

TV & Communications

The Professional Journal of the Cable Television Industry

A color photograph of four people standing in front of a swimming pool and a large, multi-story building. From left to right: a woman in a red sequined dress, a man in a white suit and blue shirt, a woman in a colorful striped bikini, and a woman in a white bikini. They are all smiling and holding a large white sign. The sign has the text 'WELCOME TO THE 15TH ANNUAL NCTA CONVENTION' in bold black and green letters, and 'MIAMI BEACH, FLORIDA' in smaller black letters below it.

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As a company totally committed to the CATV industry, let's work together in the following areas:

1. Contact your elected representatives in Congress and explain the facts about CATV.
2. Support the National Community Television Association.
3. Support Congressman Mackay's Bill H.R. 14201 which protects the public's freedom of choice.

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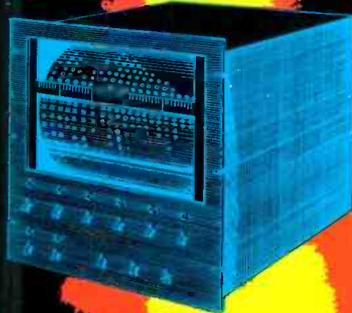
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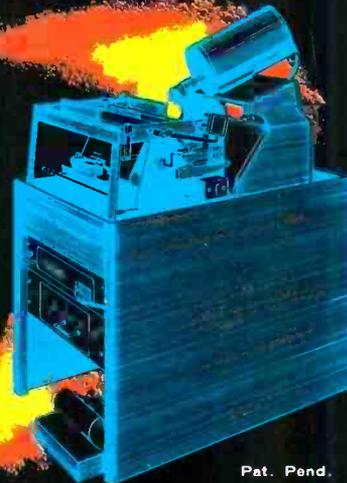
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IN THIS ISSUE

LEADERSHIP PROFILE



Since the industry meetings in Denver last July, many tough battles have been waged for CATV, with the leadership of the NCTA in the forefront. The Miami convention presents most cable operators with a chance to discuss the industry's problems and opportunities with the officers, directors, and key staff members of their representative organization—and to elect men to some of the posts. For a profile of these individuals, see page 34.

KEYS TO PROMOTION

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OUR COVER

Welcoming CATV'ers to Miami and the Americana are Jeannie Miller, Convention Committee chairman Terry H. Lee, Cindy Turner and Norma Sherer. The girls are professional models from the convention city.

Stanley M. Searle, Patrick T. Pogue PUBLISHERS

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JULY, 1966
 Volume 3, Number 7

TV & COMMUNICATIONS

THE PROFESSIONAL JOURNAL OF THE CABLE TELEVISION INDUSTRY

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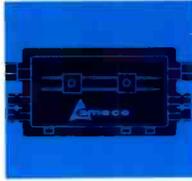


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EDITORIAL

By Stanley M. Searle

A THREAT OR A PROMISE?

The recent court decision on the copyright issue may actually be the first painful step into a land of milk and honey for CATV operators. Personally, we were keenly disappointed in the decision. Nor do we share the view of **Broadcasting** magazine that Judge Herlands' copyright decision should be integrated into the Communications Act to "require that CATV companies get permission from the station before re-transmitting its signals."

But, upon reflection, the idea of paying for signals has some interesting facets. As NCTA chairman Benjamin J. Conroy, Jr. has pointed out, once an operator pays for a signal he assumes certain proprietary rights. He now owns the **signal**, not just the wire. If a cable operator has to pay for a signal just as a broadcaster does, then he seemingly will become free to sell his **signal** in whatever imaginative manner he pleases. He may, in the process of stirring up extra revenues to pay the copyright fees, discover sources of income that will far exceed his added overhead.

"Federal Funnybook Commission?"

Here's a great, previously undiscovered idea for enabling your government to serve you better. Since the Federal Communications Commission renders such great benefits to the **viewing** public, why not start a Federal Publications Commission to serve the **reading** public? The FPC could pitch right in and issue a Report and Order to prevent the importation of distant magazines and newspapers into the grade A contour of the top 100 reading markets. For example, the economic impact of **Newsweek** on the **San Francisco Chronicle** could be avoided. And we could end the distasteful distraction of the **Cleveland Plain Dealer** outside the Cleveland Grade B contour.

An Association of Maximum Service Magazines could undoubtedly convince such an agency to protect all of the richest, best established publications from such petty annoyances as new competition.

Some reasonable quota of publications (say three) could be established for each market. Who needs more than three sources of printed matter, anyway? Of course, they could let a few "independent" publications (no national wire services) spring up in some of the larger cities. But, naturally, the Post Office would prohibit the mailing of these into other markets. In the event that some publisher wanted to challenge a Federal Publications Commission dictate, a public hearing could be held. What could be fairer? And, with a bit of well applied bureaucracy, it would only take about five years . . .

If, for example, an operator serving 7,500 homes is forced to pay copyright charges for television programs, he might logically elect to insert spot announcements in the programming which he has purchased. With this kind of audience, a concerted sales effort could produce billings of several thousand dollars per month.

In the event that the Federal Communications Commission or broadcasters should move to prevent cable systems from recovering their added costs through this method, a very touchy anti-trust issue would be raised. At any rate, the next logical step would be for the cable operator to simply provide his subscribers with programming from other than off-the-air sources. Video tape is extremely versatile and becoming progressively less expensive. Cooperating system owners could develop their own source of taped programming and pay their copyright fees to artists and producers in the same way the broadcast networks do.

A CATV programming network could result in tremendously improved service to the viewing public in many areas. And the participating cable operators could conceivably escape the **de facto** freeze which the FCC staff would like to impose on cable system expansion.

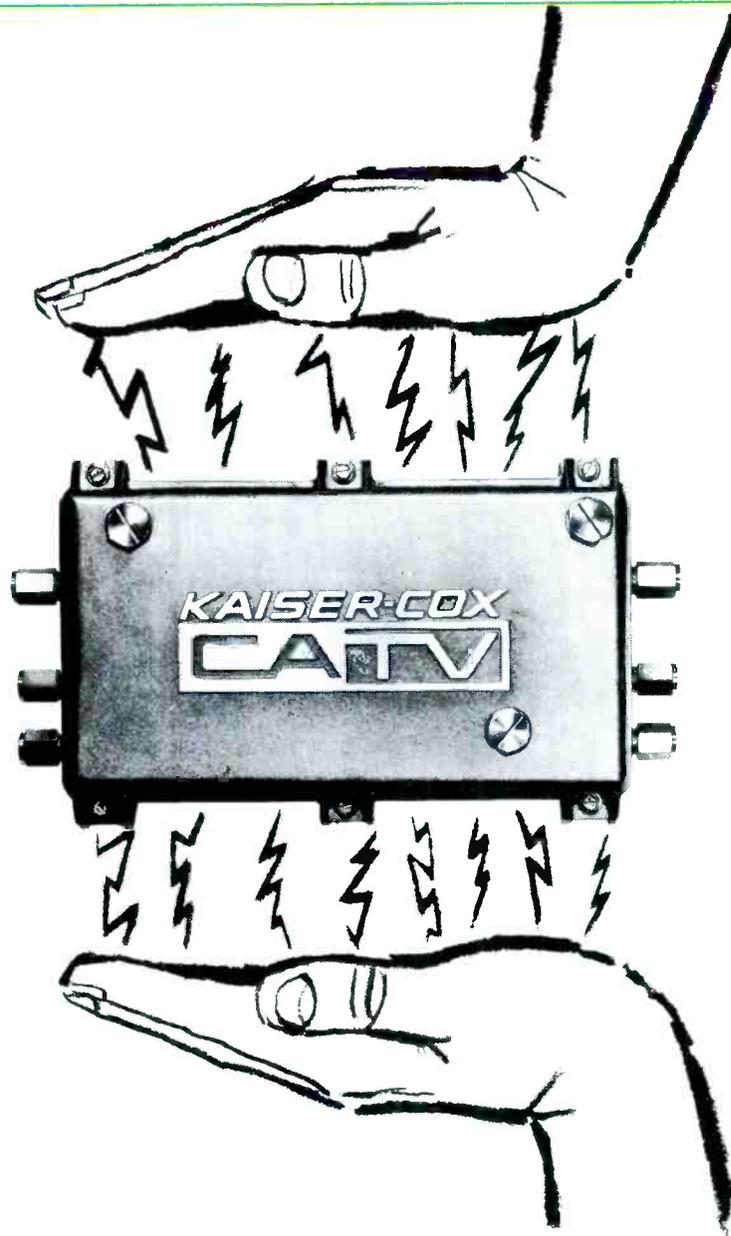
It's worth thinking about.

Being a bit on the conservative side, we would rather see cable television remain a receiving service. But the Judge didn't see it that way. In the Fortnightly-United Artists case, Judge William Herlands told the cable system that it was liable for copyright infringement. His reasoning included a comparison of cable systems to television transmitters, stating that they are not simply passive antennas since they "electronically reproduce and amplify, rely, transmit and distribute" television signals.

So, unless the CATV lawyers can get a reversal of that opinion the CATV industry will probably be faced with some kind of copyright payment. But let's look on the bright side of the coin and prepare for some of the not-so-obvious opportunities that will present themselves along with the obvious inconvenience and expense of copyright liability. Cable television is still the best means of delivering high quality, multiple-choice television entertainment into the home. Whether or not copyright payment is required, the tremendous appetite of the American people for more and better television entertainment will ensure progressive cable system operators of a ready market for their service.

If broadcast and motion picture interests force the issue, video tape and a national CATV network will become the key to the future of cable television.

Stan Searle



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CATV Industry PERSPECTIVE

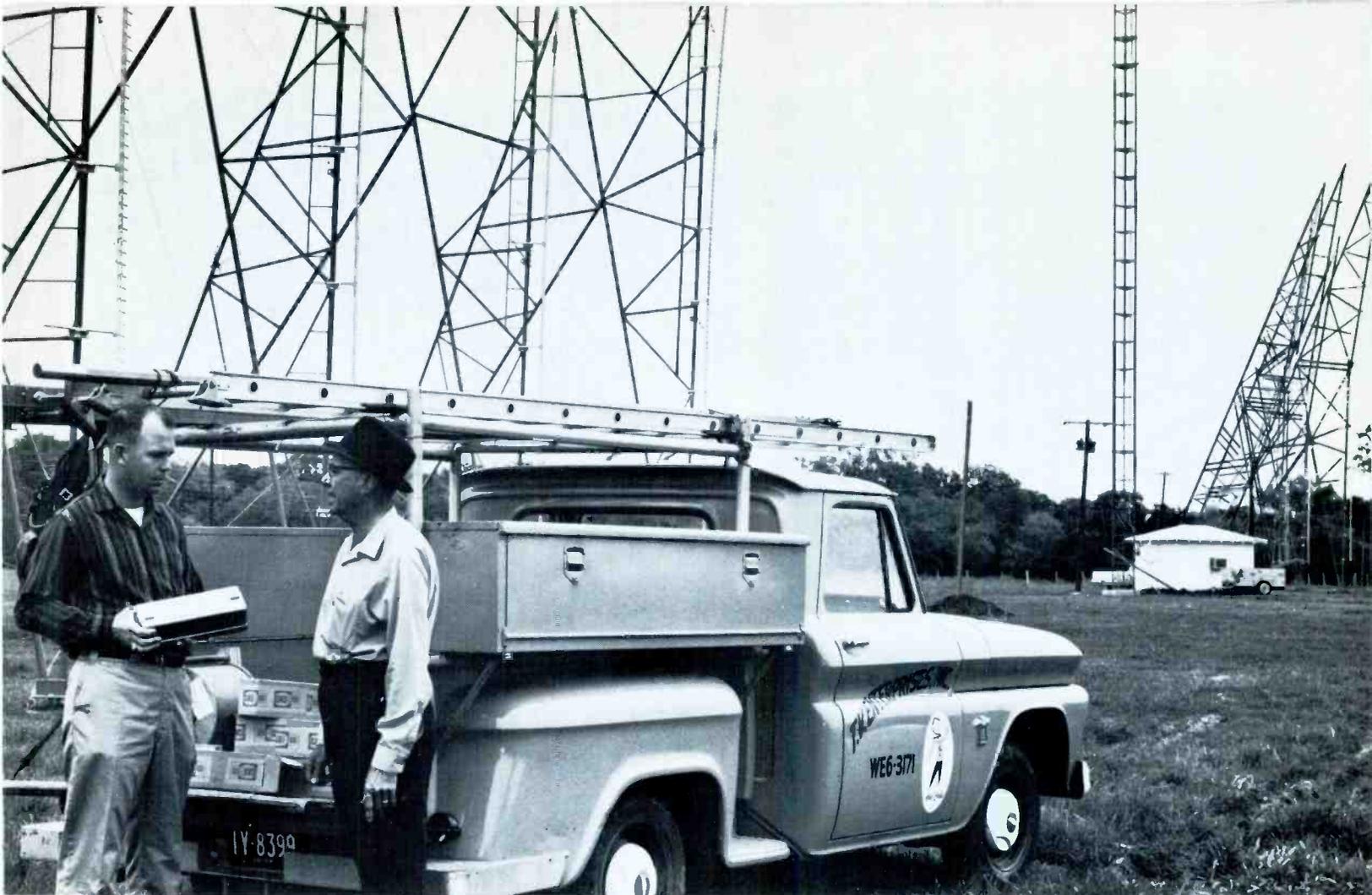
Staggers Bill, H. R. 13286, threatens to slow CATV expansion. On June 9, the House Commerce Committee, by a 20-11 vote, reported out to the House Rules Committee a bill which, if not defeated or drastically modified on the House floor, will give the FCC carte blanche powers to impede the growth of the industry. It had been hoped that the combine of Rep. Walter Rogers (D-Tex.), Rep. Fred Rooney (D-Pa.), and Rep. J. J. (Jake) Pickle (D-Tex.) would be able to stave off the FCC's power grab, but as of now the FCC has it all requested--and then some. In addition to granting the law requested by the Commission, the Commerce Committee also added three amendments, two of which were mildly helpful and one, which was intended to protect professional sports, could be harmful. But the battle has just begun, and we feel that many congressmen will think twice before they incur the wrath of their constituents by opposing CATV on the House floor. CATV operators across the country are prepared to enlist subscribers in a campaign of letters, calls and visits to Congressmen to head-off H. R. 13286.

New member push by NCTA will result from pressure for funds to finance expanded legal and lobbying functions. Trend to group ownership of systems has effect of reducing association dues income because of lower per-subscriber rate paid when a system becomes part of large holding. Many operators resent "holdouts", believe that large multiple system operators are shirking responsibility by staying out of NCTA.

CATV now \$100,000,000 industry. National survey just completed shows that average CATV system spent \$49,800 during last twelve calendar months on new amplifiers, cable and accessories. Average system has 6 employees. More than 25% of cable operators responded.

More than 90% of cable operators say they prefer TV & Communications and Cable Television Review. Other publications named as "most helpful" in CATV operation: Broadcasting, 2.7%; Television Digest, 2.3%; BM/E, 1.9%; Communication News, 0.5%; View, 0.5%.

Regional cable television associations are recognizing the necessity of becoming better organized and retaining legal counsel. (The California Cable Television Association is administered by a full-time lawyer-lobbyist.) State and regional problems will occasion an increasing number of general membership and special committee meetings. Display meetings will become fewer and larger, because manufacturers' manpower and show budgets have both been over extended by the multiplicity of CATV conferences all over the country. Some discussion has been devoted to combining the Pacific Northwest and California associations' display meetings. Combination of exhibit meetings of Pennsylvania with New York and New England associations and Mid-America with North Central would be logical possibilities. Viking, Ameco, Jerrold and Kaiser-Cox are among companies favoring a reduction in the number of regional exhibits. None of the major suppliers wants to be the only one without an exhibit at a meeting, however, so they will probably get together and decide at which regional meetings they'll display--unless associations themselves alleviate the situation.



Jack (left) and John Threadgill inspect new CAS amplifiers. Tropospheric parabolic scatter antenna in background was designed by Jack to eliminate fadeouts in the Threadgill's Marlin, Texas, system.

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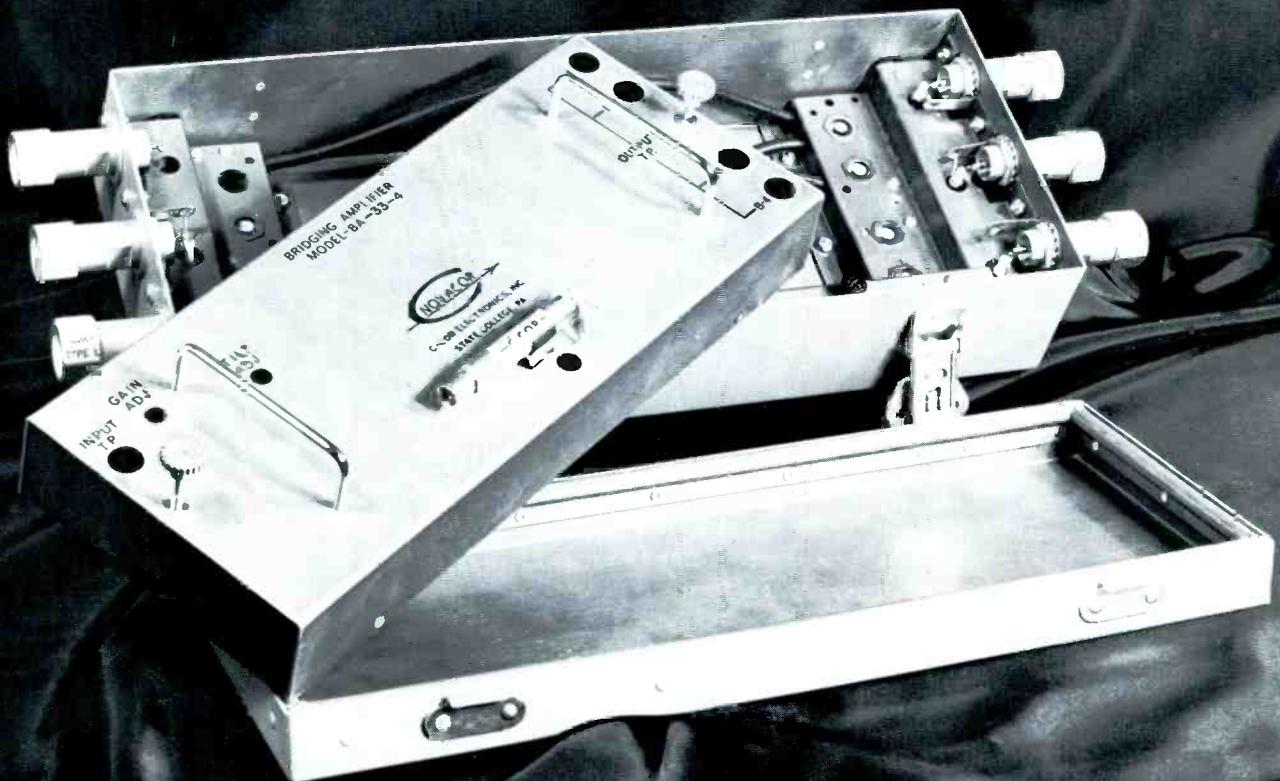
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CATV Legal VIEW

BY JOHN P. COLE, Jr.

COPYRIGHT DECISION'S EFFECT ON THE NEW CATV RULES

Probably two of the subjects foremost in the CATV operators' mind are (1) the present and potential effects of copyright liability; and (2) the application and effect of the recently enacted FCC regulations to the conduct of the cable television business. This observer believes that the CATV industry, as well as the FCC, must now give careful consideration to the immediate impact of the recent court decision in the copyright case upon the administration and enforcement of the new rules by the FCC.

On February 15 of this year the FCC, by its *Second Report and Order*, announced its intention to assume relatively comprehensive jurisdiction over all CATV operations whether served by microwave relay facilities or not. The immediate result of this assumption of regulatory jurisdiction over the CATV industry was the imposition of so-called "carriage" and "same-day non-duplication" obligations upon CATV operators for the benefit of "local" television stations.

The action of the Commission in assuming this broad jurisdiction was premised upon two separately stated grounds: (1) the assertion that CATV systems do not pay for programming and, therefore, compete unfairly with television stations which do make payment for the programs broadcast; and (2) the unfettered growth or proliferation of CATV systems might unduly retard the "establishment and development" of local off-the-air broadcast services. On these bases, the FCC acted to issue new regulations affecting the future conduct of all cable systems.

On May 23, 1966, the United States District Court of the Southern District of New York (New York City) in a lengthy, 118-page opinion delivered by Judge Herlands in the case of *United Artists Television, Inc. v. Fortnightly Corporation* determined that reception and distribution of broadcast programs by community antenna distribution systems constitutes a "performance" within the meaning of section 1(c) and (d) of the Copyright Act, and that such activity without authority of the copyright holder is an "infringement."

This significant judicial determination by a federal trial court, while certainly not finally dispositive of the

copyright question, manifests a sweeping effect upon the FCC's current CATV regulatory policies as set forth in the agency's *Second Report*. For in adopting the *Second Report* the FCC was emphatically careful to point out that its determinations there were based largely upon the "present copyright situation"; the agency further stated that in the event CATV systems are determined as liable for copyright royalties it may "have to revise (its) rules." Without intending to reflect upon either the merits of the decision of the U. S. District Court in *United Artists* or the possibilities of reversal or other modification of this holding as it may be appealed to higher Federal courts, it now seems certain that the FCC's *Second Report* will have a somewhat limited, or at least interrupted, life span. For it appears that the FCC must begin to back away from any effort to compel a CATV operator, either by regulation or contract, to (1) assume an obligation to pay copyright royalties, or (2) assume potential liability for copyright infringement. The Commission's mandatory CATV carriage and non-duplication rules would seem to have no proper place in a free competitive market where the CATV operator must pay for and bargain with others for the authority to display programs.

Under no circumstances, however, can we envision the FCC requiring CATV operators to bargain with program suppliers in an environment where the program supplier (copyright holder) is made aware that the cable system is under a federally imposed obligation to carry the program.

JOHN P. COLE, JR.

John P. Cole, Jr. holds a B.S. degree in engineering from Auburn University and was graduated from The George Washington University Law School with an LLB degree in 1956. Upon graduation, he joined the FCC staff as an attorney in the Broadcast Bureau where he served for 18 months. He then became associated, in January 1958, with the Washington law firm of Smith & Pepper and was made a partner of that firm in 1962. In early 1966 he and Roger E. Zylstra established the new law firm of Cole & Zylstra with offices in Washington, D.C. Throughout his legal career, Mr. Cole has been active on behalf of CATV interests.

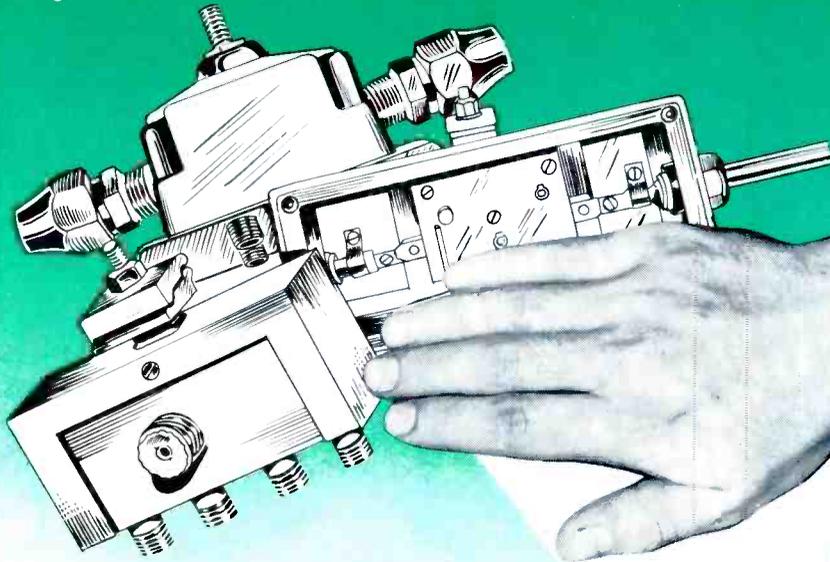
Any such regulatory activity would place the FCC and the copyright owner in circumstances tantamount to a conspiracy to obtain compensation from CATV operators. There is ample judicial precedent preventing agencies of the government from enforcing policies which would interfere so dramatically in private contractual relationships. And under any standard of evaluation, at least one-half of the agency's stated reason for enacting the new CATV regulations, i.e. no program payment by the CATV, is obliterated if the decision in *United Artists* remains substantially unchanged.

Recognizing, of course, that the decision in *United Artists* is neither final nor the "law of the land", the FCC must nonetheless give heed to the presumption, at least for the present, that here its potential infringement liability by CATV entrepreneurs under the Copyright Act. It is not believed that the FCC has the authority, nor even the inclination, to indemnify CATV operators from potential copyright liability; and surely in the absence of some appropriate form of indemnification, a TV licensee would have no right to "demand" that his programs be carried on a CATV facility, even under a federal regulation, where the CATV operator, if he does comply, subjects himself to possible "infringement" liability.

In this light, we believe the FCC has little choice but to re-examine carefully, as it said it would, the conclusions reached in the *Second Report and Order*. In the meantime, it seems only fair and prudent that the rules and regulations imposing substantial operating restrictions on CATV operation must greatly be relaxed or even set aside entirely during this re-evaluation period. At the very least, a stay of the effective date of these rules by the agency until some reasonable order can be imparted to the patently conflicting requirements of cable operators would appear to be in the offing.

While many questions remain unsettled, it would appear that the decision in *United Artists* portends some immediate relaxation in the artificial competitive restraints sought to be placed by the FCC upon CATV operation with eventual substitution of more natural market controls resulting from the interplay of the usual competitive considerations. If CATV operators are to be subjected to the payment of royalties for reception and distribution of broadcast programs over master-antenna facilities, it becomes manifest that much of the teeth in the reasoning of the FCC is adopting the *Second Report and Order* have been blunted or wholly extracted. □

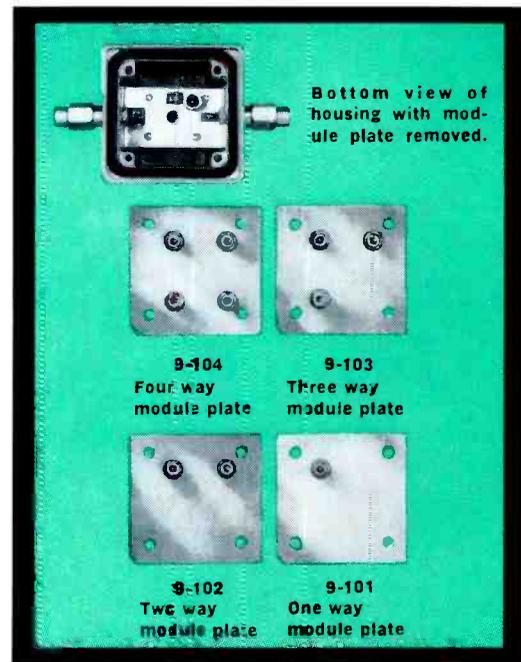
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MANAGEMENT CORNER

MOTIVATION

All too often we give too little consideration to what makes a cable company function. What makes one cable company appear better than another to work for? Why do some system employees work harder than others?

People are not like machines, with production controlled, and performance predicted the same way each day. People who are satisfied are productive. Those who are unhappy or bored can goof off, slow down or just sit on their hands. They can raise or lower the price of a service quite significantly.

Cooperation of this sort cannot be bought. It cannot be forced. It must be earned. Money will buy a certain amount of employee services. For his pay check a man will usually exert some stipulated physical and/or mental effort. Anything beyond this minimum comes under the heading of morale, enthusiasm, motivation.

Motivation comes basically from within. Some people are almost entirely self-motivated, no discouragement seems to stop them from striving toward their goals. But for the majority, motivation is strongly affected by what happens on the job. And the system manager, the day to day representative of management, is the strongest influence of all.

How can he favorably influence motivation? From an employee's viewpoint, the best manager is the one who helps him satisfy his needs and achieve his goals. People normally are independent, they do not want to be handed achievement on a silver platter. But they do want someone who will help them get what they are after. Just what goals are they striving for? On the surface, these may seem varied. One man will sacrifice everything for security; another will put up with considerable risk in order to obtain more opportunity. Yet there are basic on-the-job goals that most employees have in common, even though the importance of each goal varies with the individual. This should always be kept in mind.

We should realize that on the job no one functions only as an individual. Each person sees the job situation from at least three points of view; as himself, as a member of his group or department, and as an employee of the company. He may at times find himself in serious conflict when there is a conflict of interest among these groups; when his interests as an individual, for example, collide with the customs or wishes of the group. Every employee likes to be recognized for a job well done. Yet in some situations, he may not like to have his praise given in front of his fellow workers, especially if it's going to cause them to classify him as an apple polisher. No one manager can ever expect to attain a perfect situation of goal achievement or need satisfaction among all his employees. He can try, however, to satisfy the needs that seem to be most important to each employee.

What are the basic needs? Simply stated they are a good living; satisfactory working conditions; an opportunity for advancement; knowing what's going on in relation to his activity; letting him know how he stands in relation to his work performance; confidence in management; feeling that he counts and belongs; doing work that is contributing and worth while; and last but not least, a secure future.

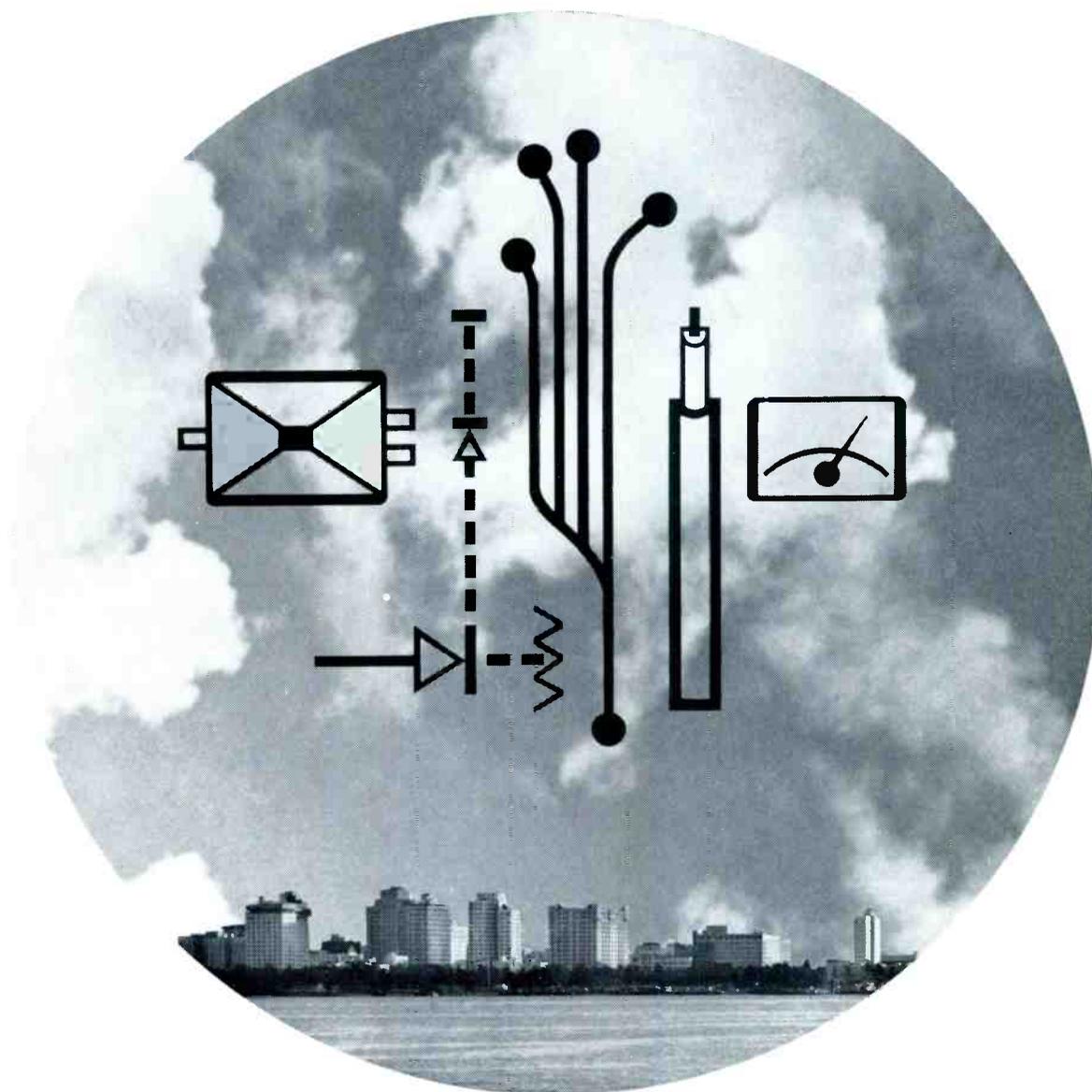
Motivation is not easy. In fact, it is the most difficult problem of management, and because people are what they are, it is a continuous job. The employee who is proud of his work and is motivated speaks about his company as "we." The worker who is disinterested speaks of his company as "they." When the "we's" have it, then the company is on the way to financial success. □

Be sure to talk CATV with Anaconda Astrodata at the NCTA Convention. We have achieved a major breakthrough with our all-new "XDR" line of electronic amplifiers. We have pioneered all-new total systems that provide the most advanced performance and profitability for CATV. We have test equipment and cable designed to exceed previous industry standards.

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News SPECTRUM

CATV COPYRIGHT DECISION

On May 23 Judge William B. Herlands, of the United States District Court for the Southern District of New York, began reading in open court his three hour-long decision on the first phase of the historic CATV copyright suit: *United Artists Television, Inc. v. Fortnightly Corporation*. It only took a few minutes though, for the Fortnightly (CATV operator) attorneys to get the unpleasant message — “the defendant is liable for infringing plaintiff’s exclusive performing rights in the copyrighted works that are subject matter of this litigation.” Thus the industry’s claim that due to its master antenna nature, it is exempt from copyright fees, has met with an adverse landmark decision.

Judge Herlands, who is widely respected in the field of copyright litigation, not only held Fortnightly liable but also rejected the most basic tenet of the industry — that CATV is a “community antenna.” He ruled that the industry claim to being a “community antenna” was “a misnomer, and reflects a fundamental misconception. Defendant’s two systems are not ‘community’ ventures. They are large-scale commercial enterprises, advertising and promoting television programs, and making profit out of the exploitation of television programs, including plaintiff’s copyrighted motion pictures. Nor are defendant’s operations simply that of passive ‘antennas’ used only to receive telecasts. In fact, defendant’s two systems (in Clarksburg and Fairmont, West Virginia), among other processes, receive, electronically reproduce and amplify, relay, transmit and distribute television programs — operations requiring complex, extensive and expensive instrumentation. These systems function as wire television systems, only one of whose structural components consists of antennas.”

Judge Herlands made it clear that while “exemptions from inclusion within the copyright proprietor’s performance monopoly may arguably be desirable” the task set before him was to establish, in light of the *existing* copyright law whether Fortnightly had infringed United Artists copyrights.

His ruling of copyright infringement under the existing law hinged upon one key word: “performs.” He pointed out that the classical sense of performance referred to actors and the audience under one roof. But, he stressed, modern mass tele-communications has changed the connotations of the word: “When a CATV system brings to the audience and makes available to that audience a reproduction of a primary performance, it is executing a function that is so closely akin in result to the primary performance of the copyrighted work that, for purposes of protecting the copyright proprietor’s performance monopoly, the court finds that it should treat the situation as if there were a classical performance and attach to it the consequences resulting from an unauthorized primary performance. There can be no doubt that there are physical differences, but they arise out of differences in technique of communication — not in what is being transmitted and what is ultimately seen and heard by the viewing public.”

Although a reversal of this magnitude was not anticipated, it had been generally assumed by all concerned that, regardless of the outcome, the case would be appealed, first to the United States Circuit Court of Appeals and then to the Supreme Court. This process will take at least a year, and most think it will take at least eighteen months. By this time, most CATV interests hope for a compromise section in the copyright bill which is currently being drafted.

This landmark decision did cast a shadow on the FCC’s Second Report and Order, for, if CATV operators have to pay copyright fees, the Commission’s basic tenet — that CATV’s unfairly compete with television stations inasmuch as there is no payment for programs — will have to be re-examined.

Most of the reaction to Judge Herlands’ decision centered on the above-mentioned Copyright Revision Act which is pending before sub-committees of the Judiciary Committees of the House and Senate. One legal firm

told its CATV clients that this avenue was the only bright side of the whole mess, stressing that the court’s decision is based upon the present Copyright Act — an act which can be changed by Congress. NCTA Counsel Robert D. L’Heureux urged the industry to renew its efforts “to seek a solution in the Congress.” To this end, he expressed the hope that “Congress will promptly face up to this situation, recognize the obvious equities on the side of the CATV system for the benefit of the public and that it will at the very least recognize that the copyright holder owes something to the public in exchange for the use of the airwaves and that the CATV subscriber should not have imposed upon him the cost of a copyright fee where the television signals were intended to be or are received by his fellow members of the public.”

Other observers questioned whether the FCC could require a system to carry programs for which a copyright fee would have to be paid. L’Heureux again summed up this argument: “How can a CATV operator reasonably bargain with a copyright holder who knows that the CATV system is compelled to purchase the programs on the television signal which the FCC forces him to receive? Reconsideration of its Second Report and Order now becomes a ‘must’ for the FCC . . .”

In the industry and among some enlightened members of Congress there is agreement on one basic fact — that the public, in the long run, will not allow its access to television signals of its choice to be denied.

ROGERS STILL AT BAT

Congressman Walter Rogers (D-Texas), who has been characterized as being “not so much a friend of CATV as he is an opponent of unwarranted Federal regulation,” recently released a statement on the First Amendment and his belief in a free press. At the end he attached a paragraph which certainly referred to the struggle over CATV in the House Commerce Committee. “Meanwhile, I am continuing to battle against attempts being made to turn over to a Federal bureau the right to tell an American citizen what he can or cannot receive on his radio or television set. Proposals now before our Committee on Interstate and Foreign Commerce would have this effect, and I am doing my best to see that they do not become law. The Communications Act expressly prohibits broadcast censorship. However, Federal bureaus are constantly seeking to control the information the citizen can receive — and, in my view, it is essential that Congress stand off these threats.”

"SHOW CAUSE" ORDERS CONTINUE

Newest recruit to the ranks of systems engaged in battle with the FCC over the Commission's new CATV rules was Muskegon (Michigan) Television System, which is operated by Booth Communications Co. Muskegon Television joins Buckeye Cablevision (Toledo, Ohio), Mission Cable TV (Poway, Calif.), and Courier Cable Co. (Buffalo, N.Y.), who earlier received "show cause" orders from the Commission.

Muskegon Television System, like the others, is essentially charged with bringing distant television station signals into a top 100 market. The system serves Muskegon, North Muskegon, Muskegon Township, Muskegon Heights, Norton Township, and Roosevelt Park and carries the signals of Chicago, Milwaukee and Cadillac, Michigan, TV stations beyond their Grade B contours — which under the Commission's proposed rules makes them distant signals.

A CATV can import distant signals without FCC permission unless the homes being served by the CATV system are within the Grade A contour of a top 100 TV station — and Muskegon is in the Grade A contour of WZZM-TV in Grand Rapids, which is part of the 38th TV market, according to the ARB figures that the Commission uses.

Buckeye Won't Yield

The other CATV cases being handled by the Commission have progressed routinely, with the possible exception of Buckeye Cablevision. The Toledo system — the first to be called before the FCC — deluged the Commission with filings that fought the rulings every step of the way. Buckeye's first hearing was short and pointed — the hearing examiner, James Cunningham, repeatedly denied Buckeye objections and requests for additional time. (The system was given seven days from the day the hearing record closed to file its legal brief; Buckeye maintained that under usual Commission rules it should have 30 days.)

However, Buckeye's separate appeals later proved profitable, for the FCC Review Board granted the firm's request to send a Buckeye petition for clarification or enlargement of issues to the full Commission for judgment. Buckeye has repeatedly claimed that it's case should not be strictly limited to whether or not it conforms to the rules, but should include the entire philosophy of the rules themselves.

Buckeye's brief said that the Commission rules are contrary to the guarantee of Freedom of Speech in the

Constitution and also violate all legal precedent. It stated that the rules were adopted without adequate notice and constitute arbitrary discrimination. According to the firm's reasoning, the new rules favor those who live in apartments with master antennas (which do not come under the rules) and also favor the rich man who can afford to put up his own large antenna, although less wealthy people would have to band together to afford a CATV system. The rules are also unlawful, said Buckeye, in that they regulate CATV systems that are not in interstate commerce and use many arbitrary standards.

The brief stated that, "It is unreasonable to proceed with this show cause proceeding before there is a final determination concerning the legality of these rules," and added that it was denied due process because the Commission insisted on rushing the case.

In its proposed findings of fact and conclusions of law, the system said that, "The rules may not be enforced because they were unlawfully adopted," and even if they were lawful they should not be imposed on Buckeye, because it was not given a proper hearing. Buckeye said that if it had the opportunity, it would prove that it's



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system would provide commendable service to Toledo. Buckeye's final document asked for an oral hearing on whether it should have to quit carrying the two distant signals it imports.

Buckeye later appealed from the rulings of its hearing examiner that it could not have more time against admitting D. H. Overmyer and Storer Broadcasting Co. as parties to the proceeding, and the Commission's Broadcast Bureau filed in opposition to an Overmyer request that any cease and desist order issued to Buckeye should forbid the CATV from carrying any Detroit or Windsor stations, although it can carry most of them under current rules. The Broadcast Bureau said that the proceeding was not the proper place to test Overmyer's contention that CATV will stifle UHF growth in Toledo, where Overmyer's station — UHF WDHO — is located.

Telerama Gets Warning

Telerama, Inc., a system group owner based in Cleveland, Ohio, received a letter from the FCC informing the firm that the commencement of operation in the Cleveland suburbs of Euclid and Maple Heights would make Telerama subject to a "show cause" order, as well as to the consequent hearings. Stating that the word "system" refers to a specific community — not to a plant operating in a geographic area, the Commission's letter contended that signals to Euclid and Maple Heights can be delivered only after receiving FCC approval.

Earlier in the year the Commission sent a telegram to Telerama inquiring about the reports that service would be

extended to Euclid and Maple Heights. Telerama's reply argued that the Euclid and Maple Heights areas were part of a planned, unified system which would serve a 20-mile radius from the city of Beachwood. (Several miles of cable were already installed in Maple Heights, which is 5 miles from the tower located in Beachwood, and the firm had over 25 miles of cable in Euclid, which is 10 miles from the tower.)

Commissioner Robert Bartley issued a dissenting statement concerning the later correspondence, arguing that "Under any reasonable interpretation, it is clear that Euclid and Maple Heights are in the same general area of other systems operated by Telerama prior to March 17 . . . No extension to new geographical areas are involved."

NCATA HOLDS 10TH ANNUAL MEET

As many as two hundred and fifty system operators from communities across Canada attended the tenth annual meeting of the National Community Antenna Television Association of Canada meeting at the Bay Shore Inn in Vancouver, B.C. Also in attendance were some thirty-five system operators, suppliers and manufacturers from the United States. In accordance with the convention theme, color was the prime topic of discussion at sessions.

Featured speakers included Ken Simons, Jerrold; I. Switzer, consultant; Ira Kamen, JFD Electronics; A. Ross, Nelson-Ross Electronics; W. R. Wilson, Board of Broadcast Governors; K. Wheeler, Vancouver Vocational In-

stitute; Ken Easton, Famous Players (Canadian) Corp.; Garth Tither and H. D. Shiel, Fred Welsh Antenna Systems.

A series of talks on subscriber sales techniques headlined speakers Dave Campbell, Cable TV Ltd., Montreal; Scotty McLachlan, London TV Cable Service Ltd., London, Ont.; and Tony Small, Neighborhood Television Ltd., Guelph, Ont., Don Paynter, Vancouver Cablevision, presided. Benjamin J. Conroy, Jr., NCTA Chairman and members of the government regulation committee gave special reports on national CATV affairs in the U.S. and Canada.

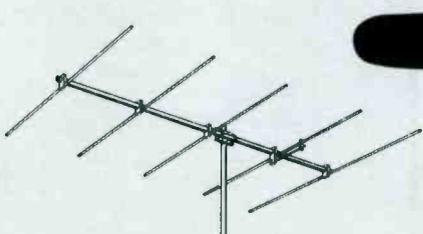
NCTA FILES IN AT&T PROBE

The NCTA has filed a brief before the FCC opposing the petition filed by AT&T which sought reconsideration of the Commission's order requiring AT&T and General Telephone to file CATV leaseback tariffs with the Commission instead of the states. The crux of the NCTA's opposition to the AT&T filing is the agreement of the NCTA with the FCC that CATV's are engaged in interstate commerce, and while NCTA opposes the Commission's attempts to regulate CATV, it does feel that the tariff rates of common carriers — telephone companies — should be filed with the Commission rather than the states. Also, if the Commission's desire to regulate CATV wins Congressional approval, the telephone company tariff offerings for CATV should be under the Commission's "dominion and control" in order to facilitate public policy considerations.

The NCTA brief argued that "if the Commission adheres to its position that CATV systems are in interstate commerce, the Commission must conclude that distributional facilities furnished by telephone companies for CATV systems are likewise in interstate commerce." NCTA further points out that "while it has challenged the Commission's jurisdiction over CATV, it has never challenged the Commission's finding that a CATV system is engaged in interstate commerce."

The real issue at stake is the position taken by AT&T that its CATV tariff offerings are a "regular telephone company service." "The difficulty with AT&T's position," NCTA argues, "is that telephone companies are not, in fact, rendering telephone and telegraph or communications service to the CATV; rather, it is taking over a portion, the major portion, of the service being rendered by the CATV, substituting itself for and in the place of the CATV system to the extent of the portion of the service so taken over."

(News continued on page 22)



PROLINE

CATV ANTENNAS

A complete line of performance-proven single channel yagi antennas. Prolines are available in five and ten element models for the VHF/UHF television channels and the FM bands.

	5	10
	Element	Element
Forward Gain	9.5 db	12.5 db
F/B Ratio	23 db	27 db
Beamwidth at 1/2 Pwr. Pt.	48°	38°
VSWR	1 to 1 at frequency, less than 2 to 1 at band edges.	
Bandwidth	6 Mc.	6 Mc

Elements and booms are .058 wall seamless, hard drawn aluminum tubing with end caps. Element to boom supports are one piece, machined from solid aluminum bar stock. The bracket center hole completely encircles the boom, with stainless steel fasteners ensuring a positive mechanical and electrical bond. There are no holes in either the booms or elements. Boom to mast support is aluminum plate with heavy u-bolts to take any mast up to 2" outside diameter. Internal fibre vibration dampers are sealed into all elements exceeding 4'-0" in length. "Reddi Match" is an improved design gamma matching system which provides direct ohm coaxial feed with no external matching baluns or networks. Proline is available with all type connectors.

PROLINE AVERAGE NET PRICES*

PL-CATV Lo channels 5 element	\$70.00	PL-CATV Hi channels 10 element	\$80.00
PL-CATV Lo channels 10 element	\$135.00	PL-All channel 7 element	\$ 46.50
PL-CATV Hi channels 5 element	\$50.00	PL-FM5 FM Band 5 element	\$ 64.50

*For complete price schedule see latest net price lists.

CUSHCRAFT

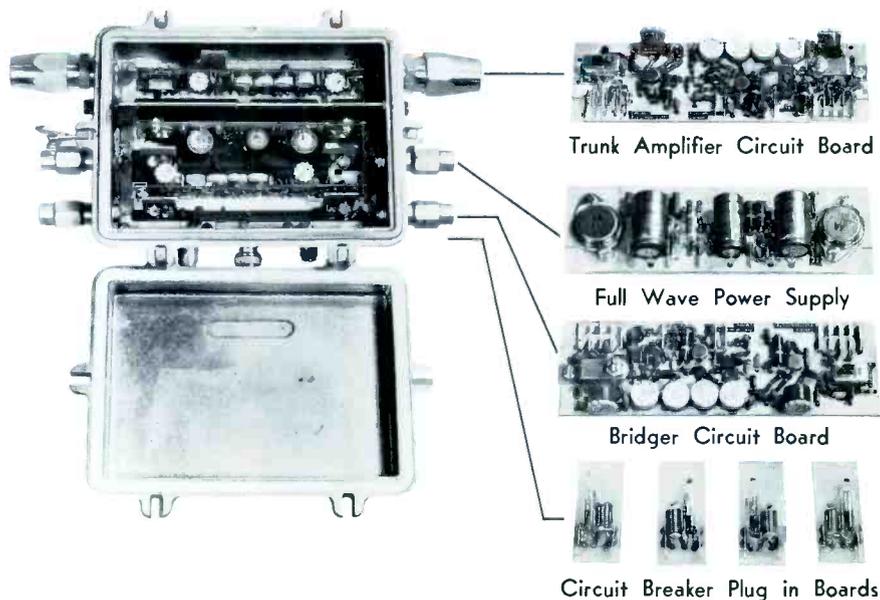
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NCTA further points out some ominous implications of AT&T's position and the distinct possibility that AT&T is violating the 1956 Consent Decree covering "attempts by telephone companies generally to go beyond their franchises which allow them to perform 'telephone service.'" If AT&T is under state jurisdiction, the state public utilities commissions cannot go into the anti-trust considerations which are raised by the ownership of 60% to 80% of a CATV plant by a phone company. Since such a large portion of the leaseback system is owned by AT&T, NCTA wonders what the fate

of the independent CATV equipment manufacturers would be if AT&T's subsidiary, Western Electric, "should decide to manufacture all the cable and equipment for CATV systems which it serves . . ."

The brief requests that the FCC hold a rulemaking proceeding to determine whether AT&T's tariff offerings are *bona fide* common carrier offerings or whether they are an attempt by telephone companies to circumvent the Consent Decree of 1956, under which AT&T promised not to go beyond its common carrier duty of providing "telephone service."

CALIFORNIA MEET STRESSES LOCAL GOVERNMENT

California Community Television Association members held their spring meeting at the Sheraton Palace Hotel in San Francisco. An attendance that edged two hundred attended panel discussions on the Second Report and Order, California government and CATV, and the CATV-ETV relationship. U.S. Congressman Burt L. Talcott spoke on "The Best Team—Local Government and CATV."

Officers elected at the meeting are: president, Eugene A. Iacopi, Television Signal Corp., San Francisco; vice president, William A. Haragan, Central California Communications Corp., Salinas; vice president-technical, Kester Krieg, TelePrompTer Corp., Santa Cruz; secretary, Keith Burcham, Coachella Valley Television, Palm Desert; and treasurer, Lee Stoner, Finer Living, Inc., Redding.

SHAPP WINS NOMINATION

A stormy campaign against Pennsylvania's Democratic organizations clinched the party gubernatorial nomination for Milton J. Shapp, chairman of the Jerrold Corporation. He won the bid by some 50,000 votes over State Senator Robert P. Casey, whose backers included urban mayors and former governors. Shapp's GOP opponent in the November election will be Lt. Governor Raymond P. Shafer.

FINANCIAL PUBLICATION AVAILABLE

The National Community Television Association has announced publication of the proceedings of the NCTA "CATV Financial Seminar," held in New York City January 27, 1966. The 172-page volume contains complete text, charts and illustrations of 16 papers on the financial aspects of CATV, which were delivered at the seminar by industry spokesmen, government officials, and representatives of the broadcasting and other allied fields. The price per copy for the limited edition is \$15.

ATR BUYS MICRORELAY

Helmut Dieter, president of American Television Relay, has announced the purchase of a New Mexico microwave system from Brown Walker, president of Microrelay of New Mexico. The system relays CBS-TV to Channel 10 in Roswell, and Albuquerque channels to cable TV systems at Roswell, Carlsbad and Artesia.

Dieter said that plans included expansion of the microwave system to other New Mexico communities, and addition of a Spanish language and four independent Los Angeles channels to the system.

(News continued on page 24)



CATV

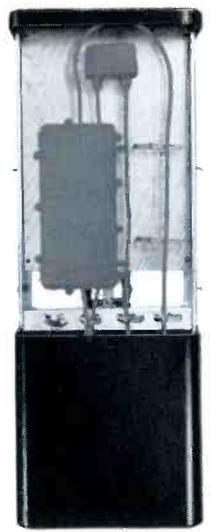
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Mounting Bracket furnished for multi tap mounting.



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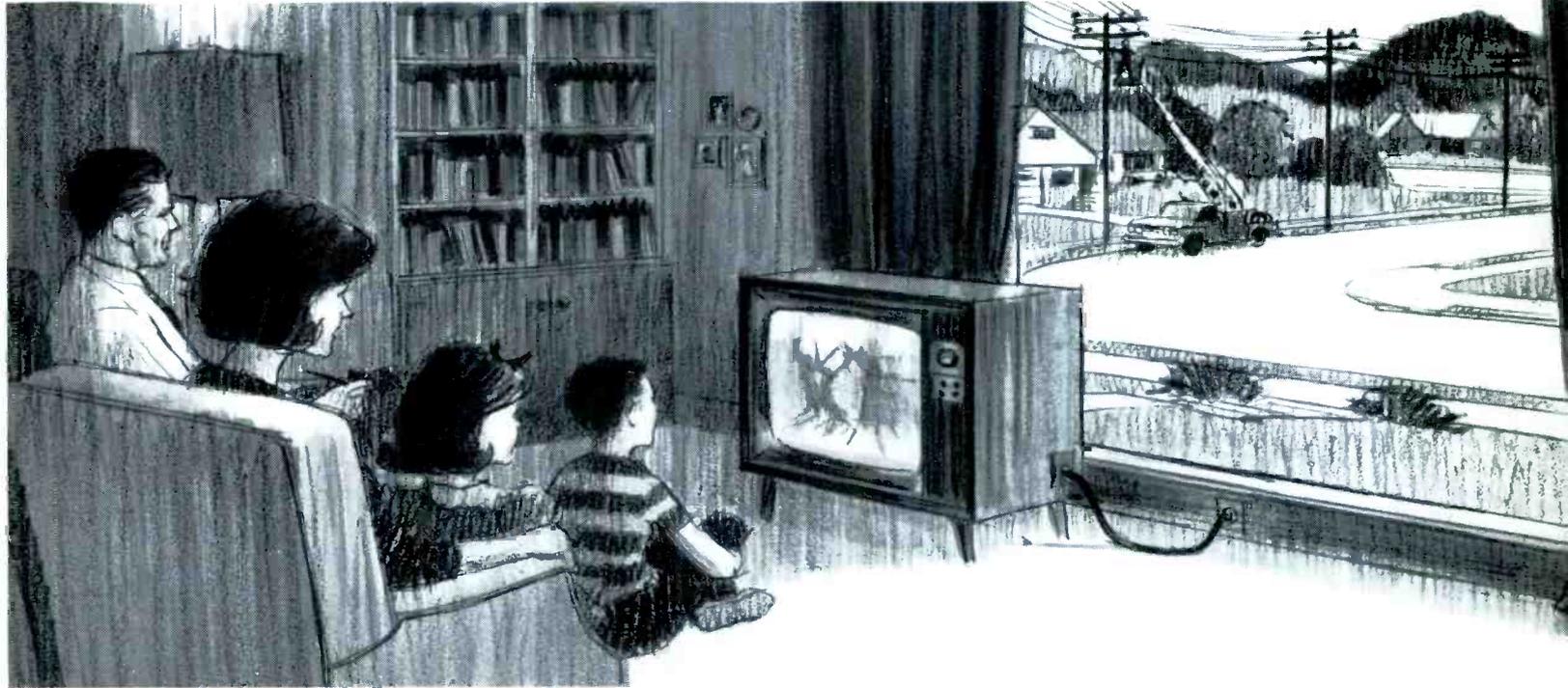
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Times 30db CATV cable—and instantly-installed matching connectors—delivers award-winning performance to your subscribers' homes year after year. It's the surest way to keep them happy and put profits in your system's picture.

Times cable is trouble-free because of the way it's made:

Cable: Available in seamless lengths up to 1/2 mile



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in continuous seamless lengths up to 1/2 mile. This means fewer splices, fewer trouble points, less maintenance . . . and less labor cost. And because it's seamless, it's water and vaporproof . . . won't stop the signal short of target. All in all, you get improved electrical performance from Times cable and matching Timatch connectors. Long after so-called economy cable has been replaced, Times cable will still be a top performer, even while you're upgrading your system.

To take advantage of this direct way to assure your system's pay-out, contact Times for information on its CATV cable.

ROHN EXPANDS FACILITIES

Rohn Mfg. Co., manufacturer of TV and communications towers, lighting equipment and accessories, is currently expanding its production facilities with the addition of two new buildings to its manufacturing complex. One building, already completed, contains 10,000 square feet of space, and houses Rohn's Angle Tower manufacturing equipment. Other expansion includes a 14,000 square foot extension to the galvanizing plant, and 20,000 square feet of concrete deck storage and shipping area.

COX RESTATES DISAGREEMENT

FCC Commissioner Kenneth Cox vented his dissonance with the Commission's rules as the result of a recent grant of microwave facilities to a group of systems. The systems — operated by the New York-Penn Microwave Corp. — are located in Jamestown, New York, and Bradford and Warren, Pennsylvania. The microwaves will bring in the three independent TV outlets in New York City — WNEW-TV, WOR-TV and WPIX-TV.

Since the three small towns to be served by the distant signals over the systems are in markets below the top 100, a hearing was not automatically required. (If an interested party, such

as an area TV station, had complained, a hearing would have been necessary.) Cox argued that the grants were contrary to the public interest, although he did not dispute that "This action is consistent with the CATV rules recently adopted by the Commission."

Cox cited this case as illustrative of his initial disagreement with the rest of the Commission on the top 100 market criterion. (He thinks the procedure should apply to all markets.) He also favors regulation of distant signals imported by CATVs in the Grade B contours of stations, instead of just the Grade A, as at present.

The microwaves will carry the signals more than 300 miles from New York City to the three towns, which are outside the Grade A contours of Buffalo, although inside the Grade B contours of two of the Buffalo stations. One of the towns is in the Grade A contour of Erie, Pa., the 103 market, although a year ago it was 95th — "Which points up," said Cox, "the unsoundness of the effort of the majority to provide treatment in markets of different sizes." He said the grants will be cited as precedents and that the Commission "will not only have to distinguish them legally and factually when they are faced with an application they feel they must contest, but

they will also be faced with pressure from the people who will be told that their opposition is depriving these people of the service enjoyed by the residents of Jamestown, Warren and Bradford."

SEMINAR TURNOUT DISAPPOINTING

A surprisingly small number of industry personnel were in attendance at the "NCTA Tax Seminar" held last month at the Marriott Motor Hotel in Dallas, Texas. Speakers for the meet included: Bill Campbell, of Merideth, Merideth & Campbell, who spoke on "Property Taxes"; Herbert A. Tuene of Lybrand, Ross Bros. & Montgomery, whose topic was "Tax Aspects of Capitalizing Startup and Interest Costs on CATV System Construction"; Arnold H. Brown, Arthur Anderson & Co., speaking on "Tax Problems in Connection with Depreciation of CATV Assets"; Ralph M. Fratkin, Ralph M. Fratkin & Co., whose topic was "Avoid Tax Pitfalls when Buying or Selling CATV Systems"; Bill Wood, Peat, Marwick, Mitchell & Co., who talked about "Advantages and Disadvantages of Sub-Charter S Corporations"; and Ray Pollock, Arthur Young & Co., who spoke on "Tax Planning of Closely Held Businesses."

(News continued on page 26)

THE SINGLE, INDEPENDENT, WEEKLY NEWS SERVICE DESIGNED SPECIFICALLY FOR CATV EXECUTIVES:

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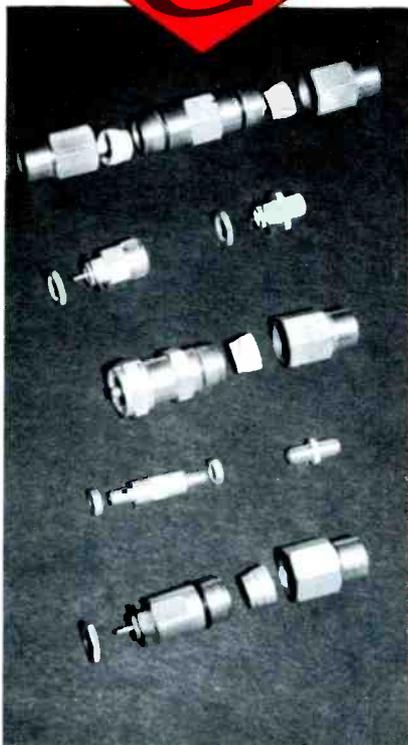
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SYSTEM FACES TECHNICAL CHANGES

FCC Hearing Examiner David I. Kraushaar has issued an initial decision concerning a Bethlehem-Allentown, Pennsylvania system's interference to off-the-air reception. The system, operated by Service Electric Cable TV Inc., must, according to the decision, "replace all tap-off boxes and make such other changes as necessary" to reduce the system's radiation, with FCC field inspection after the change-over. Service Electric must also report every 30 days on the number of tap-off boxes it has replaced and the number of cases of interference complaints it has had. Any interference must be corrected at once, Kraushaar said, and the agreement specified that if "any substantial number of valid complaints of interference to off-the-air television reception in Allentown and Bethlehem, Pa., should develop resulting from the operation" of the system, the Commission may issue a cease-and-desist order without further hearing. Service Electric and the Commission's Field Engineering Bureau arrived at the agreement.

LEASEBACK ADVANTAGES CLAIMED

First Illinois Cable TV, Inc., the firm which has been granted a franchise to provide cable service to the Springfield area, has signed an agreement which represents a major reversal of policy. The firm, which had intended to install its own cable and other equipment in Springfield, has entered into an agreement with Illinois Bell Telephone Co. for use of the telco's facilities.

According to Ira Kamen, a director of the cable firm, the AT&T affiliate "convinced us that their service was the most economical and effective way to provide CATV in the Springfield area." Kamen noted some of the advantages of using the telephone company's facilities, which, he reported, mark the first time a telephone company has: cooperated on a public relations program in support of a franchised operator; made available to the operator the benefit of the telco's right-of-way and access rights in their underground conduit system; offered a financial plan which minimizes cash exposure so that the operator can make more use of his available dollar to fund additional franchises; or offered arrangements which protected operators' cash flow by not making charges until the system is installed and the operator has solicited subscribers and requests cutover of service.

Some 365 miles of distribution lines will be required to blanket Springfield and its environs — an area of more than 120,000 inhabitants.

CATV CHARGED WITH UNFAIR LABOR PRACTICES

American Cable Systems Inc., which operates systems in Okolona, West Point and Tupelo areas in Mississippi, has been charged with engaging in unfair labor practices. The preliminary finding was issued by National Labor Relations Board trial examiner John G. Gregg, who concluded that the firm was, in his opinion, wrong in firing two of its employees for union activities during an attempt last year by Communications Workers of America, an AFL-CIO union, to organize American Cable Systems. Gregg recommended only that American Cable be ordered not to discourage union membership, as the employees have since been rehired. If the cable firm chooses, it can appeal the decision to a three-man panel of the National Labor Relations Board.

SYSTEM SALES

Soo Cable TV, Inc., which serves Sault Saint Marie, Michigan and Kincheloe AFB, has been purchased by Jack Kent Cooke's **American Cablevision, Inc.** The system, which serves approximately 2,500 subscribers, was formerly owned by Gilbert R. Clark.

R. H. Smith, regional manager for **United Transmission Inc.**, has announced the purchase of the cable system in **Reedsville, Pennsylvania**. The system was previously owned by H. W. Herman.

Universal Cablevision, Inc., a subsidiary of Universal Telephone, Inc., Milwaukee, has announced that it has merged with a recently-formed firm, **Lake Shore Cable Television Corp.** The merged firm will seek franchises in 16 northern Milwaukee area communities.

George Weeks of the **Blue Mountain TV Cable Co.**, Mount Vernon, Oregon, has purchased the **Waterville (Washington) Community TV Cable Co.** from Charles Clements. The new company will be known as Waterville TV, Inc.

Sports Network, Inc. has announced the acquisition of two Pennsylvania systems. Richard E. Bailey, Sr., SNI president, purchased the systems, which serve **Lykens, Elizabethtown, Pillow, Wiconisco, Williamstown, Muncy and Hughesville**. The previous owner was Max Miller & Associates.

Cable TV Ltd. and **Bushnell TV Co. Ltd.** have merged to form **Laurentian Cablevision Ltd.**, which will operate a system in Hull, Quebec. The firm, will be controlled by Famous Players Canadian Corp. □



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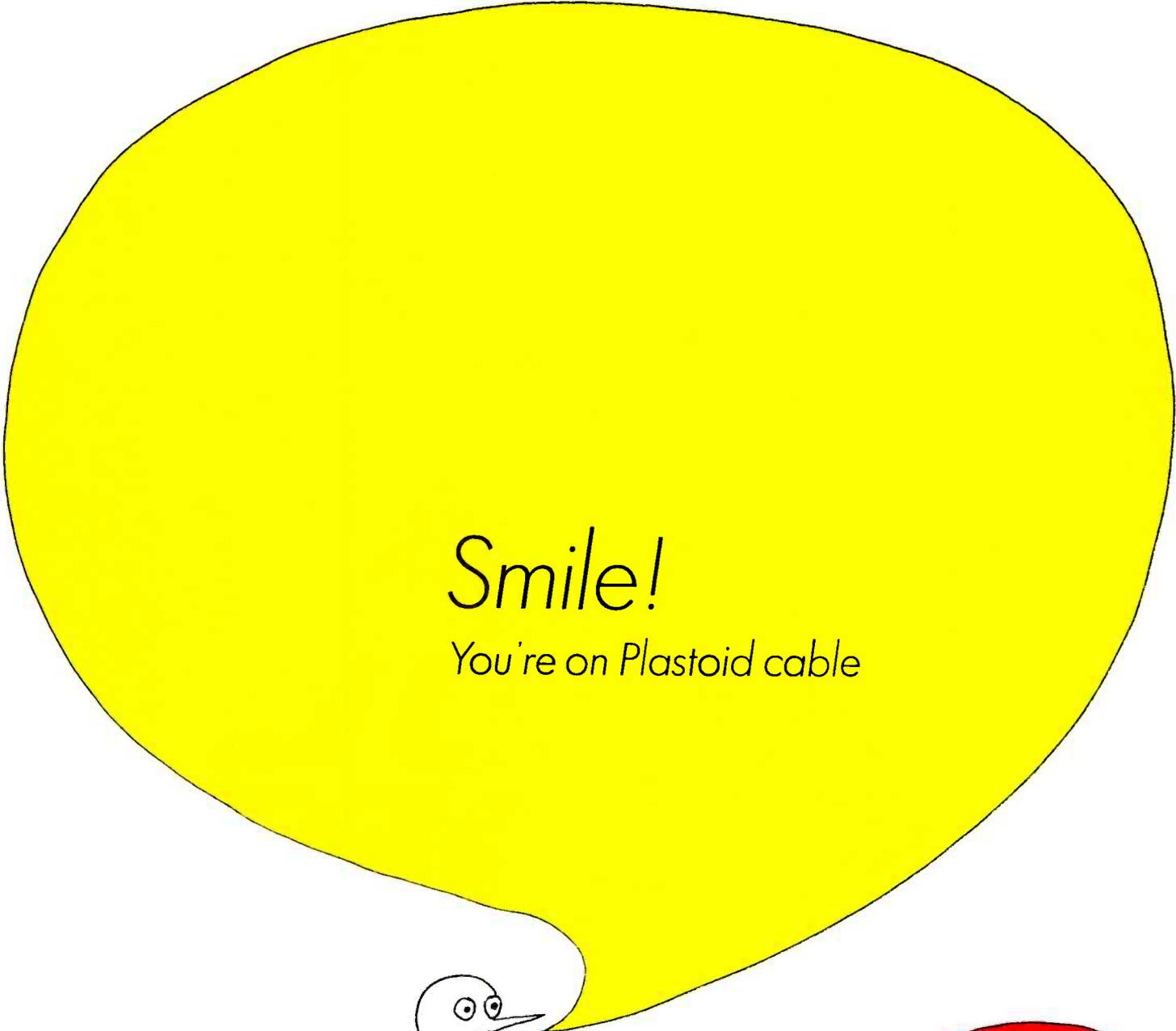
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Both systems are available in either 6-gc or 11-gc frequency bands, and are completely transistorized—except for TWT's or transmit klystrons. Both have new advanced packaging techniques for ease of maintenance.

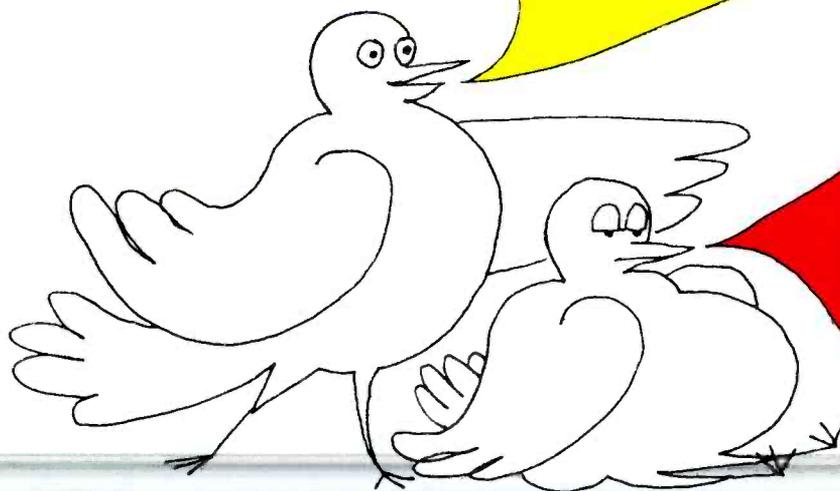
For technical information, call, wire or write Collins Radio Company, Microwave Marketing, Dallas, Texas, Area Code 214, AD 5-9511.





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Plastoid is with the birds all the way. We build a better aluminum sheath co-ax and, as a by-product we get a better bird roost.

Year after year our feathered friends—and yours—flock back to find the same familiar Plastoid cables in the same old places. That's because we build for lasting quality.

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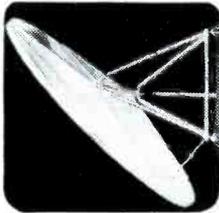
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FINANCIAL REPORTS

Jerrold Corp. president Robert H. Beisswenger announced that the unaudited earnings for the fiscal year ended February 28, 1966 rose to \$3,736,000, or \$1.75 per share, as compared with \$156,747, or 7 cents per share, a year ago. Sales for the year rose to \$34,100,000, up from \$30,197,000 a year ago.

Viking Industries, Inc. reported that its first quarter earnings were the highest in the firm's history. Sales were \$3,750,000, up 41% from the sales of \$2,650,000 for the first quarter of fiscal 1965. Earnings after taxes were \$232,000, up 200% from the earnings of \$80,000 for the same period last year.

TelePrompter Corp. President Irving B. Kahn told the annual stockholders meeting that the company had completed an agreement with Home Life Insurance Co. and Massachusetts Mutual Life Insurance Co. for the sale of \$2 million of unsecured 5-7/8% promissory notes. The notes, due in 1978, will be used to expand the company's operations.

Entron, Inc. president Robert J. McKeehan reported that the sales and profits for fiscal 1965 set all-time records. The net sales of \$3,547,000 for 1965 represent an increase of 55% over the \$2,284,000 reported in 1964. Net income was \$207,000—up 29% over fiscal 1965.

Collins Radio Company reported earnings of \$5,357,000, or \$2.37 per share on the average number of shares outstanding, for the nine months ended April 29, 1966. Sales were \$272,062,000. Comparative nine-month results for the previous year were earnings of \$2,913,000, or \$1.31 Backlog at April 29 was \$337 million, compared to \$261 million a year ago per share, on sales of \$197,080,000. and \$320 million at January 28, 1966.

Famous Players Canadian Corp. reported a \$188,369 increase in 1965 profits over fiscal 1964. Of the total profits of \$2,432,040, about \$55,000 was the product of the firm's Canadian CATV holdings. During the year, the number of subscribers in its 16 systems jumped from 73,500 to 90,000.

Storer Broadcasting Co. announced record first quarter earnings for the period ended March 31, 1966. Net income after taxes for the first quarter totalled \$2,279,453, compared with \$1,751,684 for the same period in 1965. This represents an increase of \$527,769, or 30.1%. A quarterly dividend of 25 cents per share on common stock was declared.

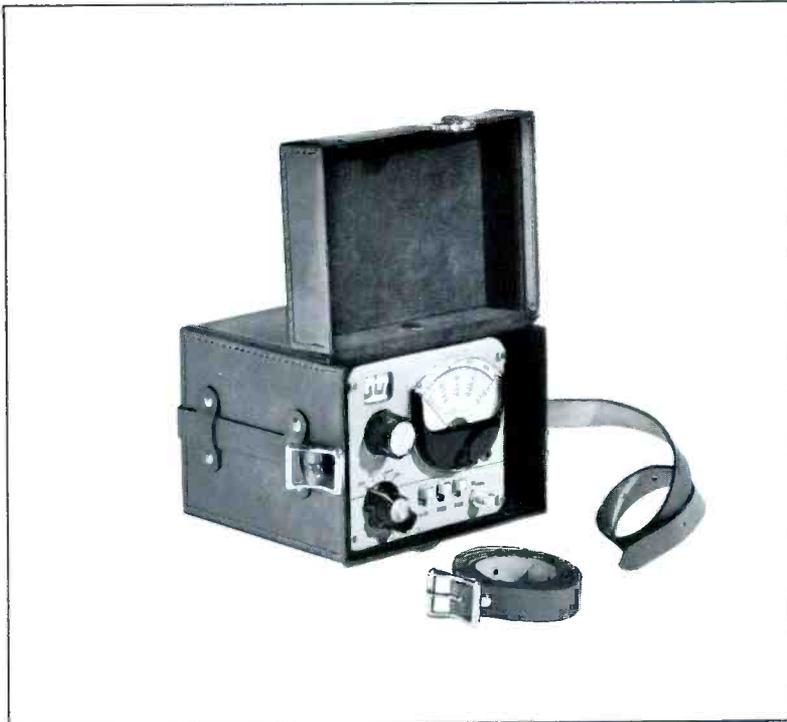
Clearview TV Cable Inc., Russell, Kentucky, announced authorization from the Securities Division of the Kentucky Department of Banking for a public sale of 1,750 shares of \$100 par value common stock, with proceeds of the sale to be used to install CAVT in five Kentucky communities.

Seilon, Inc. reported a profit of \$244,021 in April—more than double the profits for the first quarter. At the annual stockholders meeting, Edward Lamb, chairman, noted that the firm expected to complete its acquisition of General Wire & Cable Co. early in June.

United Utilities, Inc. president Paul H. Henson reported that he expects 1966 earnings to be up 8% from last years' \$12,863,912 or \$1.08 a share. He also announced that first quarter earnings rose 19% to \$3,548,101 or 26 cents a share.

Astrodata, Inc. has reported sales for the 9-month period ended March 31, 1966 of \$18,207,000 and earnings of \$955,000 or \$1.37 a share on the 704,000 shares of common stock outstanding. President Wallace E. Rianda stated that these figures do not reflect the newly-formed company, Anaconda Astrodata Co.

Anaconda Co. chairman Charles M. Brinckerhoff reported that the increase in domestic earnings for the first quarter more than offset foreign strikes and resulted in an earnings increase of 35% over the first quarter last year. Domestic earnings accounted for 60% of the net income in the period. The consolidated first quarter net income was \$26,023,000, or \$2.38 per share, up from \$19,260,000 or \$1.77 a year ago. Brinckerhoff also reported that Anaconda plans to step up its domestic copper production by about 53% in the next 5 years. □



The Model FM-1 is completely transistorized and has many advantages over meters now being used for CATV. The circuit is extremely stable through use of silicon transistors of an industrial grade. Shielding is thorough and complete, certain areas are double and triple shielded. Microammeter is one of the finest types available. Illuminated meter and dial are powered by separate "C" cell batteries. Video detector output is provided for

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Db scales	four	Accuracy	±1.5 db All TV channels
Measurement Method	True peak of sync pulse	Voltage Range	10 microvolts to 1 volt
Weight, including carrying case	5-1/8 lbs.	Db Range	-30 to +60 dbmv
Size without case	4 1/4" x 5" x 5 3/4"	Frequency Coverage	Ch 2 to Ch 13 One Range
Size with carrying case	3 3/4" x 6 1/2" x 7"	Batteries	(2) 9 volt to 2mn6 (meter) (2) "C" cells (pilot lamps)
Carrying case	Genuine leather		

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FOCUS

... On Progress

Systems

Leonard Tow, former director of administration and planning, is now vice president-administration for TelePrompTer Corp. Tow joined TelePrompTer last September. Robert H. Symons, general manager of the firms CATV division, has been elected vice president in charge of the division. Eugene Weinrich, formerly controller and assistant secretary-treasurer, is now the secretary-treasurer.

Joe Simmons, manager of Glasgow (Kentucky) Cablevision, has been named regional manager of American Cable Television, Inc. Simmons will supervise operations in Indiana, Kentucky and Tennessee.

John F. Gault is serving as executive vice president of Continental CATV Inc., a new firm which will operate CATV properties, and develop franchises and acquisitions for Viking Industries. Gault, who began his CATV career as operations manager for TelePrompTer Corp., served as vice president in charge of operations at Television Communications Corp. before forming Continental CATV with Viking.

William Webber has replaced George A. Shaw as president of CATV of Ohio Valley, Inc. Shaw resigned to devote full time to his newspaper duties.

Frank G. Haley has resigned as vice president and manager of the systems in Tupelo, Okolona and West Point, Mississippi. He had supervised operations of the systems since 1955.

F. C. (Bud) Garrett has been appointed manager of National Cablevision Ltd., Montreal, Canada. Garrett was formerly with B.C. Telephone Co.

Tom Calhoun, former vice president for the N.W. Ayer Agency, has resigned to join the Sports Network CATV subsidiary. Calhoun will head the operation of 4 recently-acquired systems.

W. H. (Hank) Sexton has been named manager of Butte (Montana) Cable TV. He succeeds Steve Schoen, who has become district manager for the firm.

B. M. Tibshirany is the new manager of Cablevision of Sumter (South Carolina).

Sean Bradshaw Mack has been named manager of NBC's newly-acquired system in Kingston, New York.

Dale Rotz has been named general manager of Hightower Telesystems of Newburgh (New York), Inc.

David Gaunder has been appointed chief engineer for Pecos (Tex.) Cable Television Co. and Fort Stockton (Tex.) Cable Television Co.

Terry A. Messner has been named manager of the system now under construction in the Michigan townships of Summit and Leoni.

Robert Wayne Foster has joined Waynesboro (Mississippi) TV Cable Co. He was formerly chief technician and assistant manager of the system in Kingston, N. Y.

Suppliers

Robert W. Behringer has joined Kaiser-Cox Corp. as vice president, administration. Prior to assuming his new position, Behringer served in several managerial positions for General Time Corp. Walter E. Baxter, formerly a sales manager for Entron, Inc., has also joined the Kaiser-Cox team. Baxter will serve as northeast area manager for the firm.

Alfred L. Ginty has been elected vice president, marketing and sales of Anaconda Astrodata Co. until recently, Ginty was product manager of Anaconda Wire and Cables' communications products division.

Paul A. Garrison has been elected president of Technical Appliance Corp. (TACO), a subsidiary of The Jerrold Corp. Garrison joined TACO as general manager in 1961, and was later elevated to vice president. Since 1964 he has served as Jerrold vice president in charge of TACO.

J. W. Servies has been elected president of National Theatre Supply Co., a subsidiary of General Precision Equipment Corp. Servies has been with NTS since 1928 and has served as executive vice president for the past year. He succeeds W. J. Turnbull, who has retired after 33 years with the firm.

James C. Poffenberger has been promoted to the position of director of research and engineering for Performed Line Products Co. He formerly served as technical administrator.

Donald Spencer has resigned as chairman of the board of Spencer-Kennedy Laboratories. He will continue as a director and consultant.

George W. W. Brewster, who served as chairman until Sept. 1965, has been re-elected to that position.

Charles H. Wright, president and chief executive officer, is now in charge with the added responsibility of directing the company's CATV installations throughout the country.

Kenneth D. Higgins has been named manager of the eastern industrial sales district at Lenkurt Electric Co., Inc. Higgins will be responsible for the company's sales efforts in 21 eastern and southeastern states.

Kenneth W. Lloyd has joined Jerrold Electronics as midwest regional manager for the distributor sales division. Prior to joining Jerrold, Lloyd was southeastern regional manager for Channel Master Corp.

S. F. Kaufman has been appointed chief engineer of Communications Systems Corp. Kaufman's duties will consist of all system evaluation and design responsibilities.



Robert Symons



Robert Behringer



Alfred Ginty



Paul Garrison



J. W. Servies



J. C. Poffenberger

Bernard J. Washisko has been appointed vice president of manufacturing, and Carl Concelman has been named vice president of engineering at Dow-Key Co. Both men formerly served with the RF division of Amphenol Cable.

Paul L. Lewis-Watts has been named manager of Amecos' regional warehouse at Toronto, Can. Lewis-Watts has been with Amecos' shipping department for 18 months.

A. J. (Jack) Phillips has been appointed sales engineer for Bishop Manufacturing Corp. Phillips will be headquartered at Bishops main' office and will be responsible for sales in the areas of metropolitan New York, Eastern Pennsylvania, Delaware, Maryland, Washington D.C., and Virginia.

Copperweld Steel Companys' wire and cable division offices in New York are now located at 100 Church Street, new York, N.Y. 10007, telephone BE 3-5600.

Professional

Don Andersson, director of information for the National Community Television Association, has resigned to accept a position with TeleVision Communications Corp. Andersson, who joined the NCTA staff in May, 1962, will serve as director of research and promotion for the New York City firm.

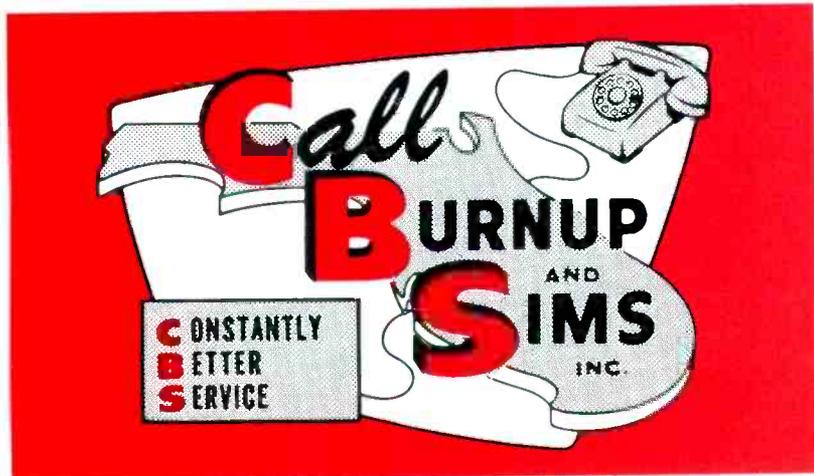
G. L. "Lee" Spaulding and Frances L. Poe have joined the staff of TV & Communications magazine and Cable Television Review. Spaulding, previously with the Enid, Oklahoma Publishing Co. and KOCO-TV in Oklahoma City, assumes duties in art and production phases of the CATV publications. Mrs. Poe will serve as assistant director of circulation for the firm. She was previously with the Oklahoma Publishing Co.

Ampli-Vision Corp., a new management and consulting firm, has been formed by International Telemeter Corp., a subsidiary of Paramount Pictures. International Telemeter president Leslie Winik will serve as chairman of the new firm, which will maintain offices at 200 Stoner Avenue, Los Angeles 25, California, and in Suite 920 in the Paramount Building, 1501 Broadway, New York 36, New York, in addition to performing management and consulting services, Ampli-Vision Corp will assist in the acquisition of new franchises, design and construction of new systems, and in financial and technical problems of system operation. Officers in addition to Winik are: William C. Rubinstein, president, and George Brownstein and Patrick R. J. Court, vice presidents. □



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MEET THE NCTA LEADERSHIP

Again this year, *TV & Communications* presents a close-up look at the NCTA officers, directors and key staff members. These men represent the cable television industry in many ways, and it is important that everyone in the industry recognize their efforts and become acquainted with as many of them as possible. The national convention presents an excellent opportunity for CATV'ers to do both — and for that reason this feature is a traditional part of our NCTA Convention issue.



Mr. Ford

PRESIDENT

Frederick W. Ford has served as President of NCTA since January of 1965. As a member of the FCC from 1957 through 1964, he served as chairman of that agency from March 1960 through March 1961. Mr. Ford practiced law in West Virginia from 1934 through 1939, after which time he entered government service. Having served with the Federal Security Agency, the Office of Price Administration, and the FCC, he joined the Justice Department in 1953 as first assistant in the office of Legal Counsel. Early in 1957, he was appointed Assistant Deputy Attorney General — then followed his appointment as a member of the FCC. Mr. Ford was reappointed to another 7-year term on the Commission in June, 1964, from which he resigned to take over presidency of NCTA.



Mr. Conroy

NATIONAL CHAIRMAN

Benjamin J. Conroy, Jr. is president of Uvalde TV Cable Corp., Uvalde, Texas, where he has resided for over ten years. Ben is also an officer of the Effingham (Illinois) TV Cable Co. He has served NCTA as a director, secretary, and chairman of the pole line committee, and was president of the Texas association from 1960 through 1962. Ben is originally from Island Pond, Vermont, and spent many of his younger years in Brooklyn, New York. He served in the U.S. Navy for 11 years before settling in Uvalde.



Mr. Tarlton

NATIONAL VICE-CHAIRMAN

Robert J. Tarlton installed the first commercial, multi-channel CATV system in the U.S. The Panther Valley Television Co., formed to operate that first system in Lansford, Pa., continues operations there with Bob as president. He is active in the Pennsylvania state association, which he helped form (along with the NCTA). Bob also worked for Jerrold Electronics from 1952 through 1956, where he held various management posts.



Mr. Stern

SECRETARY

Alfred R. Stern is president and board chairman of Television Com-

munications Corporation, which currently operates 18 systems, serving over 50,000 subscribers. Prior to joining TVC in 1962, he was vice president of NBC and chairman of NBC International. Originally from Chicago, he now makes his home in Manhattan.

TREASURER

Franklin R. Valentine, Jr. is affiliated with Unicom, Inc. of New York City, as a director, executive vice president, and general counsel. Prior to joining Unicom, Frank was associated with the CATV interests of Charles Sammons of Dallas. He received his legal training at Baylor University, and is a member of the American Bar Association.

IMMEDIATE PAST NATIONAL CHAIRMAN

Bruce Merrill, president and founder of Ameco, Inc. has interests in all phases of CATV manufacturing, engineering, construction and management, as well as in operation of his own system holdings. Bruce is past president of the Arizona CATV association, and an organizer of the National Association of Microwave Common Carriers, of which he has also been president. He established Ameco and built his first system (at Globe, Arizona) in 1952.



Mr. Merrill



Mr. Barco

DIRECTORS

George J. Barco is president of Meadville (Pa.) Master Antenna, Inc., and has served as NCTA president and vice-president, as well as serving as a director since 1954. He received his legal training at the University of Pittsburgh, and currently practices general law with his daughter Yolanda Barco in the firm Barco and Barco.

Harry C. Butcher is president of Cable TV of Santa Barbara, Inc. Having opened and directed the Washington office of CBS in 1929, Harry was involved in radio and television broadcasting management and ownership, before forming Cable TV of Santa Barbara. He also served as an aid to General Eisenhower during WW II, and subsequently authored a book on this experience.



Mr. Butcher



Mr. Crosby



Mr. Danser



JUST HOW COMPLETE CAN CATV CONSTRUCTION BE?

When you employ a construction firm to build or renovate a CATV system, you have every right to expect total service — a complete package from initial feasibility studies to final system check out. You want a firm whose only standard for equipment selection is to do the best job — an independent firm without obligations to individual manufacturers. You expect professional, experienced personnel to handle every phase of your operation . . . to

provide detailed service to meet each unique requirement.

Communication Systems Corporation brings all these capabilities to your CATV project. Broad national turnkey experience includes every facet of system construction. Complete feasibility studies, antenna site surveys, system design and field engineering, layout, liaison with utility companies, installation of poles, cable, lines and equipment, thorough inspection, system testing and dozens of other duties are handled professionally and efficiently by experienced, full-time personnel

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Mr. Fribley

Robert Clark is president of Vumore Company, one of the largest CATV group owners, with 33 operating systems serving about 45,000 subscribers. He is also president of Mesa Microwave, Inc., which, along with Vumore, has main offices in Oklahoma City.

Jack R. Crosby of Del Rio, Texas, has been involved in several Texas CATV operations, broadcast stations and other enterprises. Jack was also secretary of NCTA in 1964. He received his BBA at the University of Texas, being a native son of Del Rio.



Mr. Jernigan

Douglas B. Danser is currently getting a new system underway in Clewiston, Florida, having installed systems in Naples (completely underground) and Lehigh Acres, both Florida. He has served on the NCTA budget and audit committee, and is serving on the national convention committee.



Mr. Kahn

Charles W. Fribley is president and owner of Corning (New York) Community Television Corp. and is past secretary-treasurer, vice president, and president of the New York State association. He is also president of the New York-Penn Microwave Corp. and an officer of the microwave common carrier's national association. He installed his first system in Gibson, N.Y. in 1951.



Mr. Magness

Mrs. Pat Hughes resides in Moses Lake, Washington where she operates Moses Lake TV Inc. She is also president of Empire TV Inc. in Ephrata, Wash., and secretary of Columbia Basin Microwave Inc. Originally from Toronto, Canada, Pat is a former part owner of Coos Bay Television in Oregon and Harbor Television in Aberdeen, Wash. She has been an active member and officer of the PNCTA.



Mr. Malin

Robert F. Jernigan is president and general manager of Mississippi CATV Systems, Inc. in Hattiesburg. Bob is past president of the Southern CATV Association, and is currently a director of the Mississippi association. He organized Perfect Video, Inc. in 1954, and has done consulting work for a number of systems.



Mr. Morrissey

Irving B. Kahn is president and board chairman of TelePrompTer Corp. and was a founder of that firm in 1951. TelePrompTer is now one of the largest group owners of cable systems. He now resides with his family in Mararoneck, New York.

Bob J. Magness is president of Community Television Inc. which operates over twenty systems. He also has interests in the Mineral Wells and DeLeon, Texas systems, and is an officer of Western Microwave and Mountain

Microwave. He is a partner in KBLL-TV and radio in Helena, Montana, and a resident of Bozeman, Montana.

A. J. Malin is president and general manager of Community TV Corp. in Laconia, New Hampshire, and holds similar positions with Stratford Broadcasting Corp., Rochester, N.H. Al is a charter member of NCTA and has held various offices in the national and New England associations, including the NCTA presidency.

John J. Morrissey, Jr. is president and general manager of Durango Television Network, Inc., Durango, Colorado which he built in 1954. He is currently a director of the Mid-America CATV Association, and has been active on several NCTA committees, including pole line, membership, public affairs, and convention committees. John is a native of Colorado, and has served in the state legislature there.

James R. Palmer is president of C-Cor Electronics, Inc. in State College, Pa., and of Centre Video Corp. of the same city. He is also a director of the Pennsylvania CATV association. He has been active in ETV planning, and has served on the NCTA ETV committee.

J. Leonard Reinsch is president of Cox Broadcasting Corp., which, along with Cox Cablevision, has main offices in Atlanta. He is also an officer of Kaiser-Cox Corp. in Phoenix. Cox Broadcasting is one of the largest cable system operators among broadcasters.

Albert J. Ricci of Keene, New Hampshire, has been involved with several CATV operations in that area, and is now doing management consultation for CATV operators. He pioneered wide-band service in that area, carrying 9 channels on his Keene system. He also built the Bennington, Vt. system.

Buford L. Saville is president and general manager of Potomac Valley Television Co., Inc. in Cumberland, Md. Having started the Potomac Valley firm in 1951, he has been active in all phases of system building and management, and has served as a director and president of the West Virginia and Mid-Atlantic association.

Milton Jerrold Shapp is founder, former president, and chairman of the Jerrold Corp. He is a special consultant to the Peace Corps, which he was instrumental in forming, and has interests in numerous public service organizations. He was recently nominated as Democratic candidate for governor of Pennsylvania — for which campaign he resigned the presidency of Jerrold.



Mr. Palmer



Mr. Reinsch



Mr. Ricci



Mr. Saville

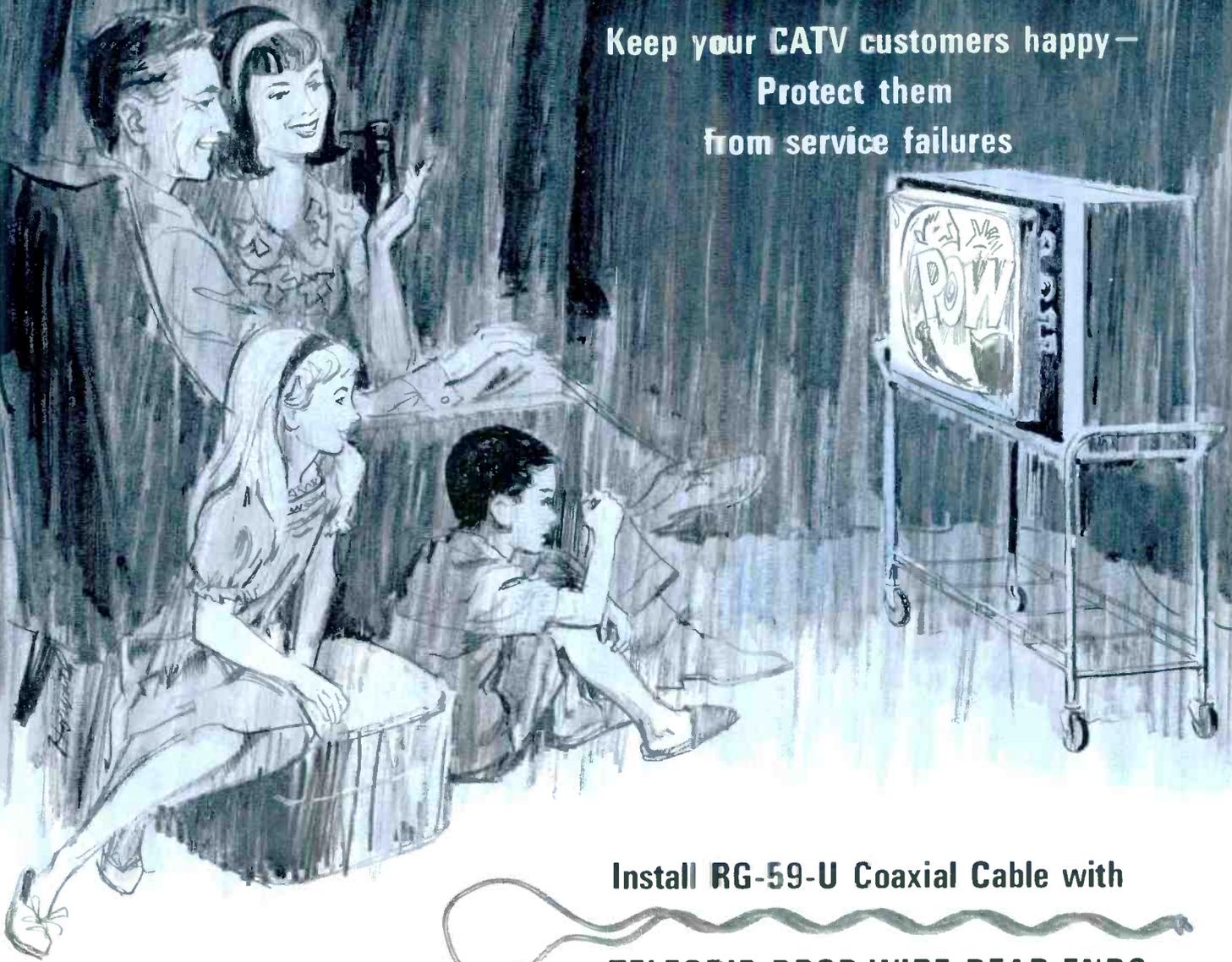


Mr. Shapp



Mr. Taylor

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Mr. Thompson

Archer S. Taylor, vice president of Malarkey, Taylor & Associates, established the first system in Montana in 1953. A senior member of IEEE, he is also president of Northwest Video, and chairman of the NCTA engineering subcommittee. He served as NCTA national vice chairman in 1964.

Frank P. Thompson is regional manager of American Cablevision, Inc. and resident manager of Rochester Video. Frank is also executive vice president of Hi Desert TV Cable Inc. which operates systems in Yucca Valley, Joshua Tree, and Twentynine Palms, California. A director of NCTA since 1957, he served as association secretary in 1961 and national vice chairman in 1965.



Mr. Weir

Ralph L. Weir of Junction City, Kansas has CATV interests in that town and several other Kansas communities, as well as broadcasting holdings. Bud was president of the Oklahoma-Kansas CATV Association in 1963. He also heads Mid-Kansas Microwave, Inc.



Mr. Whitney

Edward P. Whitney has been vice president in charge of sales for Entron, Inc. since November, 1964. Prior to joining Entron, Ed was national sales manager for Ameco, and had served as Executive Director of NCTA. He

represents the NCTA associate members on the board.

GENERAL COUNSEL

Robert D. L'Heureux joined the NCTA staff in March, 1961 as general counsel. Bob was formerly chief counsel for the Senate Committee on Interstate and Foreign Commerce, and had practiced communications law in Washington, D.C. for several years. He resides with his family in Arlington, Virginia.



Mr. L'Heureux

ADMINISTRATIVE ASSISTANT

Wally Briscoe joined the NCTA staff in October of 1964, having served as administrative assistant to Congressman Oren Harris just prior to that. Wally received his education at the universities of Missouri, Louisville, and Indiana, and has an extensive background in radio and television broadcasting. He and his family reside in Annandale, Virginia.



Mr. Briscoe

ASSISTANT GENERAL COUNSEL

Bruce E. Lovett joined the staff of NCTA in November of last year, having formerly been associated with Western Electric Co. in the office of General Solicitor. Prior to that, Bruce was with the Federal Trade Commission as a trial lawyer. He and his family now reside in Arlington, Va.



Mr. Lovett



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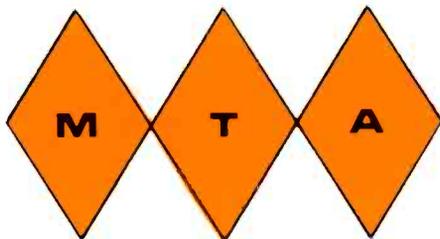
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15th ANNUAL NCTA CONVENTION

June 26-29, 1966 — Americana Hotel, Miami Beach, Florida

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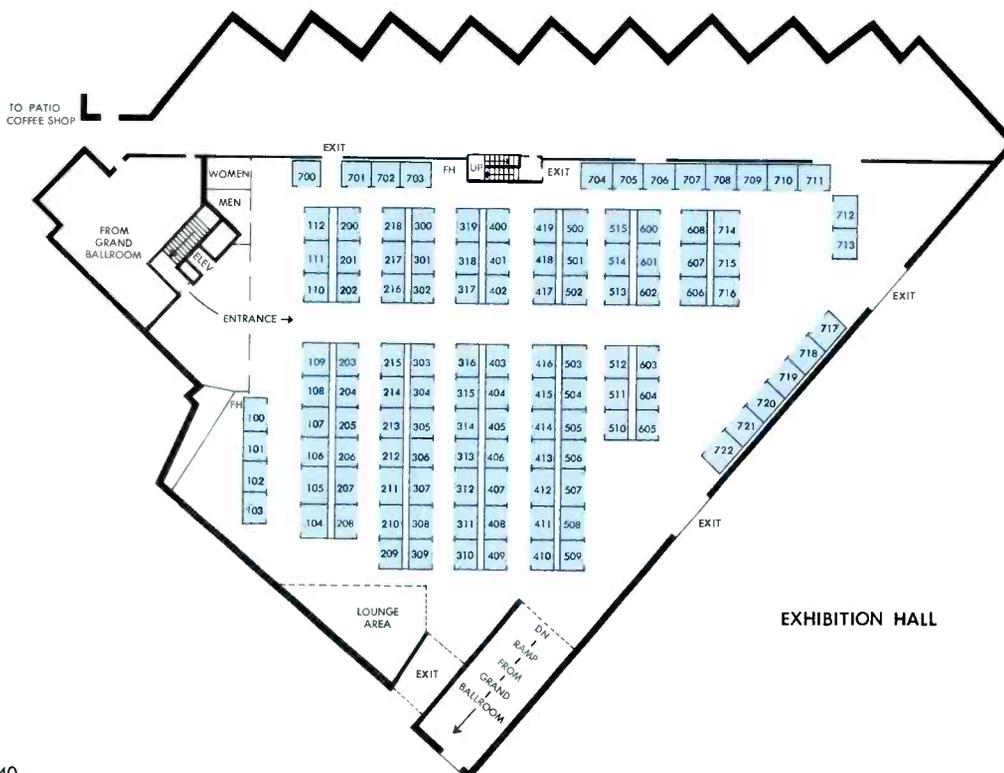
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CONVENTION NOTES

NCTA CONVENTION LADIES ACTIVITIES

Ladies attending the 15th Annual NCTA Convention in Miami will find a most interesting agenda prepared for their enjoyment. For Monday, June 27, reservations have been made with Miami Gray Line Sightseeing Boats Inc. for a cruise to Fort Lauderdale on the Biscayne Belle (paddlewheel). Lunch will be served at Creighton's Restaurant in Fort Lauderdale . . . The entire trip is made on the inland waterway, and is therefore a smooth, safe trip. On Tuesday, June 28, Grey Line buses (air conditioned) will take the ladies to tour Villa Vizcaya, and, following lunch, on a trip to the Seaquarium.

NCTA CHILDRENS PROGRAM

The Americana Hotel will provide childrens programs during the NCTA Convention . . . for different age groups as follows: Tots 5 to 7, supervised activities from 9:30 A.M. to 4:30 P.M. and 6:30 to 8:00 P.M.; Preteens 8 through 12, activities from 9:30 A.M. through 4:30 P.M. and 6:30 through 9:00 P.M.; Teens 13 through 18, activities from 9:30 A.M. through 4:30

P.M. and 9:00 P.M. through midnight. Supervised meals, and a variety of activities are included, selected for each age group: ping pong, swimming, fishing, games, hikes, splash parties, shuffleboard, story hours, cartoon movies, hootenany, bingo, arts, and crafts, etc. Babysitting services are also available.

MEETING SCHEDULE

The 15th Annual NCTA Convention holds the promise of a most informative and entertaining stay in Miami. Although the national CATV trade show is a day shorter than previous conventions, the speakers and panel sessions on the agenda, the manufacturers' displays, and the surroundings of the Americana all promise to make this year's convention an industry success. The following is the tentative agenda for the 1966 NCTA National Convention:

Sunday, June 26

- 3:00 PM—Opening of the exhibit hall
- 6:00 PM—Reception, hosted by NCTA associate members

Monday, June 27

- 9:00 AM—General session: welcoming addresses, Chairman's annual report
- 10:00 AM—Concurrent management and technical sessions

- 12 Noon—Luncheon, Edmond L. DePatie of Warner Bros. featured speaker.
- 2:15 PM—Concurrent management and technical sessions
- Evening—Social function hosted by Jerrold Electronics

Tuesday, June 28

- 8:30 AM—Technical session
- 10:00 AM—General session, with panel of FCC staff members and CATV industry counsels.
- 12 Noon—Luncheon, Commissioner James J. Wadsworth, featured speaker
- Afternoon—Free for visiting exhibits
- Evening—"Night on the town," no planned activities

Wednesday, June 29

- 9:00 AM—Concurrent management and technical sessions, with international group of speakers featured in management session
- 12 Noon—Luncheon, Frederick W. Ford, featured speaker
- 2:00 PM—Annual business meeting: election of officers, reports on legal and legislative problems
- 6:30 PM—National Chairman's annual reception
- 7:30 PM—Annual banquet: presentation of 1966 Larry Boggs Award, presentation of National Awards Competition awards

Thursday, June 30

Meeting of the new NCTA board of directors

NEW FOR '66!

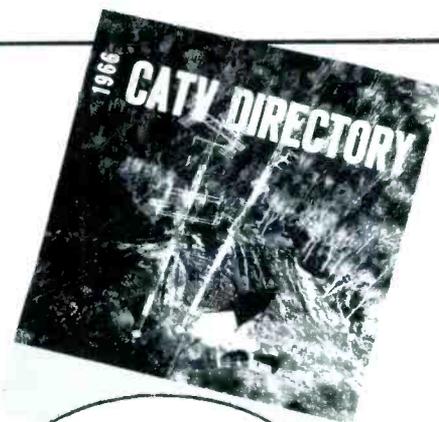
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MANAGEMENT CONTROL

By Robert H. Huston
Executive Vice President
American Cable TV, Inc.

It makes little difference whether you are manager of a single cable system employing three people, or general manager of 30 cable systems employing 300 people, the problems of control (and thus the ultimate success of the system) narrow down to you.

You may have been in this business since "year one," and you may know by heart every basic rule of a successful CATV operation, but if you can't transfer this knowledge and a degree of enthusiasm to the employees under you, you will never have the kind of tight, firm control that makes for sound, solid management of a cable system.

The key then is to make your employees work as hard as you do and to instill in them a simple but important ingredient called "esprit de corps."

You will be a successful manager and have control over your operation when the people working for you hold their heads high and say: "I'm proud to be in CATV. I'm proud of the public service we perform. I'm proud of the company I work for."

This kind of attitude and favorable climate *can* come about with a good employee relations program. But a word of caution, this involves communications . . . and communications is often the weakest link in the average manager's chain of strength.

So the first step in management control becomes the art of communicating.

True, we can't all stir people to the degree of some of the great leaders of history, but can't you imagine the amount of enthusiasm Marc Anthony would have generated had he started his speech to the Roman legions with: "Friends, Romans, countrymen, I've got something I want to tell you." His audience might have been reduced to a team of chariot horses.

Your "legions" are not preparing to embark on an invasion of Egypt, but each morning when they arrive for work they should "lend you their ear" and you, as a manager, should have something to say and you should be able to say it in a clear, concise, inspiring way. A manager's general attitude soon rubs off on the employees working for him; so be enthusiastic about *your* job if you expect an employee to be enthusiastic about *his* job.

You are the "overall-overseer" of your troops. You must be a man who can plan, set goals and policies, organize work, develop an effective team and make decisions. Thus, you must communicate.

You must give those under you a *self-motivating* attitude. You must challenge the employees under you to better the policies you have dictated. The good ones will . . . and when they do . . . you must reward them with money and/or praise.

Stop and think for a minute and suppose that all of your employees were to put as much drive into their jobs as you put into yours. Imagine the impact on morale, sales, profits.

Implausible? Not at all. You *can* get employees to work as hard as you do. You *can* get blood out of that proverbial turnip. You can and you should.

There are three basic approaches that a manager can use to get tip-top performance out of employees:

Point No. 1. *Use of threats that lead to fear.* Many companies think they are "motivating" their people through ex-

tensive and continued use of threats and fear. Fear of not meeting goals and quotas. Fear of loss of prestige and status within the organization. And, of course, fear of loss of jobs. The only thing wrong with this method of "motivation" is the fact that fear has a tendency to actually create enemies of employees if used over a long period of time. Used wisely it has its place, but if you truly want to establish lasting, firm, employee relationships . . . don't count on fear to be of too much help.

Point No. 2. The second basic approach to improving the performance of employees is *financial reward*. This, too, has its place in the operation of a successful company, but like fear, it also has a serious disadvantage: alone, it simply isn't enough. If it were, you could merely tell people exactly what you want done, pay them, and then forget it. And it might be pointed out, that this is not a realistic approach to showing a profit at the end of the year either!

Point No. 3. The third basic approach is the strongest of the three motivating factors, and I might add, the hardest to accomplish. This factor is best termed: "improvement of work attitudes." Surveys have shown that a man or woman with a self-motivating kind of attitude towards work can be up to ten times as effective or productive as others. Not even psychologists know exactly why this is true, but they feel that it may be related to an employee's feeling that he is not merely working for a company, but that pride of personal performance, pride or workmanship, if you will, becomes the dominant drive to greater achievement.

For example, if your billing system is not everything you think it should be, don't try to change it yourself. Tax the ingenuity of the girls in your office, especially the bookkeeper in this case, and have them suggest changes.

Motivate the employees to improve upon the present method of operation. Then be prepared to lavish praise, and in some cases, money for the employee who "beats your system." Don't harbor and guard pet plans and ideas. Challenge *everyone* in your organization to look for new and better ways of doing business in all departments and phases of the operation. Don't just shoot for *company* goals. Encourage employees to establish *personal* goals. To the employee, the personal goal is more important and more rewarding when it is achieved, but the company goals will then materialize and follow naturally. The company will still benefit.

It really doesn't matter if the goal is a company project or self-improvement of an individual, what matters is that the employee must:

- A. Help set the goal.
- B. Set a realistic goal.
- C. Make a commitment in writing.

These three steps will create a burning desire for achievement. And once the goal is reached, the project completed, or the idea put into effect . . . the employee will be looking for new ways of improvement.

Nothing motivates a good employee more than to discover that he is better than he thought, and at the same time, prove to others that he is better than *they* thought.

I realize that it takes guts to throw a great deal of responsibility on an employee in whom you have only faith.



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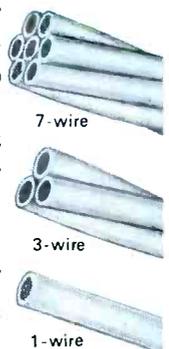
Specify Alumoweld messenger . . . you can't buy better, more economical protection for your CATV system.

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

But faith is a powerful weapon and the manager who does it is releasing tremendous forces that could bring startling results.

Finally, in closing out the subject of motivation, let's discuss that word we all use so freely but resent so much . . . "Criticism."

No matter how we disguise it, call it "constructive criticism" to dress it up, it's the one bug-a-boo that can blow your whole program out of the tub. It is also the same factor that can assure success.

I seriously doubt if there is such a thing as *good* constructive criticism. Tell the employee it is "for his own good" until you are blue in the face and he still doesn't like it. Neither do you. Neither do I.

The secret? Use criticism the correct way, and it will work for you. Take a man into your office occasionally and tell him about the aspects of his work that impress you favorably. Then ask *him* to tell *you* of any weak points he might have so you can whip them *together*.

You will be surprised how freely the average employee will talk about these weak points on his first trip to your office. But he will work hard to avoid having to tell you again six months from now that he is still weak on these points.

At this point, you have turned an employee's self-criticism into a stimulous. You have "self-motivated" an employee. He will try hard never to make those same mistakes again. Not because *you* told him what his weaknesses were . . . but because *he* told you what needed improving.

One final word on motivation: never get an employee to set a goal that is not likely to be reached. The employee will become discouraged and even hostile. He will blame you for his failure and will resist any further efforts you might make toward re-self-motivating him.

Now, on to a completely new subject, but one that is of equal importance in building management controls: *How to delegate authority effectively.*

Just recently the author had a regional manager's job come open. In consulting with one of my vice presidents who happens to be in charge of that division, I mentioned the name of a manager whom I thought was doing an excellent job. He was, I was informed, but then came the cruel fact of life that so often becomes a millstone around the neck of a man who could and should move up the ladder of success.

This manager had developed no one to take his place. He had an excellent chief technician in his system who should have been absorbing managerial responsibilities, but the manager had never delegated any degree of authority to anyone working for him.

He had made all the decisions for everyone for so long that we couldn't make him regional manager over ten systems. He had secured his job, but at the expense of foregoing any hope for advancement. What a price to pay for job security!

Why delegate? If you fail to delegate, you hold down yourself and your future!

This one is a real "sticky-wick." Most managers know they should delegate work—in fact, most managers think they do delegate work—but the truth is, few managers delegate authority to the extent they should.

Or to put it another way, there seems to be plenty of preaching, but not enough practicing in the art of delegating authority.

All we can do here is to *show why* you should delegate; what *obstacles* to be wary of; and *how* to delegate. The *practice* part is up to you.

Let's begin by putting the subject in the proper perspective. In doing this, we find that the vital function of delegation is a dual responsibility:

(1.) *You owe it to yourself to delegate.* Look at it as a form of insurance. When you are sick, on a trip, or on vacation, the company will run smoothly if you have been bringing other employees along through delegation of responsibilities. If things cannot run smoothly in your absence, it is a direct reflection upon you as a manager.

And there is something else to keep in mind . . . by delegating effectively, you strengthen the confidence and develop the initiative and capability of those under you.

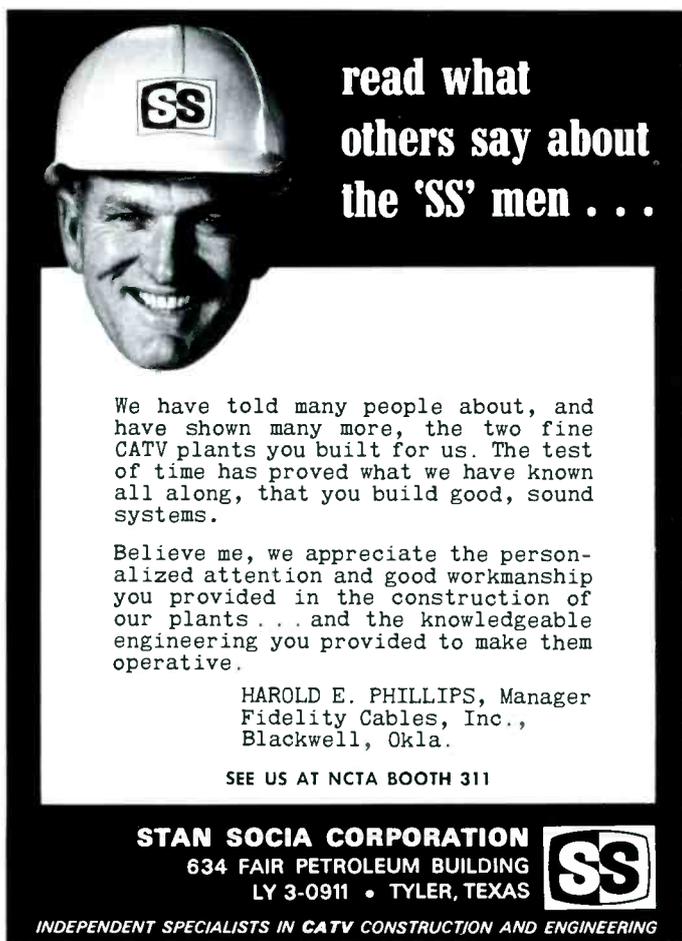
(2.) *You owe it to your subordinates to delegate.* How would you like it if you had never been given a chance to assume responsibilities on your own? You have a distinct moral responsibility to delegate. The only thing you have to work with . . . the only way you will grow . . . the only way you will have management control . . . is through people. People who trust in you as a leader because you showed faith in them. To a large degree, *delegation of authority* is the answer to management control.

It would seem then that with these facts in mind, any manager would welcome the opportunity to delegate whenever possible. Yet, the fact remains that this is one of the weaknesses of most managers.

The by-product of all this is jealousy and mistrust. To the man under you, your failure to delegate is tantamount to a vote of lack of confidence in his ability. It will become a personal affront that can undermine the entire company.

In view of this, it is surprising that so many so-called managers completely disregard this morale builder of morale destroyer.

So, learn to communicate effectively. Motivate the people who work for you. Delegate authority as widely as possible. And then let people solve your problems. Management controls will then come easy with that type of foundation. □



read what others say about the 'SS' men . . .

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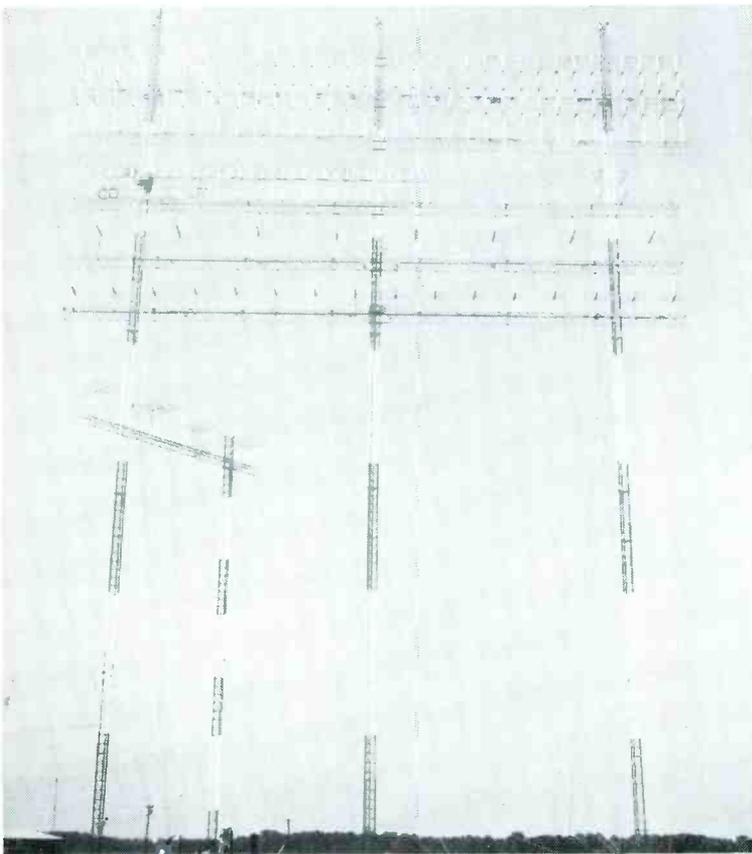
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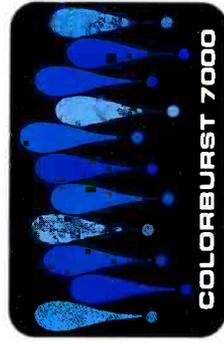
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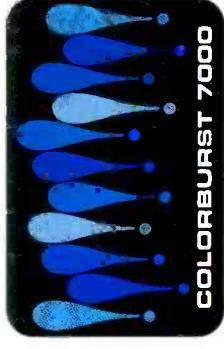
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NON-DUPLICATION SWITCHERS

By Danny Coulthurst, Vice-President-Engineering
International Good Music, Inc.

Does the new FCC rule regarding non-duplication of "exclusive" local programs apply to you?

Assuming that you do have the non-duplication requirement, how can you comply with the rule? One solution is to accomplish the switching manually—with an operator on duty. This assumes that an operator is always available during the prime time hours, and that he is available at the most convenient point to do all of the switching. Most systems will find that this method is expensive and sometimes inaccurate, in that the operator forgets to switch, or switches at incorrect times. This is particularly likely when the switching is complex. Some sort of automatic switching would then seem worth investigating.

Several systems have been suggested. The first is the use of electronic comparators which would compare two signals. When they are the same, the distant signal would be switched. This system has several fatal weaknesses, however. First, the local station may allow some duplicated programs and not others. Or, the two programs might be carried at different times, but within prime time on the same day. A comparator would take care of neither of these situations.

A second suggestion is that the local station send out control signals when it does not want a program to be duplicated. Once again, this would not work with programs at different times. Moreover, the present FCC regulation puts the burden on the CATV system, not the TV station, to see that switching is accomplished. Also, present FCC regulations do not allow for switching tones, either in the audio or any other

range to be transmitted by TV stations.

An automatic switching system based on time seems to be the only practical one at present. Consideration of the following factors will help determine the requirements of the system:

(1) Where is switching to be done? In most cases, the head-end is the best location from a technical standpoint, as signals can be switched off and others substituted in their place without elaborate filters or other devices to separate and select the various channels. On the other hand, the office is a better location in most cases, from a programming standpoint. Personnel are more likely to be available at the office to program upcoming switching and to make last minute changes.

(2) Does the power line have good reliability and frequency stability? Frequent outages or unstable 60 Hz frequency will cause conventional clock devices to get off time, in which case some other source of power for the timer should be considered. A receiver tuned to WWV with suitable dividers is one method. However, it is somewhat unwieldy and costly. Tuning forks and reeds are also used for time sources, but most manufacturers have settled on a crystal in an oven as the most stable, reliable, and least expensive. Where the use of emergency power is fairly common, an investment in a crystal controlled clock may be a very wise investment in happy customers.

(3) When a given channel is switched off the cable for a period of time, what will be substituted in its place? The local channel? A time/weather service? A CATV originated source, such as a notice as to where the weather program may be viewed? Snow? Or, will the switching system require that either of two sources be substituted for the normal channel, sometimes one, sometimes the other? Are these sources to be switched in an RF condition requiring a coax relay of some sort, or will a simple control voltage to turn amplifiers or similar devices on and off be sufficient?

(4) How many channels will have to be switched off? Is this requirement likely to remain constant, or should the system have the capability of expansion at a later date?

(5) What is the length of programs to be switched off? The most flexibility is gained by working in multiples of the shortest program, typically 30 minutes. Thus, a switcher capable of switching on 30 minute intervals will also switch one hour and two hour programs.

(6) If switching is to be done at the head-end, and the programming of the switcher at the office, what sort of remote control is feasible?

If only one or two sources are to be switched, a simple DC switching system will probably be adequate. If more than two sources are to be switched, some type of tone encoding and decoding system offers the greatest flexibility and reliability. Telephone lines are the most common link, though private lines, cable, or even radio links may be substituted in remote areas.

(7) Will programming requirements change from day to day and week to week? If so, changes should be easy to make, by non-technical personnel, if possible.

These, then, are the questions which define the type of switching system needed in a particular system. Several makes of switchers are presently available to operators, including the IGM "Telmas" line of modular switchers, and manufacturers will welcome inquiries concerning specific applications. □

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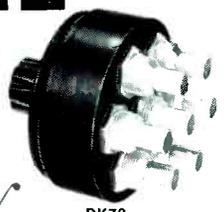
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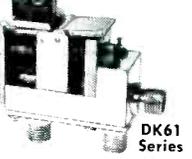
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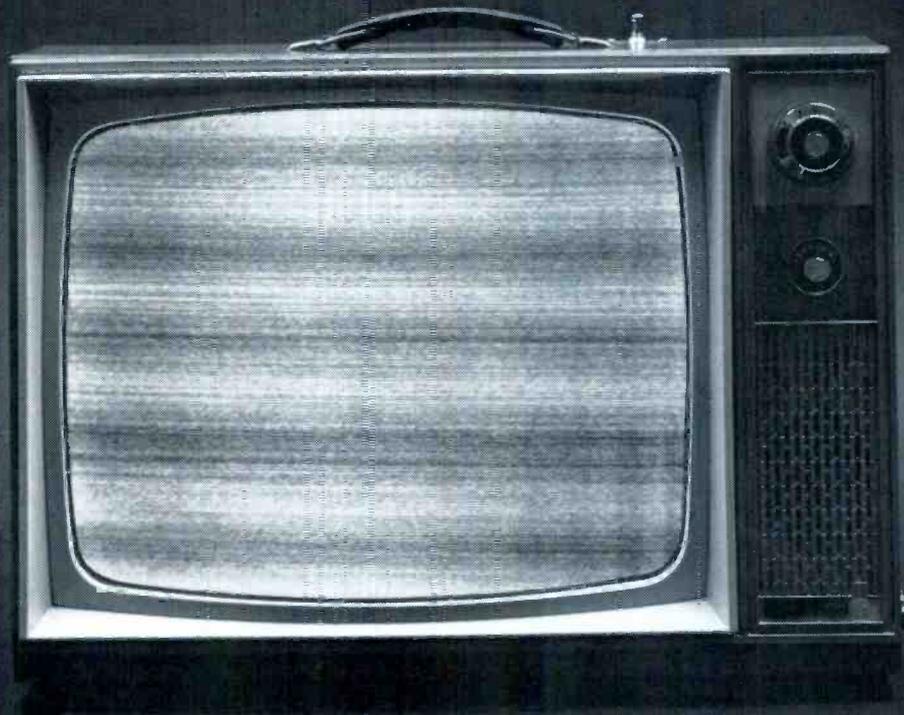
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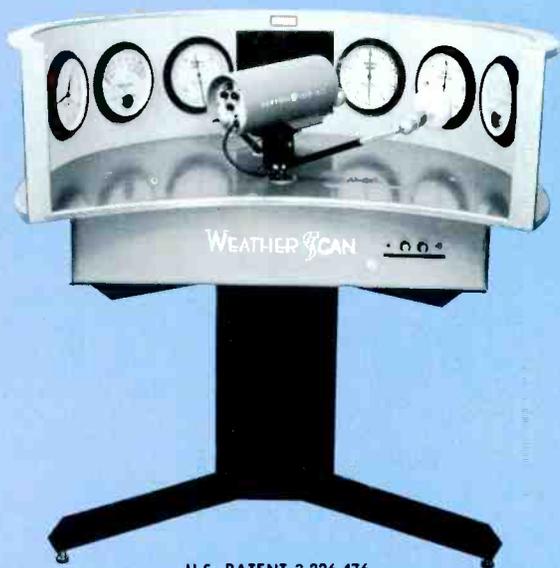
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GETTING ALONG WITH THE LOCAL TV SHOPS

*By Travis E. Garrett
Entron, Inc.*

System relations with local TV service dealers is a subject which has been stressed to considerable extent in systems public relations, but is a subject which cannot be stressed too much. There are several points to consider in building good relations with local TV sales and service firms—some are listed here to give a new manager, technician, or installer a few ideas with which to approach TV service dealers. Some of these can also be helpful in obtaining a franchise.

First, system operators should stress the fact that they are not in business to service or sell TV receivers. And that, in fact, none of their men will even be allowed to “moonlight” after hours repairing sets. It is also a good point to write into a franchise application that the cable company does not intend to sell or service TV sets. You might even be able to sway the TV service dealers in a town to come to your aid in obtaining a franchise against a company that will not write this into their application.

Second, from a sales standpoint, the service dealer can usually be persuaded that a cable system with more available channels of better quality, and stronger signal with a better color picture can vastly improve the sale of receivers — particularly color sets. Arrangements can be worked out to let the dealer offer a free connect and a free month’s service with the sale of a set. This should naturally be offered at a lower cost to the dealer than it normally is to customers. This cooperation helps the system in the fact that once a viewer is connected, he usually stays. A reciprocal arrangement can be worked out by which the service dealer can sell connects on a commission basis, and if he is so inclined, even connect the ones he sells (with adequate supervision, of course). This helps the system get additional customers, and it helps the service dealer pick up a little extra cash. It also can cut down on full time installer requirements when there are few connects to be made.

Third, from a servicing standpoint, a new system can improve a serviceman’s business because it is more desirable that the customers’ sets be in good shape. With more and more systems running more and more adjacent channels, it is imperative that a set’s adjacent channel traps be set accurately. In some older sets it might even be necessary to add adjacent channel traps. Most systems carry at least some channels that were not previously received locally. It then becomes necessary to clean tuners, and in a lot of cases, to re-align them also.

Many TV service dealers do not even like to get involved with antenna work. This of course becomes unnecessary with the system. The only disgruntled servicemen that you are likely to have are the ones that specialize in antenna work. The only suggestion there is to put them on the payroll.

In summary, it should be understood with the local TV dealers that the cable company will do nothing to the receiver except connect it to the system and adjust the front panel controls, and that the company will recommend no particular serviceman. □

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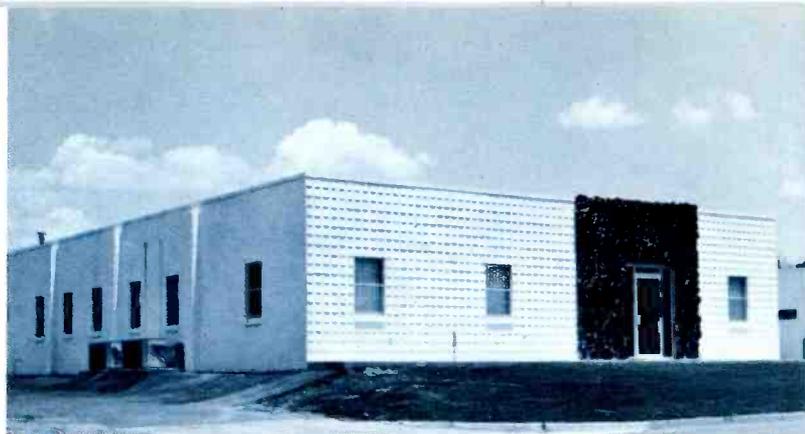


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On the CATV Limb



New offices allow for anticipated expansion of TV & Communications staff.

During the past several years we have visited with cable system owners, managers and technicians from virtually every state in the union—as well as many from other countries. It has been our pleasure and privilege to become acquainted with the men who created the cable TV business . . . and those who now battle to defend it. The cable television industry is fast moving and exciting. To the staff of TV & COMMUNICATIONS, publishing magazines to serve the CATV industry is as much of an adventure as building systems.

Although there are literally many thousands of different publications serving modern business and industry, there's only one devoted exclusively to cable television. Why aren't there more all-CATV publications? Perhaps the scarcity has something to do with certain hazards incidental to the cable TV business.

It's altogether possible that publisher-types aren't excitedly thronging to stake their future on the cable TV business because they wouldn't feel comfortable 'way out on the CATV limb. Can't blame them for that. But what about the *one* maverick magazine that *has* cast its lot with the cable crowd?

Why would a magazine purposely narrow its coverage to CATV exclusively—and crawl out on that perilous CATV limb? The NAB is vigorously shaking the branch, trying to upset the cable interests and an outfit called AMST is trying to chop down the whole tree! Meanwhile, the copyright-baggers are trying to pick all the fruit off the tree—and the wise old owl called FCC sits aloof in the top of the tree hooting encouragement to the lot of them. A gang of bullies—TAME, AT&T, NATESA and NARUC—makes a full-time hobby of throwing sticks and stones at the outnumbered CATV underdogs who have sunk their claws (and their hopes) into the cable television limb.

If it's that bad, you ask, why would anyone want to publish a magazine just for CATV? The answer, of course, is that it's really not so lonesome out here on the limb. A lot of our friends are out here, too. And besides that, a

whole band of friendly Indians—the viewing public—is on our side. And one of these days they're going to come riding over the hill and rescue cable television from its antagonists. Consensus on the lonely limb is that even the FCC will eventually have to give in to the demands of the people.

Most of our problems come from Washington, D.C., these days. But we recall that back in 1963, when *TV &*



Co-publisher Pat Pogue has extensive management background in publishing and petroleum industries. He directs business and circulation departments.



Foe of CATV's foes. Stan Searle is co-founder of company; editor of three publications.

Communications was launched, our main problem was much less complex. Just a complete lack of capital. All we had to work with was a wealth of confidence in the future of cable television. Apparently no other publishers shared our views, but fortunately several equipment manufacturers did. And they voiced their confidence in a very tangible way: with money! So we were underway and the first strictly CATV magazine was born. Jim Davidson had sent in the first advertising order — with check attached. Many others followed suit, in a combined effort that sustained the new magazine.

The publication was launched on faith in the cable TV business. But its initial success came from the trust of friends at Jerrold, Entron, Ameco, Viking, CAS, Rohn, TeleMation, Spencer-Kennedy, Superior, Westbury, Plastoid, Times, Collins, Pruzan, Phelps-Dodge, Davco, Economy Finance, Ft. Worth Tower, Sitco, Utility, Daniels, TVC, CATV Equipment, Repronics, B-T, Telesystems, Cush-Craft and Aberdeen. Our well wishers were outnumbered only by our typographical errors in those days. But, with the kind indulgence of the country's cable system operators we managed to fill a vital need for technical and management information. And an editorial stand in behalf of free enterprise for CATV and a multiplicity of choice for viewers was apparently in tune with our reader's ideas.



Bob Searle has the complex job of planning and organizing editorial content for each issue of TV&C.



John Paul Johnson (left) and cameraman Jim Powell.

There were just five on the charter crew: Pat Pogue, Stan Searle, Jean Schaefer and Sherill Dunn, plus a secretary. As editor, sales manager and janitor, Stan soon discovered that his job was seriously impairing his golf game. So he promptly recruited his brother, Bob, from the tall timber country of the Northwest.

Having edited a two-way radio publication, Bob's first big assignment in the CATV field came as managing editor of *Cable Television Review*, the weekly CATV news service launched early in 1965. Later that year he assumed the same position on the monthly publication.

A number of other talented individuals have joined the maverick publishing company that seems to thrive out on the cold and conspicuous limb of CATV publishing. And, although means and methods have been updated considerably since the founding of the industry monthly, the same esprit de corps still sparks the TV&C team effort.

Former halfback and college instructor Jon Paul Johnson invests a tremendous amount of energy and insight in handling the news desk for *Cable Television Review*. Another former educator, Miss Charlene Williams easily qualifies as the staff grammarian. She summarizes news into easy reading capsules for TV&C subscribers and also edits data for the annual systems directory. (Charlene's also in charge of proof reading . . .) Meanwhile, back at



Wayne Wilson services advertisers; creates copy and ad layouts for several companies.

TV & COMMUNICATIONS

the cash register, R. Wayne Wilson, another tall timber recruit, utilizes his multiple-degree higher education and advertising agency experience in creating sales messages for the publications and several manufacturers.

Among Pat Pogue's important contributions as co-publisher are his part-time piloting duties. Pat's first-hand contact with operators at regional association meetings helps formulate the insight which is relayed to readers each month in the new "CATV industry perspective" column.

Sharing pilot chores in covering some 200,000 passenger miles per year, are co-publisher Stan Searle and circulation director John Bryant. Company plane is a four-place Mooney Mk. 21 which normally holds 500 lbs. of sample copies and a couple of lean editors. Non-stop operating radius is 900 miles.

Although the staff now numbers more than a dozen — plus a Washington Bureau — staying abreast of an increasingly complex business keeps things buzzing. Thorough involvement in industry-wide information campaigns to avert damaging CATV regulation has also been time consuming. But the urgency of reporting industry news during crucial events has welded a young staff into a balanced team.

Managing editor, Bob Searle says that "this year's series of brush fires and threatened forest fires has had all of us working overtime. To report news accurately we have to understand it — and sometimes that's not easy when you're dealing with such things as the FCC's Second Report and Order." A major contribution in this area will undoubtedly be made by John Cole, TV&C legal editor and outstanding Washington communications lawyer who now authors a monthly column on CATV legal issues.

An FCC Commissioner recently criticized *TV & Communications* for taking an editorial position clearly partial to the interests of cable television operators. Of this alignment Pat Pogue says, "We have neither the inclination nor necessity to pacify the entire broadcasting industry — although we have many friends in the broadcast business. Serving cable television is our primary concern. Our future is vested in cable television and we make no secret of it." He added that, "personally, we're critical of certain commissioners for being partial to broadcast interests."

What about the future? Co-publisher Stan Searle sums it up: "Our faith in the future of cable television and our publishing effort is based upon the growing demand for wider program



Responsibilities of associate editor Charlene Williams include compiling data for CATV Directory.



Big help in covering the news. New Mk. 21 is fully equipped for cross-country navigation.



Art director Jean Schaefer, who has been with TV&C since the first issue, supervises production department.



Sales and marketing veteran Wes Rogers recently joined the Communications Publishing Corp. team. Pictured below is artist Lee Spaulding.





Circulation chores apparently amuse Frances Poe, office manager John Bryant, and Mark Day.



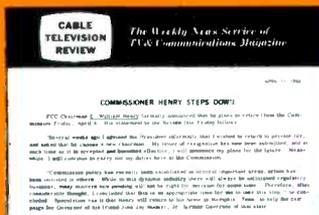
Assisting with steadily growing accounting and circulation duties is Joyce Roberts.



Jane Reynolds' varied secretarial duties include typing shipping labels for Annual CATV Directory.

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**TIME AFTER TIME
AFTER TIME
AFTER TIME
AFTER TIME
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choice. The people want cable TV; it's that simple."

To be ready for anticipated growth, Communications Publishing Corp. recently moved into new quarters. Pat Pogue, the company's business manager and a fiscal conservative, predicts that the 30% expansion potential in present executive offices will soon become inadequate. "We're already anticipating the purchase of additional property across the street for future expansion," he stated.



Advertising assistant Lorraine Friedemann personally assures careful handling of advertising materials.

For a company less than three years old, this may seem like over optimism. Stan Searle and Pat Pogue don't think so. "The folks who own and operate the cable systems across this land are a tremendously energetic, optimistic bunch of rugged individualists," says Searle. "It's exciting to be a part of this great young industry. Naturally, we have to share in the risks of CATV if we want to share in its growth."

So, that's why the only publishing company "out on the CATV limb" seems to be comfortable there. Lots of friends, plenty of pressure and a broad-band, low-loss future. □

The Elements of Pre-Sales

By W. A. Groves, Sales Manager
Cam-Tel Company

The day when a CATV operator can wire a town, make a public announcement of the availability of cable service, then sit back and watch customers line up for connections, is long past in most areas of this country. Today it takes a determined, hard-sell effort to successfully get a system off the ground with a good percentage of the potential as paying subscribers. The sales campaign during the construction and pre-opening stages will determine, to a large extent, the success or failure of a new CATV venture.

There are three elements in the successful launching of a CATV system: advance advertising, general public relations, and special promotions.

ADVERTISING

There is a definite need to educate the public *before* the system is energized. It is a mistake to assume that everyone has heard of CATV and knows all about it. You will find that even in cities which have had a system in operation for a number of years, that there are many misconceptions held by people who are not on the cable.

In preparing to open a new system, the advertising campaign should start on a low key and gradually build so as to impart a sense of urgency to potential subscribers. Start with small "teaser" ads run daily or as often as possible. From these ads, gradually build to full page or double-truck ads announcing the opening date of the system and the benefits to be derived from this new service. The advertising campaign can culminate with a special CATV supplement with ads placed by equipment suppliers, TV dealers and other well wishers. The use of color, whenever possible, gives added dramatic effect.

There are two type ads which have proven most effective in educating the public as to what the system has to offer and to impart the necessary sense of urgency. These are the progress report ads run at regular intervals during construction, and the countdown type ad used periodically before the grand opening of the system. The progress report lets the public know what is happening to *their* system, (and it should be emphasized that it is *their*

system.) The count-down ad shows potential subscribers how many days they have left to take advantage of any pre-opening specials, such as a reduced pre-opening installation charge. These ads should make prominent use of such phrases as, **DON'T DELAY, SIGN UP TODAY, — AVOID THE RUSH, CALL EARLY, — HURRY! THIS OFFER DEFINITELY EXPIRES**

In addition to newspapers, the use of radio advertising, as a supplement, should be used. The use of 15, 30 and 60 second spots, run each day during the last two weeks before the grand opening, are most effective.

The use of all other advertising media should be explored to round out the campaign. TV spots, when available, along with bus advertising, billboards, weather balloons and placards placed in shop windows, can help to reach a broader area of potential subscribers.

PUBLIC RELATIONS

The importance of good public relations to a CATV system cannot be over-emphasized. Public relations has many aspects. The beginning of good public relations is concerned with the attitude of *all* company employees toward the community and prospective subscribers. The system manager is not the only one concerned with this most important area of company operation. The girl who answers the phone, the salesmen, the installers and even the construction crews, may be the only company representative encountered by some members of the public. The actions and attitudes of these people can form impressions which will make or break the system. The watchword should be courtesy, at all times. Each employee, from the manager to the janitor, must realize that in meeting and dealing with the public, they *are* the company.

Probably the most important single segment of the public, after subscribers and potential subscribers, is the TV dealers and technicians. These are the people that potential subscribers have come to trust when they have questions about TV. No effort should be spared to enlist the cooperation and support of these people.

Here again, there is the need to edu-

cate these people as to the benefits to be derived, by them, from cable TV. One point to remember is that cable TV will give a boost to TV set sales, especially color. It should also be pointed out that improved reception on the cable will mean better satisfied customers. Let the dealers and technicians in on the action by offering them a sound and reasonable commission plan and extra incentive such as a bonus or prizes for outstanding results, saleswise.

The cooperation of other merchants should also be solicited. Let the whole business community know that the cable system is a new and very important addition which will help to pump new life into the economy.

Close press, radio and TV contact should be maintained at all times. Periodic releases should be given as to the progress and importance of this new industry.

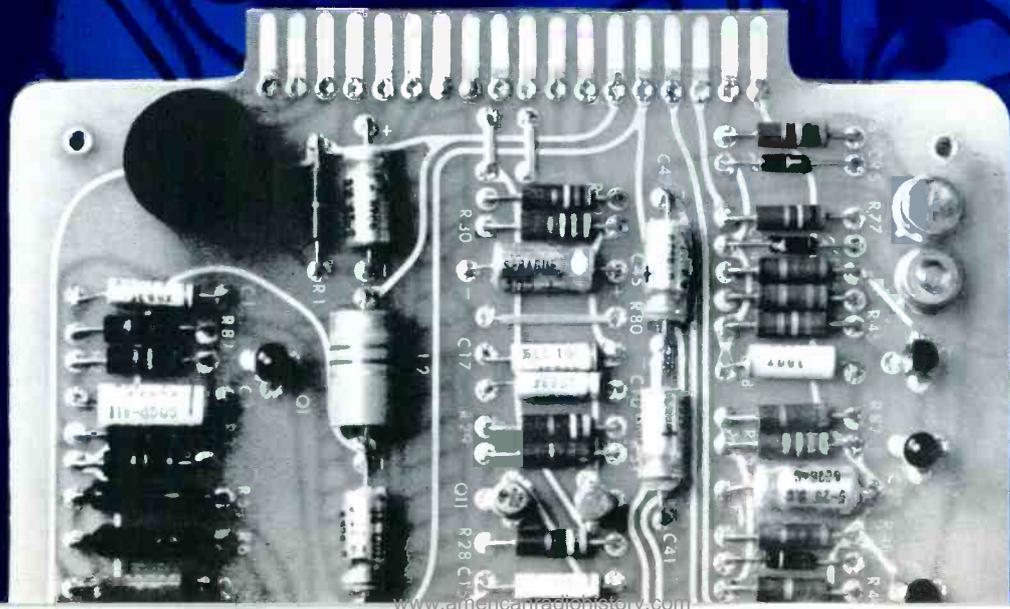
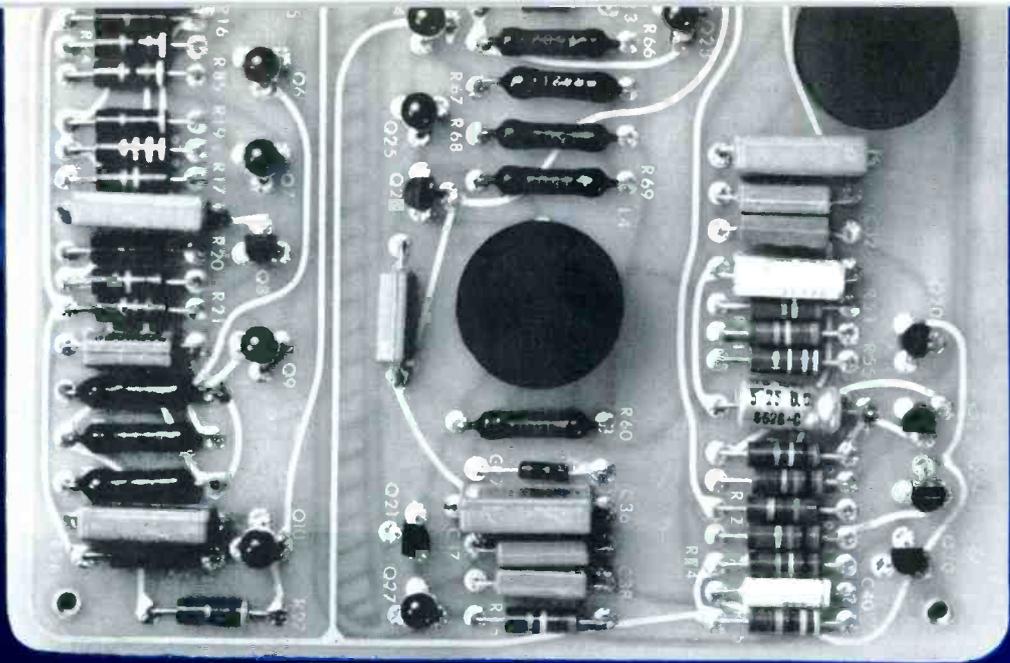
PROMOTION

The promotion campaign can take a number of forms. The most used, and one of the most successful, is a reduction or elimination of the installation charge during the pre-opening campaign. This can be called to the attention of the public by the use of direct mail, newspaper ads, telephone solicitation, door-to-door distribution, or better yet, a combination of these methods.

The promotion campaign should culminate in a grand opening ceremony. This should be publicized well in advance and there should be enough ballyhoo to generate a carnival atmosphere which will be contagious to the whole town. In order to generate this atmosphere the system should strive to have several prominent public officials and celebrities in attendance at these ceremonies.

Maximum attendance can be assured by the use of billboards, bumper-stickers, and ads which offer free refreshments, entertainment, balloons, door prizes and a drawing or contest for larger prizes.

The successful implementation of these elements can mean the difference between opening the system with a bare minimum of subscribers or with 50 or 60% of the potential pre-subscribed.



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The History of CATV in the Pacific Northwest



*Part II of a Series
By Philip D. Hamlin*

Walla Walla was a sleepy little town of 15,000 when I attended Whitman College in 1935. Wheat was its primary source of income and the "power structure" consisted of retired wheat, cattle and sheep ranchers. A wealthy sheepherder's son in my freshman class drove a 12 cylinder Packard which I coveted with an intensity not satisfied until very recently, when I bought one to restore.

WWII brought an army air base and Walla Walla was never the same. Today, the diversification of produce farming on former wheat fields and the canneries built to process them have transformed it into a thriving center with twice the population and a potential of perhaps 100,000.

The Blue Mountains and the earth's curvature prevent reception from Portland and Spokane as well as from Seattle. The 1953 population of 25,000 and the general prosperity therefore made it a natural for CATV.

Richland, 50 miles west, then owned by the federal government and operated by General Electric, had approximate-



Walt Szemanski, on a mountain top at Richland, Washington, using a marker generator to locate an interfering radar signal.

ly the same population but an entirely different social and intellectual complexion, being almost entirely scientists and technicians, with a sprinkling of the professional and business people necessary to provide "goods and services".

Wenatchee, about 95 air miles east of Seattle and 130 west of Spokane, is supported by orchards and an aluminum plant and has a total reachable population, including East Wenatchee and the nearby town of Cashmere, of perhaps 17,500.

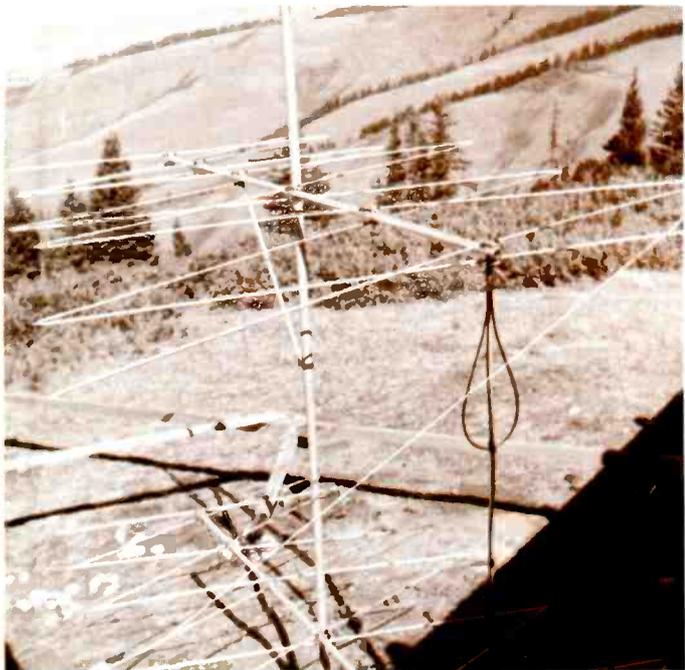
Both Walla Walla and Wenatchee were eyed by several groups but the very difficult signal situation in Wenatchee, totally ringed by mountains, and the absence of a nearby site in Walla Walla, had deterred any action prior to early 1953.

In March of that year I found a usable signal on a mountain top approximately six miles east of Wenatchee, and a "studio monitor" quality picture on a 3200' ridge of the Blue Mountains, 15 miles east of Walla Walla. The J. H. Whitney Company was then approached for financing, and in April a representative was sent to "evaluate them against the 'Whitney Criteria'".

The "evaluation" was conducted by a young fellow of approximately my vintage, but exactly opposite in personality. A former C.I.A. employee, he possessed a passion for secrecy, gathered statistics like a vacuum cleaner going over a rug and took reams of notes, all in handwriting the size of microfilm and carefully shielded within the palm of his hand.

Each evening of his four-day visit he would spend at least three hours transmitting this intelligence to the "senior partners" in New York via telephone . . . all with elaborate secrecy. They would then call him and spent about the same amount of time the following morning, relaying instructions for the day. Throughout the visit, not the slightest intimation of the feeling for or against investment was permitted to escape this "iron curtain" of secrecy.

On the last night in Walla Walla, this elaborate security broke down completely. A sleepy night clerk left a "patch cord" interconnecting the telephones of "007" and myself and when the "senior" called him for the evening intelligence session, my phone rang along with his. Fascinated, I listened on the party line while they discussed in minute detail the personalities, character attributes, and abilities of each and every person involved in the three towns. The attorney I had chosen in Wenatchee was described as of "limited" ability but highly respected to an extent that outweighed his "rather poor legal background." I found this interesting against his record as former president of the Bar Asso-

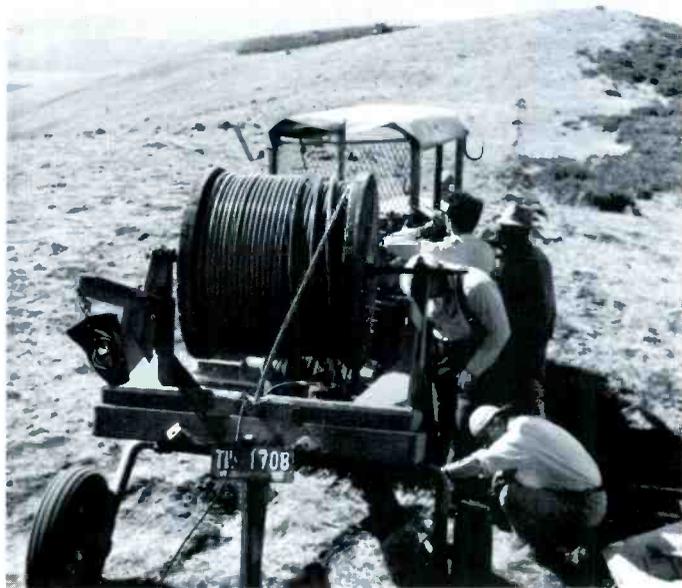


Simple, ground-level antennas at Walla Walla, Washington produced "studio monitor" pictures.

ciation and his top rating for legal skill by the lawyers' own rating agency. The Walla Walla attorney was rated highly but appeared to have excessive loyalty to me, which might pose a problem after Whitney took over. And so it went, with every person and every agency from the proposed line contractor to the managers and technicians I had selected. Finally, the computer ground out the decision. God would smile upon Walla Walla, Richland, and Wenatchee but with careful attention to all the "contingent liabilities" of these non-conforming westerners who had not attended Princeton and didn't wear Brooks Brothers suits.

In contrast to the two systems discussed in the first installment, the trio of Walla Walla, Richland and Wenatchee were projected on the major premise that TECHNICAL EXCELLENCE, UTILITY TYPE CONSTRUCTION, AND ADEQUATE FINANCING would insure their success.

These factors are more important in 1966 than in 1953, but the "brute force" of premium engineering and unlimited capital will never completely replace *strong local identification*, as an examination of these systems will reveal.



Rear view of specially designed cable plow used for burying trunklines for Walla Walla, Richland, and Wenatchee, Washington systems.

Early 1953 was a period of tremendous growth and confusion in CATV. At Jerrold Electronics in Philadelphia, four or five brilliant executives thought, worked, planned, ate and slept CATV day and night. Milt Shapp invented but failed to patent the 30 hour day, eight day week.

The pressures of decisions on the top echelon and the haste with which administrative and engineering staffs were thrown together produced an organization not unlike the military atmosphere of "hurry up and wait." The Jerrold Service Corporation, comprised of engineers who had either followed Caywood Cooley from Philco or been recruited from similar Philadelphia-based electronic facilities, is a case in point.

It was a "seller's market" and the typical field engineer performed his mystic rites and mysterious functions with the elaborate casualness of a 1920 barnstorming pilot at a county fair. Work weeks started as early as 9:30 on Monday morning, with the last straggler arriving by noon. After a casual handing out of assignments, each collected and packed his gear, then gathered for a leisurely lunch to discuss sports, problems at home, and occasionally, CATV. Departure for

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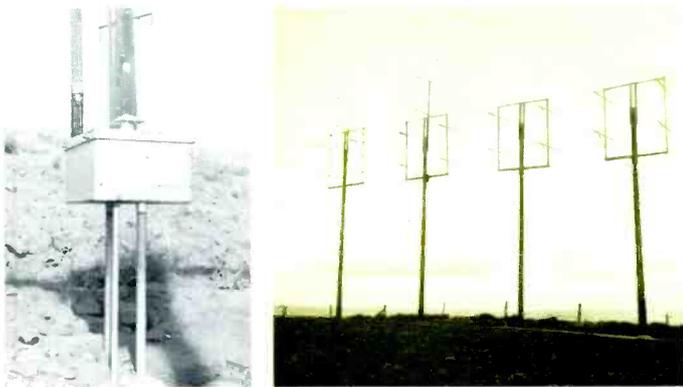
the "field assignment of the week" was dictated by (a) determining the travel time to the system, and (b) deciding the latest arrival time possible without sacrificing a chance for a room at the best motel, and (c) subtracting "a" from "b".

Most assignments were within a couple of hours driving time from Philadelphia, permitting productivity of as much as three and one half days. Departures from assignments were always at noon, by tradition. This guaranteed missing the Friday afternoon traffic and garnered a few hours of well earned rest before facing up to the two day week end.

In February of 1953 when Ron Merritt, Mildred Willman, and the author formed Video Associates, we also had a "seller's market" but no field service organization. Merritt was an inactive stockholder, which left us with an operating staff of two.

During the 37 days of Video Associates' corporate life, "Millie" wore the multiple hats of warehouseman, shipping clerk, office manager, secretary, bookkeeper, and customer complaint department, while I sold 33 days of engineering, layed out and started eleven systems, appeared before half a dozen city councils on behalf of customers, applied for three franchises under my own name, and participated in three public hearings over contested applications.

It ended with our selling Video's assets to Milt Shapp and forming, with him, Jerrold Northwest. Two Jerrold field engineers were then assigned from Jerrold of Philadelphia to help carry the load.



At left is "elephant gun-proof" amplifier case designed for Wenatchee system—others were mounted on cement bases for protection. Hamlin-designed array at right was stacked and matched with Jerrold AMN Lo networks.

The poor devils assigned to our "Siberia" on temporary duty were Kip Fletcher and Walt Szmanski. Our fourteen hour day and seven day week were a terrific shock but both dug in and for the next four months we covered an enormous amount of ground and Jerrold systems sprouted like dandelions in the Spring.

"PHASE A"

The Whitney-Jerrold formula had phases A, B, and C. Phase A was the acquisition of leases and options for antenna sites and other necessary real estate, the obtaining of all necessary city and county instruments for the use of public property, the utility contracts, and the franchises where required. It also covered the vital technical features of signal search and verification, employment of key management and technical people, and all "preconstruction planning."

Tentative antenna sites for Walla Walla and Wenatchee had been chosen more than two months before the start of formal "Phase A's" and confirmation in Walla Walla where the "line of sight" signals were of studio monitor quality, was a mere formality.

The Walla Walla site, twelve miles from the city limits and high in the Blue Mountains, posed several problems in that primitive era. First, the nearest pole line and power was more than four miles from the site. Second, the owner of some of

the real estate over which we had to pass was simply unapproachable, having set his heart on acquiring either half the system or a million dollars, and third, twelve miles was an extremely long run.

A memorable trip from the antenna site began one evening about an hour before sundown, when Kip Fletcher and I decided to research a different route. Having a great deal of faith in war surplus Jeeps, I headed down the mountain and straight through a large area of underbrush. Progress was excellent for about a hundred yards, with young trees cracking musically before the force of our downhill run and accumulated speed. Suddenly we took off like a skier over a jump, fell about 25 feet, and landed gently on a cushion of small trees.

Four wheel drive is worthless when your wheels are two feet off the ground, and trees in front and behind had us locked in solidly. Since it was rapidly getting dark and we knew there were at least three miles of mountain before the first road, we seized the only valuable in the Jeep—a bottle of Rittenhouse Rye—and proceeded down the dry creek bed.

It was pretty rough going but just like the survival manuals say, all streams eventually lead to civilization. As we strolled happily down the road towards town I took an occasional sip of the Rye and called Kip's attention to the beauties of the West, the virtues of fresh air, and what a lovely night we had chosen for a stroll. As blisters formed on blisters, for some unaccountable reason he chose to take a negative view of the entire adventure, making some uncalled for comments and being very unkind about the West in general and Hamlin in particular. When it began to rain and it appeared I had erred in suggesting we leave our coats to save weight, relations deteriorated further and the balance of the trip was made in silence broken only by the popping of blisters. And so the West was won.

The Walla Walla franchise application for "Philip D. Hamlin, his successors and assigns" was heatedly disputed by another group headed by Elroy McCaw, leading to the inevitable "public hearing."

At the hearing, Mr. McCaw arrived flanked by a small army of people of whom about a dozen were introduced as radio executives from other northwest cities who proposed to give up their homes and positions to bring the "cultural revolution" to Walla Walla. In fact, most of them appeared to have already made the move and talked pathetically of the great hardships they would incur if "eastern capital" were allowed to take over. Mr. McCaw then related his interpretation of various conversations between us, which in synopsis, seemed to support his belief that Hamlin and Jerrold simply filed franchise applications to thwart him.

The performance of this "blue ribbon line up" was impressive and I scarcely shared the calm with which our attorney, Cam Sherwood, listened to their presentations. Finally, it came his turn to question our opponents and as he asked, first innocently and then insistently about the cold, hard facts of CATV—antenna sites, layouts, pole contracts, capital committed—they struck out!

We had done our homework. We showed the layouts that Kip had worked on continuously for three weeks (he brags about the one Sunday in four months of labor out here when he sneaked away and took the whole day off, but I don't remember it), we showed our "log" of continuous monitoring of the antenna site, our property leases, our telephone and power contracts, and finally, our "proof of financial capability". We got the franchise.

I would like to think we won it on points. True, I attended Walla Walla's Whitman College and still held the conference records in high and low hurdles from 1936, and the mayor *was* the former football coach and the commissioner of streets the former track coach, but I am sure *that* didn't affect their thinking.

Wenatchee was a very different story. Here we had a serious public relations problem—our competitors were truly local—the dominant of the two local radio stations. The manager, Jim Wallace, was well liked. George Frese, their engineer, had a substantial following, lots of talent, and no fear of hard work.

We had no “local identification” worth mentioning and after the two franchises were issued and both systems began cabling the town, the battle that developed made the feud between the “Martins and the Coys” look like a Sunday school picnic. The local newspaper had a difficult time deciding which enemy to attack and finally adopted a policy of inflicting its wrath on the radio station one day and those “eastern capitalists” the next.

The Richland “phase A” was still another story. Owned by the government and operated by General Electric, Richland was populated by scientists and skilled technicians.

Although the homes were provided at less than half the realistic rent and the finest municipal services were provided without taxation, there was trouble in Paradise. While surrounding municipalities smarted at the competition of high salaries paid to firemen, policemen and other municipal employees, and their citizens complained about high taxes, Richland-ites rationalized they were being oppressed because they were denied “ownership” of their homes and “self government” of their city.

The prospect of paying for CATV hit them like a cold shower. They were conditioned to free utilities and after all, if they couldn't own their homes, why couldn't the government or G.E. furnish them with cable service?

The result was complete indifference by the public, the press, and even by our own attorney. The latter dragged his feet until we were forced to violate a basic phase A tenet of “always using local talent” by firing him and bringing in

Cam Sherwood from Walla Walla. Cam had an instrument from G.E. within the week—not a Franchise but a form of license.

Signals at Richland were an extreme problem. The only available site “looked” directly over the oldest, noisiest 50 KV power line ever constructed. By tuning to any low VHF channel and using a yagi antenna pointed at the line, one could “home” on the discharge noise from each insulator.

To solve this problem we constructed a 32 element array. Each element was a cut-to-channel yagi with one reflector one driven element, and eight directors.

To compress the antenna pattern vertically and blind it to the power line noise below, we stacked these yagis four high and then put the four vertical stacks of four in a configuration eight wide, for very narrow angle.

During the preparation of the harnesses we were disappointed to find that the theoretical 3 db gain from stacking rarely measured 2 db and that as we stacked two sets of two vertically and then two vertically stacked sets of four horizontally, these gains dropped to 1-1/2 or less.

Since the harnesses were predicated upon the published 66% velocity factors *and* the alleged impedances of cable, antenna, and fittings, I decided the problem lay with errors in each. I further deducted that “lumped constants” with either inductance or capacitance made adjustable, might achieve the desired stacking gain.

We placed a call to Jerrold of Philadelphia and soon had the “chief brain in a vacuum” building our morale by insisting it couldn't be done. Since experience had indicated anything he declared to be impossible was rarely even difficult, we soon had several people scurrying about looking for an “off the shelf” item that might be adapted for the purpose.

I found it in the Jerrold AMN-LO, an “antenna mixing network” designed for apartment houses. Having no brain

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at all, the AMN didn't know it couldn't work and performed beautifully—in fact, we discovered to our amazement that “diddling” the adjustments would “mate” two antennae or any combinations of pairs and exceed the theoretical 3 db stacking gain! As Lee Hallett, Jim Forgey, Kip Fletcher, and any of the others present will confirm, average stacking gain per pair was 3-1/2 db!

Since simple mathematics will prove this impossible, we searched for the reason and promptly found it.

In step “a”, we would measure the signal off each antenna and read, let us say, 50 microvolts. In step “b” we would measure the “stacked” antennae and read 80 microvolts. The discrepancy of the stacking exceeding the theoretical gain was drastically improved because the alleged 300 ohm terminal point was not 300 and the balun that transformed it from the alleged 300 to the alleged 75 of the “down lead” was also false.

The AMN's tuned circuits didn't give a darn what these various impedances actually were; it just let us “diddle” the adjustments until the line looking up to the balun, the balun itself, and the terminals of the antenna were all sufficiently better matched at the picture carrier frequency to achieve a better “energy transfer.” In other words, more water was being poured down the sink instead of being spilled over.

Two years later, true to form, the “chief brain in a vacuum” designed an excellent, highly stable antenna stacking network, based upon the AMN which he still claimed couldn't possibly work, although by that time we had installed it in more than a dozen fringe area installations and were using it to “stack” rhombic and long wire “V” antennae!

The 32 stacked 10-element yagi antenna at Richland, when completed, developed an average measured signal of 250 microvolts daytime, amounting to an increase of 15 db over a single 10 element yagi and, working with the directivity or

“hat type compression” of the pattern, keeping us out of the visible power line noise at least 90% of the time.

Meanwhile, back in Wenatchee . . .

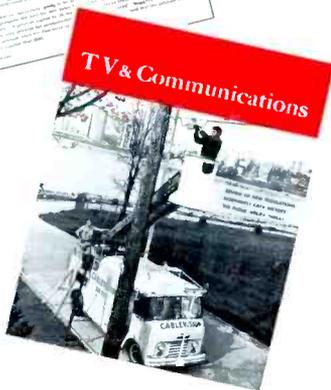
As a rule of thumb, signal location follows three paths. First is the study of topogs to determine logical signal paths. Second is the actual checking of the site with aircraft and ground parties, and last is the intensive search for some technician or home owner who may have accidentally discovered a refracted “hot spot” that defies all predictions but nevertheless is better than the signal found at the predicted locations.

In Wenatchee, we “discovered” a signal by talking to a local TV technician who had installed a set for a wheat farmer living on top of Badger Mountain. Continuous monitoring seemed to confirm adequate Spokane signals with infrequent fades.

The “Badger” site was the first and last at which we probed vertically with a helicopter. A crop duster, operating from nearby Cashmere, generously agreed to perform this service for \$100 per hour. I rigged a field strength meter, a six to 110 volt vibrator power supply, and a small Philco portable TV set into a single package and after several ground tests to determine the noise created by his rotors, we took off for the site.

The 30 mile trip was uneventful until we were about to descend at the site, at which point the pilot asked casually if it would be necessary to “hover” at any point between 20 and 100 feet above the ground. Since we had very little intention of building a tower more than 100' or less than 20', I told him this was exactly the range over which we would need to hover. He then told me how he lost his partner in a similar operation. It seems that particular bird will not “autogyro” in less than about 105' and engine failure in the area between about 30' and 100' is certain death at the upper ex-

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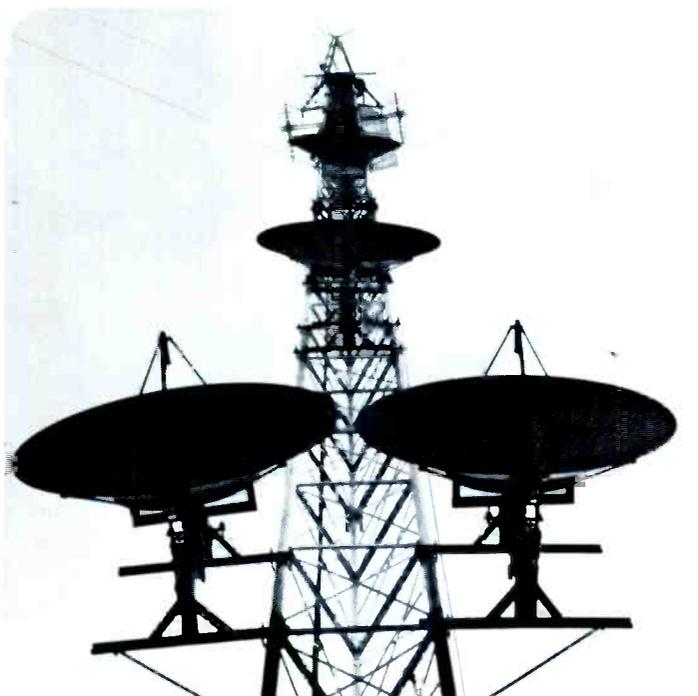
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P. O. BOX 8597 • FORT WORTH, TEXAS • (817) JE 6-5676



treme with various gradations down to a possible fractured pelvis at 30'.

We made one descent from 200' to 10' but the only reading I could get was broad, tunable noise. We then landed and with the rotors idling, found that during the trip up we had somehow developed an electrostatic charge on the rotors not measurable in the tests before takeoff. Attempts to discharge them with the whole machine shut down had no effect.

Final vertical antenna placement was determined by portable tower. A vital factor to remember in vertical orientation is that the actual signal, whether transmitted or received, arrives or departs the midpoint between stacks.

CONSTRUCTION

The problem of crossing the recalcitrant wheat farmer's property in getting from the Walla Walla antenna site to the nearest road was solved by some careful sleuthing on the part of Cam Sherwood. A search of the records revealed a 20' easement granted to a sheep rancher to move his sheep from lower to upper pastures. Although there was considerable doubt about its validity, we obtained an "easement on the easement" and buried our cable while the overzealous wheat rancher was busy with his chores. I am not sure if he has ever discovered this uninvited stretch of cable.

Walla Walla was a "first" in many respects. To my knowledge, it was the first time large diameter, low-loss cable had been plowed into a mountain-side. It was perhaps also the first time 440 volts had been sent up such a cable for powering the antenna site. For numerous rodents who fancied the taste of the outer vinyl, the first bite was also the last.

Kip Fletcher's Walla Walla layouts, purposely shortened by 20% from standard Jerrold recommendations, proved the absolute necessity of "fielding" all systems. The pole line charts supplied by one utility were "stretched" and those by

the other were short. Only after construction started and sections were activated did this become apparent.

The sections that were "fat" with signal presented no problem but the areas that were stretched caused very severe snowstorms in the heat of summer. This precipitated another interesting controversy with the "brains in a vacuum" who suggested we use low noise, single-channel preamps in front of the strip amplifiers that produced "snow" due to the very weak input signals of -10 to -12 db. We, in turn, demanded that the factory utilize the new, high output capability 12BY7 with which Blonder-Tongue was then setting sales records, to produce high output, single-channel strips. They didn't, so we quietly rebuilt standard strips in our Seattle shop and Walla Walla became the first system in the Northwest to distribute at 66 to 72 db outputs.

With the exception of the "stretched" outputs, Walla Walla had no technical problems of any kind and to this day, sets a standard for picture quality unmatched by any Northwest system.

Wenatchee was another story. The antenna run started with two miles of pole line blasted into solid rock, then went underground in soft sand to the edge of town.

Amplifiers were placed in armored boxes . . . partly because the friendly natives love to "ricochet" .22 slugs, and partly due to suspicion some might use elephant guns in support of "home talent."

KPQ was first to deliver a picture, but of very inferior quality. Their antenna site was of rather low elevation and the superiority of our pictures from Badger Mountain was vital in the decision to compete.

After our antenna site was in and the run to town completed, the opposition borrowed a trick learned from us and plowed cable to a mountain site more than a thousand feet above ours. The immediate results were not impressive, due

BENCO wants to see **YOU** at the **NCTA CONVENTION . . .** **Booths 708 - 709**

Meet old and new faces . . .

Get acquainted with the:

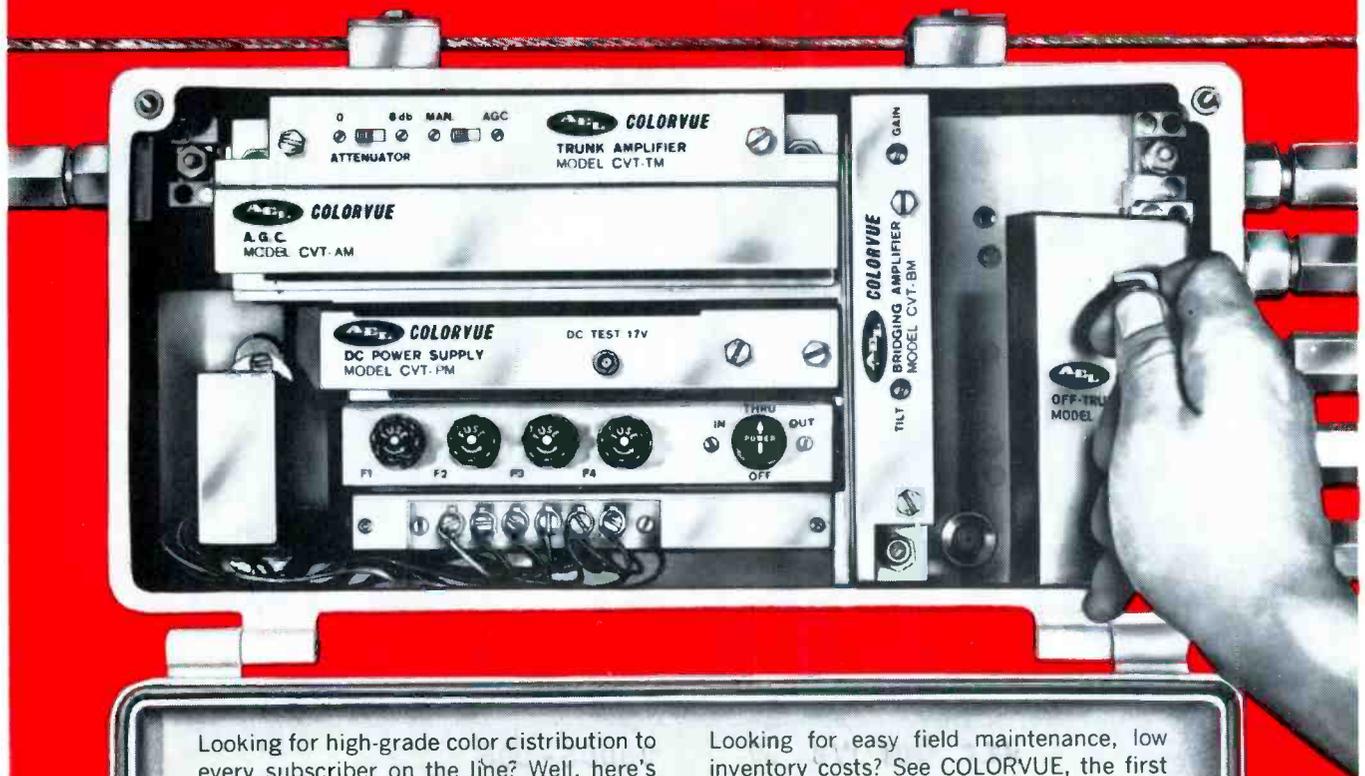
★ **BEN PRE** ★ **BENEX** ★ **BENFEED**
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BENCO TELEVISION ASSOCIATES
27 Taber Rd., Rexdale, Ont., Canada
Telephone: 244-4296 Cable: BENCOTV



BENCO TELEVISION CORPORATION
Post Office Box 10068
Jacksonville, Florida 32207

PLUG IN FULL COLOR FIDELITY WITH **COLORVUE** CATV TRUNK-LINE AMPLIFIERS



Looking for high-grade color distribution to every subscriber on the line? Well, here's the amplifier with the high output, high gain, flat response and 50 to 220mc bandwidth that delivers studio quality signals across all 12 channels . . . even with 50 amplifiers cascaded.

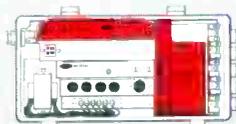
Looking for easy field maintenance, low inventory costs? See COLORVUE, the first truly modular amplifier. One basic housing, and five individual units that plug in - in the field - in seconds, and with 1 to 4 feeder lines. Sound good? So is the price! Only \$550.00 loaded.



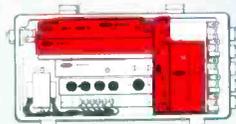
Basic housing with Trunk Amplifier/ DC Power Supply modules.



Basic housing with Trunk Amplifier/ AGC/ DC Power Supply modules.



Basic housing with Trunk Amplifier/ Bridging Amplifier/ Off-Trunk Splitter/ DC Power Supply modules.



Basic housing with Trunk Amplifier/ AGC/ Bridging Amplifier/ Off-Trunk Splitter/ DC Power Supply modules.



CATV DIVISION

American Electronic Laboratories, Inc.

RICHARDSON ROAD, COLMAR, PA. • Phone: 215-822-2929 • TWX: 510-661-4976

Correspondence: Post Office Box 552, Lansdale, Pennsylvania 19446

to exclusive use of then available broad-band amplifiers. However, just as our "public showing" approached, our antenna site developed extreme fades of long duration, while their problems began to be resolved.

All downtown construction was completed with a haste that belied any great care and the pressure to generate connections and halt the reverse "cash flow" created many unprofitable runs to connect single customers. Only the patience and ingenuity of Lee Hallett, then chief technician, kept the delivered pictures of passable quality.

After about six months of intensive and costly competition, KPQ sold to Whitney and the destructive competition came to an end. The damage in public relations, however, was permanent. Illegal translators started in the Wenatchee Area and thousands of connections, acquired at great cost, were abandoned to receive the "free" pictures which the FCC calmly permitted to continue in flagrant violation of the law.

An interesting side light on the Wenatchee "feud" . . . occurring at a time when the townspeople were divided equally into a group that accepted the rumor "Jock" Whitney's grandfather made his fortune in the slave trade and a second insisted he made it running dope . . . was a meeting between George Frese and myself during which we discussed a television transmitter he was building in his basement for KVOB in Bellingham. The "final" was completed and George was frustrated by lack of a "dummy antenna" to dissipate the output during testing. I looked at the two dozen reels of 1-1/2 inch coax lying in his front yard and suggested he terminate about 15,000 feet of cable in a 72 ohm resistor and feed his several kilowatts into the other end. He did and it worked fine. This "cultural exchange" between rival engineers, in the heat of the battle, is typical of the breed the world over.

Richland Construction was the easiest and best of the three. Circular layout of the city, with a perimeter drive and with all poles in alleys, permitted maximum economy of active and passive elements.

CONCLUSION

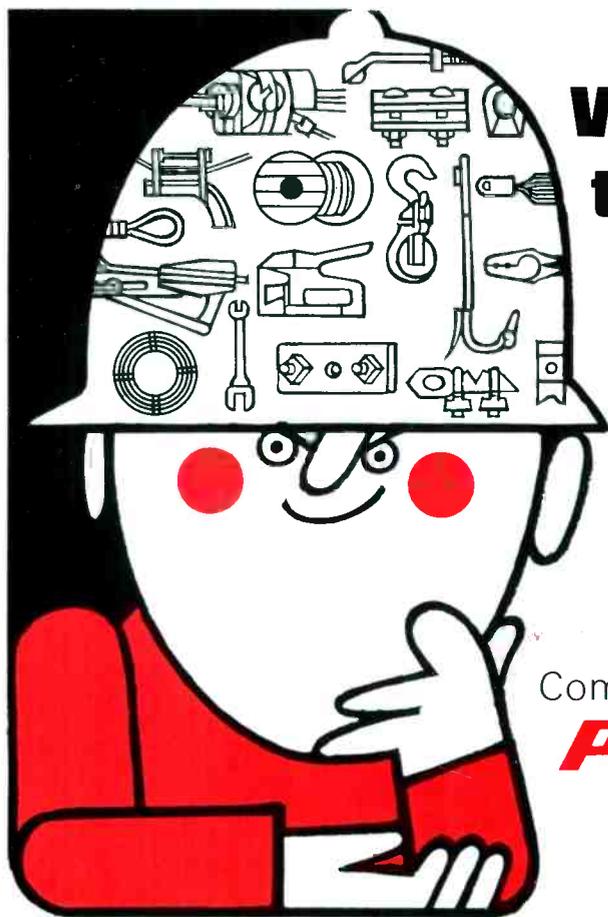
The three Whitney-Jerrold Systems, installed in 1953, had every technical and physical advantage over the Raymond and Aberdeen Systems discussed in last month's installment, yet none met with anything like the success when measured in terms of return of capital and "cash flow." The answer must lie in the "local identification."

Richland, four years after construction fell far short of expectations with only 1700 connections, against a potential of more than 6000. Walla Walla in the same period hit 3500 connections against approximately the same potential.

Wenatchee is the saddest story of all. With only 60% of the potential of either of the other cities, the Wenatchee system had 2 1/2 times the miles of cable and more than double the number of "active" elements. In spite of this enormous physical plant, connections in four years totalled only 3800 and this dropped to less than 1400 when illegal translators began spraying the area with free signals.

My personal feeling about Wenatchee is that KPQ, with its "strong local identification", and its counterparts in Richland and Walla Walla might have achieved a much faster penetration while avoiding the varying degrees of active public resentment in Wenatchee, total indifference in Richland, and initially warm acceptance in Walla Walla which faded to lukewarm support after "Phase A."

Obviously this is the current feeling in the industry, with capital groups offering "standard package" equity proposals of 20% to local groups who will provide the "local identification." □



We're thinking all the time . . . of CATV

and have been ever since the industry was founded practically in our backyard. We pioneered in supplying the earliest cable systems and have continued supplying CATV construction throughout the industry's rapid growth.

If you're thinking—of CATV...

you can benefit from our long experience and large inventories of the top lines of supplies you'll need. You'll build your system with the least possible expense, waste and delay if... when you think of CATV, you think of Pruzan first!

Communication, CATV & Power Line Supplies

PRUZAN COMPANY

PHONE 206+624-6505
1963 FIRST AVENUE SOUTH, SEATTLE, WASHINGTON 98134

Now—TWO from the leader!

SUPERIOR

Coaxial Cables for CATV

75 ohm coaxials with
"Coppergard"
corrugated copper shield



Cello-O-Air® expanded polyethylene dielectric for aerial installations.
"Solid-D" solid natural polyethylene dielectric; for direct burial installations.

75 ohm coaxials with
"Alumagard"
solid aluminum shield

Newest addition to the quality line!



For aerial installation.

Cello-O-Air® expanded polyethylene dielectric; extra high strength solid aluminum sheath.

As the community antenna market expands, decisions concerning choice of coaxial cable become more critical. Installing less than the best can be an increasingly costly mistake.

That's why it is important to know that millions of feet of Superior's Coaxial Cable are already in service; and performance records for each passing year continue to confirm their built-in reliability.

Long-term transmission stability and full spectrum capability are assured. You can count on the use of all available frequencies, with no attenuation discontinuity; none of the skipping and jumping frequencies often found in ordinary cable.

**BOTH TYPES—"Coppergard" Coaxials and "Alumagard" Coaxials—
CARRY SUPERIOR'S FIVE-YEAR GUARANTEE!**

*For performance—
call Superior!*



SUPERIOR CABLE

Superior Cable Corporation • Hickory, North Carolina 28601

CABLE TV—KEYS TO THE CITY

... A Powerful Pre-opening Promotion

By Abram E. Patlove Promotion Manager
Alpine Cable TV Pleasantville, New Jersey

Alpine Cable TV, with main offices in Pleasantville, New Jersey, serves southern New Jersey communities of Absecon, Pleasantville, Linwood, Somers Point and Egg Harbor Township. This area is situated just west of the resort community of Atlantic City, New Jersey at an approximate distance of 60 miles from the Philadelphia television transmitters.

The service area is linked by 97 miles of cable passing approximately 8000 homes, with a TV offering consisting of:

Channel	Call Letters	Network	Location
3	KYW-TV	NBC	Philadelphia
5	Closed circuit time and weather service with background music.		
6	WFIL-TV	ABC	Philadelphia
10	WCAU-TV	CBS	Philadelphia
12	WHYY-TV	Edu.	Philadelphia/ Wilmington
17	WPHL-TV	Ind.	Philadelphia
29	WIBF-TV	Ind.	Philadelphia
40	WCMC-TV	Ind.	Wildwood
48	WKBS-TV	Ind.	Philadelphia

Defining The Problem

Alpine, according to the terms of the ordinances under which they operate, has no initial connection charge for cable service.

As a result, attempting to formulate an exciting theme for a pre-opening sales campaign proved most difficult since any interested viewer could sign up for cable service at any time, at no charge.

Toward this end, several "brainstorming" sessions were held; the entire package was reviewed, dissected, stitched together and again pulled apart.

Of primary importance in the campaign initially, were the underlying factors making the area attractive for CATV. These factors included:

- (1) Prominence of 35' to 50' antenna towers.
- (2) Corrosion of antenna elements due to salt spray conditions.
- (3) Loss of antenna installations due to severe storms.

- (4) Fairly reliable TV reception on only 2 VHF network channels.
- (5) Varying atmospheric conditions playing havoc on new UHF telecast reception; either poor in quality or non-existent.

After considering these, and other TV reception problems of the area, discussions centered on the matter of defining the problem. That is, (a) what message were we trying to convey, (b) how could we best get the message across effectively and (c) how, at the same time, might we overcome an anticipated degree of complacency on the part of potential subscribers. After all, since the installation is always free, why shouldn't people wait until after the system is turned on to sign up.

First an initial plan was formulated to determine the basic elements of the campaign, which evolved as: (1) sign up now for a free hook up before the system is complete and (2) receive a 10 day free trial when service begins; (3) 9 channels of clear, reliable TV; (4) no obligation . . . no contract to sign; (5) no antenna worries; (6) no UHF converters needed; (7) monthly service amounts to less than 14c per day . . . only \$4.00 per month; and (8) new programming to be available on the cable.

The Media Approach

Media selection, based on established goals of the campaign, represented a most interesting challenge. In attempting to select the best medium or combination of media, the following factors among many had to be taken into consideration:

- (1) The communities encompassed by Alpine's service area received daily (A.M. only) newspaper coverage from Atlantic City, New Jersey.
- (2) The circulation area of the Atlantic City newspaper included 2 other CATV operations, with different CATV offerings and rates from those of Alpine.
- (3) A weekly paper, covering Alpine's service area was available, but with limited circulation.

Careful evaluation of these complex factors lead to the selection and use of the following media:

Daily Newspaper: Regular advertising schedule using color for emphasis plus return coupons in each ad — various appeals used due to frequency of ads — various size ads used — community identification.

Weekly Newspaper: Generally large (1/2 page or full page) reader ads to carry for the weekly period.

TV Cable Handbook: System brochure covering all elements of the promotion plus a post paid return card. Rather than direct mail, direct house-to-house distribution was found to be more economical.

Radio: Selected 2 most popular stations of three available to supplement the hard sell portions of the campaign.



The cable company's office was used for "miniature grand opening." Each local dealer displayed one set.

Bus Ads: Used to cover the main travel routes to and from work (front and rear outside panels used plus several interior locations).

The Plan

Review of the basic elements and appeals of the campaign revealed that cable service, during this pre-operational period, was not being sold, but "given away."

Since there was (a) a free connection, (b) a 10 day free trial when service began and (c) no contract to sign, a viewer need not buy, but merely try, at absolutely no risk.

Under these ground rules, the approach taken was that of urgency to get on the cable service now so you won't have to wait perhaps two or three months for a hook-up after our crews leave the area.

The thought triggering comment heard was, "... all we need is a key to everyone's house ...". This led to Alpine's "Magic Key for Cable TV" program in combination with the other campaign elements.

Since advanced progress reports and our initial ads (which included return coupons) had accumulated ap-

proximately 500 applications, work crews were hired to install dead taps. These crews were paid on a per installation basis.

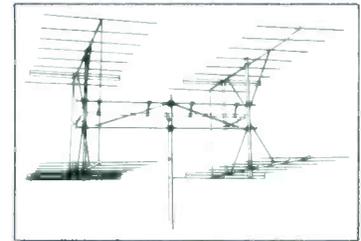
Further, since the men were already in the area to install pre-ordered taps, they were also in an excellent position to solicit additional orders house to house, except that the message had to be pre-delivered for them. The "Magic Key for Cable TV" was to do it for them and do it effectively.

The Magic Key For Cable TV

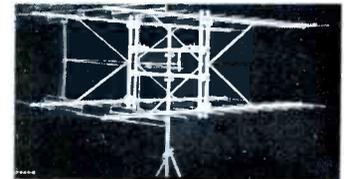
Alpine's "Cable Key" idea materialized as a 10" door hanger, die-cut in



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



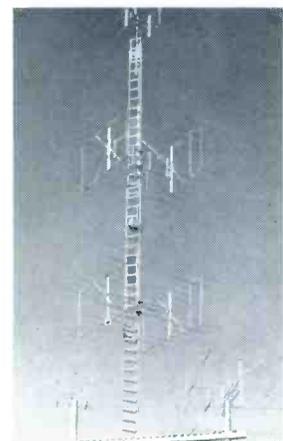
Model No. SHD 32-4 Channels 2 to 6



Model No. SHD 48-4 Channels 7 to 13

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

HEAVY DUTY QUADS AND YAGIS



Ask about SITCO MD Series Antennas
WRITE FOR FREE SITCO CATALOG

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



PATENTED SITCO WEDGE SCREW FASTENERS

SITCO Antennas

10330 N. E. MARX ST. • P. O. BOX 7691
PORTLAND, OREGON 97220

WATCH FOR your MAGIC KEY FOR CABLE TV

... it will open the door to the brand new, exciting world of TOTAL TV ... ON THE CABLE

YOUR "CABLE-KEY" WILL BE DELIVERED SOON!

ALPINE CABLE TV IS GOING TO MAKE FREE HOOK-UPS TO EVERY HOME IN OUR CABLED AREA

... because the TV CABLE is the only way to get really good reception all of the time ... and on 9 CHANNELS! YES, 9 Channels of sparkling clear color and black and white TV reception with

- NO ANTENNA or CONVERTER WORRIES
- NO CONTRACT TO SIGN
- NO DEPOSIT REQUIRED
- NO OBLIGATION

... and a 10-DAY FREE TRIAL to boot!

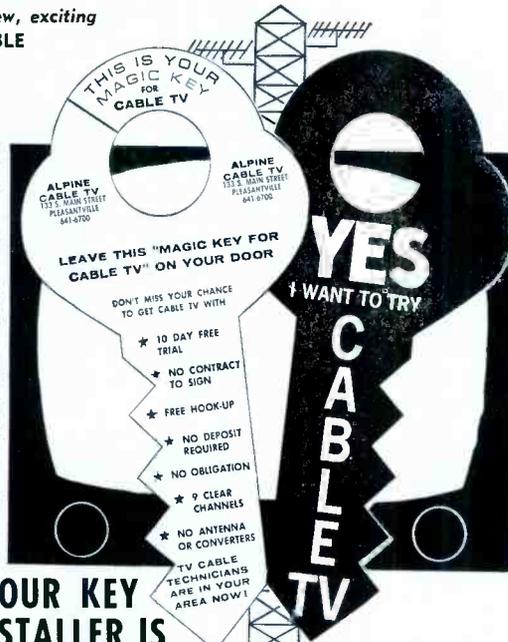
So, DON'T WAIT ... and miss your chance for early TV Cable Service ... once we leave your area, we can't come back until every street has been completed ...

... later orders will just have to wait!

YOU WILL RECEIVE YOUR KEY WHEN A TV CABLE INSTALLER IS ON YOUR STREET—LEAVE IT ON YOUR DOOR FOR A FREE AUTOMATIC HOOK-UP

ALPINE CABLE TV ... serving Pleasantville, Absecon, Linwood, Somers Point and Egg Harbor Township.

MAKE SURE THAT YOU ARE AMONG THE FIRST ON YOUR STREET ... SEND IN THIS HANDY COUPON NOW!



ALPINE CABLE TELEVISION, Inc. 2/21
125 SO. MAIN STREET
PLEASANTVILLE, N. J.

GENTLEMEN—

Yes, indeed! I want to take advantage of the special cable installation free offer. I understand that this is no contract—no obligation—free trial! I want to be among the first to be connected to the TV Cable when the service starts from your line in my neighborhood.

NAME: _____
PHONE: _____
ADDRESS: _____
CITY: _____ ZIP CODE: _____ STATE: _____

Full page ads were used to promote and explain the "Magic Keys" program. The two-color ad shown repeats most sales points used, as well as introducing the Magic Keys.

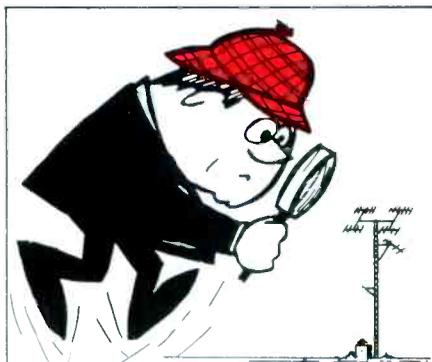
the shape of a key. The copy side of the key gave complete information on the elements of our CATV service plus the meaning of the key, with reverse side done in white on red (reverse printing) with the words "YES, I WANT TO TRY CABLE TV."

Heavily, and in a concentrated manner, we publicized that crews are going to be scheduled on an area by area basis to make free hook-ups, and once they left an area, they would not return to connect later orders. The wait could be perhaps two or three months after that. An incentive campaign was developed to induce the tap-off crews to make door-to-door solicitations with the "Cable Keys." And, finally, a heavy ad campaign was formulated to precede the "keys" and thoroughly educate the public on their meaning and use.

Implementation Details

Urgency: in order to stress the urgency of being early to sign up for service, ad copy was developed, led by a "DON'T BE LEFT BEHIND" theme, relative to cable trucks making hook ups on their respective streets.

Education: the kick-off of the "Cable Key" educational campaign took the form of a full page color ad titled,



**IF YOU'RE LOOKING FOR
A CATV SYSTEM
INVESTMENT ...**

Contact

James H. Coleman
CATV BROKER

Specializing in cable television systems in the Southeastern United States.

**COLEMAN INSURANCE
AGENCY**

414 - 22nd Avenue • Tuscaloosa, Ala.
(205) 758-4486

"Watch for your Magic Key for Cable TV," which was to be delivered soon. It went on to clearly explain that when their key is received, it means that cable installers were on their block and all they needed to do is hang out their key with the red side facing the street for an automatic free hook-up.

This was followed up by a series of smaller ads plus inserting of slugs on the cable key in every subsequent ad.

Alpine Cable-Key Contest

Tap-off teams: Alpine's 18 installation crew members were divided into

9 two man "teams." This division was for contest purposes, not for actual installation work.

Team territories: Alpine's entire service area was geographically divided into 18 comparable territories. Each 2 man team was given exclusive rights to 2 adjacent territories. Regardless of whether a cable hook-up was made in a territory as a result of the "Magic Key," mail, phone or direct sign up at our office, the team was given credit for that business.

Team & contest time: The cable key contest was run weekly for 6 weeks.

THURSDAY, MARCH 17, 1966, ATLANTIC CITY, N. J.

ATLANTIC CITY PRESS

PAGE FIVE

DON'T BE LEFT BEHIND

when **FREE TV CABLE HOOKUPS**

are being made on **YOUR STREET** in **Linwood, Absecon, Pleasantville, Somers Point and Egg Harbor Township**

LOOK FOR THESE TRUCKS! ... They are the TV CABLE crews which will be making FREE HOOK UPS to the TV CABLE on your street. Your neighbors have been signing up by the hundreds, and our backlog of TV CABLE connections is growing and growing. This means that when the ALPINE TV CABLE trucks reach your street, they will be making installations in those homes which have already SIGNED UP in the early connection group. When the TV CABLE crews move to the next street, they will not return to connect later orders until every street has been serviced. So ... get your FREE HOOK UP to the TV CABLE early, and enjoy the magic of 9 CHANNEL RECEPTION OF BRILLIANT BLACK & WHITE and CAPTIVATING COLOR TV ... with no antenna or converter worries.

Why not BE AMONG THE FIRST to enjoy this NEW WORLD OF TV ENTERTAINMENT ... LOOK FOR THESE TRUCKS and STOP THEM from leaving your street before you've been given a FREE HOOK UP to the TV CABLE. Remember, there's NO CONTRACT for you to sign; you're under no obligation for any length of time ... and we're so positive that you will be thrilled with this NEW WORLD OF TV ENTERTAINMENT, that we'll let you prove it to yourself ... on a 10 DAY FREE TRIAL. After that the monthly service charge amounts to less than 14¢ per day ... only \$4 per month. So, DON'T BE LEFT BEHIND ... LOOK FOR THESE TRUCKS and get your FREE HOOK UP to the TV CABLE.



A Bright New World of TV is Yours!

with a **FREE HOOK UP** to the **TV CABLE**

**9 CHANNELS OF
CLEAN-CLEAR TV**

- 10 Day Free Trial
- No Contract to Sign
- No Obligation
- No Converter Needed
- No Antenna Needed
- No Flutter or Fading

Monthly Service Charge Only \$4
(Less than 14¢ per day)

**ALPINE
CABLE
TELEVISION**

See Your Favorite TV Dealer Today or Stop In At Our Cable Headquarters at 133 So. Main St. Pleasantville

Use This Handy Coupon NOW

ALPINE CABLE TELEVISION, Inc. 3/17
133 SO. MAIN STREET
PLEASANTVILLE, N. J.

GENTLEMEN:
Yes, indeed! I want to take advantage of the special cable installation Free Offer. I understand that this is no contract — no obligation — free trial. I want to be among the first to be connected to the TV Cable when the coolest cable lines come into my neighborhood.

(NAME)

(PHONE)

(ADDRESS)

(CITY)

(ZIP CODE)

(STATE)

"Don't be left behind" theme brought good results in conjunction with installation crews use of the Magic Keys. This two-color full page stresses the line, "look for these trucks."



1890

1966



ONCE UPON A TIME THERE WAS A COMPANY



... It made all sorts of useful things



like d/c battery chargers ...



air cooled engine-

generators ...



emergency standby electric

power supply units ...



and other fascinating equipment. In fact, this company



still does. Many of you know the company we're talking about— **UNITED STATES MOTORS CORPORATION.**

Giants of industry and those responsible for our defense posture did business with it you know when— AND NOW! It continues to build quality products— more sophisticated of course— but then what isn't today! It has highly sensitive "No-Break" MICRO POWER Electrical Plants ... Standby Emergency Power Equipment



on wheels ... without wheels



... and in capacities ranging from only 500 watts to 750 KW. Its plant is modern



inside and outside



Its equipment is used in communications systems ...



computer systems



... in hospitals and



schools, and by industrials to protect special processes from losses due to power outages. Applications are virtually unlimited. Let's get together. Our sales and service centers are—



NEW YORK AREA
855 Riffle Street
Phone 382-1631 (201)
Rahway, New Jersey 07065

SAN FRANCISCO AREA
8 Echo Lane
Phone 388-1992 (415)
Mill Valley, California 94943

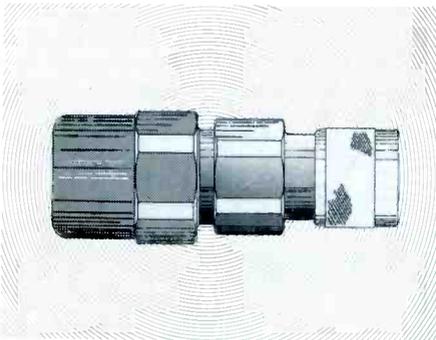
MIDWEST AREA
339 West 20th Street
Phone 231-4560 (414)
Oshkosh, Wisconsin 54901

UNITED STATES MOTORS CORPORATION
OSHKOSH, WISCONSIN

from

COMMUNICATION DYNAMICS

the New Standard of quality in CATV

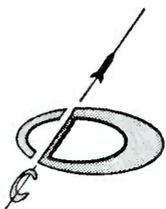


CDC offers a new high standard in its CATV connector series. Introducing the quality and reliability of missile specifications to the CATV industry for the first time at a competitive price, the complete line includes types N, F, UHF, Splices and amplifier entry fittings. Cable sizes .412", 1/2" and 3/4".

- TRULY WEATHERPROOF — SEALED TO 30 PSI
- SILVERPLATED, BERYLIUM COPPER CONTACTS
- VIRGIN TEFLON DIELECTRIC
- UNITIZED GRIP ASSEMBLY — INSTALLED IN SECONDS
- LOWEST VSWR

Catalog and Technical Specification C-12627-V, available on letterhead request.

COMMUNICATION DYNAMICS



289 NEPPERHAN AVENUE
YONKERS, NEW YORK 10701

Each week began a new contest and connection bonuses began again.

Team tallies: a team's weekly tally was the total of the two individual team member's production. Example: If Bob Jones installed 72 connections in a given week and is on team A, and Joe Smith, also on team A installed 65, team A's production was 137.

Team commissions: team commissions were paid on all connections made in that team's territory. Team commissions were paid weekly. Based on the team's *weekly* production, the following commissions were paid:

On the first thru 25 connections . . . Plus \$.50 each
 On 26 through 50 connections . . . Plus \$1.00 each
 On 51 connections or more Plus \$1.50 each

Example: Referring to Team A previously mentioned, Bob Jones and Joe Smith produced 137 connections. The additional dollars in their pockets were:

25 connections @ .50 = \$ 12.50
 25 connections @ 1.00 = 25.00
 87 connections @ 1.50 130.50
 \$168.00

This means that Bob and Joe each got an extra \$84.00 at the end of that week.

Top team prize: at the close of the contest a grand prize was given to each member of the team producing the most connections: a day at the ball game for the man, his wife and children, including box seats to a Phillies home game; paid transportation to and from Philadelphia; and dinner.

Each installer was given the following instructions:

- (1) You will each be given an ample supply of magic keys . . .
- (2) Each day you will be given the usual work sheets of connections to be made in your exclusive territory. Don't forget, you will be earning extra \$ on those, too!
- (3) Before you begin making the pre-ordered connections, simply take several minutes to hand Magic Keys on the door knobs of the non-scheduled homes in the immediate area of your work . . . ring the door bell or knock on the door . . . and leave.
- (4) Then go about making the pre-ordered connections.
- (5) When your pre-ordered connection work is completed, simply stop back at the homes where you hung keys and merely tell the person answering the door that, "I'm here to make your free hook-up to the TV cable."

Sneak Preview

The "Magic Key for Cable TV" campaign got off to an excellent start,

and the results, which are covered in a following section, were most gratifying. We did, however, learn several important things from this type of solicitation. Among the many resulting indicators, we found that a "Key" distribution during the late afternoon or evening hours proved more fruitful due to the prevalence of households with both husband and wife working during the day.

Further, we found that people were interested in seeing what they were going to try.

Taking this latter thought, Alpine developed the exclusive "Sneak Preview" of 9 channel cable TV, for our service area. This move was made to serve two primary purposes: (1) to let people see what they were being asked to try and (2) create additional excitement during the campaign.

Again, we preceded the preview with exciting newspaper and radio copy. The results were 137 applications in 2 days; representing approximately 20% of the attendance.

The System Opening

Since we were dealing with a limited yet reasonable budget for the promotion, we decided to have a "Gala Grand Opening" in what might be called "miniature." As with the sneak preview, the grand opening was scheduled and held in Alpine's offices.

Twelve days prior to the scheduled opening, a full page color ad was run announcing the date and location of the opening, plus the announcement that there were only, "12 days left to sign up for a free hook-up to the TV cable and still get a 10 day free trial."

This "countdown" continued until, and subsequently through the grand opening. Sports stars, and TV stars and a TV cable newspaper supplement were used as traffic builders with local TV dealers each displaying one set. The 1 1/2 days showing produced an additional 256 applications.

Campaign Results

The results of the Alpine Cable TV pre-opening sales campaign were indeed gratifying. The eight week promotion produced 2600 applications for cable service in the service area. This figure represents approximately 33% of our potential subscribers. Further, an additional 600 applications were taken in areas contiguous to our present system plant, representing approximately 30% of the areas potential.

It is interesting to note that the door-to-door technique developed with the use of Alpine's "Magic Key for Cable TV" accounted for almost 40% of our applications. □



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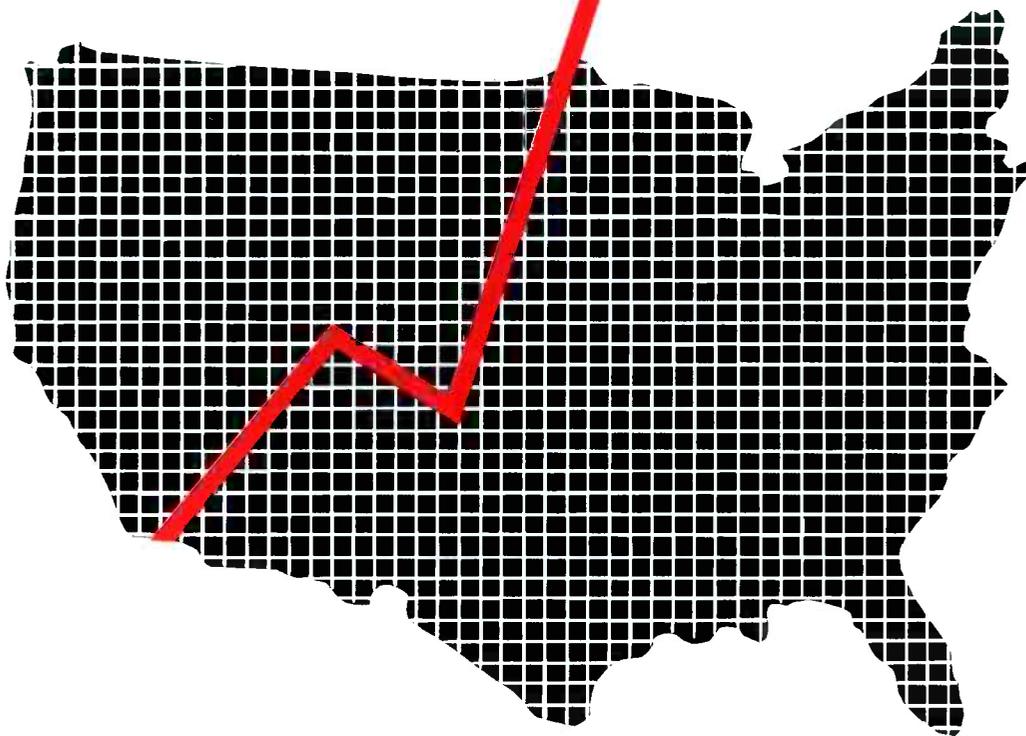


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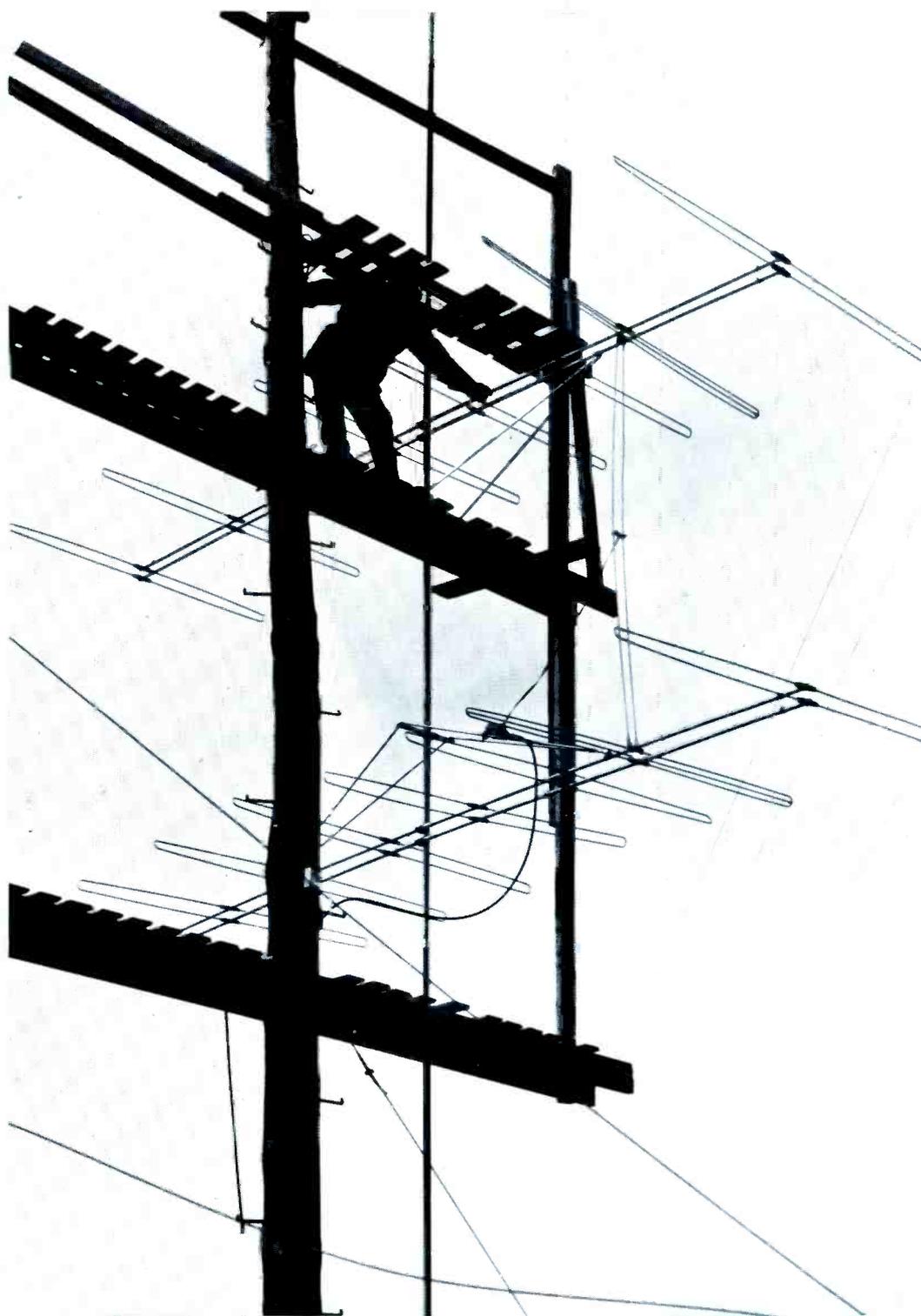
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JULY 1966

CATV TECHNICIAN



- Basic Television Principles
- Safety Warning Devices
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THE BASIC PRINCIPLES OF TELEVISION

By Gay Kleykamp
Director of Products
Kaiser-Cox Corporation

The generation of video or picture information is accomplished using a camera tube in which a voltage is developed that is proportional to the light intensity of portions of the scene to be reproduced. This varying voltage, or video, is generated by scanning an optical image of the scene to be transmitted. The original scene is then synthesized in the television receiver by means of synchronized scanning of the fluorescent screen of a cathode-ray tube, while the original picture information, or video, modulates the brightness of the cathode-ray tube spot. The scanning is accomplished at a sufficiently rapid rate to achieve the illusion of continuous motion.

In order that a given receiver will reproduce satisfactory pictures from different transmitters the government has established standards to which all television broadcast transmitters conform. In the United States the standard television picture has an aspect ratio of four to three, that is, a ratio of four parts wide to three parts high.

The scanning sequence, when viewed on the face of the receiver picture tube starts in the upper left hand corner and travels at a uniform rate from left to right along equa-distant lines. At the end of a horizontal line or scan the scanning spot quickly returns back to the left and starts a new line with the spot being blanked out during the return interval. As the horizontal scanning occurs the spot also moves downward at a constant rate so that each line is slightly below the succeeding line and when the bottom of the picture is reached the spot quickly returns to approximately the center of the top of the picture with the spot being blanked out during this vertical retrace.

A complete picture is, therefore, transmitted in 1/30th second and consists of 525 horizontal lines. This complete picture or frame is generated by two successive complete scans of the face of the tube. During one field, or complete scan from top to bottom of the picture and return back to the top, only 262-1/2 lines are generated in

1/60th of a second. Since this first field contains an extra half line, the succeeding field will lie between the first field's lines to form an interlaced scan or raster. This interlaced raster is necessary to avoid flicker in the extremely low repetition rates occurring in a picture and yet provide adequate brightness. In other words, the picture is repeated only 30 times a second but a flicker rate of 60 cycles is achieved and no noticeable flicker is observed.

The vertical scanning rate is then 60 cycles per second where the horizontal scanning rate is 15,750 cycles per second. The time for one horizontal line is 63-1/2 microseconds and the time for one field is 16.667 microseconds.

About 10 microseconds of the horizontal scanning time is used for horizontal retrace and is blanked out. This means, therefore, that the horizontal scanning across the picture from left to right occurs in about 53 1/2 microseconds. The vertical blanking pulses, which blank the tube during the vertical retrace require about 1,250 microseconds, with the result that the active picture information is displayed in approximately 485 lines.

In order to achieve synchronization of the scanning between the transmitter and the receiver, special pulses are generated at the transmitting site and are transmitted along with the picture information (Figure 1). These synchronizing pulses are transmitted during the vertical and horizontal blanking periods and consequently, they do not show in the final picture. The horizontal blanking pulses which occur each 63-1/2 microseconds are approximately a half microsecond long. The vertical synchronizing pulse occupies approximately three of the horizontal lines. In order to maintain horizontal synchronization during the vertical blanking period, equalizing pulses are transmitted before and after the vertical synchronizing pulse. These equalizing pulses are twice the frequency of the horizontal scanning rate and are approximately half as long as the horizontal synchronizing pulses.

In the United States the white picture information is represented by an amplitude modulation of the carrier of approximately 12-1/2 percent of the maximum. The black picture information is represented by an amplitude modulation of approximately 75 percent. The blanking pulses are represented in the blacker than black region of 75 to 100 percent of maximum envelope amplitude. (Figure 2)

Perhaps the most commonly used camera tube in CATV operations is the vidicon. The vidicon camera tube uses a semiconductor material that exhibits a characteristic of a decrease in resistance with exposure to light. The light provides the energy that produces current carriers by breaking the covalent bonds similar to the effect of thermal agitation.

An optical image is focused upon the signal plate of the vidicon camera tube. The signal plate is a thin con-

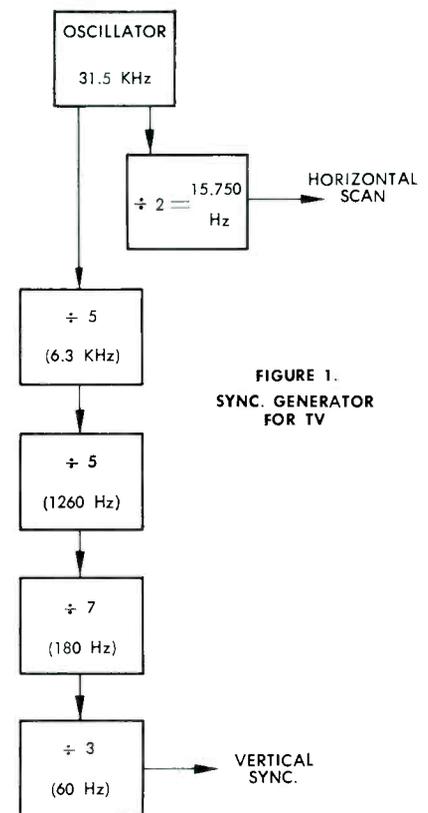


FIGURE 1.
SYNC. GENERATOR
FOR TV

ducting metallic film which is so thin that it is transparent. One side of this plate is coated with an extremely thin layer of the semiconductive material such as amorphous selenium. With the optical image focused on one side of this plate the semiconductor material is scanned with an electron beam in the manner previously described. The plate is maintained at a potential of approximately 30 volts positive with respect to the cathode, and as the electron beam scans the plate it deposits enough electrons on the surface of the photo-conductive material to reduce the potential of that material to the cathode potential, or approximately 30

volts. Between the successive scans at a particular location on this photo-conductive plate, these electrons will leak off depending upon the illumination of the material. So, the next time the area is scanned by the electron beam, it will deposit only those electrons that have been previously lost by leakage due to the illumination of the particular part of the photo-conducting material. This results in an electronic current which will flow proportional to the illumination of the successively scanned elements of the photo-conductive film on the plate. This current flowing through a load resistor produces an output voltage which varies in

amplitude with the light intensity of the successively scanned portions of the optical image.

The resolution of a television picture is determined by the capability of the television system including camera, transmitter and receiver to respond to abrupt changes in video modulation; that is, by the frequency band that the system is able to accommodate. The detail of the picture in the vertical direction is determined by the number of scanning lines, inasmuch as vertical image detail taking place in less than the distance of the width of a line cannot be reproduced.

Resolution in the horizontal plane or scanning direction is determined by the response in the video frequency spectrum of the television system. If the transition from white to black is to be accomplished during a horizontal scanning in a distance equal to the spacing between lines, it is necessary to have a 4.375 megacycle video bandwidth. This will permit the system response to rise from minimum to maximum in .08 microseconds without overshoot. Television transmission systems are generally planned for approximately 4.5 megacycle bandwidth; however, television receivers do not normally provide this degree of horizontal resolution.

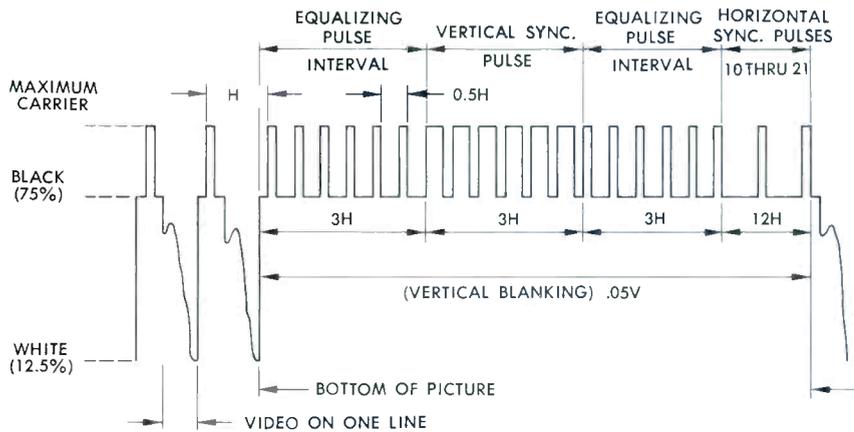


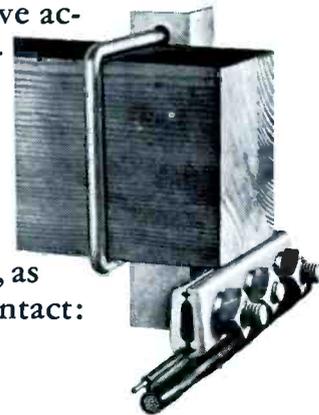
FIGURE 2: DETECTED VIDEO WAVEFORM FOR B/W TELEVISION

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The United States standards for television channels have established channels 6 megacycles wide. The picture or video carrier frequency is 1.25 megacycles above the low frequency end of the band. Vestigial side-band transmission is used. This means that the information is transmitted in an amplitude modulated wave consisting of a carrier plus one sideband with the other sideband being suppressed. This upper sideband occupies a frequency band slightly over 4.25 megacycles wide (Figure 3).

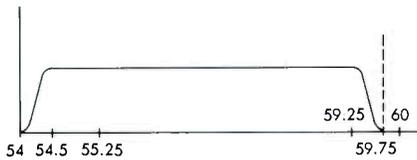


FIGURE 3. STANDARD CHANNEL 2 VESTIGIAL-SIDE BAND TRANSMISSION

The sound is transmitted by a separate frequency modulated transmitter which has a maximum frequency deviation of 25 Kc, about a carrier frequency 4-1/2 megacycles above the video carrier. The sound carrier is therefore 5.75 megacycles above the low frequency edge of the channel. The other 250 Kc is a "guard band" between channels in which nothing is transmitted. Table 1 contains the various channel frequency information.

Channels 2 through 6 (low-band) occupy the frequency range of 54 to 88 megacycles, with FM radio occupying the frequency range between 88 and 108 megacycles and channel 7 through 13 (high band) occupy the range between 174 and 216 megacycles. The UHF television band occupies the frequency range of 470 to 890 megacycles. Due to the high loss of coaxial cable at frequencies in the UHF band, it is not presently considered feasible to transmit these channels on coaxial

cable systems. In the frequency range between approximately five megacycles and fifty megacycles it is possible to transmit seven additional channels on coaxial cable systems. These are termed sub-channels, inasmuch as they are below the VHF frequencies.

Except for the amount of power generated and the antenna system used for radiation, the television transmitter or modulator used in the head-end of a CATV system is comparable to a standard television station installation; that is, a composite field signal is produced which contains the synchronizing, equalizing and blanking pulses in addition to the amplified video signal and sound information. A clamping circuit is provided in order to effect the average DC level of the composite video. This DC restoration causes the blanking pulses to be independent of the average brightness of the picture information.

The video information used in CATV system modulators or television transmitters may be obtained from a vidicon camera, as in the case of weather/news service information, or may be obtained by demodulation of off-the-air reception including microwave transmissions. It is also possible, but less desirable, to directly receive and retransmit television channels from off-the-air to cable systems. This simplified reamplification of a received signal has several disadvantages. The most important is that the picture and sound carriers disappear if reception is interrupted for any reason.

In a system using demodulated video and sound information, the various channels may be constantly transmit-

more stable synchronizing pulses are available. For example, certain noise and hum components that have been introduced can be minimized or eliminated by clipping and limiting circuits.

Television receivers provide radio frequency amplification in a more or less conventional superheterodyne method. The video information is detected in the normal amplitude modulated system method with required frequency response characteristics. The detected video is amplified and coupled to the cathode-ray tube in such manner as to effect a reduction of beam current with an increase of the video modulation signal wave.

The separation, amplification and reproduction of the sound is accomplished in an unusual manner. A 4-1/2 megacycle intermediate frequency-modulated sound frequency is obtained from the output of the second detector through beating of the local oscillator against the picture signal. Thus the 4-1/2 megacycle audio intermediate frequency or "IF" is determined by the difference in the transmitted carrier frequencies of the sound and picture and is independent of any drift in the local oscillator of the receivers' circuitry. This system of separation of the sound from the picture signal is known as the "intercarrier" sound system.

The generated 4-1/2 megacycle audio IF is then amplified in 50 kilocycle bandwidth IF amplifiers, the output of which is connected to a frequency modulation detector or discriminator, and the resultant audio is amplified and connected to a loud speaker.

Channel No.	Frequency Band (Megacycles)	Video Carrier Frequency (Megacycles)	Sound Carrier Frequency (Megacycles)
2	54-60	55.25	59.75
3	60-66	61.25	65.75
4	66-72	67.25	71.75
5	76-82	77.25	81.75
6	82-88	83.25	87.75
7	174-180	175.25	179.75
8	180-186	181.25	185.75
9	186-192	187.25	191.75
10	192-198	193.25	197.75
11	198-204	199.25	203.75
12	204-210	205.25	209.75
13	210-216	211.25	215.75

ting a carrier frequency over the cable system. This carrier frequency may then be used to control the gain of amplifiers on the system so that, should a particular channel cease its transmission, the unmodulated carrier would continue to control the gain of the various line amplifiers and prevent "runaway." In addition, it is possible to "clean up" the video and sound information prior to remodulating, and

Synchronizing pulses are obtained from the composite video output of the video amplifier and they are separated with the vertical sweep synchronizing pulses being integrated to control the vertical sweep oscillators and the horizontal synchronizing pulses are fed through a differentiating circuit into the horizontal system sweep oscillator. The separation of the synchronizing signals is accomplished by the use of

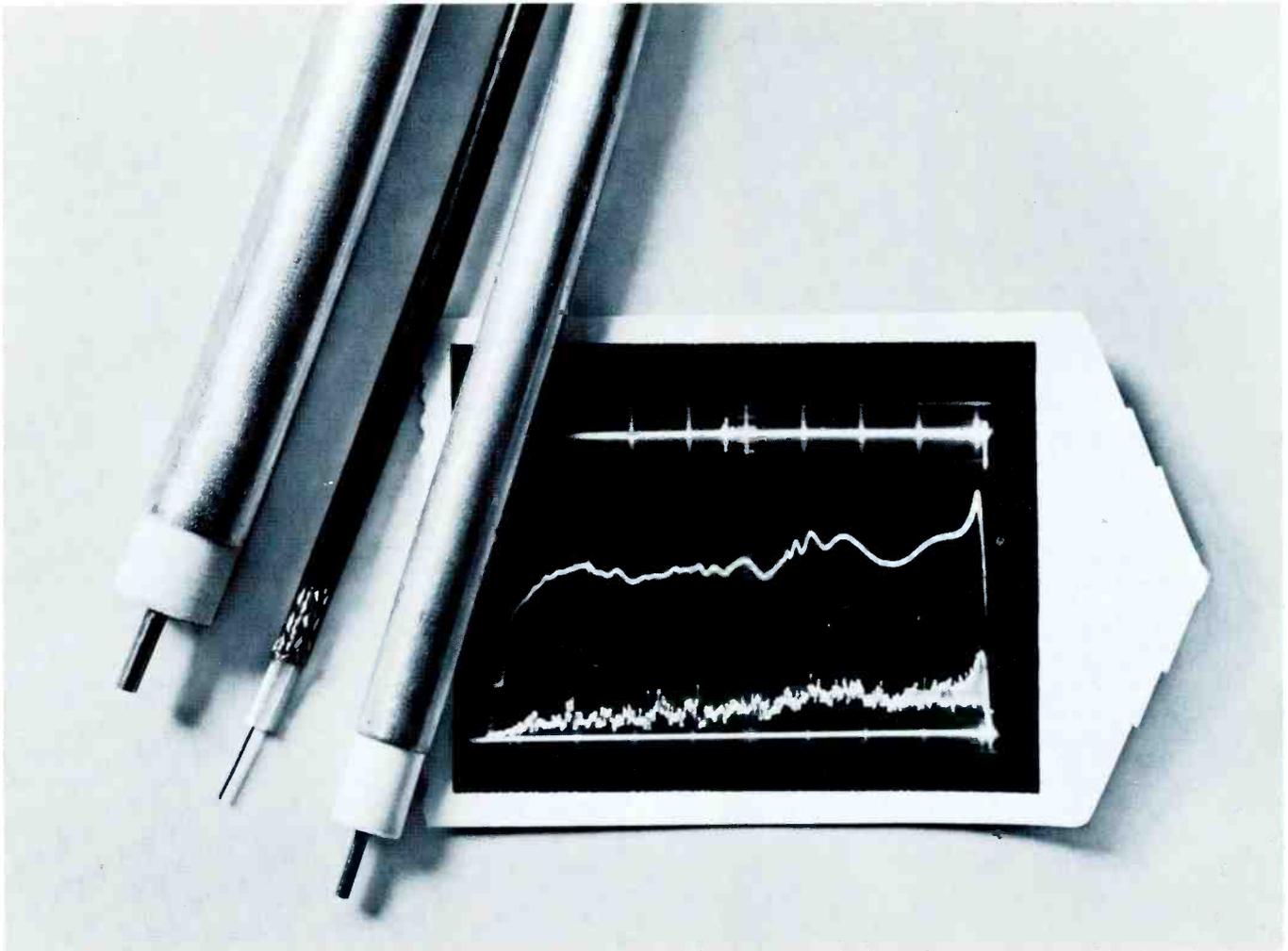
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a base clipping circuit which is adjusted to transmit only those amplitudes that are appreciably greater than the blanking pulses. The output of these separation circuits is then separated into vertical and horizontal synchronizing pulses by their respective differentiating and integrating circuits.

A differentiating circuit consists of a series capacitor and parallel resistor which provides a sharp pulse at the leading and trailing edge of the horizontal synchronizing pulses received. These differentiated pulses are then

used to control the frequency of the horizontal sweep oscillator. The integrating network, consisting of series resistance and parallel capacitance, provide the lower frequency vertical synchronizing pulse.

Magnetic deflection of the cathode-ray beam is used in modern television receivers. These deflection coils are placed about the neck of the cathode-ray tube and operate with the appropriate saw tooth current waves for the required scanning of the television picture tube. The sawtooth wave generator for vertical scanning is usually a free

running oscillator of the blocking oscillator or multi-vibrator type that is designed to normally operate, or free run, at a slightly lower frequency than that required for the field scanning. This frequency is then increased to exactly the right synchronized frequency by injecting the vertical synchronizing pulses from the integrator output. The horizontal sweep oscillator is more critical inasmuch as it has a large determination of the quality of the television picture; consequently, in addition to the free running oscillator there is an associated frequency control circuit which compares the frequency of the generated sawtooth current waveform with the horizontal synchronizing pulses and makes such frequency correction as is required to achieve more perfect synchronization.

As the retrace of the horizontal scan requires only a few microseconds it is necessary that transients in the deflecting coils be suppressed by the end of the first half cycle. This is accomplished by means of a damping diode which conducts on the second half cycle of the oscillatory transient. The rectified current passing through this damping diode is also simultaneously used to provide some of the d. c. plate voltage for the horizontal deflection output amplifier. This voltage is usually referred to as the "boost" voltage.

Such damping of oscillatory transient is not required in the case of the vertical deflection system inasmuch as the retrace time is many times longer than the time of a half cycle of such transients; consequently, the transient that occurs has only a small amplitude and it has sufficient time to die away before the end of the vertical retrace.

The contrast control of a television receiver is essentially a manually operated gain or volume control in the video circuit. This control determines the amplitude of the video or picture information fed to the grid of the picture tube. The brightness control determines the beam current and operates by determining the potential of the cathode of the picture tube.

A permanent magnet may be placed in or near the neck of the picture tube in order to deflect ions away from the screen. If the ions are allowed to strike the screen from the cathode ray gun their larger mass will result in a rapid deterioration of the fluorescent material and will result in a dark spot.

TO BE CONTINUED

This article will be continued next month with comments on color transmission and reception and antenna characteristics.

CABLE SYSTEM SAFETY

By Jack Pruzan, President
The Pruzan Company

WARNING EQUIPMENT

Previous articles in this series have discussed the safety and protection of the CATV lineman. This current issue is concerned primarily with *other people's* safety.

Code requirements governing safe markings for vehicles and working sites are not necessarily uniform in all states. Every CATV executive and every lineman should be thoroughly familiar with the regulations of his own state as well as basic safety procedures. The points we discuss below are in pretty general use throughout all parts of the nation.

Every CATV line truck should be equipped with traffic cones, "men working" signs, warning flags, flares, lights and barricades. Many CATV systems now use the standard Bell System A-frame with the special CATV industry-wide insignia, "ABLE CABLE WORKING." At least two "men working" signs should be on every truck.

Many line trucks are equipped with flashing lights which can be used as warnings whenever the truck is parked on a street. These by themselves are not sufficient, however. Additional markers should also be used such as traffic cones and warning flags.

Even though all line crews and linemen know this, it is worth repeating that special care must be exercised whenever a truck is parked on the rise of a hill or in any location where the visibility of oncoming motorists is obscured. Traffic cones, warning flags and at times also flares should be used before such rises or obscured

points to make certain that even inattentive motorists are well alerted to the construction work.

Every line truck should carry at least six red cloth or plastic warning flags. Every truck also should carry a minimum of six to eight traffic cones. These are available in 28" and 18" sizes and both should be utilized. The 28" size is needed for barricades or as a lead cone in a series, and the smaller unit for general use. Cones are available in conventional white, black and red; in red and yellow; red, yellow and black; and in fluorescent red color combinations. Flag adaptors for cones are available, permitting flags to be attached to either 18" or 28" cones. Signal adaptors with such warnings as "Danger," "Slow," etc., also are available for this same purpose.

Battery-powered red and amber flares are available for night use. Every truck, whether or not it carries battery flares, should be equipped with fuses or burning flare lights. Red flares are unmistakable warning signals in case of accidents, breakdowns or fallen lines. White flares give valuable illumination for night work or any emergency situation requiring quick general illumination. Flares should be equipped with spike points so they can be quickly placed in position at the edge of a road, on a post or a tree or on a crossarm.

Every CATV line truck should carry these basic types of warning equipment, and every CATV lineman should be thoroughly familiar with their uses. □

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POWER SUPPLIES FOR TRANSISTORIZED AMPLIFIERS

By I. Switzer
Technical Associate

The new generation of CATV solid-state amplifiers has power consumption characteristics which threaten to negate one of the important advantages of solid state amplifiers—cable powering of amplifiers. Some of the combination main line -AGC-bridging amplifiers consume 1 ampere at 30 volts (RMS AC). Maintaining economy and efficiency in cable powering requires a thorough appraisal of CATV solid state amplifier power supplies and the cable power systems that feed them.

CATV amplifiers act as converters for converting one form of energy into another. Systems require RF energy to make up the energy dissipated in cable losses and RF energy to feed to subscribers' television sets. CATV system amplifiers supply this energy in the form of an amplified replica of the input RF waveforms.

The amounts of RF energy involved are quite small, and as an energy converter, the CATV amplifier is quite inefficient. A transistorized amplifier operating at an output level of +35 dbmv per channel is delivering only .0042 microwatts per channel. The total RF energy output in a ten channel operation might be only .042 microwatts. Even a very high level of +60 dbmv (1 volt) is still only .013 watt per channel. The amplifier operating at +35 dbmv might be drawing 200 ma DC at 20 volts, a total input power of 4 watts. Its conversion efficiency is only .000001%!

Amplifiers require a source of direct current as a primary energy source. The DC supply must be well regulated against changes in primary supply voltage, free of ripple, and of proper polarity and voltage. A CATV amplifier generally presents a fairly constant power supply load.

Normally the power supply would be considered as an integral part of the amplifier not affecting system design and layout considerations. However the growing power demands of succeeding "generations" of transistorized CATV amplifiers make it imperative to have a good understanding of power supply operation in order to make the most efficient system layouts

and to facilitate system power trouble shooting and maintenance.

Since CATV systems using transistorized amplifiers often use more amplifiers than older tube systems, and since transistorized amplifier power requirements are very modest compared to tube amplifiers, it has become desirable to provide power for the amplifiers on the cable itself, diplexing it with the RF using simple RF choke and capacitor filters to separate RF and power as and where required.

Solid-state amplifiers can be easily designed to use DC of single polarity with respect to ground. The choice of polarity usually depends on the circuit designers choice of solid-state devices, PNP or NPN types. The simplest power supply would use DC of the same polarity supplied along the cable, and provide regulation to assure the proper voltage input to the amplifier.

This is the simplest possible system since each amplifier requires only a simple regulator. No rectifiers or filters are required. This was the original approach to cable powering of solid-state amplifiers. Some early solid state amplifiers did not even have regulators; they merely used an adjustable resistor to adjust the voltage at each amplifier manually. Regulation was provided at the input to the cable power system. These early DC cable power systems soon ran into difficulty. DC currents and voltages in the cable system accelerated corrosion by electrolysis, the worst effects occurring across connectors and splices where the DC potential between center conductor and sheath caused electrolytic corrosion any time that moisture provided a leakage path between the two. So much trouble was experienced with DC cable power systems that use of DC cable power has been virtually abandoned.

Use of AC power in the cable reduced or eliminated the corrosion problems which had been experienced with DC power. The balanced alternating voltage between center conductor and sheath produced alternating leakage currents which nullified corrosion

effects. These are the leakage currents across "wet" splices or connectors. Use of AC power in the cable complicated the power supply in each solid-state amplifier in the system since each amplifier now had to be provided with a complete power supply providing rectification, filtering and regulation in each amplifier. This has increased the cost and complexity of amplifiers and

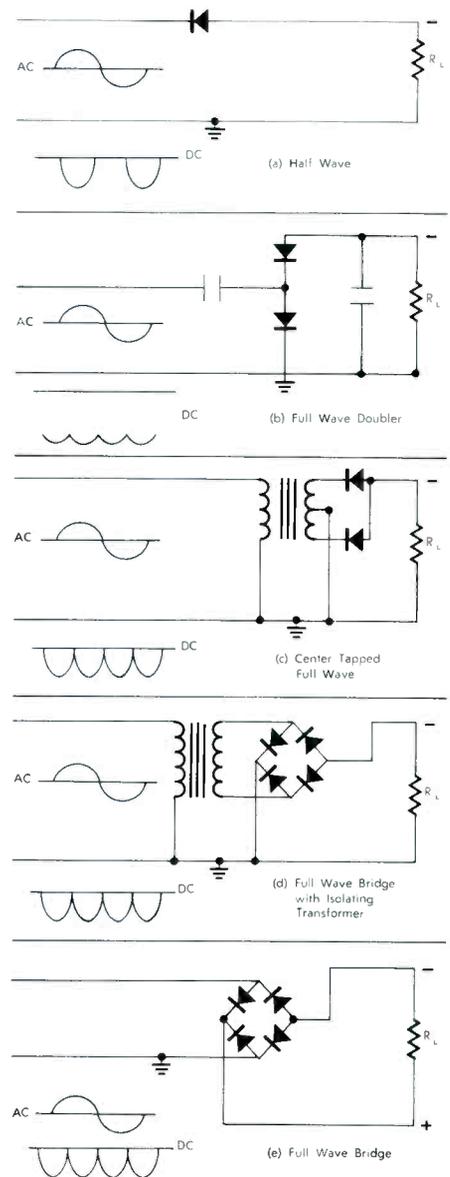


FIGURE 1.

complicated the problem of system power planning.

These three aspects of power supplies will now be discussed and their effects on system design and operation considered.

Rectification

Silicon diodes are now used universally for rectification in solid state power supplies. They are compact, reliable, cheap, have high current carrying capacity, low forward voltage drop (about 0.5 volt); indeed they come very close to being an ideal device, i.e., they are cheap and they work well. A number of rectifier configurations are possible, the choice usually depending on whether AC input and DC output must have a common ground, and whether isolating transformers may be used. Some of the common rectifier arrangements are shown in Figure 1.

Figure 1a shows a half wave rectifier. AC input and DC output have a common ground. Only the negative going cycle of the AC input appears at the load.

Figure 1b shows a full wave voltage doubler arrangement. If the capacitors are large enough for the output, voltage will double the AC peaks and both negative and positive half cycles are used (full wave). Output voltage can be held down if the capacitors are sized properly.

Figure 1c shows full wave rectification using a center tapped transformer and two diodes. The isolated windings on the transformer permit common AC and DC ground. Operation is full wave, and both positive and negative half cycles of the AC input are used. Note that only half of the transformer secondary is used during each half cycle, the other half being blocked by reverse bias on its diode.

Figure 1d shows full wave rectification using a four diode "bridge" arrangement. Output is full wave and the isolated winding on the transformer permits common AC and DC grounds. The transformer secondary works "full time" and for the same output rating this transformer will be smaller than the center tapped version. Operation is full wave and both positive and negative half cycles are used.

Figure 1e shows a full wave "bridge" rectifier arrangement without isolating transformer. The DC output cannot have the same ground as the AC input, nevertheless this arrangement can still be used for solid-state amplifiers.

Filtering

Filtering is usually provided by large value capacitors. Occasionally filter chokes may be used in a choke

input configuration. Most solid-state amplifier power supplies use an electrolytic capacitor to filter out most of the ripple in the rectifier output. The regulator is relied on to further reduce ripple to an acceptable level.

Regulation

Virtually all solid state amplifiers use dissipative regulation, i.e., the difference between the input DC voltage and the desired constant output is dissipated in a control transistor or a series resistor. Small low-cost amplifiers often use shunt regulation using zener diodes. More elaborate amplifiers use series control transistors whose base is controlled by a zener diode. Some more sophisticated amplifiers use a feedback amplifier system to control the base of the series control transistor. All of these systems require that the input voltage be higher than the desired regulated output and use a control transistor as a variable resistor to maintain a constant voltage output. Voltage reference is universally a zener diode. Some temperature compensation may be provided. The regulator filters out most remaining ripple by its high speed "regulating" action. The regulating action is fast enough to treat the ripple as a variation in input voltage which is removed by the regulator action.

System Considerations

The design of power feeding aspects of a CATV system depends on the power requirements of the amplifiers, the power handling capability of the system cables and the power feed voltages and currents permitted by applicable electrical codes.

The resistance of the coaxial cables causes voltage drops as current is drawn through the cables to feed amplifiers. Portions of the cable adjacent to the primary power feeds may carry substantial currents since these cables will be carrying the total current for several amplifiers. Cable sections further from the primary power feeds will be carrying less current. The voltage drops follow Ohms Law, the voltage drop being the product of current and voltage.

Resistances for commonly used aluminum sheathed cable are summarized in the accompanying table.

It should be remembered that sheath resistance is further reduced by the parallel resistance of the messenger and grounds to earth and power line neutrals. If subscriber drops are grounded inside the subscribers' home, these grounds further reduce cable sheath resistance to power flow.

The center conductor, therefore provides the chief resistance to cable power flow. A typical 1,400' length of

1/2" cable will have a resistance of 1.5 ohms, neglecting sheath resistance. A current of 3 amperes flowing through this resistance will cause a voltage drop of 4.5 volts. This is a substantial voltage drop in a system having an input voltage of only 30 volts (RMS AC).

A number of problems arise when an attempt is made to rigorously analyze the flow of power in a cable powered system. An accurate calculation of power flow is desirable in order that the system can be laid out with minimum number of power feed points and to facilitate placement of power

Cable O.D.	Center Conductor Diam.	Sheath Thickness	Conductor DC	
			ohms/1000 inner	ohms/1000 sheath
.412"	.0752"	.031"	1.83	.36
1/2"	.0980"	.025"	1.08	.36
3/4"	.1400"	.046"	.530	.13

feeds at points convenient to main AC power lines. Accurate analysis is also desirable for the design of long transportation runs where distance between power feeds may be very great due to lack of access to AC power mains.

One of the first problems encountered is the "non-ohmic" nature of the amplifier power supply. An ohmic device would draw a current proportional to the voltage applied.

Amplifier power supplies must be considered as constant current devices, since the regulator is designed to feed a constant voltage to the amplifier itself and the amplifier will draw a constant current when fed with its design voltage. When excess AC input voltages are applied to the power supply, the regulator dissipates the excess power and the current into the amplifier remains constant. This might seem to simplify power system design since the current through any cable section is merely the sum of the currents drawn by all the amplifiers which it feeds, and does not depend on the voltage applied to each amplifier. Voltage drops can then be calculated along the cable as the product of cable resistance and current flow in each cable section. Unfortunately practical systems do not behave in this way, and cable power systems designed in this way will soon find that the more remote amplifiers do not have sufficient voltage to operate properly.

Proper cable power design requires a consideration of instantaneous voltages and currents. It is very informative to examine voltages and currents in a cable power system using an oscilloscope. A double beam oscilloscope or an electronic switching system is particularly helpful as it permits simultaneous examination of voltage and current waveforms.

Most solid-state amplifier power supplies use capacitor input filter systems. These have the advantage of being simple, low in cost and reasonably effective. They have the disadvantage of drawing energy from the cable in short high current "surges". The peak value of these surges may be up to 10 times the average current, and cause proportionately higher voltage drops during the short time these cur-

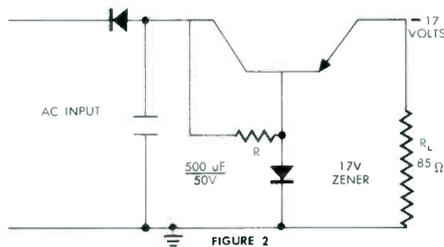


FIGURE 2

rent surges flow. Since half wave, capacitor input, emitter follower regulator power supplies are fairly common in CATV solid state amplifiers, the operation of such a power supply will be described in detail.

Figure 2 illustrates the circuit diagram for such a power supply. An equivalent load resistance of 85 ohms has been assumed drawing a DC current of 200 ma. When first connected to the AC power feed the power supply will draw an initial surge of current charging the capacitor to nearly the peak of the input AC voltage. The regulator will start feeding regulated filtered DC to the amplifier. While the instantaneous AC voltage is below the voltage on the capacitor or during the half cycle when the AC voltage is positive, the amplifier draws its current from the energy stored in the capacitor. Current is drawn from the cable only during the small portion of each negative half cycle during which the instantaneous voltage exceeds the voltage on the capacitor.

The regulator is a simple emitter follower. The base of the control transistor has its voltage fixed by the zener diode. R_1 limits current through the zener to a safe value. The emitter

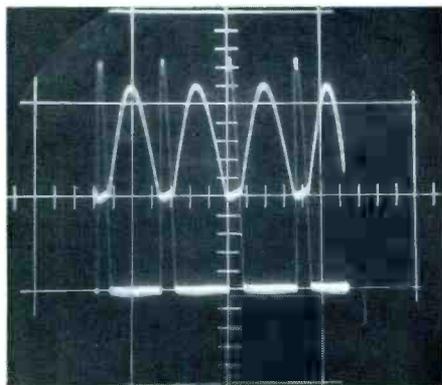


FIGURE 3. Voltage and current waveforms in cable feeding half wave power supply.

"follows" the base voltage which has been fixed by the zener diode.

Figure 3 is a photograph of an oscilloscope display of current and voltage waveforms in a half wave capacitor input power supply. A load resistor was substituted for the regulator and load in Figure 2 and a small resistor was used to develop a voltage proportional to current flow for display on the oscilloscope. The requirement of a common ground for both the voltage and current display channels has caused the current waveform display to be inverted in polarity with respect to the voltage waveform display. Note that current flows in narrow high

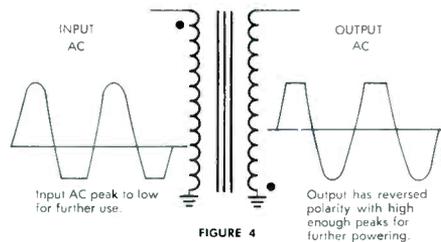


FIGURE 4

surges only during negative half cycles. Note also that the current is direct current, i.e. it flows in one direction only, even though the applied voltage is alternating in polarity. This points out an important characteristic of half wave power systems — the current flow is DC even though the voltage in the cable is DC. This DC current flow in the cable suggests that it might be susceptible to electrolytic corrosion effects, but it appears that in practical systems there is little damage from the DC currents flowing along the sheath and center conductor. The voltage between sheath and center conductor is AC and leakage currents between center and sheath in wet connectors or splices is also AC, minimizing electrolytic effects.

The amplifier requires a steady energy flow as direct current. Energy is supplied by the cable only by flow of current and instantaneous energy flow is the instantaneous product of voltage and current. Figure 3 shows that in this particular case (typical for half wave powered CATV amplifiers) energy flows for only 10% of the total time available. Current peaks are necessarily very high in order to provide the necessary energy in the short length of time available. These current peaks are so high that they cause voltage drops which significantly clip the voltage waveform during current flow time. Since no current flows the rest of the time, no voltage drops can occur during that time and the cable voltage is unaffected. In a half wave system using negative half cycles, there is no voltage drop at all during the positive half cycle. The unused half cycle is

still available in the cable to power any amplifiers that can use it.

Several systems have been devised to take advantage of this characteristic of half wave power systems. One company offers main line amplifiers which use one half cycle, e.g. half wave positive power supplies, while supplying line extender amplifiers which use half wave power supplies using the alternate half cycle. This system does make use of both half cycles of available AC power, but unless power loads are balanced will still not make most efficient use of the available cable power handling capability.

Another approach is to invert cable power polarity by use of isolating transformer. This makes the previously unused half cycle available for further use by inverting its polarity. Such transformers may be inserted in a cable power line by using "power inserters" available from some CATV equipment manufacturers; see Figure 4. Note that the inverted waveform will assume an "average" level with respect to ground and that not all of the previously unused half cycle will be available; nevertheless it is a convenient way to power an extra few amplifiers on a line that appears to have run out of useful voltage.

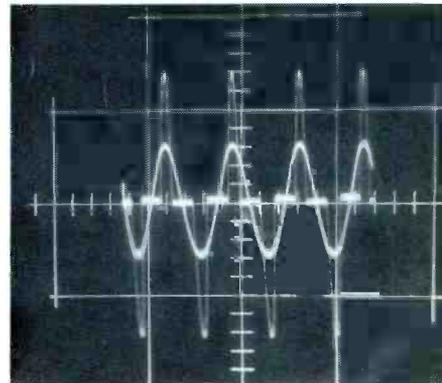


FIGURE 5. Voltage and current waveforms in cable feeding full wave power supply.

A significant improvement in cable power operation can be achieved by use of a full wave power supplies in all amplifiers. Figure 5 shows current and voltage waveforms in a full wave system (current and voltage channels have same polarity in this display). Input voltage and load current (DC) are same as in Figure 3. Note that current flows during both half cycles and that peak currents are much lower than in the half wave power supply. Current peaks in half wave supply were 2.5 units, current peaks in full wave supply are approximately 1.4 units. There will therefore be only half as much voltage drop during voltage and current peaks. The system now has twice as much time in which to deliver the same amount of energy and conse-

quently the current peaks are significantly lower. Voltage drops in a full wave system are much lower than in a half wave system and both half cycles suffer the same voltage drops. The system still suffers from "part time" current flow and is using only 20 to 25% of the system capacity, since current flows for only this proportion of the total time.

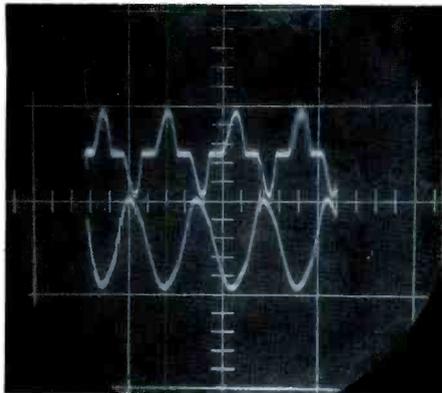


FIGURE 6. Voltage and current waveforms in cable feeding choke input, full wave power supply.

Further improvements in cable power efficiency could be attained by having current flow during an even longer period of each half cycle. This can be accomplished in several ways. One method is to use a choke input filter system. The inductance of the choke stores energy and helps prolong the period of current flow. Figure 6 shows current and voltage waveforms in a system using choke input power supply. This particular power supply is in a Jerrold "Starline" series amplifier which uses choke input and achieves full wave operation by using both negative and positive voltages (balanced) in its amplifier. Note that current peaks are broader than in capacitor input full wave system (Figure 5). Voltage and current scales in Figure 6 are not the same as in Figures 3 and 5. The time scales are the same and they do indicate longer current flows indicating more efficient use of the cable power handling capability. Note also the slight shift in current/voltage phase caused by the choke inductance.

Since current in a capacitor input filter system flows only during voltage peaks why not prolong current flow by prolonging the voltage peak? In fact why not have the voltage at peak value all the time? An alternating voltage which is at peak voltage all the time is a square wave, and it can be shown that square waves make a nearly ideal cable power voltage — see Figure 7. Perfectly square waves would have harmonic components that would cause RF interference in the system. These square waves were generated for demonstration by clipping an AC voltage for (sinusoidal) with a pair of high

power zener diodes. The tilt in the top and bottom of the square wave voltage form is due to poor low frequency response in the oscilloscope used for display. Voltage and current scales and DC load are the same as in Figures 3 and 5. The zeners used did not provide the same peak voltage as in Figures 3 and 5 and consequently the DC load current is slightly less. Nevertheless the reduction in current peaks is dramatically illustrated. Current peaks are down to 0.55 units compared to 1.4 units for sinusoidal full wave and 2.5 units for half wave sinusoidal. Current flows for about 90% of the available time. This could have been improved by using "squarer" AC voltage, however in the demonstration set up this would have threatened to burn up the zener diodes used to provide clipping action.

The next improvement that might be considered is to have current flowing 100% of the time — DC! DC cable power has many advantages: simplification of amplifier power supplies since no rectifiers or filters are required; minimum voltage drops in cable, since current flows smoothly 100% of the available time.

The disadvantage is the problem of system susceptibility to electrolytic corrosion. Perhaps system construction methods have advanced sufficiently in the last few years that we can again consider use of DC power systems.

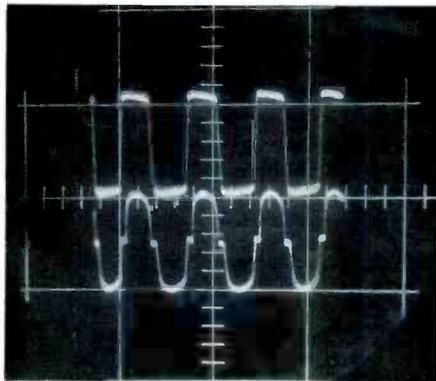


FIGURE 7. Voltage and current waveforms in cable with square wave AC feeding full wave power supply.

The next best alternative seems to be full wave amplifier power supplies fed by square wave voltage (AC) in the cable. Efficient generation of square wave voltages at required power levels (typically 42 volts at 6 amps) is a problem. I have specified 42 volts as this is the same peak voltage as that of the commonly used 30 volt RMS sinusoidal waveform. Suitable power supplies could be constructed using AC input from mains to provide DC to drive a solid state square wave inverter. Another possible form for the square wave power supply is use of suitable semi-conductors to clip sinu-

soidal waveforms at the desired level. This is wasteful of input power and more power might be dissipated in this power feed than is transmitted on the cable. Such a power feed might waste 200 KWH of power a month.

Certainly full wave power systems should be used even if used with ordinary sinusoidal AC. Full wave powering of amplifiers can be achieved by use of isolating transformers, by using balanced negative and positive voltages, or by "floating" the amplifier and isolating the RF by isolating transformers in the RF section of the amplifier.

It should be noted that the voltage regulating transformers used in some AC power feeds have a somewhat square output waveshape. This waveform varies considerably with load. If full advantage is to be taken of square wave powering, the output voltage should be specified to have the same peak voltage as the sinusoidal waveforms we have been accustomed to using. This will give somewhat higher RMS readings. A power feed having 30 volt RMS output (sinusoidal) will have peak voltage of 42 volts. A square wave power supply reaching same peak 42 volts will have RMS voltage of 42 volts (same as peak). Rigid code interpretation might rule that this exceeds the 30 volt limit, but it can be argued that from a safety point of view the 42 volt square wave is no more dangerous than the 30 volt RMS voltage since the peak voltage reached is the same.

Some comments should now be made on common trouble shooting problems in power supplies and cable power systems. It is useless to test cable power systems with an ordinary AC voltmeter. Most VOM instruments have full wave rectifier systems for use on AC voltages. In capacitor input power supply systems it is the *peak* of AC voltage which is significant in determining whether the line cable power is adequate. Voltmeters with half wave rectifiers can be completely misleading in half wave power systems if they happen to be connected to read the half cycle voltage which is not being used. The best guide to proper system power voltages is a DC reading on the filter capacitor. This should be a minimum of 3 volts above the regulated output of the power supply. This is usually a minimum margin for proper regulator action. Lower voltages will cause hum in the DC output and will cause reduced amplifier gain. An adapter box for the ordinary VOM is recommended which simulates the action of the power supplies in the amplifiers being used on the system.

Figure 8 shows a suggested adapter box for checking cable power.

Size of capacitor depends on load presented by DC meter used. A minimum load that DC voltmeter might represent might be 50,000 ohms. The capacitor chosen could be value that will give same time constant (RC) as the filter capacitor and load in the amplifiers used. For example a typical small amplifier might have a 100 mfd

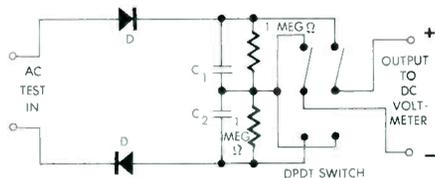


FIGURE 8

capacitor and an equivalent load resistance of 85 ohms. A typical voltmeter used with adapter box might have 25 volt scale at 5,000 ohms per volt, representing a total resistance of 125,000 ohms. A 0.1 mfd capacitor for C_1 and C_2 would be suitable. The DPDT switch permits reading either negative peak or positive peak. In a system operating full wave, both peaks should be checked. This unit can be made up in a small "handy-box" and makes a most useful instrument for checking cable power. If choke input filter systems are used, a small choke of same kind as used in amplifiers may be added, and capacitors and load resistors should be installed to completely simulate power supply action of the amplifiers used. Unfortunately this puts a substantial load on the system being measured but it is difficult to simulate the action of the choke input without actually loading the choke being used.

Tracing of short circuits on cable power systems can be facilitated by using a series low voltage light bulb. The faulty line usually isolates itself by blowing a fuse. Make up a fixture which can be plugged into the fuse socket and which permits wiring a 32 volt light bulb (any reasonable wattage will do) in series with the faulty line. The light bulb will light up indicating the short circuit and will limit the short circuit current to a safe value. The light will go out when the short is cleared. The light is bright enough to be seen from the ground is a handy short circuit indicator.

A clamp-on type AC ammeter is a handy tool for investigating cable power problems. Ordinarily one would not expect a clamp-on type instrument to indicate current flow in cable power systems since the clamp loop encom-

passes both power conductors. The multiple ground paths in parallel with the sheath shunt a portion of the sheath current, while the center conductor carries the whole current. This leaves a net magnetic field which the clamp-on meter can indicate. We have increased the sensitivity of the ordinary instrument (usually 6 amp full scale), by providing a small transistorized amplifier between current transformer and indicating meter. Use of this instrument has shown us sheath currents that we never suspected. We have been surprised by the substantial currents flowing in subscriber drop shields in many installations. Even distribution cable which is not supposed to be carrying power will indicate AC currents in the sheath which represent current flows to earth through subscriber drops and other earth paths.

Improving amplifier power supply efficiency

The discussion so far has been concerned with improving power feed efficiency by improving utilization of the power handling capacity of the cable system. Further improvements can be effected by improving the power supply itself.

Reference has been made to the dissipative nature of amplifier power supply regulators. High input voltages are reduced to desired output level by dissipating the excess voltage in control transistors or in series resistors. An amplifier close to a 30 volt power feed will have about 40 volts DC input to its regulator. The regulator output may be only 20 volts. In this case the regulator is dissipating as heat enough power to supply another complete amplifier. Clearly power utilization could be improved by saving this power.

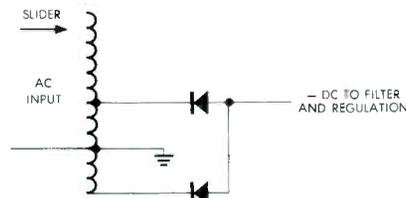


FIGURE 9

An amplifier requiring 20 volts DC will operate with 24 V DC input to the regulator. Any higher input voltage is wasteful. A variable transformer can be used to adjust the voltage input at each amplifier to provide the optimum DC input to the regulator. This minimizes wasteful dissipation in the regulator. It also permits higher voltages in the cable, if local codes permit. Some systems are being operated with 60 volt cable power, using variable transformer at each amplifier to step down the voltage

to the optimum value for the amplifier power supply. Currents in the cable are reduced proportionately and much lower voltage drops are experienced. The reduced voltage drops and higher initial voltages permit many more amplifiers to be fed from the same power feed points.

Since most variable transformers ("variacs") are of autotransformer type with common ground for input and output, a special tap system was devised which permitted combination of adjustable voltage and full wave operation with common ground for AC and DC. Schematic is shown in Figure 9. Figure 10 shows one of our

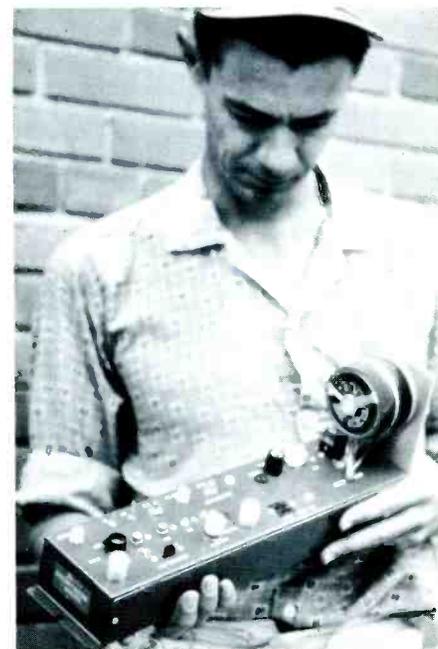


FIGURE 10. Ameco 60 series amplifier modified for 60 volt, full wave operation.

system chief technicians holding an Ameco 60 series amplifier which has been modified for 60 volts full wave operation with such a transformer.

Switching mode regulators offer an alternative method of improving regulator efficiency. They reduce high input voltages to desired level by switching the power from the filter in high frequency pulses (typically 50 KC). The width or frequency of these power pulses is automatically adjusted so that their average filtered output is the desired regulated DC level. The high frequency DC pulses produced can be filtered with small L-C filter systems. Such regulators have comparatively high efficiency, but at the present time are very costly because of the complex voltage controlled multivibrator circuitry necessary. No doubt integrated circuits will become available for this control function and the cost and size of such regulators will be substantially reduced.

Power can also be controlled by using silicon controlled rectifiers to feed through only enough of each half wave to supply the needed power. SCR firing angle can be controlled by automatic feedback in the power supply or can be adjusted manually to provide the required DC input to the regulator. As voltage drops along the cable distort the voltage waveform, the SCR firing angle advances to use more and more of the waveform that is left.

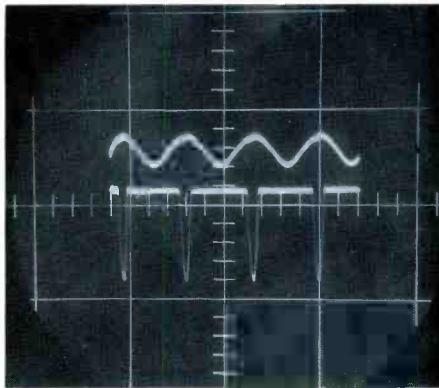


FIGURE 11. Voltage and Current waveforms in cable feeding ATM-20C-HS amplifier.

SCR's are now very low in cost and very reliable and no doubt switching mode regulators can be designed using them effectively. Switching mode regulators could give rise to RF interference from high speed switching transients and they may require RF filtering and some shielding to prevent interference to the RF section of the amplifier.

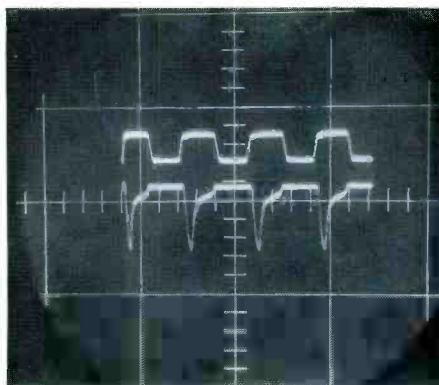


FIGURE 12. Voltage and current waveforms in cable feeding ATM-20C-HS amplifier square wave voltage input.

Usefulness of the two channel oscilloscope in investigating amplifier power supply action may be seen in this series of photographs of current and voltages in cable supplying a small line extender amplifier (Ameco ATM-20C-HS). Figure 11 shows voltage and current waveforms in cable. AC sinusoidal input has been adjusted to 24 volt peak. Note high current peaks at every negative half cycle (voltage dis-

play polarity is reversed). Some distortion of negative half cycle is evident due to the current surge. Figure 12 shows same amplifier with square wave AC feed with 24 volt peak. High initial surge is due to undersized filter capacitor (100 mfd) which draws a fairly high surge during beginning of

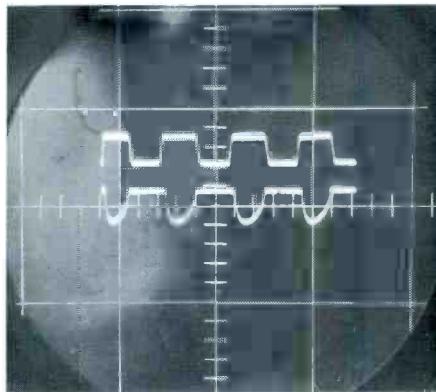


FIGURE 13. Voltage and current waveforms in cable feeding ATM-20C-HS amplifier, square wave voltage input, additional 500 mfd filter capacitor.

each charging half cycle to replace the charge drawn by the amplifier during the off half cycle. Figure 13 shows voltage and current with square wave voltage and additional 500 mfd capacitor added to the filter. Current flow is now more uniform and much lower in peak value. This amplifier power supply works with only 100 mfd filter capacitor because the regulator takes out the resulting ripple. It does, however, require a higher DC input to the regulator to maintain this action.

The steadily increasing power requirements of CATV amplifiers threatens to negate some of the advantages of solid-state amplifiers unless steps are taken to improve power efficiency in the whole system. Manufacturers should consider power supply designs which provide most efficient utilization of cable power handling capability and system designers and operators should consider cable power feeds which further promote power handling efficiency. □



BY J. BENNETT

TOWER SITE VARIABLES

One of the prime variables in tower design and installation is the tower site. It may be almost anything, from solid rock and trees on one location to not-so-solid swamp and water on another. Varying conditions such as this make it necessary for tower vendors to make quotations based on an ideal tower site location and good sub-soil conditions. Many times this is not recognized beforehand by the purchaser, and extra charges for site preparation strike an unexpected blow.

A good site is reasonably flat, or with foundation and anchors near the same elevation. Of course allowances may be made in the tower design for unequal guy anchor elevations, as this is not extremely critical.

The erector should be able to drive directly to the foundation and anchor locations with his trucks and equipment. The site itself must normally be accessible to the truck and trailer carrying the tower and hardware — although helicopters have been used to transport materials to the tower site in some instances.

Trees often pose a problem during installation, as they are invariably in the exact spot where an anchor should go. Working around them takes more time, so if possible they should be removed from the immediate work area. Other heavy vegetation should also be cleared.

The tower site which is flooded makes work considerably more difficult, and must be drained — or special equipment brought in — for erection of the tower. It is usually the tower buyer's responsibility to prepare the site, so that the installer can go to work directly on the tower.

The underlying soil is of considerable interest to both the designer and the erector. The designer must be certain that the foundation and anchors are adequate for the tower, and the installer must have the necessary equipment on hand to do the job efficiently and correctly.

If the sub-soil is poor, the foundation and anchors may have to be increased in size, and pilings may have to be driven. On the other hand, if the site is on rock or sandstone, blasting may be required.

Towers have been successfully installed in swamps, on solid rock, in oceans, on roof-tops, and practically everywhere imaginable, but the price is higher. □

PRODUCT REVIEW

NEW COMPONENTS FOR CABLE TELEVISION SYSTEMS

SOLID-STATE HEAD-END SYSTEM

A completely transistorized head-end system—billed as the industry's first—will be introduced at the NCTA convention by CAS Manufacturing Co. It features full channel conversion, transmission of video and sound information, AGC, and sound limiting with provision for standby modulation. Using plug-in modular circuit boards, it can be mounted on a standard 19" rack. CAS will also introduce a new solid-state trunk, AGC and distribution amplifier, model TRA-230D. The unit uses plug-in modules, and is housed in die-cast aluminum with universal mounting fixtures. A new multi-outlet, back-matched transformer is also being added to the CAS line. The unit makes possible up to four outlets from a single existing block without cutting the transmission cable.

VIKING ADDS TO LINE

Among the new products introduced at the NCTA convention by Viking Industries will be the 1-5000 series of modular inline amplifiers, featuring built-in AGC, integrated thermal equalizer, external test points, plug-in pads and lightning protection. Also introduced will be the Futura Series of modular plug-in amplifiers, featuring a basic housing with interchangeable modules. Other new products include a complete line of underground equipment, including models 5502 and 5503 multi-output directional taps, pressure tap "football" model 547-51, directional tap model 432 and underground line extender, Mustang II. Viking's Newsarama and Weatherama units will also be shown at the firm's booths, as will the new non-duplication switcher model 5967.

MULTI-TAP CONNECTOR

Preformed Line Products Company will display a new multiple-tap connector for use with RG-59/U coaxial cable at multi-tap installations, at the NCTA show. This newly-developed device, which eliminates the need of supplemental strand attachments, features low installed cost, easy wrap-on connection, and maintenance-free dependability, according to the manufacturer.

ENTRON'S SHOW PLANS

Entron will exhibit a new solid state FM converter for use at head-end sites. Double converter circuitry reportedly provides a high degree of frequency selectivity for the desired FM signal in the 88 to 108 MHz range while discriminating against undesired frequencies. A mixing output facilitates the combination of signals from any number of converters. A muting circuit switches off the output of the Model F-1 in the absence of an incoming signal.

A Single VHF TV Channel Pre-amplifier, designated Model P-1, will also be shown. This unit is a solid-state, low noise, high gain preamplifier for CATV antenna sites. The unit is cable powered by a Model RPT-310 remote power transformer which will also be shown. Entron will also unveil solid-state, cable powered, strand mounted repeater amplifier. This unit includes tilt corrected automatic level control covering the low VHF, FM, intermediate, and high VHF bands. Among other new equipment, will be a new line of underground equipment for CATV applications.

NON-DUPLICATION SWITCHER

A new "Telmas," or television modular automatic switcher designed for the non-duplicating switching needs of CATV operators, has been developed by International Good Music, Inc., a supplier of automated equipment for the broadcast industry. The "Telmas" unit automatically turns off or turns on selected channels at designated time intervals with programming capabilities up to a week at a time. Modular design permits adding channels as desired. IGM will exhibit the new "Telmas" unit at the NCTA show in Miami.

NEW BENCO AMPLIFIERS

The Benco booths in Miami will feature three new amplifier models and a new multi-tap insert. The model Benpre solid-state pre-amplifier in low or high band models, uses epoxy printed circuit boards, and is mounted in cast zinc housing. The new Benfeed line amplifier is a solid-state unit with maximum gain listed at 28 db at channel 13, and

is aligned for 22 db of cable plus additional 6 db flat loss. The unit is housed in cast zinc for in-line mounting. Benco's Benex-22 is a new solid-state line extender, with gain at channel 13 listed as 22 db. The unit is zinc-housed, and is adaptable to pole, pedestal and strand mounting. The Stinger multi-tap insert to be introduced is said to be the first pressure tap insert for CATV using toroidal transformers.

COLORVUE AMPLIFIER

American Electronic Labs will display its new Colorvue amplifier series at the NCTA show in Miami. The solid-state trunkline units feature completely modular design, said to be unlike other designs available. Listing a maximum output capability of 48dbmv with -57db cross modulation (for 50 trunk amplifiers cascaded), and an operating gain of 24db over 12 channels, design of the new Colorvue amplifier is said to have overcome the problem of amplitude irregularities in adjacent channels, by keeping response flatness down to ± 0.25 db, even when cascaded. With 2 to 50 trunk amplifiers cascaded, operating gain is reportedly held to 22db. Differential phase and gain characteristics reportedly meet the standards imposed by common carriers for distribution of color signals.

DYNAIR UNITS INTRODUCED

New Dynair equipment on display at the NCTA show will include the new TX-4A solid-state modulator, the TS-100A sideband analyzer, new non-duplication switching equipment, and the RX-4A solid-state TV tuner. The TX-4A "Dyna-Mod" unit is available for use with either separate video and audio inputs, a combined video and multiplexed 4.5-mc input, or separate video and 4.5-mc aural inputs. Units are available for operation on any VHF channel and most special frequencies.

The TS-100A solid-state sideband analyzer is tunable through all 12 VHF channels, and provides complete facilities for video modulation of the unit under test plus analysis of the RF output. The TS-100A is compatible with most commercial oscilloscopes having vertical and horizontal input deflection responses of at least 10 CPS through 1000 CPS.

NEW KAISER-COX EQUIPMENT

The Kaiser-Cox line will feature three new units at the NCTA convention, including a new line of trunkline amplifiers, a new pilot carrier generator, and a new feeder line

amplifier. The new trunk amplifiers are part of the Phoenician series of modular units, and are available with 22 db gain, nominal noise figure of 10 db at channel 13, and minimum operational gain of 27 db, according to the manufacturer.

The pilot carrier generator, model KCPG is said to provide a frequency-stable, constant output RF signal for use in automatically controlling the gain and/or equalization in mainline amplifiers. The new model KCLE feeder line amplifier has up to 20 db gain and +43 dbmv output at -57 db cross-modulation for 12-channel operation, according to the manufacturer.

NEW "WEATHER CHANNELS"

TeleMation, Inc. will introduce two new Weather Channel units at the Miami convention, the Weather Channel 97, and the Weather Channel 75. The '97' features walnut paneled cabinetry, and dimensions of 27" deep by 43" wide by 36" high, as well as many features of current Weather Channel units, such as horizontal camera scan. Also featured is a new method of illuminating the instrument panel, which is said to eliminate shadows. A stationary camera is also offered for live telecasting applications. An 81 slide projector and card slot are standard equipment, with variable dwell time available for these camera positions.

The Weather Channel 75 is designed for smaller systems, providing wind velocity, wind direction, temperature, barometric pressure, and time. The instruments and camera used are identical to those used on other TeleMation units.

BLONDER TONGUE ADDS TO LINE

Among the new products displayed by Blonder Tongue in Miami will be a new single channel bandpass filter, the new Courier trunkline amplifier, and a new "Powerdrive" single channel amplifier. The Courier trunkline unit is a solid-state, pilot carrier AGC-controlled amplifier with variable tilt and gain controls, built-in power supply, and cast aluminum case. The Powerdrive single channel amplifier is designed for head-end applications, and features adjustable AGC action for stable, uniform output with greatly varied input.

Also new to the Blonder Tongue line are the new MTB series cable blocks, 2- and 4-TBV series multitaps, and model 4133 solid-state, crystal controlled post injection marker generator. A new "Transporter" solid-state broadband amplifier for trunkline applications will also be shown.

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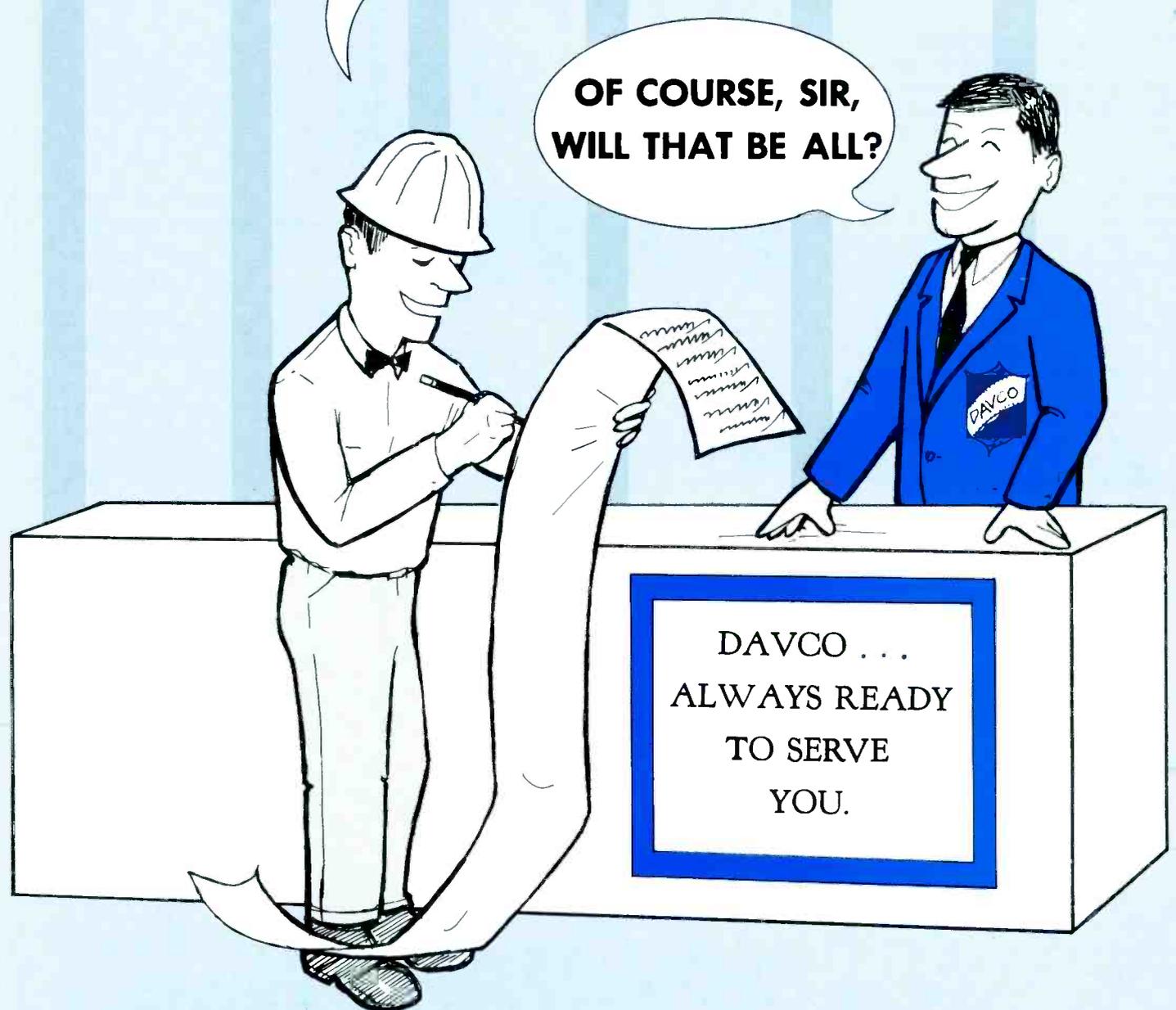
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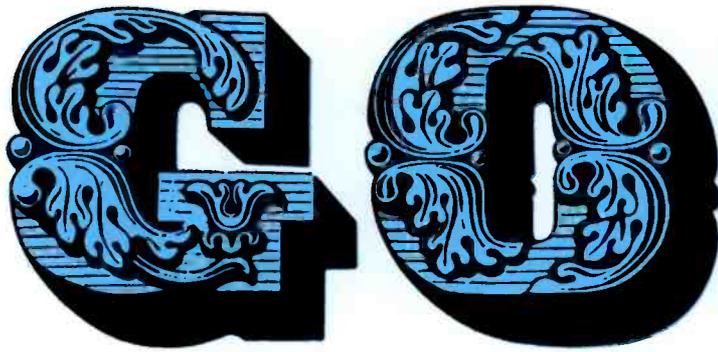


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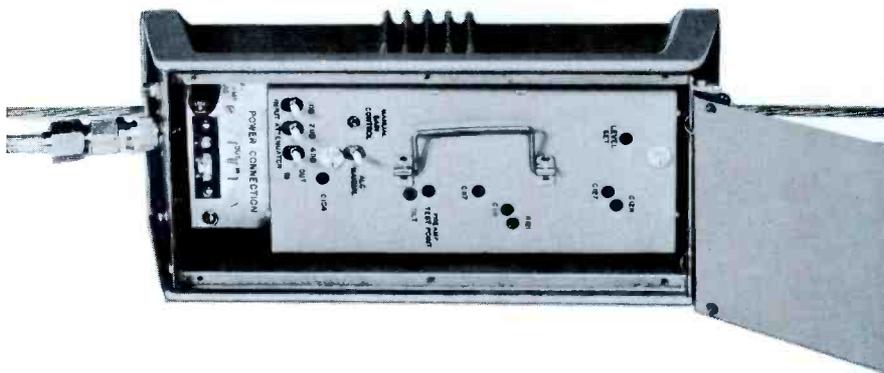
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