

TV Communications

The Professional Journal of Cable Television

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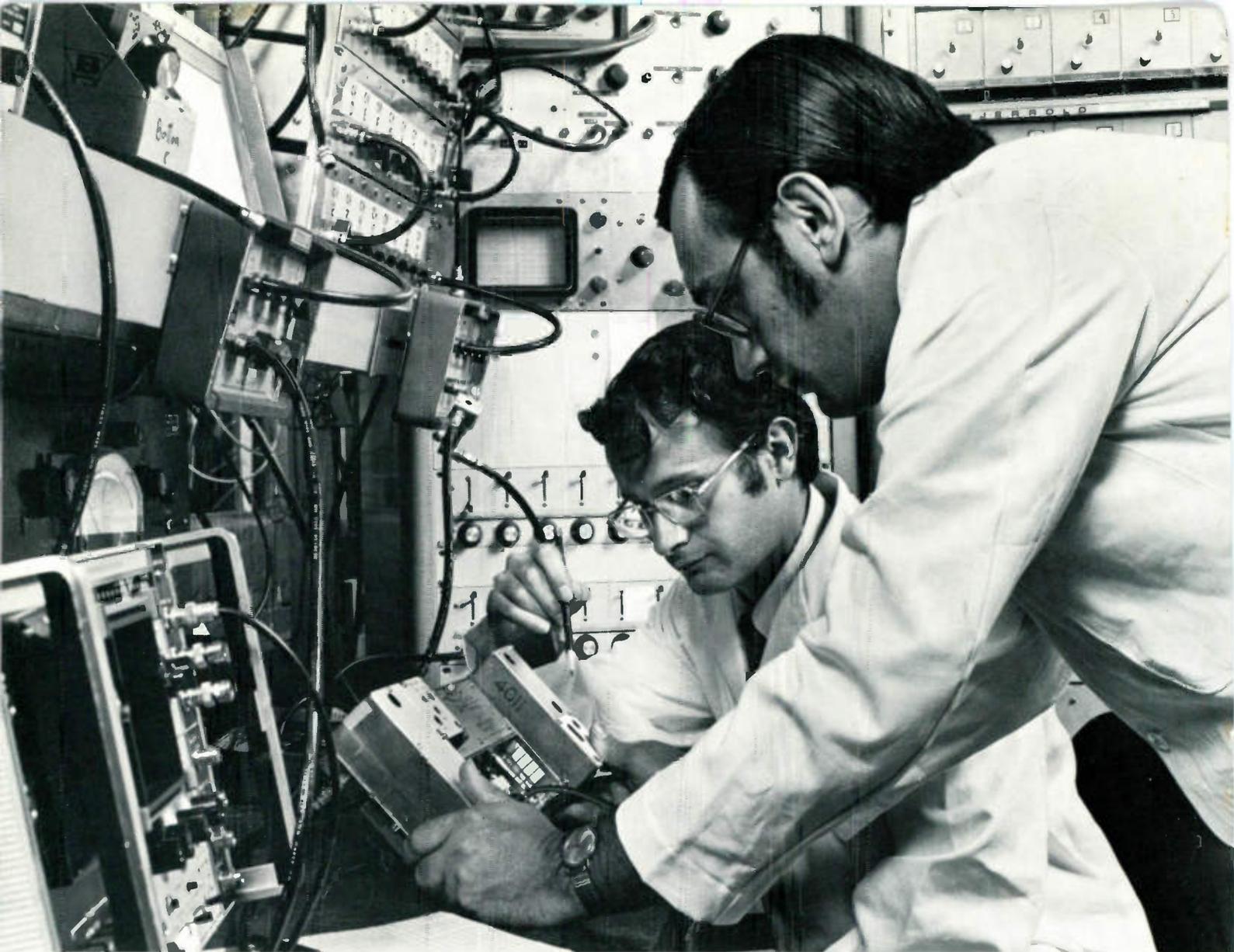


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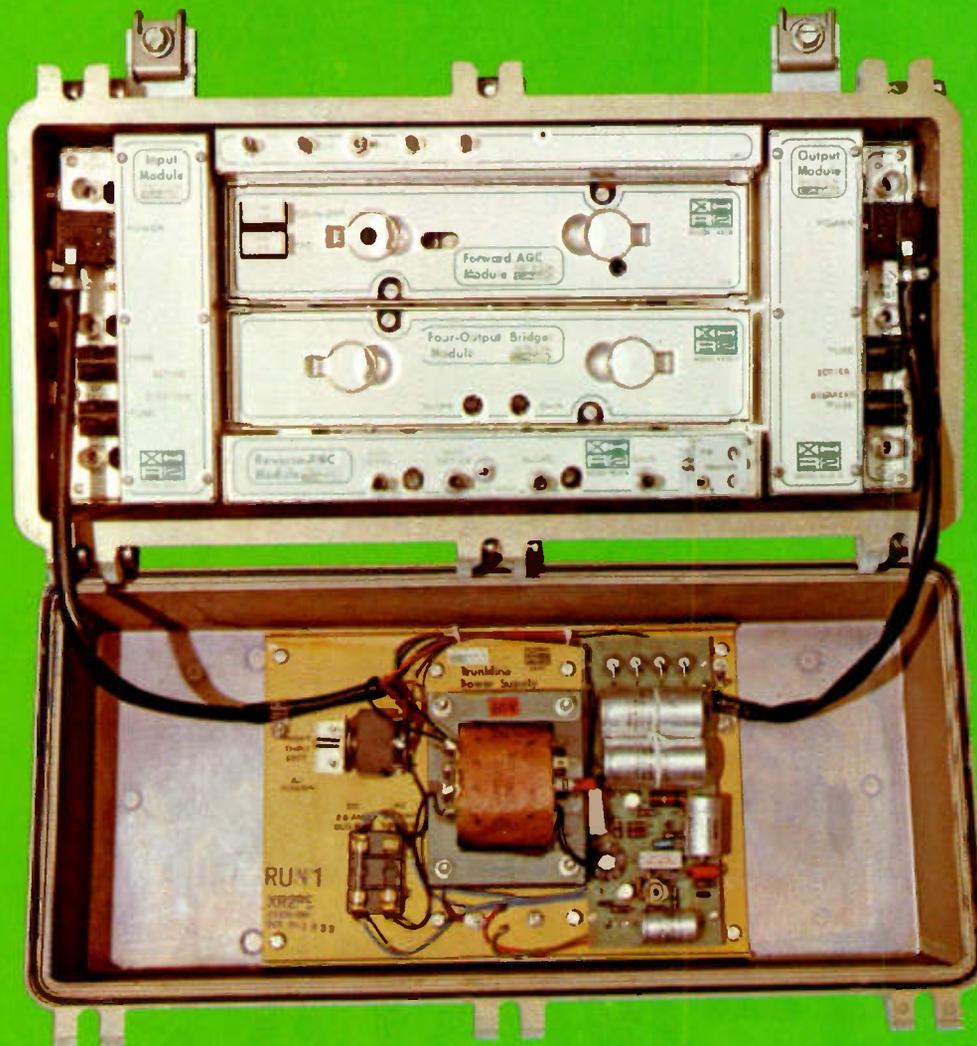
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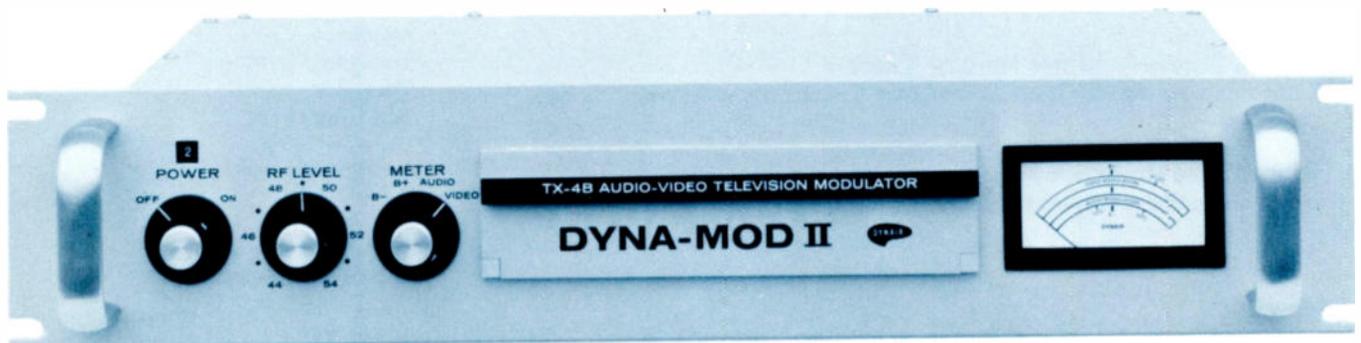
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October 1972, Volume 9, Number 10.

TV Communications

The Professional Journal of Cable Television

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B. Milton Bryan

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This Month's Cover...

Public Access — it has been happening at TelePrompTer Manhattan Cable TV since July, 1971. Here, Uma Sen Gupta introduces her group of Indian dancers. For an in-depth report on the access issue turn to page 30 for "Say the Magic Words (Public Access) — You're on the Cable."

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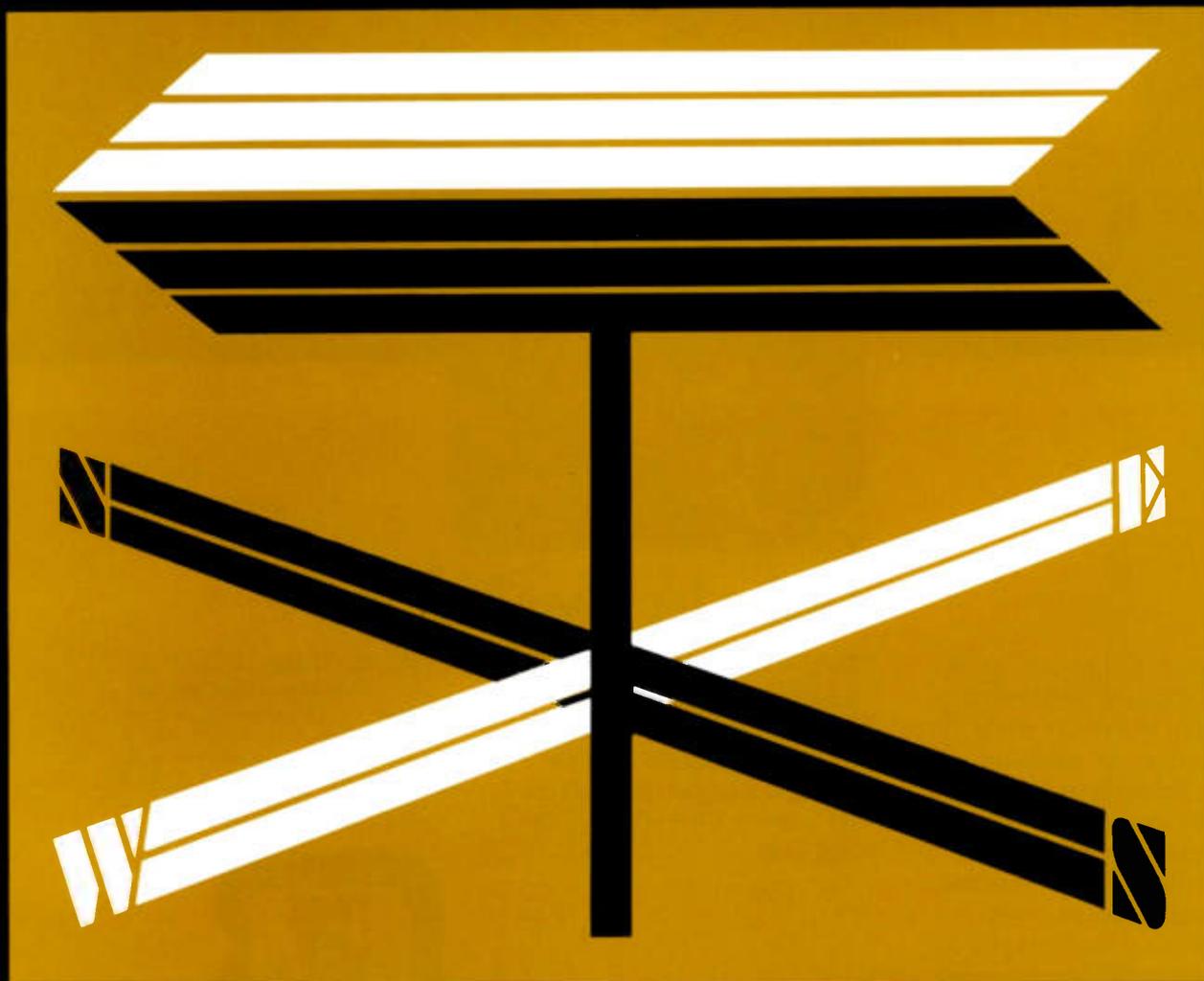
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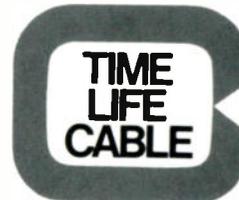


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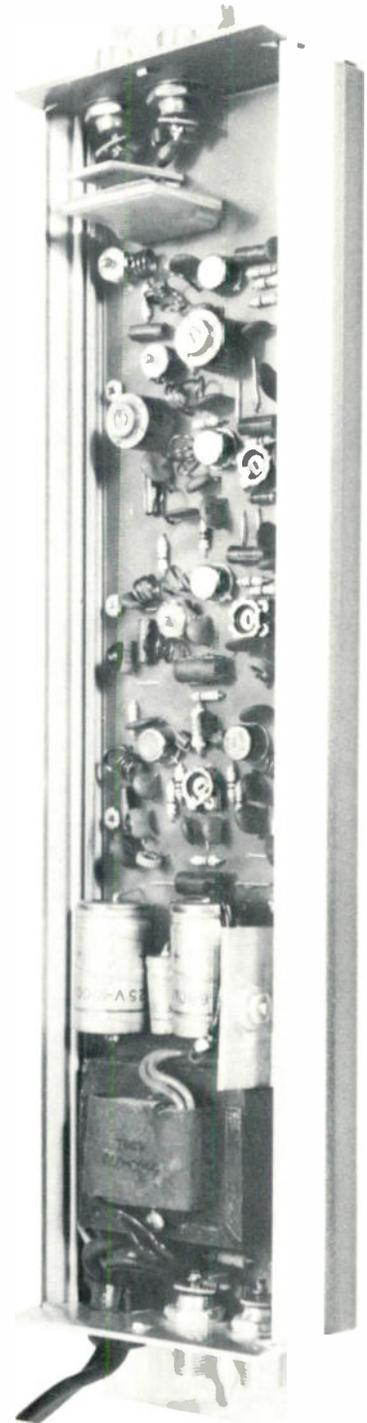
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The TVC Viewpoint

EDITORIAL



Robert A. Searle
Publisher

A Pause That Refreshes

It's refreshing to see things change for the better, and the upcoming NCTA "Expos" look like a perfect example of that sort of a pause from daily problems.

Some of the subjects to be covered in the meetings to be held this month and next are listed on this page just to whet your appetite. Any red-blooded cableman just has to get excited when he looks over that agenda.

Why? Because the meeting fare has some meat in it for a change. As a veteran meeting attender, this editor has been depressed more than once with the program content at cable TV meetings.

You've sampled the menu too. Surely you remember the seemingly endless legal panels where expert after expert put you to sleep with speech after speech in legalese. More often than not those sessions ended with a short question and answer period which was dominated by a single enthusiastic cableman who had questions about his unique situation. At least *he* got something out of the session — free legal advice.

What made it really rough was getting up from one of those legal sessions and going into a typical engineering session. This time the experts changed their language to *engineeringese* and put you to sleep with speech after speech about engineering considerations.

If the above analysis seems too severe to you, you are probably right. It is an exaggerated oversimplification of what most meetings are really like, but it clearly expresses something that has concerned this editor for quite some time.

This industry needs information it can sink its teeth into. It is ridiculous for us to spend all of our limited time together hearing speeches about legal complexity and engineering theory. We need information that is practical — information that tells us "how to."

We need to have meetings which are worth taking your technician to. We need to cover the subjects which will affect our bottom line. We need meetings which allow us to learn from the combined experience of MSO specialists.

And that's the need that should be met by the upcoming Expos. As the agenda reveals, subjects will be discussed which affect our business close to home. The conference periods will give operators a chance to meet personally with the experts to get specific answers to their specific questions. That's a new twist I especially like.

It's true that we must cover the larger, broader based and more theoretical considerations that face our industry, but we also need to get down to the brass subject of doing business better.

Hats off to the NCTA staff for preparing an excellent agenda for the North East and North Central Expos. They are shows worth attending.

MANAGEMENT SUBJECTS

Understanding the Occupational Safety and Health Act
System Control Record-Keeping
Marketing Multiple Dwellings
Pole Attachment and Construction Problems
Education as the Local Origination Partner
Local Taxes and Insurance Bonding
EEO and FCC Form No. 395.
Handling Public Relations in Your Community

TECHNICAL SUBJECTS

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Perspective

on the news



B. Milton Bryan
Editor

Now that the industry's attention has been focused on technical performance tests, FCC is hearing outcry from NCTA and others about the deadline of year's end. Association counsel Feldstein told FCC it will be "virtually impossible" to perform tests on all operating systems before December 31 deadline.

Early response from inside the Commission gives some indication the FCC may show some sympathy for smaller operators with regard to the deadline, but nothing certain had come forth at Perspective presstime. NCTA is asking Commission for a one-year extension of the deadline. Association is also requesting that FCC provide guidance on standardization of procedures for testing.

Some encouraging action has come forth from the FCC with regard to regulatory jurisdiction. In response to an urgent letter from Western Communications executive Ed Allen, CATV Bureau Chief Schildhause clarified 13 points regarding what franchising authorities can and cannot do.

Included in the clarification statement: franchising authorities may not base franchise fees on all incomes derived from a CATV operation. Standard subscriber revenue alone is subject to the city tax; the Commission will probably reject a franchising authority requirement for local origination in communities with less than 3500 subscribers; franchisor may not require all access services free; also, franchising authority outside a major market may not require more than 20-channel capacity.

Commission statement is encouraging, in that it is further reassurance that the FCC intends to stand behind the intent of its new CATV rules. Some further encouragement comes from the FCC's handling of requests for certificates of compliance. Although FCC handling of the requests isn't exactly moving at a whirlwind pace, (some sources say they expect it will take at least a year to process all requests now on hand) the Cable Bureau has begun sending requests up to the Commission for decision. A number of unopposed requests have already been processed routinely by the Bureau. Those with objections will have to be handled individually by the Commission at this point.

The Federal-State Local Advisory Committee continues to struggle for workable compromises, but opposing interests on the group still make meaningful progress difficult. Committee did agree, however, that the FCC should not delay requests for certification when there is a dispute over local jurisdiction. That FSLAC recommendation to the FCC does indicate that the majority of the Committee is at least concerned that the industry continue its forward progress.

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Athena Communications Corporation has developed a low-cost system to scramble and unscramble cable TV programs called EnDeCode. The system uses a decoder (top) which can be incorporated into a converter, atop a TV set in the home. The encoder, normally located at the system head end, is placed on the TV set (bottom) for photo purposes. This patented system and a special program package will be offered to subscribers on Athena's Cable TV systems and will be made available to other Cable TV operators as well.



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LETTERS

Dear Mr. Searle:

I was happy to see both your editorial and Marc Nathanson's article on franchising, the Achilles heel of the industry. I agree with both pieces. However, I believe the industry has some cleaning up to do. Further it is in the industry's interests to have both informed city officials and fair and orderly selection procedures. Without them we are all going to end up with mud on our face. Nathanson's comment that the industry expects very little public attention during the franchise process is true — very little attention is paid by the public. In the very near future both the industry and public officials are going to suffer when the public begins to check on how their franchises

were awarded. As long as the following pitches will win franchises, the industry and the public are in danger.

Pitch One: We will give you 18-30 channels plus local programming for \$4.75 a month.

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Pitch Two: We will offer 30 or 60 TV channels.

Comment: Only ten or twelve will have any programs.

Pitch Three: (To City Councilmen) Pass this ordinance and leave everything to us. We are experts in this business.

Comment: This is the most damaging because it leaves public officials without knowledge or understanding of what they are doing. Franchises continue to be awarded without public bids, public hearings or public notice.

Most at the urging of cable companies and their agents. This is going to make for a bloodletting at FCC hearings and fill court dockets across the land, enriching FCC lawyers and no one else.

It is in the public and industry interest to establish a code of conduct and to provide information on the industry and the rules that govern the industry to franchising officials in city and county government. The code of conduct should encourage public notice, public bids, and public hearings; reasonable rates and a clear distinction between channel capacity and TV programs available to the customer. This is the minimum necessary to maintain an industry with any public or self respect.

Arthur Barber
The First Communications Co.
Bethesda, Md.

Dear Mr. Maxwell:

Thank you for your letter and enclosed magazines entitled TV

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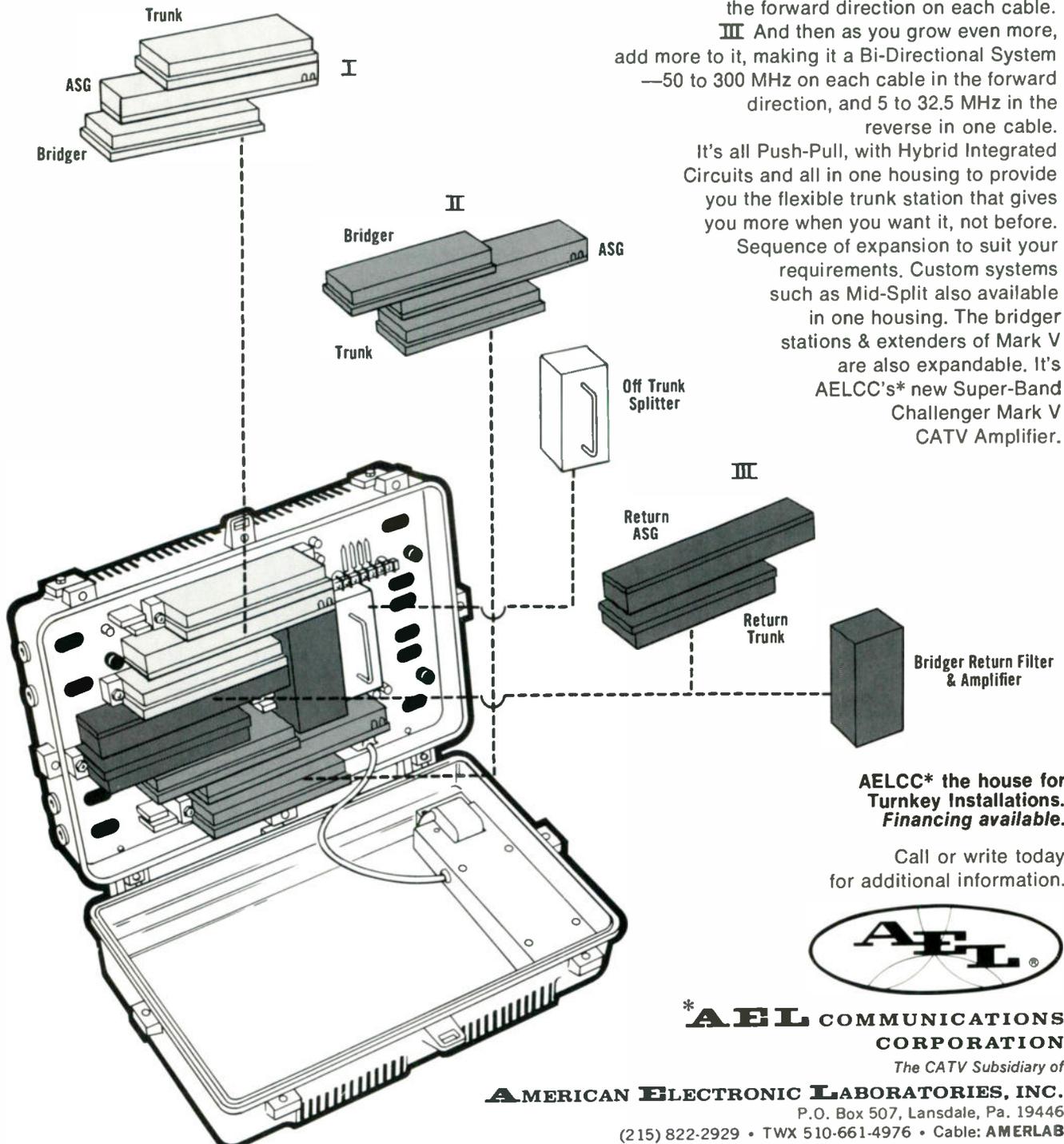
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Communications and CATV.

As a member of the Senate Commerce Committee, I appreciate having this information and am sure they will be most useful.

J. Glenn Beall, Jr.
United States Senate

Dear Ms. Steinberg:

We're happy to send you a complimentary subscription to *URBAN TELECOMMUNICATIONS FORUM* — as we're both used to that refrain "it's nice to know that somebody out there is listening." An exchange subscription isn't really necessary since we are already getting both *TVC* and *CATV* through my personal subscription at another address.

However, it might be helpful if you care to note in *TVC* and *CATV* to the general effect that we are publishing a monthly review and discussion of policy developments in telecommunications for city administrators, educators and urban planners, particularly as these policies relate to broader urban problems and

values, and as these developments reveal possible implications for greater dispersal in living patterns, in fuller utilization of community institutions, and even changes in the customary journey-to-work.

The Editorial Advisory Board includes Glenn Ralston as Managing Editor, who is a city planner and an Associate of the Urban Telecommunications Workshop; Kas Kalba teaches communications planning at Harvard's Graduate School of Design and was formerly a staff member of the Sloan Commission on Cable Communications; Herbert S. Dordick, Director of New York City's Office of Telecommunications, was formerly a member of the Rand Corporation; and Richard L. Meier, author of *A COMMUNICATIONS THEORY OF URBAN GROWTH*, is a professor of Urban Planning at Berkeley.

Sincerely,
Glenn Ralston
Managing Editor
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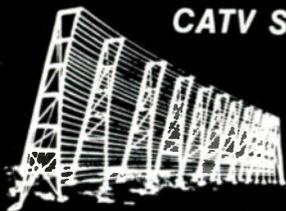
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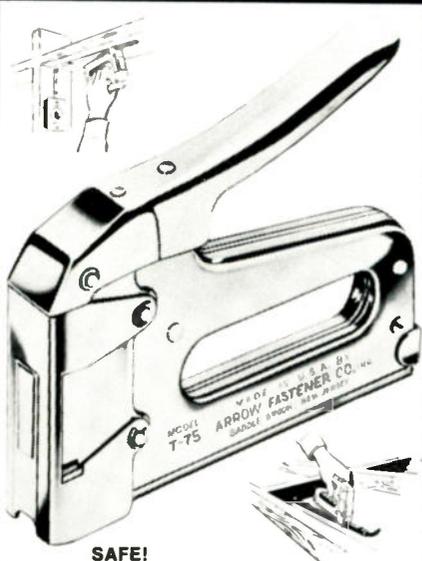
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Management Guidelines

Randall B. Lee
Asst. Managing Editor



The Minorities Revisited

In August's column, "The Minorities and Management," I made the general statement that "cablemen don't need to be told that there is little minority participation, they can see that by looking around."

This month, I'm able to add some figures to that statement. The information in the table below was obtained from filings at the FCC from some of the major MSO's. It will still be a while before the official figures are available from the Equal Employment Opportunity Commission, but the pattern is clear.

The numbers in themselves do not tell the complete story. Breaking them down into "type of work performed" categories is more enlightening. For example, minorities (blacks, orientals, American Indians and Spanish-surnamed individuals) employed as managers or as professionals represent a very small percentage of the total employed. Of TelePrompTer's 2,080 employees, only 15 qualify in this category. Cox lists two out of 428; TCI lists three out of 582; Sammons, six out of 338; Warner, two out of 414;

and Viacom, nine out of 515. ATC, CPI and Cypress indicate they have no minority employees in these capacities.

The breakdown of female employment is also quite interesting. Of the major MSO's, only TPT appears to have a good dispersment of female employees with 14 percent in official/manager or professional categories. TelePrompTer has 639 women, 523 are in clerical positions; TCI has 191 women, 185 in clerical positions; Viacom, 163 women, 142 in clerical; ATC, 155 women, 154 in clerical; Cypress, 136 women, 122 in clerical; Warner, 109 women, 95 in clerical; Cox, 106 women, 103 in clerical; Sammons, 89 women, 72 in clerical work; and CPI has 82 women . . . all in clerical work.

While I seriously doubt that any of these firms have deliberately hired and promoted with discrimination against either minorities or women, the figures show that neither group has been provided with "equal" opportunity.

Management has a job to do . . . let's do it without external intervention.



Employment Figures from Major MSOs

Company	Total Employees	Minority Employees	
		Male	Female (male and female)
TelePrompTer	2080	1441	639
American Television & Comm.	527	372	155
Cox Cable Communications	428	322	106
Community TeleCommunications	582	391	191
Sammons	338	249	89
Warner Communications	414	305	109
Viacom	515	352	163
Communications Properties, Inc.	276	194	82
Cypress Communications	444	308	136

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	CONNECTICUT Seymour	ILLINOIS Carpentersville Decatur Effingham Galesburg Mendota Monmouth Paris Peru Rochelle Westville	KANSAS Russell Hiawatha	MISSISSIPPI Batesville Cleveland Biloxi Hattiesburg Houston Lambert Louisville Marks Pontotoc Water Valley Yazoo	NEW JERSEY Hoboken North Bergen Ocean City Ventnor Wayne Wildwood	OKLAHOMA Weatherford	TEXAS Abilene Anson Dublin Galveston Hamlin Hico Jacksonville Monahans Navasoto Perryton Port Arthur Port Neches Rotan Stephensville Sweetwater Tyler	WEST VIRGINIA Clarksburg
	FLORIDA Blake City Crestview Fort Lauderdale Fort Walton Beach Niceville	LOUISIANA Lake Charles Marksville	MAINE Lewiston	MISSOURI Atchison Co. Rolla Sedalia Waynesville Warsaw Warrensburg Windsor	NEW MEXICO Gallup Ruidoso Santa Fe	OREGON Hood River	PENNSYLVANIA Altoona Carlisle Chambersburg Marietta Morrison Cove Newport Reedsville	WISCONSIN Marshfield Merrill Monona Wisconsin Rapids
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		INDIANA Anderson Brazil Connersville	MICHIGAN Bay City Coldwater				VERMONT Brattleboro	

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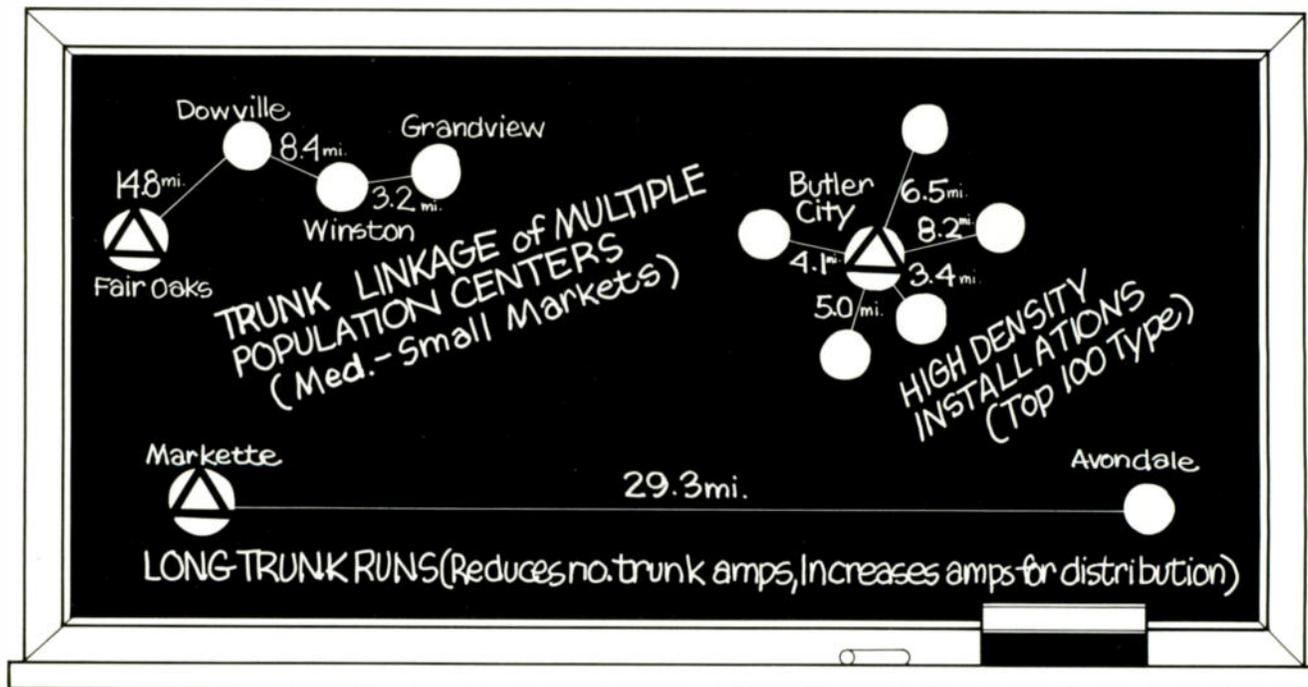
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CATV News Briefs

A Summary of News from CATV, the Newsweekly of Cable Television

ABC, NCTA Urge FCC To Consolidate Regulation: ABC, with the support of NCTA, has filed petition with FCC, requesting "total look" at methods of program distribution in order to avoid patchwork of regulation. ABC argues that, even though uniform regulation is not possible, same public interest considerations apply to all systems. (CATV 9/18 p3)

FCC Prepared To Process MDS Applications: Commissioners decide not to hold up the processing of about 250 pending MDS applications. Processing favored by Common Carrier Bureau. (CATV 9/18 p3)

Commission Grants Cross-Ownership Waiver: FCC permits WSNL-TV, UHF station in Patchogue, N. Y. directional antenna and change in transmission site, bringing WSNL's Grade B signal over Comtel's Manhattan cable system. Holmes Protective Service controls Comtel and shares officers, directors, and stockholders with WSNL. Only Nicholas Johnson objects to action. (CATV 9/4 p3)

MSO Equal Employment Opportunity Filings Discouraging: Although official EEO figures unavailable in organized form, primary figure filed with FCC by MSO's indicate women, blacks, and Spanish-surnamed play little part in industry. (CATV 9/18 p15)

Schildhouse Letter Explains Franchise Requirements: In a letter to Western Communications, Inc., FCC Cable TV Bureau Chief Sol Schildhouse answered 13 specific questions on possible differences between municipal franchise agreements and FCC's new cable rules. Cities may require more than 20-channel capacity, non-voice return communication capacity (outside a major market), and a faster construction than the FCC recommends. (CATV 8/28 p3)

TelePrompTer Acquires TM's Florida Systems: TPT buys all shares of TM Communications of Florida, a wholly-owned subsidiary of Times Mirror, operating ten CATV systems and franchised to serve a total of 27 Florida municipalities. (CATV 8/28 p4)

Plans for South Eastern Cablecasting Network; NCTA-sponsored cablecasting coordinators meeting became first meeting of South Eastern Cablecasting Network. First project: building of product pool of tapes and films for bicycling. (CATV 9/11 p3)

New York Asks FCC To Intervene: New York City seeks FCC intervention in squabble between Sterling Manhattan and Columbia Pictures. Sterling had previously asked Commission to prevent New York Telephone Co. from providing distribution for Columbia pay-TV operations in hotels. (CATV 9/11 p3)

Tiernan Bill Aimed at Assisting Wiring of Rural America: Bill being prepared by Robert Tiernan (D-R.I.) would establish agency to provide low interest 35-year loans to non-profit cooperatives or small operators serving rural areas. (CATV 9/11 p4)

CATV News Briefs

LVO Cable Credit Expanded: Bank of New York and others establish revolving credit for LVO, expanding credit from \$6 to \$17.5 million. (CATV 9/11 p4)

First Stock Offering of Cable Funding Corp. Success: Cable Funding Corp.'s first stock offering — one million shares at \$15 each, making it the third largest offering in CATV history — oversubscribed. (CATV 9/4 p4)

Vikoa Completes \$5 Million Acquisitions: Vikoa purchased companies operating system in Missouri, Kansas, and Ohio. (CATV 8/28 p4)

PACCT Gives Accounting of Campaign Contributions: Memorandum issued by Political Action and Political Education Committees of Cable Television details contributions made by committees before June 30, when both were brought into NCTA. (CATV 9/4 p6)

Acquisition Moves IMC into Communications: International Minerals and Chemical Corp. will acquire controlling interest in Cor-Plex International Corp., operators of CATV, telephone interconnect systems, MATV and other communications businesses. (CATV 9/4 p6)

TCI Plans Stock Sale for Microwave Financing: Registration statement to be filed with FCC by Tele-Communication, Inc. for a public offering of about 30% of TCI'S subsidiary Western TCI's common stock. Proceeds of sale to help finance major microwave expansion. (CATV 9/18 p6)

UHF Wins Major Market Cable Rule Waivers: At request of Santa Rosa, California UHF station KFTY, FCC gave major market CATV systems within station's 35-mile zone authorization to carry signal without certificate of compliance. KFTY complained that it was being financially harmed without CATV carriage since it covers heavily cabled area. (CATV 9/11 p7)

FCC Asks Congress for Tougher Enforcement: FCC asked Congress for new legislation extending forfeiture provisions of Communications Act to cable television system and increasing penalties for misconduct. (CATV 9/18 p8)

ATC Completes Buy of Jefferson Carolina Corp.: ATC completed acquisition of Jefferson Carolina Corp. from its joint owners, United Telecommunications, Inc., Kansas City, and Jefferson Standard Broadcasting of Charlotte. (CATV 8/28 p7)

Amvideo Purchases West Virginia System: Amvideo Corp., Boston-based MSO has purchased CATV system serving Charlestown and Ranson, W. Va. from Frederick Cablevision, Inc. (CATV 9/4 p8)

Fifth Circuit Okays FCC's Schedule of Fees: NCTA and California CATV Assn. lost bid to overturn FCC schedule requiring annual fee of thirty cents per subscriber regardless of whether or not system does any business with FCC during the year. (CATV 8/28 p12)

Certificate Applications Granted: During the latter part of August and the first half of September, the FCC granted 158 Certificates of Compliance. Listed by state, the certificates are:

Alabama: Cable of Alabama, Inc., Hartselle (CAC-340); Alabama TV Cable Inc., Fairfield, Midfield and Hueytown (CAC-513, 514, 515, 516); Telvu Cable of Alabama, Vestavia Hills, Hoover and southwest Jefferson County (CAC-344, 393, 395).

Arkansas: Continental Transmission Corp., Russellville (CAC-529); Resort Television Cable Co., Hot Springs (CAC-138); Jonesboro Cable TV Inc., Jonesboro (CAC-173).

California: Burney Falls Cablevision, Inc., Burney (CAC-148); Storer Cable TV, Inc., Santa Paula (CAC-172); State TV Cable, Orland, Glenn City, Willows (CAC-414, 415, 416, 417); Storer Cable TV Inc., Yountville, St. Helena, Monte Rio, Bodega Bay, Rohnert Park, Sebastopol, Fulton, unincorporated areas of Napa County, Calistoga, Oakville, Glen Ellen and Cotati (CAC-493 through 505).

Colorado: Media Cable TV Systems, Inc., Lamar (CAC-544).

Florida: Dynamics Cablevision of Florida, Inc., Hialeah (CAC-199); Storer Cable TV of Florida, Inc., Ft. Meade (CAC-386)

Georgia: Thomaston Cable Co., Thomaston (CAC-399); DeKalb Cablevision Corp., DeKalb County, Decatur, Avondale Estates, Clarkston, and Stone Mountain (CAC-613 through 617).

Idaho: Rex-TV Inc., Rexburg (CAC-282, 484).

Illinois: Sullivan Cable TV, Olney (CAC-420); Vandalia Cable TV Co., Inc., Vandalia (CAC-360).

Illinois-Iowa: Quint Cities Cablevision, Inc., Davenport and Bettendorf, Iowa, and Moline, East Moline and Silvis, Ill. (CAC-26 through 30).

Indiana : Connersville Cable TV, Inc., Connersville (CAC-198); Dubois Cablevision, Inc., Jasper and Huntington (CAC-297, 298).

Iowa: Hawkeye Cablevision, Inc., Urbandale (CAC-71).

Kansas: Goodland Cable TV Co., Goodland (CAC-263); Hays Cable TV Inc., Hays (CAC-260); American Television and Communications Corp., Chanute, Independence, Neodesha and Parsons (CAC-207 through 210); Herington CATV Inc. Herington (CAC-259); Lyons CATV, Inc., Lyons (CAC-389); McPherson CATV, Inc., McPherson (CAC-390).

Maine: Aroostock Community TV Co., Madawaska (CAC-358); Cablevision of Knox County, Rockland (CAC-543); Cable Vision, Inc., Auburn and Lewistown (CAC-112, 113); Maine Cable Television, Inc., Bangor, Brewer, Old Town Orono, Milford and Veazie (CAC-347 through 352); Van Buren TV Cable Co., Van Buren (CAC-419); Maine Cable Television, Inc., Lincoln (CAC-354).

Maryland: Gaithersburg CATV, Inc., Gaithersburg (CAC-591).

Michigan: Munising Cable TV, Munising (CAC-250).

Minnesota: Continental Transmission Corp., Ely (CAC-526).

Mississippi: Mississippi Transmission Corp., Batesville (CAC-507); and Yazoo City (CAC-528).

Missouri: Nevada TV Cable Co., Nevada (CAC-200, 201); Continental Transmission Corp., El Dorado Springs (CAC-530); Capitol Cablevision, Inc., Jackson (CAC-87); Saltillo TV Cable Co., Saltillo (CAC-316).

Montana: Columbus Cable TV Co., Columbus (CAC-166).

New Hampshire: Merrimack Valley CATV, Inc., Nashua (CAC-409).

CATV News Briefs

New Jersey: Clear Television Cable Corp., Beechwood (CAC-421) and Berkeley Twp. (CAC-285).

New Mexico: Taos Cable TV Corp., Taos (CAC-339); TV Cable of Space City, Inc., Alamagordo (CAC-175); Tele-Vu, Inc., Milan (CAC-212) and Grants (CAC-211); Cruces Cable Co., Las Cruces (CAC-153).

New York: KWR Systems, Inc., Oneida, Oneida Castle, and Sherill (CAC-234, 235, 236) and Vernon (CAC-261); Tioga TV Cable Inc., Tioga (CAC-263) and Owego (CAC-262); Hudson Valley Cablevision, Inc., Poughkeepsie and LaGrange (CAC-541, 542).

North Carolina: Sandhill Community Antenna Corp., Aberdeen Southern Pines and Pinehurst (CAC-78, 79, 80).

Ohio: Continental Cablevision of Ohio, Inc., Athens and The Plains (CAC-317, 318); Coaxial Communications of Columbus, Inc., Columbus (CAC-2); All American Cablevision Co., Columbus (CAC-86); Highland Cable TV, Inc., Hillsboro (CAC-276); Wolfe Broadcasting Corp., Freemont, Sandusky Twp. and Belleville Twp. (CAC-288, 289, 290).

Oklahoma: See-More Inc., Hollis (CAC-335); GenCoE, Inc., Pryor (CAC-219); Sallisaw Cable TV, Sallisaw (CAC-218); Commco, Inc. (dba TV Cable of Sulphur), Davis (CAC-305); Bartlesville Video, Inc., Bartlesville (CAC-74); Cablecom-General, Inc. (and Cablecom-General of Altus, Inc.), Mangum and Altus (CAC-322, 323, 324).

Oregon: Medford Cable TV, Medford (CAC-412).

Pennsylvania: Coudersport TV Cable Co., Coudersport (CAC-517); Lebanon Valley Cable TV Co., Inc., West Lebanon Twp. (CAC-336); Muncy TV Corp., Muncy, Hughesville, Wolf Twp., Picture Rocks and Muncy Creek Twp. (CAC-251 through 256); Jefferson TV Cable Co., Borough of Reynoldsville, Borough of Sykesville, Rathmel, Big Soldier, and Borough of Big Run (CAC-453 through 457).

Tennessee: Chattanooga TV Cable Co., Chattanooga (CAC-105).

Texas: San Saba-Goldwaithe CableVision, Inc., San Saba, (CAC-519); Santa Anna Cable TV, Santa Anna (CAC-341); Bay City Cable TV Co., Bay City (CAC-7); Mustang Cable TV, Inc., Andrews (CAC-337); Wharton County Cable TV, Inc., El Campo (CAC-400); Trans-Con CATV, Inc., Sunray and Dumas (CAC-479 and 486); Port Arthur Cablevision, Inc., Port Arthur (CAC-485); Cable TV of San Marcos, Inc., San Marcos (CAC-304); International Cablevision Corp., San Angelo and Ballinger (CAC-524, 525).

Wisconsin: Complete Channel TV, Inc., Madison (CAC-110); Valtronics of Wisconsin, Inc., Merrill (CAC-531).

Wyoming: Lincoln Cable Television, Kemmerer, Frontier and Diamondville (CAC-309, 310, 311); Dubois Community Cable Television, Dubois (CAC-410). (CATV, 8/28, 9/4, 9/11, 9/18).

Financial Developments: TCI reports increase in net earnings, gross revenues, and cash flow. Net earnings up to \$837,910 for the first six months of 1972, compared with \$263,457 for the same period in 1971. . . Warner Communications earnings for the second quarter up 21 percent to \$.57 . . . ATC reports record revenues and earnings for the fiscal year ending June 30. Net income rose 98 percent in 1972. . . Vikoa second quarter net earnings rose to \$194,000 (\$.08 per share) as compared to a loss of \$2,720,000 in same quarter of last year. (CATV Aug./Sept. issues)

Franchise Actions: St. Petersburg, Fla. studying sale of TM of Florida to TelePrompTer. TM was awarded franchise last year over TelePrompTer . . . Subject to approval of city council, Gary, Ind. board of works has awarded franchise to Gary Communications Group, Inc. . . . City of Muncie, Ind. has offered to waive section of contract with Sentinel Communications Corp., calling for payment to the city of 7½ to 10½ of gross revenues. FCC has rejected offer, requiring complete rewriting and resubmission to city council of franchise. (CATV Aug./Sept. issues)

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FOCUS

... On People

Systems

Michael B. Arnold, president of the New York State Cable TV Association, has joined TelePrompTer Corp. as manager of its Islip, N.Y. cable system.

Nate Levine has been appointed vice president of engineering for Sammons Communications, Inc. He has fifteen years experience in cable, formerly serving as chief engineer for Jerrold's systems operation division.

Joel P. Smith and James F. Cavanaugh have been named vice president-operations and vice president and controller, respectively by TeleVision Communications Corp.

Alvin L. Hollander has been appointed network production manager for TelePrompTer Corporation's group communication division. Hollander will assist in packaging and marketing special TV productions.

Suppliers

James W. Emmick has been named director of system and field engineering for Ameco, Inc. Emmick rejoins Ameco after managing the CATV systems engineering department for Anacosta and operating his own manufacturing and field engineering firm.

Charles B. Radloff has been named vice president-operations at the CATV division of Oak Industries, Inc. Radloff will assume responsibility for all manufacturing, marketing, sales and engineering operations.

Dr. Jacob Shekel, a former visiting professor in the electrical engineering department of the University of Maryland and a former chief engineer with the Spencer-Kennedy Laboratories, has joined the advanced studies section of Jerrold Electronics' engineering laboratory.

Benjamin Hughes, Jr. has moved to the marketing staff of Theta-Com of California, bringing over 20 years' experience in cable marketing. He will be in charge of sales promotion for cable division of Theta-Com.

Irving Phillips has been named western representative for Videomation, Inc. Phillips will direct syndicated cable programming sales to national advertisers in the West.

John J. Sie, named technical director of the terminal products and services division of Jerrold Electronics, will be responsible for the development of computer-controlled interactive two-way communications systems.

Professional

Brian Owens has been appointed educational coordinator for NCTA by David Foster. Owens, 24, is the first to hold such a position at NCTA. He will serve as liaison between the cable industry and educational institutions.

Paula M. Span, formerly a summer intern at the Cable Television Information Center, has joined CTIC's permanent staff as special assistant to the director of information. 

JUST THINK!

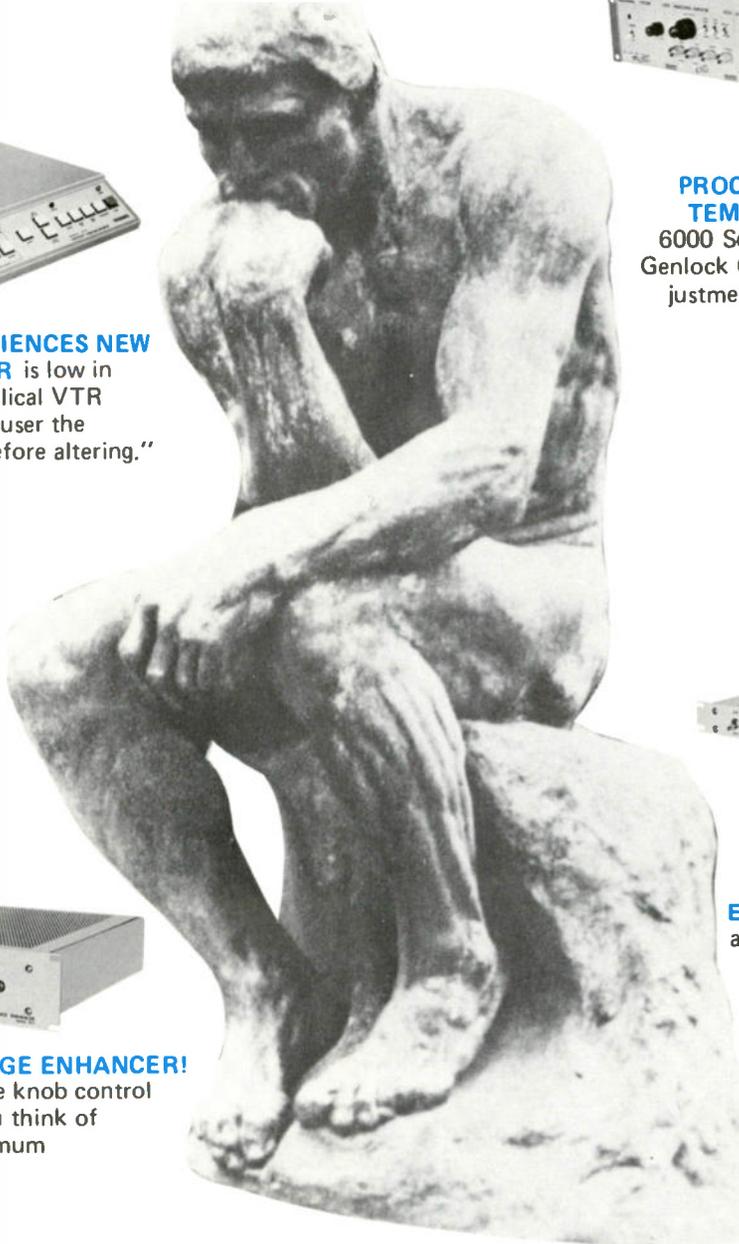
"The famous 'THINKER' – a bronze sculpture created in 1880 by Auguste Rodin."



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Say the You're on

Public Access will be a reality on most large cable systems very soon. It's too new and too limited to know what access will mean to tomorrow's user . . . or viewer—if there is one.

*By Paul S. Maxwell
Executive Editor*

October, 1972

Magic Words— the Cable



Access is, thanks to the Federal Communications Commission, a *fait accompli* . . . it's a magic phrase whose time has come. The new rules, which thawed cable's long time freeze, have put the cable's craft in, as National Cable Television Association President David Foster put it, "largely uncharted waters."

That stretched a lot of metaphors somewhere beyond the breaking point . . . and we can only be glad Groucho Marx won't comment further.

But public access is not a joke. The FCC, with cable communications, is grasping at a public interest brass ring it missed when the broadcast merry-go-round went by. Television has developed into the dominant mass medium in America and in doing so has engendered a mystique about the video experience. It is something that is done from afar; by slick professionals; and it cannot be understood or duplicated by the layman.

Public access will debunk that myth.

The camera and the medium are suddenly in the grasp of the man on the street, the kid on the corner, and the guy slouched in front of his TV set.

Guidelines for the Guidelines

The new cable rules include guidelines from the FCC about the requirements of the access channels. Top-100 systems (either wholly or partially) born after March 31st of this year must comply in order to

be "certified." Older operating systems have until March 31, 1977 to comply . . . or until adding television signals (a catch . . . in order to get the newly authorized distant signals, access must be complied with).

There are four kinds of access channels specified: public, educational, government and leased (in the order of their priority). The NCTA has published a booklet called "Guidelines for Access" which covers the FCC's guidelines generally. It is available from NCTA (918 16th St., N.W.; Washington, D.C. 20006). While it covers all four kinds of access channels, this article deals only with the public access channels.

The Public Access Channel

The FCC makes six specific requirements: 1) There must be at least one public access, non-commercial channel on the system. 2) At least one channel must be free. 3) The system must provide and maintain at least minimal equipment and facilities. 4) Charges may be made for productions of longer than five minutes. 5) The system can exercise no control (except for the prohibition of obscenity, lottery information, political candidate plugs or advertising) over content. 6) Rules for operation of the channel must be established . . . and filed with the FCC within 90 days after establishment of the channel.

Access must be first-come, first-served . . . and non-discriminatory . . . and public.



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The NCTA suggests a little more. In the area of facilities, NCTA recommends more than "minimal" facilities be provided. It suggests, where economically feasible, the system provide a studio "in good operating order with at least two cameras, two video tape recorders and the basic attendant studio equipment (lighting, etc.)." Paying for that, and making it economically feasible, might be a bit of a problem. The FCC rules say you *cannot* charge for costs incurred in live studio presentations of less than five minutes. Charges beyond that should not be more than actual costs.

The access channel may be formatted to some degree. Specific times may be set aside for scheduled "performances" or one-time specials. But this must be done without unduly interfering with the one-time user's right. It may also be reasonable to require some pre-scheduling and to put a limit on the amount of time any particular individual or group could use per week or per month. But, if no one else wants access, the heavy user shouldn't be restricted.

Copyright and Access

Copyright is important to the access channel in two ways: first, copyright clearance should be obtained for any production or music the user wants to perform; and, secondly, to protect the user's original work from exploitation by others.

The cable company should require written authorization of copyright permission and clearances before any copyrighted material is performed on the cable. In strict theory, music copyright releases are not required for non-profit performances... but until the question of the cable is cleared, the operator should require that written release (after all, the cable company is hoping for a profit).

The New York Experience

On July 1 last year, TelePrompTer and Sterling Manhattan began the operation of public access channels on their cable systems in Manhattan-borough, New York City. Under the rules promulgated by the City of New York in the franchise grants to the two companies, the first real experience with public access cable television is now more than one year old... and has proven to be a qualified success.

Neither company has charged its non-commercial users for channel time (though, under New York City rules, commercial users must pay from \$125 to \$520 per hour). Additionally, TelePrompTer provides, free of charge, the studio equipment and personnel necessary for the taping and playing of a simple, one-camera, in-studio program; or, to plan and produce a pre-recorded program in any of the formats for which TelePrompTer has equipment (16mm film, 1/2" Sony AV tape, and 1" Ampex 7500 tape). More kinds of equipment and technical assistance (even a remote unit) are available for a charge. Sterling Manhattan charges more than TPT, mostly because of the more expensive 2" quadruplex tape equipment.

The Center for the Analysis of Public Issues (the New Jersey "Crossed Wires" people) in association with the Fund for the City of New York has published a booklet called "Public Access Channels: The New York Experience" (available from the Fund, 1133 Avenue of the Americas, New York, N.Y. 10036). The Center and the Fund set up a special project to aid private groups in making the new access a reality and to draw some experience and to make some early conclusions on "which way the twig of public access television should be bent."

Programming by the Public

As the report notes, the users "run the gamut from artistic groups, education agencies and ethnic organizations, to unclassifiable individuals with something to say over the cable, including a Shakespeare buff from New Jersey who lectures on Saturday afternoons and a black arts critic who presents readings of black poetry and criticisms." New York, though, is an isolated experience. New Yorkers are, almost by necessity, more "media-sophisticated" than the citizens of other areas. And, there are simply more people. The combined cable audience in New York is around 90,000 (sets).

New York also has, with the possible exceptions of Los Angeles and San Francisco, more media-oriented groups than anywhere else. Most visible — on or off the cable — is Raindance Corporation. Others include Videofreex, the Alternate Media Center, Global Village, Automation House, People's Video Theater, Filmmakers' Cooperative and more. Some are foundation sponsored, some are church sponsored, and some are just there.

The Alternate Media Center has used more public access time than any other group so far. Using ½" tape, the Center has taped a media conference at New York University, an Indian Rights march, and a neighborhood organization campaign to get a new spotlight.

The Deafness Research and Training Institute (see article on page 51), in affiliation with New York University, the Sloan Commission and the Center, has experimented with programming for the deaf. Significant problems involving compatibility between TPT and Sterling Manhattan were encountered (next month, *TV Communications* will publish a commentary on the compatibility problem by Wally Briscoe of NCTA).

The Center also has backed some impressive experiments including a series on aging with David Othmer of the Vera Institute and George Stoney of the Alternate Media Center; and a half-hour co-produced with Consumers' Union on the problem of flammable children's clothing. Somewhat to the Center's surprise, neither TelePrompTer nor Sterling Manhattan objected to the programming on the ground of possible legal liability . . . in spite of the fact the presentation carried candid consumer information.

On July 6, FCC Commissioner Ben Hooks and TelePrompTer Chairman Governor Raymond Shafer,

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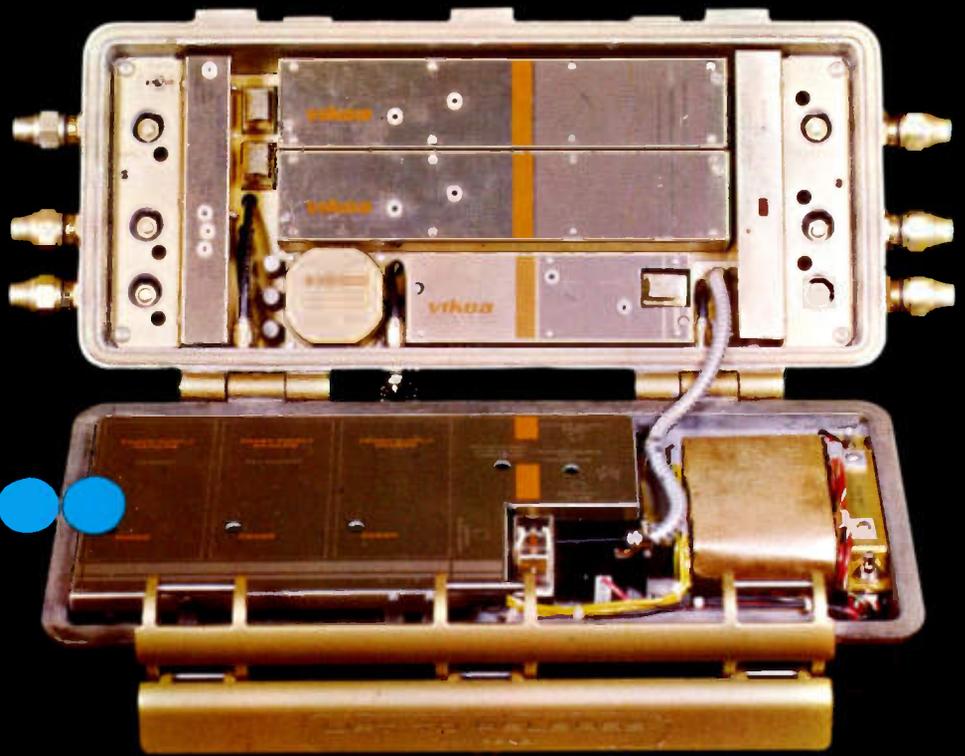
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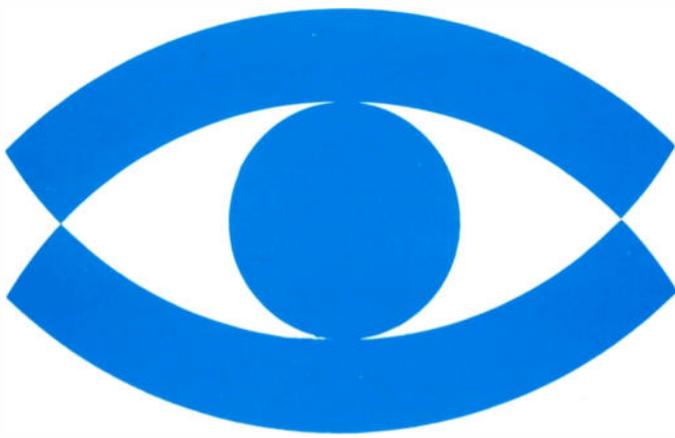
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along with Manhattan Borough President Percy Sutton, dedicated TelePrompTer's new storefront access studio in Harlem. The studio, at 60 West 125th, was launched during the first anniversary celebration of the public access channels "C" and "D".

Just last month, Sterling Manhattan opened a new, free video workshop at 528-530 LaGuardia Place (just two blocks from famous Washington Square) in cooperation with New York University's School of Arts. Dean David Oppenheimer of the School said the workshop's equipment will be provided and maintained by Sterling Manhattan and the School's Alternate Media Center will staff and manage the new facility with the assistance of a grant from the Fund for the City of New York.

New York Empirically

As the Center noted, "For all its fits and starts, public access cable television is a reality in New York." While it is still too soon to make concrete assessments of its impact, it is clearly a success . . . people who never before dreamed of being on the tube, are.

Major problems still exist in New York . . . and should be taken into account by systems which will be "accessing" soon. Penetration is a complaint; why do much for the one subscriber out of 90,000 who *might* be watching. Access users would like to demand that the system be required to publicize the access events (but, that seems a little much to ask for . . . that's the user's responsibility). It's possible that the user's target audience could best be reached by other media means like newsletters, tabloids, magazines, simple mail or other.

Another significant problem is the history of the video medium. Most people still cannot conceive of using TV for their own purposes. It's still primarily an entertainment medium. TV to the average person is still "a land of electronic wizards and technical mysteries." Demythologizing the electronic media will take a long time.

Compatibility is also a major difficulty. Access studios should be more than studios to work best. Facilities for getting movies, slides, and other tape formats on any given system should be possible.

Perhaps the key problem, though, is financing. Free channel time alone is not enough to ensure its use. Sterling Manhattan and TelePrompTer are both trying to make more equipment available free, but it is really only making it all more frustrating . . .

To make significant spontaneous usage the norm will take time and the re-education of the video sensibilities of the potential users. More charitable groups and foundations need to be made aware of the potentials of access.

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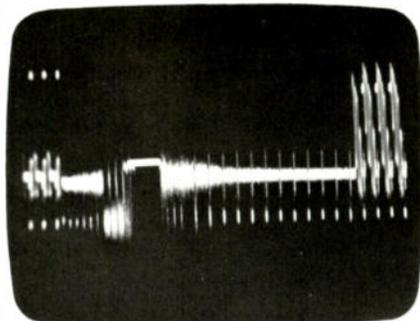
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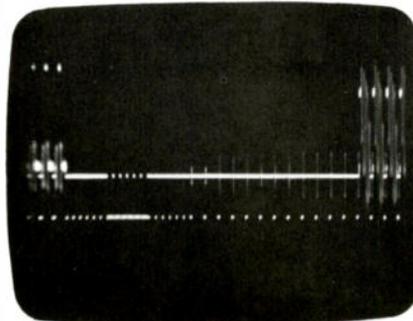
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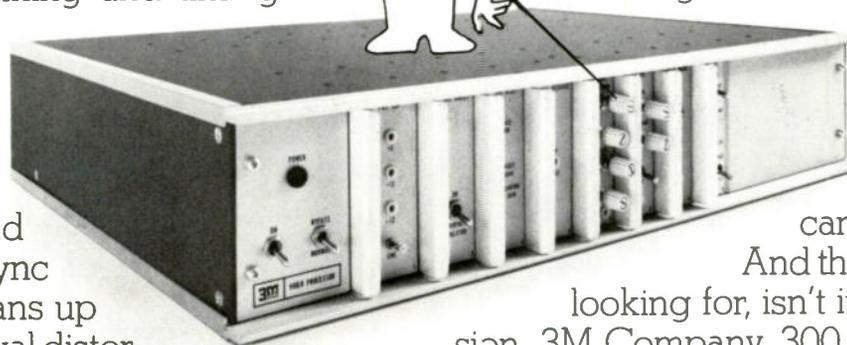
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15,000 subscribers. After hiring a telecommunications graduate of Southern Illinois U., Gene Kois, Cypress decided to try limited public access by supplying channels, VTR equipment and personnel free of charge. Using local high schools as a base, the results have been encouraging. Excerpts from Kois' report follow:

Three distinct phases of the project developed immediately: First of all, there was the programming that the schools produced from March to the end of the term in June. Second, during the summer months, Videotape Workshops were formed in each of the towns. While being comprised mainly of high school students, the workshops were open, free of charge to anyone. Many faculty people and some private citizens attended the meetings. One weekly meeting was held in each town with Kois going over new production material or reviewing production problems and techniques. But most of the work was done during the week on a regular, production type schedule. "We're not interested in turning out professionals ready for commercial work, though there might be a few in there," Kois says. "Our main emphasis is on teaching local people in the basic elements of TV production so they can utilize the VTR equipment and the cable grids as a total, local communications device."

The third phase of the project has begun this fall with new school terms.

Many of the programs produced in the different towns are similar. These include taping of high school

graduation exercises, local sporting events, news programs, and interview shows with city officials. But the majority of the programs are designed by local people to fit local needs and interests.

For example: this year, Delphos, Ohio, was the scene of the Northwest Ohio Volunteer Firemen's Convention. This four day celebration/business meeting is topped off with a festive three hour parade. Members of the Delphos Workshop put together a four hour program that showed the entire parade, plus a pre and post parade program.

The Canadian Experience

Access of a sort has been going on in Canada for some time. The Canadian experience has basically been a mixed approach to local origination . . . that is, allowing access to a limited degree on local origination channels. In Toronto, for instance, there are 10 cable companies with 10 different local channels. All have, to greater or lesser degrees, some forms of public access.

Keeble Cable, one of the Toronto outfits, has an interesting experiment built around what looks like one of those arcade 25 cent picture machines. This one, about that size, contains a camera, a VTR and one person. The portable booth is carted about Toronto, set up in shopping centers or other public locales, and whoever wants is allowed one minute to sound off. Rather a limited "public access" and

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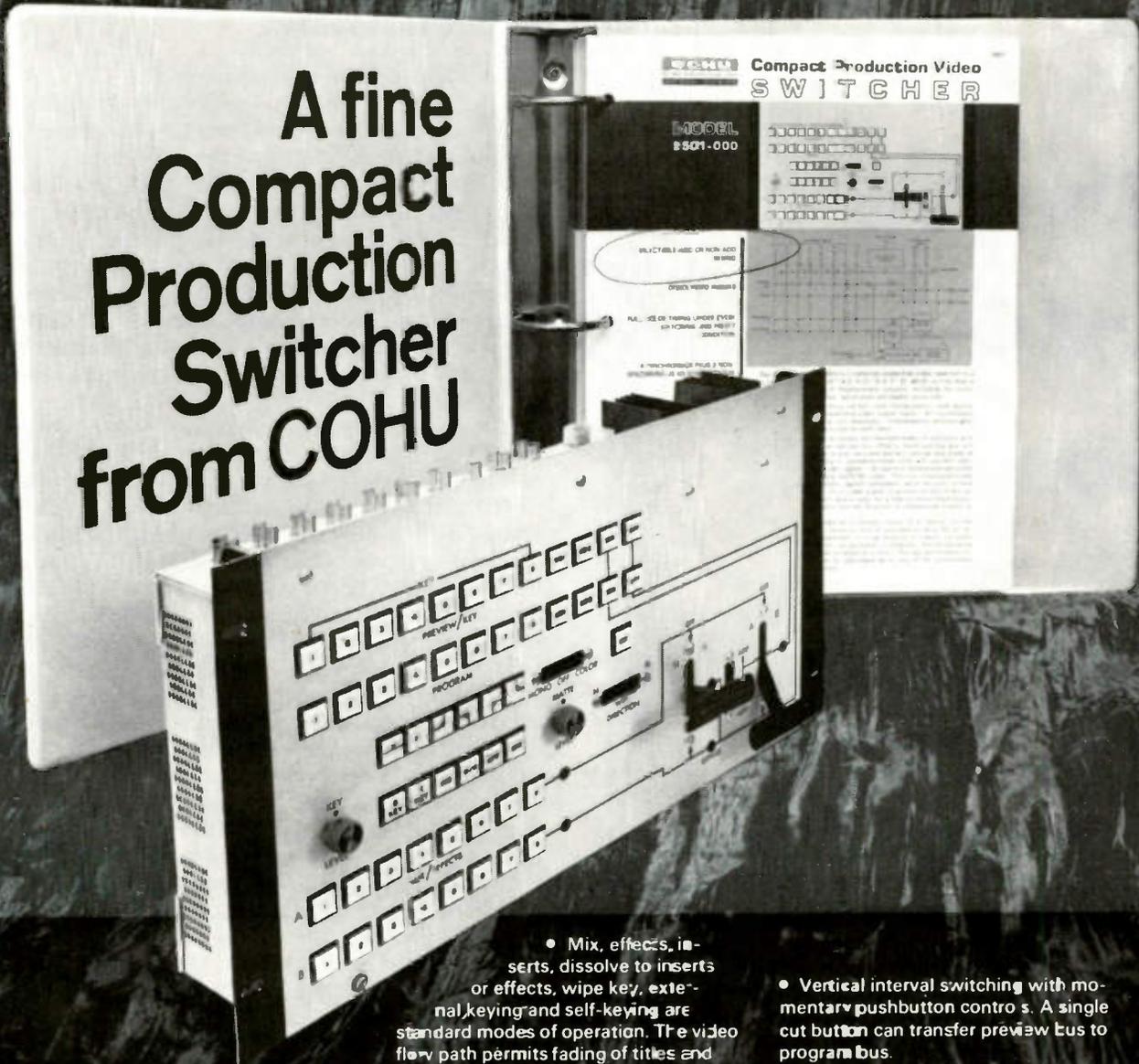
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Other cities in Canada are coping with access much the same as Toronto. Vancouver has extensive facilities as do most other large Canadian systems.

Who Are Those Guys?

Who wants on the access channel?

Well, a lot of people . . . after they find out about it. One of the main problems, as we have already discussed, is the mystique of the medium and the lack of a history of access to it. With publicity and educational projects, both problems can be negated.

Well ahead of the cable companies in trying to educate segments of the community are a large number of people who, for want of a better term, might be called video freaks. Most are of the general body of the population called the counter-culture (more or less, depending upon the cultural climate of their home base).

As might be expected, the most active are in New York City — and the most sophisticated is probably the Raindance Corporation led (if the term is right, *fronted* might be more descriptive) by a young man named Michael Shamberg. He and his Raindance have published an interesting book called "Guerrilla Television." It is a hectic, confused guide to alternate video media. The book is a trip through the counter culture's view of how to develop alternatives to mass, consumer-based, over-the-air television.

Cable plays a large part in providing a possible forum for Raindance and other groups (mentioned before in the New York Experience). A few alternate media groups have even organized heavily, in towns already wired, to push for access channels. A prime example is Santa Cruz, California, home of the University of California's most experimental branch.

An outsized paperback book by Californian J. Allan Frederiksen details the counter culture's side in the Santa Cruz dispute. More importantly, Frederiksen's book comes complete with the most extensive current list of alternate media groups. The list covers most states.

"Guerrilla Television" is available from Holt, Rinehart & Winston, 383 Madison Avenue, New York, N.Y. 10017. Frederiksen's "Community Access Video" is available from Book People, 2940 7th Street, Berkeley, CA 94710.

The Future of Access

Access is a moot point now. It's a legal certainty, but its future is subject to debate. Just how it develops is unknown. But, develop it will.

NCTA President David Foster, in the NCTA's access guidelines, wrote, "Success will not come overnight. For the access concept to develop meaningfully, flexibility, persistence and perhaps most important, sincere, honest and realistic efforts at cooperation will be required of all concerned."

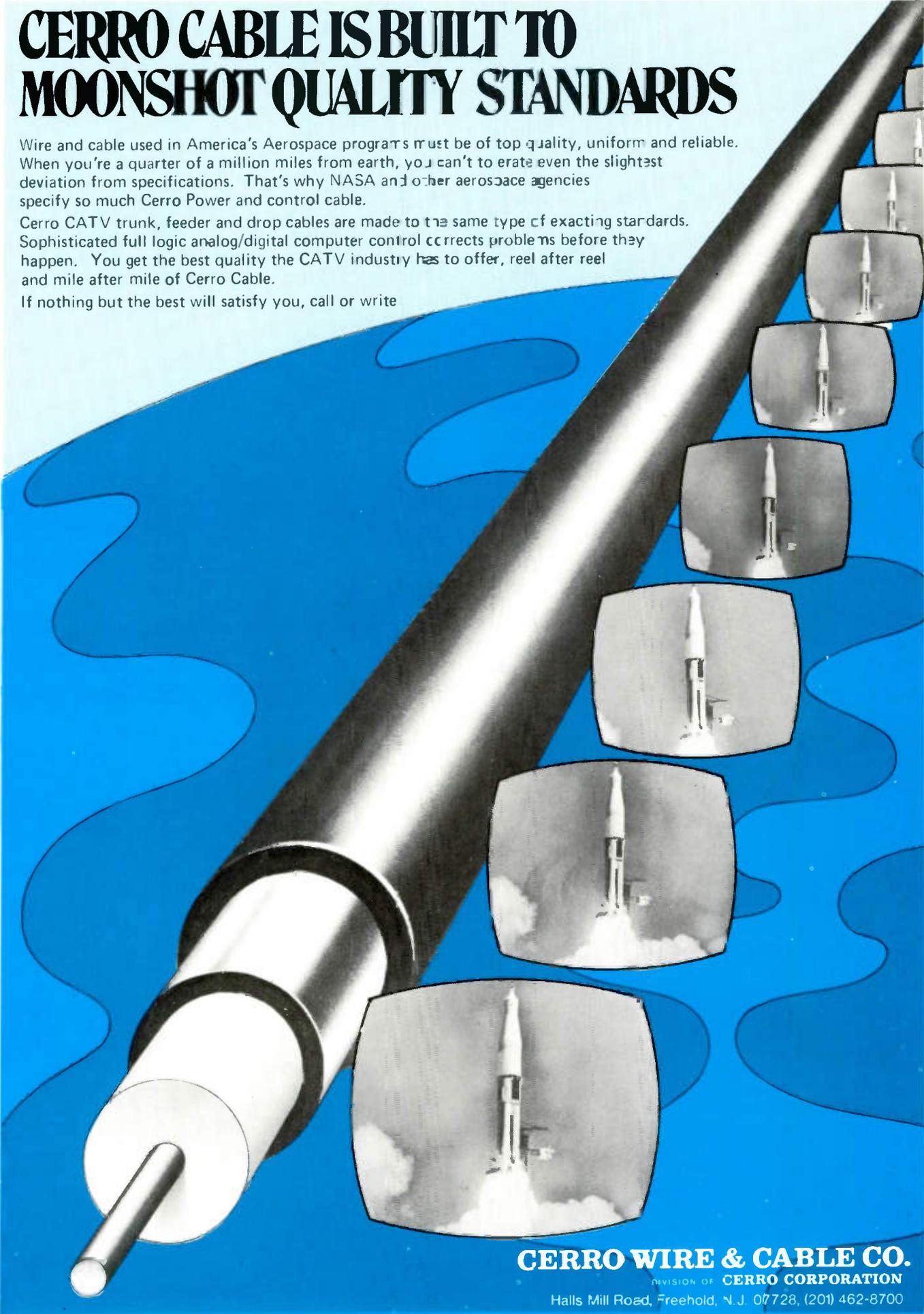
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Just Because You Didn't Pay Attention in School

—is not a very good excuse for ignoring the educational community now. Teachers are on the march and Ms. Booth, educational media consultant, tells cable how to avoid the dunce cap.

*By Ethel Greenfield Booth
Media Consultant*

The year ahead, from all indications, will provide some of the most exciting developments yet seen in the newly enfranchised cable television industry. At long last, impatient cable operators are gearing up for the possibilities of extending their systems to new and potentially more profitable markets. With the FCC finally on record as approving their continued expansion, CATV companies can now do some long-range planning and begin to implement hitherto seemingly impractical ideas for programming and services.

As the MSO's line up at the starting gate like so many overtrained thoroughbreds to begin the challenging race for new franchises, how can they be expected to hold off, and even to drop out for a race or two, to do some critical self-examination, and re-evaluate the current scene?

Difficult as it may seem, that may be the only way to deal with a new problem that, paradoxically, may also be cable's greatest opportunity to date.

Almost unnoticed in the beginning, a new element has gradually begun to influence the shape of things to come in more and more franchising situations. This is the ever more insistent intrusion of the schools, through their administrators, into the picture.

But educators do not consider their presence on the scene as an intrusion, rather an obligation and extension of their responsibility to inform and to educate. In this case, it is to inform not only the general public but the political powers-that-be as to what a cable company should be prepared to offer in advance of being awarded a franchise. They come to this self-appointed task increasingly well prepared. And it behooves the alert cable operator not only to

become aware of this new interest of the educator, but to take an active part in becoming a reliable source of information, to be added to the other inputs about cable television that this sophisticated new student, who is a quick learner, is getting anyway.

Stereotypes take a long time dying. Yesterday's old maid schoolteacher is not easy to find in today's schools. She has become today's advocate of the new look not only in her personal appearance and life-style, but in educational practices as well. She is apt to be as visual media-minded as she used to be book-oriented because her students are, and she knows it. She is outnumbered by her married colleagues, both male and female, because spinsterhood is no longer the hallmark of teaching.

The same is true of librarians, college professors, supervisors, and audiovisual specialists. Superintendents of school districts and their boards of education are probably more alert to the potential of cable television than their staff are by virtue of their administrative and leadership roles. Cliches no longer apply to schools or their personnel.

Even as broadcasting and cable are big business, so is education. And to its practitioners the stakes are even higher with the rewards greater. They intend to protect their constituents, and they are making steady progress towards developing the necessary expertise. It is time for the cable industry to pay attention.

How do school people get their information about cable television?

Mostly from publications like the monthly magazines written expressly for educators, and sponsored

by organizations like the National Educational Association and its allied branches, the Association for Educational Communications Technology, and the Association for Supervision and Curriculum Development, as well as the bulletins and journals of the National Association of Educational Broadcasters. In addition there have been many special reports written and publicized not only by these organizations and others, but by church groups like the United Church of Christ and the United States Catholic Conference, Department of Education.

Informing the Educators

Other magazines directed to these special audiences include *Educational Television*, *School Management*, *Educational Broadcasting*, and the *ETV Newsletter*. These are but a few of the special interest publications that reach educators with responsibilities in the field of media education, in supervisory positions, or in classroom teaching.

In the past year all of these have published one or more in-depth articles not only describing cable television but recommending specific guidelines for school people to follow in order to assure what the writers and researchers consider to be adequate cable service for their communities. Most of the publications are monthly, but some are fortnightly newsletters. Many come automatically as part of membership in the professional organizations they represent.

The professional organizations to which audiovisual educators belong not only have yearly conventions that are widely attended, but there are regional organizations which also meet at least annually, and sometimes more often. The NAEB convention last year paid significant attention to cable television, and continues to inform its membership of new developments. This year it has added a two-day session on cable systems to its schedule of Educational Broadcasting Institutes, a highly successful approach to updating members' awareness of new techniques in many areas. The list of Institute offerings, which includes such subjects as Film Production for Television, Legal Issues for Management, Instructional Design, and many others, has now added cable systems to its calendar. The institutes have been well attended and there is no reason to doubt that the one on cable will be equally well received.

Cable Talks at Meetings

A recent meeting of the Western Educational Society for Telecommunications in San Francisco had two major speeches on the opening day of a three-day conference, one of which was addressed by William G. Harley, president of the NAEB, on "Telecommunications Centers — Tomorrow's Role" and the other by Geoffrey Nathanson entitled "Reaching out with Cable."

A smaller group session dealt with cable from the favorable point of view of a school district using cable facilities for program origination and distribution.

Two others presented information from several local cable operators and program managers, supplemented by the views of an educational consultant.

In every case the audience reactions were mixed, and in every case the audiences included not only those who were learning about cable for the first time, but others who had already been exposed to views that differed from those being presented. This kind of exchange is going on in many parts of the country today, and will be happening even more frequently as educators become more confident in assuming leadership roles when cable is under consideration.

A group called Publi-Cable has recently been formed in Washington, D.C. to expedite and hasten the education of school people with regard to cable. In California a state association has already been formed which will actively pursue the possibility of setting up a publicly owned cable system. Many concerned citizens who are determined that the public indeed have access to the multi-channelled capacity of cable television are genuinely in favor of putting the operation of cable television into the hands of educators and non-profit groups specifically organized for that purpose. They do not trust private industry to serve the public interest. Such groups are being alerted to the need for informing city councils and other franchising agencies as to their demands, and to assure that there are public hearings in advance of the awarding of a franchise.

Only a thin line seems to divide those whose chief concern is with education and those who care more about public access. They are united by the often bitter recollection of how they missed the boat in making their views count when radio and television channels were originally allocated not so very many years ago.

The Fund for the City of New York has just published a study of the use of the public access channels in that city. It is well worth studying, and will suggest to the thoughtful reader, of whatever persuasion, some positive directions for action along these same lines in other cities. More recently, on the west coast, announcement was made of the formation of a new organization, PAN (Public Access Network), which will devote itself to programming these channels.

Time for a Study

The Sloan Commission report, and others from the Rand Corporation, have been well publicized and have aroused considerable discussion. The former pays scant attention to education but underlines its reasons for the omission by an emphatic statement that this is too big an area not to warrant a large scale study of its own. There is little question but that there will be not one, but many in the near future.

The Ford Foundation, with its funding of the Urban Institute in conjunction with the Markle Foundation, has opened up a new source of information and assistance for urban areas which will assuredly give attention to urban schools and the part

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they can play. The Washington Post recently quoted statements by some of the largest foundations — Ford, Carnegie, Rockefeller — indicating that they were moving away from the campus and research into support of action and urban programs like medical education, health care, and minorities.

This has great significance for educators, and should have for people involved in cable, because it is clear that some of these funds will be available for implementing such programs via television, whether it be using the airwaves or the cable. Non-profit agencies, like schools or social service agencies, will definitely be the prime originators.

Stanford University is studying the results of CATV networking, and an earlier study (Frank Newman: *Report on Higher Education*) strongly urges universities and colleges to consider cable television as a way to extend educational programs, and to consider regional television colleges set up after the model of England's Open University.

Not to be overlooked is Rudy Bretz' paper, *Potential Uses of Cable in Education and Training* (Rand Corporation). This discusses many sophisticated concepts in the kind of language, and with the close reasoning that must impress the educator who respects competent research when he sees it. Some cable operators have also read the paper, in conjunction with the Rand Corporation's recent recommendations for cable television in Dayton, Ohio. But it has significance for many other geographical areas, and will remain a valuable reference work, certainly for educators.

So What's Cable's Place?

What, then, is a reasonable stance for cable operators to assume in view of this upsurge of interest and activity on the part of educators and others concerned with cable's involvement in public service?

President Harley of the NAEB has gone on record as urging that cable assume public service as its primary obligation. Yet this need not be construed as a totally hostile statement. He is speaking for his own constituency, the educational broadcaster. He has also urged the formation of telecommunications centers in all geographical regions, and anticipates that these could embody production centers where cable needs, as well as educational television requirements, may be served.

It might be wiser to participate from the start in such efforts to design a new model for regional centers than to duplicate activities, and to alienate a significant segment of the educational broadcasting fraternity, who already recognize cable's value to them.

The National Cable Television Association and the NAEB have for some time been able to exchange views and information on an organizational staff basis, and this could be an important first step towards exploring mutually advantageous activities on a broader basis of participation. Obviously, the active support and eventual participation of members of both organizations will be required to make any

meaningful contribution. Not commitment, but communication, might be a reasonable intermediate goal.

Dr. Sidney Marland, United States Commissioner of Education, has recently announced a new policy that has hopeful implications for fruitful cooperation between cable and the schools, at the very least in some of the 200 proposed renewal sites under consideration. By centralizing administration of the Office of Education's discretionary funds in a single operation under Deputy Commissioner Don Davies, it is expected that successful project results will be more easily shared, and information pooled.

Dr. Marland said that top priorities will be "to give more support to newly developed telecommunication technologies such as satellites, cable television and ITFS and to develop experimental software as well as hardware." His programming priorities extend to the areas of child-rearing, bilingual education, high school equivalency, career education, teacher training, education of the handicapped, and a university of the air. Each subject mentioned holds great potential for cable implementation.

It is up to the alert cable system owner to accept the responsibility of assisting in such programs rather than having to be coerced into participating. There is little question that whichever route he chooses, eventually he will be involved. The attitude he assumes, and the atmosphere he creates will have a significant influence on how successful he will be in his own terms, as well as in terms of the educators' goals.

Education and Cable Tomorrow

A paper published November 1971 by the Association for Supervision and Curriculum Development of the NEA, entitled *Cable Television — Its Future in Education*, says "... Ordinances are being drawn up and franchises are being awarded that can open up a world for us in education, or shut us out ... It is the deliberate purpose of this paper to sound an alert and push for a mobilization ... Even if business is going to be very profitable in the long run, the immediate prospect (for the cable owner) may be one of high expenditure and uncertain returns.

"Still, the moral of this story is that something of enormous potential value is on the auction block and before they get that franchise the bidders may be willing to go pretty high. It is time to stop depending on 'gentlemen's agreements' and go for contracts that protect the public and the schools." The writer adds that schools must face up to whether or not small companies can "give it all free," and advises that schools should consider investing reasonable amounts in their part of the system.

The same moderate attitude is reflected in a further statement that "the best weapon of franchise operators or bidders ... is to argue that schools seldom do much anyway, even if the facilities are open to them. And they are right. Our record, as a whole, is pretty bad." When you find such an educator in your midst, cherish him and do him honor. You are more likely, in the current climate of

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challenge, to have to deal with confrontation rather than commiseration.

In the Franchise Arena

One difficulty seems to be that too few cable companies are adopting a positive attitude of offering assistance to communities in extending educational services, in advance of being confronted by challenges from the educators themselves. Because the FCC has stated that only one educational, one municipal, and one public access channel is required, too many cable companies are resting on that statement, and make franchise proposals that ignore the opportunity for differentiating themselves from other applicants by offering more than the required minimum.

It seems logical to assume that all companies will strive to offer competitive bids in terms of technology, subscriber fees, and services, but how will a company be able to set itself apart from its competitors who probably have equally strong financial statements and engineering capabilities?

I suggest that by paying significant attention to ways in which it can help the schools, the company can immediately establish an identity that sets it on a different level from other contenders. It is not enough to play the numbers game and offer 'X' number of channels. To indicate a real commitment may involve going into a community in advance of writing a proposal, not only to become acquainted

with the political structure of the town, which is acknowledged practice, but more importantly, to find out what the community itself offers by way of education, cultural activities, social welfare needs and organizations, minority problems, special interests, and facilities.

If the local educators and others responsible for these community activities seem lacking in any real understanding of how cable can assist them in their work, it can pay off to spend the time and money required to designate a consultant whose sole responsibility will be to do some preliminary promotion of the concept of cable, at the same time that he or she is surveying the resources of the community. Such a person, to be effective, must be acceptable to the local people concerned, and must be qualified by education, temperament, and experience to understand their concerns.

This is not a substitute for the conventional business approach, but rather a new kind of back-up to a company's usual affirmation of its intention to perform in the public interest. It can provide some substantive assurance that thought has been given to a particular community's particular requirements and goals.

What if overnight, by some miracle, an overwhelming majority of all cable companies began to pay this kind of attention to education, how then would companies be distinguishable, one from the other?

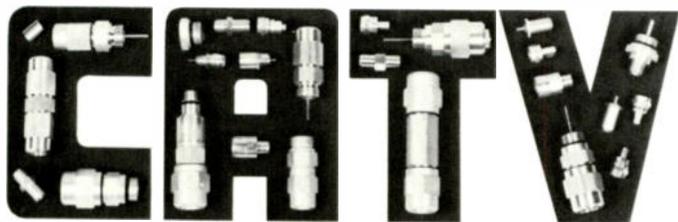
It is difficult to imagine that this commitment to good works may some day be the rule rather than the exception, but should this ever come to pass, unquestionably the good experiences will lead to further developments and refinements of these initial experiments. Since good educational programming should create a wider audience for cable, the long-range prospects for profit generated by education are excellent.

Many educators are ready to rally to the cause of cable. But in the absence of cordial, consistent, and informed approach by cable operators, accompanied by offers of tangible assistance, they will listen with increasing militancy to those among them who insist that lobbying is the only way to get what they want.

With cable technology one of abundance rather than of scarcity, with the future dependent on developing public demand for the many new services that cable can deliver at a profit, CATV operators can perhaps afford to be generous in their dealings with educators. They may have to overlook some ignorance, some apathy, even some hostility, in order to encourage those who really want to use the cable, who really will try to provide meaningful services and programming, wherever they find them. They may even have to educate them . . . but it will be worth it.

There may be some risk-taking involved, but the intelligent taking of chances is what is called for now. By assuming some responsibility for educating the educators, you, the cable operator, will be repaid in the not too distant future.

The educator has it within his scope to reach thousands, perhaps millions of new subscribers, once he has hit his stride in developing programs for cable. Adult education, college courses for credit, in-service



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training for teachers, skill training courses, classes for the homebound, informational services for ethnic minorities, legal and medical assistance in conjunction with federal and state agencies, pre-school classes, parent-training programs, are only a few of an ever-growing list of possibilities than can supplement, not imitate existing television fare.

There is also an untapped reservoir of federal and foundation funding for school originated programs being eyed by school administrators everywhere, from Washington and New York to the smallest county in the midwest. They need your help if they are to develop innovative programs within the framework of cable television. They know the programs they would like to have, they know how to approach the funds — but they do not know how to approach you. You must take the initiative, and in terms they can understand and accept.

Encouraging signs do crop up here and there . . . The New Jersey Cable Television Association met recently with the Center for Educational Technology and Educational Improvement Center in a day-long seminar at which educators, cable people, and legislators exchanged views and information, and found there were ways to work together . . .

The National Cable Television Association has commissioned a study to analyze and organize materials received from approximately ninety cable companies currently cooperating with schools in successful joint ventures. Its purpose is to develop from these materials a publication that will inform not

only NCTA's members but also school districts throughout the country of existing patterns of such collaboration, and to describe models that can be adapted in other areas. NCTA also has a standing committee on education.

What Can You Do?

1) Indicate your approval of NCTA's educational activities and encourage the organization to set up an ongoing informational center to serve not only members, but educational organizations. Contribute examples of your own successful activities to the office.

2) Encourage NCTA's leadership to initiate regional cable workshops at which top cable experts will explain and demonstrate cable's potential to educators.

3) Next time NCTA has a college conference, advertised as an opportunity for students to tell the cable industry what it would like to see cable doing, attend. Or send a representative.

4) Resolve to include specific provisions for education, based on specific local situations, in all franchise proposals.

5) Provide speakers, printed materials, invitations to meetings, advice when requested, to educators and educational conferences, either as an individual, a company, or through NCTA or a regional organization. Actively seek out such opportunities. Publicize your participation.

6) Assign a member of your company to keep abreast of activities on the national and the local educational scene by subscribing to publications, and/or joining media organizations wherever this is possible. For MSO's this might include a membership in the NAEB or AECT.

7) Cultivate and project a positive attitude, not only by including specific local proposals for education in bids, but once a franchise has been awarded, by actively assisting school personnel to project a good public image of the schools to their own community.

8) Initiate offers of assistance through your own organizations to educational and public groups planning conferences or discussions on cable. Maintain a high level of informational content, and avoid any aggressive public relations or self-seeking approach.

9) Encourage NCTA to seek out citizen groups, like the PTA, on the national scene, and you do likewise on the local scene. Offer cooperation in publicizing their goals and activities, and try to develop programming that they can endorse.

In short, pay attention to the educator *now*, or it may be too late. Make no mistake, educators are on the march . . . Now is the time to join hands with all those who are determined to play a constructive part in the communications revolution in which we are even now already engaged, or be prepared to man the ramparts against those who will be storming them. There is still time to make collaboration work, for everybody, if everybody is prepared to respect the other's contribution.

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The HTN system for Pay TV accepts that basic philosophy... *it's the programming*. At the same time HTN was developing a complete system that is both technically and economically sound, they were also going forward with a plan to acquire large blocks of programming for the HTN system that are not now available on existing free TV.

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Telecommunications have never meant much to the World's deaf. Radio was a disaster for them, and television has forgotten its vision. Cable television, however, can be adapted to their particular needs. And it should be.

*By Jerome D. Schein, Ph.D.
Deafness Research & Training Center
New York University*

Progress in media development has seldom been beneficial for deaf people. The telephone put them at a great disadvantage, rather than, as Alexander Graham Bell intended, "aiding the development of speech for the deaf."

Motion pictures were different. They were ideal for deaf audiences — until they changed from silents to talkies.

Of course, radio was a communications disaster for deaf persons. Then came television.

That Screen Is Only a Speaker

Television opened mass communication again to the deaf community. But television did not remain teleVISION very long. As it is presently used, it is little more than radio with a few pictures.

For each of the media, except radio, deaf people recently have succeeded in promoting adjuncts which permit their use without the audio dependence. The Phonotype connected to the teletypewriter makes the telephone available to deaf users by generating a high-frequency sound which activates another teletypewriter on the other end of the line. Captioned Films for the Deaf has restored motion pictures to deaf viewers by projecting a printed version of the dialogue on the screen along with the picture.

Now a similar possibility is opening in television.

CATV holds the most exciting prospects for deaf persons of any of the media for distant communications. This potential has been present since the

earliest development of CATV, but only recently has it been recognized. Two developments — one technical and the other politico-economic — have prepared the way for a great improvement in the lives of deaf citizens of the United States.

Expanding the TV Potential

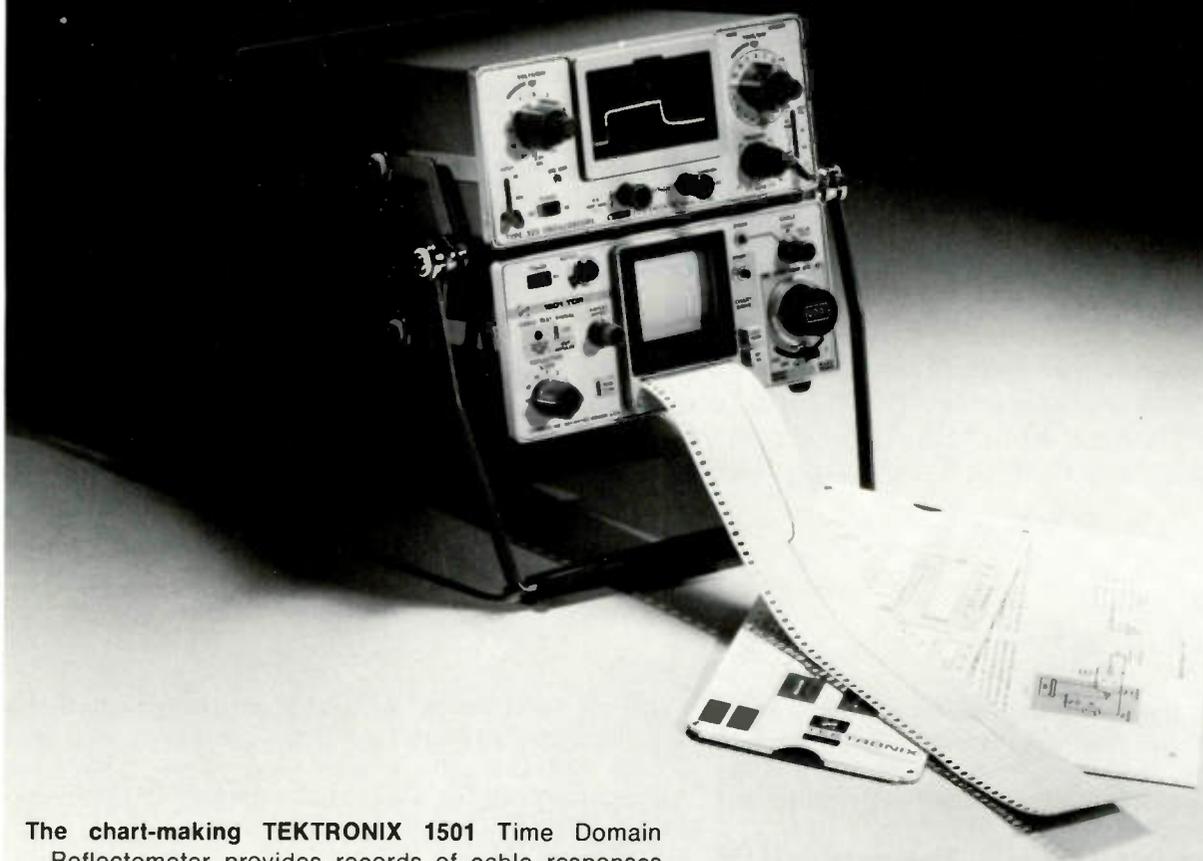
In any given area today it is possible to have at most 12 over-the-air TV stations, both UHF and VHF. The nature of the TV signal prevents more from being satisfactorily broadcast. However, when the television receiver is wired into CATV, the number of channels is doubled. A precious resource available only to huge audiences becomes a relatively common one, available to small groups.

The deaf community is small relative to the general population. With only about two members per thousand population, deaf people cannot make a strong case for their needs to be served by the limited over-the-air television capacity. But when an area is wired into CATV, it becomes reasonable to request that some cabletime be set aside for the deaf community.

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The chart-making TEKTRONIX 1501 Time Domain Reflectometer provides records of cable responses to TDR pulses. With these records you can easily detect deterioration and failure. Just compare "before" and "after" differences between charts made over a period of time and you can locate problems that were difficult to find by any other method.

To make a chart of your cable, just push a button. The built-in chart recorder in the 1501 does the rest in 26 seconds. Then when you make later charts of the same cable, comparison permits you to identify potential problems before they cause your subscribers to complain about picture quality . . . or before small problems become catastrophic failures.

Totally portable, the battery-operated 1501 carries easily to any point in your system. Designed for CATV, the 1501 connects easily to your system, even with system power on. Installed cable, out to almost two miles, can be "profiled" and problems located to within a few inches. The 1501 comes complete with a built-in chart recorder and TDR pulse source for \$1900. The 1501 can be combined with a 323 Oscilloscope (shown above) when you want CRT displays to complement the charts.



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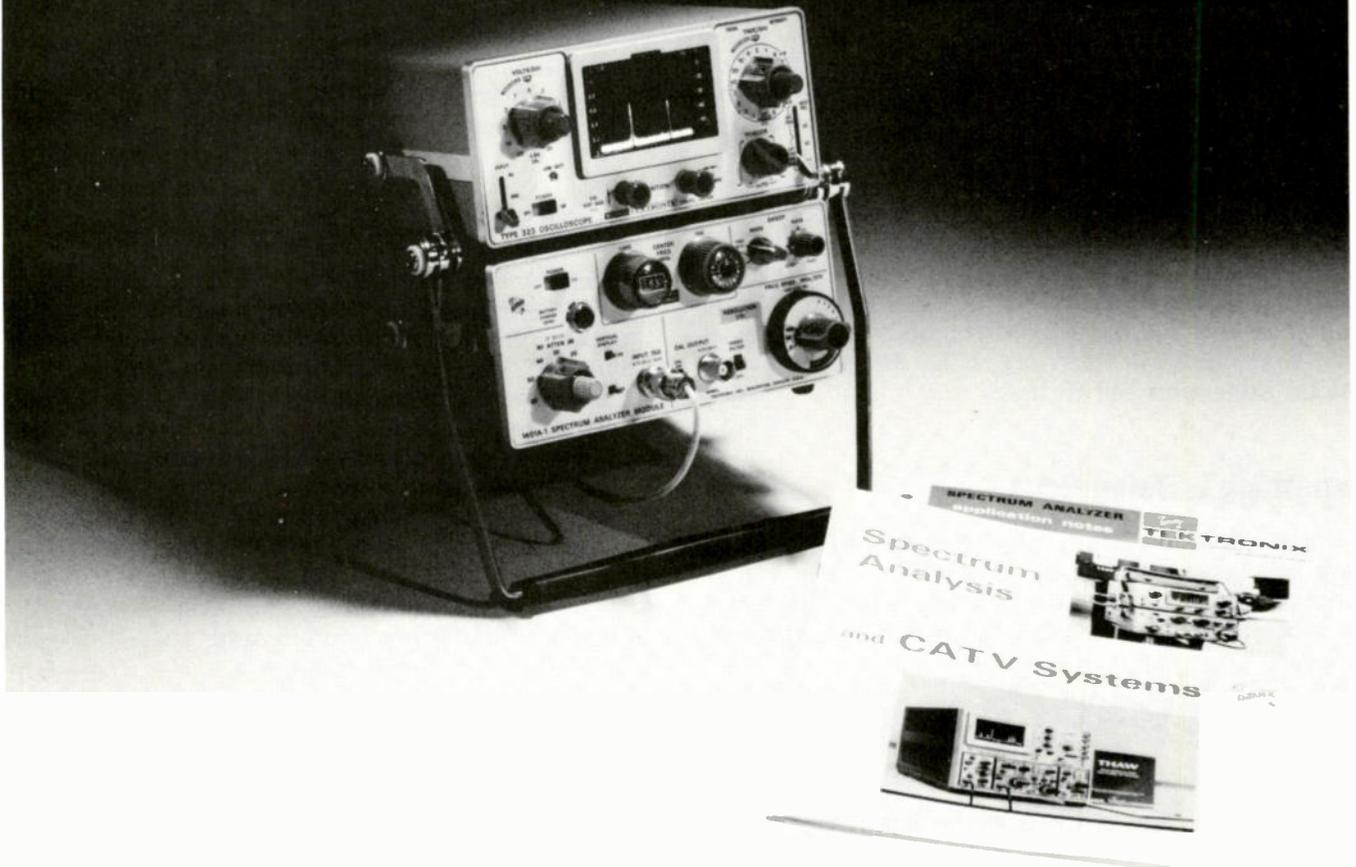
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Make your required systems performance tests with the TEKTRONIX 1401A-1 Spectrum Analyzer. It's designed for CATV. It's economical, (just \$2450, \$3400 combined with a 323 Scope). It's portable, (just 7½ pounds, 15 pounds with a 323). It's calibrated in dBmV/div for direct reading of levels. It has a 75-Ω input. It helps you make the following system performance tests as required by the FCC:

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their franchises, the two CATV licensees on Manhattan are required to provide three public-access channels. Two channels are scheduled at the discretion of the city government.

The third must be made available to any special-interest group in the city. And that is where deaf people enter.

The Deaf Community Hour

At the urging of the Center for the Analysis of Public Issues (Princeton, N.J.) the Deafness Research & Training Center requested two hours per week of prime time on the Manhattan public-access channel. We were granted Tuesday and Thursday, 8:00 to 9:00 p.m., beginning August 31, 1971. The production costs have been paid by the Center for the Analysis of Public Issues, because they feel that experience gained will be valuable to other special interest groups. Additional support has come from the Social and Rehabilitation Service, U.S. Department of Health, Education and Welfare.

Something Is Being Done

During the past 13 months, a variety of programming has been broadcast. Interviews with noted professionals in the field of deafness, performances of the National Theatre of the Deaf, panel discussions of

issues of particular interest to deaf people, and instructional programs ranging from hobbies to vocational skills have been aired. Programs focusing on vocational rehabilitation have been a major feature of the series. These have included information on job application and interview procedures, and job opportunities for the deaf worker.

The programs in the series use video-only techniques. The two most common are captioning the audio portion of the program and presenting the program in the American sign language. Original productions by the Deafness Center have used only manual communication because we lack the capability for generating captions.

The Programming Challenge

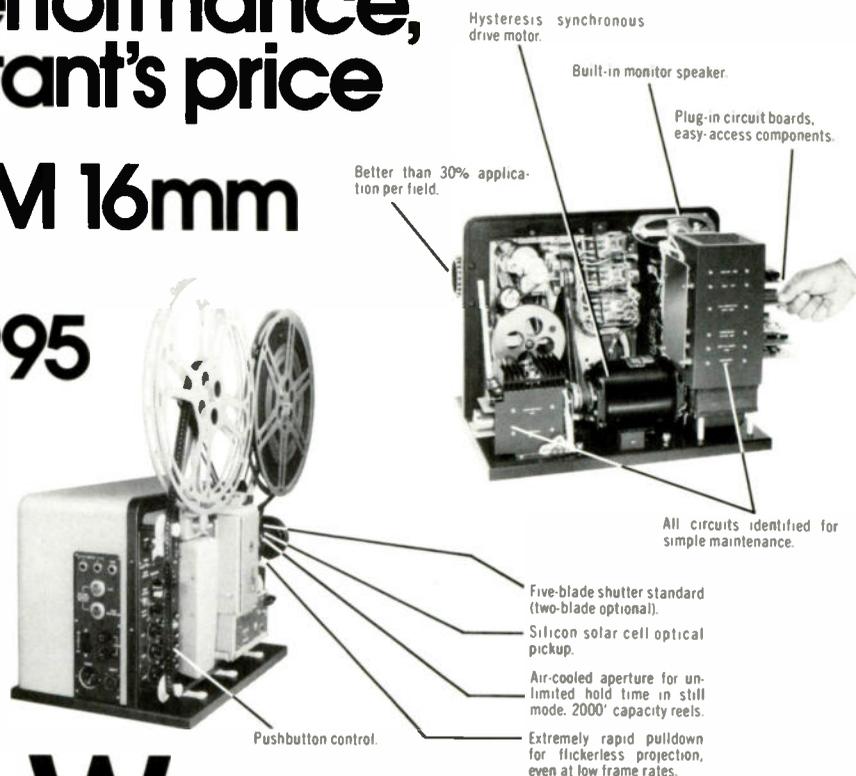
At present no one has any substantial experience in programming for a deaf audience. How should the program be designed? The technical questions are numerous. What are the requirements and preferences of the deaf audience? Format aside, what kinds of information do most deaf people want and need? These are all fertile topics for research.

During the month of July, 1972, the Deafness Center conducted an evaluation of the series' effectiveness. Members of the deaf community expressed their preferences for program content and format, and their attitudes about television in general. In addition to studying content and alternative visual

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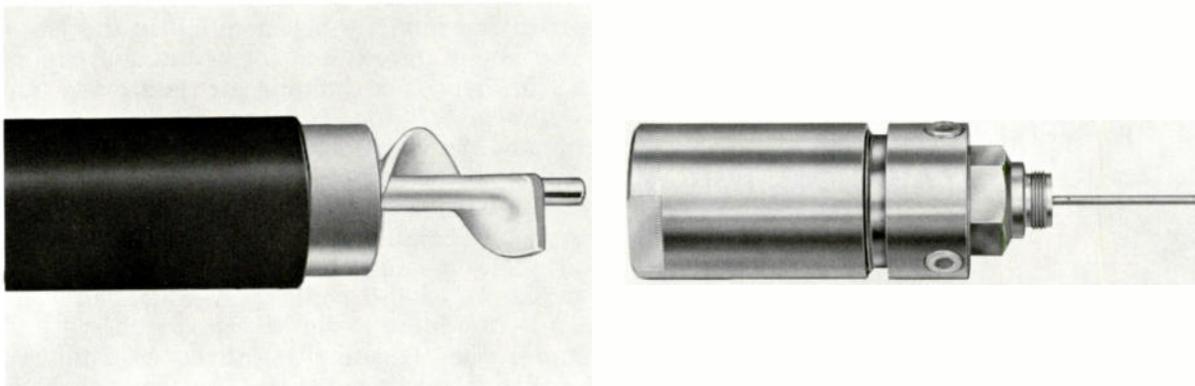
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entire system by means of a simple pressure gauge. These new connectors require no assembly or special tools for installation.

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formats for comparative effectiveness, these evaluations included histories of the viewers themselves.

What are the viewers' current sources of information and entertainment?

Is a television already in their home — perhaps watched by a hearing member of the family?

How might regular television viewing patterns change their other schedules; such as, attending social functions or adult education programs?

Advantages to Deaf People

Television can provide the ready access to information now denied deaf people. From simple things — transportation delays, weather warnings, news bulletins — to complex matters — the wage price freeze, the Vietnam situation, local and state election issues — the deaf citizen must depend on newspapers or person-to-person reports. Participation in the general community is thus curtailed, depriving both the deaf person and society.

Knowledge of the labor market is important to effective economic functioning. On the job, information about current and forthcoming events can make a difference in holding or improving one's job. Conceivably, the lack of television's availability hinders the vocational rehabilitation of deaf persons. This hypothesis should be tested.

Speechreading, another rehabilitation-related aspect in communication skill development, depends in some measure on guessing. The more aware a person is of the context in which an utterance is made, the more easily he can speechread it. Furthermore, speechreading improves as familiarity with spoken language increases. The result of the increased language familiarity gained through televiewing can mean much to the deaf person's vocational rehabilitation.

There Are Also Minor Benefits

There are also minor ways in which television for deaf audiences can add up to improved job performance. For example, a deaf person can avoid being late to work, if he knows that his usual route is blocked. Most people get such information from radio broadcasts, a medium of communication denied to those who are deaf. Announcements of shift changes in large industrial plants and other such information usually broadcast on radio could reach the deaf community on special programs over CATV.

One expert, Ralph Lee Smith, has predicted that by 1980 more than 85 percent of all television reception will be by cable. In conversation with a network vice president a few weeks ago, this assertion was repeated. His off-the-record rejoinder was that the source was badly underestimating the situation: he predicted 90 percent of television will be received via cable in five years! But that seems overly optimistic.

No matter which prediction proves correct, the time for positive action to secure the benefits of CATV by and for the deaf community is now. rvc

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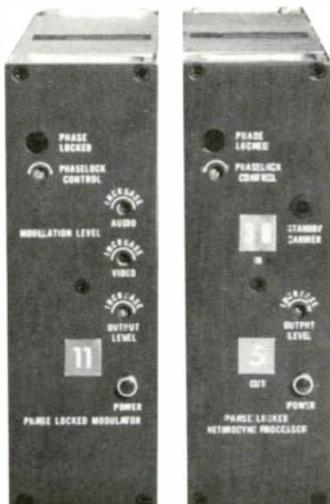
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OPINION

From The Industry



Jack A. Rickel

What About Small Systems Caught in the Top-100 Net?

By Jack A. Rickel
Jack A. Rickel Associates, Inc.

One of the most disturbing things about the recently enacted FCC CATV rules is that they penalize that segment of the United States population which could benefit most from CATV. We're speaking of the small towns with a total population of from 2500 to 5000. *Nations' Cities* estimates there are nearly two thousand communities this size in the United States. How are they affected by the new rules? Many of them lie within 35 airline miles of top 100 markets and, therefore, must follow the same rules that apply to a big city. The rub is that while many of these communities desperately need CATV, they neither need nor can they support a system with capabilities for 20 channels with two-way and educational, city government, and public access channels.

A Closer Look

Let's take a closer look at a typical community of this size and see why CATV is so important to

its populace. It may be a small industrial pocket located outside a major city to take advantage of lower land costs or lower labor rates; it may be a county seat; or it may be the center of commerce for a rural area. In any case, income and the standard of living may be lower than in a more urban community. A town this size may not even have a high school.

The Essential TV

Entertainment in a community this size is almost always limited. There may be no major sporting facilities, dinner type restaurants or night clubs, and there may not even be a theater in the town. Television, then, becomes essential to the people of the community.

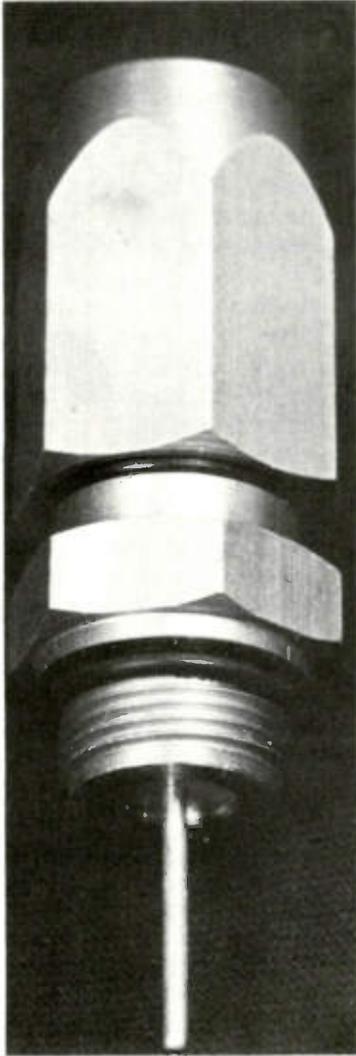
However, television reception can be (and often is) poor in a town of 5000 people or less, particularly in mountainous states. These towns tend to become land-locked in deep valleys where reception is extremely poor, even

from a station just 35 miles away. People in many of these towns are so anxious to receive television they will go to great lengths just to bring in one or two channels. It is not uncommon to see almost every house in town with a 20 or 40 foot mast on the roof and a wide variety of stacked antennas necessary to achieve any kind of reception. Frequently, in spite of predicted contours filed by the stations in the local area, the best signals these people get are from distant stations 100 or more miles away.

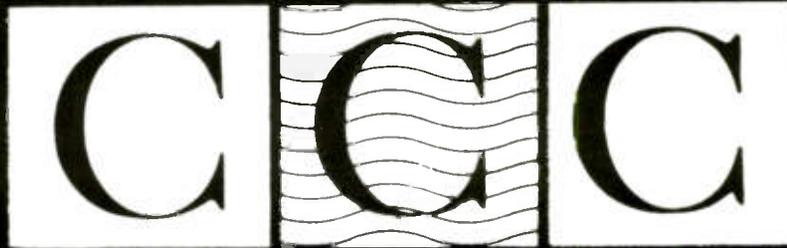
Can Cable Help?

Can a CATV system operator build and run a system profitably in a town this size? He can if he watches his overhead and if he doesn't have to build a 20-channel system. Last year 65% of all the CATV systems in the United States had 1500 subscribers — or less. So while the new rules were promulgated to promote the development of CATV in the

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major cities, the backbone of our industry is still the smaller towns.

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Compliance Costly

It will probably take 25 to 30 miles of plant to cover a town this size. A regular 12-channel system can be built for approximately \$150,000 in this kind of community. However, to build a system that will comply with the new rules will bring up the costs to something like \$250,000.

We do not need to cast a pro-forma to see that with an annual income of only \$50,000 per year, the system is licked before it's started. Furthermore, 20-channel capacity with a local channel available for every off-air channel received is not and may never be needed. The operator of a system in a town like this will have difficulty filling up 12 channels!

Who'll Buy the Gear?

Other than a small time-and-weather machine, it is unlikely that the operator will ever be able to afford local origination or even non-duplication equipment. The only chance of providing local educational or city access channels is if the local high school or college is willing to buy the origination equipment necessary to perform this function. Even on a 12-channel system, the operator will have spare channel space he

can offer for this use.

The FCC Neglect

How does the FCC feel about these small communities?

We're not sure.

One spokesman, when asked about the problem, replied that the new rules were to protect the major markets and not the small towns within those markets. We disagree with this concept. People in a large market already receive good television reception from at least three local stations; those in the small towns usually do not. Commercial television is paid for by the sponsors, and their products are used by the small town folks as well as the big city people. Public television is paid for by all taxpayers — no matter where they live.

If one accepts these two concepts, then it must be agreed that adequate television reception should be available to all. Yet, in essence, the new rules are saying to the people in these small towns, "You can't have adequate television reception because there aren't enough of you to support the kind of system we insist be built."

A Simple Answer

There is a simple answer to the problem which should not upset the major market concept or the broadcasters. The FCC can either amend its rules or accept waivers to exempt communities of 5000 population or less from compliance with these new rules. At least they should be exempt from 20-channel, two-way capacity and non-duplication requirements.

It would appear that the present rules cater to the large cable operators and to the major markets. We believe it is time the small system operators got some consideration. They've been the backbone of our industry for many years. Let's not squeeze them out now.

Let's make it possible for people in small towns to enjoy television as good as that available to the big city folks.

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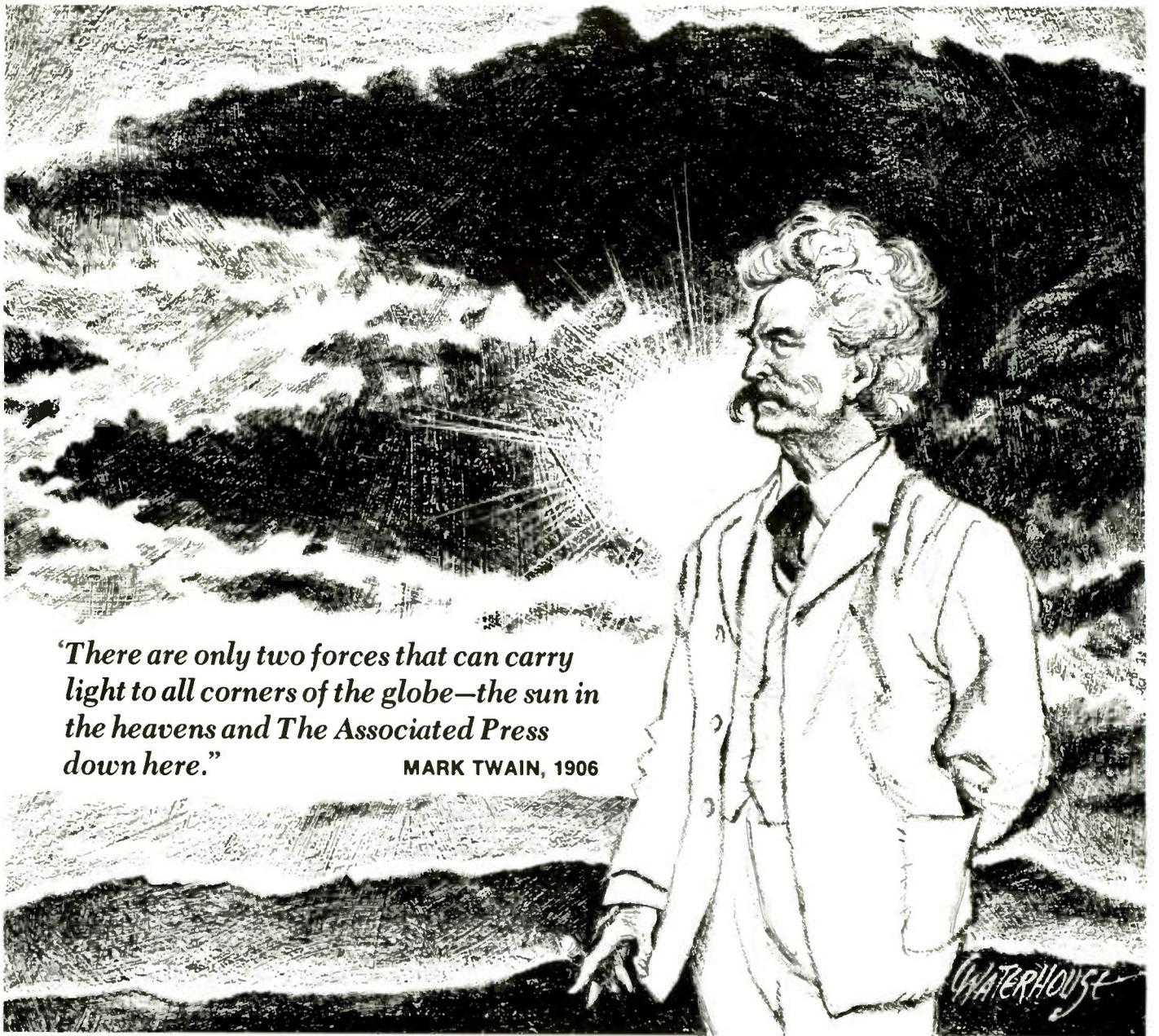
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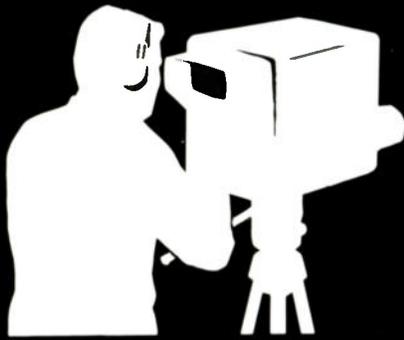
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STUDIO

Technology

A special monthly section devoted to TV programming operations in small studios

The Mobile Studio— Either Here or There

Before making the decision to purchase or build a mobile studio, carefully analyze your requirements. The ultimate question is "here or there?" The amount of remote programming to be done must be the deciding factor.

By Oliver Berliner
Telaudio Centre

It is a common joke among pros in the industry that the first thing every neophyte videoman dreams of is a truck. He's seen the magnificent network and even local-station vans, and he's set his heart on getting one and doing some fabulous "remotes."

Well, do yourself a favor and curb your enthusiasm... or at least try to achieve the realization that you should "let the punishment fit the crime." By that I mean that your mobile unit is a costly luxury; so analyze your requirements well *before* you sign that purchase order. In this way your investment in this area will ultimately cause you the least consternation. I like to think about what I call "the 50 percent rule":

Will at least fifty percent of your teleproduction be away from a studio?

Do you intend to have more than one studio?

Once you have carefully deliberated and obtained the answers to these two basic questions, take a look at Figure 1. Here we have attempted to provide guidelines that will result in the outfitting of an appropriate mobile unit. We have assumed, of course, that *some* location shooting is in the offing. The extent of it will determine the degree of sophistication of your vehicle and its equipment.

Permanent Equipment?

At the risk of raising some

eyebrows, I will go on record against the permanent outfitting of a van. The permanently equipped truck is usually the albatross around the neck of all but the most pretentious operations. In the first place, you're tying up valuable dollars in an installation that may get relatively little use. Secondly, using a truck as the control room more often than not will require huge investments in lengthy camera and microphone cables. Third, in all but the largest of vehicles there is rarely enough room for the equipment and the people needed to run it... video operator or switcher/operator, director, audioman and perhaps a recordist.

If you intend to operate with one man doing camera "shading"

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One-Studio Operation

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- B) Less than 50% of program production is on location. In this case, build Van "B".

Two-Studio Operation

- A) At least 50% of all program production is on location. In this case, build Van "A".
- B) Less than 50% of total programming is shot away from the main studio.
 - 1) At least 25% of total programming is shot on location. In this case, build Van "A".
 - 2) Less than 25% of total programming is on location. In this case, build Van "B".

Figure 1: Guidelines for choice of a mobile van.

and video switching-and-effects and operating the audio and the VTR . . . lots of luck!

What is the alternative? I suggest that the van be used only for transportation and that you plan to remove the equipment and operate from a convenient place within the confines of the location where the event to be televised is taking place . . . be it arena, theatre, stadium, soundstage, etc.

Contingencies Covered?

Have you checked the high cost of multiconductor camera cables

and are you familiar with the abuse to which they are subjected? Do you wish to invest in enough long, spare camera and microphone cables to protect you against their last-minute failure — an occurrence that is guaranteed to happen? Will you have the manpower and the time to do all the work that setup and changes entail?

Will your van be large enough, and your equipment correctly placed to permit repairs at the remote location? (Rest assured, if there is to be a failure or a mishap, it will happen on the remote rather than in your studio.) Then,



Figure 2: Van "B"

STUDIO

Technology

too, there's the matter of air conditioning the van, plus the frequent lack of sufficient ac power near the parking place. The solution is, as stated before: don't operate from the truck. Save time, save money, save personnel ... save headaches and frustrations.

I have designated a van that is used for transport only as "Van B." In Figure 2 we see an example; in this instance, it is equipped with a platform that not only will support a camera and its operator, but may also be used for equipment in transit. A removable ladder is desirable to prevent unauthorized persons from climbing it when unattended. In most instances, it is not necessary to purchase a truck with windows. But an elevator tailgate would be a most worthwhile adjunct. In the absence of this, build or buy a removable ramp. They are not expensive. Your large and heavy equipment should be on casters or rollabout carts.

Consider It's Use...

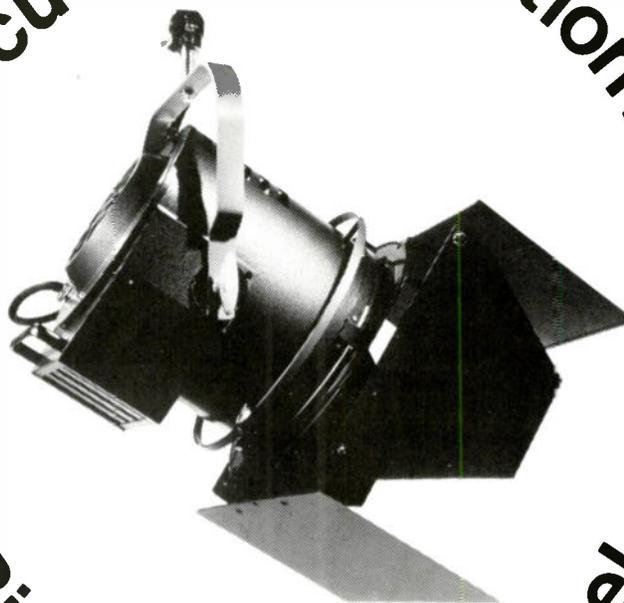
If you are determined to use your vehicle as a control room, you may wish to effect a saving by having it serve as the control room for your permanent studio. In this way you will enjoy maximum equipment usage.

If you are so active as to require both a completely equipped van and a completely equipped fixed-position control room, you may find it advantageous to build two studios, one of which uses the truck its control room. Don't forget, with equipment permanently installed in a vehicle you will find maintenance of the truck more difficult; you will run the risk of theft of or damage to your equipment while the van is in the service shop; and your equipment will not be available for use during vehicle maintenance. If you choose "Van A," be sure it is air conditioned and large enough to accommodate at least three persons who will have to be able to stand up inside during setup, production and dismantling operations.

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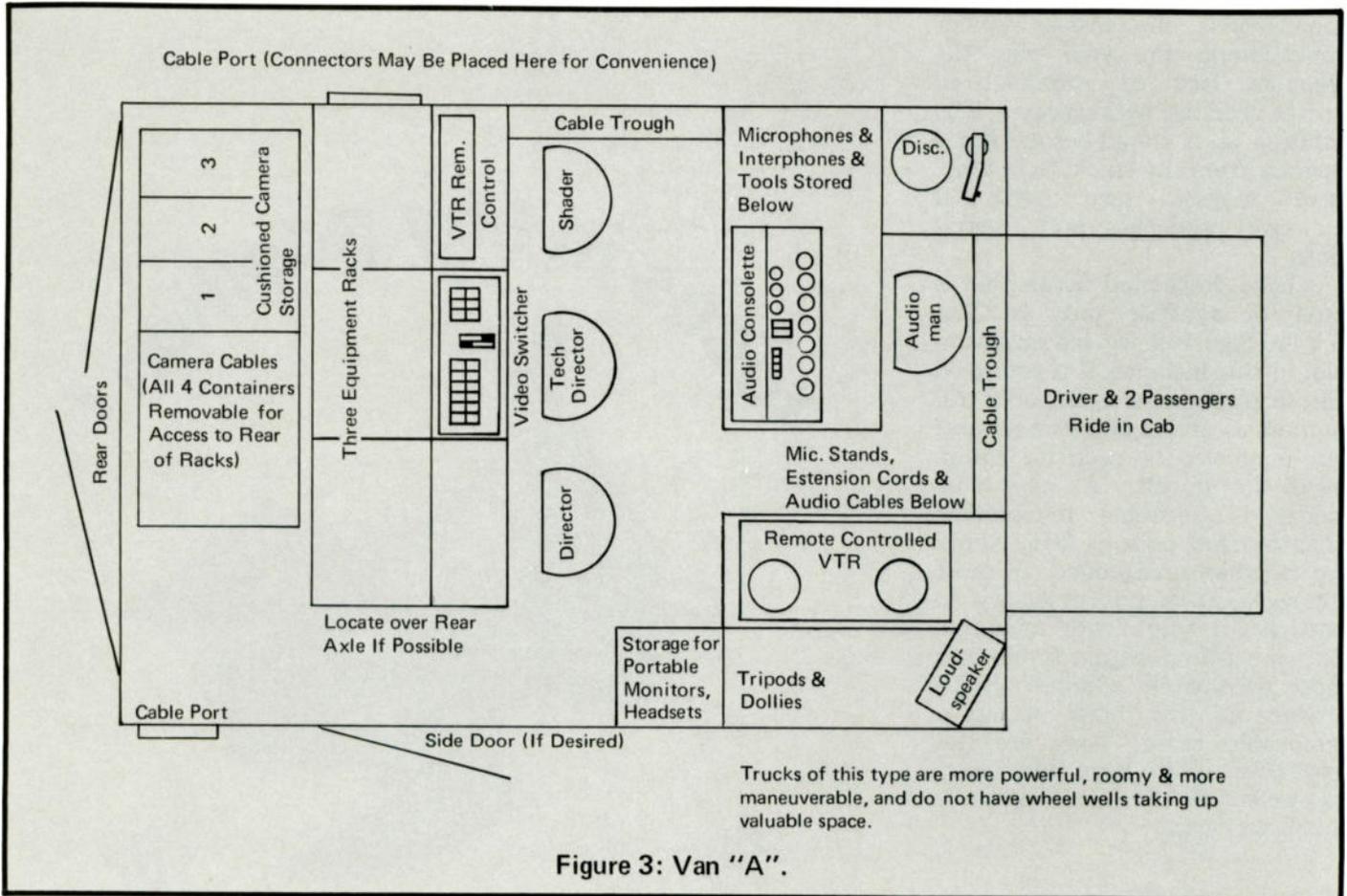
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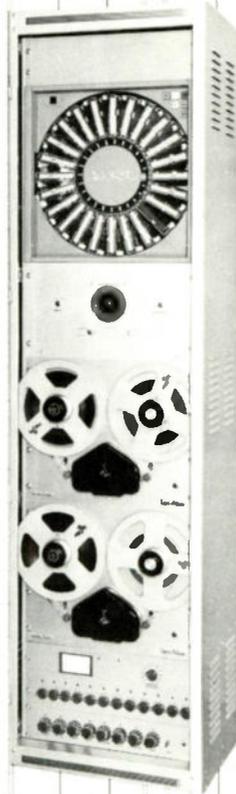
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various truck makers. Figure 3 illustrates a floor plan which not only eases operation but accounts for convenient storage and transport of removable articles. Furthermore, on-the-spot maintenance access to all fixed electronics has been provided for, just as in your home base studio. Note also that the control console has been placed over the truck's rear axle for proper weight distribution. A truck with four wheels on the rear axle is preferable. Air conditioning is mandatory if you plan to do much daylight cable production. Try to locate all fixed and removable items so that when the vehicle is in motion there is no appreciable excess of weight on either side; otherwise you may have serious cornering and braking problems.

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Malton, Ontario, Canada

for some "hot" times regardless of the weather. You will need an umbrella to protect each field camera and cameraman from sun and rain, plus a cover for each camera during standby or non-use times.

The interior of the van should be equipped with both battery-operated and ac-powered work lights. You may wish to install a second battery in parallel with the main truck battery. Always keep your battery under trickle-charge when your vehicle is idle. Use a hydrometer for checking battery condition. A 5-gallon can of extra gasoline may prove to be a good investment. Be certain the load capacity of the van is sufficient to handle all of the equipment and personnel. For one thing, you may get cited by your state police if you overload the truck.

Keep two powerful flashlights on hand. Purchase a quantity of rubber cones of the type used as temporary markers on highways. These are excellent for warning passers-by that cables and equipment are in the area. Also, obtain a few 6-foot and 12-foot lengths of heavy 3-foot-wide rubber mat material. This gives excellent protection to cables that you are forced to locate in areas where people will walk over them. You may wish to strategically place signs lettered "Caution — Delicate TV Cables."

What About Power

AC power may pose a problem. In spite of transistorization, color video equipment may draw in excess of the approximately 1500-watt limit of a nearby wall outlet, and there may already be other loads on the same circuit. In such instances you may find it expedient to split your equipment, electrically, so that each "half" can be fed from separate wall outlets, fused separately, with each capable of delivering some 1500 volt-amperes. Of course, this necessitates two ac power cables to your van; each should use number 12 wires.

Be sure to carry a voltmeter with you. You may be amazed to find that the voltage at the truck

may have dropped to as little as 100 to 105, barely enough for your cameras and VTRs, which need 110 to 120 volts.

Frequent serious power-source problems will compel you to utilize a costly gasoline-driven generator which must incorporate substantial voltage and frequency regulation facilities. Always check the availability of sufficient power prior to the date of the production. At the same time, you should plan the placement of the van, the cameras, the audio, and the cable routing.

Audio Control

Speaking of audio, it is sometimes far more convenient to have audio control at a strategic point away from the truck, with an intercom line to the audioman and a program line from the audio mixer's output going to the van. Improved audio control and use of less equipment may be the result.

I once saw an outlandish specification written by an amateur representing a purchaser who desired to buy a custom-built compact mobile unit. The buyer required all competing bidders to specify at what frequency the truck would vibrate, and to provide a method of shock-mounting the video tape recorders so that they would be protected from such vibration. What he overlooked was that the VTRs require scant vibration protection, but the cameras are the items that really need it.

You may wish to customize your vehicle by providing access from the outside to the camera-storage area, as is usually done by the networks and major local stations; but this is costly and by no means the pinnacle of convenience. Do provide cable ports so that the van may be operated with all doors closed. This also permits you to lock the van during lunch breaks, etc., without the necessity of disengaging the various cables. Most trucks are not sold with spare tires. Be sure you have a spare because you may be operating far from home and at night and/or weekends and holidays.

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All About Cable Color, Or Notes on a Friendly Peacock

Color origination equipment is usually expensive . . . and very complex. However, understanding the principles of color is relatively simple. Kozikowski and Crutchfield provide **TVC** readers with a quick course in cable color.

*By Greg Kozikowski and Ben Crutchfield
Jack A. Rickel Associates*

As we saw at this year's NCTA Convention, origination is here to stay. And the pressure to go color is relentless. The equipment is complex, expensive, and usually tricky, but the key to understanding it is the rather painless (no vector diagrams) explanation of that concept.

Compatible Color

The system of color in the United States is called NTSC for the National Television Systems Committee. This was the body which investigated the various systems of transmitting and reproducing color and decided on that now in use. You may remember some of the early experiments, including the TV set with a large "color wheel" spinning in front of the screen.

The important idea at this point is that the system is entirely compatible. That is, a black-and-white TV receiver is perfectly happy with a color signal and vice versa. In order to achieve this compatibility, it was necessary to

develop a color system which did not significantly alter the existing black-and-white system.

Enter Color: 3.579545 MHz

The above number is a very handy number to remember since the entire color system is based on proper manipulation of a signal at that frequency. Since we promised this would be painless, we will round off to 3.58 MHz, the way it is usually shown. This frequency is within the normal video response (4.2 MHz), it is easy to handle, and reasonable amounts of it may be dropped almost anywhere in a black-and-white signal with no effect on a black-and-white TV set.

About the only time the frequency is visible on any set (black-and-white or color) is when the fine tuning is adjusted for too much picture sharpness. Then it appears as a fine pattern superimposed on the picture. A continuous signal at 3.58 MHz is generated by the studio sync generator, which contains elaborate

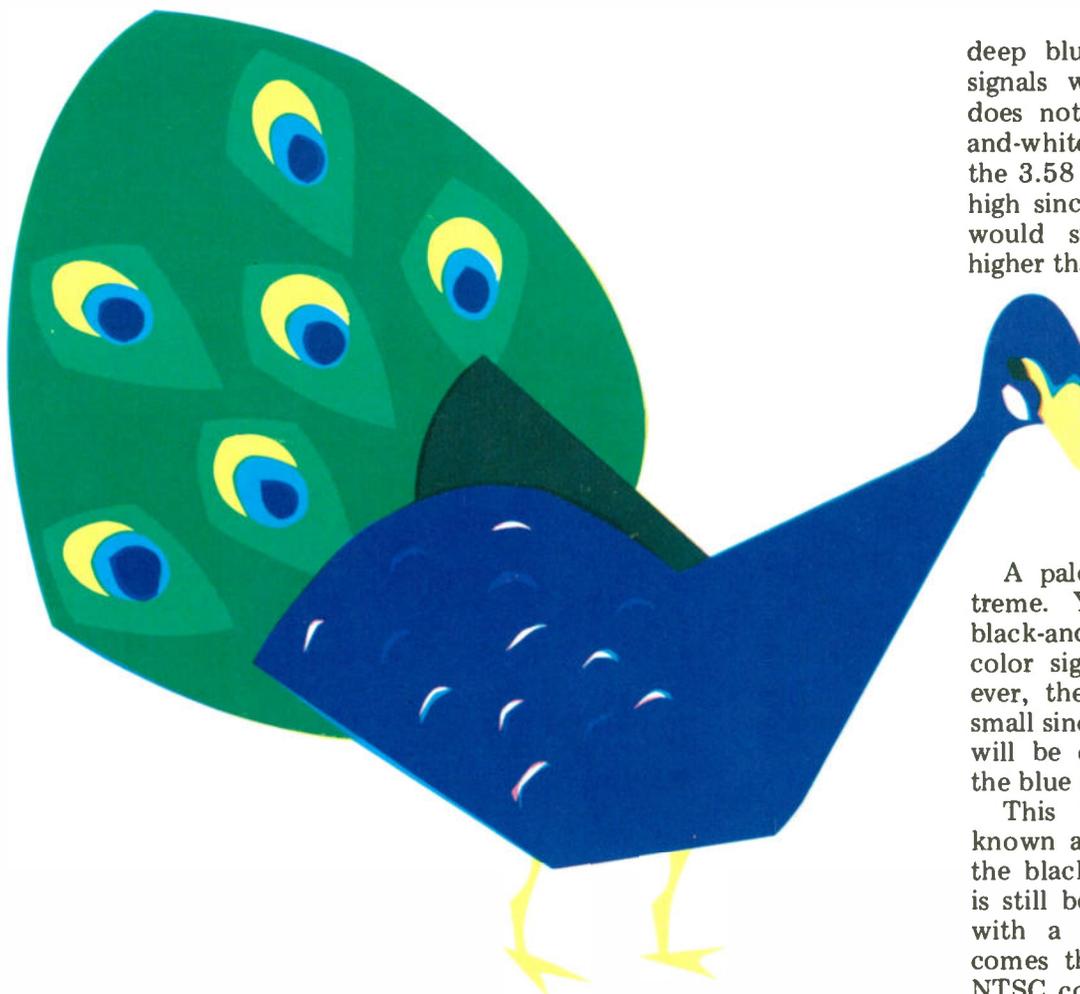
temperature and electrical controls to insure that the frequency will be very stable.

There are many variations on the procedure at the camera head, but the basic requirement is to develop separate electrical signals for each of the three primary colors in the scene being viewed. These are usually red, green and blue, corresponding to the phosphors on most color picture tubes.

The Color Camera

In fact, the average color camera is basically three black and white cameras in the same box, all looking through the same lens. Behind the lens is a system of mirrors and filters which break up the image into its different color components. Each "sub-camera" then produces a signal relative to the particular color brightness of the scene.

Proper combination of the three color signals at the color encoder (usually found at the camera control unit) provides us



with a black-and-white signal which, when transmitted as is, satisfies the requirements of everybody's black-and-white sets.

direct proportion to the differences in the red, blue, and green signals.

For example, if the camera were to look at a very intense

deep blue color, all three color signals would be low since blue does not have a very high black-and-white brightness level. But, the 3.58 MHz level would be very high since the blue camera signal would still be relatively much higher than either red or green.

A pale yellow is the other extreme. Yellow has a very high black-and-white level so all three color signals will be large. However, the 3.58 MHz level will be small since the red and green levels will be only slightly higher than the blue level.

This 3.58 MHz signal (also known as chroma) is mixed with the black-and-white signal (which is still being produced) combined with a reference burst and becomes the composite compatible NTSC color signal (see Figure 1).

The Burst, or...

How I learned to avoid green

Enter 3.58 MHz, Act II

The other function of the color encoder is to take the 3.58 MHz signal provided by the sync generator and to provide a signal at 3.58 MHz whenever the relative amounts of the three color signals from the camera head *differ from each other*.

When a camera looks at a black-and-white scene, the signals for each of the three colors are the same size when they reach the encoder. The encoder will produce a black-and-white signal with nary a sign of 3.58 MHz (except the back porch burst, which is not a rock group).

When the camera looks at a color scene, however, the three color signals to the encoder will *not* be equal in size, and the encoder will react by producing a signal at 3.58 MHz. The size, or voltage, of this signal, varies in

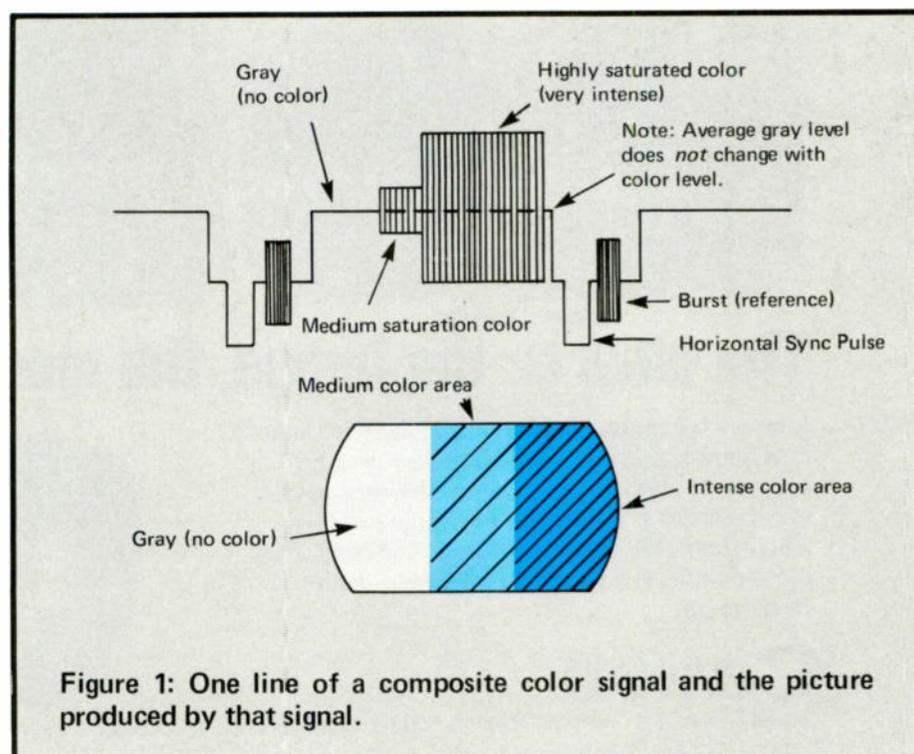
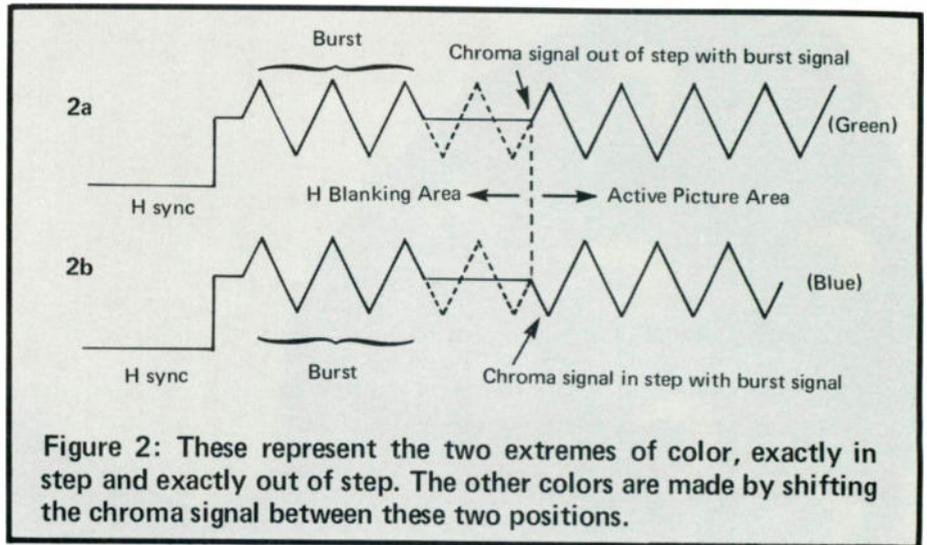


Figure 1: One line of a composite color signal and the picture produced by that signal.

people. So far, we have developed a method to tell us *how much* color is in a particular area of a particular scene. The "which color" of this system is a little more complicated. The *burst*, or master color reference signal, is a short blast of 3.58 MHz (8 to 11 cycles) which is placed at the beginning of each horizontal line of video information during the short, inactive period, which makes it invisible to the viewer. This burst has one very important feature. Its *timing*, or *phase*, is used as a reference for the following line of video information.

To explain: If you were to avoid stopping the burst at nine cycles and extended it as a continuous signal throughout the following line (see Figure 2a), the result would be a yellow-green picture. This happens because any time you get the 3.58 MHz chroma signal in the active picture area it produces a color. And since the illustrated chroma signal is timed the same as the burst (it has to be, it's the same signal), it becomes zero phase chroma,



which is yellow-green.

Now suppose you grabbed the chroma just as it entered the active portion of the line and caused a timing error (see Figure 2b). The chroma signal is no longer exactly in step with the burst and, although we still have a color on the screen, that color is no longer yellow-green and it is assigned a number (in degrees)

designating how far "out of phase" it is. For example, if the chroma were to be exactly out of step with the burst (as it is in Figure 2b), it is said to be 180 degrees out of phase with the burst and the screen will turn from yellow-green to a deep blue. Different delays or phase shifts will result in different colors.

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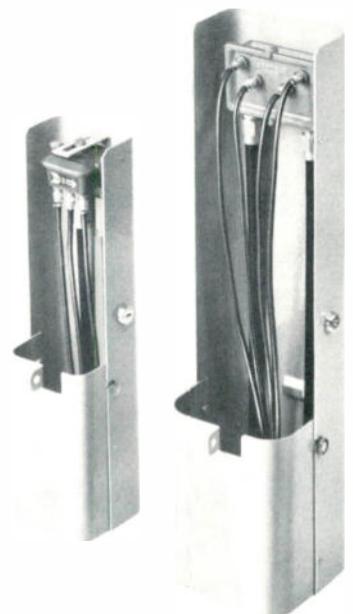


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STUDIO

Technology

above ideas it may be seen that by inserting 3.58 MHz into a black-and-white signal and changing its amount and phase at appropriate places, a complete color picture may be developed.

Healthy flesh tones have a specific phase shift and will stay healthy as long as you keep the chroma and burst in their proper relationship. Unfortunately, for engineering reasons, the burst is separated from the chroma in most videotape machines, most transmitter systems, and all color TV sets.

In the first two cases, the engineers can usually re-insert the burst with an acceptable accuracy and flesh tones will stay flesh tones. However, if the burst were to be recombined, delayed, or not at zero phase, the flesh tone's chroma no longer has an accurate reference from which to work and will go green or raspberry (or worse) depending on the amount and direction of the burst error.

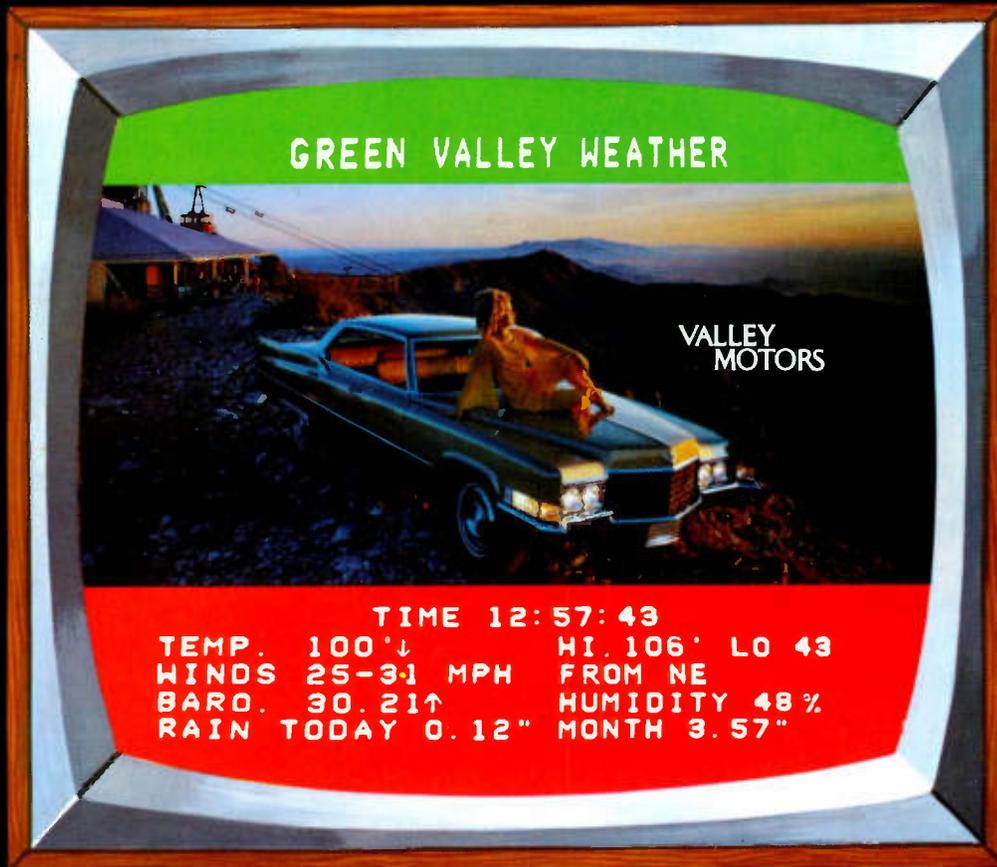
Back to the Bird

The theory then is fairly simple. The relative phase of the 3.58 MHz chroma signal tells what color, while its amplitude tells how much. The tricky part comes in keeping that signal from being affected by anything but scene color. A black-and-white signal can suffer considerable distortion before it becomes objectional. But just a small fraction of a micro-second can make a noticeable difference in color. Even at RF, a problem in, say, cable response at 3.58 MHz above visual carrier can impair color fidelity for that channel.

While the subtle bugaboos that make for unhealthy color can be difficult to troubleshoot even with sophisticated equipment, you should not despair at the prospects of color origination. Understanding the basic theory helps a lot. And having a good system makes a big difference. If you start with good equipment in a properly engineered studio system, your friendly peacock has a much better chance of getting through without his feathers being ruffled.

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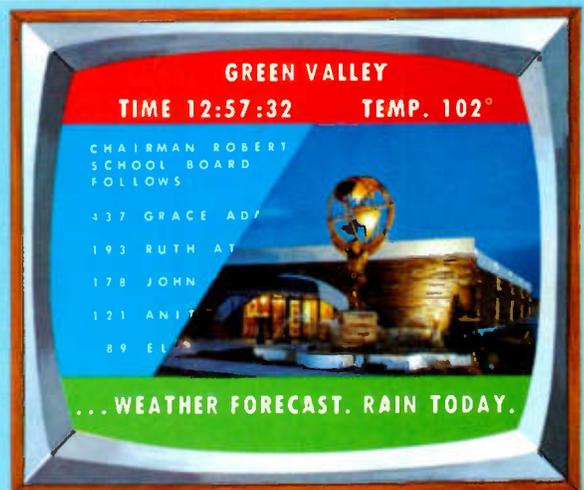
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Color Camera from Magnavox

Magnavox Video Systems, Fort Wayne, Indiana 46804, has introduced their new CV200/CV300 color television camera series. The color cameras are designed to be small, lightweight, simple-to-operate units for educational, industrial and CATV applications.

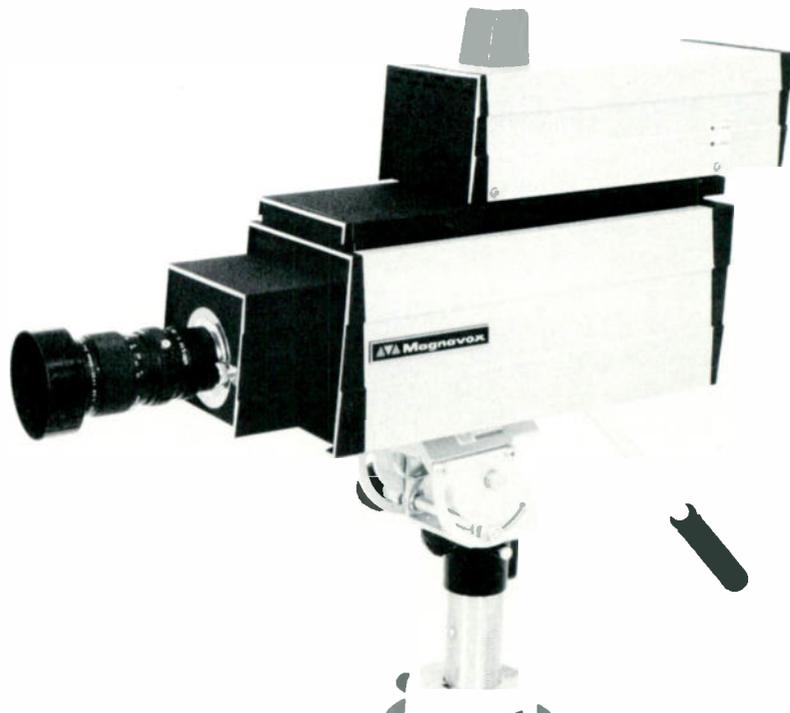
Because of its price, Magnavox believes the camera to be ideally suited for either studio or film use in local originations by CATV systems.

Some of the cameras' features include: self-contained — AC power in/composite NTSC type color video out; internal EIA RS-170 sync generator; and built-

in color bar generator.

The units are said to have no registration problems because they utilize the single-tube technique. Two controls, electrical focus and pedestal, are designed to make operation easy. The cameras can be locally or remotely controlled, and are available with or without viewfinder.

Price of the CV200 (less viewfinder and lens) is \$4,500. Price of the CV300 with viewfinder (less lens) is \$4,400. A CCU303 control unit which includes a sync generator is priced at \$1,650. The control unit can control three CV300 cameras. TVC



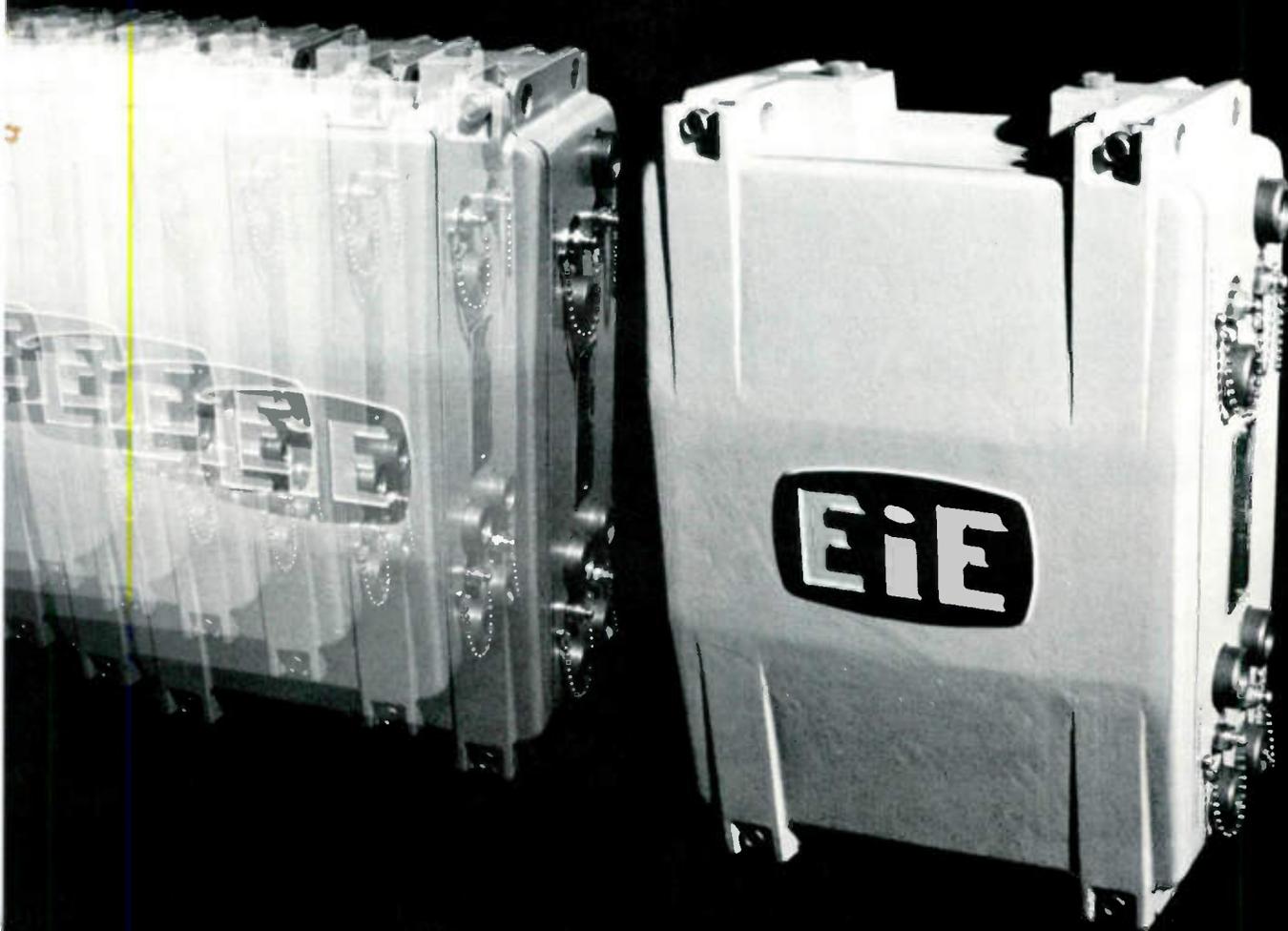
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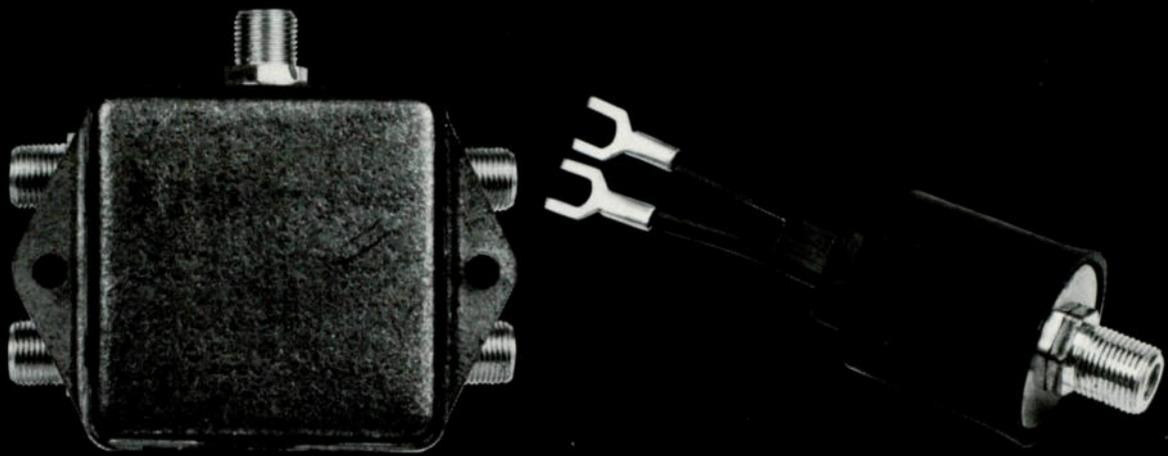


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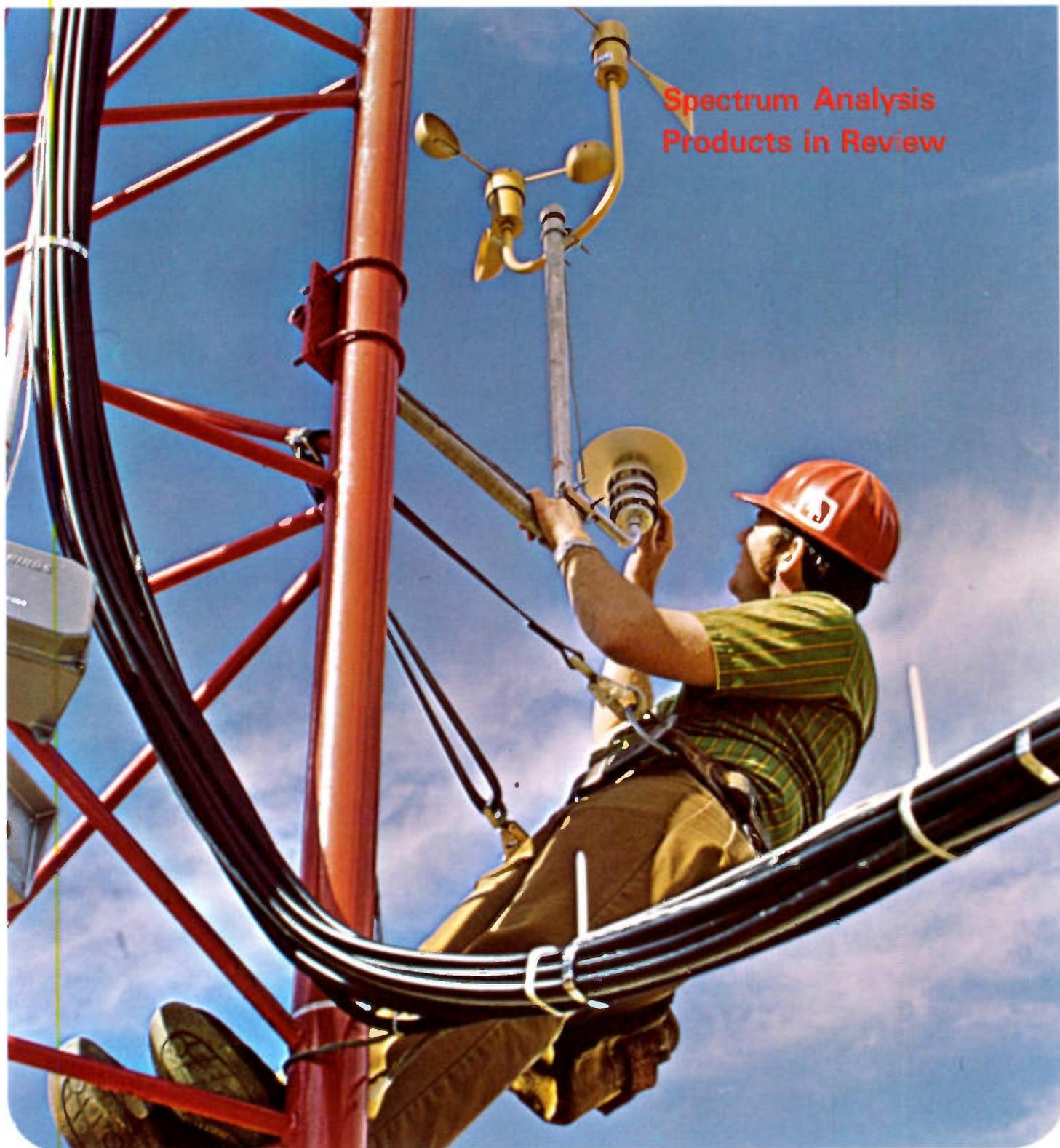
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October, 1972

TV Communications

CATV Technician



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Dave Knoll, Plant Manager for Pinebelt Cablevision, Inc., Brewton, Ala., checks weather instruments on the tower.



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CATV's Critical Mass: Scientific Approach to Subscriber Penetration

Critical mass isn't the smallest bit of fissionable material that will sustain a nuclear reaction . . . it's also the main criterion in designing a technologically and economically feasible urban cable system today.

By John J. O'Neill
The Mitre Corp.

The introduction of cable systems into the nation's urban centers presents almost equal measures of promise and peril to potential builders of such systems. The opportunities and needs of urban centers present a direct and welcomed challenge to cable system advocates almost everywhere. Communications, in general, and cable, in particular, have long been heralded as the means toward such broad and laudable goals as better understanding among citizens and improved urban living. The magic of words like "interactive" and "two-way" simply quickens the excitement; almost by their very mention alone.

However, businessmen and bankers quickly note fundamentals.

(1) Urban dwellers already have an abundance of clear TV pictures. In addition, they may have a significant number of attractive cultural and entertainment alternatives readily available.

(2) No one has identified an aggregated set of services that will insure adequate system penetration.

(3) A basic cable distribution plant must be laid in each major urban center and this represents a major initial capital expenditure. The need for set-top converters in virtually every urban household does nothing but increase this expenditure.

The degree of peril is clearly indicated by the interest rates currently charged for borrowed capital.¹

Financially the cable industry has evolved much as the telephone industry; that is, subscriber fees have formed the financial structure. If one assumes the cable industry is more like the broadcasting industry — that is, advertising revenues instead of subscriber fees will eventually support the capital structure — it is clear that almost total penetration will become mandatory. What advertiser wants to talk to less than 50% of an urban market when he can reach an entire region via radio or TV broadcasting or newspapers?

In either case the key to cable may be simply stated by one word — *subscribers* and the goal line is clearly marked — *saturation*.

Starting with the positive

premise that cable will eventually be as ubiquitous as the telephone and the electric, gas and water utilities, and that the benefits of total penetration are desirable, one criterion might be applied to all system planning decisions; viz, "*Make the decision that will accelerate the subscriber growth rate while still guaranteeing economic viability.*"

This "motherhood" criterion may appear to be obvious; its application may not be. The following are examples of this criterion applied to a few of the basic system parameters of urban cable systems.

Penetration

In rural areas where over-the-air TV reception is poor and nearby cultural and entertainment opportunities are nil, it has been said that monthly subscriber fees anywhere in the range of \$3 to \$8 will result in about the same number of subscribers. Over the last few months articles, apparently based on this premise, have been advising operators not to be timid about requesting rate increases.



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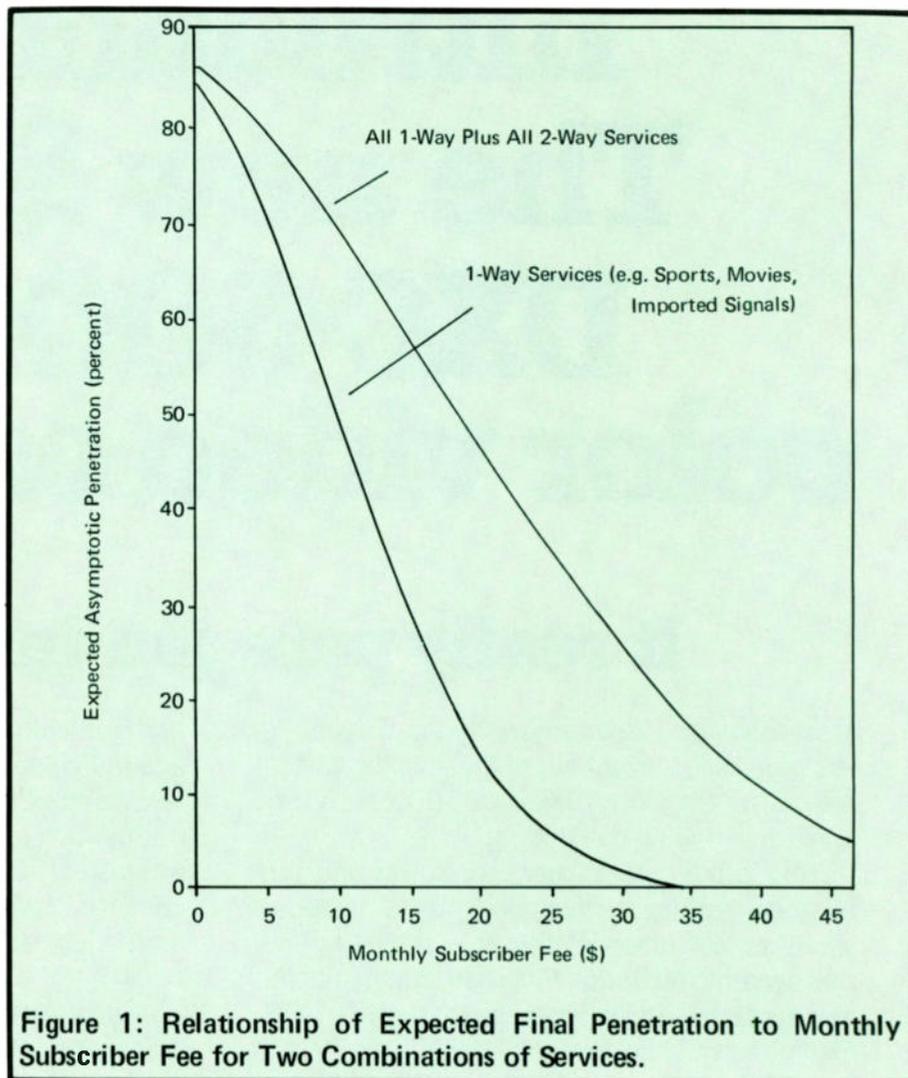


Figure 1: Relationship of Expected Final Penetration to Monthly Subscriber Fee for Two Combinations of Services.

This advice may not apply in urban areas where people have many alternatives to cable — such as a pair of rabbit ears.

One particular urban survey was specifically designed to determine the incremental demand for different types of services and programming as a function of the subscriber fees charged. It was conducted by Howard University in Washington, D.C. for The MITRE Corporation. The results were applied to a cable system design for Washington, D.C.² Figure 1 shows the main results of the Howard survey; namely, the final penetration is very much a function of the monthly subscriber fee charged. As the fee is lowered, more subscribers come on board, regardless of the sophistication of the services being provided.

Time could be spent arguing the absolute value of the final penetration, the most desirable service or

group of services, or the slope of the curves. But one thing is clear, the curves have slopes. The only place the curves level off is when subscriber fees are so high that no one subscribes and zero penetration is obtained.

Figures 2 and 3 display this data in terms of total system revenue for various combinations of subscriber fees and penetration. The cost of building and operating the system is overlaid on the revenue data. It can be seen that the profits, or the difference between revenues and cost, peak in the region of 50% penetration and at a monthly subscriber fee of approximately \$8.

Now comes the dilemma and the decision!

Which is more important to management, higher surpluses or higher penetrations? Or more basically, will a monthly fee of \$3.50 be charged in an attempt to

obtain a penetration of 70% or more — or \$8.00 in an attempt to maximize near term profits?

The main criterion opts for maximizing system penetration.

Rate Increases

During the early years of system implementation there is another tempting mechanism available to cable system operators to increase revenues. Figure 4 shows rate-of-return on equity in each year of system operation, assuming a 2:1 debt-to-equity ratio. This annual rate-of-return assumes the final value of the system to be seven times the annual revenue, plus cash-on-hand, minus outstanding debt. The peak in the rate-of-return is partly caused by tax carry-over provisions. The early years of no positive rate-of-return illustrates that cable needs plenty of capital while it is being built with little hope of financial return.

The temptation to seek rate increases from city councils in these early years, while losses can be documented, should be resisted. Again, because such a rate increase would only slow both the subscriber growth rate and the final penetration.

When cable enters the nation's

urban centers it should direct its capability for services toward all the residents of the city — to the municipal government, to the public and private schools, to the colleges and universities and to the business and commerce community, as well as to the "household communities."

The FCC Rules and Regulations³ include a requirement for a municipal channel, and an educational channel. Why not a cable-full-of-channels for each? Why not separate point-to-point cable nets overlaid in a grid-like fashion on the conventional cable distribution plant; one each for the municipal government, the educational institutions and major business concerns? Table I shows key characteristics of such nets for Washington, D.C. and the costs are included as part of the total system costs plotted in Figures 2 and 3.

Selective Power Control is being used by Detroit Edison to help alleviate brownout and blackout problems. There, 200,000 dual element water heaters, representing 360 MW of power, are radio controlled. During short peak load periods one element of these heaters is selectively turned off. Thus, up to 360 MW of power, costing \$77M of standby plant equipment, does not have to be

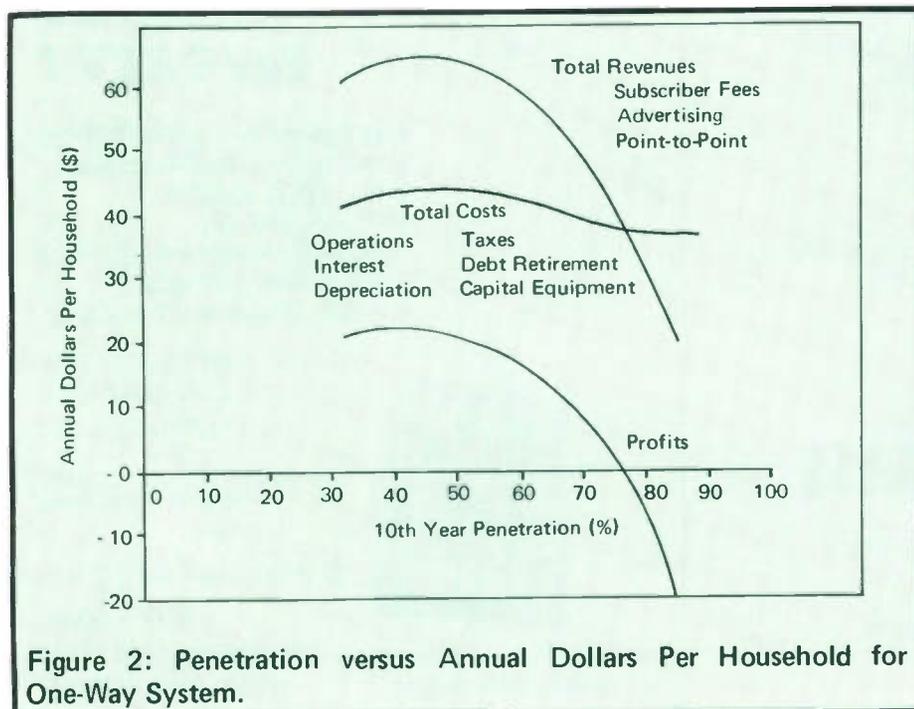


Figure 2: Penetration versus Annual Dollars Per Household for One-Way System.

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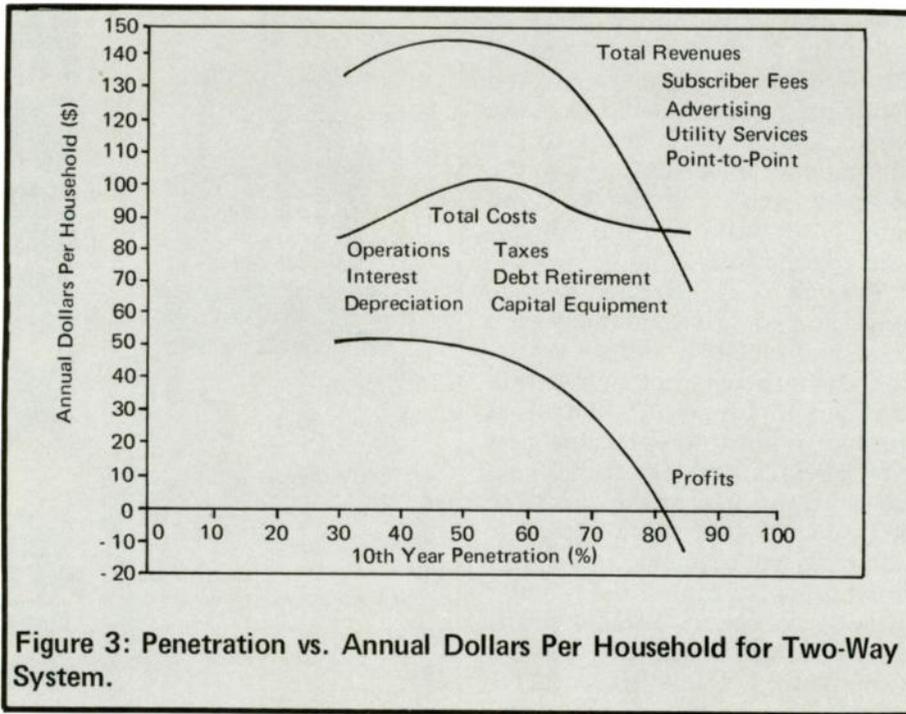
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generated. The radio control system costs \$9.6M. Part of the savings are passed on as lower yearly utility rates (and subscriber fees?). Cable systems could easily provide the communication link

for this type of service. Iron lungs, elevators and hospitals could be given a higher assurance of continuous operation at the expense of air conditioners, washing machines and dryers.

Why not promote Selective Power Control as a national cable service? It does not require high initial penetrations as does utility meter reading and it certainly provides an incentive; that is, extra revenue for the system.

Washington, D.C.,⁴ New York City,⁵ Charleston⁶ and San Jose⁷ are experimenting with traffic control systems. Cable can provide the communication links for such services and save the city money.

Common Carrier Data

The local distribution of specialized common carrier data may be another near-term service that cable can provide to its non-household customer.⁸

Cable systems should tap these non-household markets and include the entire city and its many functions as its clientele. Only in this way can cable be in a position to provide the broad spectrum of services promised. The economic arguments for multiple cables being drawn when

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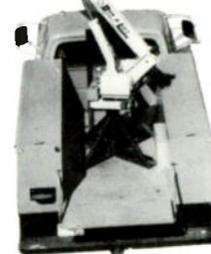
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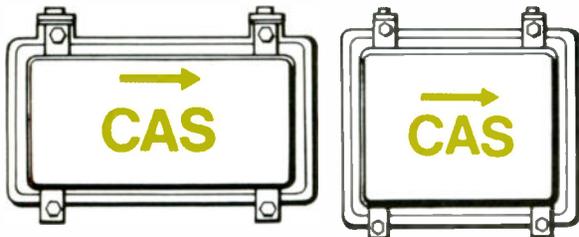
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the conventional plant is initially installed can be persuasive indeed.

Let me digress for a moment. When I moved into my home recently I found three built-in telephone outlets with seven twisted pairs behind each. Opportunities for twenty-one revenue producing services per household were being provided and I had not even spoken to the telephone company. There is a message there — for all of us.

Programming sources to supply this industry that continues to provide more and more channels can become a serious near-term problem. Local community studios, easily accessible and moderately equipped must be provided if a community voice (and a new program source) is to be realized. The FCC's³ community access channel requirements and their additional requirement for one non-broadcast

channel for each broadcast channel will insure programming the status of a long term issue.

Commissioner Johnson suggests¹⁰ that portions of a rela-

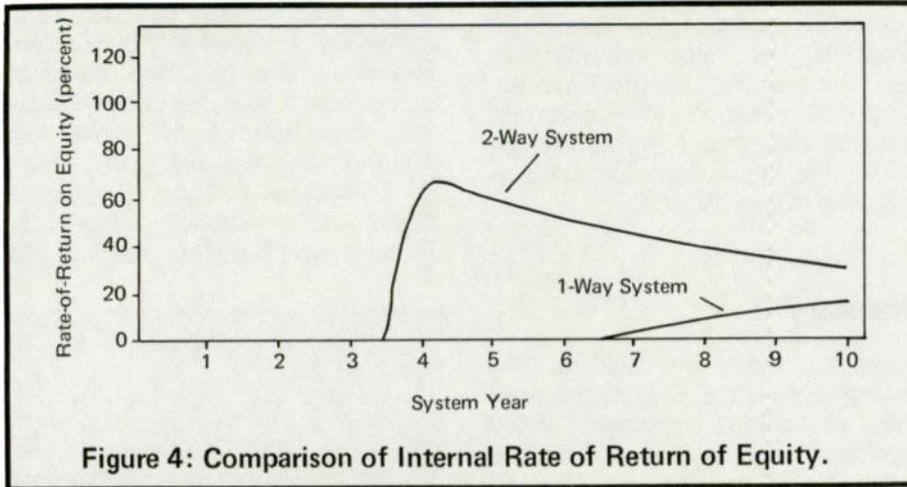


Figure 4: Comparison of Internal Rate of Return of Equity.

Type	Number of Subs.	Length (miles)
Federal Capitol Building and Major Federal Buildings \$417,000 30 Channel Pairs	54	10
Municipal Schools, Fire, Police, Hospitals, Sanitation, Etc. \$807,000 14 Channel Pairs	271	73
Institutional Banks, Dept. Stores \$952,000 14 Channel Pairs	300 to 3000	50
Higher Education All Public and Private Facilities \$183,000 14 Channel Pairs	23	15

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tively high franchise fee be reserved by cities through an independent commission or by private groups with grants from the city for the purpose of cable-casting programming. This idea sets up a middleman to handle the

yearly for programming purposes in both the one-way system configuration and in the two-way subscriber response system configuration. Over a ten year period this amounts to \$15M being allocated to programming in the one-way system configuration and \$34M in the two-way system configuration. In addition, it provides nine local studios moderately equipped costing a total of \$500,000.

The economic analysis of an urban cable system requires many different assumptions and the sensitivity of these assumptions must be tested. For the Washington, D.C. system,² the economic analysis was repeated using various values for key parameters such as those shown in Table II.

Rate-of-Return D/E Interest Market Value	System Maintenance
System Penetration Final Value Growth Rate	Economies of Scale Studio Costs Programming Costs Operating Costs
Capital Costs	Multiple Franchises

funds and decide on the type of programming. The handling fees of such collection commissions are well known.

The expense curves of Figures 2 and 3 include approximately one-fourth of the total yearly subscriber's fee being ploughed back

Summary

Again, these are just a few thoughts directed toward the peril side of cable's promise. They represent some changes in the conventional approaches directed

toward obtaining the critical mass of subscribers necessary for both economic and social viability of urban cable systems.

Acknowledgements

Many of the thoughts and much of the background information for this report were developed during the course of a study of the economic viability and technical feasibility of urban cable systems which was funded by The John and Mary R. Markle Foundation; Reference 2 is the final report of this study. I wish to acknowledge the contributions of other key members of the study team, Frank R. Eldridge, William F. Mason, Carol A. Paquette, Friend L. Skinner, and Ralph L. Smith. 



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Spectrum Analysis and Key FCC Measurements

The spectrum analyzer is an expensive piece of test equipment. But when it comes to performing tests for the old FCC, it will prove its real value. Linley Gumm explains several of its applications.

*By Linley Gumm
Project Engineer
Tektronix, Inc.*

Measuring CATV system performance has been spotlighted by new FCC rules requiring periodic system performance tests. But, then, system performance measurements have always been important, and in recent years have been receiving increasing attention. Also receiving increasing attention are spectrum analyzers to meet measurement needs.

Figure 1 shows a synopsis of the FCC's specifications as well as a list of specifications that might be used as engineering standards in a high-quality system. Of course, the engineering standards are considerably tighter since the aim of establishing these standards is to achieve nearly flawless performance. All of the standards relating to signal amplitude, spurious signals, cross modulation, signal-to-noise ratio, hum and radiation can be measured easily with a spectrum analyzer. However, some of these standards such as carrier frequency and system flatness cannot be measured by spectrum analyzers alone. In the past few years, great strides have been made in spectrum analyzer performance. Spectrum analyzers are available with absolute calibration that read the input level directly without external calibration. They also have accurate logarithmic displays that read directly in dB, as well as high linear, calibrated frequency sweeps for making frequency difference measurements, plus many more features that make RF measurements easy.

Other, more economical, spectrum analyzers with fewer features are also available. These analyzers also have a logarithmic display, linear in dB, but cannot make level measurements without first referring to an internal calibrator. This is a slight inconvenience, but

they are relatively easy instruments to use. The striking advantage of this type is that they are small, light, highly portable battery-operated instruments suitable for field work. But they are restricted somewhat in performance and cannot make some of the more difficult measurements. However, they can make all of the amplitude measurements with ease.

Amplitude Measurements

Figure 2 shows a spectrum analyzer display of a typical TV signal. The visual carrier is the large signal to the left, and the aural carrier is the large signal to the right. The smaller signal between the visual and aural carrier is the chroma subcarrier, carrying the color information in the picture. Measurement of the visual carrier frequency is made with a Type 7D14 digital counter separately connected to the signal source. The character readout of this frequency is at the top left on the CRT. The rest of the readout presents most of the pertinent scale factor information needed to interpret the photo.

The upper center format indicates the vertical scale factor of the display as 10 dB per division in this case. The upper right indicates the input signal level to produce full scale deflection, or -10 dBm. The 6 dB minimum-loss pad is used to convert the input impedance to 75 Ω . To convert the reading to dBmV, add 55 dB to the reading in dBm.

With the minimum-loss pad, in this case, the reference level is +45 dBmV. The format at the lower left indicates the bandwidth that the analyzer IF uses

Amplitude Standards		FCC	Desired Engineering Standards	Frequency Standards		FCC	Desired Engineering Standards
a) Minimum visual sync-tip level		0dBmV	+3dBmV	a) Visual freq. accuracy		$\pm 25\text{kHz}$	$\pm 25\text{kHz}$ of standard channel freq.
b) Maximum visual sync-tip level		Below overload	+10 dBmV	b) Inter-carrier freq.		$4.5\text{MHz} \pm 1\text{kHz}$	$4.5\text{MHz} \pm 1\text{kHz}$
c) Maximum amplitude difference between visual carriers 6 MHz apart		3dB	1dB	c) FM freq. accuracy			$\pm 2\text{kHz}$ of standard channel freq.
d) Maximum amplitude difference between any visual carriers		12dB	7dB	System Fault Standards			
e) Minimum visual/aural ratio		13dB	13dB	a) Hum or low freq. variations		5% peak to peak	1%
f) Maximum visual/aural ratio		17dB	17dB	b) Visual carrier to noise ratio (4MHz BW)		36dB min.	40dB
g) Maximum FM station amplitude			-7dBmV	c) Visual carrier to coherent spurious signal ratio (i.e., inter-modulation)		46dB min.	-45 to -60dB (depending on position with respect to visual carrier)
h) Minimum FM station amplitude			-20dBmV	d) Cross mod. ratio			-51dB (-57dB trunk)
i) Maximum variation between FM stations on adjacent channels			3dB	e) Reflections within system (shadows)			-40dB
j) Long-term variations in amplitude		12dB		CATV System Flatness Specifications			
Video Characteristics (Base Band Systems)				a) Amplitude response within any TV channel		$\pm 2\text{dB}$	$\pm .5\text{dB}$ (-.75 MHz + 3.6MHz from visual carrier)
a) Differential gain			.5dB	b) Amplitude response for entire spectrum			$\pm 2\text{dB}$
b) Differential phase			± 1 degree	Radiation			
c) Envelope delay variations			Per FCC Standards	a) Up to 54MHz		15uV/M @ 100'	
Isolation				b) 54 to 216MHz		20uV/M @ 10'	
a) Subscriber to subscriber isolation		18dB	30dB	c) Above 216MHz		15uV/M @ 100'	

Figure 1: CATV System Specifications.

to separate the various components (resolution bandwidth) is 30 kHz. At the lower right, the readout indicates the horizontal scale is 1 MHz per division.

Figure 3 shows the head-end output of a CATV system. The system is located in Portland, Oregon, where, before the new FCC rules, it could not import any foreign signals. Therefore, the system is lightly loaded, carrying only the six local TV signals (2, 3, 6, 8, 10, 12), as well as nine FM stations. At the time this photo was taken, Channel 3 was not on the air.

The photo shows the general condition of the head-end: the readout shows that the vertical scale

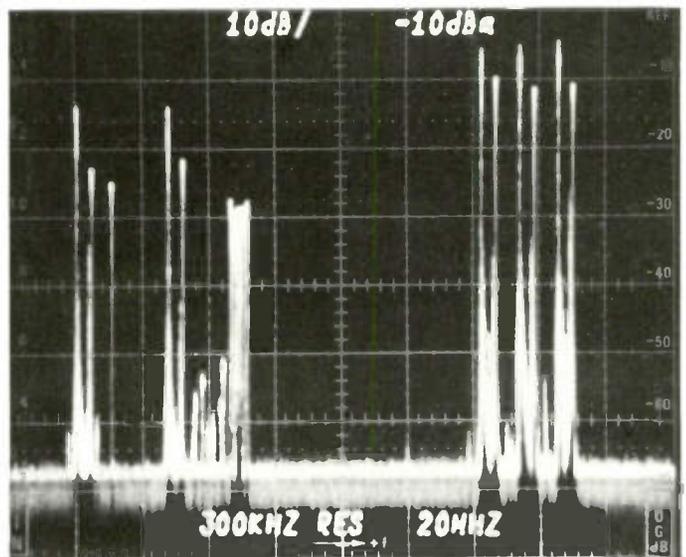
factor is 10 dB per division and the reference level is -10 dBm (+45 dBmV). Channel 2 is the first signal on the left, with the visual and aural carriers in the same relative positions as in Figure 2. The visual level of Channel 2 is +31 dBmV and the aural level is +22 dBmV for a visual/aural ratio of 9 dB.

The large carrier just to the right of Channel 2 is the aural output of the Channel 3 strip amplifier when Channel 3 is off the air. The Channel 3 visual output under these conditions is just to the right of the Channel 2 aural carrier at a level of -70 dBm (-15 dBmV). Channel 6, the next TV station, is correctly

Figure 2: Typical TV signal.



Figure 3: CATV head-end output.



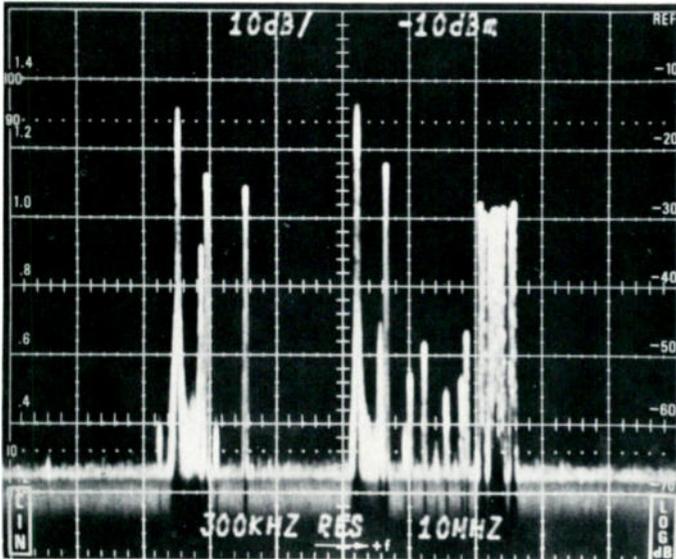


Figure 4: Low band and FM band output. Channel 2's level is +31 dBmV.

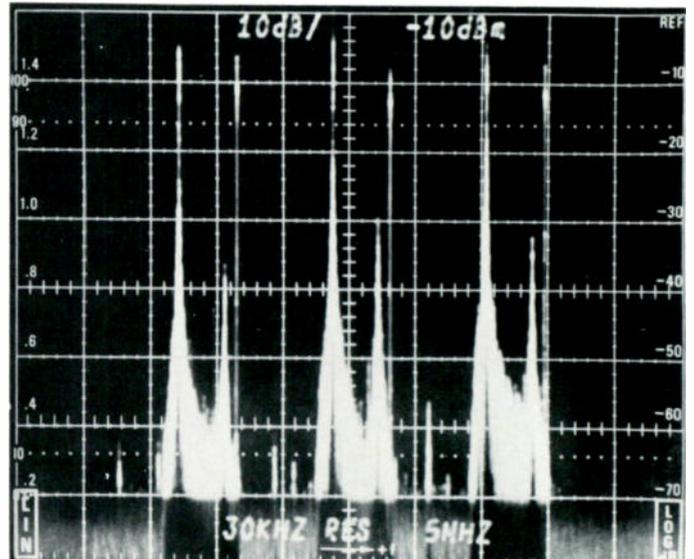


Figure 5: High band output. Channel 2's output level is +40 dBmV.

operating at the same output level as Channel 2, but with a 3 dB less visual/aural ratio. The low-level signals above Channel 6 are the unprocessed FM carriers as broadcast, leaking through onto the cable.

The block of carriers just above the FM carriers are the processed FM signals at an amplitude of -38 dBm (+17 dBmV). The high-band signals (Channel 8, 10, 12) are all within 2 dB of each other, and 9 dB

greater in amplitude than the low-band signals; this system employs block tilt. After the various low-level signals between the carriers are identified, a photo such as this can serve as a system record that even includes a tabulation of some of the spurious signals.

Moving the frequency span to 10 MHz per division and slightly retuning the center frequency, we arrive at Figure 4. Here a more detailed view of the low band and the FM band is obtained. Note the two spurious signals below Channel 2. The close-in one, being 46 dB down from the Channel 2 carrier, will cause no problem. A detailed look at the high band is presented in Figure 5.

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The FM Frequency Band

Figure 6 shows the FM band. The processed signals are at the high end of the band and are about 20 dB higher than the unprocessed signals at the low end. As shown in Figure 7, the processed signals are at 0.5 MHz spacing with the exception of two gaps left open since these are unassigned FM broadcast allocation frequencies. Note the signal that is much wider than the rest. An oscillator was misadjusted and the converter was nonoperational. This was found as these pictures were being taken, and a quick adjustment by the technician put the converter back in business.

To make highly accurate amplitude measurements, the Tektronix 7L12 has been provided with a 2 dB per division mode. Figure 8 is a picture of the high-band carriers' amplitudes. With this 2 dB per division vertical scale factor, we can observe that Channel 8 is operating at -13.4 dBm (+41.6 dBmV) and Channels 10 and 12 are within 1 dB of the same level. The more sensitive 2 dB per division scale factor affords easy and accurate power measurements. Periodic checks of the spectrum analyzer's accuracy are easily done with an internal calibrator.

TVG

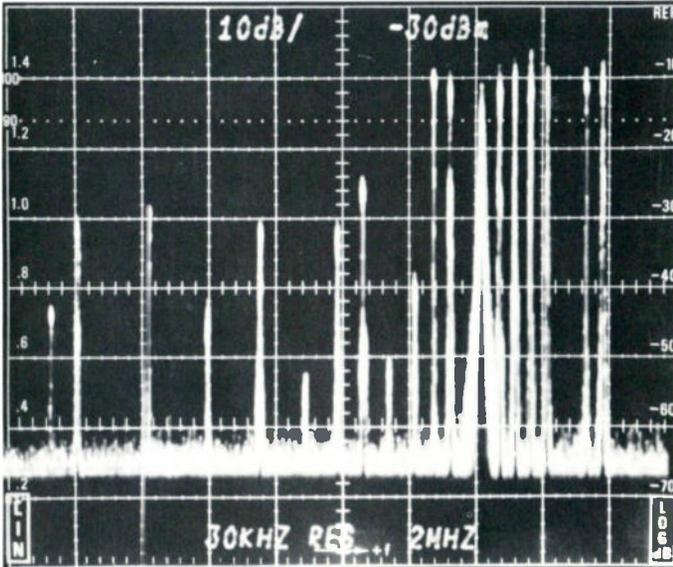


Figure 6: FM band output. The processed FM output level is about +16 dBmV.

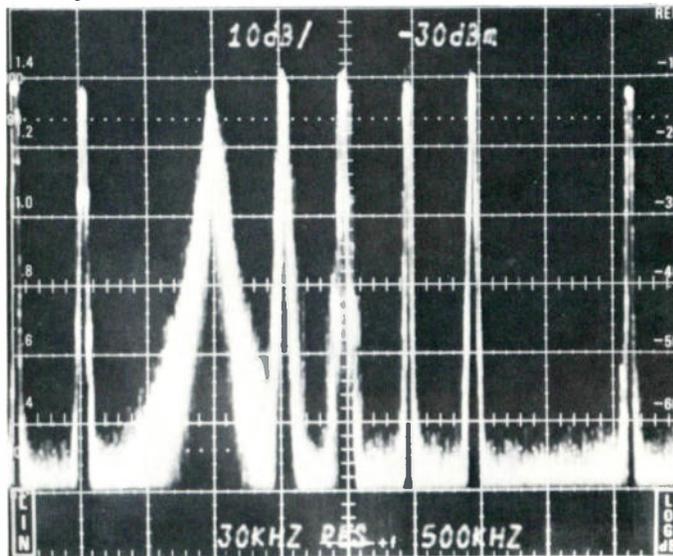
System Fault Measurements

Cross modulation: As in most things, the economy models of spectrum analyzers cannot do some of the things that more elaborate ones can do. This is the case in cross-modulation measurements. The 7L12 can make this measurement with ease, but the Tektronix 1401A-1 lacks high resolution circuitry.

Cross modulation is generally measured by applying thirteen visual carriers of the VHF spectrum at the correct operating level to the input of the amplifier to be tested. Twelve of the thirteen carriers are simultaneously modulated with a 15.75 kHz squarewave, while the thirteenth carrier is left unmodulated.

This thirteenth carrier is then carefully tested at the amplifier's output to see if it has become modulated by passing through the amplifier simul-

Figure 7: Output of FM processors. One unit is misadjusted.



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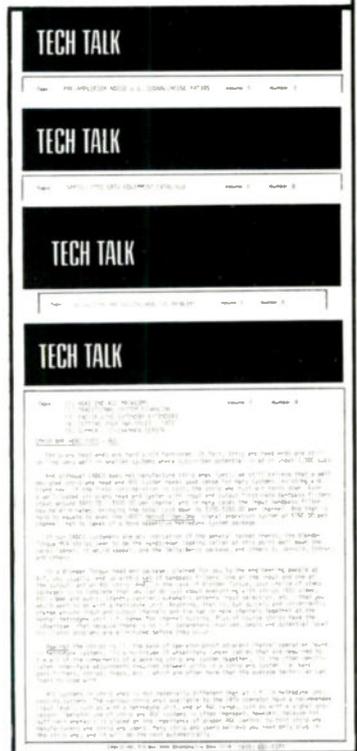
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VOL 1 / No. 3 — a detailed discussion of CATV headend problems, adjacent channel interference, AGC amplifiers and interference elimination.

VOL 1 / No. 4 — five topics covered including head end AGC problems and their solution, financing of CATV systems (it is good to know about what the boss sweats!), end of line extender-extenders, setting your own poles, and summer time co-channel interference causes.



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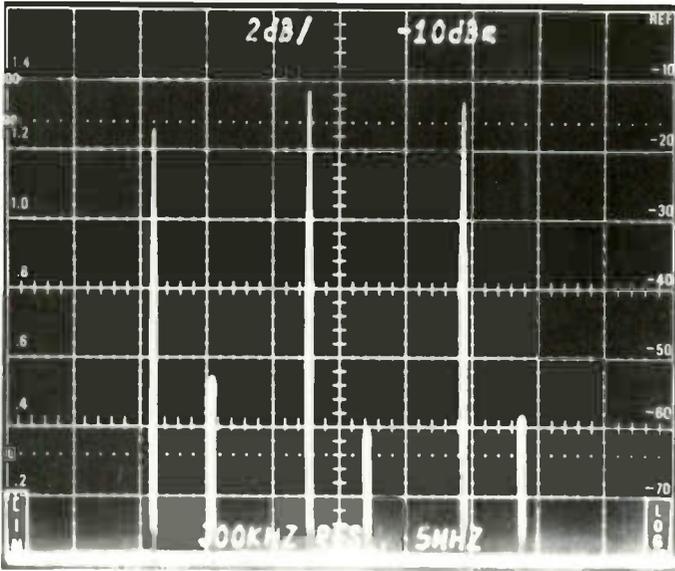


Figure 8: High band output at 2 dB per division Channel 8's level is +41.6 dBmV.

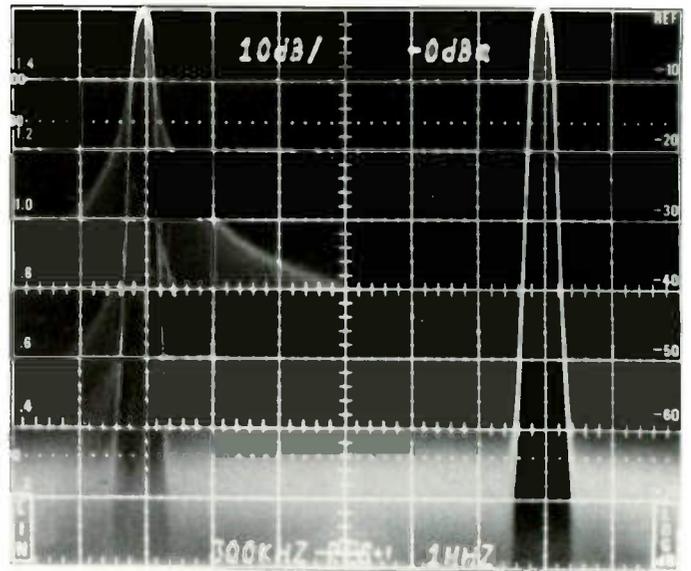


Figure 9: Cross modulation measurement. Lower frequency carrier modulated with a 15.75 kHz squarewave. Higher frequency carrier is CW.

taneously with the twelve modulated carriers.

Figure 9 shows one of the modulated carriers next to the unmodulated carrier. The analyzer is set for a 300-kHz resolution bandwidth, which gives a full peak reading of the carrier amplitude. From the photo, we ascertain that the two carriers are of equal amplitude. The second step is to tune to the modulated carrier and measure the amplitude of the 15.75-kHz

sideband. This amplitude is the calibration level for the actual measurement.

Figure 10 shows this measurement. The carrier has fallen 6 dB in amplitude because we are now measuring the average amplitude of the carrier instead of seeing its peak amplitude. The first sideband is down 12 dB. The third step is to tune to the

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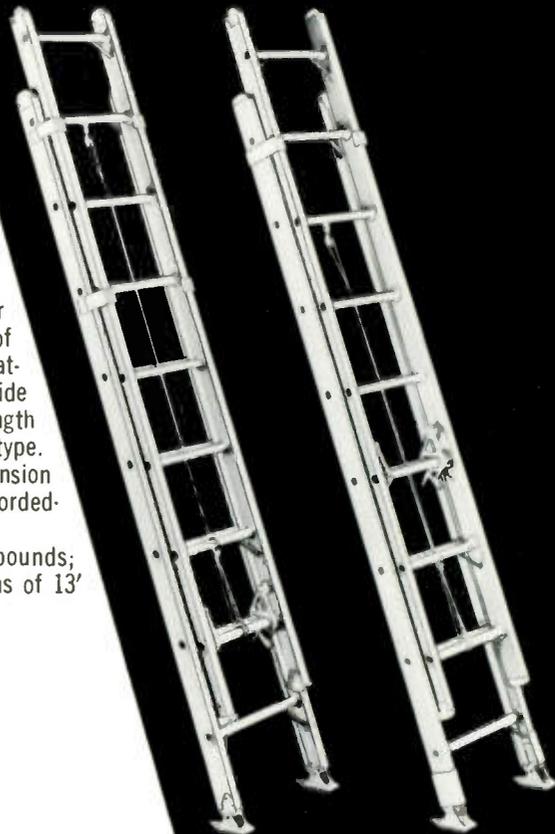
These are Type I, Heavy Duty Ladders (250# Workload) in which high-strength, fiberglass siderails combine with strong and light-weight aluminum rungs. They are spark-proof, moisture-proof, acid-resistant — safest of ladders for electrical work — meet all ANSI requirements for portable metal ladders. Side rails — your choice of I-beam or Channel type — have a dielectric strength of 50,000 volts per inch, are safety orange color. Rungs have heat-treated aluminum discs between their double-cripped ends and side rails, plus extra steel braces at stress points — for increased strength and rigidity. Rung locks are cast-aluminum, spring-loaded, gravity type. Outside slide guides make for easy separation and joining of extension ladder sections. Safety shoes are heavy-duty type with heavy corded-rubber bottoms, swivel for spike points. Single section ladders in eight sizes from 6' to 20', 14 to 48 pounds; Extension ladders in base lengths from 8' to 20', extended lengths of 13' to 36', 43 to 98 pounds.

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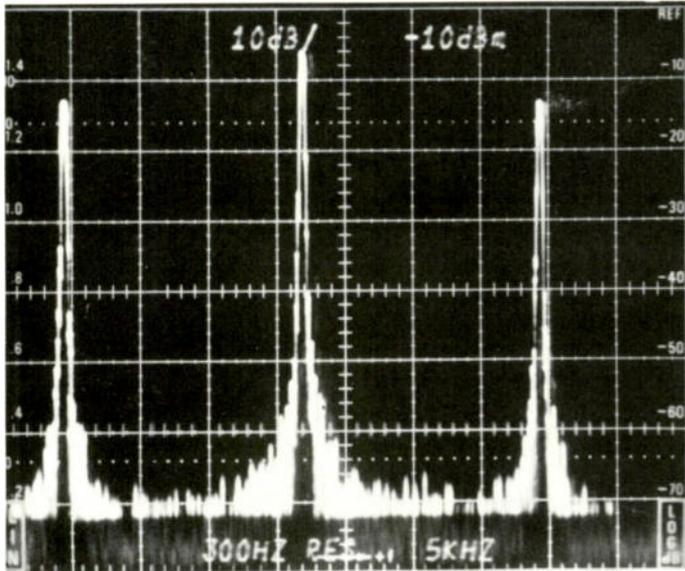


Figure 10: Cross modulation measurement. This is the modulated carrier with its first 15.75 kHz sidebands.

unmodulated carrier and again measure the amplitude of the first sideband. Figure 11 shows this measurement. The 15.75 kHz sideband is down 65 dB. The cross-modulation ratio is $-65 \text{ dB} + 12 \text{ dB} = -53 \text{ dB}$.

Note that with a 15.75 kHz squarewave of reasonable symmetry, the calibration of step two will be within a dB or so of 12 dB. In Figure 11, the first

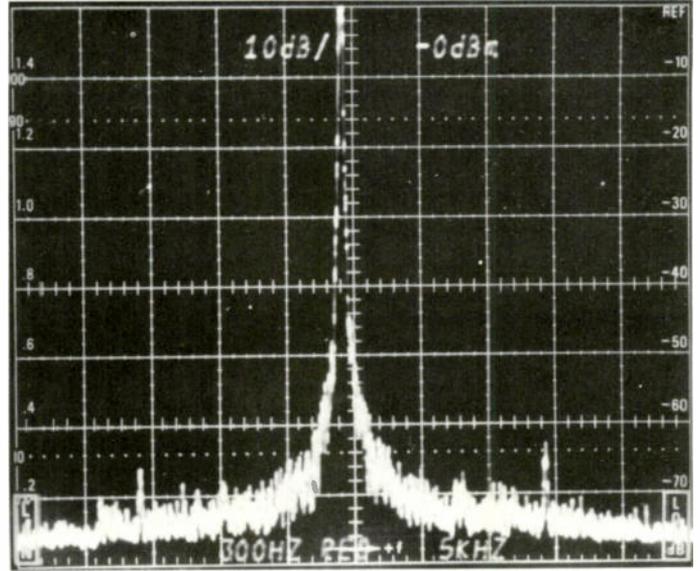


Figure 11: Cross modulation measurement. This is the CW carrier with its low level 15.75 kHz sidebands. The cross modulation level is -53 dB. (Sideband level Fig. 10 — Sideband level Fig. 11)

sideband is about 5 dB above the noise floor of the spectrum analyzer. Therefore, the 7L12 is capable of measuring cross modulation down to about -58 dB. *tv*

Editor's Note: Part II of Mr. Gumm's article will appear in next month's issue.



a reel sale

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PRODUCT REVIEW

NEW COMPONENTS FOR CABLE TELEVISION SYSTEMS

TIME/DATE GENERATOR: LAIRD TELEMEDIA INC.

Laird Telemedia, Inc., 2125 South West Temple, Salt Lake City, Utah 84115, has developed a television time/date generator. The equipment electronically produces a single-row display of current clock and calendar information on any standard TV raster. A typical example of the 25 character-space line is 12:37:20 PM TUE JUL 18 '72; however, many format variations are available. Characters, 28 TV lines in height, are decoded from a standard 64 letter ASCII set.



Timing accuracy is established either by power line frequency or use of an external standard. A 100-year calendar circuit automatically corrects for length-of-month and leap year variations. This assures continued

accuracy on those days affected without requiring operator attention at midnight.

The time/date display signal is precisely synchronized with a composite video, sync/blanking or black burst input signal and is non-additively mixed internally. A choice of black or white characters is permitted by switch selection. A strapping arrangement provides optional sync. addition at the dual video outputs.

Price is \$895.00

VIDEO TAPE: MEMOREX CORP.

Memorex Corp., San Tomas at Central Expressway, Santa Clara, CA 95052, has announced availability of new Vidichrome video tape which is said to offer substantial noise-resistance and an extremely low dropout rate for one-inch Ampex helical recordings.

The tape has a dropout rate of less than 10 per minute on an Ampex VR 5100, as well as a signal to noise ratio of over 42 dB, according to the manufacturer.

The possibility of static charge build-up which attracts foreign particles and causes dropouts is said to be significantly reduced because it is also back-coated.

Capable of recording both color and black-and-white values, it is available in lengths of 1500 feet (½ hour) and 3000 feet (1 hour).

Users may also select either a functional plastic shelf box carrier or a new plastic shipper at a slight additional charge. Prices of the new tape depend on the quantities and package ordered.

AERIAL DEVICE: STELCO, INC.

Stelco, Inc., 7700 Wedd, Overland Park Kan. 66204, has announced the introduction of its Stel/Lift model S/L-27 aerial device.

The unit features 32-ft. working height, full use of truckbed space, 300-lb. bucket capacity, positive leveling system, full hydraulic controls and 370 degree rotation. The upper boom and bucket are available in steel or fiberglass.



According to the manufacturer, the unit is designed to be mounted on a ¾ ton chassis having a 56' C.A.

When mounted on a one-ton chassis with dual rear wheels, Stelco, Inc. rates the bucket capacity at 350 lbs.

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program origination, buckets, cable, head end, line, etc. and,

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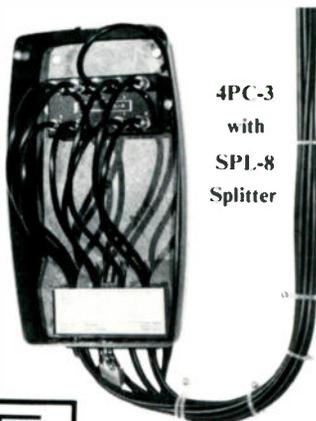
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**PORTABLE FSM:
AMECO, INC.**

Ameco, Inc., Box 13741, Phoenix, Ariz. 85002, has introduced a new portable field strength meter. Called the Mark I, it measures signal levels in the VHF range of 40-260 MHz and VHF 470-890 MHz.

Operating on four 9V transistor radio-type batteries (not included), the meter features lighted dials and single-knob tuning with indications in both dBmV and uV. It has a 75 ohm input connection and audible signal channel identification may be made through an earphone jack.

The unit measures 9½" x 5½" x 7" and weighs approximately 7 pounds. It comes in a piano-hinged carrying case with carrying strap and lists for \$389.00.

**MATCHING TRANSFORMER:
ELECTRONIC SWITCH CORP.**

Electronic Switch Corporation, 40 Page St., Providence, R.I. 02903, has introduced a new matching transformer. Model MT 3201 is a



low-loss, completely shielded matching transformer which is used for connecting a 75-ohm coaxial tap line to the 300 ohm TV set input terminals. Mounts behind the TV set and comes supplied with male F-Type connector.

**MATV AMPLIFIER:
JERROLD ELECTRONICS**

Development of a single channel six vclt output MATV amplifier has been announced by Jerrold Electronics, 401 Walnut St., Philadelphia, Pa. 19105.

Designated THPM-*-S, the new solid state AGC units are used to provide signal to very large MATV distribution systems in high rise apartment houses, hospitals and hotels. A single channel amplifier is available for each of the VHF-TV channels.

The new amplifiers offer a number of other features. Gain is 58.5 dB. A front panel AGC setting provides an adjustable range of output levels from two volts to six volts, with a range of usable input levels between +8 dBmV and +37 dBmV. The AGC circuit maintains the output level constant within 1 dB with input variations of up to 20 dB.



Triple tuned input circuits and double tuned output bandpass filters provide skirt selectivity greater than 26 dB at the next non-adjacent channel edge. The directional

TV Communications

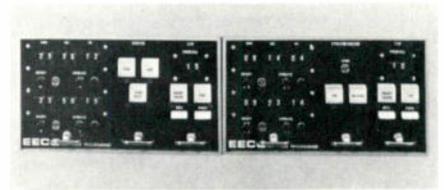
design of the output filter simplifies jumper mixing. Input and output impedances are matched to 75 ohms, with VSWR less than 1.50:1.

Each amplifier includes a self-contained power supply and takes only 1¾" of vertical rack space. Reversible brackets facilitate rack, cabinet or surface mounting.

**VIDEO TAPE EDITING:
EECO**

New BE 400 series Edit Programming modules are used to preset control of playback and record video tape recorders for automatic location of scenes, cue, preview,

tape sync and edit. The new units are actually assemblies of sub-modules which allow the user maximum economy in forming a programming capability for the precise functions desired.



The new modules have been introduced by EECO (Electronic Engineering Company of California), 1601 East Chestnut Ave., Santa Ana, CA 92701. All modules are approxi-

10 inch Giant



This is the new, unique Setchell Carlson 10-inch monochrome video monitor...the *only* professional-quality 10-inch monitor. It gives you **13% more viewing area than standard 9-inch monitors; occupies only 8¾ inches in rackmount configuration.**

It is small and handy, but able to do giant duty. Use it for broadcast studios, industrial monitoring, surveillance, remote installations, medical, VTR display, educational, and many other applications.

You'll find the picture quality always superb (horizontal resolution 640 lines or better), the reliability factor amazing, the weight practically nothing (15 pounds), and the cost modest.

One hundred percent solid-state circuitry

assures you maximum performance and stability, low power drain, and a minimal heat factor. Setchell Carlson UNIT-IZED® plug-in circuit modules make maintenance a breeze.

At \$199, it is the lowest-priced American-made monitor of comparable size, and is available in single or dual rackmounts.

Take a giant step forward...ask your Setchell Carlson dealer for more information, or write to us. Remember SETCHELL CARLSON, where quality is a tradition.



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mately 5" x 8" x 15" in size and use the new 80-bit SMPTE Edit Code. According to the manufacturer, the main advantage of the mini-modular concept is that a minimum initial investment is required; and additions and reorganization of modules can be made to meet changing production requirements.

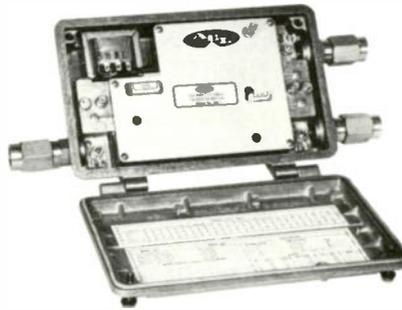
SUBCARRIER CONVERTER: CATEL

The new FMU-2100 subcarrier up converter and companion FMD-2100 subcarrier down converter are designed to provide exceptional selectivity in microwave subcarrier transmission of both monaural and FM stereo signals, according to Catel, Division of United Scientific Corp., 1030 West Evelyn, Sunnyvale, Ca. 94086.

The down converter is used at the microwave transmitter terminal to convert the signal to the multiplex carrier frequency (5.2 to 8.2 MHz), the up converter is then used to accept the signal and up-convert it to a preselected frequency within the FM band or other special VHF or sub-channel frequencies.

Both sub-carrier converters are completely solid state, employing silicon transistors, integrated circuits, ceramic IF filters and are crystal-controlled to provide exceptional input and output stability.

providing signal to the balance of the cable system. The extent to which a system is served is dependent upon the number of switches used.



Switches may be located within trunk or distribution sections and are operable in either uni- or bi-directional systems.

Designed as a strand mounted device enclosed in a standard extender amplifier housing, the switch accepts standard 5/8"-24 connectors. Power, provided from remote locations, may be 30 volts or 60 volts.

PORTABLE OSCILLOSCOPES: TEKTRONIX

Tektronix, Inc., P.O. Box 500, Beaverton, Ore. 97005, has announced two new, 25 lb.



portable oscilloscopes, the 465 and 475. The 475 features 200 MHz at 2 mV/cm. The 465

has 100 MHz bandwidth at 5 mV/div. Both achieve full bandwidth at their highest sensitivity settings and contain a big, bright 8 cm by 10 cm display with risetime graticule. The 475's sweep speed is one nanosecond with X10 Mag.

Many new convenience features such as Trig View, operation function push buttons, probe ground reference button, battery operation and others are incorporated.

By pressing a front panel push button on the 465 or 475, any external waveform applied at the A trigger input is instantly displayed, thus eliminating resetting controls and disconnecting leads.

Time bases feature sweep rates appropriate for displaying full bandwidth signals on each instrument. Sweep accuracy is within 2% over the full 10 divisions of the CRT. The 475 time bases go to 1 ns/cm with the X10 Mag while the 465 time base sweep is 5 ns/cm with X10 Mag. This capability is of value for time resolution. Improved delay-time accuracy of 1% further extends fast, accurate time-difference measurements.

Horizontal modes for both units include both delayed and mixed sweep operation. Other features include a variable holdoff control to allow selection of the triggering point by varying the holdoff time between sweeps.

Price of the 465 is \$1725. The 475 costs \$2500.

CABLE TRANSFER SWITCH: AEL COMMUNICATIONS

AEL Communications Corporation (AELCC), P.O. Box 507, Lansdale, Pa. 19446, has announced the new automatic cable transfer switch, model AS-1.

Designed to provide a normal signal through path for a chosen section of trunk cable, the switch automatically switches to an alternate cable feed when normal signal input is lost, or falls below a pre-set level, thereby

CHARACTER GENERATOR: GBC CCTV CORP.

A 4-page, 2-channel television display generator is being marketed by GBC Closed Circuit TV Corp., 74 Fifth Avenue, New York, N.Y. 10016.

Providing optimum character size for maximum readability, the model CG-240 character generator allows simultaneous presentation of two different displays in addition to internally storing four different pages of display.



This capability makes it possible to display one page of the channel while composing, editing or previewing any one of the remaining three pages of the preview channel. The audio record/playback interface allows off-line storage of additional display information.

The generator meets EIA RS-170 video standards and RS-232 data standards for universal application.

SIGNAL LEVEL METER: MID STATE COMMUNICATIONS

Mid State Communications Inc., 40 N. Seventh Ave., P.O. Box 203, Beach Grove,

\$700,000 Teleservice Corporation of America

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Financial consultants to CATV industry

Jim Ackerman, President
1800 North Meridian Street
Indianapolis, Indiana 46202
(AC 317) 923-2353

August, 1972

Ind. 46107, has introduced its new DT-12V for measuring signal levels at the subscriber's drop. The low band makes a wide-band composite measurement from 54 MHz to 86 MHz. The high band makes a similar measurement from 150 MHz to 250 MHz.

The operating range is from -10 dBmV to +36 dBmV. Four pushbutton controls select the band of operation or attenuate the signal. The two-band approach permits the unit to be used as a trouble shooting aid on drop installations.



The unit also contains a 0 to 60 Volt AC and DC voltmeter. Line voltage can be measured, and amplifier and power supply trouble shooting can be performed with the same instrument.

Electronic regulated power supplies are utilized for stable operation throughout the life of the batteries, and all circuits are temperature compensated for all weather use.

The instrument complete with a leather case, neck strap, belt loop, and batteries is \$149.00

WFM & VIDEO MONITOR: ULTRA AUDIO PRODUCTS

Ultra Audio Products, Box 921, Beverly Hills, Ca. 90213, has introduced a compact version of its waveform monitor in conjunc-



tion with a high-resolution 5" picture monitor. The assembly, WV-063, requires 7" of rack space and is designed primarily for placement of one such array on the output of each camera in a studio system, although it may be connected anywhere in the video circuit.

A tally light to show camera status is included and the cost of the package is designed to facilitate using as many WFMs as there are cameras.

VIBRATION FREE FASTENER: DUO-THRED

Duo-Thred, 3330 Peachtree Rd., Atlanta, Ga. 30326, has introduced a dual-rolled threaded fastener (right and left hand rolled threads on a single bolt) that offers many possibilities for CATV construction.

Bolt accommodates two opposing nuts. Right-turn holding nut is put on first and properly torqued; then the left-turn retainer nut is snugged against it. Motion, vibration and torque are no longer problems. Utilization can eliminate lock washers, lock nuts and cotter pins.

Fastener meets SAE-ASTM Standards. Sized 1/4" through 3/4" in most metals and configurations.

AV SWITCHER: RIKER COMMUNICATIONS

Riker Communications, Inc., 142 Central Avenue, Clark, N.J. 07066, has developed the AVS 700 series switching system for routing (switching) of video and audio signals. The system is used where large numbers of signal sources are needed on a remote selection basis to a large number of destinations and can also be used for information retrieval from audio or video tapes.

A "building block" technique sub-assembly permits each unit to be designed for a specific user need and the system also can be expanded as required by adding on to the basic installation. A variety of configurations can be designed into an 84 in. rack frame such as: 520 inputs by 20 outputs; 130 inputs by 80 outputs; 50 inputs by 160 outputs and others as needed for a particular installation.

Multiple control access is available for the system including rotary telephone dials, touch tone (telephone type), momentary push buttons, interlocked push buttons, thumb wheel switchers and computer access. Combinations of these access types can also be used.

The unit is 100% solid state and the pull-out printed circuit board frames allow access to all connectors and busses for good ventilation and direct access from the front of the equipment rack.

CONCRETE BREAKER: DITCH WITCH

Ditch Witch, Charles Machine Works, Inc., Box 66, Perry, Okla. 73077, now is offering a hand-held concrete breaker as an attachment



\$1,500,000 Petra Cablevision Corp. (Suffolk Cablevision)

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tool for its H12, J20, V30, R30, R40, R60 and R65 trenchers and VP12 vibratory plow.

The all-hydraulic breaker eliminates the two main causes of excessive noise usually associated with jackhammers — the roaring compressor and explosive release of compressed air. It connects to the basic trencher unit with a pair of quick-couple hydraulic connections.

The power input to the breaker is approximately eight horsepower. The unit is said to be less tiring to operate because its patented hydraulic recoil system lets the unit take the shock — not the operator.

CO-CHANNEL REJECTION: RF SYSTEMS, INC.

A new co-channel rejection unit for TV channels 2 through 13 is now available from RF Systems, Inc., 155 King St., Cohasset, Mass. 02025.



The unit, measuring 9" x 3" x 3 5/8", decreases co-channel interference by 20-30 dB. The single channel unit is priced at \$750.

PAN HEAD: QUICK-SET, INC.

The Quick-Set Samson friction pan head (7201 series) has been redesigned by Quick-Set, Inc., 3650 Woodhead Dr., Northbrook, Ill. 60062.

The unit is now designed with a removable handle that mounts for both left and right hand operation. The positioning of the handle is out of either side at a 90 degree angle to eliminate any interference with cable mounting and the need for an accessory to reposition the handle.

The new version offers a full range of motion in both pan and tilt. Large locking knobs add further convenience to the pan head.

The unit is priced at \$40.00.

AERIAL LIFT TIME MFG. CO.

Time Manufacturing Company, 7601 Imperial Dr., Waco, Texas 76710, has announced the introduction of its newest one-man aerial lift. Designated the TEL-24, the unit features a telescoping boom, mounts on a ¼-ton pickup, and requires no ballast or outriggers, even at full boom extension with bucket loaded to its 300-pound capacity.

The lift offers a 20-foot working height and

17-foot reach from the truck center-line. Controls, from the bucket or the pedestal, are electric, and include a remote start-stop control for the truck engine. Bucket controls are composed of three toggle switches to operate elevation, rotation and extension.

Hydraulic power is provided by three optional sources; a 12V DC motor pump, truck fan belt driven pump, or truck PTO pump.



Use of an aluminum upper boom with a simplified drive and power system have resulted in a total unit weight of 1200 pounds.

The lift has an elevation range of -6 degrees to +84 degrees and has 360 degrees non-continuous rotation, providing control over full working range of lift.

A/B SWITCH EIE, INC.

Electronic Industrial Engineering, Inc., 7355 Fulton Ave., North Hollywood, Ca. 91605, has announced it has changed the specification of its A/B switch from 75 dB to 85 dB.



Operations Manager James Wiard said EIE believes the improvement provides more separation between signals delivered over two-cable systems than similar switches.

CHARACTER GENERATOR: KAPCO ENTERPRISES

Developed by Kapco Enterprises, 947 Janesville Ave., Fort Atkinson, Wis. 53538, the KG-1632 is a character generator designed to title live TV programs, or existing helical scan video tapes. The unit can be used with a monitor to display messages only, or in conjunction with a VTR to add titling.

Unique features of the KG-1632 are the ability to add titles to black and white or color recorded video tapes. Price is \$1,895.

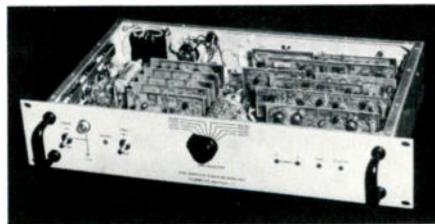


The slightly modified typewriter keyboard contains sixty-four characters including letters, numbers, and punctuations. Sixteen lines of copy, with thirty-two characters per line, can be typed and displayed on a television screen against a black background, or overlaid on another picture.

A window may be inserted to mask out all but one of the sixteen lines, or an entire page of copy can be displayed. The individual line appearing in the window, or an entire page, can be rolled upward or downward on the screen, and can be stopped at any location.

SYNC GENERATOR: TELEMET COMPANY

A new crystal controlled, multiple H line rate sync generator is now available from Telemet Company, Amityville, New York 11701. The unit is said to eliminate the need for several units usually required to provide multiple drives.



Model 3519A is housed in a 19" wide x 4" high x 14" deep frame. Flexibility is built-in, enabling the unit to provide line rates of 525, 875, 945 and 1023. A single front panel switch selects the desired line rate required for driving high resolution video systems.

STEREO GENERATOR: LEADER INSTRUMENTS

Precision and stability are said to be among the important features of the model LSG-231 multiplex stereo generator introduced by Leader Instruments Corporation, 37-27 Twenty-Seventh St., Long Island City, New York 11101.

The unit has a pilot signal frequency of 19KHz with $\pm 2\text{Hz}$ accuracy. The 1KHz audio signal is accurate to $\pm 1\%$. Signal separation is rated at 50 dB with output voltage at 0 to 3Vrms continuously variable.

Useful in the field or on the workbench, this new product is said to offer such reliability that many technicians may not find it necessary to use a scope. It comes complete with a tilt stand. Price is \$229.95. 

Calendar

OCTOBER

1-3 Pacific Northwest Cable Television Association will meet at the Redpath Hotel, Spokane, Wash. For further information contact Carl F. Spaulding, Jr., P.O. Box 463, Heppner, Ore., 97836.

5-6 Kentucky Community Television Association will meet at the Continental Inn, Lexington, Ky. For further information contact Lonnie Gregory, Morehead TV Cable, 802 Main St., Morehead, 40351.

8-10 West Virginia/Mid Atlantic CATV Association will meet at The Greenbrier, White Sulphur Springs, W. Va. For further information contact D. Michael Ganley, 217 Fairmont Ave., Fairmont, W. Va.

15-17 Mississippi Cable TV Association will meet at the Broadwater Hotel, Biloxi. For further information contact Joe Petro, Miss. Transmission Co., P.O. Box 250, Yazoo City, 39194.

18-20 Pennsylvania Cable Television Association will meet at the Host Farms Resort, Lancaster, Pennsylvania. For further information contact Mrs. Sy Barash, Barash Advertising, Inc., P.O. Box 77, State College, Pennsylvania 16801 (814) 238-5051.

22-27 Society of Motion Picture & TV Engineers will meet at the Century Plaza Hotel, Los Angeles. For further information contact SMPTE Conference, 9 East 41st St., New York, N.Y.

23-26 North Central CATV Association will meet at the Abbey, Fontana, Wisc. For further information contact Joe Floyd, Midcontinent Cable Co., 2221 6th Ave. SE, Box 999, Aberdeen, S.D. 57401.

25-27 Mid-America CATV Association will meet at the Pro-Sheraton, Kansas City, Mo. For further information contact Bob Weary, 1008 N. Washington St., Junction City, Kan.

NOVEMBER

15-18 California Community Television Association will meet at the Disneyland Hotel, Anaheim. For further information contact Walter Kaitz, 207 Walsh Center Bldg., Castro Valley.

17 Iowa Cable Television Association will meet at the Holiday Inn, The Amanas. For further information contact James Hoak, Hawkeye Cablevision, 704 Insurance Exchange Bldg., Des Moines, 50309.

Note: If you have listings to be included in this calendar, please send them (as early as possible) to 1900 West Yale, Englewood, Colo. 80110. 

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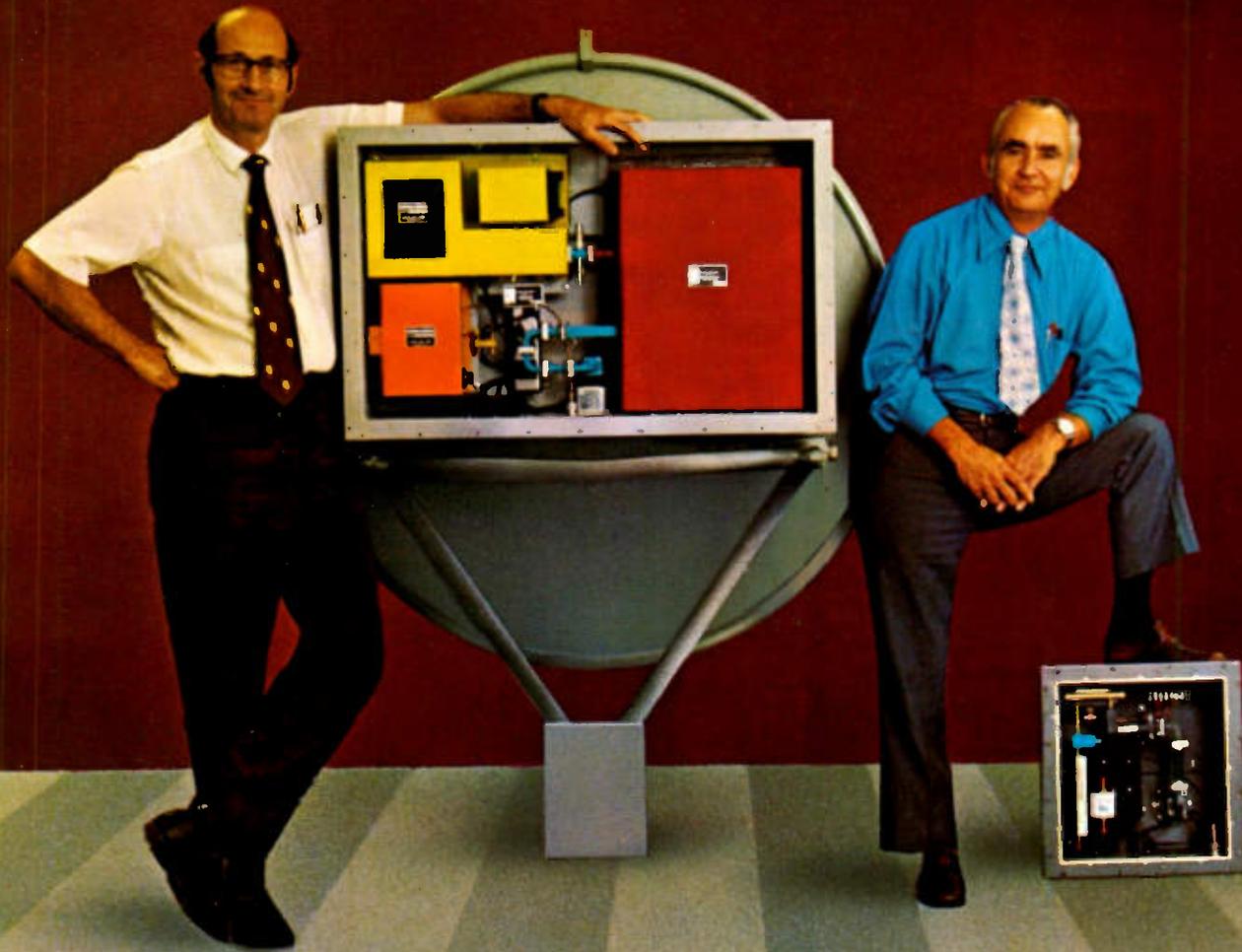
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