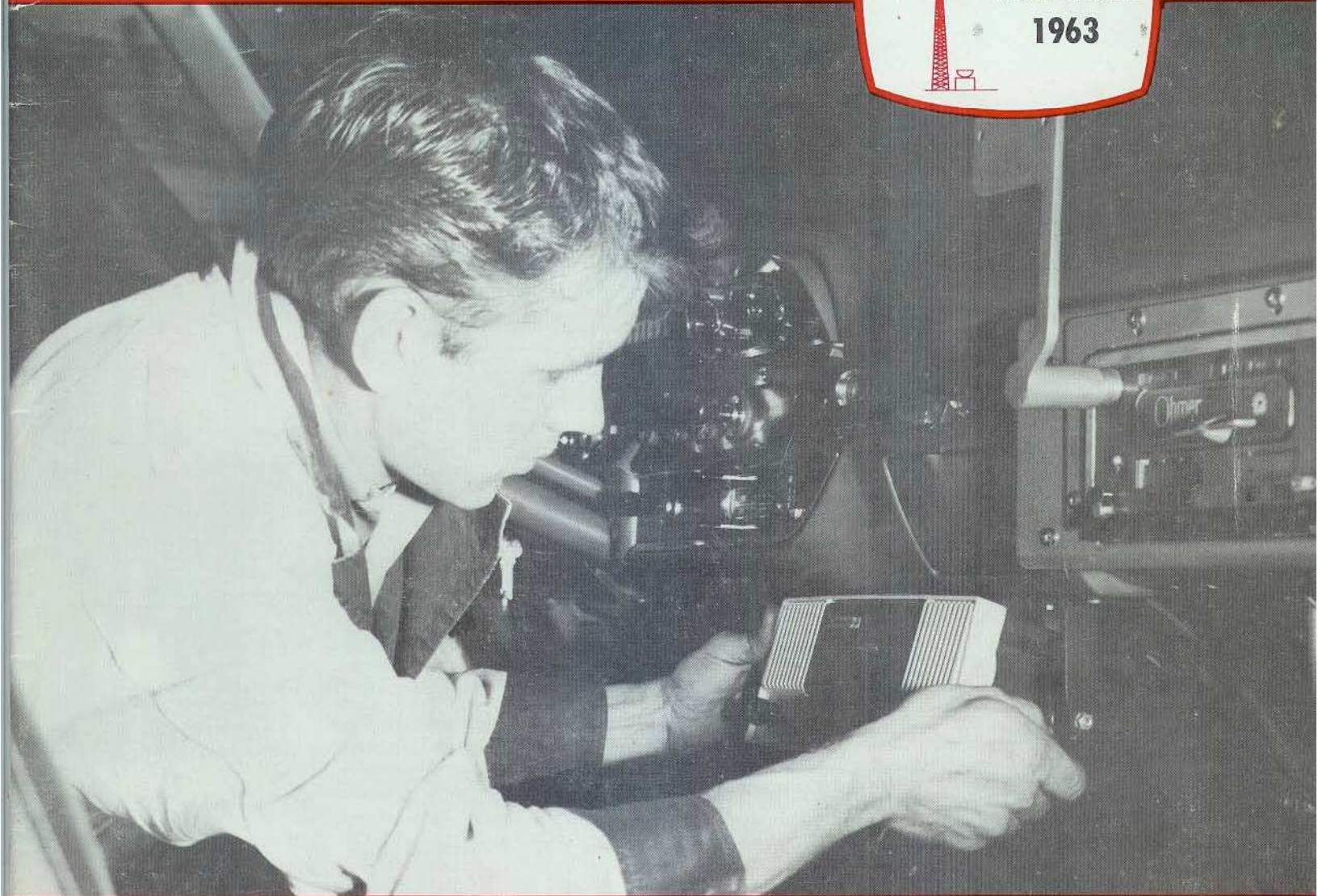


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# Video Communication Journal



**Serving the Audio-Video Communications Industry**

**IN THIS ISSUE**

- **THE STORY OF CATV** — Its Beginning and future
- **PAY TELEVISION** — Are we ready for it
- **TELCAN** — A revolutionary new development
- **ALUMINUM SHEATHED CABLE** — How to install it

# VIDEO-COMMUNICATION JOURNAL

Combining Television Horizons and Communication Horizons

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## Editorial

Perhaps a lesson is to be learned from the FCC's September action establishing a new Instructional Television Fixed Service on channels in the 2500-2690 megacycle band.

In spite of serious objections on the part of many non-broadcast interests the Commission found it in its heart to turn the 190 megacycle band virtually over to the educators without a single shot being fired.

The band in question has been allotted to "private microwave users." It has been used, but only a little. Those users who have been on the band have *blamed the FCC* for lack of additional occupancy, citing the fact that the FCC has never set definite standards for the band and any users up to this point have been there with full knowledge that they might one day wake up and find their band gone.

*Which they did.*

On the other hand, the private users who are there, or who contemplated being there one day, called the FCC as to why the Commission didn't consider "asking the educators" to share the 1990-2110 megacycle band with the broadcasters, who use this range for studio-to-transmitter and TV inter-city linkage.

The reason the Commission didn't ask the educators to share with the broadcasters should also be obvious. No-one for a minute thought the broadcasters would sit still for any sharing.

The entire proceeding becomes more misty when you consider that no manufacturer today has any equipment capable of doing a job for educators in this band, and that it will be next spring before the earliest of any equipment could possibly be ready.

Finally, there is little chance you will find an educator who remembers *asking* for this new fixed service. Feeling in Washington is that the entire project was hatched by a single manufacturer to create a new market for his product line. Whether this is true or not remains to be seen.

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# *The Story of Community Antenna Television*

by Milt Shaw  
San Francisco, California

Although the community antenna television industry has progressed slowly and silently, it has become a major factor today in the development of television in hundreds of small communities throughout the nation. Community antenna television, herein to be referred to as CATV, has brought television to thousands of homes beyond the normal range of television stations and thereby has helped to establish television as a national service. Subsequently, the development, growth, and improvement of CATV has almost been synonymous to that of its commercial counterpart, but to a lesser extent.

The first semblance of a community antenna television system developed in New York in 1947 when master antennas first appeared on the roofs of hotels and apartment houses to pick up television signals and send them to individually wired rooms. From this start, the community antenna television concept developed and grew until many communities were using huge master antennas to pick up television signals and bring them via coaxial cable to homes that were either out of range of television stations or located in areas where mountains obstructed the signals.

As an industry dedicated to operating in the public interest, CATV brings multi-channel television signals to 1,069,500 homes or an estimated 3.5 million viewers. However, not all of these viewers are located in small communities and rural areas. There are some CATV systems that are located in urban areas like San Francisco and Seattle where hills or mountains block normal reception.

## **A Beginning**

The first true CATV system came into existence in 1949, in Astoria, Oregon. Astoria, like many similar communities, was beyond the range of television signals, which at that time was 50-miles at the most; the nearest station was 125 miles away in Seattle, Washington. Aware that television signals travel in a theoretically straight line from the transmitting antenna, a group of local engineers erected a single antenna on a nearby mountain to catch the television signals and pipe them down to the cities' homes by coaxial cable.

A year later, a second system emerged in the mountainous area of Pottsville, Pennsylvania. To stimulate the sale of television sets, the local dealers banded together and put up a CATV system at a cost of \$580,000. The system brought in two channels and much improved reception.

The growth of community antenna television systems then began to spread rapidly when, in 1948, the Federal Communications Commission imposed a freeze on the licensing of new television stations owing to technical problems. With the threat to restrict the new medium to a few privileged urban areas came the impetus in many towns and cities to build CATV systems capable of receiving signals from the stations that did exist. The freeze was lifted in 1952; and CATV continued to grow, developing over 1,000 systems in 47 states and the Virgin Islands.

## **Bringing the Signal to Town**

The basic operation of a CATV system involves bringing television signals into distant towns without deterioration of the signal. The first step of prime importance is the location of adequate signals and the installation of appropriate receiving antennas. Usually the antenna and attendant tower or pole is built after the CATV engineer has searched with special electronic instruments for the location giving the most reliable signal. If the location happens to be too far away from the community, the television signals are sometimes brought to town over a leased long-distance microwave service. Where a location is relatively near the community to be served, coaxial cable is used to transport the signals.

CATV systems use specially designed receiving antennas, one for each channel, aimed precisely in the direction of the transmitting station. These are placed on high towers, sometimes built as high as 750-feet, to reach strong signals. In addition, the signals are boosted by amplifiers before they are fed into a coaxial cable for the trip to the subscriber. As these signals are carried to town by coaxial cable, it is necessary to reamplify the signals every so often to overcome losses in the cable.

## **Subscribers and Economics**

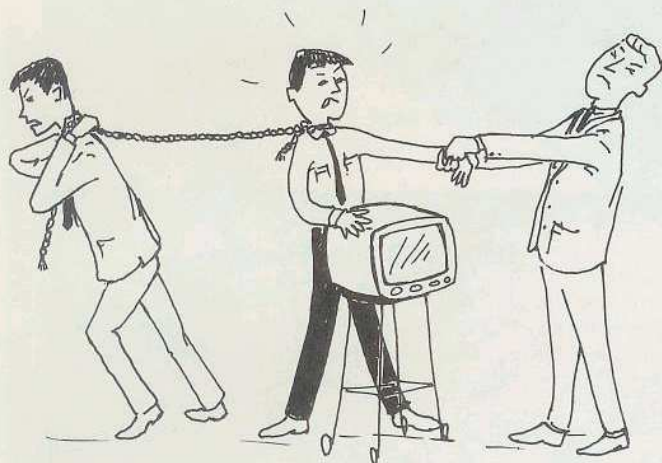
Getting a television signal to the subscriber's house is best described by comparing it to the installation of a new telephone. First, a technician surveys the home to ascertain where the small coaxial line must be run to conveniently reach the television set. Then, he must connect a "drop-line" from the house to the nearest coaxial cable line which is usually attached to electric power or utility company poles which the CATV company has obtained rights on. That is about all there is to it. For this service, the subscriber pays an installation fee which

may run from \$4 to \$200, the average being around \$30.

The usual monthly charge to the subscriber for the television programming ranges from \$2 to \$6. However, based on an average charge of \$4 per month, a subscriber pays \$48 a year for CATV. Most of the CATV systems serve as estimated 800 subscribers with only a few numbering more than 5,000. Yet, systems having 100 to 500 subscribers form the majority of the CATV industry. The average CATV system will offer four or five television signals and some may carry as many as nine. To make their service even more attractive, some even furnish FM stereo and hi-fi background music to subscribers.

#### CATV and the Broadcaster

In some areas CATV has been held back or suffered because of the attitude of local television broadcasters. This attitude seems to have fostered the idea that CATV has an overwhelming impact on local broadcasting facilities. On the other hand, there have been a number of broadcasters that have beheld gross advantages in the systems. Nevertheless, some broadcasters have complained that CATV systems



BROADCASTER

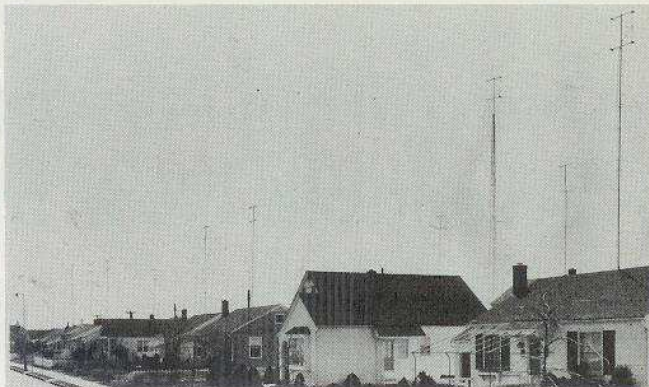
TV VIEWER

CATV'er

hurt their business because they provide the viewers with a choice of television channels which contain a wide variety of programs thereby reducing the chances that a local advertisement will be seen by all. Small broadcasters feel that with the element of CATV, local advertisers are somewhat reluctant to contract for time on the station. Another claim that has been made by broadcasters in small communities, primarily areas where there is only one station, is that: (1) CATV systems have refused to carry the signals of the local station; (2) local signals have been technically degraded by the CATV system; (3) the CATV system carries the same network shows and programs as the local facility thereby duplicating local efforts. Such practice is said to have had resulted in audience fall-off and a proportionate decrease in advertising revenue.

#### The FCC and CATV

The Federal Communications Commission holds no regulatory authority over the operation of a community antenna television system. In the past, the FCC has requested that authority be given it to regulate CATV but Congress has not yet responded

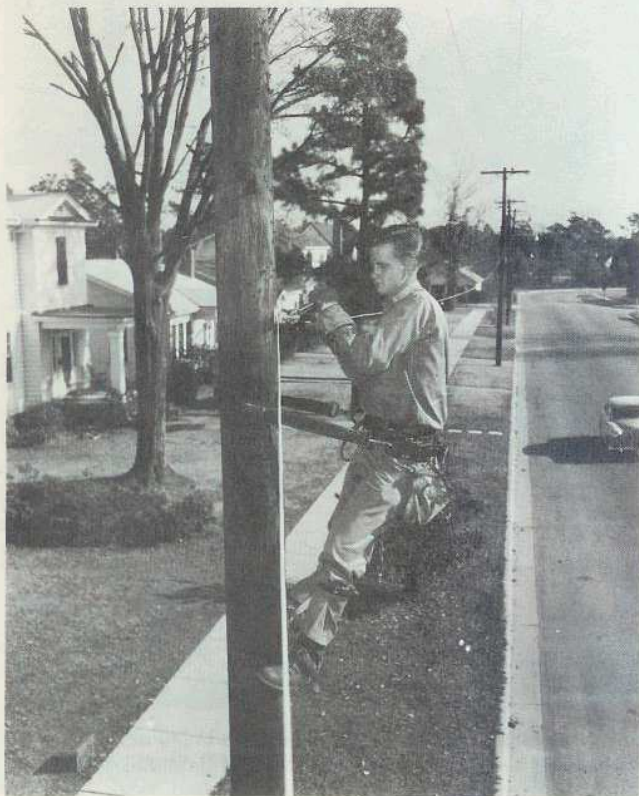


Photos Courtesy The Jerrold Corporation

by allowing the FCC to assume this responsibility. In spite of this, the FCC has attempted to regulate the industry by imposing non-duplication requirements and other criteria regarding the carrying of local television signals upon applicants for microwave grants where such applicants are involved in the transportation of television signals to a CATV system.

A strong backer of the FCC's theories regarding the regulation of CATV is the National Association of Broadcasters. The NAB has stated that their interest is solely in protecting the broadcaster and consequently they have suggested that the Commission regulate CATV operations to prevent duplication of local programs which they feel has created a condition of unfair competition.

The FCC first came to grips with the CATV industry as the result of its decision in the now-famous



Carter Mountain case in 1962. Through its jurisdiction over microwave common carriers, the Commission granted a protest by Joseph P. and Mildred V. Ernst, owners of KWRB-TV, Riverton, Wyoming, and denied the application of Carter Mountain Transmission Corporation for additional microwave facilities to serve CATV systems in Thermopolis, Riverton and Lander, Wyoming.

The FCC based its decision on the economic survival of KWRB-TV. An increase in Carter's facilities would render better and more efficient service to the CATV system serving a community with only one local television broadcasting station. Thus, it was claimed, the Riverton station would find it more difficult to sell its advertising due to a major split in the audience; and the demise of the local operation would therefore result.

KWRB's stand on the matter was that a grant of

the CATV application would have permitted the urban areas a wider choice of programming but would not have extended the coverage for the entire region included in KWRB-TV's contours since it would be too costly for CATV to enter the rural areas. Therefore, if KWRB were forced to cease operation, the rural people would be left without any service.

Today, there are about 40-communities whose local television stations compete for audience with a local CATV system. The National Community Television Association, a well-known spokesman in the industry, estimates that in only three or four of these communities is the situation a matter of controversy. In most cases, however, television stations enjoy the additional coverage CATV brings them.

#### **Another Problem**

CATV operators have met with further difficulty owing to circumstances arising from the procurement of a franchise. A franchise is usually granted only where the use of public property is involved. Since a CATV system must run cables along the public streets and right-of-ways the franchise functions to protect the city from damage claims resulting from violations of good engineering practice and malicious or accidental damage to the property.

The granting of franchises to CATV systems is relatively new and has recently even been required of long-established systems. In fact the grant is a legality recently recognized by the cities as needed for the protection of the public. In truth, the imposition of a franchise has been used as a means to gain control of the complicated CATV systems, in some cases. Where this has occurred, city governments have been encouraged to impose a franchise upon CATV operations by local broadcasters and theatre owners who were attempting to eliminate what they felt was unfair competition.

In a few communities, the desire for regulation of a CATV system arose from the belief that such an operation was in reality a public utility since it used lines or cables strung on poles throughout the city. However, courts of law have ruled that a CATV system is not a public utility. Also, it has been established that city governments lack the authority to regulate, in any form, the operation and rates, or set forth technical qualifications for a CATV system. In most instances, franchise arrangements have been equitable and designed along workable lines.

#### **Possible Legislation**

As the encroachment by local and state governments to regulate CATV systems has grown, the National Community Television Association has recognized the need for legislation providing for limited regulation when there is a legitimate complaint by a television station in the same community. In addition, the NCTA's Board of Directors would like to secure a uniform national regulatory policy with respect to CATV and establish a forum for resolving the CATV-Broadcast conflicts which continue to plague both industries.

The CATV industry has not readily come around to the concept of federal regulation, nor has the FCC favored the responsibility of imposing regulation over CATV operations. But, the Commission does have control over the microwave common carriers, some of which carry or provide relay services to CATV systems.

Although the FCC does not advocate general fede-

ral regulation of CATV, it does favor legislation which would grant it powers to adjudicate disputes arising between local television stations and CATV systems that operate in the same area. A case in point is the previously mentioned Carter Mountain controversy in which the FCC denied additional microwave facilities to CATV systems in Thermopolis, Riverton and Lander, Wyoming. It concluded that the need for the service provided by the local television station to areas beyond the reach of the CATV system, outweighed the need for improved CATV service.

#### **A Dead Proposal**

A proposal to curb CATV competition was submitted before the FCC in 1961 by WSTV, Inc., Steubenville, West Virginia. The rule-making petition would have prohibited the grant of a license to a network affiliated television station who permits the distribution by wire of its programs by a CATV system which operates in a different community in which another television station broadcasting the same programs.

The purpose of the proposed rules as stated by WSTV, Inc., was to prevent large market television stations from extending their normal service areas by means of CATV systems in a way that results in the duplication of programs carried by, or which would be available from, smaller market stations in the latter's Grade A contour area. However, a television station can not legally prevent operators of community antennas from picking up their programs unless they are protected by a copyright or an exclusive license. Even though networks hold exclusive property rights to their programs, no legal action has ever been taken against CATV operators to enforce these rights. The Commission denied the petition on the grounds that it would place undue obligations on the television licensees, nor would this method of attack actually solve the problem.

#### **Business Radio Service Becomes Popular**

As the result of a study made by the FCC, in 1958, into the economic impact of CATV operations on the development of television broadcasting, the Commission looked into the matter of CATV regulation but decided it was powerless to levy restrictions on the systems and upon common carriers serving CATV systems. It further concluded that possible economic injury to a broadcaster from a common carrier, microwave-fed, CATV system is not legal grounds for refusal to authorize such facilities.

Despite the wide-spread use of point-to-point microwave common carriers in relaying television broadcasts to CATV systems, operators of the systems have shown a new interest in private microwave carriers for obvious reasons. FCC license renewal regulations require the microwave common-carrier to show at least half of their services are rendered to subscribers independent of the carrier. To forego these consequences, CATV operators have been applying for private microwave systems in Business Radio Service to relay television signals to their systems. The first such application granted by the FCC, authorized the CATV system of Wyoming, Inc., to bring the programs of two Denver, Colorado television stations (KRMA and KTVR-TV), to a CATV operation in Casper, Wyoming.

Recently the Commission has proposed to adopt rules and regulations in the Business Radio Service to

govern the authorization in that service for microwave point-to-point television signal relay facilities where the CATV system proposed to be served operates within the Grade A contour of a television station. The proposed rules would: (1) grant authorization if the CATV system, in an area served by an existing local television station, agreed not to duplicate simultaneously or 30 days before or after the broadcast of a program by the television station, provided the CATV operator has received at least 30 days advance notification from the broadcast station licensee of the date of broadcast. Further, if requested by the television station, the CATV system must carry the signal of the station without material degradation in quality; and (2) similar conditions would be imposed if there is a local television station authorized, but not constructed or operating, and also if there is a television channel assigned or subsequently assigned to the area to be served by the CATV system.

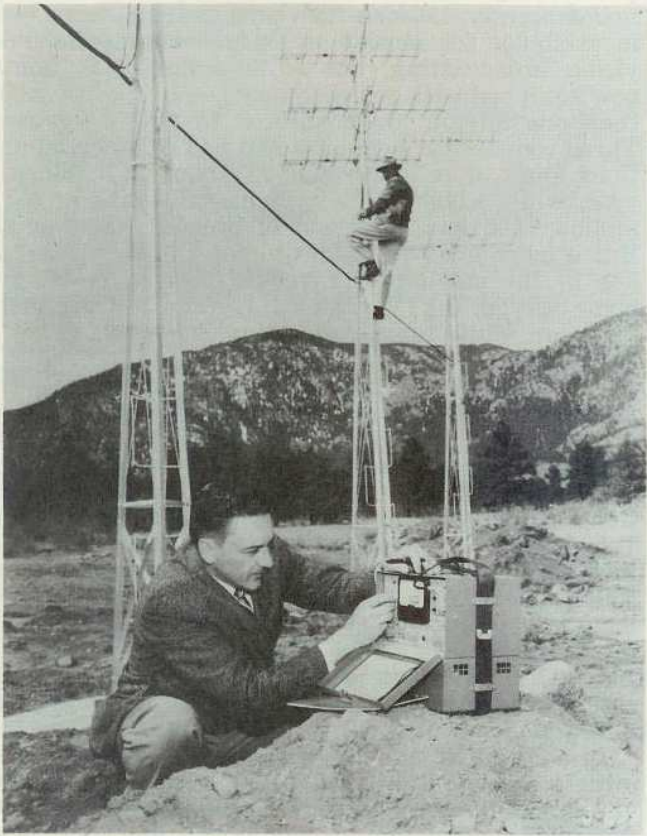
Furthermore, a freeze was placed on all applications for microwave systems in the Business Radio Service, pending the conclusion of the rulemaking, unless the applicant voluntarily accepted the proposed conditions. Feeling the freeze on the applications to be unduly broad, the Commission later revised their thinking to allow authorizations subject to the conditions that the microwave stations authorized may be used only to relay the signal of an educational television station.

In a statement made by Chairman Minow, now no longer with the Commission, dissenting in part regarding the freeze on microwave applications and speaking of the transmission of programs from educational stations, he states: "... I can see little or no likelihood that the importation of such programs into a community served by a television broadcasting station would seriously impair the station's ability to operate in the public interest." But although Minow did not believe the Commission could justify its requirement that the CATV operator carry the programs of any present or future local television stations as the price of a microwave authorization to import educational television programs, he does support the majority's decision — that CATV systems should generally carry the programs of local television stations.

#### **Educational Television**

One of the most important aspects of CATV is its application to the field of educational television as well as closed-circuit instruction. A large number of the CATV systems already carry local educational television programs to local schools in addition to closed-circuit signals from college television studios. Others offer free installation and service to educational institutions. A survey conducted by the National Education Association and the National Association of Educational Broadcasters showed: (1) 72 out of 78 reporting CATV systems are providing one or more ETV signals to subscribers and schools; (2) these programs come from 23 ETV stations and the Midwest Program for Airborne Television Instruction (MPATI); and (3) programs are received by 131,793 homes, 231 elementary and secondary schools, and eleven institutions of higher learning in 17 states.

A CATV system in Ithaca, New York presently carries the closed-circuit signal of Ithaca College and distributes it to 18,000 subscribers. The fully



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equipped studio of the college employs its faculty and the local citizenry in providing college credit courses, cultural programs, and community affairs to the CATV audience. CATV has further allied itself to presenting community meetings and public discussions, thereby increasing opportunities for active community participation.

Although the CATV industry conceives of itself as primarily a receiving "business," the NCTA encourages its members to increase the intelligent use of television as a tool to be used by teachers and learners in professionally planned educational programs. The systems have set out to accomplish this goal through working together with local school officials and in sharing facilities costs and technical skill. Several CATV systems have contributed public services such as live studio telecasts of news, weather, sports round-ups, and panel discussions.

**CATV is Big Business**

Community antenna television systems have been in existence for almost as long as commercial television broadcasting, but of 50-million U.S. homes now equipped with television sets, only slightly more than one million are connected to CATV systems. Three commercial networks and 543 commercial stations share a total revenue of about \$1.3 billion a year, while 1,000 CATV systems only take in \$51.3 million, less than 4 percent of broadcasting's purse. But a more adequate indicator of CATV's potential lies in the amount of revenue received from each home served. CATV systems average \$48 per home per year, while the broadcasting industry's share is less than \$30.

With over \$450 million invested in CATV, the industry is growing in cities of 50,000 to 100,000 in population. Originally a small community undertaking, CATV now boasts of such owners as RKO-General, TelePrompTer Corp., Antennavision, Inc., General Industries (formerly National Theatres and Television Co.), Jerrold Electronics, and Daniels & Associates, Inc., a prominent CATV brokerage firm. The Daniel's firm has handled one of the largest transactions in the history of the CATV industry. It involved the sale of 18-systems in 10-states for a sum of \$10.25 million to Televents, Inc., a new organization headed by Alfred R. Stern, formerly an NBC vice-president.

In addition to the large investors, CATV system owners also include multi-hotel chain operators, television broadcasters, capital investment groups, manufacturers of distribution equipment, and local businessmen. In most circumstances, these companies are actively looking for more CATV investments. Each multi-system operator has a different reason for selling.

The future of CATV looks promising, but it is still undetermined. Nevertheless, the development of pay-TV appears to be inevitable. Incidental tests of pay-television, via CATV, were made as early as 1960 when the second Floyd Patterson-Ingemar Johansson heavy-weight championship fight (not televised commercially), was offered to CATV subscribers at a cost of \$2. The subscribers in 13 cities were asked in advance if they would like to see the fight and if so, to send \$2 for the privilege. Eighty per cent of the subscribers ordered the bout.

Contingents within the CATV industry are divided for and against pay-TV. Large systems operators

(Continued on Page 30)



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## CATV STORY

(Continued from page 24)

such as RKO-General, who has already entered the field of subscription television openly favor pay-TV in CATV's future. However, the smaller operators, like the small businessman who got CATV off the ground, oppose such a move.

The question now is not how to operate pay-TV, but whether to operate it at all. If it is to become successful it must offer a greater diversity of programming than commercial television now offers. Its success will be determined by the entertainment industry with which it will have to compete. However, as cable systems grow and the introduction of pay-television becomes apparent, theatre operators will be given an opportunity in pay-TV by working together with CATV operators on the installation of a compatible closed-circuit and over-the-air pay-TV system. The potential of such a system would increase the theatre audience capacity as well as the income from the CATV subscriber.

One final significant trend in the ownership and operation of CATV is the ever growing participation of the broadcaster in the CATV industry. As broadcasters begin to understand and participate in CATV operation, the sense of ambiguity and animosity may soon be replaced by one of mutual cooperation.

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