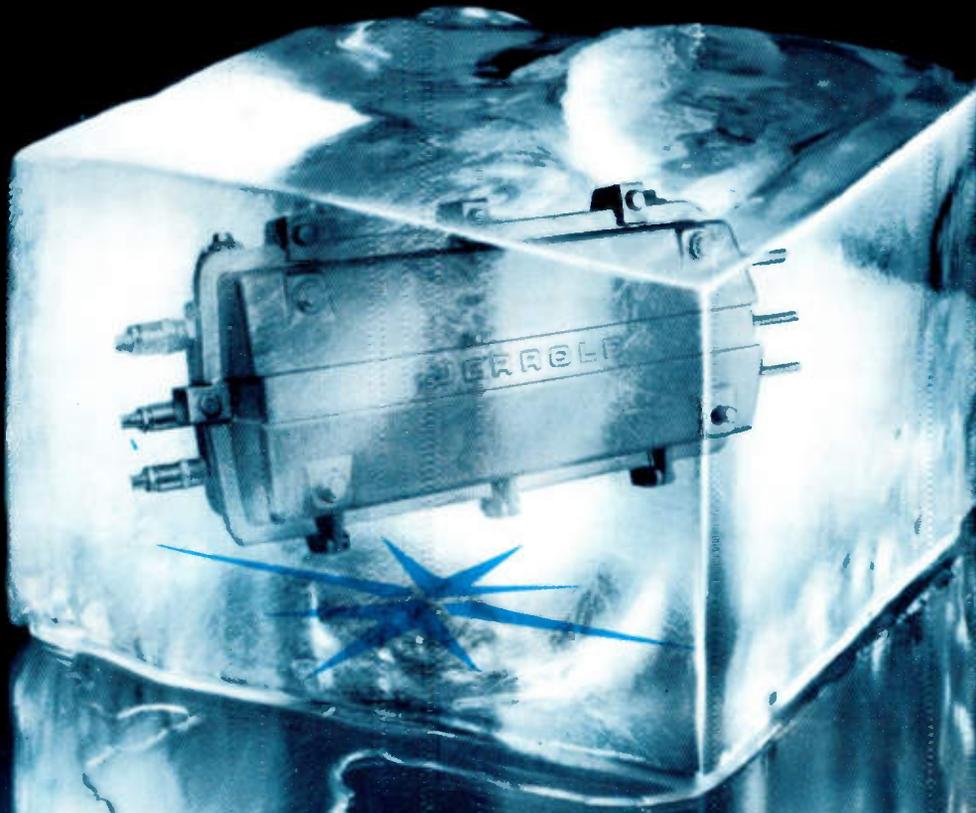
The Professional Journal of Cable Television

In This Issue...

**Multi-channel Microwave
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- Aluminum thermal finger inserts ■ Integrated AGC circuitry



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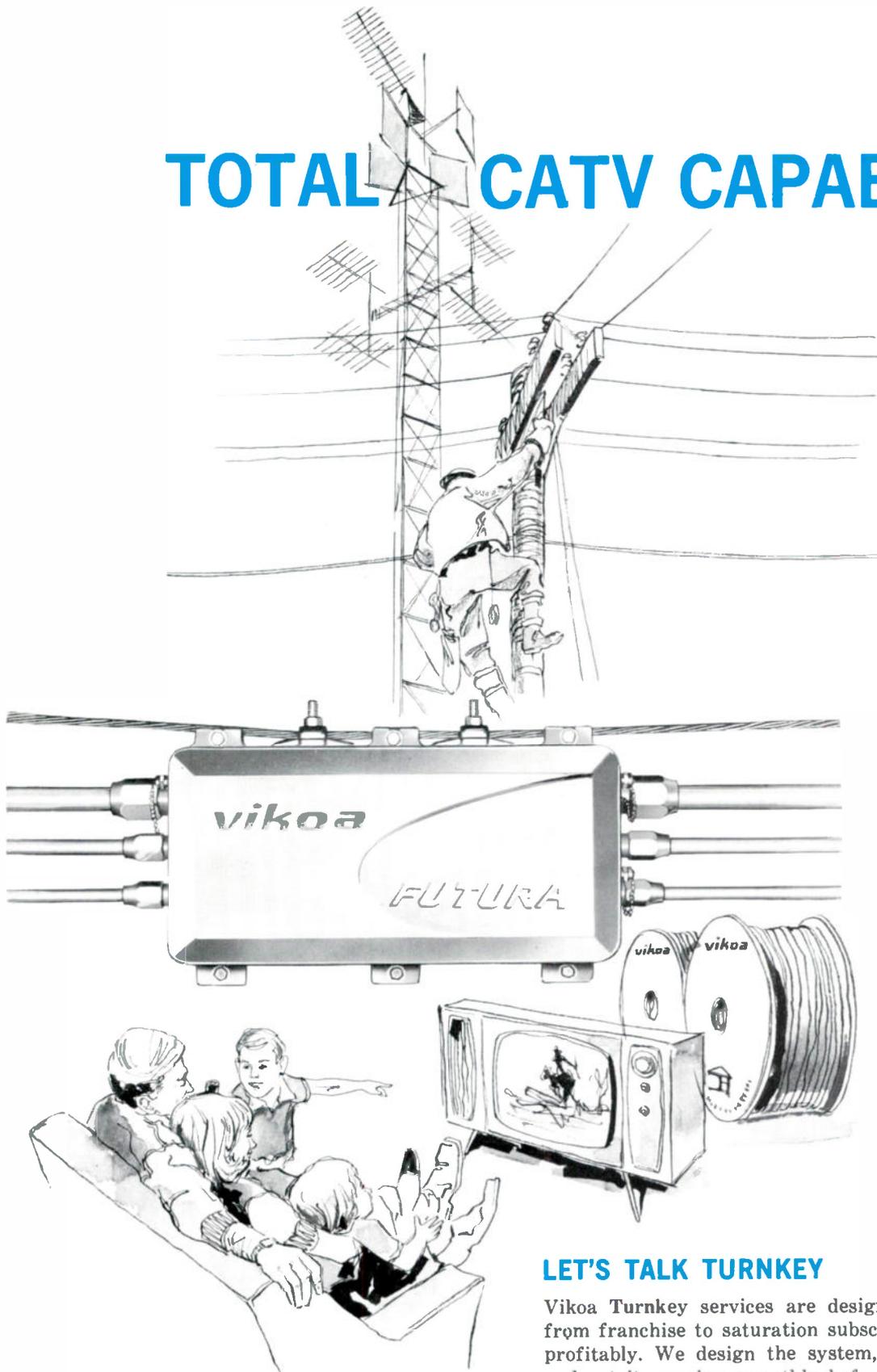
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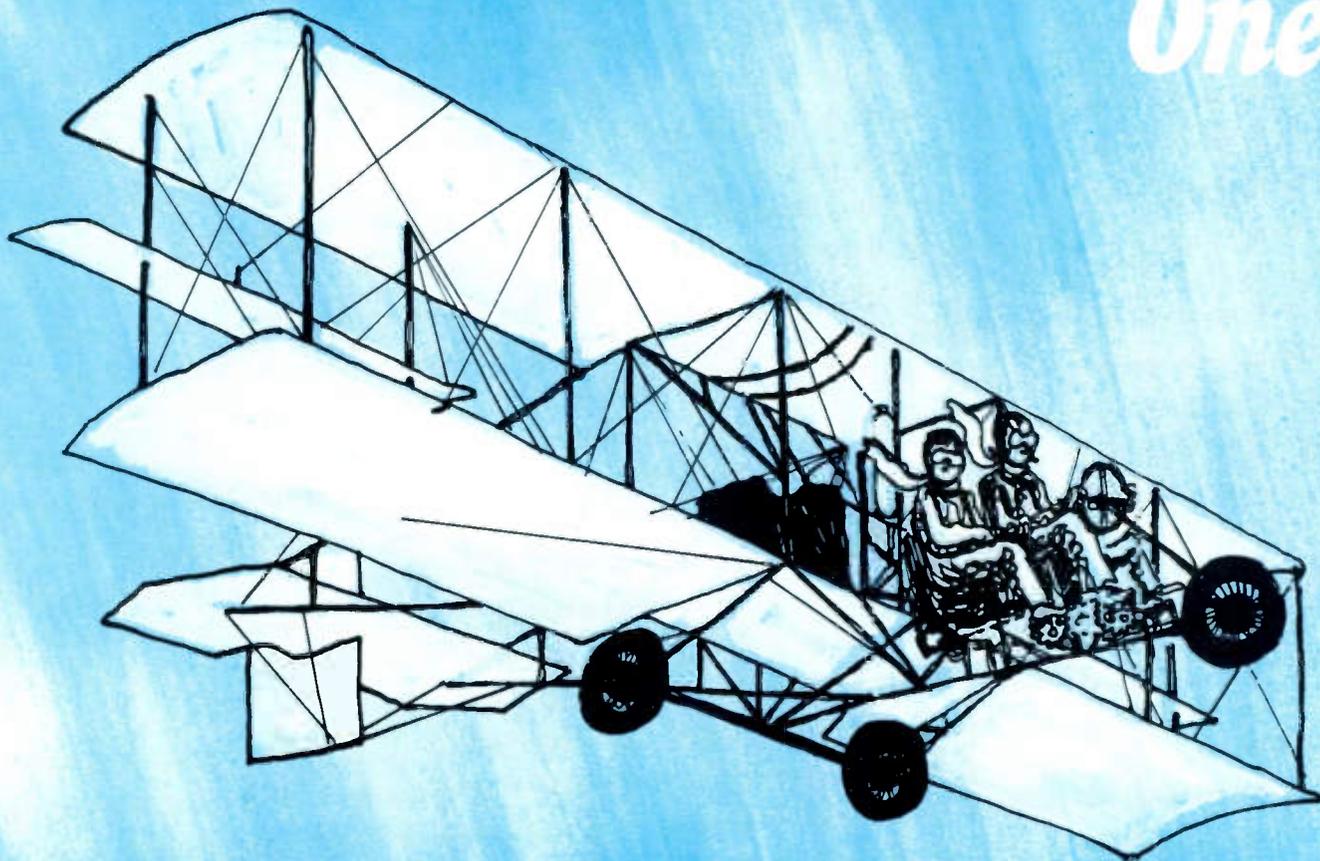
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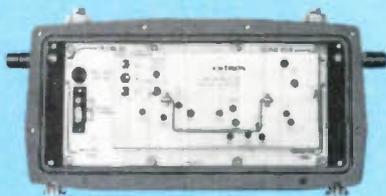
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The Most Respected Name in CATV

IN THIS ISSUE

Getting the Drift

A record winter storm hit the reception facilities on the Globe-Miami, Arizona cable system last December, and resulted in an unusual struggle by the system personnel to restore television service along with other communications services for their community. Manager Ingo Radicke relates the incidents of those "days on the mountain" beginning on page 39 of this issue.

Microwave of the Future

The TelePrompTer-Hughes Aircraft tests of multi-channel short haul microwave in New York City caused considerable interest within the CATV industry. That was 18 months ago, and interest remains high in the potential applications of the amplitude modulated link system for signal distribution. A comprehensive review of the development and applications of AML begins on page 42.

Master-minding System Growth

The addition of multiple outlet dwellings and institutions can be decisive in a cable system's profit picture, as well as an effective PR project in the case of hospitals, nursing homes and schools. In many communities, the cable system operator will be called upon to wire such buildings for television — in other cases, a knowledge of MATV system construction is essential to connecting existing master systems to the CATV distribution system. Tom Shea's article, beginning on page 67, presents answers to many of the problems encountered when installing and serving such systems.

Our Cover: This month's front cover photo was supplied by Clearview of Georgia, Inc., Dublin, Georgia. Clearview has its own construction crew, some of whom are shown here lashing trunk cable from the head-end building in the background. (*TV Communications* pays \$20 for color photos supplied by readers and selected for publication. Both transparencies and glossy prints are accepted.)

TV Communications

The Professional Journal of Cable Television

Arizona Storm Paralyzes Globe-Miami System

System manager Ingo Radicke recounts the efforts to restore cable service following a record storm 39

Amplitude Modulated Link for CATV Distribution

A review of the development of the short-haul, multi-channel microwave now awaiting FCC licensing action 42

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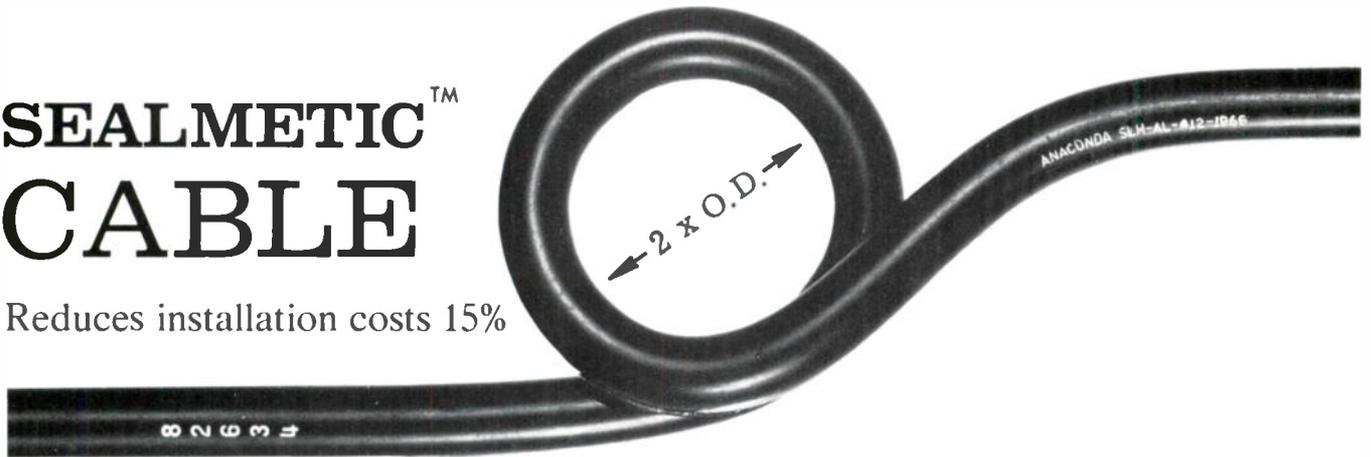
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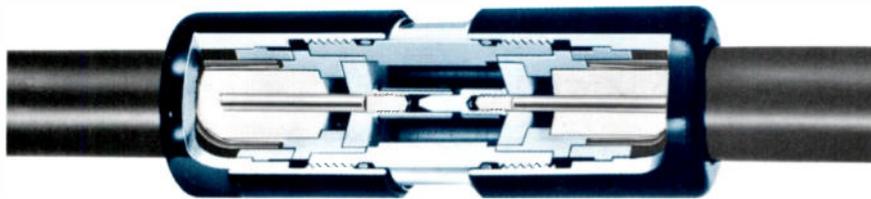
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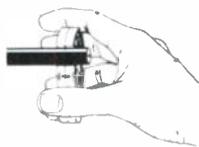
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The TVC Viewpoint

EDITORIAL



Jolly Greenback Giant

It is ironic that one of the newest and smallest industries, CATV, finds itself opposed in certain areas by one of the largest of corporate giants, Bell Telephone. Without large companies, with their economies and mass production, America would never have developed as it has. But what of the threat posed by the established giant to the aspiring little companies?

The success — or size — of a business isn't inherently bad. But when a company overshadows all of its potential competitors, so as to totally dominate its field, then American free enterprise may be threatened.

Just how large is the Bell System? Well, just to drop a few statistics, Bell added 3.8 million telephone outlets during 1967. That's more than the total number of customers accrued by the CATV industry to date. The Bell System spent \$4.3 billion on expansion and improvement last year. That's about 35 times the amount spent by *all* cable television companies on expansion, improvement and *new construction* combined!

The 101 billion conversations, conducted over the 103 million telephones, generated enough revenue to provide for the \$4.3 billion expansion with debt financing of only \$1.5 billion last year. And, of course, there were some profits for the more than 3 million stockholders.

The largest cable system in the world has a staff of about 100 people. In contrast, the Bell System has 845,000 employees. Plant investment in physical facilities of the Bell System totals \$32.3 billion.

Considering these figures, who could ever believe that the fledgling CATV industry has a ghost of a chance competing with the Bell System? If all of the cable systems in America merged and combined their resources the resultant combine would be no match for Bell!

Being in every branch of communications, CATV pointedly included, is a matter of Bell corporate policy. And with \$4.3 billion a year just for expansion, it's obvious that the Jolly Greenback Giant has the "muscle" to take over anything in sight.

Conclusion: the cable television industry must have the protection of the Federal government in order to prevent eventual assimilation by AT&T.

Quiet Heroes

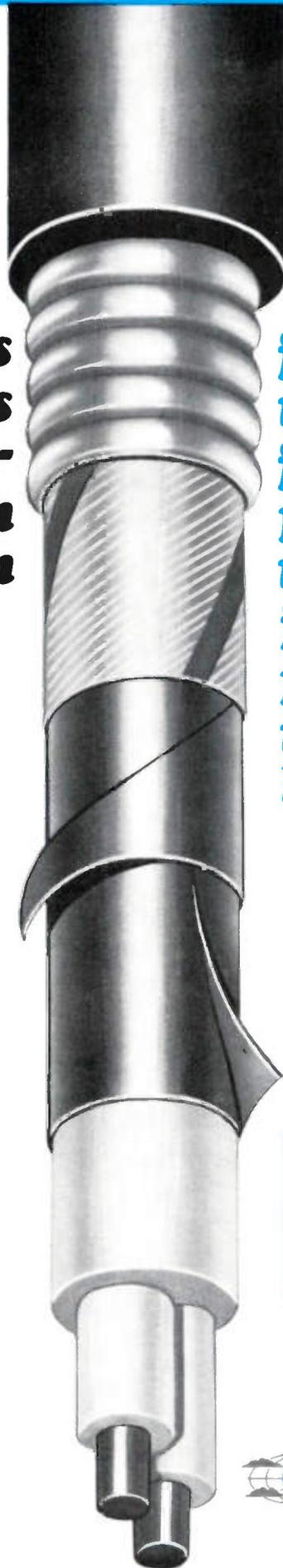
Every battle has its unsung heroes. A handful of generals may take most of the bows. But a far greater number of men — whose efforts and accomplishments are known to only a few — are the real heroes. They did their jobs well, with thoroughness and thoughtfulness. The cable television industry has its own small legion of unsung heroes, who work selflessly yet effectively behind the scenes. Men who commit their best effort — aware that few if any will ever know of their contribution. And no plaques, applause or acclaim will come their way.

If the CATV industry wins its battle for existence and a fair chance in the market place, a great part of the credit will be due these men. Who are they? We wouldn't attempt to list them for two reasons. First, the list would be rather long. Secondly, because we would be sure to omit many whose role has been vital.

Most of us are aware of the important efforts of the professional people retained at state, regional and national levels to carry the ball in certain legal and regulatory battles. But the CATV industry must not overlook or underestimate the indispensable role of individual operators — especially where Congress is concerned.

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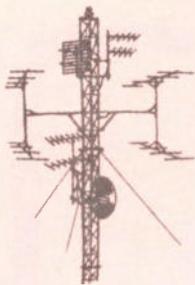
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CATV Industry **PERSPECTIVE**

Among noticeable trends in the cable television industry during the next two years will be changing patterns of ownership. Mergers and rumors of mergers are becoming more and more frequent--and some of the rumors have substance. Joining of TelePrompTer and Hughes in joint venture, Jerrold combine with General Instruments, absorption of systems by Jack Kent Cooke, formation of GenCoE and Colorado partnership of Vumore and Daniels are some examples of the trend.

Factors contributing to the merger trend are: shortage of substantial amounts of capital at attractive rates, stiff competition for franchises and the size of markets now being vied for. A merger or two among medium sized equipment manufacturers is a definite possibility, also.

Some big system sales, in addition to mergers will be in the offing this year. Some who entered business during period of faster growth have lost enthusiasm. Others are disheartened by copyright threat and continual anti-CATV posture of the Federal Communications Commission. But buyers with big money available are waiting in the wings to make huge investments in cable television.

Look for increased prices on CATV equipment and turnkey construction costs. Higher manufacturing costs, coupled with operator demands for consistency and performance have been squeezing manufacturer margins in a market that was already slowed from 1966 level. Cable system owners, becoming generally more sophisticated, are wary of cut-rate turnkey construction bids, also. Many readily spend \$3,500-\$4,500 per mile, in order to achieve reliability of service and economy of maintenance--even though quotations lower by hundreds of dollars per mile have been tendered.

Interest in local program origination continues to grow. Operators are becoming increasingly aware of the fact that equipment availability is running ahead of capability of personnel to properly use the equipment. For systems interested in color cablecasting, the need for a technical staff with specialized training becomes quite conspicuous. Meanwhile the manufacturers of basic time, weather and mechanical display equipment are upgrading and broadening their lines. Consequently, keeping pace technically with CATV studio gear is becoming more complicated. Within 2-3 years many cable systems--barring FCC restrictions on local origination--will have studios as well equipped as some broadcast stations.

New friends and understanding on Capitol Hill will result from cable operators efforts to expose elected officials to populace via videotaped cablecasts. Election year is recognized as ideal time for operators to utilize this capability for political mileage. Don't expect your congressman to be too impressed, however, because broadcasters are still in driver's seat in terms of total audience and influence. Primary benefit of cable politicast is in getting the idea across to officials of just what a cable system is, how it operates and who subscribes to it.



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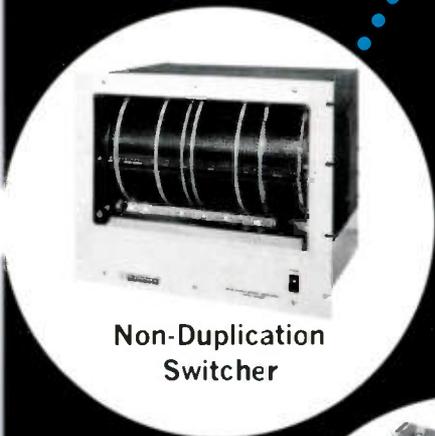
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Construction Reports

Arkansas — Davco Electronics Corp. is investing one million dollars in CATV expansion, including extension of existing systems and construction of new systems. New systems include recently acquired franchises in **Helena, West Helena, Tuckerman and Newark**. Poles have been set in Helena and West Helena and plans are under way for offices, warehouse space and a television studio area. A \$60,000 expansion program is under way on the Pocahontas system.

Fallbrook, Calif. — Pala Mesa Cablevision is installing a new system consisting of over 30 miles of cable.

Daytona, Fla. — Halifax Cable TV, Inc. has awarded a construction contract to Kaiser CATV Corp. for the first phase of work on a system which will serve sections of Daytona Beach and South Daytona, Fla.

Tifton, Ga. — Tifton Cablevision Inc. has been awarded a 20-year franchise

by the city. Survey work has begun and construction is scheduled to start April 1, with the system to be in operation 6 months later.

Mountain Home, Idaho — Valley Cable Television Corp. recently signed a contract for the engineering and installation of the system by Anaconda Astrodata Co.

Lawrenceville, Ill. — The system in Lawrenceville is now partially in operation.

Shelby, Montana — Intermountain Microwave Company is installing \$34,000 worth of solid-state electronic equipment at Mt. Aeneas near Kalispell, Mont. and Mt. Baldy near Browning, Mont. to improve the relay of Spokane network channels 2, 4 and 6. Although severe snow and ice conditions are slowing installation progress, new service is expected to be available soon to Great Falls, Havre, Glasgow, Shelby, Cut Bank, Whitefish and Polson. Intermountain Microwave is a subsidiary of TelePrompTer Corporation.

Willingboro, N.J. — A CATV system is now being installed by the General CATV Co. Over 30 miles of cable have

already been laid and operations are scheduled to begin April 1.

Blackwell, Okla. — Fidelity Cables Inc. in the Blackwell and Tonkawa area has recently installed additional equipment and now brings its viewers 12 channels of programming.

Multnomah County, Ore. — Construction is beginning on a Radiant Cable Systems, Inc. plant which will serve about 15,000 subscribers in Multnomah County, adjacent to Portland, Ore. Costs are expected to exceed \$1 million.

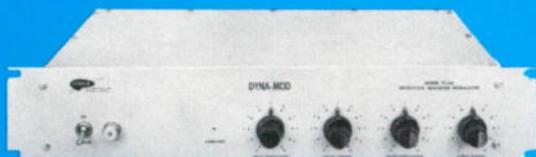
Ligonier, Pa. — The Laurel Highland Television Co. has announced beginning of construction on a system serving the Ligonier area.

Titusville, Pa. — Titusville Cable TV, Inc. is completing construction of the first tropo scatter antenna of its particular design and size in the eastern United States.

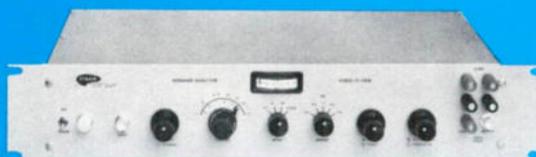
Jasper, Tex. — Time-Life Broadcasting recently gave the contract to lay cable for its Jasper system to Burnup and Sims, Inc., of Florida. The system should be in operation in about 3 months. (TVC)

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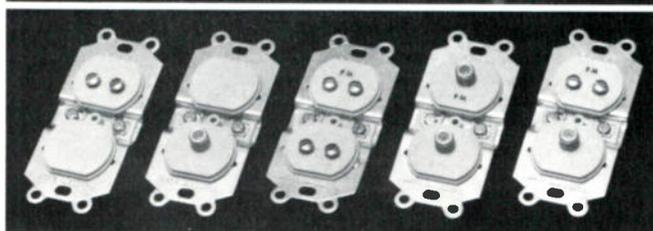
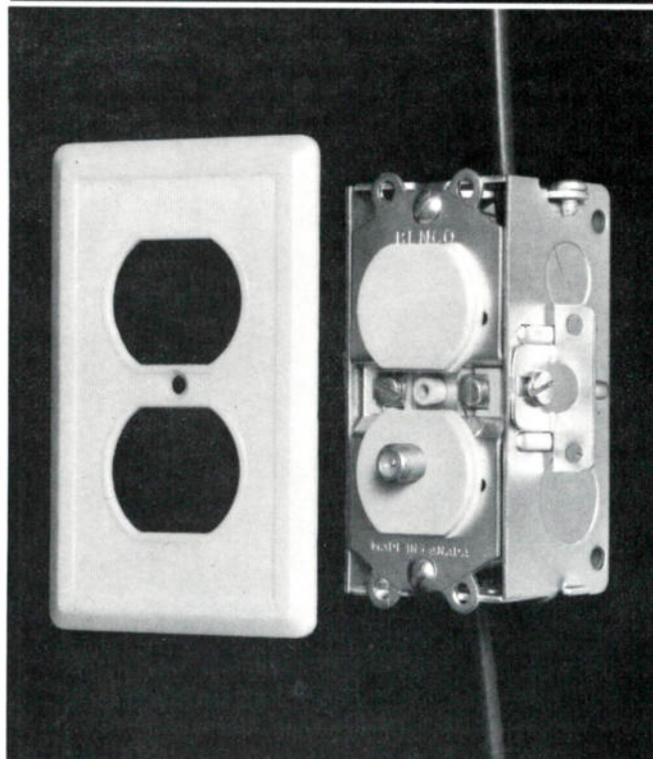
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Nothing is more valuable to any manager than time. Businessmen who get the most done in the least time have conscientiously sought out minute-savers that add up to extra time for thinking out answers to problems and planning ahead, their real function. Here are a couple of important tips:

Simplify your work. Why do it the hard way? The simpler way is usually easier, better, and takes far less time. Follow the experts' procedure and check these pointers:

First, pick your routine actions. Break down the way you do things into movements, actions and delays, including such things as: getting ready, going through the actual motions necessary to accomplish the task; cleaning up or getting things organized for the next assignment.

Then ask these six question about each step:

1. Can you eliminate the entire operation? Or part of it?
2. Does the accomplishment of this step really contribute something?
3. Where should it be done?
4. When should it be done? Could you do some of the things you're doing at different hours? Or group them together to get them done more quickly?
5. Who should do it? Perhaps more of your responsibilities could be delegated.
6. What's the best way to do it?

Now work out the new method. Basically, you find it consists of five steps: (1) Eliminating any unnecessary details; (2) Combining two or more jobs wherever practical; (3) Rearranging the order of your tasks systematically for better sequence; (4) Simplifying all details; and (5) Organizing put-away to save time on make-ready of next job.

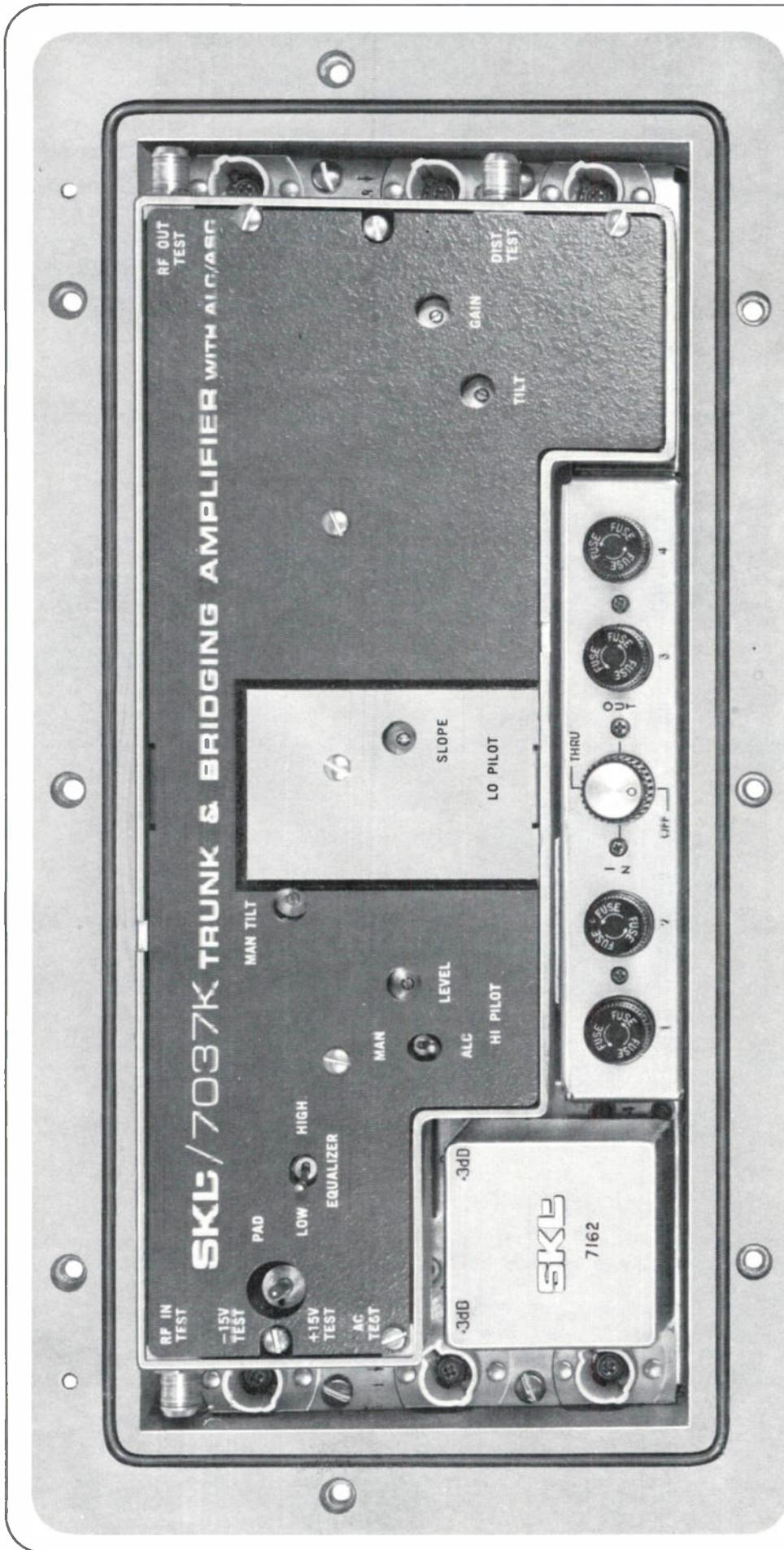
After you've developed a new method for repetitive tasks, begin using it at once. See if practice is as good as theory. It may take you a while to establish the new patterns, but you'll soon become accustomed to them.

Working at your best hours. Your "normal" body temperature actually varies as much as three degrees during the day, even when you're perfectly well. The variations coincide with the rises and falls in your working efficiency; mental alertness and feeling of well-being coincide with these temperature variations. Though not all of us respond alike, we are likely to fall into one of these three types:

The morning type wakes up full of drive, reaches his peak around noon, and then cools off gradually. The evening type hates to get up, and then goes through the morning listless, lethargic, even surly. But soon after noon, he begins to gain momentum and by late afternoon, he's just as much a fireball as Type I was in the morning. The half-and-half type has the virtues of both the others. His personal thermostat gets him off to an early start, cools him down at mid-day and fires him up again for the afternoon.

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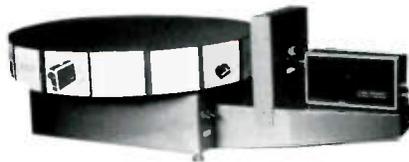
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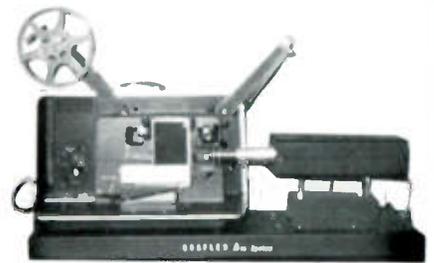
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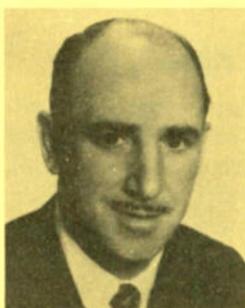
Late News

FINAL ARGUMENTS SET IN SUPREME COURT

All briefs have now been filed in both of the CATV cases scheduled before the Supreme Court this month. In the first, the San Diego case, the Court has before it the basic question of FCC jurisdiction over the cable industry. Besides the briefs of the parties themselves, friend-of-the-court briefs have been filed by Midwest, Black Hills, Alice and Buckeye cable companies arguing against Commission jurisdiction. One of the briefs contends that the CATV rules constitute "an illegal and unjustified extension of governmental power over a legitimate industry providing a necessary and sought-after service to the public." This same case is also pending before the FCC for review of an initial decision by hearing examiner Chester Naumowicz favorable to the cable companies. April 8 has been set for oral arguments before the Commission.

CATV copyright obligations will also be decided by the Supreme Court this month. A host of briefs has been filed on this important question which affects so many varied interests (see story this issue, page 23). The main brief arguing CATV copyright liability was that of respondents, United Artists Television, Inc. UA told the court that CATV "plays no David to respondent's industry's Goliath" and cited the "financial giants" involved in the cable industry as well as predictions on the phenomenal growth of CATV. The National Association of Broadcasters' brief also echoed the big-business line, claiming cable fears of copyright confiscation are exaggerated. Another broadcaster group, the All-Channel Television Society, also called on the court to affirm liability as did several groups directly involved in the performing arts such as: BMI, ASCAP, Screen Composers Association of U.S., Writers Guild of America, Screen Actors Guild, American Federation of TV and Radio Artists, and Directors Guild of America.

FAIRNESS VIOLATIONS CHARGED AGAINST BROADCASTER



Al Ricci

The Community TV Association of New England has petitioned the FCC to revoke two licenses held by William L. Putnam's Springfield Television Broadcasting Corp. Repeated violations of the Commission's Fairness Doctrine have evidenced a pattern of disregard for FCC rules by Springfield, says the cable association.

The company operates two UHF stations, WWLP-TV, Springfield, Mass., and satellite WRLP-TV, Greenfield, Mass. Putnam, president of Springfield, is also president of the All-Channel Television Society, a UHF group which advocates rigid curtailment of cable television, and is an outspoken critic of the cable industry. Putnam's editorializing against CATV was specifically forbidden in a Memorandum Opinion and Order issued by the Commission in March, 1965. The Order stated that Springfield had "seriously failed to discharge its responsibility in the public interest." Less than a year later, the stations again ran afoul of the Fairness Doctrine, and at that time the Commission informed Putnam that "Springfield's conduct . . . was far short of a licensee's obligations under the Fairness Doctrine."

The New England association's allegations of new violations are supported by an affidavit signed by Albert J. Ricci, Secretary of NCTA and operator of seven systems within the service contours of the Putnam stations. His affidavit is accompanied by copies of six WWLP-TV and WRLP-TV editorials which are highly critical of CATV. According to the petition, the editorials "constitute a

Late News (Continued)

continued expression of Springfield's anti-CATV bias, are vehement attacks upon CATV and its proponents, including personal attacks upon the character, honesty, and integrity of area CATV proprietors."

CABLEMEN HOPEFUL ON 214 HEARINGS

How Section 214 of the Communications Act will affect telco-CATV relations was the subject of an all-day FCC hearing recently, and a decision this month is not unlikely, according to an informed source. The answer CATV'ers are waiting for is that telcos must obtain certificates of convenience and necessity for cable leaseback arrangements. All seven commissioners were present for the hearing, and they stayed in attendance throughout.

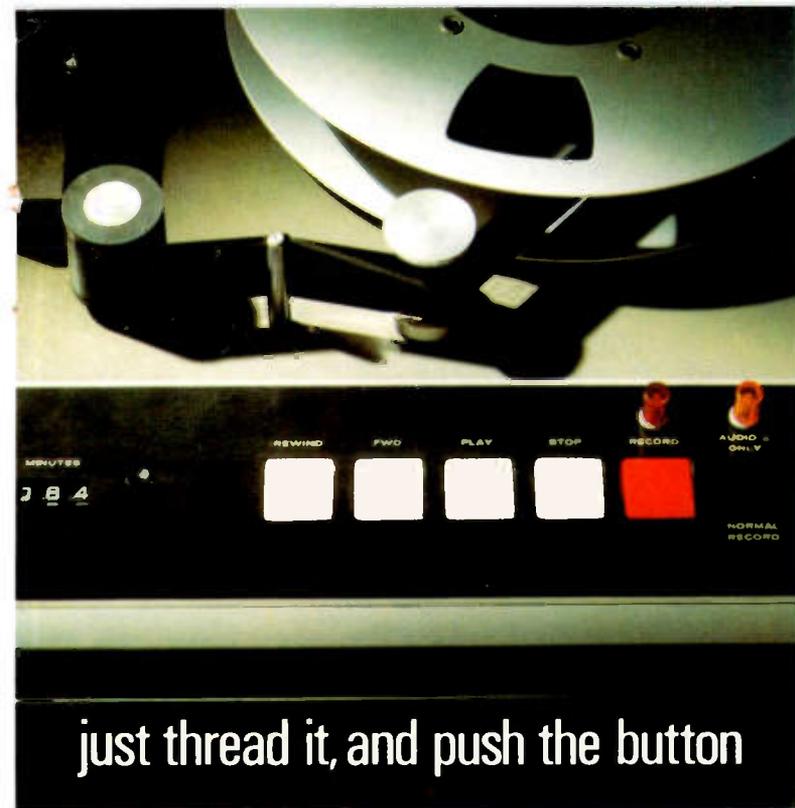
The telcos argued against such a requirement on the basis that leaseback service is intrastate and therefore not subject to federal jurisdiction; but they said, further, that even if the service is held to be interstate, it is exempt from Section 214. The National Cable Television Association and other industry representatives were joined by the FCC's Common Carrier Bureau and the CATV Task Force in arguing for Commission jurisdiction. Bruce Lovett, NCTA general counsel, gave the main portion of the argument. He was assisted by special counsel Harold Farrow.

Washington attorney, John P. Cole, Jr., predicted a victory for cable interests in this matter. "For one thing," he said, "it is much easier arguing *for* jurisdiction than it is *against*." But the real issue, according to Cole, is which way the Commission will move once jurisdiction is asserted. Federal regulation alone would not necessarily prevent the telco take-over of CATV which some industry observers fear.

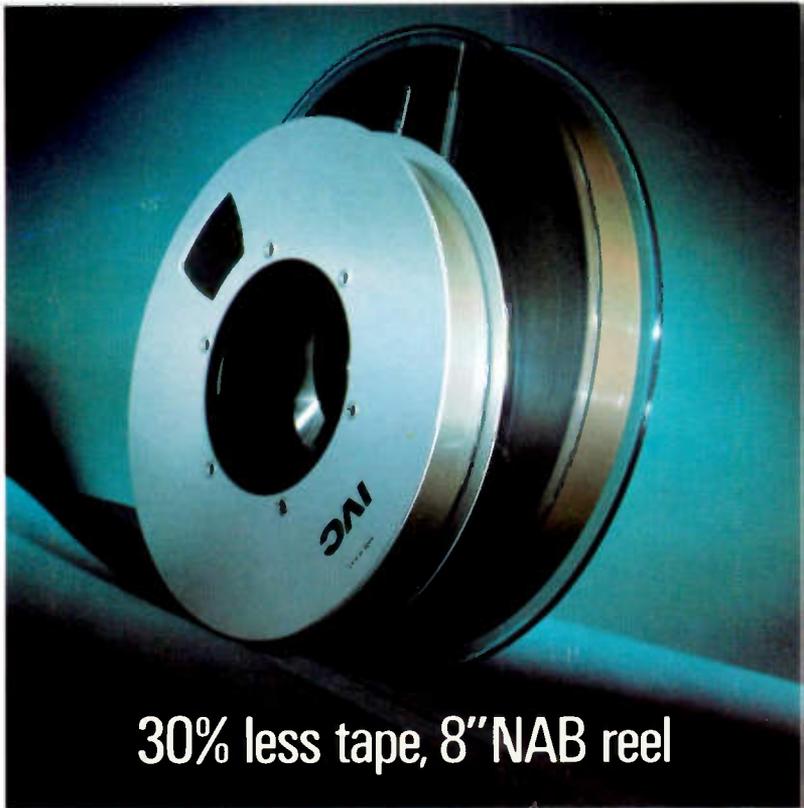
While Cole did not discount the possibility of this happening, he did discount its likelihood. He said he thought the Commission had "learned its lesson" and would be reluctant to create another giant monster.

JOHNSON-NCTA SETTLE DIFFERENCES OVER CATV FILM

FCC Commissioner Nicholas Johnson and the NCTA have arrived at a settlement of their differences over Johnson's appearance in the CATV industry film, "CATV: A Response to Public Demand" (see story this issue, page 26). The solution is a new introduction to the film by NCTA president Fred Ford. In the new footage, Ford states, "The film you are about to see contains statements by FCC Commissioner Nicholas Johnson and Congressman Silvio Conte of Massachusetts. These gentlemen do not appear as spokesmen for cable television or for the bodies in which they serve. Commissioner Johnson is one of seven FCC Commissioners; Mr. Conte is one of 435 members of the House of Representatives." Ford adds that their keen interest in cable television "should not be construed as endorsement or support of any governmental policies." He concludes with a grateful acknowledgement of their participation. All copies of the film will have the new introduction attached, and NCTA has agreed that segments showing the Commissioner will be deleted from any future editions of the film. Commissioner Johnson's highly publicized appearance in the cable film was the subject of attack by Representative Dan H. Kuykendall (R. - Tenn.) who called on Commissioner Johnson to disqualify himself from all future FCC cases and proceedings involving CATV. "Members of quasi-judicial regulatory bodies have a duty to be as impartial as judges, and Johnson has revealed himself to be anything but impartial in the NCTA promotional film," according to Kuykendall.



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* Bell and Howell, G.P.I.

All Players Set in Copyright Contest

The month of March should see the beginning of the end to one of the most vexing problems facing the CATV industry—the question of copyright liability. This month the Supreme Court is scheduled to hear oral arguments in the case of *Fortnightly Corporation vs. United Artists Television Inc.* While the ultimate solution to copyright must wait for Congressional action, the Supreme Court verdict will determine liability under present statutes; a verdict is expected before Court adjournment in June.

The Court will have before it not only the briefs of the litigants, but friend-of-the-court briefs from the National Cable Television Association and the National Association of Broadcasters, in addition to a memorandum from Erwin Griswold, Solicitor General of the U. S.

Fortnightly: No "Performance"

Fortnightly Corporation is appealing decisions of two lower courts which hold that CATV reception is a "public performance for profit." In its brief to the Supreme Court, Fortnightly contends that CATV is not a performance, but merely the reception and transmission of energy in the form of broadcast signals. According to E. Stratford Smith, co-counsel with Cleary, Gottlieb, Steen & Hamilton for the petitioner, "The essence of Fortnightly's argument is that since CATV does not produce the picture and sound, does not own, operate or control the TV receiver on which the copyrighted program appears, does not know who is watching any given program at any time, and does not select the programs for either the stations or the CATV subscriber, CATV is not a 'classical performance' or any other kind of performance within the ordinary meaning of the word."

The brief attacks a lower court finding that liability results from "magnitude of contribution" to viewing. On that basis, says Fortnightly, manufacturers and distributors of television sets and antennas, common carriers and power companies, among others, would all be infringers. It urges the court to reject such a "sweeping new doctrine of infringement by contribution."

The 109-page brief also contains extensive arguments as to the underlying policies of the Copyright Act and the Communications Act. Under the former, reward to the copyright owner is only a secondary policy; the principal objective is to provide for release to the



Handling the CATV argument in the *Fortnightly-United Artists* case before the Supreme Court on March 8 will be Robert C. Barnard of Cleary, Gottlieb, Steen and Hamilton, Washington.

public of the copyrighted works. The Communications Act also was intended to secure public rights—the right to receive maximum benefit from television.

In support of its policy argu-

ments against copyright liability, the brief quotes testimony of the Antitrust Division of the Justice Department. The Justice Department fears shift of cable control and ownership to networks and copyright holders. This would mean loss of the competition to networks which could be provided by CATV local origination. It could also represent the loss of competition for telephone companies in providing communications facilities. Another area of concern, according to Smith, is the anticompetitive danger of "permitting copyright owners to draw territorial lines around broadcasting stations by means of exclusive licenses as against CATV and other master antenna reception."

Although the main thrust of petitioner's argument is that CATV is *not* a performance, the brief contends that even if the court does find that it *is* a performance, it must also find a "license implied by law" running from the copyright holder to CATV. This license would exist because of the public's established right to receive TV broadcasts, and their further right to use any antenna system they may choose in order to receive those broadcasts.

Robert C. Barnard of Cleary, Gottlieb will argue petitioner's case.

NCTA Supports Fortnightly

In a friend-of-the-court brief prepared by their attorneys Bruce Lovett and Gary Christensen, the National Cable Television Association "supported and adopted" the brief of Fortnightly. The Association warned the high court of "disastrous consequences" for the industry and the public if the lower court verdict is affirmed.

"It cannot reasonably be contended," said the brief, "that CATV, operating within the framework of the television industry as it has for the last 17 years without paying copyright royalties, has had an adverse impact upon the implementation of the Copyright Act."

NCTA pointed out the inequities to subscribers and to CATV operators which would follow a finding of liability. "The subscriber to a CATV service—who has paid his share and played his part in the

economic system that supports television—should not be required to make a second payment to the copyright proprietor through his CATV subscription,” according to the brief. It also went into some burdens which would be imposed on the operator if proposed copyright procedure is endorsed. As a practical matter, negotiations would usually follow rather than precede program reception, and the operator would have to either accede to the copyright holder’s

random proposed a solution whereby CATV would be liable only for signals carried beyond the Grade B contour of the originating station.

He said, “CATV carriage of copyrighted works within the licensed station’s normal service area cannot be expected to have a substantial adverse impact on the incentive to create, while extension of the station’s signals outside that area may well have such an effect.” His proposal is very much like a formula considered by Congress last session. That plan specified no liability in Grade B contours, compulsory licensing at reasonable royalties in underserved areas and full copyright

protection for distant signals.

A Supreme Court ruling along these lines would leave many copyright questions unanswered. Griswold suggested, however, that those answers might be found in negotiation and legislation rather than by judicial action.

It is generally agreed that, whatever the judicial outcome of *Fortnightly vs. United Artists*, the ultimate solution to copyright will be found in legislation. To this end, negotiating teams from the cable, broadcast and copyright owner camps are working on recommendations which they will submit to Congress in hopes of getting new copyright legislation this session.



General Counsel Bruce Lovett says NCTA supports *Fortnightly* position.

demands or go to court. “It is easy to see,” said the brief, “how the larger copyright proprietors and networks would end up owning the CATV industry.” Moreover, one cable operator would be forced to bargain with 25 or more major syndicators, 3 TV networks and music societies. And, said NCTA, even if copyright holders were willing to grant a license, they may be unable to do so because of prior exclusive arrangements with area broadcasters.

**Solicitor General:
“Performance, But . . .”**

U.S. Solicitor General Erwin Griswold’s memorandum to the Court reflects something of the conflicting views of the various government agencies. Although Griswold concluded that CATV is a “performance,” he also considered the anticompetitive and monopolistic dangers feared by the Justice Department if full liability were upheld. The memo-

“No Impact” Verdict in Buffalo

CATV has won a significant victory in the top-100 market of Buffalo, N.Y. The second full-scale hearing on CATV impact culminated in Hearing Examiner Herbert Sharfman’s decision that Buffalo UHF would not be injured by expansion of Courier Cable Co. activities in that market. Since the first full-scale hearing in San Diego had the same result, CATV is thus far boasting a perfect record in hearing examiner impact decisions.

Opposing Courier’s expansion were UHF applicant, Ultravision Broadcasting, and UHF permittee, Beta Television Corporation (WBAU-TV). Although they alleged irreparable economic injury, Sharfman said there was a “dearth of any cogent testimony by the UHF’s from which their downfall can be assuredly predicted.”

Referring to the cable’s 11-channel capacity, he said, “It bears repetition to say that if all that was necessary was for the UHF’s to plead that they will have it tougher to compete with eleven other program choices than with three, a hearing was superfluous.” His final word was: “It is concluded that it was not proved that the expansion of Courier’s CATV system will prevent the profitable operation of UHF TV in Buffalo.”

Citing Beta’s own witness, consultant Richard P. Doherty, Sharf-

man pointed out the economic headstart the UHF’s would have over CATV. Based on 1967 signal reception, the UHF’s can enjoy \$800,000 to \$900,000 in revenue, and by 1973 that figure could reach \$1,000,000. But a CATV system takes seven years to build, and by 1973 would only have reached about 65% of total growth, according to Sharfman. While Sharfman acknowledged the FCC’s policy of protecting UHF’s, he concluded, “the Commission did not, in evincing a concern for healthy UHF, furnish management with a self-inflating survival kit.”

While proceedings were still in progress, Courier signed a private agreement with the three VHF’s in the area on carriage and non-duplication considerations. This agreement was offered to the UHF’s, but was rejected.

If no exceptions were filed to the Hearing Examiner’s initial decision, it would become final in thirty days and have the effect of a final decision of the Commission. In the event exceptions are filed, the case ordinarily goes to the Commission’s Review Board which issues a final decision. The Commission may in some cases, as it did in the San Diego case, by-pass the Review Board and review the decision directly.

(News continued on page 26)



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NCTA Film Gets National Attention

If a film's premiere is any indication, the National Cable Television Association's new \$50,000, 20-minute color movie may turn out to be one of the more sensational industrial films of the year. When "CATV: A Response to Public Demand" was screened for the first time, it drew astonished—and unhappy—comments from one of its "stars," FCC Commissioner Nicholas Johnson.

The Commissioner was surprised at the extent to which he was featured in what he considered an advertising film. It was "wholly

the matter to Chairman Rosel H. Hyde who listened sympathetically. Ford said the Association was extremely anxious to satisfy Commissioner Johnson, and would do anything it could within reason. Around 100 prints of the film went out for Cable TV Week showings in February.

Those close to both sides in the controversy agreed that the Commissioner did not say anything on film that was not already on record in his speeches and writings. What apparently shocked him was the effect of appearing several



Commissioner Nicholas Johnson says NCTA's film paints a picture of him which is "wholly inappropriate."



Among those on hand for the premiere of "CATV: A Response to Public Demand" were Rep. James H. Quillen (R.-Tenn.); G. R. Gamble, National Trans Video, Inc., Dallas and Paul G. Puckett, Cable TV Co., Johnson City, Tenn. Over 200 political and cable industry leaders attended the Feb. 7 premiere of the film which has received national publicity due to Commissioner Johnson's objections to his "star role" in it. (Photo compliments of NCTA Bulletin)

inappropriate" for a public official, he said, and he is asking NCTA president Frederick W. Ford to do something about it. He had understood he was to give prior approval to his role in what he had thought was a public-affairs, educational documentary; but the footage was never submitted for his review, perhaps because of the death of producer Irving Gitlin.

Commissioner Johnson was reported to be trying to get NCTA to withdraw the film, or at least delete the footage featuring him. He is understood to have taken

times for a total of about seven minutes—moreover, as the sole Commission representative. A source near him called the situation unfortunate, and emphasized that he had no wish to embarrass Ford, the NCTA or the film producers.

Also appearing in the film is Congressman Silvio Conte (R-Mass.) who explains how he uses cable to reach constituents who otherwise could not receive his periodic filmed messages. "I use CATV," he says, "because there are pockets in my area where the

reception from ordinary television is poor and the only way that I can reach my constituents is through this medium."

The Washington premiere drew more than 200 guests from the industry, congressional, and regulatory communities. Besides Johnson, FCC Commissioners there were Kenneth A. Cox and Lee Loevinger, as well as FCC General Counsel Henry Geller and CATV Task Force Chief Sol Schildhouse. The President's Task Force on Communications was represented by J. F. Kincaid, Undersecretary of Commerce. National Association of Broadcasters representation was led by General Counsel Doug Anello.

Congress Moves Toward Copyright Legislation

Senator John L. McClellan (D-Ark.), Chairman of the Senate Judiciary Subcommittee on Trademarks, Patents and Copyrights, has called for statements of position on the CATV section of a copyright bill by April 1. In a letter to those who appeared at the 1966 hearings, the Senator asked interested parties to bring their positions up to date and to make their suggestions on the language of the law.

In his letter, Sen. McClellan referred to recent developments, such as passage by the House of a copyright revision bill imposing total liability on CATV systems, and consideration of the copyright

case now before the Supreme Court, as reasons for prompt action by the Subcommittee.

Although they are left out of this round of statements, the various other government agencies heard in 1966 continue to influence thinking on copyright (for example, the Justice Department's fears of anti-competitive consequences of blanket copyright liability). Also influential is the set of recommendations drawn up by the cable-broadcaster ad hoc negotiating team. The Subcommittee encouraged the groups to negotiate last year, with a private moratorium put on infringement suits. A report from the ad hoc committee is now in the hands of the NAB and NCTA.

NCTA has retained the firm of Katz, Mozelle and Schier, of New York, to assist with negotiations. Walter Schier is recognized as one of the nation's leading experts on production and use of copyrighted audio-visual material.

Cox Demands "Fairness" to Cable

FCC Commissioner Kenneth A. Cox, in a dissent to a recent Commission decision, took the position that if nonduplication is required of cable systems, it should also be required of non-profit translators in the same area. "In fairness to the cable company which competes with the translators for public support," he said, "I think that the requirement of nonduplication should also be applied to the translators."

The statement accompanies an order denying translator nonduplication protection to KFBC-TV, Cheyenne, Wyoming. Commissioner Cox said that since the Commission has enforced the nonduplication rule against Laramie Community TV Co., it should do the same against the translator. The cable company, he said, "is quite understandably concerned about this, having indicated that it would be willing to provide nonduplication voluntarily if the Laramie translators would do the same." He added that the cable system is seeking reconsideration of the order requiring it to protect KFBC-TV.

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Harvard's Jaffe Speaks Up on CATV

At least one respected voice in legal circles has predicted that there is a "strong likelihood" that the "competition minded" Supreme Court will not be prepared to uphold FCC regulation of CATV. The speaker was Louis L. Jaffe, former Dean of the University of Buffalo Law School, one-time staff member of the National Labor Relations Board, author of a textbook on administrative law

and director of an FCC seminar at Harvard for the past 10 years. In an article recently published in *The Viewer*, Jaffe referred to the upcoming consideration by the Supreme Court of the San Diego case which challenges FCC jurisdiction over the cable industry.

Jaffe said the Communications Act may be interpreted either way, but that the underlying policy of the statute is regulation



Dr. Louis L. Jaffe of Harvard University Law School.

of frequency allocation. Thus, CATV, which only "incidentally affects the scheme of frequency allocation," is not in the "main stream of FCC power." Jaffe feels the benefits, in the form of protection to local TV stations and UHF's, which are realized by CATV regulation may not be enough to offset the restriction of competition which results from Commission regulation. "The FCC," he said, "is regulating it (cable) to protect the local station against competition." He calls this policy "questionable" because "there is insufficient evidence that CATV seriously threatens the prime local service stations."

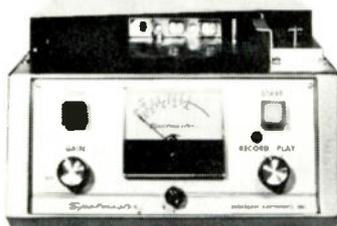
The FCC's protective attitude toward broadcasting came under fire from another source also. Technical journalist Leendert Drukker, writing in the January issue of *Popular Photography* magazine, said the Commission is "depriving the public of vast educational wealth." Drukker criticized the policy of eliminating competition to TV stations: "Suppose all intercity transportation were stopped because of the effect on local economies—or national magazines were prohibited because they might lure readers away from their local newspapers?" Both popular and trade press are becoming increasingly interested in the CATV issue. No doubt public awareness about CATV will be increasing in the future.

(News continued on page 30)

The Spotlight Is on

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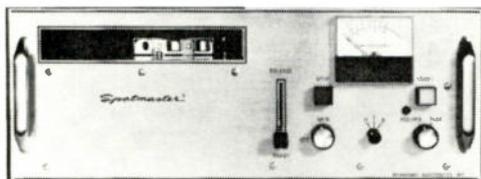
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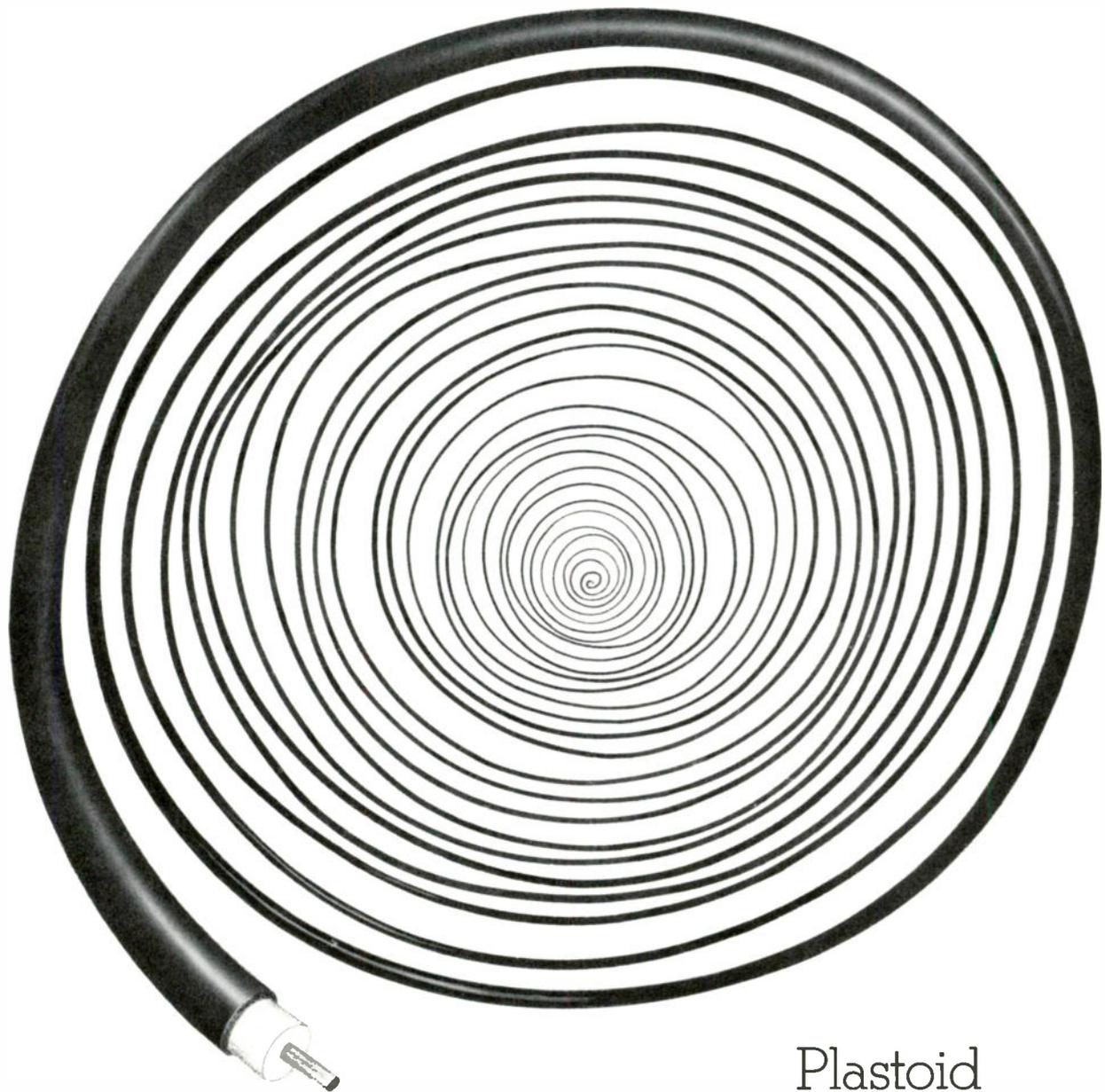
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Proposed FCC Budget Spotlights CATV

CATV has been cited as one of the major problems responsible for a \$2 million increase in the FCC's asking figure for fiscal 1969 operations. A note on one table submitted with the budget reads: "Increase is primarily for greater work load in the community antenna-TV activity and for research into more effective use of the electromagnetic spectrum."

However, figures sent to Congress reflect a direct increase for CATV of only \$74,223—a very small portion of the overall increase. This would bring CATV's chunk of the FCC budget to \$625,000 as compared with \$578,000 last year. The estimate, along with a 10-page summary of the CATV activity, is now being considered by Congress.

According to the FCC summary, most of the money asked for would be spent on salaries. Manpower allocation plans for 1969 call for an increase of 9 men, bringing the total staff number to 50. The three offices expecting additional men are: CATV Task Force, 26.5

for 1969 as compared with 24.0 for 1968; Broadcast Bureau, up from 6.0 to 8.5; and Opinions & Review, increased from 4.9 to 8.4.

Most of the new personnel are needed to handle a constantly increasing work load of hearings. The latest FCC report of backlogged applications shows CATV still just under a third of the Commission total. Various CATV application figures as of October, 1967 are: CARS Microwave, 33; Top-100 TV Markets, 208; Rule Waivers, 226; Commercial Carrier Microwave, 437.

In addition to outlining Commission policies and projects for CATV, the FCC summary included a 4-year growth chart for the industry which showed the number of CATV systems increasing by a third to 1,900. The chart projected the systems would be serving 10,000,000 people. Franchises outstanding are expected to number 1,860 (about half in major TV markets) and franchise applications pending are estimated to be 2,300.

Broadcaster Requests Lock on Rule Data

In a recent non-compulsory questionnaire, the FCC asked cable operators and broadcasters to provide data on the effects of the present carriage-non-duplication rules. One broadcaster, KLTV (Channel 7, Tyler, Texas), included an unusual request with its answers—it asked permission to file responses to two of the questions confidentially.

One of the questions deals with the impact of rules or private agreements upon net weekly circulation. The other question asks "what lasting economic effects" the rules are expected to have on the CATV system or station operation.

In a letter to the Commission, Marshall H. Pengra, executive vice president of Channel 7, asked that the answers to these two questions "be placed in a confidential file and made available only to the chairman and members of the Commission and their immediate executive assistants." He made the request, he said, "because of the extremely vital nature of the information given." If the FCC does not deem it appropriate to grant such a request, it must give the sender a chance to get the material back.

Although secrecy is not unfamiliar in connection with top-100 market rules, information on carriage-non-duplication has, up until now, been open to inspection in a public docket (No. 17505). An attorney in the FCC general counsel's office said that the KLTV file is being held on a confidential basis until the Commission makes a determination on it. One veteran Washington observer thinks all information gathered by the questionnaire may become confidential if KLTV's request is granted.

Schildhause: "CATV Poised for Growth"

Sol Schildhause, chief of the FCC Task Force, defended his agency in a recent message to a Florida CATV Association meeting. "The whole communications business," he said, "with its new know-how, is now so fast-moving as to confound the kind of plan-

Kaiser to Build Daytona Beach System



William A. Lasky, (seated right) vice president of Gulf and Western Industries, Inc. signs a construction contract on behalf of Halifax Cable TV, Inc. while Robert W. Behringer, executive vice president and general manager of Kaiser CATV Corporation, Phoenix, waits to sign. Witnesses are Thornwell Jacobs, Mayor of South Daytona, Mayor J. Owen Eubank of Daytona Beach and Daytona Beach City Commissioner James Huger.

ning that regulatory bodies are accustomed to." He counseled patience for an industry "poised for explosive growth" but waiting "for settlement of the big questions."

To Schildhouse, FCC jurisdiction is not one of the big questions. "To me, it is unlikely that the Supreme Court will say that the scheme of the Communications Act does not contemplate a regulatory pattern that embraces even the new technologies as they are born."

He predicted that the big question, copyright, would ultimately be settled by legislation, and that its settlement "will substantially change the game." Copyright legislation, he said, will probably depend on the arrangements worked out between cablemen, broadcasters and copyright holder groups.

Schildhouse ended on a hopeful note: "Eventful new technologies move with an inner force. When an important development becomes feasible, it generally finds use."

No New Evidence In San Diego Replies

Although reply briefs have been filed following the San Diego Hearing Examiner Chester F. Naimowicz' initial decision that cable restraints should be lifted, nothing has been said thus far to change the finding.

Mission Cable TV Inc., Pacific Video Cable Co. and Southwestern, replying to exceptions to the decision, claim there is no evidence of harm to broadcasting from CATV. "This entire proceeding has been instigated, prosecuted, and totally financed against the CATV companies by a VHF network affiliate in San Diego who, contrary to its earlier allegations, at the record backed away from its claims that CATV expansion would preclude it from being able to operate in the public interest," according to the briefs. The cable firms have asked the Commission to grant oral argument. (Observers expect this request to be granted since this is the first evidentiary hearing to run its course since the 1966 CATV rules went into effect.)

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Associations Plan Conventions

Both the U.S. and Canadian national cable associations have announced plans for their annual conventions. The National Cable Television Association's 17th annual meeting is scheduled June 29 through July 3 at the Sheraton-Boston Hotel in Boston, Mass. Conventioneers will register Saturday and Sunday, June 29 and 30. Technical, management and business sessions are scheduled all day Monday and Tuesday and until noon Wednesday. NCTA's

banquet will be held Monday evening. The exhibits, which will be located in the city's War Memorial Auditorium, will open Sunday afternoon and close Tuesday evening.

The National Community Antenna Television Association of Canada will hold its convention and trade show May 13 through 16 at the Empress Hotel in Victoria, British Columbia. Technical, management and sales sessions will be highlighted.

(News continued on page 34)

Calendar

March 18-19. The Pacific Northwest Community Television Association will hold its spring convention in Spokane, Wash., at the Ridpath Hotel.

March 18-20. The NCTA board of directors meeting will be held. Meeting place to be announced.

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

March 31-April 3. The National Association of Broadcasters will hold their convention and broadcast engineering conference in Chicago at the Conrad-Hilton Hotel.

April 4-5. The National Association of Educational Broadcasters will hold their Region II Conference at the Cabana in Atlanta, Ga.

April 19. The spring meeting of the Mid-America CATV Association will be held at the Skirvin Hotel, Oklahoma City, Okla.

April 24. A special technical meeting of the New York State Community Television Association will be held in Syracuse, New York, at the Country House.

April 25-27. The Texas CATV 8th Annual Convention will be held at the Marriott Motor Hotel, Dallas, Texas.

May 7. The Pennsylvania Community Antenna Television Association will hold their spring meeting at Allenberry On The Yellow Breeches, near Boiling Springs, Pa.

May 7-8. The NCTA executive committee will hold a meeting in Washington, D.C.

May 10. New York State Community Television Association will hold its annual spring membership meeting. Place to be announced.

May 13-16. The 12th annual convention and trade show of the National Community Antenna Television Association of Canada will be held at the Empress Hotel, Victoria, British Columbia.

June 3-5. The NCTA board of directors will meet. Place to be announced.

June 30-July 3. The 17th annual convention of the NCTA will be held in Boston, Mass., at the Sheraton-Boston. 

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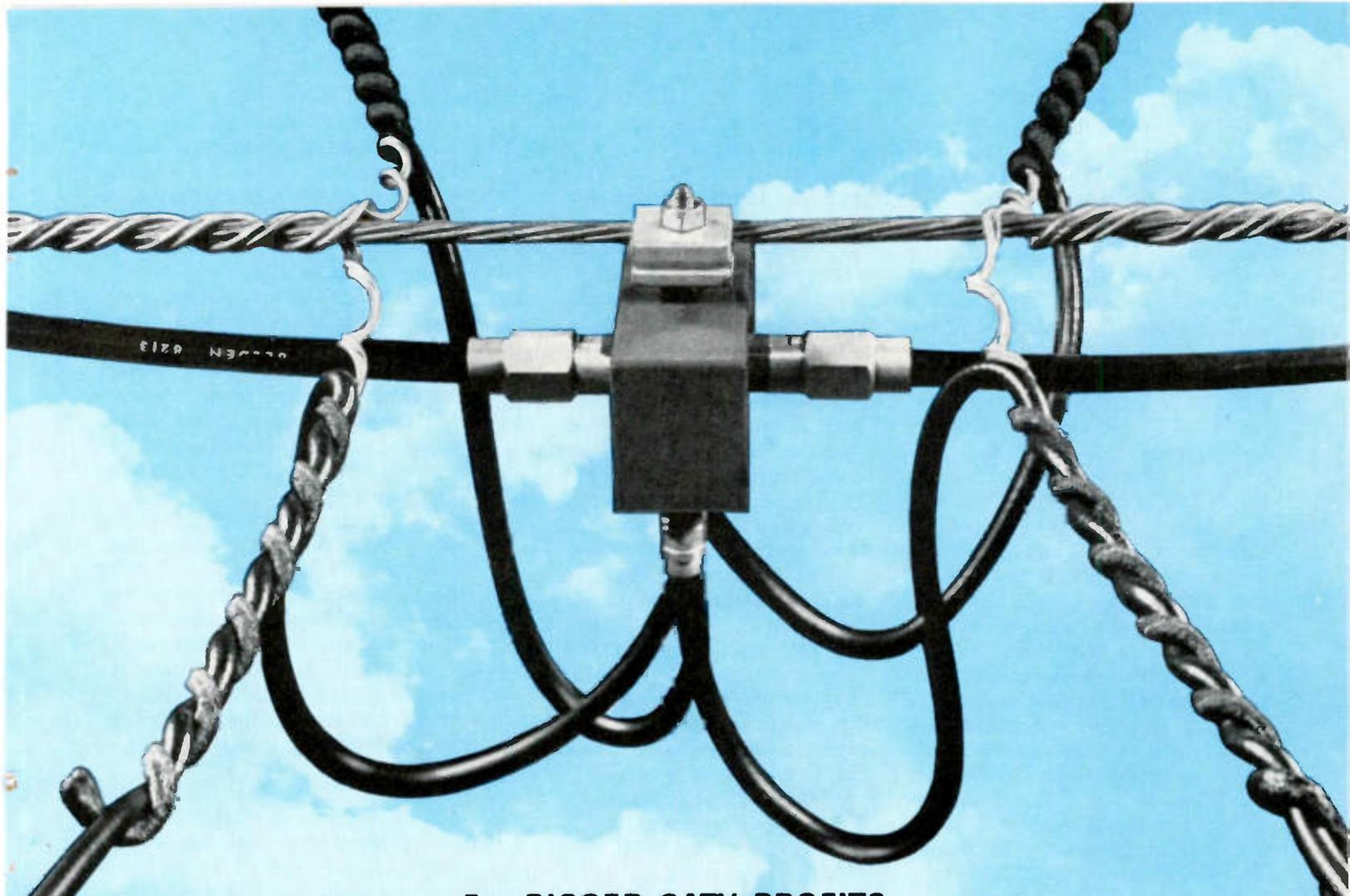
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NAB Prexy Wants Cable Help in Spectrum Battle

The National Association of Broadcasters is mobilizing on all fronts to protect its spectrum space from land mobile forces. Among other moves, NAB president, Vincent T. Wasilewski sounded the alarm for CATV. The cable industry, he said, should beware of attempts to shift all TV to wire because "under any nationwide wired system, they (present CATV operators) will likely be displaced."

In an address to the International Radio & Television Society, Wasilewski said, "There are certain large CATV entrepreneurs who evidently believe that a wired system would be owned and operated by present-day CATV companies. Thus, they join the alliance, even though it seems evident that a national policy decision to convert to wire would involve giant utilities, present or to-be-created, rather than CATV as it exists today."

Asked about Wasilewski's warning, NCTA president, Frederick W. Ford commented: "Cable television operators are and must be

dedicated to a strong, healthy, competitive television industry, and will certainly work toward that objective. At the same time, we must assure through an orderly process, that cable television becomes an integral part of the overall broadcasting and communications pattern of the United States."

Broadcasters were alarmed by the government-industry Advisory Committee on Land Mobile Radio Services report which outlined the need for additional spectrum space—space which would most likely come from UHF's present share. Shifting all television to cable was only one suggestion mentioned in the report.

The ACLMRS report was not the only indication broadcasters had of such a shift. The subject was also considered during a spectrum conference at Airlie House in Virginia last fall, sponsored by the Brookings Institution and the Resources for the Future, and at a meeting between NAB officials and the staff of the President's Task Force on Communications.

FCC Commissioner Kenneth A. Cox, chairman of ACLMRS, reassured the broadcast industry

somewhat. According to him, the likelihood of a total move to wire is remote for these reasons: objections of the FCC and Congress; incapability of cable at present to provide the technology or programming required by a nationwide system; difficulty of obtaining sufficient advertising support; hardship to stations which would no longer be network affiliates and would then have to obtain their own programming in competition with networks. He urged broadcasters and land mobile users to cooperate in solving spectrum problems.

One industry expert, familiar with both CATV and mobile communications, called the action by NAB "one of several smoke screens they have thrown up to obscure the basic weakness in the current TV allocations." He said, "There is a vast amount of broadcast UHF spectrum which not only is not being used but will certainly lie fallow for decades."

As to the future of existing CATV operators in the event of an all-wire system, this expert commented: "CATV as we know it would certainly be modified. But remember—this would occur in the future when current CATV systems would be obsolete anyway." As to broadcasters, he said, "It is ironic that broadcasters fail to see that under a wired system they could have *more than one channel*. Thus, a local broadcaster could deliver NBC *and* a local football game at the same time." This would enable stations to provide a variety of programming for special interest groups and would also create a market for local businessmen who wish to advertise on TV but find present costs prohibitive.

The spectrum fight is expected to take a significant portion of the \$124,000 voted for research by the recent NAB board meeting. The NAB will be joined in the battle by other industry groups such as the Committee for All-Channel Broadcasting, All-Channel Television Society, Association of Maximum Service Telecasters, National Association of Educational Broadcasters, Television Bureau of Advertising, and Television Information Office. □

Southern Telephone Elects Officers



Southern Telephone Supply Company recently elected their 1968 company officers, pictured above. Left to right are Edward L. Chapin, secretary and controller, J. P. Gleaton, president, A. W. Barnes, vice president and general manager, and H. A. Bishop, Jr., vice president. Not pictured is C. M. Jones, treasurer. The board of directors was also elected as follows: A. W. Barnes, Glenn E. Bryant, H. A. Bishop, Jr., J. P. Gleaton, C. M. Jones, J. K. Kirk, II, and H. E. Solem.

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Systems

William T. Baker has been appointed general manager of Valley-Vision Inc., Diamond Springs, Calif. The system handles Placerville, Sutler Creek, Jackson and Angels Camp in Mother Lode County.

Wesley R. Willbanks is the new manager of TV Cable of (Manchester) Tennessee.

Robert R. Morrison has been named operations manager of the Galion-Crestline CATV system of Continental Cablevision of Ohio.

Wendell R. Miller has joined the San Clemente Cable Television Co. as merchandising manager. He brings experience acquired in Washington and California systems to his new duties in sales, advertising, and public relations for the San Clemente office.

Robert Lee Finlay has been appointed system manager of United Transmission Inc., Kingsport, Tenn. He was formerly assistant research engineer with the Georgia Institute of Technology Engineering Experiment Station. United Transmission Inc. has been engaged in a modernization and expansion program for the Kingsport cable system.

Cal Sutliff has been named assistant to Bruce Merrill, president of Ameco Inc. and American Cable Television Inc. Sutliff will assist Merrill in the management of ACT's operating systems and in some aspects of Ameco operations. Sutliff assumed his present position in January of this year, having been with Telecable in Seattle as manager of the Bellevue and Bremerton systems. Other ACT personnel include assistant director of promotions, **Ralph Anderson**, who came to the company from the broadcasting industry several months ago, and **Ted Swanson**, director of engineering, who was previously with American Cablevision.

Suppliers

Harold K. Dobra has been named director of personnel at Entron Inc. where he will be in charge of all personnel functions. Dobra was previously manager of CATV systems operations for Federal Electric.

The appointment of **G. Brent Horney** as advertising manager has also been announced by Entron. In his new position, Horney will be responsible for directing corporate advertising efforts. He comes to Entron from Liskey Aluminum, Inc. where he was ad manager.



Harold K. Dobra



G. Brent Horney

T. Douglas Casey has been appointed controller of Craftsman Electronic Products, Inc., and will have overall responsibility for the financial and accounting operations of the company. Casey has held positions with Climate Control-Singer, Fieldcrest Mills, Inc. and Inland Motor Corp.

Richard H. Bamford has joined the Brand-Rex Division of American Enka Corp. as manager, industrial market. During has 18 years in the wire and cable industry, Bamford has held managerial positions with Anaconda Wire and Cable and the Rockbestos Wire and Cable Division of Cerro Corp.

ITT Wire & Cable Division of international Telephone & telegraph Corp. has announced the appointment of two new vice presidents. **William A. Nicoll**, who has been with the company since 1961, is vice president and director of marketing. **Robert N. Haidinger** is vice president, administration. The

same company has also announced the appointment of **H. Allen Kelly** as Ohio and Michigan district manager. Kelly was formerly a communication product specialist for Anaconda Wire and Cable, and will now be in charge of the products of ITT's Clinton, Mass. (Surprenant) operation.

Heinz Matuschka is the new Western regional sales and service manager for Times Wire and Cable Division of International Silver Co. Matuschka will be working in the Rocky Mountain and West Coast states, and will headquarter in California.

Jerrold Electronics (Canada) Limited recently announced the appointment of **A. T. Keenan** to the position of general manager of the company. Keenan is widely experienced in Jerrold Sales.



A. T. Keenan



W. G. Arthur

W. G. Arthur has joined Ameco, Inc. as personnel director. Arthur has 21 years experience in the field, most recently as personnel manager at Kaiser Aerospace & Electronics.

Superior Continental Corporation has announced the following promotions to regional sales manager: **Ron J. Westwood**, Pacific Region, from west coast district sales manager; **L. Kenneth Powley**, Dixie Region, from southeastern district sales manager; **Marvin Chenault**, Texas Region, from southwestern district sales manager. New assistant regional managers are: **Robert E. Wohlberg**, Midwest Region, from midwestern district sales manager; and **Homer P. Roelle, Jr.**, Atlantic Region, from northeastern district sales manager.

Elliot Bell has been named senior sales engineer, commercial marketing department, American Electronic Laboratories, Inc. He will report to **I. A. Faye**, commercial market manager.

Chase Morsey, Jr. has been appointed to the newly created position of vice president, marketing, for RCA. Morsey will have

staff responsibility for all marketing activities of the corporation.

Kenneth W. Lloyd has been named national distributor sales manager for Rohn Manufacturing Co. and Vulcan TV Mast & Tower Co., Inc.

Rein Narma has been promoted to the position of vice president of Ampex Corporation and general manager of the company's consumer and educational products division in (Chicago), Ill.



Lyle Paris

Charles S. Walsh

Lyle Paris has been named sales engineer for Television Presentations, Inc. Paris will be responsible for the sales and engineering services of "Alphamatic News." He had previously been sales director for Trans-Lux Distributor Corp.

and consultant to the radio and TV industry. Television Presentations, Inc. a news service to provide 24-hour UPI news and stock market prices to CATV, is a wholly owned subsidiary of Sterling Communications, Inc.

Professional

Charles S. Walsh has been appointed government liaison director for the National Cable Television Association. His duties will include working with the association's Legislative Committee and state and regional CATV associations in providing legislators with industry information. He will also coordinate the government relations program, helping to maintain lines of communication between industry spokesmen and national, state and local officials. Walsh joins NCTA after one and a half years as an attorney with Douglas, Obear and Campbell of Washington.

Rocky Mountain Cable Television Association members elected the following officers: president, Gene Schneider, Casper, Wyo.; vice president, Howard Teel, Safford

Ariz.; secretary-treasurer, Nick Pavlovich, Bisbee, Ariz.

Florida CATV Association officers for 1968 have been announced. They are: board chairman, Harry W. Bennett, Jr., Cocoa Beach; president, Richard L. Cox, Naples; vice presidents, Clarke



Gene Schneider

Harry Bennett, Jr.

Swanson, Sebring, John S. Booth, Sarasota, and Charles Smith, Key West; secretary, D. D. Sullivan, Winter Haven; and treasurer, Dave Decker, Lake City.

Howard Teel, of Safford, Ariz., has been elected president of the Arizona Community TV Association, Inc. Other officers are: Marvin Jones, Yuma, vice president; N. L. Pavlovich, Bisbee, secretary-treasurer.

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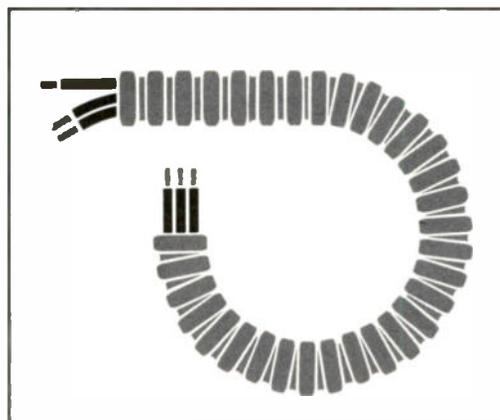
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Cable TV crew fights
record winter weather to
restore services

Arizona Storm Paralyzes Globe-Miami CATV Operations

By Ingo Radicke,
Manager Globe Miami Cable TV, Inc.

The Globe-Miami area in Arizona experienced one of the fiercest storms on record there in mid-December. The repeated snowfalls left the nearby mountains blanketed in beautiful white crystal . . . but Ingo Radicke, manager of Bruce Merrill's Globe-Miami system, didn't have time to enjoy the scenery. He and his staff were busy fighting it. Virtually all communications facilities on Pinal Peak were wiped out by the storm, which hit the area twice within four days. Our thanks to the Ameco *Roadrunner* for the opportunity to reprint Ingo Radicke's account of the efforts to restore service in his community.



The storm on Pinal Peak near Globe, Arizona left the cable system's antennas strewn around the head-end site. The channel 12 antenna appears to be vertically polarized!

When I got to work Thursday, December 14th, it was obvious that the microwave atop Pinal Peak was off. James George, my technician and I had the four-wheel drive suburban chained and ready to go, when Dean Wyland from the FAA hitched a ride with us. His partner's truck was known to be stuck in a snowbank on the

mountain, but nothing had been heard from him since the day before.

As we approached Keltner Canyon we met an Arizona Public Service crew who had turned back because of the deep snow. We went on anyway, in four-wheel low range and in grandma gear. In nine miles we used 10 gallons of gas!

At one point we were held up for

I spent Friday getting parts for several hours because the road was blocked by a 15-foot drift and a stalled Highway Patrol snowcat. After dark we were on the move again, slowly, behind a D-8 caterpillar and a telephone company vehicle. We passed the FAA truck, but the technician was gone . . .

Two miles from the top the telephone truck broke down and ours was the only moving vehicle behind the caterpillar. We numbered two telephone men, a highway patrolman, the FAA man and the two of us from Antennavision.

By 10 p.m. the cat had cleared the road to our antenna shack and the FAA building, where we found the lost FAA technician, safe.

Jimmy George and I found our emergency power plant had gone out because of a broken fuel line, and we had no replacement with us — so by 10:30 were on our way downhill again. We got back to Globe about four the next morning.



Radicke and Jimmy George are shown collecting antennas and broken elements blown down in the storm.



Five feet of snow blocked the entrance to the head-end building. Also note the bent mast of the 465 MHz microwave antenna which almost touches the ground.

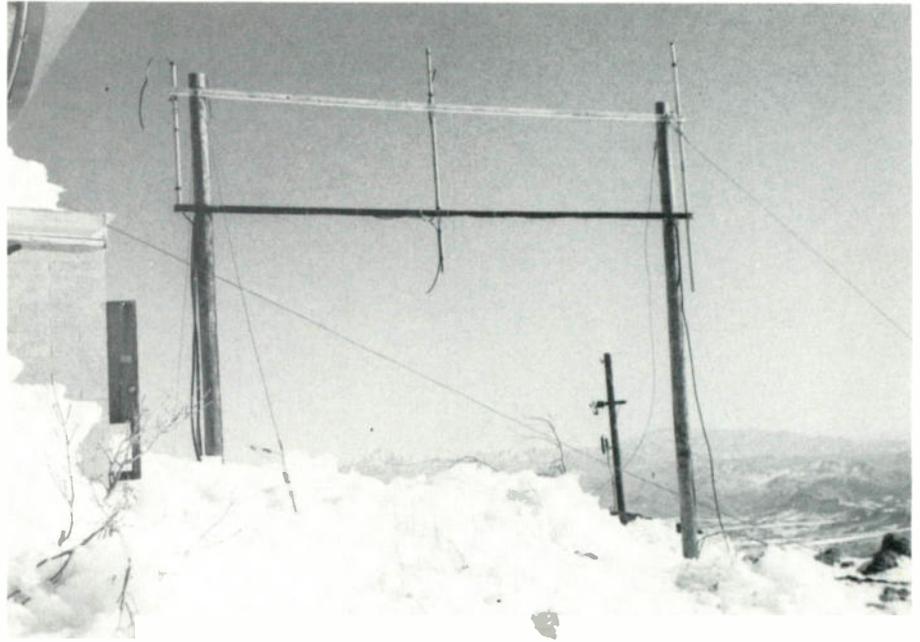
the fuel line and hoping that Ray Marble, ATR technician at Safford, would show up with the weasel. But no luck; it was snowbound on Helio-graph in the Grahams.

Early Saturday morning the Southern Pacific Railroad technicians phoned they had room for me in their snowmobile. About 3½ miles from the top we lost a track and were hopelessly stuck. We radioed for help, and about 2 p.m. Jimmy George arrived with my GMC truck. We transferred tools, parts and gas cans and proceeded.

We inched to within 150 yards of the antenna shack before snowdrifts stopped us. Jimmy and I repaired the fuel line by 8:00, got the generator on — and TV was on again at Globe!

About The Author

Ingo Radicke has been manager of Bruce Merrill's Globe-Miami system since September, 1967. He got his start in CATV in 1961 working for Arlo Woolery as technician for the cable system at Bisbee. He studied at the Collins Microwave School for CATV, completed a Jerrold seminar, took care of microwave multiple terminals at the Yuma Proving Grounds and managed Clearvision TV at Nogales. Ingo was born in Berlin, Germany, and became a naturalized U. S. citizen in 1965.



System manager Ingo Radicke comments, "This is where our antennas for channels 4, 5, 9, 10, and 12 used to be . . ."

Ray Marble got there about that time with the weasel and we tried to leave the hill in it, since my GMC was buried in a snowdrift. We turned back when we reached a 20-foot drift in the road. The wind was blowing hard and we couldn't see five feet in front of us.

We ate a few candy bars in the antenna shack, and turned on all possible tube equipment to generate a little heat. Even so, the inside temperature never got above 36 degrees. We were short of sleeping bags, so I slept on an old piece

of cardboard on the concrete floor.

We got about three hours sleep, and woke up cold and stiff, hearing Dave Rolan's voice on the two-way radio from Phoenix. We told him all was well, then dug our way out the door and spent the day trying to start the weasel. Finally they unfroze the starter's solenoid with a heat lamp and loosened up the clutch linkage with penetrating oil. We got only a few feet down the road in the weasel before we faced a 30-foot snowdrift, the first of a dozen or so in our path.

Meantime a rescue crew with three caterpillars was trying to reach us . . .

We decided to break into the FAA building that afternoon: we found survival crackers, coffee and more sleeping bags! We stayed the night.

Next day we walked off that mountain with snowshoes in a howling blizzard.

Lucky we did, for the storm continued Tuesday and Wednesday, which is when it did the most damage; towers and antennas bent and broken.

Thursday and Friday, Ray Marble and I went back up on foot. We picked up all the pieces, mounted the antenna remnants inside the shack — and were on the air once again. TVC

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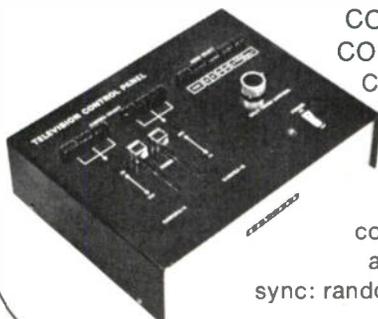
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Amplitude Modulated Link; A Review of Its Development

By H.T. Ozaki and L.S. Stokes
Aerospace Group, Hughes Aircraft Co.

The development of the Amplitude Modulated Link (AML), began when TelePrompter Corporation contacted Hughes Aircraft Company to determine if Hughes would be interested in developing a multi-channel television relay system. The resulting research effort produced a new method of transmitting 12 channels of television simultaneously using a single microwave carrier to a receiver site.

It was envisioned that the AML system would use many receivers with a given transmitter. In this operation a fan beam could cover a large city area with receivers located strategically within the fan beam which could then receive the television signals and send them by cable throughout their immediate area. The Amplitude Modulated Link system would thus become an integral part of a CATV system, replacing coaxial cable trunks through city streets. In addition to the large city application, the AML could also be used to serve satellite communities which are somewhat remote from metropolitan areas. In this case the Amplitude Modulated Link would be used to replace long runs of coaxial cable. A third use of this system would be one of circumventing natural barriers such as large rivers or other waterways. In all these cases, as in the large city case, the 12 channels of television would be transmitted simultaneously to the receiving site using a single carrier. From the receiving site a coaxial cable would be used to serve the surrounding area.

There were general limitations and specifications from which an appropriate system configura-

tion was to be selected for the AML. (1) It was to have a large bandwidth, on the order of 100 MHz; (2) it was to be used for a relatively short distance, six to ten miles with only one hop being used, or at the most two or three hops; (3) it was to conserve radio frequency bandwidth; (4) it was to use relatively simple receivers since many receivers were to be used with a single transmitter in the normal configuration; and (5) it was not to interfere with existing services in their designated RF channelling. With these considerations in mind, the system configuration chosen

MHz spectrum for the frequency modulated band, was translated to 18 GHz. The spectrum at 18 GHz was then an exact replica of the VHF television spectrum. A pilot signal was inserted between channels 4 and 5 which was harmonically related to the suppressed carrier.

The receiver required was a relatively simple one; having the same elements that are found in a simple UHF converter, a mixer, a local oscillator which translates the incoming frequency to one which is directly usable by the TV receiver and an IF amplifier. In

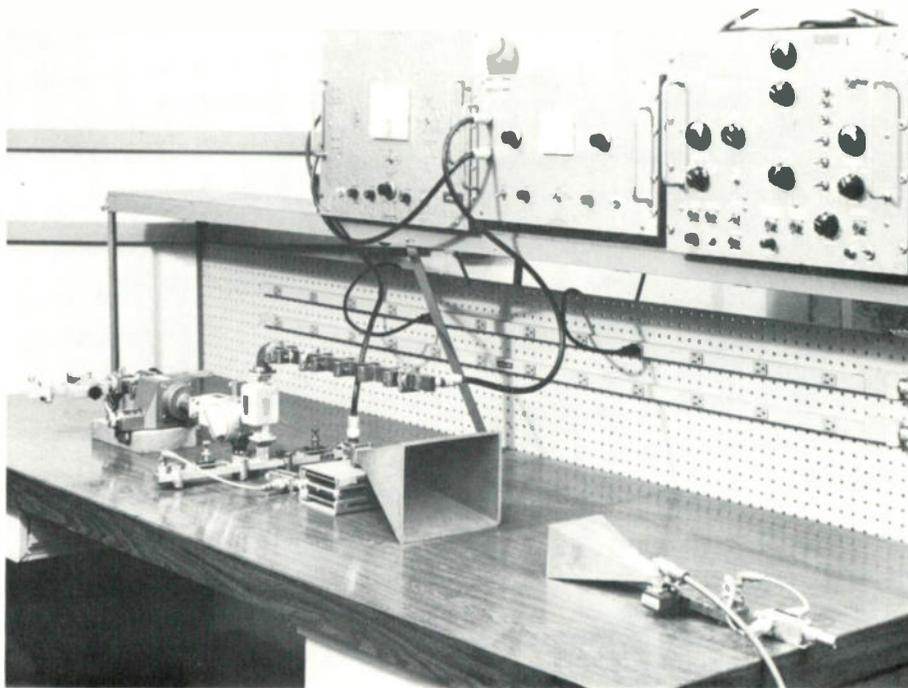


Figure 1: AML Breadboard Transmitter and Receiver.

was that of single side band amplitude modulation (SSB-AM). In this system, the entire television spectrum from channel two through channel thirteen, including a 20

addition, the AML receiver used a phase locked loop to sense the pilot signal and locks the receiver local oscillator to the pilot signal.

In the AML receiver, the in-

coming microwave frequency is translated back to the original VHF spectrum. The various television channels from channel 2 through channel 13 appear at their exact frequencies. The output spectrum of the receiver is applied

to a television receiver through a distribution system. The center frequency of the AML system was selected to be near the center of this band allowing it to be operated at any point in the band with only slight modifications.) (3) The 17.7 to 19.7 GHz band was not being used, thus no displacement of existing services would occur by its use for such a link. (4) This frequency band, while not being ideal from the point of view of propagation, did and does

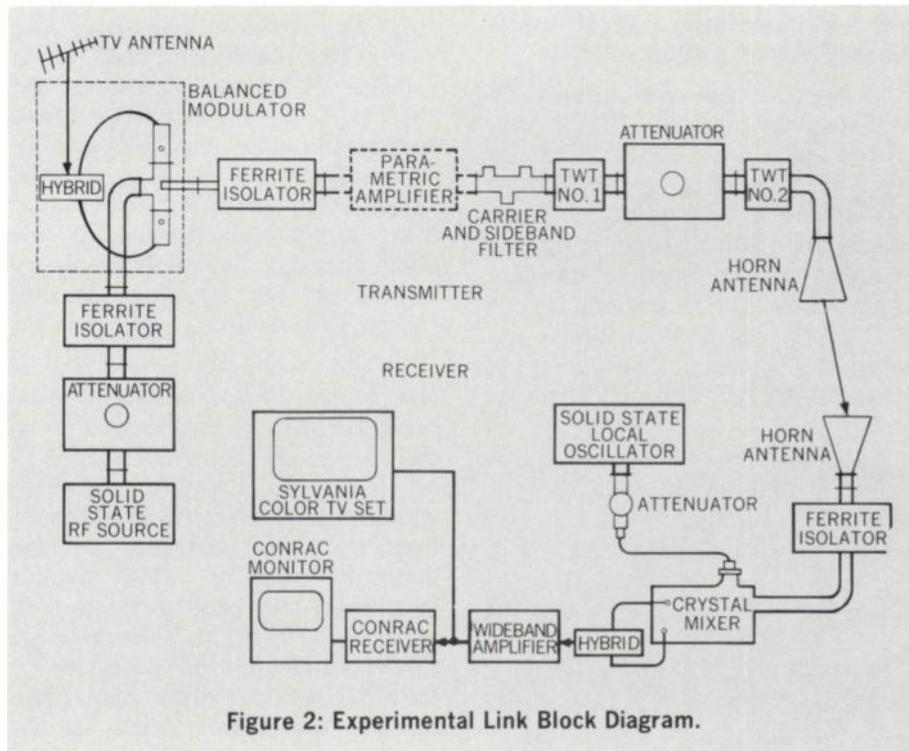


Figure 2: Experimental Link Block Diagram.

directly to a television receiver through a distribution system.

The system configuration, briefly described above, was discussed by Hughes and TelePrompTer representatives. The conclusion of that meeting was that a breadboard model would be constructed to determine basic feasibility. Since feasibility was the main object to the breadboard model, the X-band frequency spectrum was used, for the X-band components and test equipment were conveniently available. Figure 1 is a photograph of the original breadboard constructed. It was extremely simple, having an up-converter (single sideband modulator) which essentially shifted the VHF TV spectrum from its normal frequency band to the X-band microwave frequency. The up-converter spectrum was filtered, amplified in two travelling wave tube amplifiers and transmitted through a horn antenna. The receiver consisted of a horn antenna and a mixer with its local oscillator. The local oscillator used, was either an indepen-

dent microwave source or the same frequency used in the up-converter, cabled to the mixer. A block diagram of the experimental link is indicated in Figure 2. The experimental link confirmed the basic design choices; substantiating

The Experimental Design

The breadboard model had determined the feasibility of the system design configuration. It was now decided to proceed with this system in an experimental form. The experimental model was to be a fully operable model capable of transmitting 12 channels of television from a transmitter to a receiver over a several mile link.

The center frequency for the experimental AML link was chosen to be 18.7 GHz. The reasons for this choice were: (1) This frequency band had been set aside for fixed and mobile operation. (2) The band was essentially 2 GHz wide, from 17.7 GHz to 19.7 GHz, with one small exception from 19.3 to 19.4

GHz. (The center frequency of the AML system was selected to be near the center of this band allowing it to be operated at any point in the band with only slight modifications.) (3) The 17.7 to 19.7 GHz band was not being used, thus no displacement of existing services would occur by its use for such a link. (4) This frequency band, while not being ideal from the point of view of propagation, did and does

<ul style="list-style-type: none"> • MULTIPLE CHANNELS (UP TO 12 CHANNELS) • LOW INTERMODULATION PRODUCTS • LOW OVERALL SYSTEM NOISE FIGURE • RANGE OF AT LEAST 6 MILES • OUTPUT FREQUENCIES IDENTICAL TO INPUT FREQUENCIES • MULTIPLE RECEIVERS.
<p>Table I 18 GHz Microwave Link System Goals</p>

have acceptable propagation characteristics for the type of service envisioned for AML. That is, a service where short links were used.

In addition to the selection of the 18 GHz frequency, several other system goals were selected for the experimental system; these are shown in Table I.

Photographs of the hardware produced for the experimental system are shown in Figures 3, 4, and 5. Figure 3 is a photograph

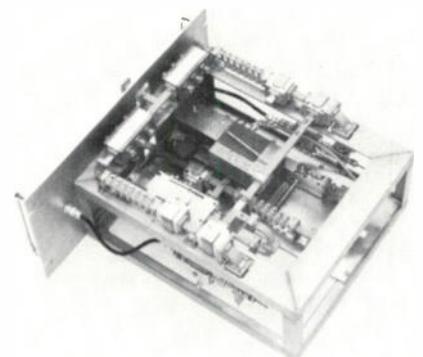


Figure 3: Experimental Transmitter Up-Converter.

of the single-sideband modulator or up-converter. This unit is a key design component of the AML system for it is required that the output power of the up-converter be high enough to overcome the internal noise of subsequent power amplifiers in the AML transmitter. In order to provide this output power a parametric up-converter

has been designed which exhibits power gain from the VHF baseband input to the 18.7 GHz RF output. The photograph shown in Figure

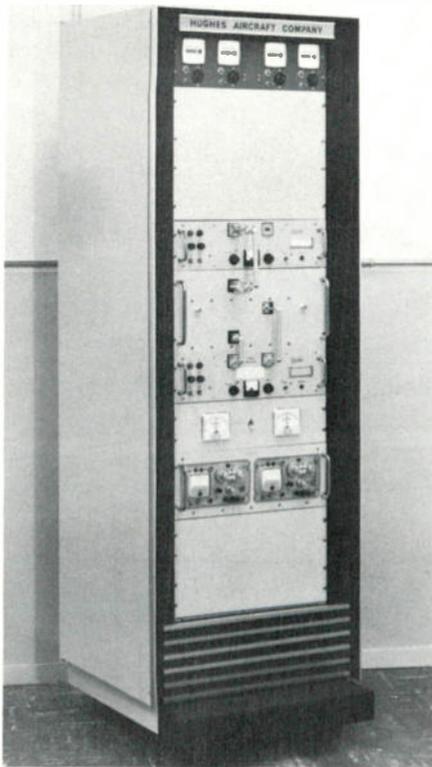


Figure 4: Experimental Transmitter.

4 is the ten watt experimental transmitter. The maximum transmitter power output was ten watts; however, this power was not used in normal transmission because at the ten watt level the travelling wave amplifier was operating at saturation. Since several signals were being transmitted simulta-

neously through this power amplifier, it was necessary that the power be reduced below the maximum level to prevent the signals from intermodulating with one another in the nonlinear power amplifier. Thus, the power output of the travelling wave tube was reduced approximately 20 dB below the peak power output.

In Figure 5 the receiver and the receiving antenna for the experimental system are shown. The antenna has a gain of approximately 44 dB with a beamwidth of about one degree. The receiver is shown mounted on the back of antenna in Figure 5 while the internal layout of the receiving components is exposed in Figure 6. These components include: The RF mixer,

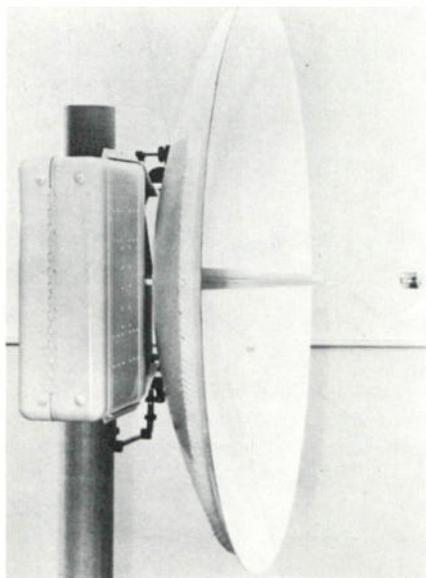


Figure 5: Experimental Receiver and Receiving Antenna.

driven by solid state local oscillator; a wideband video amplifier, which passes channels 2 through channel 13 and amplifies them to a level suitable to drive a normal CATV plant; a narrow band RF filter, which filters the pilot tone used to phase lock the solid-state local oscillator; and a phase lock loop which locks the solid-state local oscillator to this incoming pilot tone.

With the completion of the experimental transmitter and receiver certain tests were conducted. These included the transmission of 12 channels of television and the entire frequency modulation

band through the transmitter and receiver. Intermodulation tests were made which varied the output power of the transmitter to determine the point at which intermodulation products became objectional, and a performance analysis was made of the phase lock loop operation. The 12 channels of television had been equalized using Jerrold "Channel Commanders" such that the video carrier levels were all the same amplitude and the audio carrier levels were reduced to 15 dB below video carrier levels. Many of the tests were run over a three thousand foot antenna range located at the Hughes Aircraft Culver City facility.

In these tests the importance of the phase locked receiver local oscillator was established. For if the phase lock loop were purposely unlocked, the television receiver, which was receiving VHF signals from the AML receiver and also directly receiving VHF signals from local television stations, had noticeable beat notes between the video carriers of these two inputs. However, when the AML receiver was phase locked to the

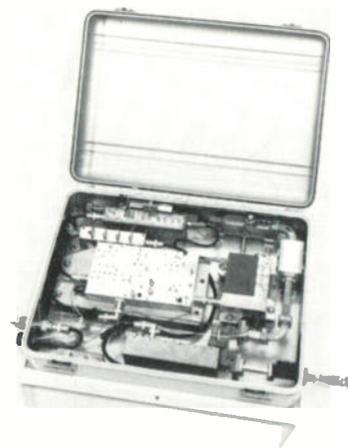


Figure 6: Experimental Receiver.

pilot tone, producing output VHF frequencies identical to the VHF frequencies being transmitted by the local television station, the beat note interference disappeared.

A second series of important tests on the experimental AML system were conducted in New York City. The purpose of these tests was to gain field experience

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by operating an AML link and secondly, to determine experimentally the effect of rain upon the AML system.

The AML system was operated in New York City during the late summer and early fall of 1966. During this period of time, two months of data were analyzed in some detail. The compilation of the data extended from the middle of August, 1966, to the middle of October, 1966. There were ten days during the test period where significant rain attenuation data was obtained; seven different storms passed through the New York City area. Signal fades as large as 40 dB were noted on several occasions. However, these rain-caused fades were rather brief, in the order of two to five minutes. The cumulative time that attenuation was greater than 20 dB totaled 45 minutes during the August, September and October time period. This extrapolated to 2.56 hours annually and was in close agreement with Weather Bureau data and with other data for the New York City area. Similarly, 22 minutes of data were noted during the two month sample period where the attenuation was 30 dB or greater. This extrapolated to an annual basis of about 1 hour a year. This data was also in close agreement with statistical rainfall data for N.Y.C. The statistical weather data used to determine the subjective performance of the AML system over a period of one year is shown in Figure 7. This plots the hours per year of reduced signal strength, due to rain attenuation, against signal level both in decibels and in the subjective TASO scale. The data in Figure 7 is for the Washington, D.C./New York City area for a frequency of 18.7 GHz. The figure shows parametrically the effect of link range on the hours per year when signal strength is somewhat reduced. For instance at a six mile range the picture quality is less than "Good" for approximately six hours per year. However, only two of those six hours would the signal level be called "Not quite passable." Thus, the use of an SSB-AM system for transmission of the data not only maintains the minimal RF bandwidth and a simple re-

TV Communications

ceiver design, but provides a picture to the viewer which has excellent quality for 99.94 percent of the year. It should also be noted that for a range of 4 miles the average signal degradation per year is only 3 hours for a signal strength less than "Good" and is less than "Not quite passable" for 1 hour per year. (One hour per year outage corresponds to approximately 99.99 percent reliability.)

The Culver City tests and the New York City tests with the experimental AML system showed the feasibility of simultaneously transmitting 12 channels of television and 20 MHz of frequency modulated signals. The next step

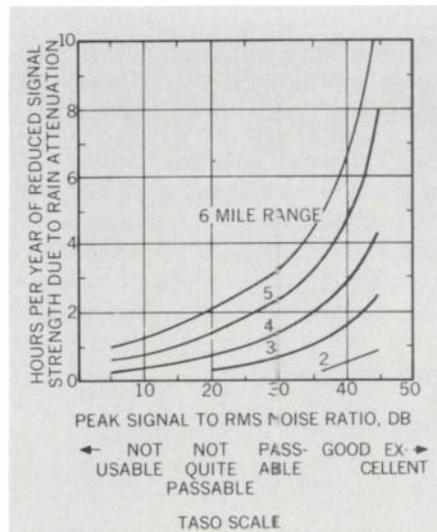


Figure 7: Subjective Effect of Rain on AML Performance in One Year in the Washington, D. C. Area (18.5 GHz).

in the development was that of designing and building a prototype AML system.

The Prototype AML System

The AML system consists of a transmitter and its antenna and the receiver and its antenna. The receiver forms a new "head-end" and as such may be used to drive an entire CATV plant in its immediate vicinity. The prototype AML receiver is shown in Figure 8. The dimensions of this unit are approximately 14" x 9" x 2-1/2". The receiver is weatherproof and will withstand a temperature range of -10° F to +110° F. The receiver is divided internally into several shielded sections; these are part



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of the cast frame. The receiver may be mounted directly on the back of the receiving antenna, thus reducing RF losses to a minimum.

The AML transmitter is divided into two major components. The first major component is shown in Figure 9. This is the driver unit which has as an input the 12 VHF television channels and the FM spectrum. These are then shifted to the 18.7 GHz frequency with an average total power output of approximately 10 milliwatts. The two RF outputs of the AML transmitter driver are the lowband tele-

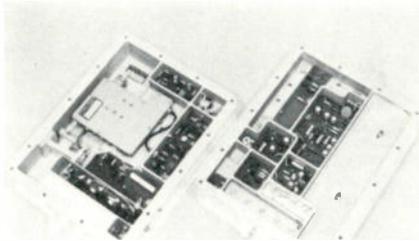


Figure 8: Prototype AML Receiver.

vision channels (channels 2 through 6) and the highband channels (chan-

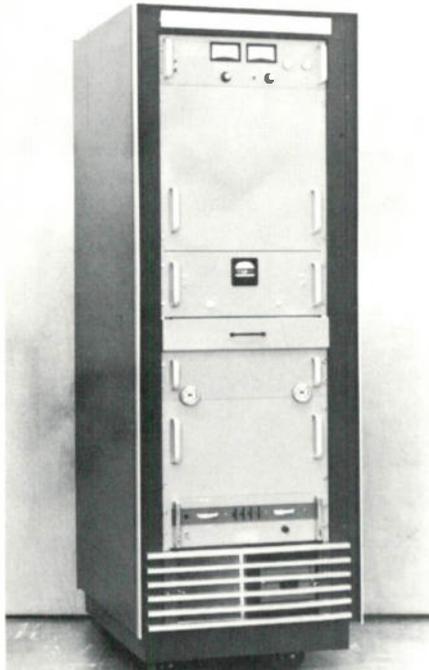


Figure 9: Prototype AML Transmitter Driver.

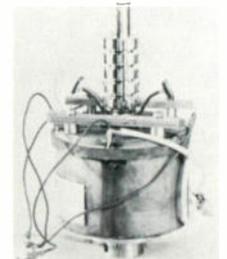
nels 7 through 13). The two outputs of the AML transmitter driver may be summed to drive a single power amplifier or each output may drive a power amplifier depending upon the output power required for the

particular installation requirements. The use of two power amplifiers provides three advantages. First, the total power output is increased by 3 dB; secondly the number of intermodulation products will be lower since fewer TV channels are being passed through each power amplifier; and third, the power amplifiers may be used as redundants in case of failure. If one power amplifier should fail, it is possible to transmit the entire spectrum through the remaining power amplifier until the failure is corrected. During this time the signal-to-noise ratio will be somewhat reduced; however, this will only be slightly noticeable in most instances.

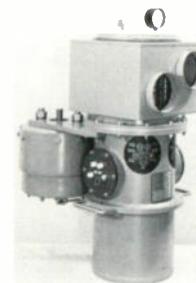
The power amplifier consists essentially of a travelling wave tube amplifier and its power supply. This travelling wave tube has been designed especially for the AML system by the Hughes Aircraft Company. Certain special requirements were incorporated into this design. These include design con-



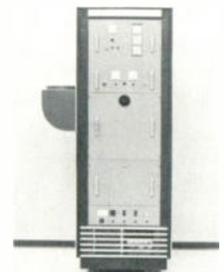
A. TWT Internal Structure.



B. TWT Enclosed in Magnetic Structure.



C. Packaged Travelling Wave Tube.



D. Power Amplifier and Power Supply.

Figure 10: Prototype AML Power Amplifier.

siderations to maintain low intermodulation products, low internally generated noise, a power output of approximately 1 to 2 watts, and a saturated power output of approximately 250 watts. The maximum

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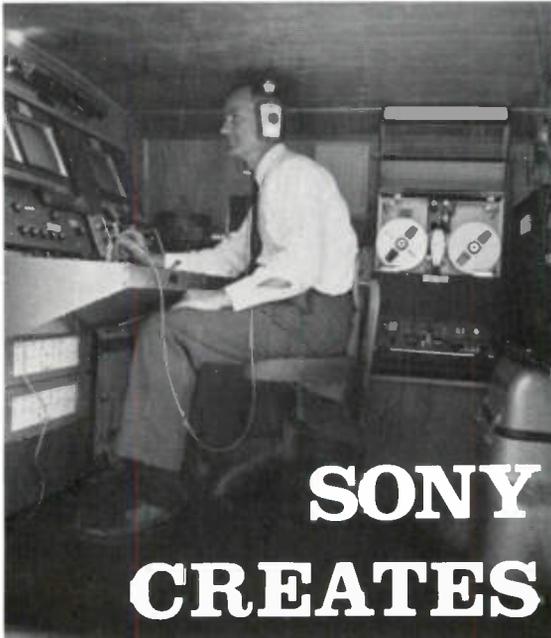
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saturated power level is never used, for it was realized that the travelling wave tube must operate 20 to 25 dB below the saturated power output in order to maintain suitably low intermodulation products. The photographs in Figure 10a, b, c, and d show the travelling wave tube in various stages of incorporation into the final power amplifier rack. Figure 10a reveals the internal structure of the travelling wave tube. The electron gun is at one end of the tube, the slow wave structure, the input and output waveguide flanges, and the heat sink at the anode end of the tube. In addition, a small ion pump is used to maintain the ion level within the travelling wave tube at a suitably low level. Figure 10b shows the

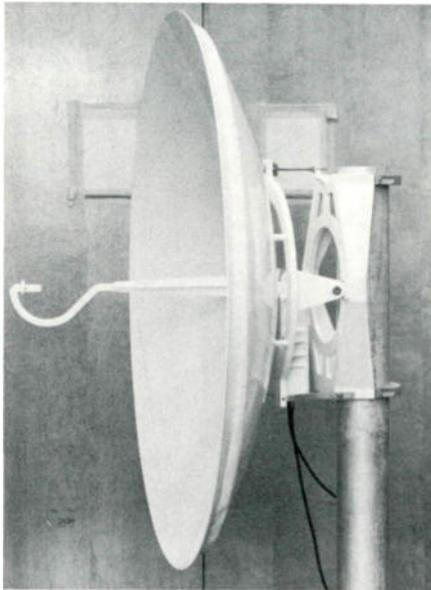


Figure 11: Prototype AML Receiving Antenna.

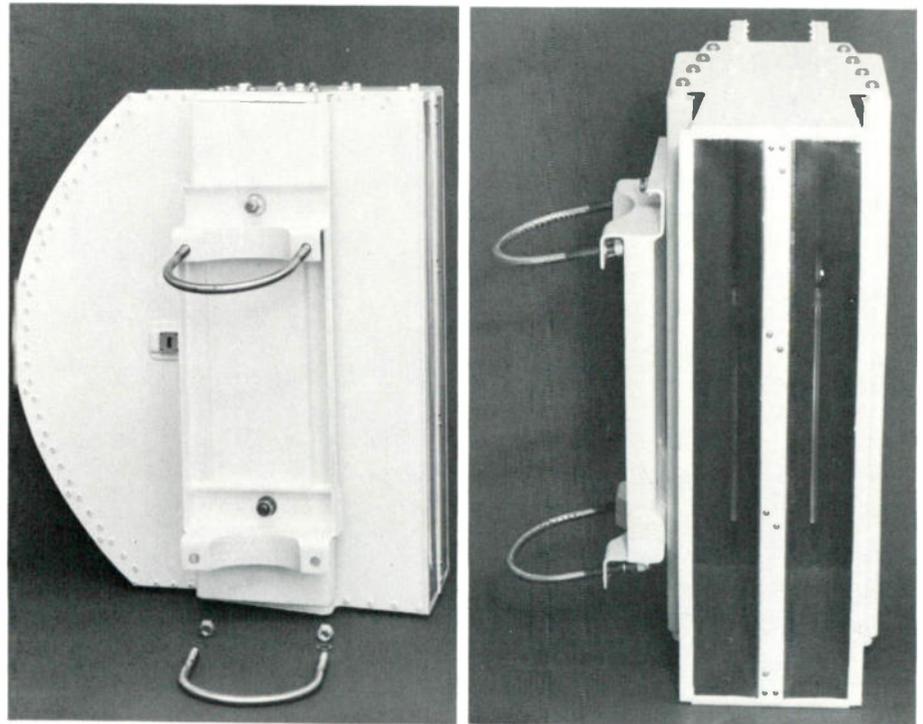
travelling wave tube with its electro-magnet. Figure 10c shows the complete travelling tube with the fan jacket for cooling, and Figure 10d exhibits the rack mounted travelling wave tube power amplifier and its power supply. The travelling wave tube is designed to have an operating life of five thousand hours.

Figure 11 is a photograph of the antenna used at the receiving site. It has a gain of approximately 44 dB with an antenna beam of 1 degree. A small feed dome is used over the feed structure and may be operated without any further shelter. The receiver, shown in Figure 11, is mounted immediately

behind the receiving antenna. The receiver's design is also weatherproof.

The photographs of transmitting antenna are shown in Figures 12a and b. This antenna is actually two

The antenna concept used is one of exciting an electro-magnetic field within the antenna cavity such that it reflects against a parabolic surface at the back of the antenna. The



A. Side View

B. Front View

Figure 12: AML Transmitting Antennas.



Figure 13: Artist Concept of Urban Use of AML System.

antennas in one. These "two" antennas are mounted side by side with a waveguide input for each.

reflected wave then forms a plane wave front midway in the antenna structure. From this point, the



Figure 14: Artist Concept of Suburban Use of AML System.

plane wave front is conducted through a microwave horn to the open aperture. This antenna, with its large vertical dimension and narrow horizontal dimension produces a 15-degree fan beam in azimuth and a 2-degree beamwidth in elevation. Figure 12b is the front view of the transmitting antenna and shows the two parts of the antenna. In a normal configuration, the transmitter driver unit would drive two power amplifiers; they, in turn, would drive the two parts of the dual transmitting antenna. The RF energy is added in space rather than in any waveguide structure. (It should be noted that the RF energy coming from the left side of the transmitting antenna is at a different frequency from the energy coming from the right side of the transmitting antenna since the left side corresponds to the lowband TV channels and the right side corresponds to the highband TV channels.) Clearly other types of transmitting antennas are possible and will undoubtedly be used; however, this transmitting antenna was designed for the large metropolitan city configuration and is shown here for illustrative purposes. Antennas with a high gain, such as are used for the receiving antenna, could be used in the transmitting position.

suitable to transmit directly to a home television receiver. This system is designed to meet the distribution needs found in CATV. Initially, the system was designed to be used in an urban environment where a single transmitter would be transmitting to many receivers. The illustration in Figure 13 depicts this type of distribution system. A variant system is depicted in Figure 14. Here, outlying communities are able to receive TV signals sent from a central transmitter, thus bypassing the use of long runs of non-profitable coaxial cable. The illustration in Figure 15 shows the use of AML to cross natural barriers. Again a central transmitting site beams the TV signals to specific locations. Here the central site comprises five transmitting antennas, each with a high gain and each pointing at their individual receivers.

The Amplitude Modulated Link

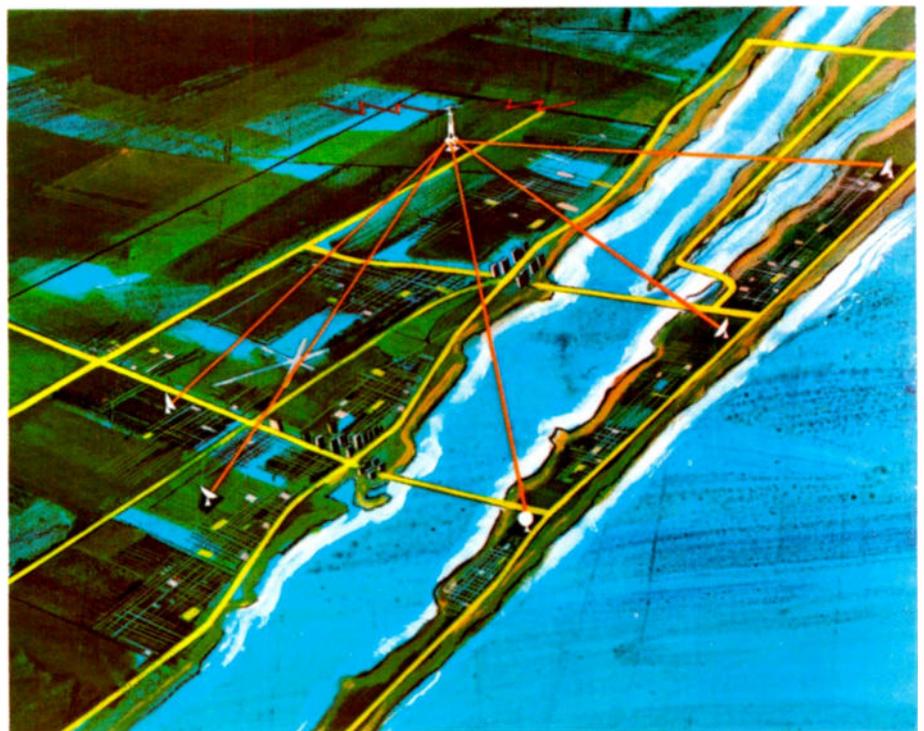
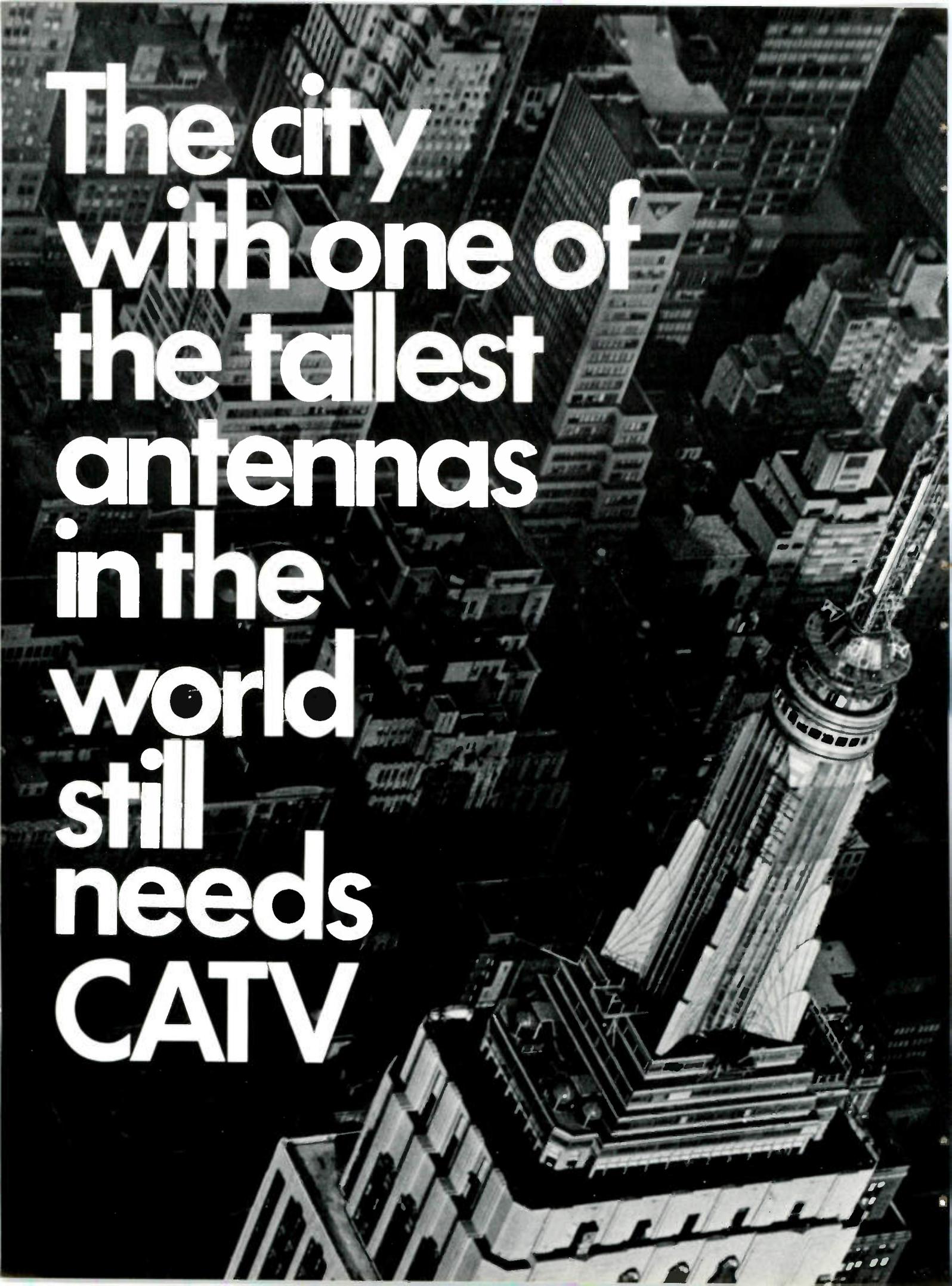


Figure 15: Artist Concept of AML Usage in Crossing Natural Barriers.

Conclusion

The Amplitude Modulated Link provides a means for transmitting the entire VHF television spectrum. This is done with a minimum use of radio frequency bandwidth and with a relatively simple receiver, which has, as an output, the VHF television spectrum at a power level

represents an addition to the CATV industry which will allow this industry to expand into areas which were previously not economically feasible to serve. With the expansion will also come the economic impact of additional CATV plant networks and the availability of greater numbers of television channels to the individual viewer. 

An aerial, black and white photograph of a dense urban landscape. The buildings are packed closely together, creating a complex grid of rooftops and windows. In the lower right quadrant, a prominent skyscraper stands out, featuring a tall, slender antenna structure extending from its top. The overall scene conveys a sense of a highly developed, vertical city.

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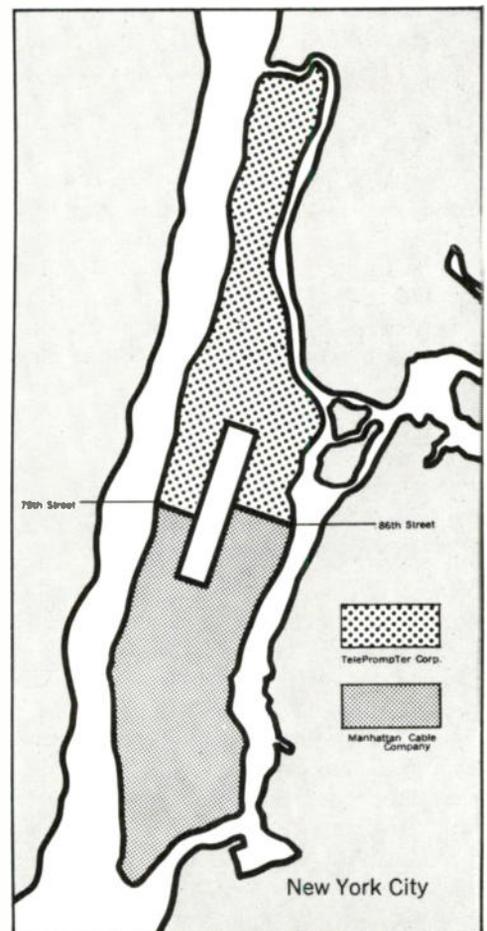
That's why TelePrompTer and Manhattan Cable TV are tunneling their cable under city streets and avenues, installing the CATV systems that will bring ghost-free, non-fading, clear-channel color and black and white reception to families that want it.

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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.

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The New "Minority Media"

By H.J. Schlafly
Senior Vice President
TelePromTer Corp.

"Between the mass medium of broadcasting and the private medium of telephone, is a vast segment of the total developing telecommunications requirement of our nation and our world." This statement is one of the key points made by H. J. Schlafly, Senior Vice President of TelePromTer Corporation in the presentation reprinted below. Schlafly's comments paint a concise and visionary picture of the telecommunications world of tomorrow along with a portrait of the powers resisting cable today. The "New Minority Media" concept was originally presented by the author at the National Winter Convention on Aerospace and Electronic Systems (WINCON) at the International Hotel in Los Angeles on February 14.

The title of this presentation originally was to have been "A Projection of CATV to 1975." I have changed the title to "The New Minority Media," not as a commentary on our current social problems but to draw a distinctive picture of the mushrooming role of CATV.

All of us are acquainted with mass media in its several forms. The goal of mass media, and particularly the goal of the mass medium of broadcasting, is to reach and hold the attention of as large a portion of the public as possible. In this way *the message* is exposed to the greatest number of potential customers.

**"'Free' communications service is paid for
by the public whether or not there is individual benefit
from the broadcast presentations."**

The cornerstone of this giant industry is the advertiser's "cost per thousand" in terms of exposures of his product. Except to the extent to which the national broadcast advertising budget (and that amounts to approximately \$2 billion) is reflected in our cost of living, this medium is "free" to all those who wish to invest in a radio or television set. Recognize that the cost of this "free" communication service is paid by the public whether or not there is individual benefit from the broadcast presentations. By a Spartan type of attrition, broadcast presentations must necessarily represent the viewing preferences of a satisfactory percentage of the total public.

We are also acquainted with telephone service for private communications. This service provides for real

time dialogue between two parties regarding their direct personal or business interests. Although the bandwidth requirements are small, the switching facilities and the long lines facilities for making a connection "from anybody to anybody" is staggering. Unlike "free" broadcasting, the cost of private communications is related to a base charge and/or a service rendered charge. The charge is borne by the party who placed the order. The amount is formulated on something called a rate base. This is similar to the "cost plus" contract used at one time by the government to provide manufacturer incentive but now almost universally abandoned because of obvious opportunities for abuse. Use of the service is entirely voluntary . . . If you do not want to pay for facilities to phone the doctor, call the fire department or use a telephone in your business, you do not have to take the service.

**"Between the mass medium of broadcasting
and the private medium of telephone, is a vast segment
of the total developing telecommunications
requirement of our nation and our world."**

Other communication services, including rental of terminal devices are offered by the telephone company since in the process of providing telephone service, it generally happens to have some of the facilities, skills, administrative organization and financial resources to do such jobs. This, of course, makes duplication by competing business organizations unnecessary.

The need for private communication services is attested by an annual gross revenue in excess of 13 billion dollars, a physical plant investment of a little over 34 billion dollars and an organization served by some 800,000 employees. (This includes adequate representation in the legal field and a staff for providing information to regulatory bodies.) Control, in the public interest, is the responsibility and concern of the 100 professional members of the FCC Common Carrier Bureau and by state regulatory offices. Between the mass medium of broadcasting and the private medium of the telephone, is a vast segment of the total developing telecommunications requirement of our nation and our world. Although these services relate to millions of people, I prefer to think of this field of telecommunications as a "minority medium." Its purpose is to serve comparatively small special interest

groups or even individuals who have a temporary, occasional or specialized need or communication requirement.

"Can the freedom and coverage characteristics of journalism be applied to telecommunications?"

The field of journalism has long recognized this type of social need. Branches of the printing trade cater to groups with common interests in business, professional activity, sports, hobbies, etc. They publish handyman books and magazines for the homeowner; cook books for the housewife; foreign language newspapers for the immigrant; and news weeklies which are limited to neighborhood or small town circulation.

Printed material can be delivered to your home — it patiently stores its information and waits for your convenience. I am not aware of any restrictions on duplication, or importation of publications that originated at a distant city. The question now arises, can the freedom and coverage characteristics of journalism be applied to telecommunications? The problem is not technical. The state of the art is adequate for today's needs. If certain non-technical obstacles could be removed, competitive manufacturers and imaginative system operators would quickly show that they are more than capable of rapid development, supply and utilization of superior technical devices. Furthermore, the technology does not make demands on a limited and precious commodity — the radio spectrum.

The key words of this technology are *broad-band, multi-channel* distribution. Establishment of such an express highway of signal distribution into each dwelling in a community provides the means by which vast freedom of choice of entertainment, information or business services can be provided for the individual.

This technology started in the early '50s. Today it is best illustrated by the evolving CATV industry. CATV meets a community need by providing multiple channels of television and other broadcast signals over a coaxial cable transmission system from a superior receiving head-end into the homes of individual subscribers. The original 2 or 3 TV channels expanded to 5 and then to 12. Crude make-do equipment was quickly improved by risk capital adventurers, unaided by hindsight, protected profits or subsidy to produce the low loss cables, solid-state amplifiers and other components in use today. The result is characterized by FCC Commissioner Johnson, in his *Saturday Review* article of November 11th last. There he compares a CATV system signal-carrying capacity to that of a telephone circuit by saying that it is, "like comparing a river with a garden hose". . .

Remember that we are not talking about the premium commodity of space radiated energy but rather about a confined, and directed transmission, balanced and controlled signal levels and a system design which permits the efficiency of adjacent channel utilization. Today, in spite of the restrictions, powerful competitive opposition, regulatory delays and legal actions, there are in the U.S.A. approximately 3 million homes representing perhaps 10 million people served by CATV. The service has spread from remote rural regions, inadequately covered by broadcast, to metropolitan areas

where 10 or more TV broadcast signals can be received at the more fortunate home antenna locations. It has been established that good reception of TV network channels is by no means the only or even the most significant reason for a subscription to cable TV. On the ridges of the Hollywood Hills where antenna reception is almost perfect, we find that cable service is welcomed even if its only benefit is to "get that monstrosity of corroding pipe and that mess of guy wire off the roof of my beautiful home"...

"Cable TV can survive only if it continuously delivers value worth the price."

Cable TV makes a charge to the individual user of its technical facilities. To ask a person to pay for a non-essential service requires that that person be convinced its value to him is worth the charge. A service that can be terminated at any time on short notice, usually one month, without penalty, is constantly subject to this test. Therefore, cable TV can survive only if it continuously delivers value worth the price. The fact that the subscriber count and the number of operating systems of cable television continues to grow in spite of regulatory limitations on the viewers' choice or viewing convenience, says something about the public desire for and support of the service. The fact that long-term financing by major banks and insurance companies is now commonplace says something about a "hard nose" evaluation of the future of the business.

Why then is there opposition to the growth of CATV?

Let us consider some of these recognized profit-motivated interests:

(1) Movie Exhibitor: — Naturally, any threat of additional competition must be opposed.

(2) Broadcasters: — CATV is great provided it enlarges the viewing audience of a station but not the viewer's choice of programs. Just in case, however, broadcasters are joining CATV ranks in droves.

(3) Copyrighters: — Do not want to have CATV killed. They are, however, experienced negotiators and, sensing a new source of revenue, keep the pressure on to work out a favorable deal.

(4) Telephone Companies: — Certainly not against CATV as long as the telephone company provides all of the transmission services under its rate card, 10 year contract, credit guaranteed, cancellation charges, and other normal protections.

"Pressures from the well established industries already regulated by the FCC are strong."

Now with proper and sincere respect for its problems, let me consider the quandary of the Federal Communications Commission. The national television policy was written in 1952. At that time, the value of television and its appeal to the public was recognized and a substantial portion of the radio spectrum was allocated so that all of the nation could be served by at least one television station. This objective has been implemented to the point where by 1968 it is reported that 95% of the population has access to television programming. The only effect of CATV on this broadcast pattern that has

been definitely established is an increase in the number and quality of viewable channels for a substantial portion of the public. Less desirable effects are debatable but the evidence of CATV's rapid growth is undeniable.

As it has before, the FCC put a "freeze" on a rapidly developing communication service so that the problems could be studied before mistake patterns were established. As decision takes more and more time, a policy gap has been created which may defeat the very objective that the FCC is trying to achieve — protection of the best interest of the public. Pressures from the well-established industries already regulated by the FCC are strong. Other government bodies, including the Supreme Court, now will make important contributions to the issue. Many, if not all the Commissioners, concede that cable TV offers the public a much wider variety of program selection, often a substantial improvement in picture quality and, since channel capacity and interruption of advertising income is not a limitation, an opportunity to provide a volume of public service programming tailored for precisely selected geographic portions of a city or region.

" The FCC should ask not what CATV must delete to protect the profits of a broadcaster but what it must carry to protect the interests of the public."

Broadcasting by definition cannot pin-point an audience. Even a small transmitter reaches viewers over a 5000 square mile area. The mechanics of regulation of CATV systems are not a problem. Controls on ownership, excessive charges and other acts not in the public interest are standard regulatory practice. The prime concern is that a small local station, without network or other programming affiliations, which does not have the viewer interest programming supplied by stronger stations, will not get a sufficient share of the potential viewers to support a satisfactory profit-producing rate card. Since CATV helps the public to compare and judge program quality, the Commission has speculated that it could be the responsible agent for the loss of such a weak broadcast station and thus decrease the radiation pattern of the country. It is my opinion that, should this occur, leaving any portion of the country without broadcast coverage, there are a number of remedies, including new sources of local programming that could correct this deficiency. To paraphrase an historic remark of the late President Kennedy, I respectfully suggest that the FCC should ask not what CATV *must delete* to protect the profits of a broadcaster but what it *must carry* to protect the interests of the public.

The Commission is justifiably concerned that cable TV will not be installed to serve smaller communities and remote farm or ranch locations. But development of a local distribution, multi-channel microwave transmitter in the presently vacant 18 GHz band (reported in an article published elsewhere in this magazine) offers a most interesting and, I believe, practical technological solution to that phase of the problem. Such a transmitter is currently operating with 12 TV channels and FM band distribution capacity under an experimental license. A petition for rule-making for this service is now being considered at the Commission. . .

Let us assume that present restrictions and oppositions to the expansion of cable distribution of wide-band signals will be worked out. What then can we project for this portion of the telecommunications picture looking towards 1975? To serve effectively as a "minority medium" a cable transmission system must have sufficient bandwidth to deliver into the home those things which the individual has need to hear, see, read or store, for example:

Education and Training, including trade and job skills, selected academic courses, refresher courses, adult training courses, hobby and craft instructions, musical instrument instruction, multiple choice tests, income tax and other government form assistance, routine business procedures such as — how to open a bank account, arrange for travel, apply for a job.

Entertainment, broadcast channels (surely they should not be excluded from this service), full length professional presentations or major sporting events without interruption or advertisements. . .

Community action including information on local issues, political campaign speeches, public opinion polls, reports by authorities, emergency or safety instructions (including emergency override announcements on all channels), job opportunity announcements, and criminal detection bulletins. . .

Stored information delivery, library data, handbook information, professional (legal, medical, etc.) references (scrambled where necessary), computer readouts.

Electronic marketing, catalog displays and specification sheets, and in-depth product displays. . .

Some of these services are already being provided on CATV systems. Each of you undoubtedly can add to that list. A number of the above services require home terminal equipment not yet commercially available, for example, electronic storage and display or hard copy reproduction of selected television frames. . .

Continuous repeats of information or performances (I recognize that this may be duplication in totality) will gear the service to the viewers' convenience rather than a schedule-or-miss arrangement. Orders for test responses, product ordering, opinion polls and the like will require a form of two-way transmission. While this might be inserted into the media facility and transmitted either downstream or upstream to a relay or collection point, the return flow could be handled by existing conventional low bandwidth circuits through a normal switching office. Coordinated use of different communication means is not uncommon even today.

How will we keep accounts to pay for all these uses? I don't know, but the transmission efficiency of this community cable will be high; the cost low. If there is a demand for a service, I'm sure there will be an equitable way to charge.

Who will provide the technology? Who will provide the programming? Who will provide the terminal equipment? That too, I do not know, but I fervently hope that as many energetic and enthusiastic talents as possible will be involved, motivated by an understanding of the communication needs of our society — and a reasonable profit — for supplying program material, equipment and services, so that the era of telecommunication "minority medium" will be the more quickly established.

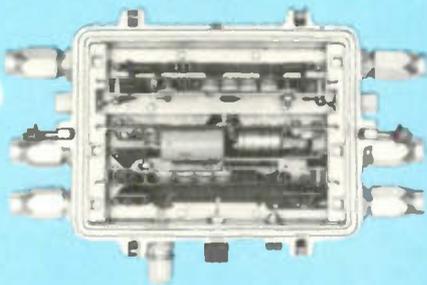
(rvc)

CASCADE

1968

PRODUCT DIRECTORY

CETA-2/25
CEBA-2/19
CEBA-2/27
CETC-2/25
CETD-2/35



Universal housing and interchangeable plug-in modules function as high-quality Trunk Amplifier, high-gain Bridger Amplifier, low-gain Bridger Amplifier, Trunk Combination amplifier or Terminal Distribution amplifier. Housings accommodate any 5/8-24 connectors with or without seizing of center conductor.

Glass-epoxy circuit boards slip into guide slots in cast aluminum heat sinks. Trunk amplifiers feature Temperature Level Control (TLC) which senses ambient temperature and adjusts gain to compensate for changes in cable attenuation. High-efficiency "switching mode" power supply module extends cable-powering range. Warranted two full years against defects in materials and workmanship.

CETA-2/25:

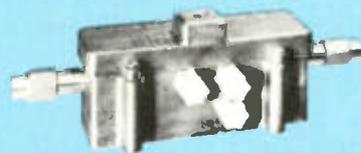
Maximum output:	+50dbmv
Maximum Gain:	28db
Gain Control (Ch. 13)	6db tilt comp.
Tilt Control (Ch. 2)	5db
Input pad	0-3db
Return loss, in/out	18/15db
Noise figure, max.:	10db
Powering	22-32 VAC.
Test points	-20db, ±1db

CELA-2/22



All-new 22db line amplifier, suited to both trunk and feeder application. Features modular construction, full-wave power supply and Cascade Temperature Level Control. Thermistor probe monitors temperature and adjusts amplifier gain to compensate for changes in cable attenuation. Operational gain is 22db (25 max.), and 12-channel output capability is +48dbmv. As a trunk amplifier, suggested operation (Channel 13) is +10dbmv input and -32dbmv output. In feeder applications, recommended levels are +20 and +40 dbmv.

CELX-1/15



Low-cost line extender features 2-stage circuit and full-wave power supply on glass-epoxy board. 12-channel output capability is +38dbmv, and operational gain is 15db at Ch. 13 (18db max.). Suggested operating levels are +20dbmv in and +35dbmv out at Ch. 13. External 8db Gain and 5db Tilt controls allow compensation range from 15db of cable to 5db cable and 10db flat loss. Frequency response is ±1db, 50-220 MHz, and maximum noise figure is 12db.

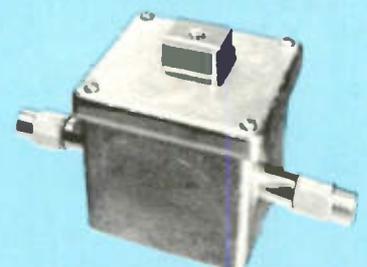
CELE-1/20



Cable-powered line extender in compact cast aluminum housing. Separate RF and power supply modules allow instant replacement. Features high output, low noise figure and wide control ranges. Bandwidth 50-220 MHz, ±.5db. Suggested operating levels are +40db mv out @ Channel 13.

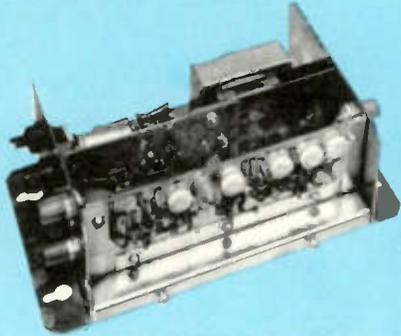
Maximum output:	+49dbmv
Maximum Gain:	20db
Gain Control (Ch. 13)	8db tilt comp.
Tilt Control (Ch. 2)	3db
Input pad	0-3-6db
Return loss, in/out	17/15db
Noise figure, max.:	14db
Powering @ 22-30 VAC	220-250 ma
Test points	-20db, ±1db

CAT-2/5



Compact unit provides moderate gain (or loss) at feeder tapoff, and supplies amplified signal to four outputs. Gain may be adjusted over a 13db range, from -8 to +5db with respect to input. Maximum input is +20dbmv at 5db gain, and +33dbmv at 8db gain, and through-line insertion loss is less than 1db. Return loss at input, output and taps is 16db. Frequency range is 50-220 MHz, ±5db, and output capability is +25dbmv.

CEDA-2/40



Self-powered four-stage distribution amplifier, equally suited to trunk/feeder application and MATV type distribution within hotel and apartment buildings. Offers 40db gain and +50dbmv output capability. Gain and tilt controls provide compensation for 30db of cable and 10db flat loss to 40db flat loss. Requires only 11.7 watts at 117 VAC. Ideal replacement for older tube-type equipment.

CEDW-2



New wallplate coupler features high isolation and directivity, and accurate impedance match to eliminate ghosts and beats in multiple dwellings. Maximum peak to valley response deviation over 40-250 MHz bandwidth is .50db. Circuitry is on etched glass-epoxy board, mounted on metal outlet cover. Tap values from 8 to 28db (± 1 db) are available.

Model	Tap Slope (max)	Loss (max)	Return Line	Loss Tap	Directivity (min)
CEDW-2/8	.5db	1db	20	12	14db
CEDW-2/12	.5db	.5db	22	16	18db
CEDW-2/16	.5db	.5db	22	18	18db
CEDW-2/20	1db	.5db	22	18	16db
CEDW-2/24	1db	.5db	22	20	16db
CEDW-2/28	1db	.5db	22	20	16db

CEDT-1



Available in tap values from 12 to 36db, the CEDT provides four output taps with high directivity and isolation. The waterproof housing is of corrosion-resistant aluminum alloy.

Model	Tap value	Insertion Loss (max)	Isolation (min.)	Directivity (min.)
CEDT-1/12	± 1 db	3db	19db	19db
CEDT-1/16	± 1.5 db	1.5db	19db	11db
CEDT-1/20	± 1.5 db	1db	19db	12db
CEDT-1/24	± 2 db	1db	17db	10db
CEDT-1/28	± 2 db	1db	16db	8db
CEDT-1/32	± 1.5 db	.5db	22db	5db
CEDT-1/36	± 1.5 db	.5db	35db	3.5db

CEDC-1



For insertion in trunk and feeder lines where an unequal split is needed, two models, CEDC-1/8 and CEDC-1/12 provide tap values of 8 and 12db, ± 1 db. Through-line insertion loss is 1.5 and 1db, respectively. Input, output and tap return loss is 20db over the 5-240 MHz bandwidth, and tap-to-tap isolation is a minimum of 18db. Circuit board may be positioned to use any of the three connectors as input, the other two becoming output and tap connections.

CELS-1



CELS is a passive line splitter, providing equal output to two trunk or feeder lines. Unique construction allows circuit board to be positioned to use any of the three connectors as input, and other two as outputs. Input and output return loss is 18db over 5-240 MHz range, and tap-to-tap isolation is 18db. Splitter loss is 3db at Ch. 2, and 3.5db at Ch. 13.

CESP-1



Convenient splice box to connect cable ends and provide separate AC and RF test points.

AC test point is marked in red as a reminder that FSM is not to be connected. RF test point is -30db, ± 1 db. Return loss is maintained at 25db, and insertion loss is .25db. Optionally, insertion loss may be reduced to .1db by removing RF test point components.

CEPS-3



This is a heavy-duty 30-volt AC power supply which provides surge and overload protection for itself and for the system which it powers. A fuse, self-resetting thermal breaker, neon transient suppressor and self-healing Thyrite lightning suppressor afford protection to both primary and secondary circuit. Output current is read on the built-in ammeter. Primary circuit includes RF filtering and double-pole switch. 5- and 10-amp models are offered, and may be had complete with either of the following housings.

CEPH-1



Weatherproof power supply housing of welded sheet aluminum. Supplied complete with externally-operated primary switch/circuit breaker, internal duplex receptacle and crossarm mounting bracket. 14 $\frac{1}{2}$ x 13 $\frac{1}{4}$ x 11 $\frac{1}{4}$ ins. 11 lbs.

CEPH-2



Weatherproof power supply housing of cast aluminum alloy for pole, cross-arm or underground installation. Clamshell design and silicon rubber sealing gasket provide complete sealing and radiation protection. Includes primary switch/breaker and AC convenience outlet. 12 x 12 x 7 $\frac{3}{4}$ inches. 17.5 lbs.

all specifications subject to change without notice.

CASCADE

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Vancouver, B.C.: 5594 Cambie / 327-9201

Programmed learning method
uses FM band for distribution

Educating, a Potential Service for Cable Systems

By Ira Kamen, Vice
President, Educating Systems, Inc.

Cable system operators are to be offered a new service which will allow them to participate in the "learning business" boom. This new system, which in 1967 won the Ohio State Award as an "extraordinary development," can also improve the status of CATV systems, as they will be opening a new channel of learning for all their subscribers. Here's how "Educating" works:

Whenever a program is scheduled, you merely activate the equipment shown in Figure 1. The FM subcarrier generator creates four subcarrier channels



Figure 1.

on an unused FM channel. Each student tunes in his Educating receiver (Figure 2) which is connected to the CATV system in the manner shown in Figure 3, and participates throughout the lesson by listening, by answering multiple-choice questions and noticing the instructor's comments on each question. The FM radio shown in Figure 2 works as shown by Figures 4, 5, 6 and 7.

Educating was conceived and developed by broadcast pioneers Norman S. Livingston and Theodore

TV Communications

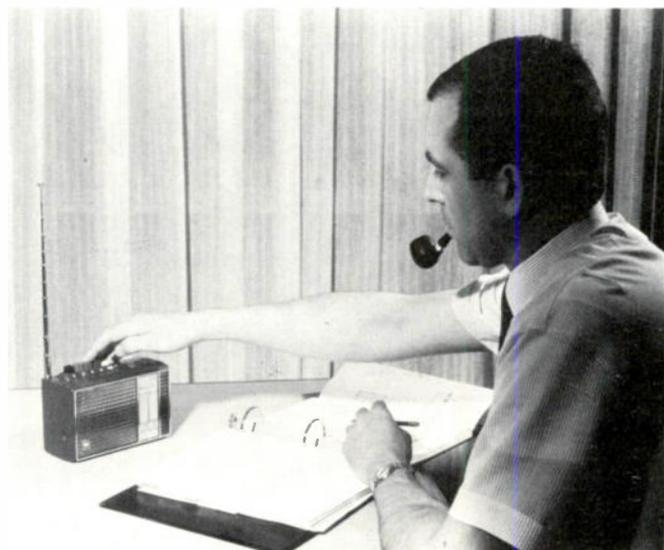


Figure 2: Note: In the CATV application the antenna is not raised as the connection is made on the external terminals in the rear of the set.

Granik, along with the author. The corporation is partially owned by International Textbook Company and Sylvania, Division of General Telephone and Electronics, who manufacture the equipment shown in Figures 1 and 2. Triangle Communications, well known to the CATV industry, is the national marketing manager for this new system which will be offered to the

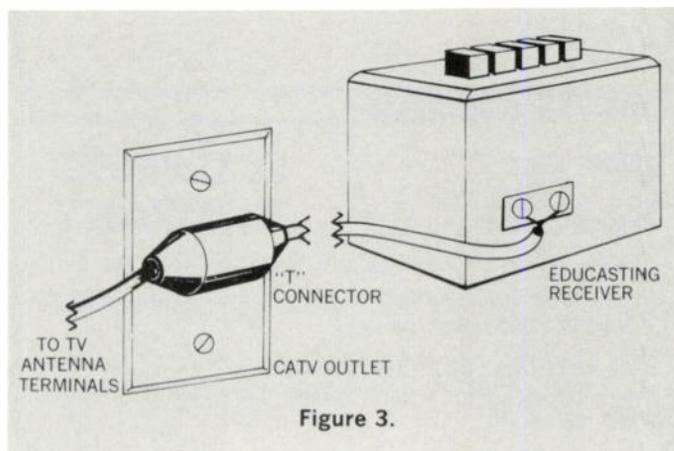


Figure 3.

In the dark about CATV equipment & services?

We supply both.

And we've been doing it for over 15 years. As a leading supplier of cable television equipment & services, we have constantly maintained a complete variety of equipment, immediately available to fill your requests. Specializing in getting the orders to you fast, too.

Our two one-stop headquarters for equipment & services always strive to offer the best in service to the vast cable television industry. Regardless of your requirements, let us recommend and supply you. We'll do it at reasonable prices.

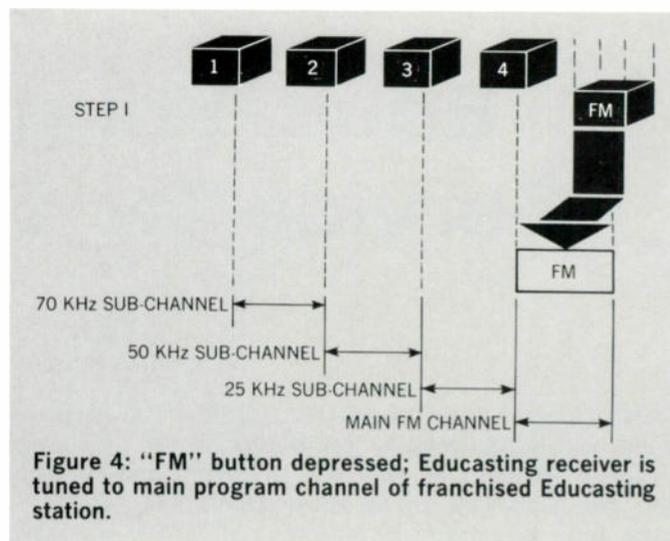
CATV

EQUIPMENT COMPANY

SEATTLE • ED FOUST / ROYCE BUSEY
1422-34th Avenue • Seattle, Wash. 98122 • Phone (206) 325-6662 (24 hr. Ans. Service)

SAN RAFAEL • GREG ANDERSON
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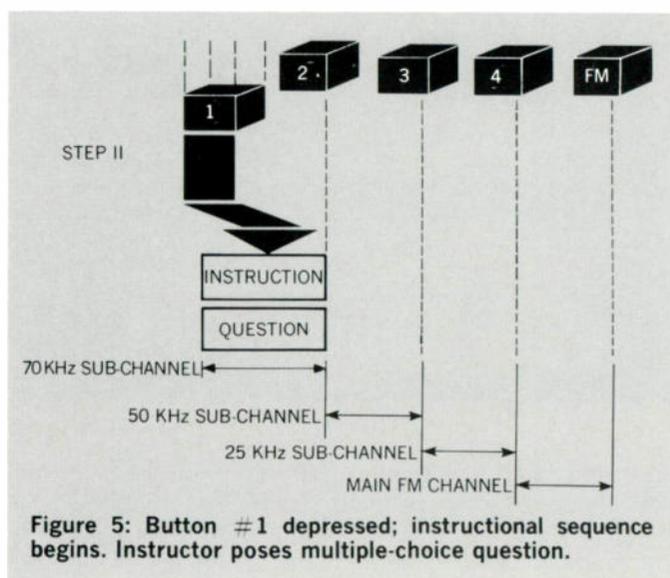
industry early this year. Triangle has taken the responsibility of teaching the CATV operators the techniques for selling the Educasting courses. In the Triangle plan there is no franchise fee or equipment



to purchase. The units shown are rented, and the CATV operator pays a royalty on gross sales and pays his own local promotion and sales expenses.

Triangle has proven in a test market operation in Philadelphia that Educasting can be sold via company paid tuition refund programs, individual enrollments and via service clubs, government, etc. The current courses which will be offered by Triangle are: Modern Management, Creative Salesmanship, and Clerical Skills.

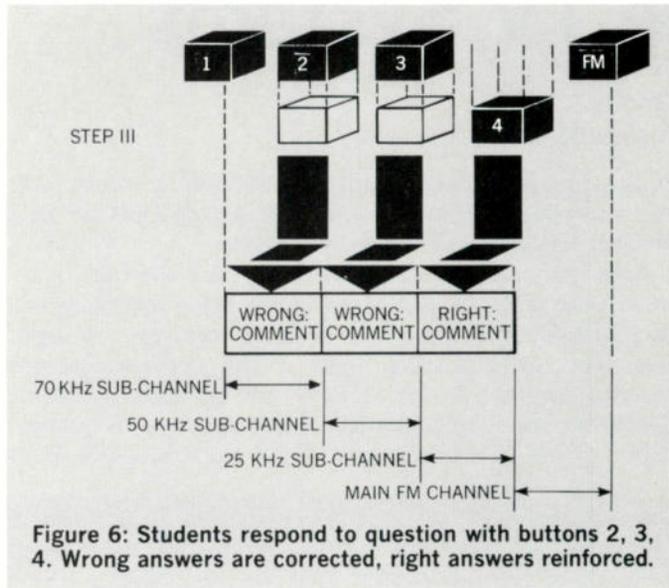
Courses in Bridge, Golf, Computer Languages, Computer Education and others are now in the hopper. When the CATV system is set up for this service, more



courses can be incorporated merely by changing the tape on the transport shown in Figure 1. As may be noted from an inspection of Figures 1, 2 and 3, Educasting can be easily incorporated in a CATV system on a clear FM channel.

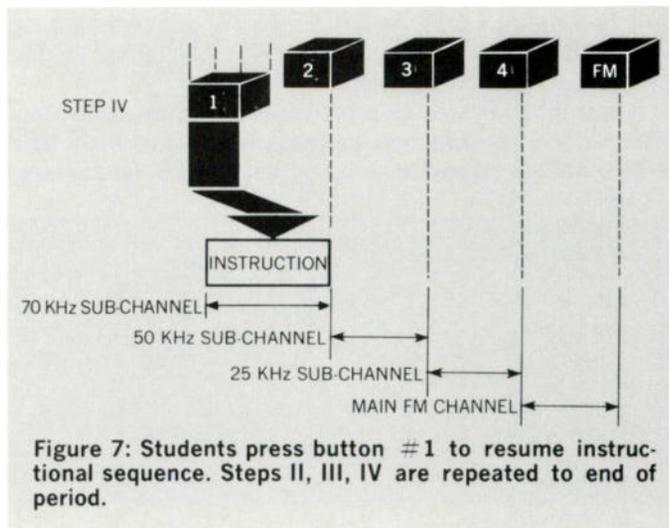
Educating by cable will offer the latest in techniques of programmed learning in the comfort of a CATV subscriber's home rather than in the classroom. It is anticipated that it will overcome normal training program difficulties of making people available on a regular basis and driving to and from a center of learning.

The CATV operator can offer the same lesson several times a week in various time slots with a complete



makeup of the week's courses several times over the weekend, and as one training director using Educating put it, "You've got to be home sometime."

Educating represents the first time that cable TV has been married to programmed instruction, which



is the instructional technique which allows the student to participate actively in the learning process. Pushing the button on the receiver shown in Figure 2 keeps the student active, not passive as he is in the conventional lecture study format or during a classic FM radio educational program. The question-answer process of Educating has the effect of keeping a student alert and forcing him to come to grips with the learning problem. TVC

TV Communications



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:

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- Transmission Engineering
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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.

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Tel. (213) 962-3271

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HENKELS & MCCOY, INC.

An economical "plus" service
for your system's subscribers

Communications Reception Service via Cable TV Systems

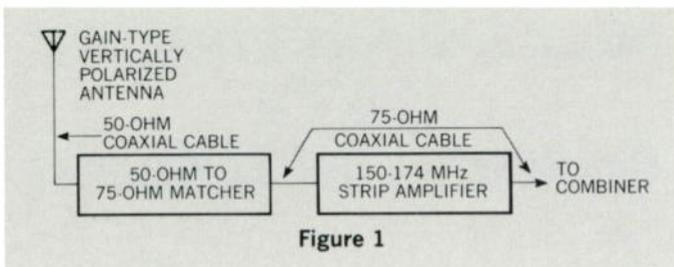
By Leo G. Sands
Electronic Consultant

The market for VHF communications receivers and converters is booming. Thousands of people are buying devices which will enable them to listen to U.S. Weather Bureau broadcast on 162.55 MHz plus police, fire, land transportation and industrial communications traffic in the 150-174 MHz band. Users employ either a make-shift indoor antenna or a relatively expensive outdoor antenna. They *could* use CATV facilities to increase receiving range.

Any CATV system equipped for distribution of signals in the 54-216 MHz range (without 108-174 MHz suppressed) can readily be equipped to pick up and

equipped with a coaxial antenna connector; most have screw terminals, but are intended for connection to a 50-ohm antenna system nevertheless.

Since subscribers would normally also use the CATV facility for TV and/or FM radio reception, couplers will be required for feeding two or more receivers. A slight technical problem may arise if the communications receiver employs a 10.7 MHz IF and the local oscillator operates above the incoming signal receiver frequency. When tuned to a frequency within the 163.3-174 MHz



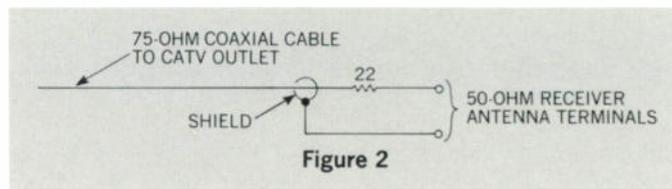
distribute Weather Bureau, land mobile and VHF marine (150-174 MHz) radio signals by installing a strip amplifier for this frequency range at the head-end, as shown in Figure 1.

Subscribers can use tunable or fixed-tuned 150-174 MHz band receivers. These receivers are designed to



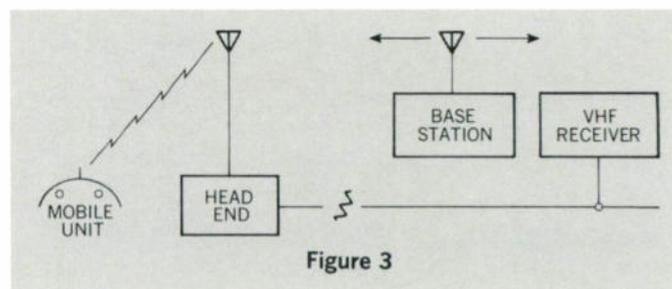
Monitor receivers such as the one shown can be rented to subscribers or they can furnish their own.

be fed by a 50-ohm antenna system. For attachment to a 75-ohm CATV outlet, a 22-ohm carbon resistor can be connected in series with the receiver antenna terminals, as shown in Figure 2. Some of these receivers are



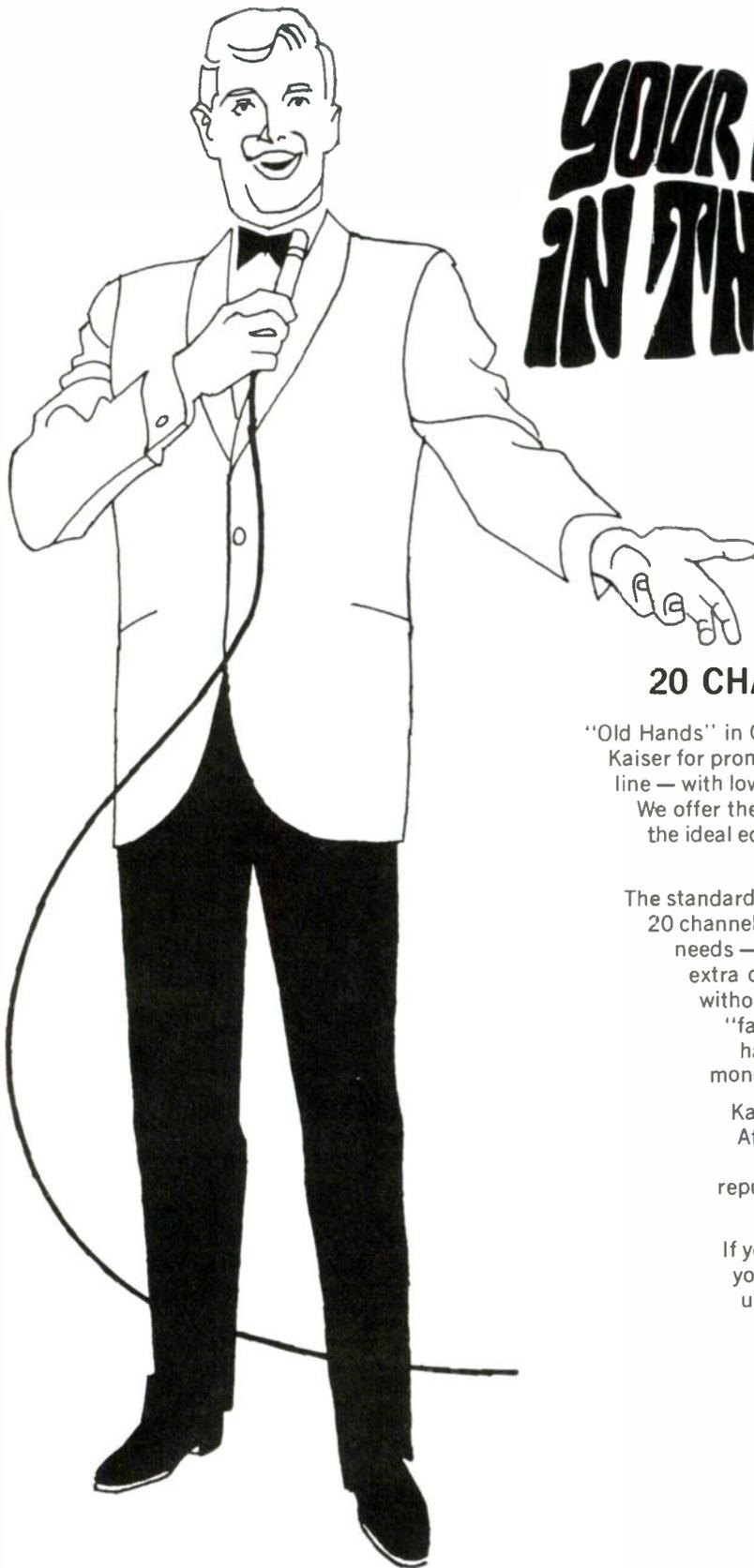
range, interference may be caused to reception of TV channels 7 and 8 if the receiver radiates any appreciable amount of local oscillator signal. However, this interference would usually be limited to TV receivers served by the same CATV outlet. Furthermore, most of the activity in the band is below 163 MHz.

Potential subscribers who could be charged an additional fee for this service include operators of land mobile radio systems who could use CATV facilities to



extend talk-back range, as illustrated in Figure 3. These subscribers could be even better served by providing individual narrow band strip amplifiers or heterodyne amplifiers at the head-end for their specific frequencies. Such subscribers would undoubtedly use fixed-tuned receivers.

The same kind of service could be provided to land mobile radio systems operating in the 30-50 MHz and 450-470 MHz bands by providing frequency converters at the head-end, as shown in Figure 4. To receive the



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signals, users would employ fixed-tuned 150-174 MHz band receivers tuned to the translated frequency.

U. S. Weather Bureau broadcasts can be distributed to all CATV subscribers by installing an FM receiver, tuned to 162.55 MHz, at the head-end and feeding its output to an FM band modulator or to the sound channel of a TV modulator operating on an unoccupied TV channel or one used for TV weather cablecasts (Figure 5). The Weather Bureau has a number of VHF

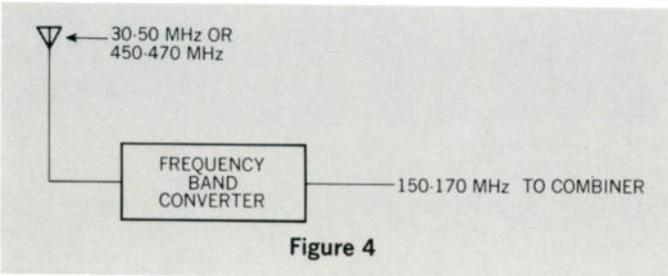


Figure 4

broadcast stations on the air and plans to blanket most of the nation with 70 stations, all operating on the same frequency.

Another service that can be provided is reception of time signals from WWV by installing a receiver at the head-end tuned to 2.5, 5, 10 or 20 MHz. The audio output of the receiver can be connected to an FM or TV modulator, as above, to enable reception with an FM radio or TV set. The same techniques can be used for enabling reception of a particularly popular, distant

AM broadcast station or a foreign short wave station.

For intercepting signals in the 30-50 MHz, 150-174 MHz and/or 450-470 MHz band, a vertically polarized antenna is required for each band, fed to its head-end device through 50-ohm coaxial cable. If the head-end device is designed for 75-ohm input, a 50-ohm to 75-ohm matching transformer can be used. The antenna should preferably be of the gain type. For reception of a single signal only from a fixed station, a vertically polarized Yagi can be used.

A doublet or other wire-type antenna can be used for reception of WWV or short wave broadcasting stations.

By providing any or all of these special services, a CATV operator has more to sell to the public and

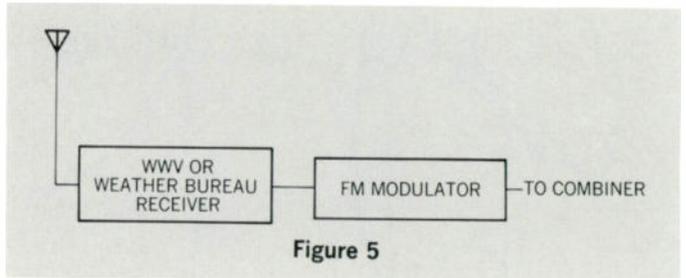


Figure 5

special interest groups. While the necessary head-end hardware may not be available off the shelf at the present time, existing strip amplifiers and frequency converters can be modified to cover other than TV channels and the FM band. TVC

How good are your contacts?



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FINANCIAL REPORTS

Craftsman Electronic Products, Inc. reports record-breaking fourth quarter and annual sales for 1967. In addition, backlog remains at a high level and preliminary forecasts show gains up to 50% for the first half of 1968.

Storer Broadcasting Company has declared a regular quarterly dividend of \$.25 per share on common stock, payable March 11, 1968 to stockholders of record February 23, 1968.

Times Wire and Cable, a division of International Silver Co., reports an increase of 20% in footage of aluminum sheath cable sold last year for CATV installations.

Pre-tax earnings of **Electronics, Inc.** for the first half of the year nearly doubled 1966 earnings, according to a 6-month report of the firm. Earnings for the 6 months were \$19,712, up from \$10,244 in 1966. Sales for the period increased 20% from \$258,095 to \$310,324.

Famous Players Canadian Corp. stock has been rising steadily since it was announced that Gulf & Western Industries was dropping its plan to acquire a 49% minority interest through share exchange. A substitute plan may be a concentration of Gulf & Western Canadian interests in Famous Players, and the spin-off to Canadian shareholders of the communications subsidiary as originally proposed.

Cox Broadcasting Corp. reports per share earnings of \$2.62 for the year ending Dec. 31, 1967. This compares with per share earnings of \$2.12 for the same period of the preceding year. Earnings figures are based on net incomes of \$7,518,527 and \$4,807,359 for the two periods respectively. Operating revenues were given as \$49,576,170 and \$39,446,599 for the two periods.

Figures were restated by the company to include operations of cable television systems in San Diego and Bakersfield, Calif., as a pooling of interests. CBC now serves more than 84,000 subscribers and is the nation's third largest CATV operator.

Copperweld Steel Co. reports per share earnings of \$1.29 for the year 1967. This compares with per share earnings of \$1.93 for the preceding year. Earnings figures are based on net incomes of \$3,138,513 and \$4,693,508 for the two periods respectively. Sales were \$124,028,056 for 1967 and \$128,700,984 for 1966. Gross revenues were given as \$6,238,513 and \$7,993,508 for the two periods.

Ameco, Inc. reports per share loss of \$.09 for the fiscal first half ending Dec. 31, 1967. This compares with a per share loss of \$.24 for the same period in 1966. Figures are based on net losses of \$104,768 and \$282,697 for the two periods respectively. Sales were \$3,455,810 for 1967 and \$3,754,969 for 1966.

Scientific-Atlanta reports per share earnings of \$.20 for the six months ending Dec. 31, 1967. This compares with per share earnings of \$.24 for the same period in 1966. Earnings figures are based on net profit of \$169,557 and \$190,329 for the two periods respectively. Sales were \$5,300,564 for 1967 and \$5,723,886 for 1966. 1966 per share earnings are adjusted to reflect a 20% stock dividend distributed in Sept., 1967.

Livingston Oil Co. reports per share earnings of \$.06 for the second fiscal quarter ending Nov. 30, 1967. This compares with per share earnings of \$.03 for the same period of the previous year. Earnings figures are based on net incomes of \$238,969 and \$137,591

for the two periods respectively. Gross revenues were given as \$2,313,484 and \$2,555,928 for the two periods. Also reported were figures for the fiscal first half ending Nov. 30, 1967. Per share earnings for this period were given as \$.11 as compared with \$.08 for the same period of the year before. Net incomes for the two periods respectively were \$469,990 and \$325,078 with gross revenues given as \$4,689,789 for 1967 and \$5,140,977 for 1966.

General Instrument Corp. reports per share earnings of \$.66 for the quarter ending Nov. 30, 1967. This compares with per share earnings of \$.70 for the same period of the year before. Earnings figures are based on net incomes of \$2,953,165 and \$2,130,006 for the two periods respectively. Sales were \$48,068,169 for 1967 and \$40,437,913 for 1966. Also reported were figures for the 9-month period ending Nov. 30, 1967. Net income for 1967 was \$7,812,161 and \$5,424,420 for 1966, with sales at \$143,166,884 and \$115,843,232.

Hewlett-Packard Co. reports per share earnings of \$1.60 for the year ending Oct. 31, 1967. This compares with per share earnings of \$1.42 for the same period of the preceding year. Earnings figures are based on net incomes of \$19,925,000 and \$17,445,000 for the two periods respectively. Sales were \$243,500,000 for 1967 and \$203,340,000 for 1966. Also reported were figures for the quarter ending Oct. 31, 1967. Per share earnings for this period were given as \$.36 as compared with \$.38 for the same period of 1966.

Ampex Corp. reports per share earnings of \$.83 for the first 3 quarters of fiscal 1968 ending Jan. 27. This compares with per share earnings of \$.74 for the same period last year. Earnings figures are based on net earnings of \$7,915,000 and \$7,011,000 for the two periods respectively. Sales were \$171,015,000 for 1968 and \$153,008,000 for 1967. Also reported were figures for the third quarter ending Jan. 27, 1968. Per share earnings for this period were given as \$.30 as compared with \$.27 for the same period last year. (TVG)

March 1968

TV Communications

CATV Technician



Solid-state component quality control at Ameco, Inc.

MATV Hookup to Your System • Non-duplication Interrupter • New CATV Product Report

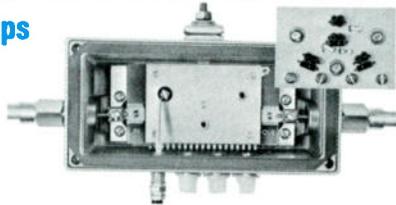
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here, they are just a few of the many items you'll find helpful and economical. And, whether you want one item or a system full, remember, Pruzan is the only major distributor with a total stock of CATV equipment and supplies.

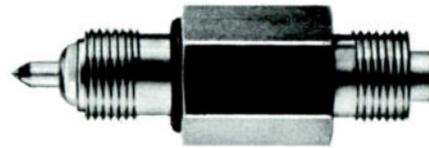
SKL 7500 Colortaps



This reliable unit can serve one drop or up to four with the Colortap-Adder (See insert) at a very low cost. Yet it still provides you with full directional protection. These Colortaps have a wide range of tap loss values (0-40dB) and excellent between set isolation.

Colortaps:		Tap-Adders:	
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100 - 249	8.40 ea.	Four-way	7.00 ea.
250 - 499	7.50 ea.		
500 up	7.00 ea.		

Blonder-Tongue 3200 Series "Stinger"



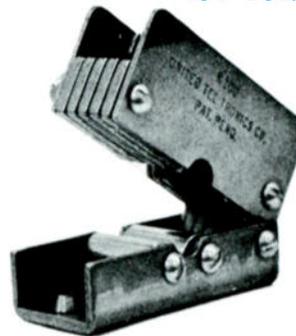
This universal pressure tap insert is back-matched to protect against drop imbalances. Its extremely low VSWR, low insertion loss and flat frequency response assure your subscriber of the best reception on all VHF Channels from 2 to 13. A neoprene "O" ring provides weatherproof seal between tapoff block and Stinger body.
 3200 Stinger: 12, 15, 20, & 25 dB \$2.61 ea.
 3202 Stinger: 30, 35, 40, 45, & 50 dB \$1.79 ea.
 Specify dB when ordering. (i.e. 3200 - 12)

Viking #936 Back-matched Hybrid Splitter-Coupler



This coupler has a frequency range of 50 to 220 MHz and a 75 ohm impedance on all terminals. The unit has a low VSWR of 1.2:1 maximum input, and 1.3:1 maximum output. Its thru-loss is 3.5 dB maximum. Only \$3.75 each.

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Tap the full potential
of your cable system by...

Adding MATV Systems To Your Distribution Plant

By Tom Shea
Manager, Systems Division
JFD Electronics Co.

CATV system operators are often called upon to install MATV systems in schools, apartments, trailer parks, hotels, motels, hospitals, and other large buildings.

MATV systems, like CATV systems, are traditionally divided into head-ends and distribution systems. However, your cable is already passing the building you want to serve with good, strong, clean signals. Therefore, you don't really need a complete head-end.

Your only problem is distributing signals. Theoretically, MATV distribution is almost the same as CATV distribution, but in practice there are important differences, and the hardware is different.

School Systems

If you're like most CATV systems, you're probably supplying free signal to all of the schools in your area. This service often leads to the request for signal outlets in every classroom. Some CATV operators provide this service free, but most charge for it. In fact, installing a school MATV system should be quite profitable.

Figure 1 shows a distribution system designed to serve a new 2 story school with 100 classrooms. Notice that 8 main trunk lines are used. If the school were only a one-story building, you'd use only 4 trunklines. And if fewer rooms were to be served, you'd use less tapoffs per trunkline.

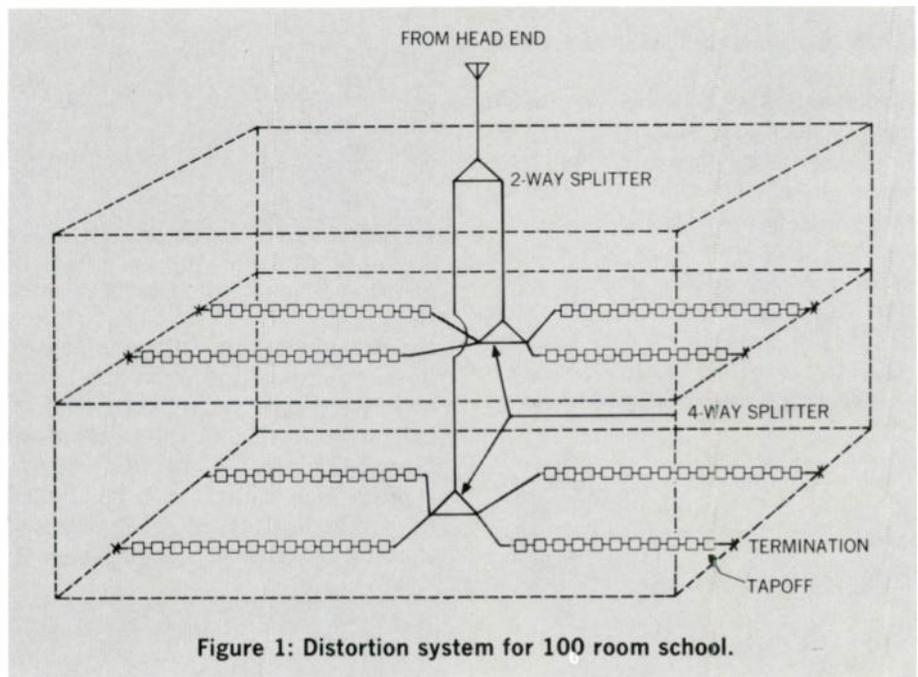


Figure 1: Distortion system for 100 room school.

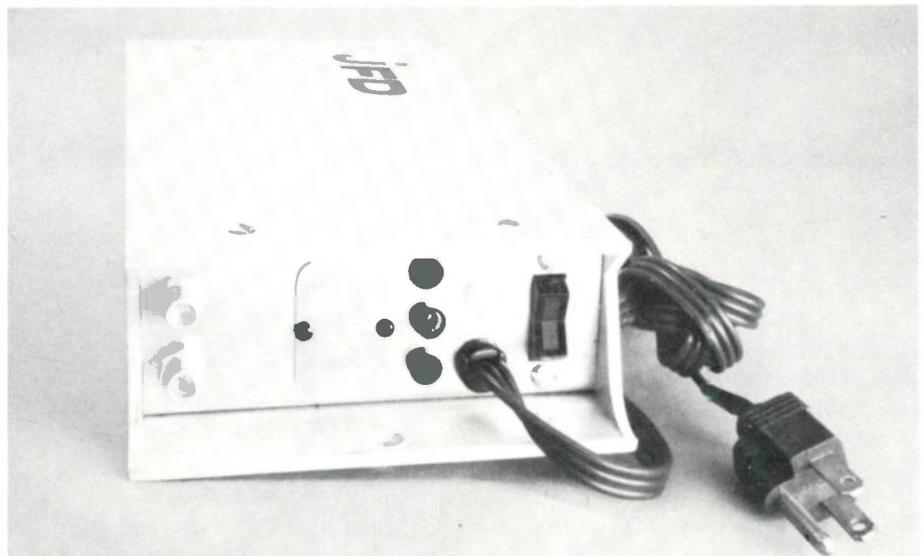


Figure 2: Typical solid state MATV head-end amplifier. This unit is capable of overcoming up to 52 channel distribution system loss.

A system such as this will lose about 35 dB between the first splitter and the last tapoff in the line. Assuming that your cable could

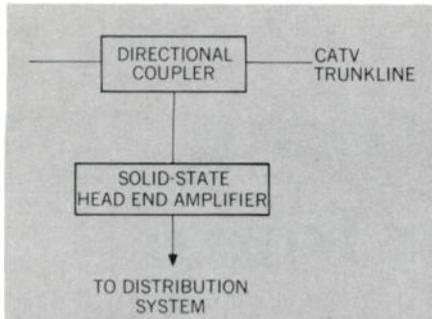


Figure 3: MATV systems can be fed directly from CATV cable, through a directional coupler and a head end amplifier.

feed it only about 20 dB, you would need a head-end amplifier such as that shown in Figure 2. The complete head-end for this school system is shown in Figure 3.

You simply use a directional splitter, such as the Jerrold Starline Model SDC-16. Since this unit has a tap loss of 16 dB, you are probably entering the MATV head-end amplifier with an input of about



Figure 4: Typical flush mounted tapoff with 75 ohm output. This type of tap requires set mounted matching transformer.

14 dBmv. The JFD Model V-3130 amplifier shown has a gain of 30 dB. Therefore, you can serve any system up to about 44 dB loss with this set-up.

As for the type of tapoff to be used, this depends primarily on the construction of the school. Flush mounted tapoffs such as that shown in Figure 4 are most desirable. However, for existing construction, or where no conduit

has been supplied, you may have to use surface mounted tapoffs.

In either case, you would use the same type of set-mounted matching transformer as you use for your CATV subscribers. If you anticipate no problems with direct pick-up, however, you can use a wall

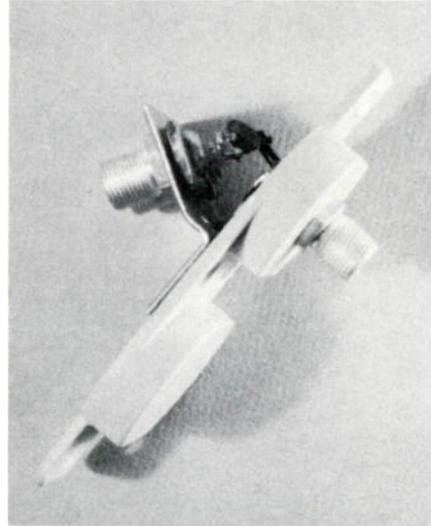


Figure 5: 300 ohm output tapoff requires no separate matching transformer.

tapoff such as that shown in Figure 5. Combining the function of a tapoff and a matching transformer, this unit feeds 300 ohm twinlead directly to the TV set. Of course, strong local signals can be picked up by the few feet of cable between the wall and the set, causing ghosts.

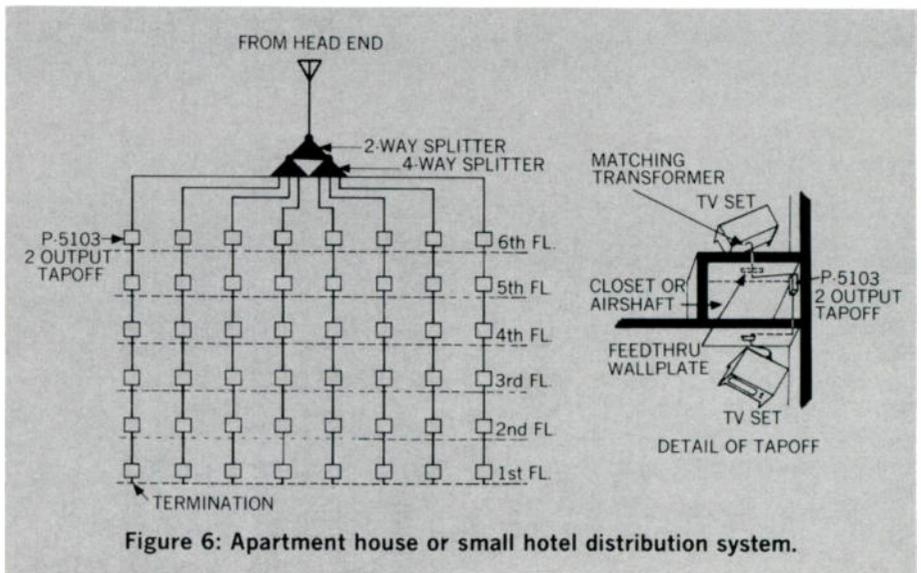


Figure 6: Apartment house or small hotel distribution system.

Apartment Houses

Many CATV systems have subscribers in apartment houses, and of course this requires an MATV distribution system. Except for

the physical layout of the building, the distribution system is quite similar to that used in schools. Figure 6 shows a typical apartment house system. This is a 6 story building with 16 apartments per floor. Rather than to run 16 trunklines, we simply run 8 and use a 2 output tapoff. In many buildings, it is convenient to run the trunklines through an airshaft, as shown in the detail drawing. Then, each apartment has a feed-through wall outlet and a matching transformer. (The wall plate and matching transformer can be combined into a single unit in areas with no strong local signals.)

This system would have even less loss than that of Figure 1, therefore you could use the same type of head-end amplifier and feed it from your cable in the same way.

To disconnect a non-subscriber, all you have to do is disconnect the tapoff from the wallplate. Some system owners put locking covers over their wallplates to prevent tampering, but this is generally considered unnecessary.

Hospitals

TV has become a very important part of hospital life. Rare is the patient who doesn't insist on a TV set in his room if he's in the hospital for any length of time.

Further, patients very often pay extra for TV, either renting the set, feeding it coins, or having it added to their bill. Since TV is a moneymaker for hospitals, they

using 4 output tapoffs, you can use the same type of single output pressure taps you use in your cable system. Just clamp the cables securely to the walls and you have a sort of miniature CATV system serving the building. Losses in such a system can be quite high, exceeding 50 dB. You can overcome these losses by feeding this system with an 8 dB directional, rather than a 16 dB directional. If you use RG-11/U cable (which you'll need for your pressure taps anyway) and taps with low insertion loss, you should have no trouble serving a 400 outlet system with the solid-state broadband head-end amplifier shown in Figure 2.

From these examples, I think it is easy to see that you'll have no difficulty with MATV systems. The layouts shown can be adapted to almost any type of building.

You'll seldom need to cascade MATV amplifiers, since a single unit can generally serve virtually any building. For a large high rise, or for a multiple building complex, however, you can use amplified splitters (see Figure 10A) or "Line Stretchers" (see Figure 10B). These units make it easy for you to handle any MATV problem you may encounter. You don't even have to calculate system losses in advance. Just install the system and see how it works. If you run into snow at the end of a long line,

simply insert a "Line Stretcher" exactly as you would a line extender in your CATV system. Like CATV line extenders, Line Stretchers and amplified splitters are cable powered. Therefore they can be installed anywhere.

Servicing the System

Once you install an MATV system, chances are you will also have to maintain it. First, of course, you have to check the system out. You do this exactly as you initially checked out your cable TV system: use a field strength meter and a portable TV set to check signals at the end of each trunkline.

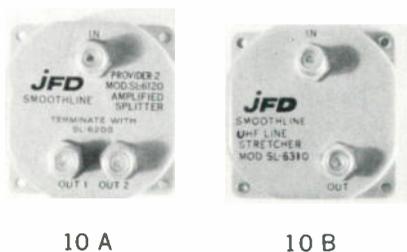


Figure 10: Amplified splitters (A) and line stretchers (B) can be used to overcome distribution system losses in very large MATV systems.

Troubleshooting is a little different. For one thing, you're indoors, which can be very pleasant on a cold night. For another, there is very little active equipment for you to worry about.

Finally, the system will pretty well tell you what is wrong with it. For example, suppose your other cable subscribers are getting good signals, but none of the outlets in your MATV system is working. It's easy to see that the trouble must be between the cable and the first splitter. Use a field strength meter to check the directional and the head-end amplifier and chances are you'll find the trouble very quickly.

Suppose, on the other hand, that most of the system is working well, except for one particular trunkline. The trouble is obviously in that trunkline, and it should be quite easy to track down. Disconnect the trunkline from its splitter and measure the DC resistance with an ohmmeter. It should be about 75 ohms, but don't worry if it's a little off. Anything between 50 and 100 ohms is

probably OK. If you get a reading approaching an open or a short, you've probably spotted your trouble. However, ohmmeters don't always give accurate readings, especially if the system carries power. In this case use a field strength meter.

Now, all you have to do is to isolate the trouble. Use the old "divide and conquer" technique. Remove an outlet from the middle of the trunkline from the wall and disconnect the trunkline from it. Then, measure the resistance between the tap and the splitter. If it reads normal, you'll know the trouble is lower down. If it reads open or shorted, the trouble is between the splitter and the tapoff you've disconnected. Keep splitting the trunkline in half until you locate the defective tapoff or connection.

If your ohmmeter reveals a very low resistance or a short, you can track the trouble down more rapidly with a field strength meter than an ohmmeter. Connect the trunkline to the splitter and make sure the system is turned on. Then read the signal output of each tapoff in the line. The closer you get to the trouble, the lower the signal level you'll read. When you reach the defective tap, its output will be so far below the others that you'll know you've spotted the trouble.

A field strength meter is faster than an ohmmeter for a short because you don't have to take the plate out of the wall to check it out.

Most shorts are caused by one or two strands of cable which have strayed loose. Try to avoid this when you're installing the system.

Water can also cause a lot of trouble, especially if cable is installed outdoors. If a splitter or a tapoff fills up with water, it causes severe signal loss. This should represent no problem to an experienced CATV operator, however. Use your normal waterproofing techniques and you'll have no trouble.

MATV systems are easy to install and service. They can be an important source for revenue for the CATV operator. Be sure, however, to use the best of cable and hardware, plus careful workmanship, to maintain your system's reputation. [TV]

COLOR IT GREEN . . .

the cash, that is, that we pay for photos of CATV subjects. TV Communications pays \$20 for any color photo published as the magazine's front cover subject. All photos and negatives will be returned on request, and credit will be given to the photographers whose photos are published.

Photos may include any subject matter related to the cable television industry, and may be submitted in the form of positive transparencies (2 1/4" square or larger) or as color prints (please include negatives with prints when possible).

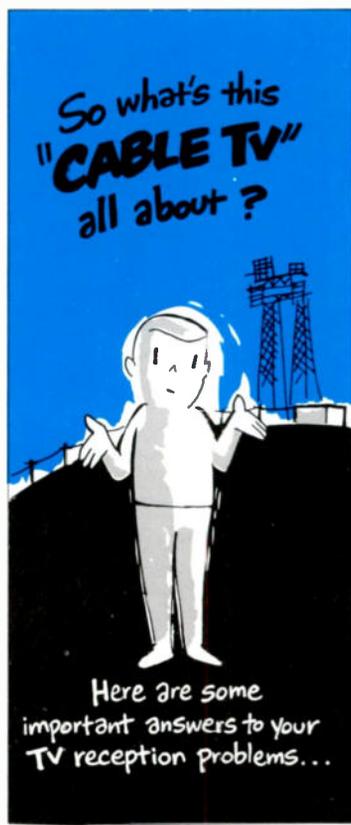
Send materials (carefully packaged) to Mill Bryan, Assistant Editor, TV Communications, 207 N. E. 38th Street, Oklahoma City, Oklahoma 73105.

Here's a system sales builder that really gets the job done.

Here are 16 pages of facts that sell cable television for you. Already in its fourth printing, this lively booklet is rapidly winning friends and signing up new subscribers everywhere. It is a perfect sales tool to promote your system and its many services and benefits. And to make it directly effective the entire back cover has been reserved just for your message. Think of all the ways you can put this cable television booklet to work for you.

Shows how broadcast signals and CATV antennas work.

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Don't wait any longer, initiate a program right now to get this valuable subscriber-building material in the hands of those not serviced by your cable system. It's an economical and unique approach to subscriber expansion for cable television systems. And it answers all the questions one might have pertaining to your own local operation. Send today your order for a free copy and prices of this system sales-builder.

Gives disadvantages and dangers of rooftop antennas.

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Technique takes advantage
of last-minute program changes

The Non-Duplication Interrupter and Restorer

By Milton G. Schmidt
Manager, D and E Cable TV Inc.

In the case of our particular system, we are providing non-duplication protection to three stations, one for each of the three networks. During the period of time when protection is provided we are, with the local station's assent, also converting the respective programming to the frequency of the channel being deleted.

Assuming that the non-duplication switcher (in our case a TeleMation TMP-205) has been correctly programmed, you have only two things to worry about: (1) The *local station* has given you the wrong information to begin with, or (2) The *local station* has changed its programming at the last minute.

If you have been given the correct information and there have been no last minute changes then this still leaves just two things to worry about: (1) The *station being deleted* may change their programming at the last minute, or (2) The *station being deleted* may have given you the wrong information or perhaps you

ing service with the ability to delete or restore protection to any one or all of the stations involved. We decided to install three double pole double throw switches alongside the answering service PBX. The three lever action switches are center off and are wired up in accordance with Figure 1. Two telephone pairs tie these three switches into relay circuits at the head-end which in turn are in series with the coaxial relays

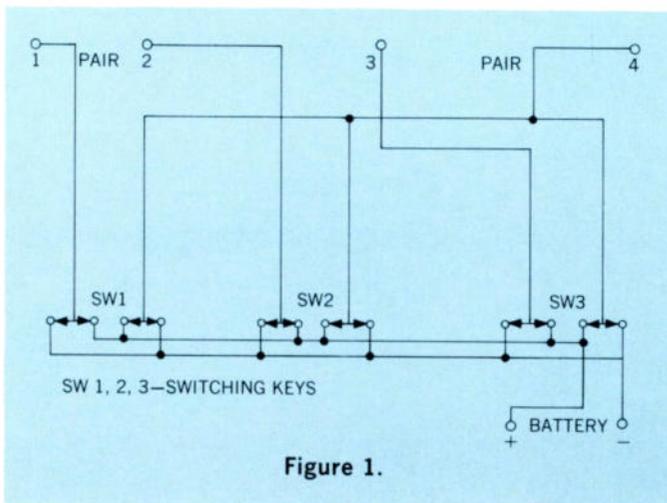


Figure 1.

program your non-duplication switcher with the information from the *TV Guide*. If this is the case then there is no point in reading further since there is no hope for your situation at all.

If, however, you are running a normal "restricted" operation the following may help you muddle your way through the mess, as it were.

Fortunately we have an answering service which is immediately apprised of any errors, additions, or deletions, to the programming. It was decided to begin our thinking along the lines of empowering the answer-

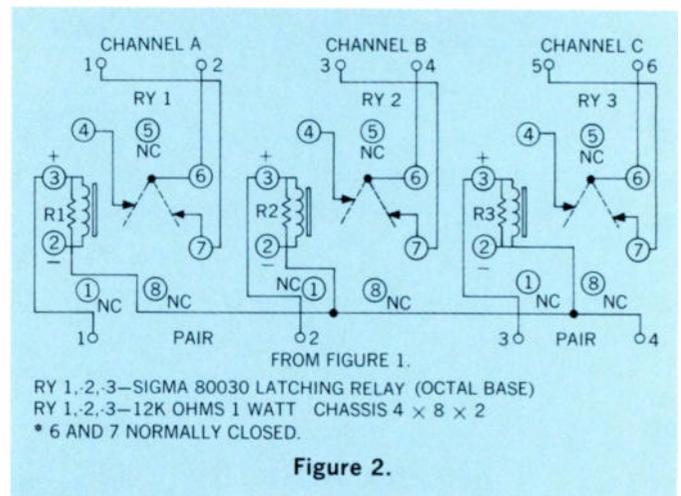


Figure 2.

operated by the N.D.S. Figure 2 shows the schematic of the relay circuits which are built up on a 4" x 8" x 2" aluminum chassis. Figure 3 is the circuit of the tie-in to the TeleMation unit coaxial relay holding coils for the channels involved.

In order to interrupt non-duplication protection for channel A, it is necessary to throw the switch lever for that station to the left. This operates Relay 1 to break the holding circuit to the coaxial relay for that channel and immediately restores the station being deleted. Non-duplication protection can likewise be interrupted for channels B and C by throwing either of the other two switches as applicable. Now, with a TV set handy, the answering service can take on the job of interrupting the programming immediately, when we become aware of something being amiss.

Flipping the proper switch to the left will interrupt the non-duplication protection. Through the middle position and to the right will reverse the polarity and restore. If the switch is thrown to the left and it is found that there is different programming on the alternate



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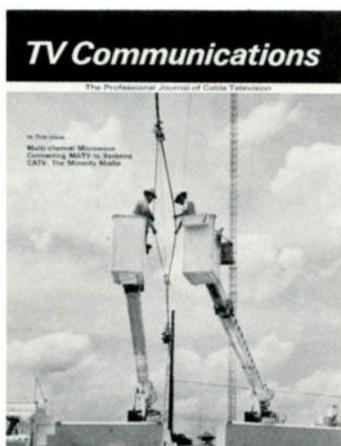
ation is low. For .412" at channel 6, 1.05 db/100' maximum, channel 13 is 1.65; the .500" is .84 db/100' maximum for channel 6, 1.40 for 13.

On a job like this, lay cable once ... with Amphenol. Your Amphenol Sales Engineer can give you the facts. Or write **Amphenol Cable Division**, 6235 S. Harlem Avenue, Chicago, Illinois 60638.



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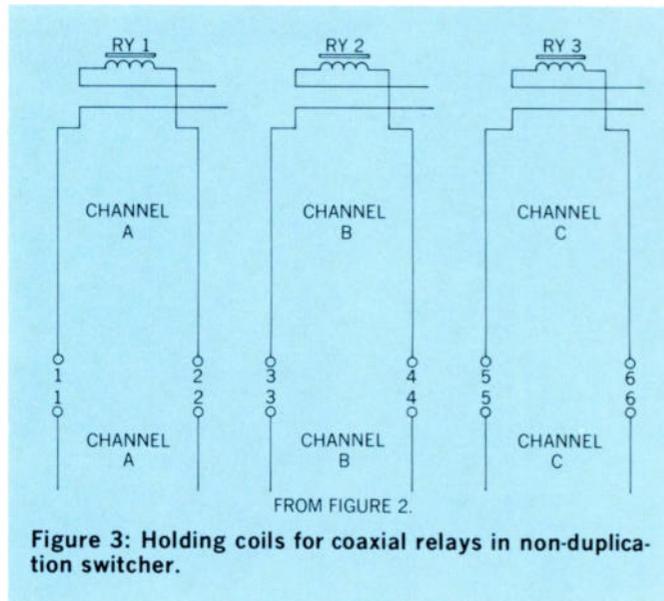


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station, then the switch is returned to the middle position until the next regularly scheduled program that requires protection and protection can be restored by flipping the switch to the right and back to the middle position again.

If you've ever felt the ire of your subscribers for "non-duplicating" them out of one of their favorite programs or caused them to miss a special program, or if your head-end is several miles away on a mountain top, then the non-duplication interrupter is for you. TVC

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PRODUCT REVIEW

NEW COMPONENTS FOR CABLE TELEVISION SYSTEMS

CRAFTSMAN AMPLIFIER

An improved broadband TV/FM system amplifier, the Avante 20-CA, is now available from Craftsman Electronic Products, Inc. The new solid-state device provides up to 18 dB gain from 50 MHz through 250 MHz and incorporates convenient gain and tilt controls for maximum signal balance, according to the manufacturer. The Avante 20-CA features 75 ohm and 300 ohm inputs and outputs, with C-F-59A connectors and mounting screws supplied. Output capability is designed to handle multiple outlets from a typical CATV drop cable. The unit is said to be ideal for use with indoor TV and FM taps in motels, garden apartments, showrooms, clubs and deluxe home installations.

For further information on this new product contact Craftsman Electronic Products, Inc., 133 West Seneca St., Manlius, N.Y. 13104.

SOLID STATE SWEEP/SIGNAL GENERATOR

Texscan Corporation has introduced the Model VS-30 solid-state sweep generator into its line of sweep signal generators. The VS-30 covers a frequency range of 300 kHz to 100 MHz, according to the manufacturer, and has a sweep width that is continuously adjustable from 200 kHz to 100 MHz. The RF output is specified for a flatness of ± 0.25 dB at maximum sweep width with



1 volt rms into 50 ohms. The VS-30 includes provisions for eight plug-in crystal controlled markers, a variable marker option and sweep rate controls from 60 Hz to 5 Hz plus manual sweep. The price of the unit is \$895.

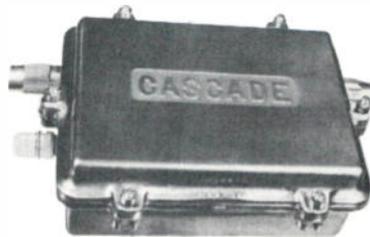
Texscan has also recently announced the Model DT-100 diode and transistor checker. The DT-100 is a low current device, designed for the purpose of determining whether or not a transistor or diode is good. By being a very low current device, it is capable of testing RF transistors and low current diodes with-

out damaging them. The price of the unit is \$15.

For further information contact Texscan Technical Products, 4610 N. Franklin Road, Indianapolis, Indiana. Telephone 317-545-6481.

NEW AMPLIFIER FROM CASCADE

A new line amplifier, designated CELA 2/22 has been recently introduced by Cascade Electronics Ltd. The modular unit features separate RF and power boards and full-wave transistor power regulation as well as Cascade's



temperature level control. Manufacturer's specifications list maximum output capability as +48 dBmV; maximum gain as 25 dB; operational gain as 22 dB; frequency range as 50-220 MHz; Input return loss as 16 dB; output return loss as 12 dB and noise figure as 10 dB. The price of the unit is \$149.50.

Cascade has also recently introduced a cable splicing device, designed to connect two cable ends and to provide separate RF and AC test points in the process. The cast aluminum housing is waterproof, according to the manufacturer, and all fittings are on the bottom, making the device suitable for strand or pedestal mounting. The unit, designated CESP-1, sells for from \$14.50 to \$17.50, depending on cable size.

For further information on these new products contact Cascade Electronics, Ltd., 2395 State St., Harrisburg, Pa. or 244 S. A St., Santa Rosa, Calif.

CRAFTSMAN MATCHING TRANSFORMER

Craftsman Electronic Products, Inc. has announced a new 75-300 ohm matching transformer said to feature maximum shielding for strong signal areas, improved return loss and linearity to 300 MHz, and dual capacitive

blocking. The Model T-16 is housed in a metal case with the twin lead attached to a circuit board and sealed in plastic



to prevent pull out. A special C-F-61 A fitting accepts all popular cables used in CATV. Manufacturer's specifications list return loss at 20 dB minimum and insertion loss at less than 0.8 dB over the extended bandwidth. Included with the T-16 are a matching C-F 59 A connector and a cable clip. The unit is 4 1/2" long and 7/8" in diameter. System net price for the T-16 is \$1.40.

For further information on this new product contact Craftsman Electronic Products, Inc., 133 West Seneca St., Manlius, N.Y. 13104.

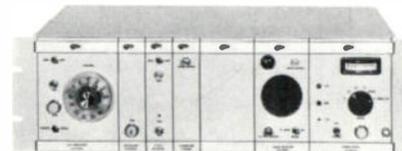
JERROLD SWEEP GENERATOR SYSTEM

A new sweep generator system, designated Model SS-300 has been announced by Jerrold Electronics Corporation. The unit incorporates a sweep generator covering the frequency range of 500 kHz to 300 MHz, a marker generator and a detector system. Start-stop frequency tuning is also featured, along with automatic leveling without frequency shift, calibrated output level control, external AM and FM, low radiation toggle switch attenuators and 50-400 Hz power input.

For further information on this new product contact Jerrold Electronics Corporation, 401 Walnut St., Philadelphia, Pa. 19105.

SOLID-STATE MODULAR TV DEMODULATOR

Dynair Electronics, Inc., has announced a new modular solid-state, off-the-air demodulator. The standard unit,



designated Model RX-4000A, has a tuner for reception of all VHF channels. An optional single-channel crystal-controlled tuner is also available and an external converter may be added to allow reception of all UHF channels. Over-all frequency response, differential phase and gain and AGC and envelope delay characteristics are featured. Several simultaneous outputs are available from the RX-4000A. In addition to the regular 75-ohm video plus 600-ohm audio outputs, a combined 75-ohm video and 4.5 MHz aural output is available for

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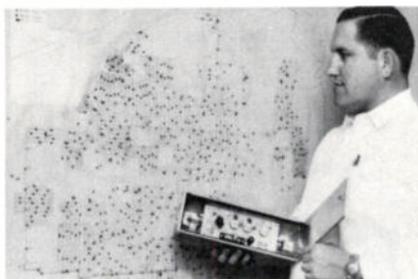
Here's some plain talk about amplifiers.

CAS line extender amplifiers are weatherproof, not waterproof. As a matter of fact, they won't float either. They install cover down on the cable, operate reliably during blowing rains, snow, hail, and sleet. When the sun comes out they keep right on operating.

CAS has nothing against modular construction. But plug-in replacement *does* cost you more. It's a nice feature when and *if* you need maintenance.

Quite frankly, CAS feels its TRA-217 amplifier maintenance history *doesn't* justify the additional cost of modular construction, so it builds a minimum maintenance unit and passes the savings on to you.

If a CAS amplifier ever does require maintenance, there are



only six screws between you and disassembly.

Here's what Mr. Dale Mathis, (above) chief engineer of TV Cable of Abilene, Inc., says about the reliability of CAS amplifiers:

"We now have 670 CAS TRA-217 amplifiers in over 250 miles of system. Most of these amplifiers have been in operation since 1964.

In the past 12 months we have had only 7 failures from all causes."

If your system doesn't really demand the additional cost of hermetic seals, modular construction and other design frills, you're missing a good buy.

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CATV microwave applications. Full switch-selectable metering is provided on the power supply for monitoring B+ and B- voltages, RF level, IF level, video level, percentage of aural modulation and VU level on the 600-ohm audio output.

For further information on this new product contact Dynair Electronics, Inc., 6360 Federal Blvd., San Diego, Calif. 92114.

NEW COHU CAMERA

Production of the 3200 Series self-contained Plumbicon television camera has been announced by Cohu Electronics, Inc. Available with or without viewfinder, the 3200 is designed for use in closed-circuit television as well as in re-



mote and studio broadcasting. The unit weighs only 32 pounds with viewfinder, and has 600-line resolution and modular solid-state circuitry for all video organization functions. According to the manufacturer, a usable picture can be produced with 0.1 footcandles of illumination on the Plumbicon face. When 0.25 footcandle of highlight illumination is applied to the tube face, the camera is said to provide all ten shades of gray on an EIA test pattern. Circuit assemblies for the camera are mounted on interchangeable plug-in boards and controls are protected against accidental movement by a hinged rear door. EIA synchronization is by means of a plug-in sync generator or external sync source. The basic 3200 camera may be used as a general purpose studio unit with the addition of Cohu's snap-on viewfinder. Base price of the unit (with viewfinder) less tube, lens and cable is \$3,375.

For further information on this new product contact Cohu Electronics, Inc., Box 623, San Diego, Calif. 92112.

NEW CANON LENSES

Recently introduced by Canon, U.S.A., Inc., were two zoom lenses for industrial and vidicon camera use. Each is available either as a manual zoom lens or with motorized zoom, including full

remote control of focus, zoom and aperture. Both zoom lenses are available with several types of mounting supports for various uses. The V12X15 provides a zoom range of from 15 to 170mm, with focus and f/2.5 speed remaining constant throughout the entire range. For exceptionally fast lens requirements, the f/1.3 model V8X15 zooms from 15 to 120mm, also maintaining focus and f-stop continuously. According to the manufacturer, the image remains sharp even at maximum aperture due to corrections made for vidicon camera use. Both lenses are color corrected by the patented "spectra" coating method with amber and magenta colors, and both have anti-reflection multicoating to prevent lightflares and ghosts on the lens surfaces.

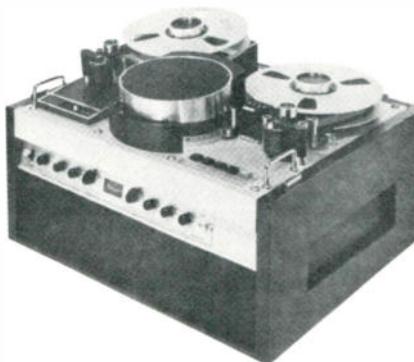
For further information on these new products contact Canon U.S.A., Inc., 550 Fifth Avenue, New York, N.Y. 10036.

TWO VTRS FROM DIAMOND POWER

Two new video tape recorders have been introduced by Diamond Power. The units are designated DP-2 and DP-3 and are in the \$4000 and \$8500 price ranges. They are part of the series



which also includes the lower-priced DP-1 (February TVC, page 84). All units employ solid-state circuitry and record both audio and video simultaneously or



separately. The units accept any EIA signal, are compatible with all cameras and existing TV equipment, according

to the manufacturer, and all feature stop-action. The DP-2 and DP-3 both offer 350-line resolution and are designed with removeable circuit modules and dual capstan drive. Both units utilize a rotary two-head system and 1-inch tape.

For further information on these new products contact Diamond Power, P. O. Box 415, Lancaster, Ohio 43130.

PLP GUY GUARD

A new one-piece plastic Guy Guard that provides 360° protection to pedestrians is being produced and marketed by Preformed Line Products Company. The device is said to eliminate problems associated with guards using bolted and other separate fittings. A V-notch at the upper end of the slit running the length of the Guy Guard enables the lineman to slide the tube onto the strand. Once the upper portion of the guard has been slipped over the guy, the lineman wraps the self-contained helical leg around the strand. Application is then completed by slipping the Guy Guard downward as far as it will go. The self-contained helical leg permits only downward movement, assuring that the Guy Guard will remain in place.

For further information on this new product contact Preformed Line Products Company, 5349 St. Clair Avenue, Cleveland, Ohio 44103.

SEALED BEAM LAMP

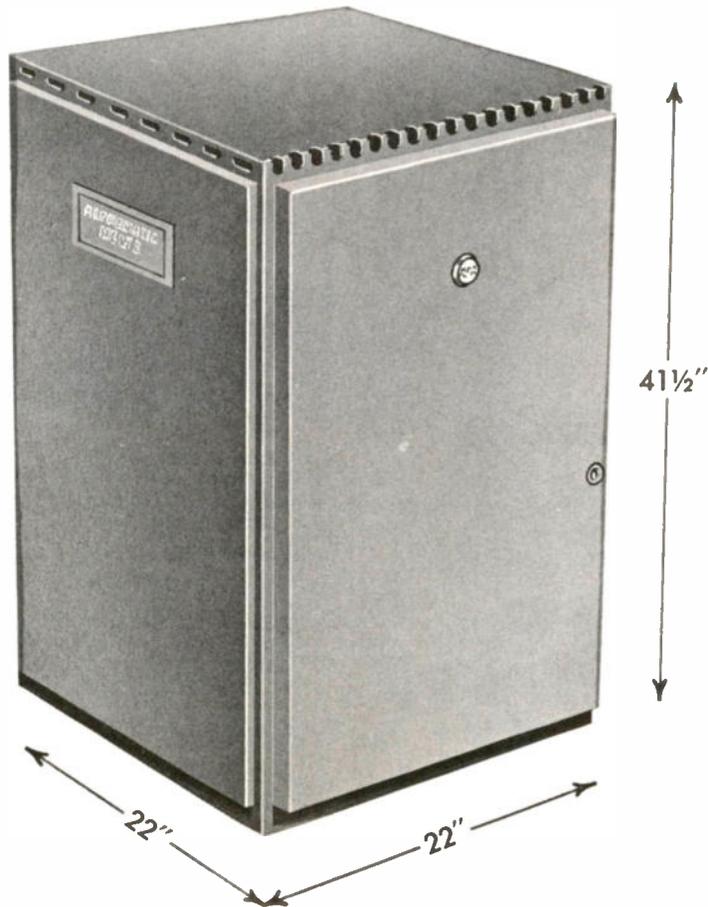
A new high intensity lamp has been introduced by Mole-Richardson Company. The unit, designated Molequartz Molepar Type 2271 accepts any one of eight 1000-watt quartz tungsten-halogen Par-64 globes. Also featured is 360° rotation capability of the globe which permits beam orientation while accessories are held stationary by diffuser clips. With intensifier, the unit produces up to 39,000 fc at 3 feet.

For further information on this new product contact Mole-Richardson Company, Hollywood, Calif.

AVA CONNECTOR PRODUCTS

AVA Electronics & Machine Corp. has developed a new F to UHF coaxial connector adapter for CATV-MATV-CCTV use. It will adapt an F 81 or F 61 female chassis connector to accept a UHF male connector type PL 259. The connector has an F-male connection on one end and a UHF female connection on the other. The length is 2.08 inches. The device is shielded with an all brass housing and has a Mil Spec silver plated finish. AVA has also added new small F-terminating connector to its F connector line. Length of the device is ¾ inch. It uses an Allen Bradley ¼ watt 75 ohm resistor for termination. The smaller

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size reduces cost and is being sold at 30% less than the previous F 59 terminating connector. Connector is shielded with an all brass housing and has a Mil Spec silver plated finish.

For further information on these new products contact AVA Electronics and Machine Corp., Box 224, Upper Darby, Pa. 19082.

PITMAN PERSONNEL BUCKET

A new personnel bucket, developed by Pitman Manufacturing Co. for their Pelican RII aerial device, is said to enable a cable splicer to work in greater comfort and eliminate time-wasting get-ready of conventional rigging while making aerial cable splices. The fiberglass bucket features a fold-down chair so the splicer can sit down while performing splicing operations.

For further information on this new product contact Pitman Manufacturing Co., Division of A. B. Chance Co., Grandview, Missouri 64030. 

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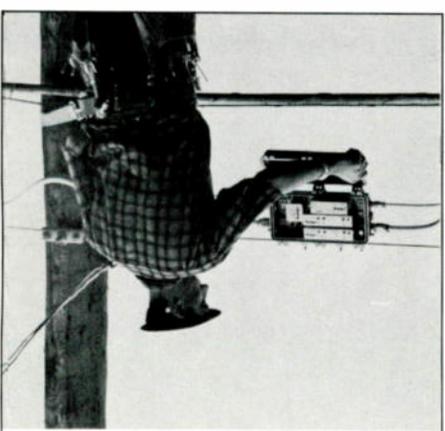
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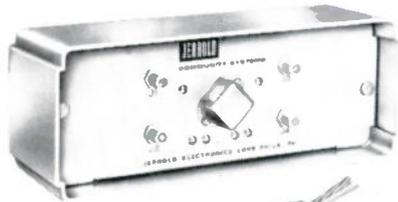
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