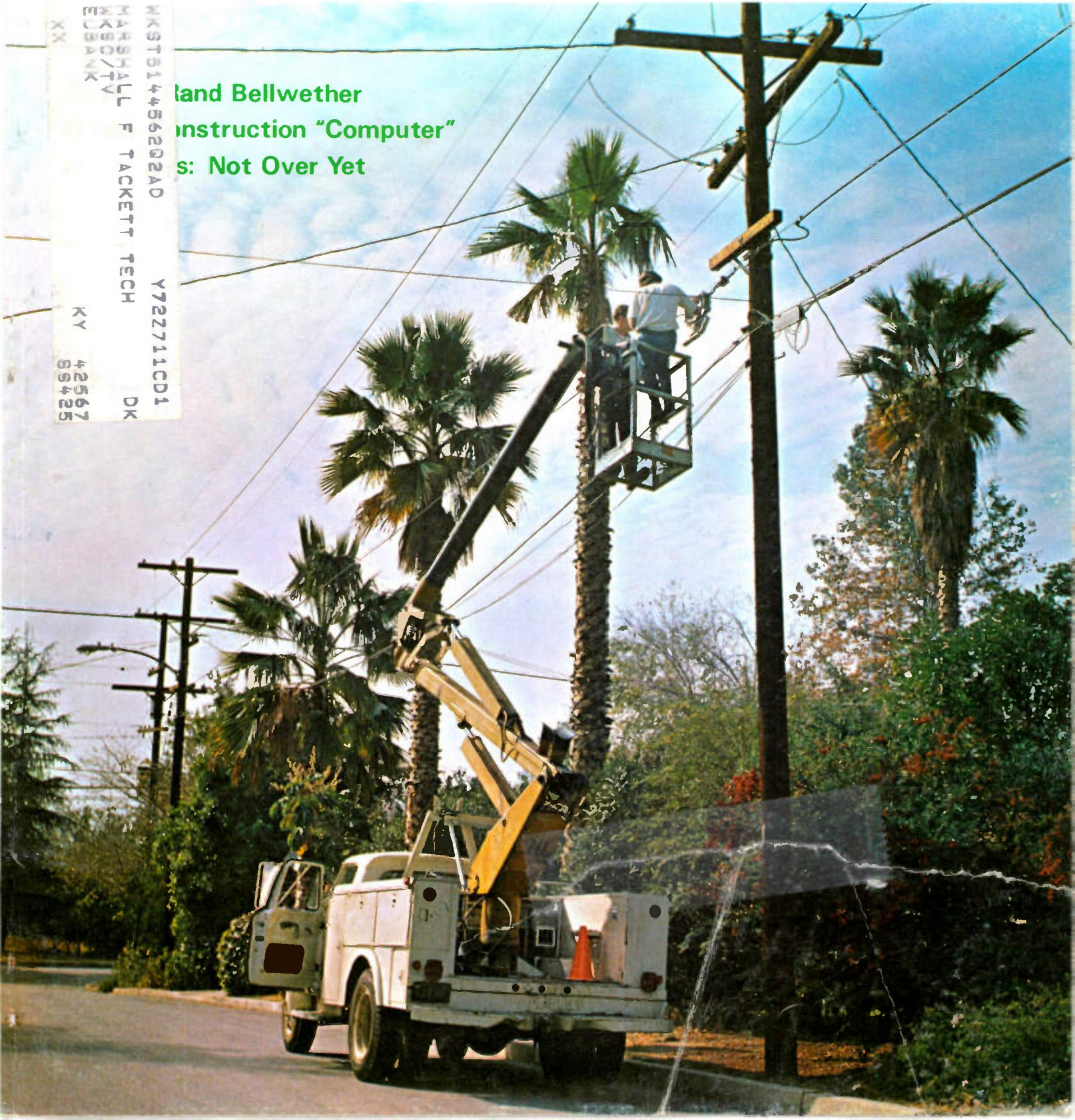


TV Communications

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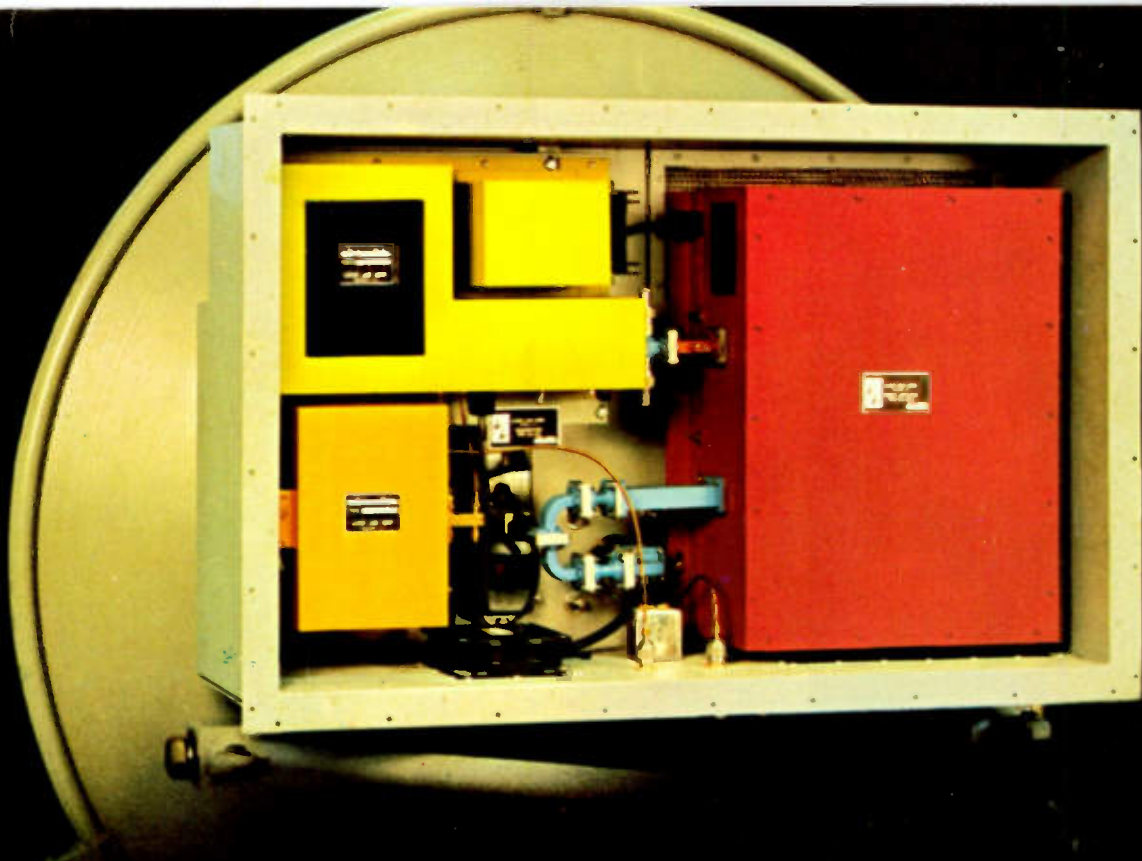
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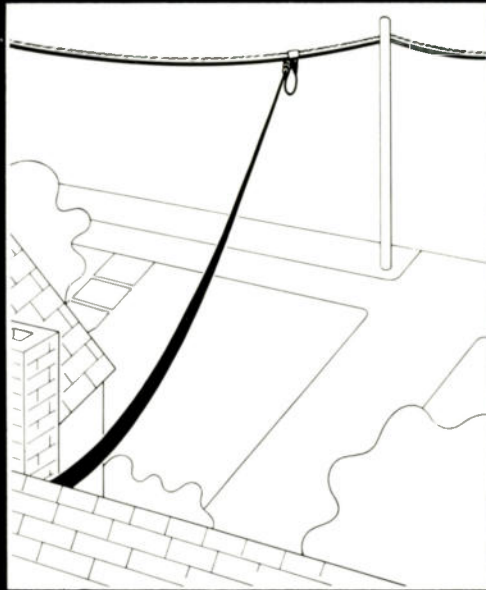
* Transmitter QLL-5T (5-8 Channels) FCC type, accepted November 26, 1971.

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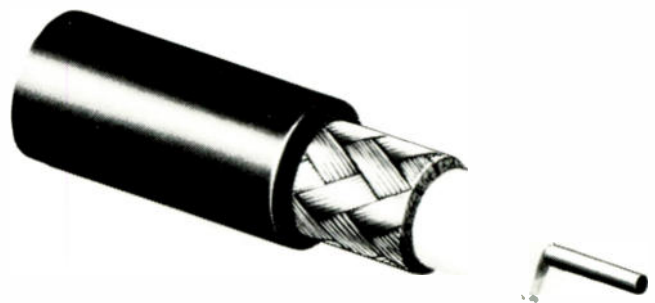


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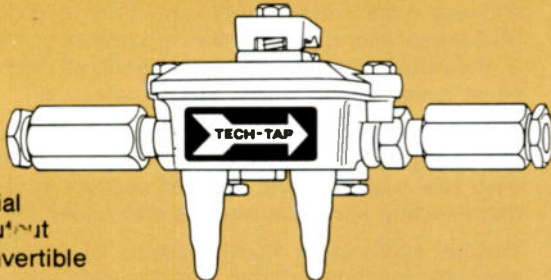
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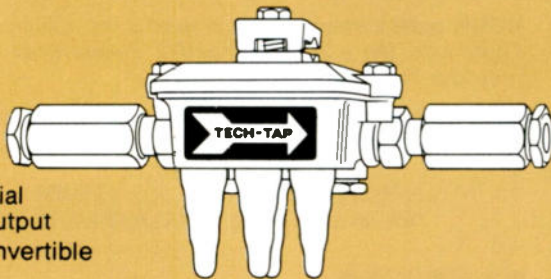
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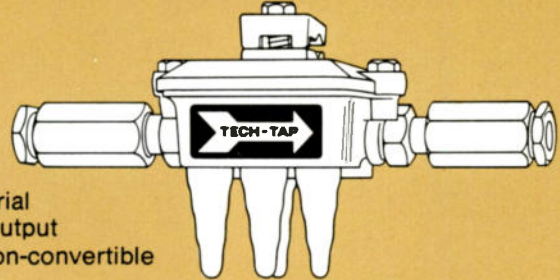


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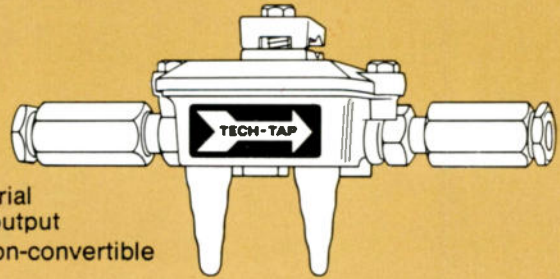


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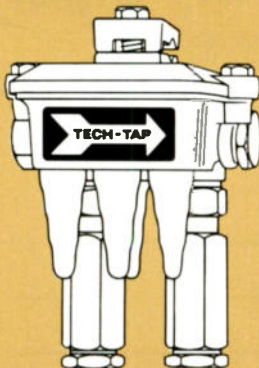


Aerial
4 output
-non-convertible

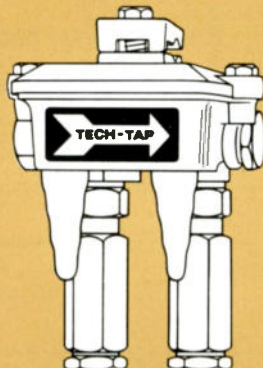


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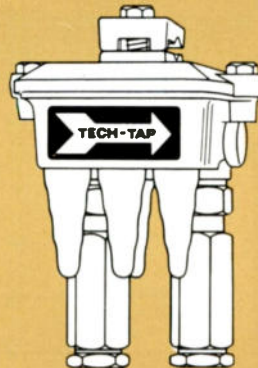


Underground
4 output -convertible

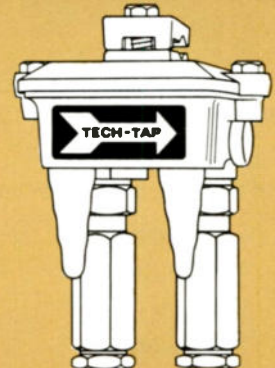


Underground
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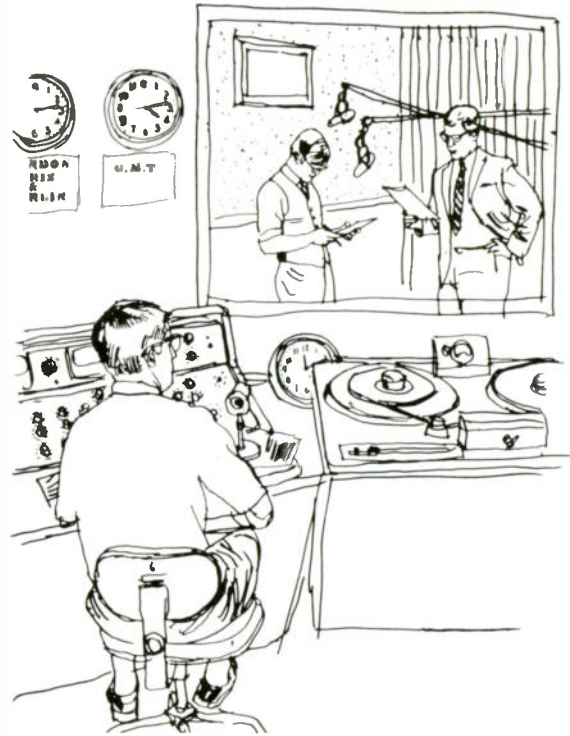


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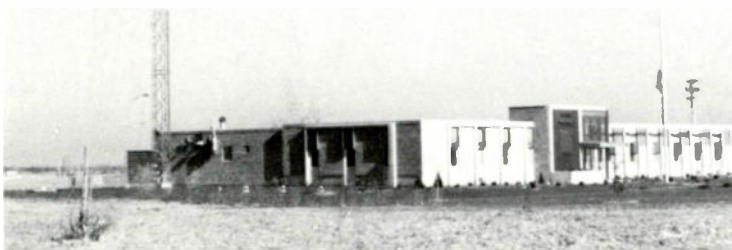
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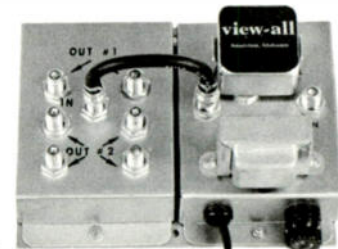
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The TVC Viewpoint

EDITORIAL



Robert A. Searle
Publisher

It's the Real Thing

There's been a lot said about where our industry would go and what it would become if and when the freeze were ended. Well, taking the new rules and the Commission's intentions at face value, the freeze, as such, has ended (see CATV News Briefs). So I think it's most appropriate to stop right now and review the realities of our present and future.

Reality Number One: We must now *start performing* as a multi-service broadband communications service.

Like it or not, the new rules have a price tag attached — and the price is pretty steep by present industry standards.

Chairman Burch spelled it out at the last NCTA convention when he warned us that, "if the answer, the *whole* answer, is simply moving over-the-air broadcast signals around — if cable is to be nothing much more than *status quo* television plus an overlay of improved technology — then you'd better just count many of us out. I tell you candidly that cable so defined would not be worth the time and energy we're currently expending on it. And the public would be the loser... What makes the price (of cable's orderly growth and the inherent risk) worth paying, are the benefits that cable can bring over and beyond the mere distribution of commercial broadcast signals."

The text of the new rules makes it clear that Burch has not changed his mind. We've all promoted a lot of "blue sky" ideas about the potential of cable communications — and some outsiders are demanding even greater things of us (see "Urban Cable Development: We Shall Overcome," page 32 this issue) — and now the FCC has called our hand.

Reality Number Two: Major growth means new enemies and tougher fights.

Our industry has been attracting plenty of attention from interests who want to control us. Now that we actually have a green light to get moving in some of the Top-100 markets, such interest groups will be popping up wherever we go. PUC's have been and still are at the top of this list. But minority groups, non-profit fanatics, educators, and myriad other elements of society are now a very real part of our lives.

Those who are clearly our adversaries are perhaps the easiest to resist. We will be faced

increasingly with the danger of being ruined by those who strongly support us (or at least our technology) but feel compelled to control various aspects of our business. We must achieve the right balance between our involvement with, and resistance to these interests.

Reality Number Three: We're not the only technological breakthrough in town.

Satellites, video cassettes and other communications and entertainment developments will be a part of our lives in the future. We *can* resist their progress, of course, but eventually we'll have to mesh our technology with these and others, or face certain obsolescence.

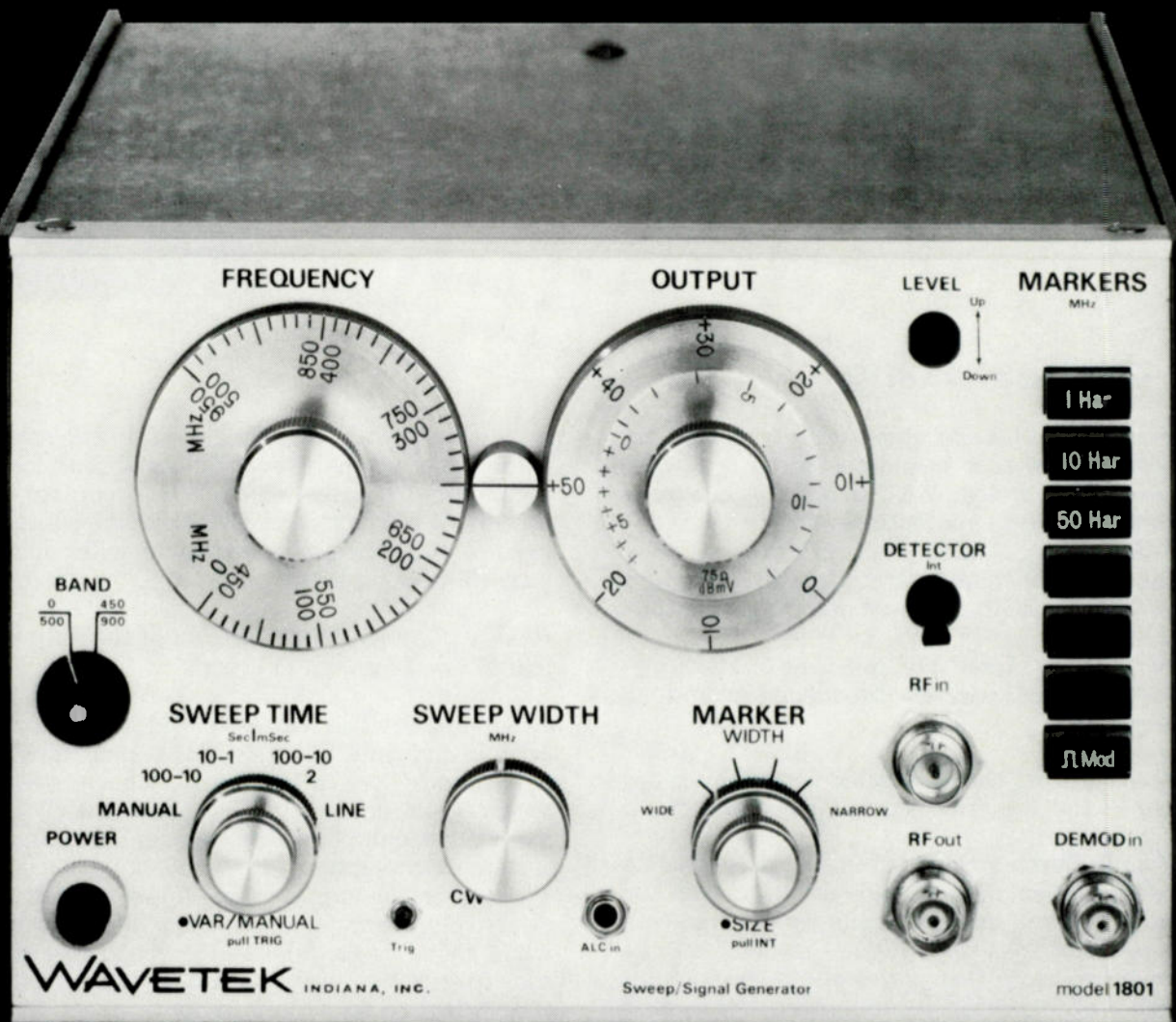
Another reality is that these new rules are effectively formulated to demand the maximum while giving us the minimum — meaning survival of the fittest and no free rides. Historically you almost had to *try* to fail in our business. But these new rules, and the other realities of our situation will, as the saying goes, separate the men from the boys.

Reality Number Four: The rules are not really ours until someone starts building systems under them.

The Third Report and Order is due to go into effect the 31st of this month. But all of us who have been watching the FCC for the past few years know that endless delays seem to be the rule rather than the exception. Petitions for reconsideration, court challenges, Congressional pressure and other potential roadblocks could get in the way. (See "Third Report and Order: It's Not Over Yet," page 38.) Some industry spokesmen are more fearful of this possibility than others.

But one reality seems to be agreed upon by all: it looks like we have finally gotten that long awaited crack in the Major Market door. It's certainly not all cable had hoped for — nor is it all the public deserves — but it will definitely be the shot in the arm our industry needs to get moving again.

Note: For a complete synopsis of the FCC's new rules, request a copy of "The FCC's New Cable Rules: A Communications Watershed" from the editor. The report, a special edition of CATV Newsweekly, is available in limited quantities for the asking.



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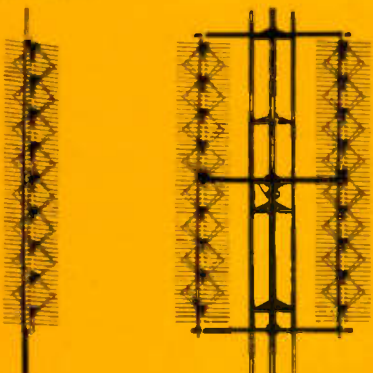
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Perspective

on the news



*B. Milton Bryan
Editor*

By the time you read this column, NCTA may have a new president at the helm. After industry candidates Bruce Lovett and John Gwin pulled their hats out of the ring, NCTA Selection Committee was reportedly going to take a closer look at a third front-runner, David Foster, now executive vice president of Datran Corp., Virginia-based microwave common carrier.

From what we've heard about Foster, he's a young (45) tiger. Although his credentials are not in CATV, he's been highly successful, and played a major role in persuading the FCC to expand the role of microwave common carriers in this nation.

Foster is a graduate of The University of Iowa, where he graduated with honors. His job at Datran has called for him to work extensively on the Hill, as well as at the FCC. He is reportedly an exceptionally effective communicator and statesman.

Selection Committee, which has taken a full seven months in its search, has been tight-lipped with regard to the third candidate as well as all others under consideration. The Committee has worked hard at coming up with "the right man for the job," but has been taken aback by the withdrawals of Gwin and Lovett. It is expected, however, to come up with a candidate for the Board's consideration by no later than month's end, and that candidate is expected to be David Foster.

Gwin and Lovett both withdrew from the race for personal reasons. Lovett apparently grew impatient with the Selection Committee's slow pace, and Gwin decided to accept a better offer from his present employer, Cox Cable Communications.

New man at the TelePrompTer helm should be good for the company and CATV in general. Former Pennsylvania Governor Raymond Shafer is widely respected as a forthright statesman and effective politician. Shafer succeeded in getting the antiquated Pennsylvania state constitution re-written during his tenure. Regional Vice President Bill Bresnan will move from L.A. area to New York, where he will act as Shafer's right-hand man.

On another subject, RCA has again entered the CATV industry, after an earlier attempt in the CATV construction business aborted. Although no official word was forthcoming from RCA at Perspective press time, the company has apparently bought out the interests of Zenith and at least one other major stockholder in Los Angeles-based Electronic Industrial Engineering. EIE's CATV hardware includes a complete line of active devices. The company has invested substantial R&D funds in its multi-purpose two-way cable communications system.

LETTERS

Co-Channel Clarification

Dear Milt:

I have some comments to make on the article "Co-Channel Measurement: A State-of-the-Art Report" which appears in the January, 1972 issue of *TVC*.

Technicians using spectrum analyzers with only 300 Hz resolving power have been misled in their interpretation of the co-channel situation which they see. The authors correctly state that even analyzers with 10 Hz resolving power will not separate carriers with "zero offset."

The problem is not so much the resolving power of the spectrum analyzer as the normal spectrum of a television signal. Transmitters with nominally "zero offset" will still be some tens of Hertz (sometimes a few hundred Hertz) different in frequency.

Figure 1 shows the effective resolving power of the Hewlett-Packard 8553B/8552B spectrum analyzer. The polaroid photograph shows the spectrum of a relatively high quality crystal oscillator displayed on the spectrum analyzer and represents effectively the bandwidth of the analyzer. Another spectral component about 40 dB down (the level to which

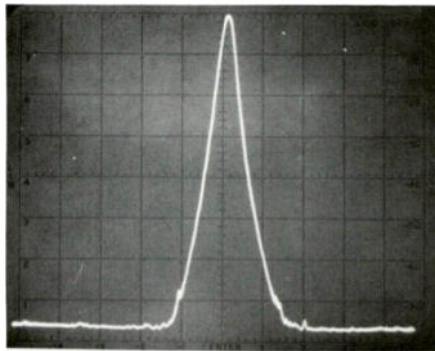


Figure 1: H-P 8553B/8552B spectrum analyzer. Crystal oscillator — 41.25 MHz; IF bandwidth — 10 Hz; Video filter — 10 Hz; vertical scale — 10 dB/division; dispersion — 50 Hz/division.

we would like to see co-channel components) would be visible if it differed from the desired carrier by only 25 Hz. The photograph does show just a hint of 60 Hz hum modulation at a -68 dB level. The spectrum analyzer has excellent resolving power.

Figure 2, with same spectrum analyzer settings, shows the "normal" spectrum of a Channel 2 station. Note the presence of 60

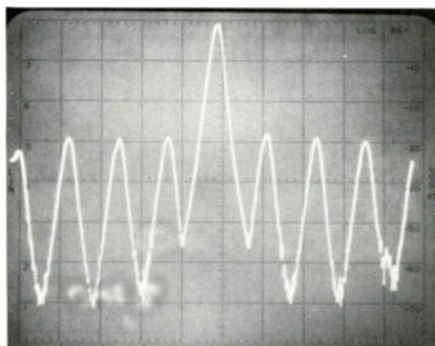


Figure 2: Channel 2 visual carrier with TV program modulation. Settings as in Figure 1.

Hz modulation components (due to the vertical sync pulses) at a level of only 30 dB below the carrier. These spectrum components make it difficult to observe co-channel or other inter-

ference products very close to a normally modulated picture carrier.

Carriers operated to "precision offset" standards would not be resolved by even the 10 Hz bandwidth spectrum analyzer, because the carriers would be separated by only 2 or 3 Hz.

The principal pitfall in using spectrum analyzers with only 300 Hz resolving power is their inability to distinguish between several co-channel carriers with the same nominal offset. This was illustrated in the paper which I presented at the 1971 NCTA convention. I enclose two more spectrum analyzer photographs showing the situation.

Figure 3 shows a typical display on a medium resolving power analyzer. The bandwidth used was actually 100 Hz but the display is typical of 300 Hz instruments. A co-channel component 10 KHz

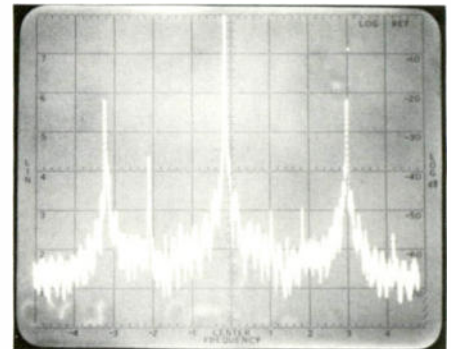


Figure 3: IF bandwidth — 100 Hz; Video filter — 10 Hz; vertical scale — 10 dB/division; dispersion — 5 kHz/division. Channel 2 with co-channel interference observed at Toronto, Canada. Desired channel: WGR-TV, Buffalo, N.Y. Co-channel interference not positively identified.

below the desired carrier at -36 dB level is indicated. Closer observation of the co-channel component using 10 Hz resolving power indicates that there were actually two co-channel components, about 200 Hz apart and differing in level by about 10 dB.

This indicates that the potential solution to the co-channel problem is probably more complex than if there was only one co-channel component. Our experience is that these multiple co-channel components change in relative level and frequency during the day and from day to day.



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BDC 8	1.5max.	8.5	28min	1.2	75	5.300	<ul style="list-style-type: none"> • Tap off's and splitters • Check terminals for Meas and amplifiers
BDC 13	0.5max.	13.5	30min	1.2	75	5.300	
BDC 18	0.5max.	18.5	33min	1.2	75	5.300	

SPLITTER model	Splitting loss (dB)	Isolation bet'n terminals (dB)	VSWR	Impedance (ohms)	Freq. (MHz)	Applications
BSP 2 2 way	3.5	25min	1.2	75	5.300	<ul style="list-style-type: none"> • Amplifier output dividers • Mixers • Splitters
BSP 4 4 way	7.0	25min	1.2	75	5.300	

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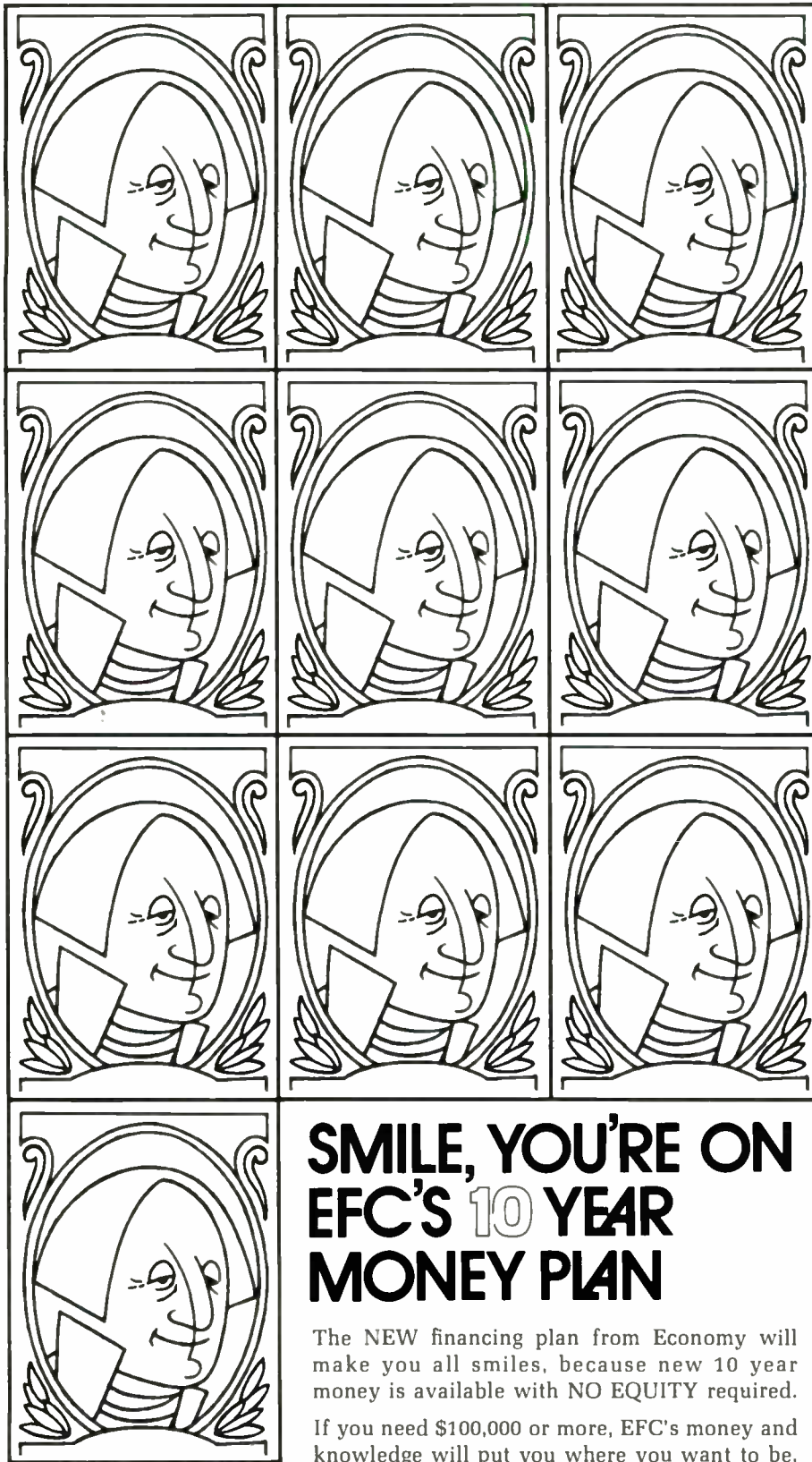
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**ECONOMY
FINANCE**

Technicians seriously interested in studying co-channel problems should consider use of higher resolution spectrum analyzers

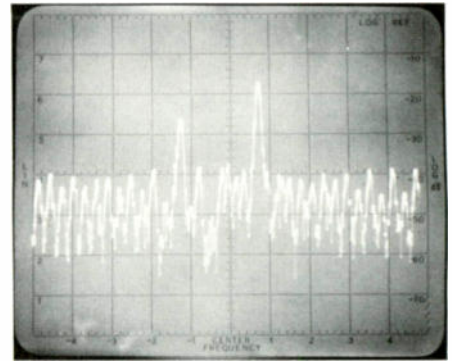


Figure 4: IF bandwidth - 10 Hz; Video filter - 10 Hz; vertical scale - 10 dB/division; dispersion - 100 Hz/division (gain increased by 20 dB relative to Figure 3).

such as the H-P 8553B/8552B (10 Hz bandwidth).

Co-channel problems would be significantly reduced if the FCC required all television stations, particularly VHF low band stations, to use precision offset.

I. Switzer, P.Eng.,
Chief Engineer
Maclean-Hunter Cable TV Ltd.

Re: Free Video Tapes

Dear Mr. Lee:

I have just received my first copy of *TV Communications* and am most pleased with it.

I am wondering if you happened to run the blurb about "Consultation" that you spoke with my secretary about. If you have not been able to, but will in the future, I will certainly appreciate it. No dates have to be mentioned as far as when the bicycles begin. We are just interested in letting people know that the University of Illinois at the Medical Center Campus has this program available on 1-inch IVC tape (color) free of charge. They can contact me and we'll take it from there.

Thank you for your past co-operation and support.

Jack W. Rigeimer
Coordinator of Public Service
Radio and TV Programming
University of Illinois
At The Medical Center

An item about the University's

March, 1972

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a
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(see page 51)

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free tapes appeared in the February issue, Jack (p. 64). You probably received it the day after you mailed this letter!

Glad to hear you're pleased with TVC. — Randy Lee

Interested in Calculator

Dear Sirs:

We notice in your January 1972 issue, page 76, there is an article on a Cable System Calculator.

Would you please give us the address or information if a calculator as described, can be purchased.

R. S. Ferguson
President
Merritt Cablevision Ltd.
Merritt, British Columbia
Canada

Gentlemen:

I am writing in regard to one of the articles you had in your January 1972, Volume 9, Number 1 issue. The article on page 76 was Cable System Calculator: A Partner for Planners, by: John Cappon, P.E., J. Cappon and Associates, LTD.

Chuck Locke
Director of Engineering
Palm Beach Cable TV Co.

Copies of your letters have been forwarded to the author. Others needing information about the calculator can write directly to John Cappon, J. Cappon & Associates, Ltd., One Cathcart St., Willowdale, 443, Ont., Canada. — Randy Lee

About Complimentary Subs

Dear Milt:

As you may or may not know, I am a member of the NCTA Educational Committee. One of our major projects is to try to set up a two-year technical training program at the College of San Mateo in San Mateo County, California.

In dealing with the educators at CSM, I find that one of the major problems encountered is the lack of understanding of just what CATV is. Another problem is the real lack of any published manuals or technical books on CATV.

By this time you have probably assumed that I am leading up to something. Does CPC have some sort of courtesy subscription program for educational institutions (at least one institution — CSM)? If possible, please send to Dr. Albert Fine, College of San Mateo, 1700 West Hillsdale Blvd., San Mateo, California 94402 the back issues for 1971 and start a subscription for them beginning January, 1972. I would consider this a personal favor, and feel that it would help both the NCTA as well as myself in starting this technical program.

Joe E. Hale
Director of Engineering
Western Communications, Inc.
Walnut Creek, Calif.

We will be glad to make an exception to our general rule of "no complimentaries" in this case, Joe. — Milt Bryan

Gentlemen:

Contained in the December issue of *TV Communications* within the CATV News Brief, appeared an article from Equity Research Associates. It sited a 48-page analysis on the future of CATV. Would it be at all possible for me to receive this analysis or an address where this information can be obtained?

Another article in which you may be of some assistance to me is in the December issue in the year 1970, appeared an article on page 70 "Students Produce Programs For California Cable System." I would like to receive this back issue or a copy of this article. I have, at the present time, a xerox copy and this is not as much help to me as would be an original from this back issue.

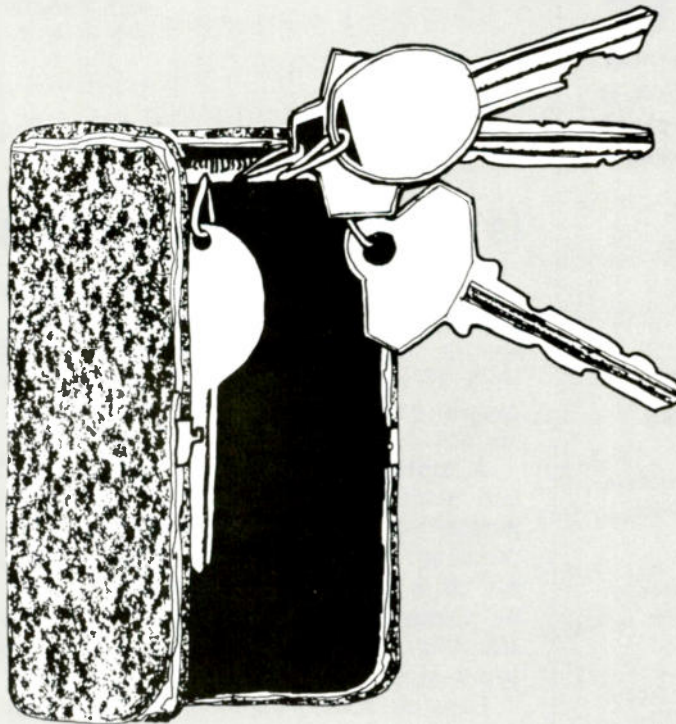
Your cooperation in the above matters would be greatly appreciated.

N. Lopez
Public Relations
Nation Wide Cablevision, Inc.

A copy of the analysis may be obtained for \$35 by writing to Mr. Stephen M. Gordon, Equity Research Associates, 52 Wall Street, New York, N.Y. 10005. —Milt Bryan

TVC

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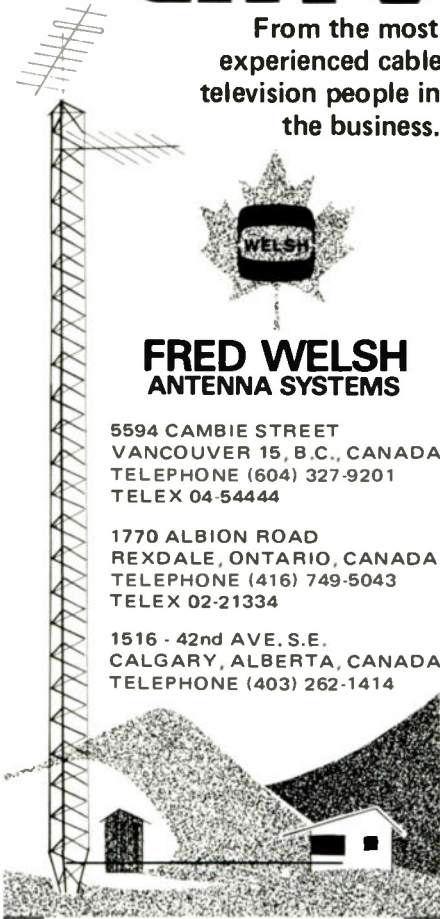


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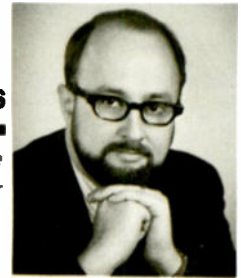
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Management Guidelines

Randall B. Lee
Asst. Managing Editor



Is Your Speech Intelligible?

Make what you say understandable. That suggestion sounds simple, but it often isn't. It would be easy were all people exactly alike, but they are not.

A statement which is easily and accurately grasped by one person may be completely puzzling to another. What you say as a system manager must be phrased to reach the understanding of many different types of men and women.

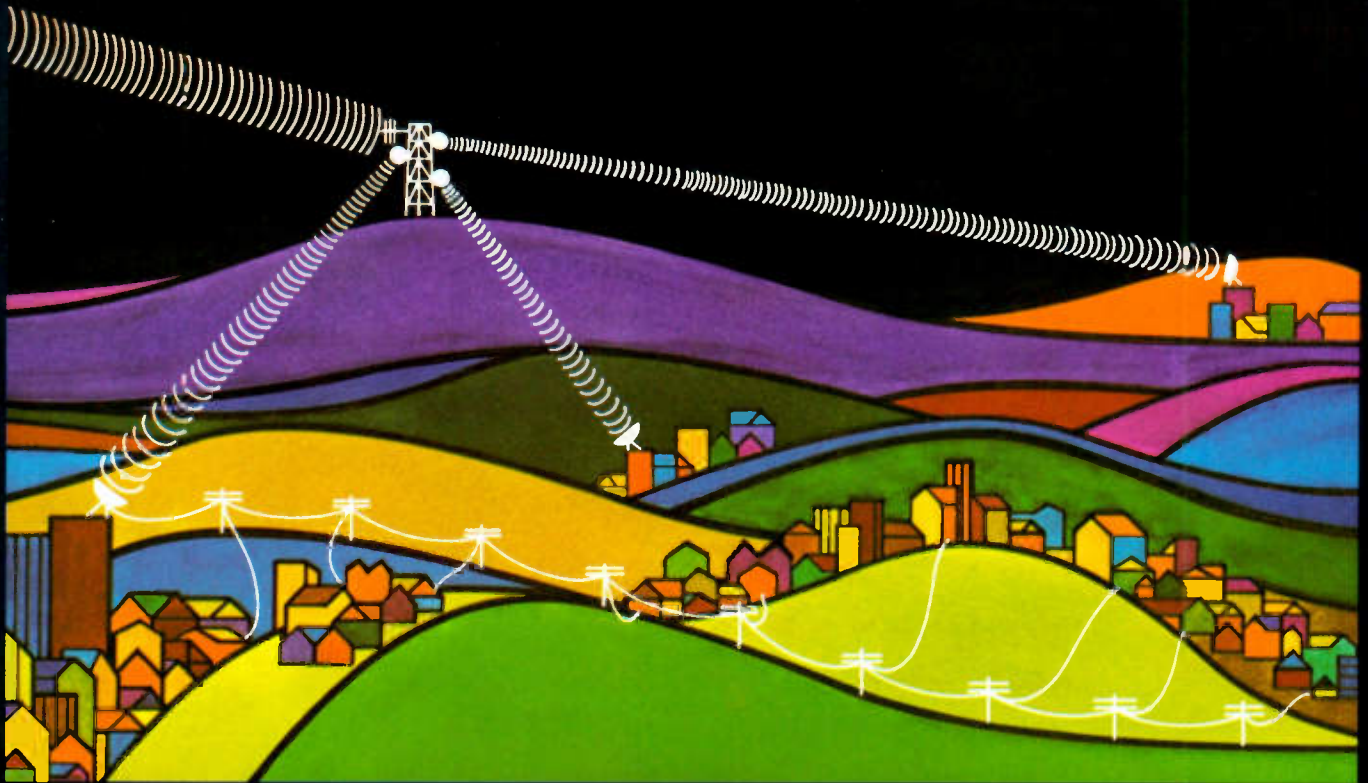
Here are some suggestions for making yourself better understood.

- *Understand thoroughly what you want to say* — then say it. It should only take a fraction of a second to think out everything you must say. This slight delay is seldom noticed.
- *Speak slowly.* Fast speech frequently garbles what one has to say.
- *Talk to the other person's background* and experience, thus providing him with a means to understand what you are saying. The quickest and most accurate understanding always comes when that person's background and experience are used to reach this understanding.
- *Avoid overly technical words* at all times, even in talking with your colleagues.
- *Use words which have but a single meaning* if at all possible. Words which are subject to different shades of meaning too often provide confusion.
- *Open your mouth* when you speak, even where soft conver-

sation is appropriate. Many cases of misunderstanding are based on nothing more than failure to speak distinctly.

- *Do not shout.* Most people who have a hearing deficiency are either unaware of the condition or will not admit its existence. Speak just loud enough to reach any person with what you have to say. Look directly at your listener.
 - *Present a single idea at a time.* It never pays to include as many ideas as one can utter in a single breath, for many of them will go directly by the listener's ears without being received.
 - *Be sure of word meanings.* Where there is the slightest doubt about a word's definition avoid its use entirely.
 - *Be relaxed.* A nervous approach only makes the other person more unreceptive to what you have to say.
 - *Use your hands for emphasis,* but not to the extent that they will distract from what you are saying.
 - *Impress the individual with the content* of what you are saying. Avoid trying to reach this goal with flowery words which will only confuse most people.
 - *Use a picture, chart, or other visual aid* if it can save words and reach understanding quicker.
- Of utmost importance in every instance is your own desire to make what you say understandable. This approach always assures a greater degree of comprehension.

TVC



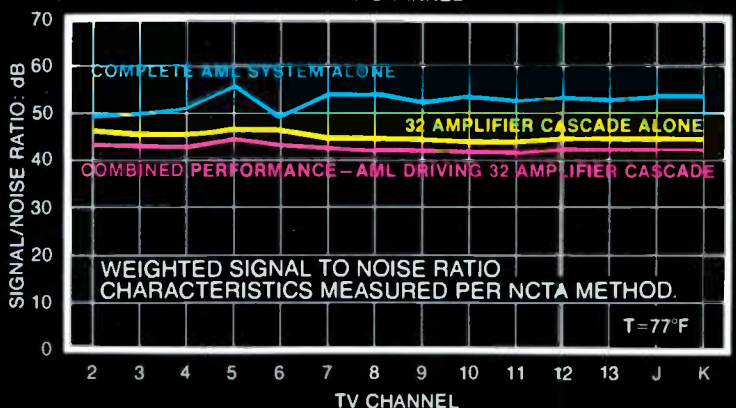
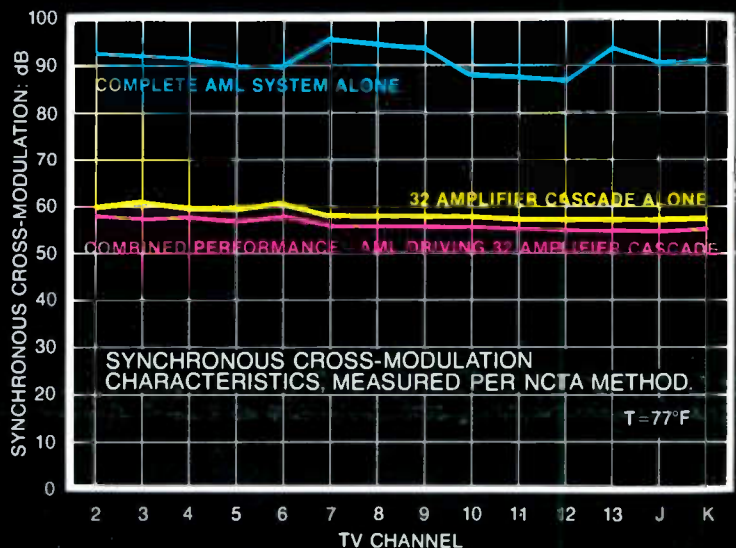
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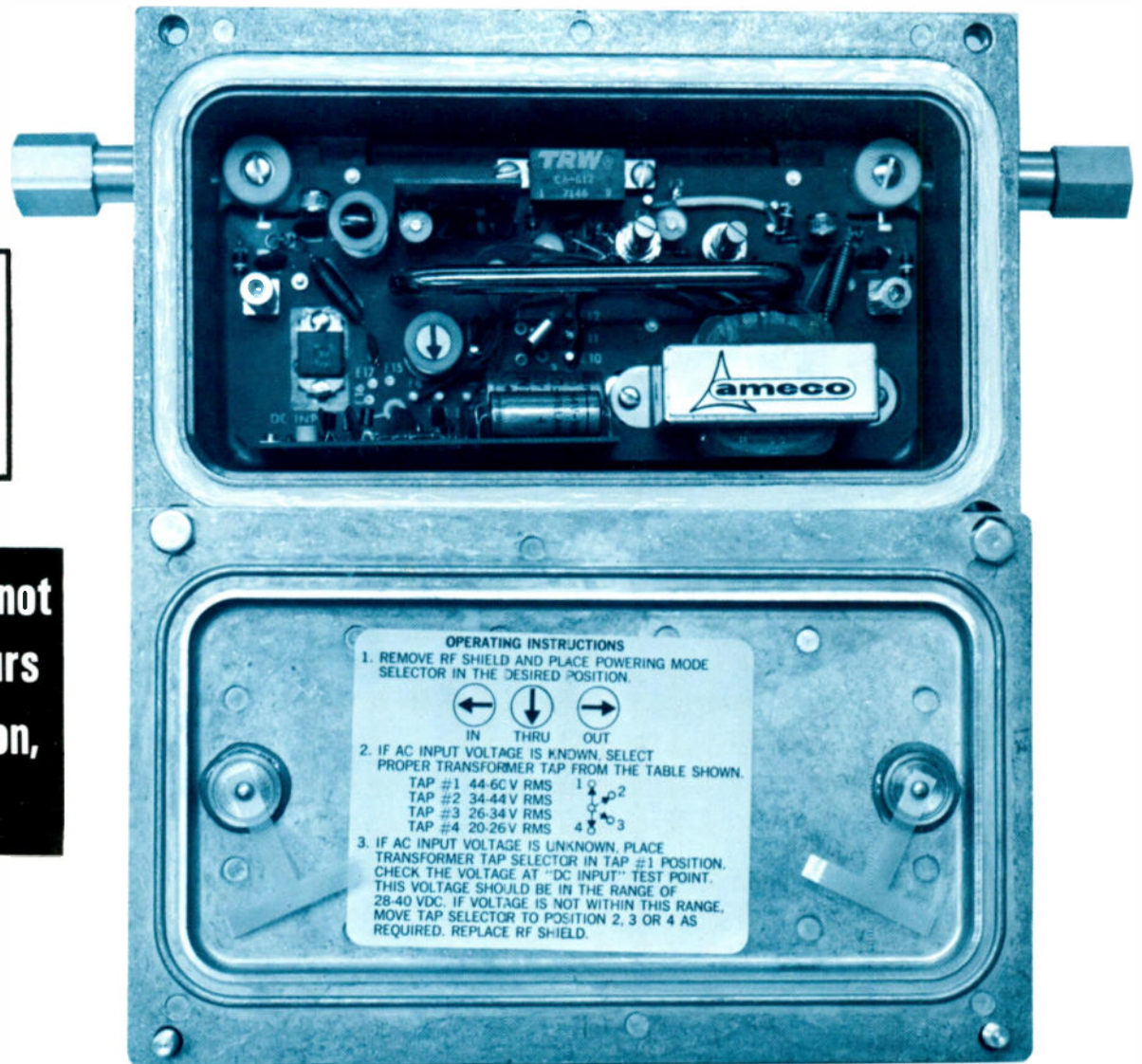
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CROSS-MODULATION AT OPERATING LEVEL:
-72 dB at +40 dBmV (12 Channel,
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NOISE FIGURE: 12 dB at Channel 13, (without equalizer)

HUM MODULATION: -65 dB

SECOND ORDER BEATS: -72 dB at +40 dBmV

MINIMUM FULL GAIN: 25 dB (300 MHz, no equalizer)

CABLE EQUALIZATION RANGE: 0 to 17 dB of cable at
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THERMATIC GAIN EQUALIZATION: ± 1.4 dB for $\pm 60^\circ$ F.
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CATV News Briefs

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

Commission Votes Against Delay on Rules Package: Move to delay final action on CATV rules defeated 4-2. Report and Order expected soon, but new regulations won't be effective immediately. (CATV 1/31/72 p3) See Page 38, "Third Report & Order: It's Not Over Yet."

Gwin Says No to Top Job Candidacy: John Gwin, NCTA national chairman and virtually acting-president for past eight months, has told Presidential Selection Committee he is not a candidate for association's open top slot. (CATV 2/21/72 p7)

Official CATV Report and Order Available from GPO: Copies of Report and Order, at 20 cents per copy, are available from Government Printing Office, Superintendent of Documents, Washington, D.C. 20402. When ordering, ask for: Federal Register of February 12, 1972, Vol. 37, No. 30, Part II only. (CATV 2/14/72 p13)

Senate Subcommittee Probes Administration-FCC Links: Sen. Pastore's Senate Communications Subcommittee criticizes Administration's freezing of FCC funds; AT&T investigation, satellites also draw Senate fire. (CATV 2/7/72 p3)

FCC "Neutral" on Senate/Executive Clash: Sen. Lee Metcalf (D-Mont.) declares determination to free regulatory agencies from having to run budgets through White House Office of Management and Budget; Chairman Burch tells Senate he's not upset by White House oversight powers. (CATV 2/21/72 p3)

Christensen Resigns; NCTA Board Changes: Gary Christensen, NCTA general counsel, advised Board he is leaving to become partner in Washington law firm. Board member Robert McGinty also submitted resignation on doctor's orders; Barry Zorthian to fill McGinty's spot on board until May meeting. (CATV 1/31/72 p6)

Burch Asks for Flexible Price Control: In letter to Price Commission, Chairman Dean Burch asked that price controls for commercial radio and television be kept flexible enough to allow broadcasters to adjust prices in line with audience circulation. (CATV 1/31/72 p 5)

Sports, Radio Rules Proposed for CATV: Sports rule for cable proposed by FCC would make Public Law 87-331 (home-game blackouts on over-the-air television) applicable to CATV. (CATV 2/14/72 p6)

NCTA Sponsors Youth/CATV Dialogue: College students and industry leaders met at George Washington University seminar in Washington, D.C. as climax to 1972 Cable Week. (CATV 2/7/72 p7)

Bresnan Urges Common CATV/Broadcast Cause: William J. Bresnan, TelePrompTer v-p and NCTA vice chairman, told Alabama Broadcasters Association that the two industries should explore mutual interests and common causes. (CATV 1/31/72 p11)

Missouri Operators Form Association: Don Eggebrecht, St. Joseph, Mo. is president. (CATV 2/7/72 p15)

CATV News Briefs

Rand/Kettering/Ford Report Unveiled: Rand recommends six or seven interconnected systems for Dayton area at Policy-Makers Conference. (CATV 1/31/72 p3)

Suspended Sentences for Johnstown Officials: Former Johnstown mayor Kenneth Tompkins and former city councilman J. Howard Deardorff have been given suspended sentences for their roles in bribery-conspiracy case involving TPT franchise. In related case involving Trenton, N.J. franchise, jury acquitted three defendants. (CATV 2/21/72 p7)

Kahn Contract Ends; Shafer New TPT Head: Raymond P. Shafer elected chairman and chief executive officer of TelePrompTer to fill office of Irving Kahn; Kahn is "no longer associated with the company" according to TPT. (CATV 2/14/72 p11)

PACCT Gathers Steam for Election Drive: Political Action Committee of Cable Television has asked system owners and managers for \$99 contribution in '72 to support campaigns of congressional candidates who support fair cable policies. (CATV 2/14/72 p11)

TVC Stockholders Okay Kinney Merger: Stockholders of record on date of merger will receive approximately one-third share of Kinney common stock for each share of TVC capital stock; Value of transaction would be \$45.4 million, based on Jan. 31 closing price of Kinney stock. (CATV 2/14/72 p9)

Name Change Announced for Kinney Services: Kinney Services has announced company name change to Warner Communications, Inc. Al Stern, former chairman and president of Kinney-acquired TVC, will head Warner's cable activities. (CATV 2/21/72 p6)

Vikoa, CPI Talk of Merger: Vikoa and Communications Properties jointly announced they have entered into letter of intent for merger of CPI into Vikoa. If merger is finalized, subscriber count for combined companies will total more than 210,000. (CATV 2/14/72 p6)

TelePrompTer, Hughes Aircraft Report \$30 Million Loan: TPT and Hughes announced \$30 million, eight-year Eurodollar financing by Western American Bank (Europe) Ltd. for construction of jointly-owned New York City-Los Angeles area systems. (CATV 2/14/72 p9)

ATC Raises Credit by \$10.5 Million: American Television & Comm. has made arrangement with five-bank group to increase its credit line and decrease interest rate. (CATV 1/31/72 p11)

Two Companies Form Separate CATV Operations: Oak Electro/Netics Corp. announced formation of the Oak CATV Division, to manufacture and market CATV products (CATV 2/14/72 p11); and GTE Sylvania, Inc. announced formation of separate CATV operation within its Electronic Components Group. (CATV 2/21/72 p4)

UATC Splits Off Cable Operations: United Artists Theatre Circuits has spun off its CATV operations

in form of U.A. Cablevision, Inc. 300,000-share public offering went on market at \$15 and immediately rose to over \$20. (CATV 2/14/72 p11)

CATV Pioneer Hal Phillips Dies: Hal Phillips, veteran cable operator, died Feb. 2 at age 63. Most recently, Phillips served as supervisory consultant for ATC's Blackwell and Tonkawa, Okla. systems. (CATV 2/14/72 p13)

Dr. Goldmark Continues in Cassette Field: Dr. Peter Goldmark, developer of Electronic Video Recording while president of CBS Labs, will serve as consultant and technical advisor to The EVR Partnership, London. The Partnership has assumed responsibility for the system, following CBS's withdrawal. (CATV 1/31/72 p5)

Rand To Prepare Cable TV Handbook: Rand Corp. will prepare a guide on cable television for communities that will be making franchise decisions; book will go to press in late '72. (CATV 1/31/72 p5)

Milwaukee Baseball Club Wants Franchise: Milwaukee Brewers Baseball Club has filed letter of intent with Milwaukee, Wis. Common Council for CATV franchise. (CATV 1/31/72 p15)

Houser Campaigns for Nixon in Illinois: Thomas J. Houser, who left FCC in October, is now chairing campaign of Illinois Committee for the Re-Election of the President. (CATV 2/7/72 p5)

NCTA Convention Plans Taking Shape: 21st NCTA Convention scheduled for Chicago May 14-17 will have as its theme, "CATV — The New Communicator." (CATV 2/7/72 p5)

Rocky Mountain Association Meets in Phoenix: Association selected new officers and directors including: Bob Collett of Carlsbad, N.M., president; and Clay Blanco of Yuma, Ariz., vice president. Luncheon speaker John Gwin urged goal of 35 million wired homes in next decade. (CATV 2/7/72 p7)

Chromalloy, Laser Link Announce Joint Venture: Chromalloy American and Laser Link will venture into the field of cable TV entertainment. New company, TelePremiere International, will be headed by Dore Schary. (CATV 2/7/72 p9)

System Acquisitions: Liberty Television announced plans to acquire GTE Communications, with 50,000 subscribers . . . Tele-Communications has completed acquisition of Com-West, Inc., midwestern cable operator . . . Viacom announced it has completed acquisition of Telerama, Inc. and Cable TV of Marin, Inc. (Calif.), bringing Viacom subscriber total to approximately 165,000. (CATV February issues)

Actions in Franchise Arena: LVO Cable of Hayward, Inc. selected by city council to provide service to Hayward, Calif. . . . TPT wins 20-year Belleair Bluffs, Fla. franchise . . . Urbandale, Ill. grants 10-year franchise to Hawkeye Cablevision . . . Flint, Mich. mayor and city council appoint citizens committee to study CATV. (CATV February issues)

CATV News Briefs

Financial Developments: Coral, Inc., Puerto Rico-based manufacturer, signed 10-year, unsecured loan with Chase Manhattan Capital Corp. in amount of \$544,000 . . . Vikoa retired all its short-term debt which had been as high as \$3 million due two New York banks last year . . . American Television and Communications reported record profits and revenues for second quarter and first half . . . Year-end report from Cablecom-General showed higher revenues, but decreased net income due to start-up costs for eight new systems. . . Canadian MSO Maclean-Hunter reported record year for '71. (CATV February issues)

The New Report and Order: A Summary of Major Aspects

	Systems in Markets 1-50	Systems in Markets 51-100	Systems in Minor Markets	Systems Outside TV Mkt.
Signals That Must Be Carried	Stations within 35 miles	Stations within 35 miles	Stations within 35 miles; on request, Grade B and 100-watt translator	On request, Grade B, 100-watt translator; ETVs within 35 miles, significantly viewed stations.
Distant Network & Independents	If minimum service quota (1) above, not filled from Basic Signals (2) above, may import sufficient distant signals to fill quota. May also carry "bonus" of two distant independents, but independents imported to fill quota count against the "bonus" allowance.	If minimum service quota (1) above, not filled from Basic Signals (2) above, may import sufficient distant signals to fill quota. May also carry "bonus" of two distant independents, but independents imported to fill quota count against the "bonus" allowance.	If minimum service quota (1) above, not filled from Basic Signals, (2) above, may import sufficient signals to fill quota.	May carry any number of signals
Leapfrogging Restrictions	If independent signals are imported from a top-25 market, it must be from one of the 2 closest such markets. Closest network affiliate must be carried. Where third independent is imported, in Markets 1-50, it must be UHF from the same area, or any independent UHF.			
Non-duplication	Simultaneous non-duplication; broadcasters may ask for special relief for time-zone problems.			
Exclusivity	Pre-clearance 1 yr.; run-of-contract in market.	Off-network series: 1 year from first showing; First-run series, 2 years from first showing. Films and non-series: 2 years from availability.		
Grandfathering	All systems in operation or authorized to carry signals before March 31, 1972, are grandfathered.			
Minimum Channel Capacity	20 channels for new systems.			
Non-broadcast Channels	One-to-one broadcast to non-broadcast channel availability. One channel for education; one for local government; one for public access.			
Two-way Capacity	Return capacity on "at least non-voice basis."			
Certificate of Compliance	All new systems must have in order to begin operations. Existing systems must obtain from FCC before adding new signal carriage and at end of current franchise period or March 31, 1977, whichever occurs first.			
Franchise Standards	Public proceeding must accompany franchise grant; franchise period should not exceed 15 years; system must extend service to all areas of franchise community where practicable; system must begin construction within one year after Certificate of Compliance is issued; franchise fees must be "reasonable" (3% suggested).			
Filing Fees	For Certificate of Compliance, \$35; (but if more than one community served by single head-end, full fee required for only one community and \$10 fee for each of the others); for special relief \$25.			

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FOCUS

... On People

Systems

G.L. "Lew" Davenport has been named general manager of Cox Cablevision and Tele-Systems Corp., both subsidiaries of Cox Cable Communications. Named to replace Davenport as Cox's northwest regional manager is Roger Pierce, presently Cox system manager in Aberdeen, Wash. New system manager of Cox's Astoria-Seaside-Long Beach systems is James E. Durham, a former employee of the company.

Leon G. Van Bellingham has been appointed vice president-corporate development for Denver-based Cablecom-General, Inc. He will concentrate in the areas of new franchises, acquisitions and marketing.

Daniel Pickett has been appointed sales manager of Rogers Cable TV Limited, Bramalea Tele-cable Limited and Coaxial Colour-view Ltd., of Toronto, Canada.

Ron Harmon and J. Patrick Michaels, Jr. have been named to the board of directors of the Florida CATV Association to fill vacancies created by recent resignations. Brian Johnson has been appointed to the legislative committee.

Jerrold employee, has been named manager of the company's Philadelphia manufacturing facility, and Maurice M. Renard, an 18-year Jerrold employee, has been named to a similar post at its Nogales, Mexico plant.

New president of AEL Communications Corp. is Leonard L. Rosenfeld, formerly with KMS Industries.

James F. Jennings, Jr. has been elected vice president, marketing, of Phelps Dodge Communications Co.

Charles G. Lowe, has joined CAS Manufacturing Co., Dallas, Tex., as national sales manager for TOCOM Systems.

Robert E. Gruno has been elected vice president-CATV of Burnup & Sims, Inc. (Florida). Gruno joined the firm in 1969 as assistant manager, CATV Division.

The Communications & CATV Division of Essex International, Inc., has announced the appointment of Edward J. Donahue to regional salesman in the North Central states.

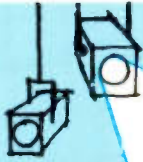
Richard T. Callais has been named to manage the newly-formed Theta-Com SRS Division. Callais previously directed the basic development of the SRS system at Hughes Aircraft.

Suppliers

Robert Gutreuter has joined Jerrold Electronics as manager of the Turnkey Systems Division. He will be based at Jerrold's Philadelphia headquarters, with responsibility for turnkey construction, system design and layout activities. Robert Mai, Sr., nine-year

Professional

Washington, D.C. attorneys Arthur Stambler and Jason L. Shrinsky have announced a change in firm name to Stambler & Shrinsky. Martin A. Blumenthal also has joined the firm.



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Urban Cable Development: We Shall Overcome

The Rand Corp. presented its plan for the Dayton region last month . . . but the real story of the conference was the tension between the inner city and the suburbs—and what that means to cable television tomorrow.

*By Paul Maxwell
Associate Editor*

“Our cross is that we are so tied to the social issues of the Seventies that we, CATV, will have to deal with them,” stated Amos “Bud” Hostetter of Continental Cablevision, Inc., and a participant in the Dayton Policy Makers Conference on Urban Cable Communications.

“Can America be made to work? . . . is participatory democracy viable?” asked Leon Papernow of Cypress Communications, also a participant in the Dayton, Ohio conference.

“Cable television, a futuristic communications system ideally suited for community control and

local programming, is on the verge of broadscale expansion into the cities and ghetto communities,” wrote conference participant Charles Tate of the Urban Institute in “Cable Television in the Cities.”

Cable television is coming of age in an era of social upheaval. That is cable’s cross: CATV will have to deal with America’s emerging minorities in a way no other medium has.

Minorities in the Media

There are more than 1,500 daily newspapers in the United States. Less than a handful are controlled by minorities.

There are almost 700 commercial television stations on the air. Minorities do not own a single one.

There are more than 6,500 commercial radio stations (AM and FM) on the air. Minorities own less than 15.

There are more than 450 noncommercial FM stations on the air. Only three are affiliated with minority educational institutions.

There are nearly 3,000 cable television systems operating. The nation’s restless minorities do not own a single system. However, minorities own, either wholly or cooperatively, franchises in Oakland, California and West Orange, New Jersey, and are bidding for franchises in Los Angeles (Watts), Boston, Washington, Detroit and other major markets.

It is clear that minorities have been excluded, for

March, 1972



Opposite Page: Bud Hostetter (second from left) makes a point to one of the discussion groups during the Dayton conference as Ken Knight (second from right) listens. Right: During conference discussion sessions, panelists were available to answer questions via closed circuit TV. Above, left to right: Walter Baer, Ned Feldman (both of Rand Corp.), the cameraman, Leland Johnson (also of Rand and the study director) and Leon Papernow of Cypress Communications.



one reason or another, from media ownership in America. That is true no matter what the specific medium. How many blacks own publishing companies? How many blacks own telephone companies? — virtually none. Yet the black minority alone represents 12 percent of our nation's population.

Charles Tate says, "Cable television may be the last communications frontier for the oppressed."

FCC Commissioner Nicholas Johnson told a Washington workshop that "They used to say 'the pen is mightier than the sword' in terms of revolutions. And today that pen is represented in that video camera. That's power. That really is power."

Minorities now want that power. Cable television is becoming that power.

The Rand/Dayton Report

Municipalities in the Dayton, Ohio region decided to find out all they could about cable television before granting franchises. The thirteen-member regional Council of Governments commissioned the Rand Corporation to study "Cable Communications in the Dayton Miami Valley." The Ford Foundation and the Charles F. Kettering Foundation provided the financial backing. A moratorium on franchising was declared, pending completion of the report.

Rand presented their study. At the end of the conference, the municipalities declared another six months moratorium. The report had raised more

questions than it answered.

The study proposed a regional, metropolitan dual-cable system with limited two-way capability. Using ten-year financial projections, Rand concluded that an interconnected network of six cable systems covering the 13 incorporated cities in the Dayton metropolitan area would be economically feasible. However, if each city were to attempt to franchise and build its own system, only the cities of Dayton and Kettering would be feasible.

Rand suggested three feasible alternatives for ownership: private, government and non-profit. Each has, Rand said, strengths and weaknesses when measured against ideal "public interest" criteria.

Rand also discussed some of the many possibilities for using cable: local origination, education, facsimile mail, leased channels, computer access, information storage and retrieval, alarm systems, traffic control and so on. Particular emphasis was placed on special pay channels or leased channels. Geoffrey Nathanson of Optical Systems talked at length about sports and motion picture programming on a pay basis.

Discussion groups tended to dwell on public access and minority programming. Jerrold's Dr. John Malone told one discussion group that access would not be a problem in the urban markets — that cable operators will gladly provide channels for public use.

The heart of the Rand Report is its recommendation that a metropolitan system of interconnected cable systems be built.

Dayton, Ohio, is the 41st largest television market in the United States. It is also the 35th largest *black* television market. Therein lies the controversy.

Bud Hostetter likened the conference to "an encounter group with 500 people." It may have been one of the "two or three most significant news events of the year" or it may have simply been "a waste of time."

In any event, it was significant in that, as one participant put it, "many diverse interests got to-



TVC's Paul Maxwell listens to conference participants during a discussion session.

gether and began talking about issues that must be resolved if large, urban markets are to be built."

The two-day conference was held at the Sugar Camp facilities of NCR on the outskirts of Dayton. Almost 500 people with differing interests attended: cable operators, applicants for the Dayton area franchises, government representatives, social activists, educators, sociologists, politicians and press.

The two days were packed. Panel discussions in the mornings and afternoons were followed by small discussion groups.

But no matter what any speaker talked about, the discussion following centered around minority involvement in cable television: access and ownership.

The Access Issue: No Longer a Problem

The Federal Communications Commission has, with its Third Report and Order due to become effective the last day of this month (see "The Third Report and Order: It's Not Over Yet" beginning on Page 38, this issue), taken public access, local government access and educational programming out of the realm of suggestions.

The new rules require at least one non-broadcast channel for every broadcast channel carried. Also required is that at least one non-broadcast channel be devoted to public access; one to local government; one to local educational interests; and one to the cable operator for local origination. The cable operator must provide the government and educational channels free of charge for five years... he must provide the public access channel free of charge (except for some production costs) always.

Cablemen at the conference said again and again that access was not expected to be a problem. Indeed, getting someone to *use* that access will be the

problem... and even *more* of a problem will be getting someone to *watch*.

"Access Doesn't Go Far Enough"

The problem of access is already history... both cable and the FCC are solving the difficulties. Access will be provided. The question now is one of ownership.

Recognizing this fact, Charles Tate has written, "Access is extremely important to minority communities, but it does not go far enough. Access alone will not provide the measure of control required over capital, labor and technology, to stimulate and sustain economic and social development in the ghetto areas. (Minority) ownership and control must be achieved to meet this objective."

"We want a piece of the action," demanded minority member Charles Beard of Boston Model Cities to his discussion group at the conference.

It is a simple fact: blacks and minorities will demand ownership of urban cable systems, especially cable systems in their ghettos. Their reasoning is like this: "A sizable portion of the income and profits from CATV in the major cities will come from minority subscribers, particularly blacks. Unless these systems are controlled by the communities served, the resources urgently needed for development will be lost." ("Cable Television in the Cities.")

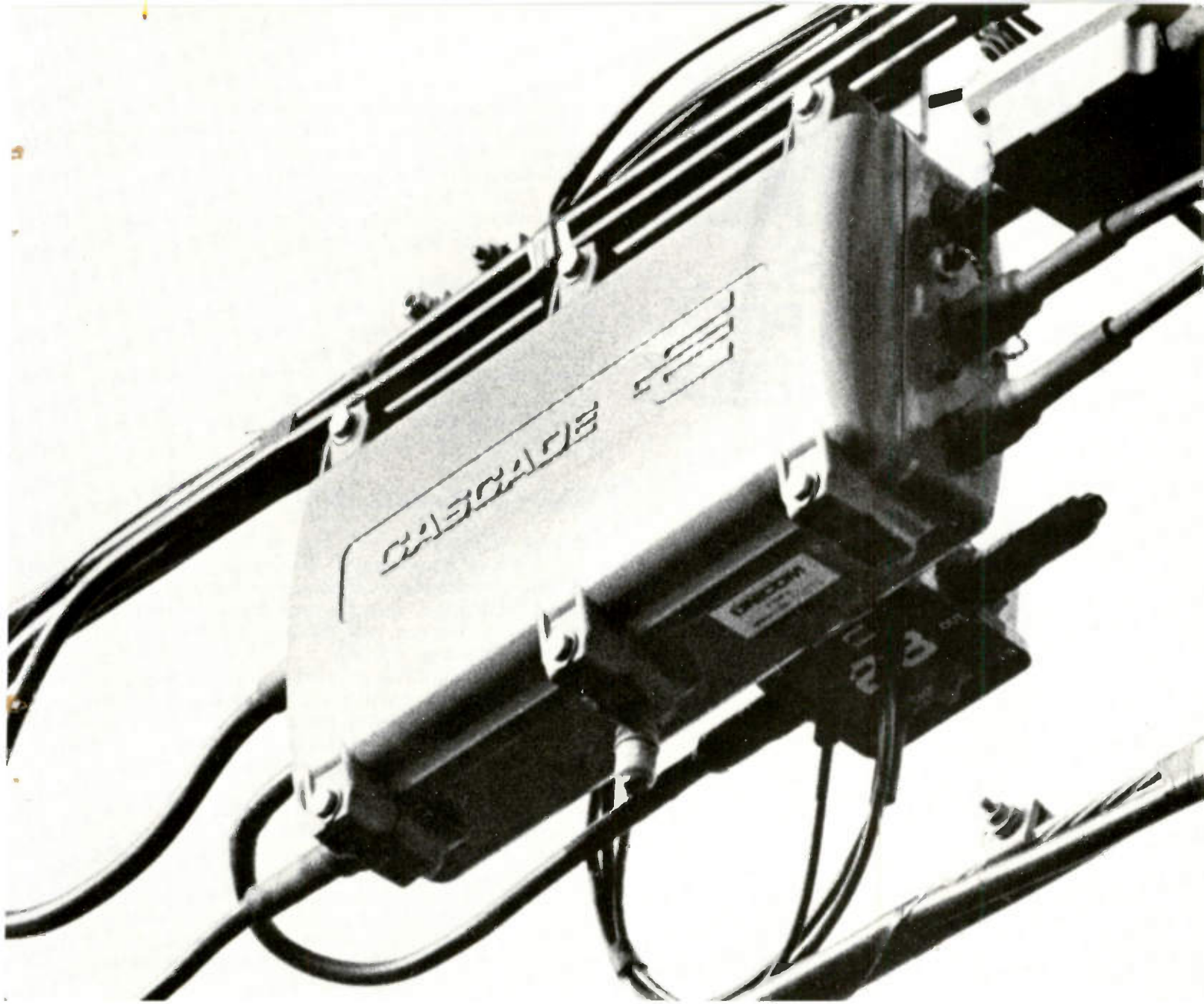
In cable television, blacks and other minorities see an opportunity they have never had before. Cable television is not yet a fact in the urban markets. There is no prior investment in most cities to protect. Community action groups and minority entrepreneurs have a chance at last for a "piece of the action."

Charles Tate (left) of The Urban Institute and William Wright of Black Efforts for Soul Television.



Charles Tate lists six reasons why he believes that cable television is a potentially effective "vehicle for achieving sizable gains in community organization, unification, control and development."

- 1) There is no entrenched interest claiming public protection as a basis for protecting its investments.
- 2) The franchising authority is the local municipal government.
- 3) Installation must take place in the ghetto area.
- 4) Black (minority) communities are a substantial



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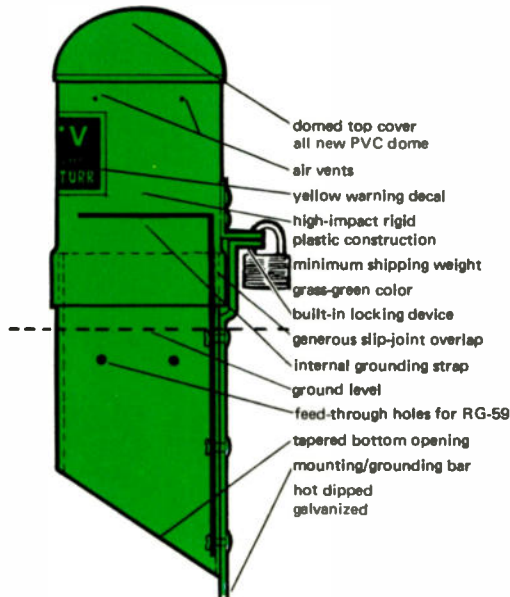
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segment of any urban subscriber market.

5) Local programming is a key to cable's success.

6) Cable has a wide variety of potential applications.

Community control is therefore "imperative," Tate says. CATV is the "system that could enable America's minorities to challenge the communications systems that exploit the ghettos, barrios and reservations."

Morton Janklow, the special counsel for the Bedford-Stuyvesant Restoration Corporation, suggests a joint partnership arrangement between a community group and private cable company. The community group could provide the political muscle necessary for the franchise grant...or it could mobilize and deny the franchise to a company it doesn't like.

What This Means to CATV

Cable television is not just at the dawn of its era...it's at a crossroads. The social concerns of modern America must be taken into account...the problems of urban America must be considered...the face of America has changed, and the face of CATV must change with it.

America's minorities are now demanding a share in this, the newest communications medium. Their demands *will* somehow be realized...in some form or another. The minorities cannot be ignored.

Some would have cable television be merely a municipally-owned service...supposedly for the better of the served community. Some would have cable television be a non-profit, community-owned service. Some would suggest joint ventures among government, non-profit groups, private cable companies and others...with all or some involved. Some would have cable companies and others...with all or some involved. Some would have cable continue along its predominantly private route. Some would suggest yet other alternatives.

Private ownership is the only alternative TV *Communications* recommends. We think we stand on rock-solid footing in our conclusion that government or non-profit ownership of CATV will only stand in the way of the industry's "becoming."

But in order to keep those private ownership patterns intact, we must somehow involve minority interests in them. We are suggesting no free rides for any group simply because that group has been socially disenfranchised. Nobody should fail to earn his equity position.

But if CATV is to become the full communications service we think it can, those of us in the industry today must work out fair and creative ways to involve the nation's minorities in the CATV of tomorrow. This type of joint venture will help guarantee cable its place in the sun. The alternatives to a capitalistically based joint venture are ugly.

Cable must face these issues. They won't go away. As William Wright of Black Efforts for Soul Television said, "What we are really giving you is a glimpse at the strategies you will be faced with in all of the (black) communities you go into." rvc

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Third Report & Order: It's Not Over Yet

Cable television has rules . . . but does it?
Court suits, petitions for reconsideration, and
disgruntled broadcasters may yet delay the implementation
of the compromise rule-package wrought by the FCC.

*By Jacqueline Morse
Associate Editor*

On February 2, 1972, four of the seven members of the Federal Communications Commission voted — for widely varying reasons — to adopt the CATV Report and Order; one member dissented; one dissented in part and concurred in part; and one, because of illness, did not participate in the vote.

This contentiousness is just one more evidence of the emotionally charged controversy which has plagued the cable rule-making from the beginning.

Nor is the drama over. Court suits against the new rules have already been filed; disgruntled broadcasters, theatre owners, and others are on their way to the FCC and to Congress to stall the rules; and, although it has not happened yet, it is conceivable that even an unhappy CATVer or two will take action against the regulations due to go into effect the last day of this month.

There will also be, at some undetermined time in the future (but presumably before November), a major set of proposals on CATV's future from the President's Cabinet Committee to Congress.

In addition, the copyright liability issue must be solved — and solved soon — in Congress. The FCC has made it clear that its regulatory program contemplates passage of a copyright revision law encompassing CATV. The rules will go into effect before Congress acts, but FCC Chairman Dean Burch has said that if Congress does not act on copyright within a "reasonable time" the Commission will take another look at the issue.

Trade groups representing cable system operators, broadcasters and major copyright owners have al-

ready agreed on the necessity for supporting early passage of a copyright bill which will give CATV systems a compulsory license for the "quota" of distant signals allowed by the FCC to be carried in each market (see chart in *CATV Magazine Special Report*, Feb. 17, for signal carriage provisions).

That pact was part of the larger Consensus (or Cable Compromise) Agreement engineered last fall by Office of Telecommunications Policy director Clay T. (Tom) Whitehead (who is "cautiously optimistic" about March 31) with the support and participation of Burch. The Consensus Agreement — which also gave broadcasters great support in CATV leapfrogging, overlapping market signal carriage, and market exclusivity protection — was incorporated into the FCC's rules.

Commissioner Nicholas Johnson was the most outspoken opponent of the incorporation of the Consensus Agreement into the rules, of White House "interference" in the decision-making process (through OTP), and of the resulting slashing of CATV's potential service — especially in the Top-50 markets.

"The much-heralded new dawn for cable," he said, "turns out to be a cold and smog-filled day." His sentiments were echoed, at least in part, by Commissioner Robert Bartley who commented, ". . . I view the action here, in large measure, as another freeze in many markets. . . ."

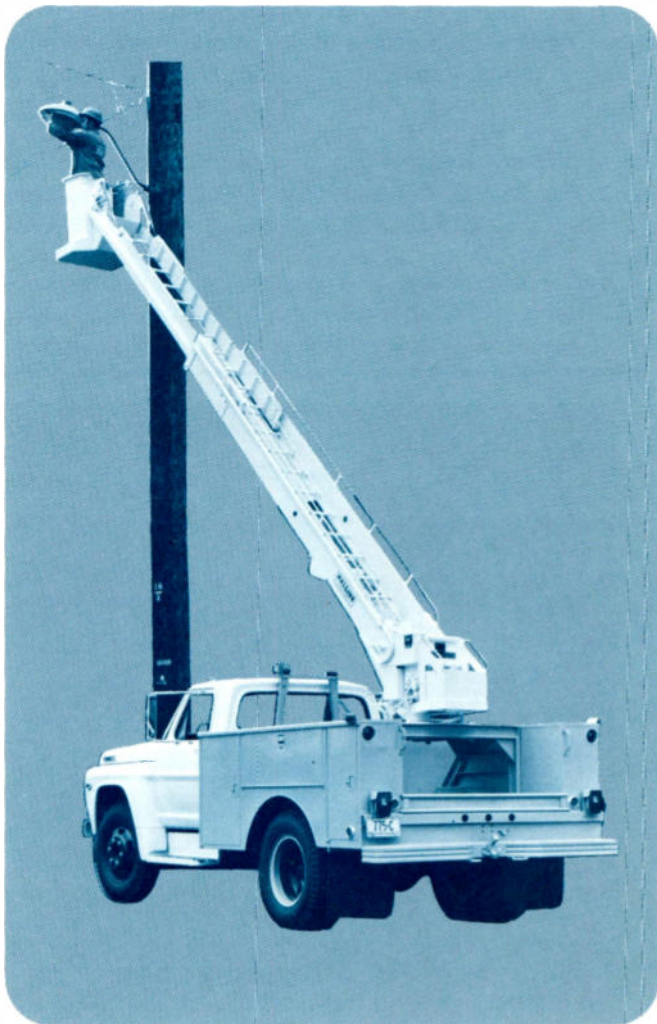
Nevertheless, Johnson and Bartley conceded that the rules do represent a "thaw around the edges," — a framework within which cable systems may begin to



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For most CATVers, the hope is for a respite from high drama, a breathing space in which the lawyers, financiers and engineers can work out the infinitely complicated details of just what the new rules mean.

What the New Rules Mean

The new rules attempt nothing less than to change the nature of the CATV industry: to transform it from a community antenna service bringing viewers more and better quality broadcast signals to a combination antenna/local programming/broadband communications service.

The change is to be by evolution rather than revolution. For the moment, at least, systems which operate outside the 35-mile zone around television communities may continue to act as antenna systems with a vengeance — importing any signals the operators wish from any place they choose.

These, along with all other systems, will also benefit from a change in the network non-duplication rules — from same-day to simultaneous non-duplication.

Systems within the zone of a small-market (non-Top-100) are hardest hit by the signal carriage rules since the limit is three networks and one independent — plus ETVs and foreign language signals. The feeling is, however, that most of these communities have already been cabled and the systems grandfathered, so these restrictions will not be particularly signifi-



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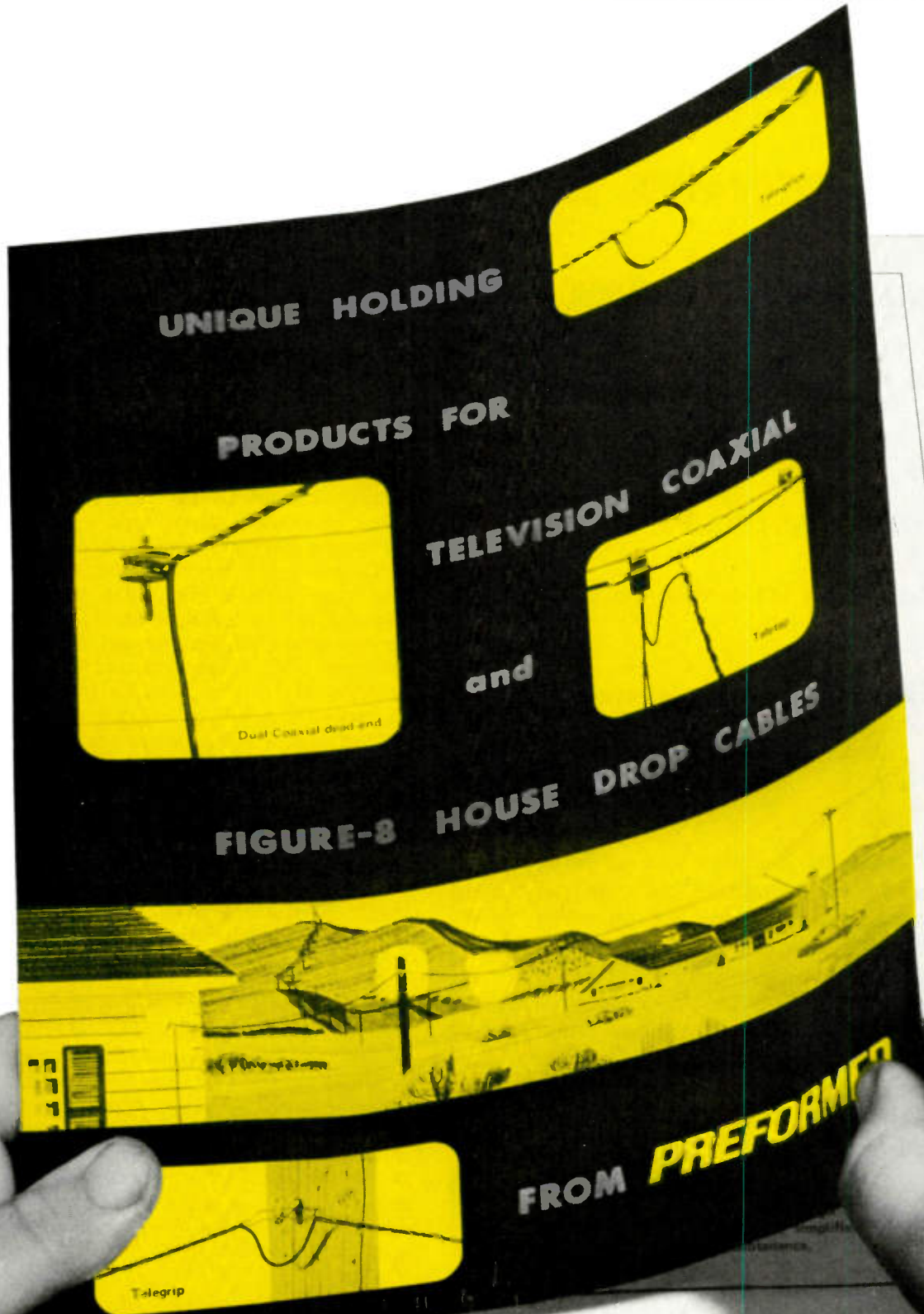
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cant to the industry — even though they will work a hardship on the viewers in those unwired communities.

Both of the above categories of operation (small-market and non-market systems), are affected by other portions of the FCC's rules. All systems, whether major, minor or non-market, will have to obtain Certificates of Compliance when their current franchises expire or by March 31, 1977, whichever occurs first — already, CATV of Rockford, Ill., has applied.

Performance standards are also applicable to all systems. As of March 31, 1972, every operator must maintain a list of CATV channels delivered, all broadcast stations carried, and the minimum visual signal level maintained on each broadcast signal carried to subscriber locations. He must be prepared to provide performance data on request to authorized representatives of the FCC and he must conduct complete system performance tests at least once a year (never more than 14 months between tests).

The specific technical standards set by the FCC in the new rules are immediately applicable to all new systems, but existing systems have five years to comply with most of them.

In the Top-100's

It's Top-100-market systems that will feel the major impact of the new regulations. These are the markets chosen by the FCC to begin developing the cable communications concept, rather than just furthering the community antenna concept.

To give major market systems a stronger marketing base, the Commission rules allow a distant signal "bonus" of two independents where the minimum service quota (three nets and three independents for markets 1-50; three nets and two independents for markets 51-100) is filled by in-market stations. For example, if a Top-50 market already has three full networks and three independents, the operator may bring in two distant independents. If the market has three full networks but only two independents, he can import one signal to fill his minimum service quota of three/three — and that leaves him with one "bonus" signal to import.

Offsetting these signal carriage advantages are leapfrogging restrictions (anytime a distant independent is imported from a top-25 market it must be from one of the closest two such markets) and stringent exclusivity protection for syndicated programming (one year pre-clearance plus run-of-contract in Top-50 markets, one or two years from date of program sale in second-50 markets generally).

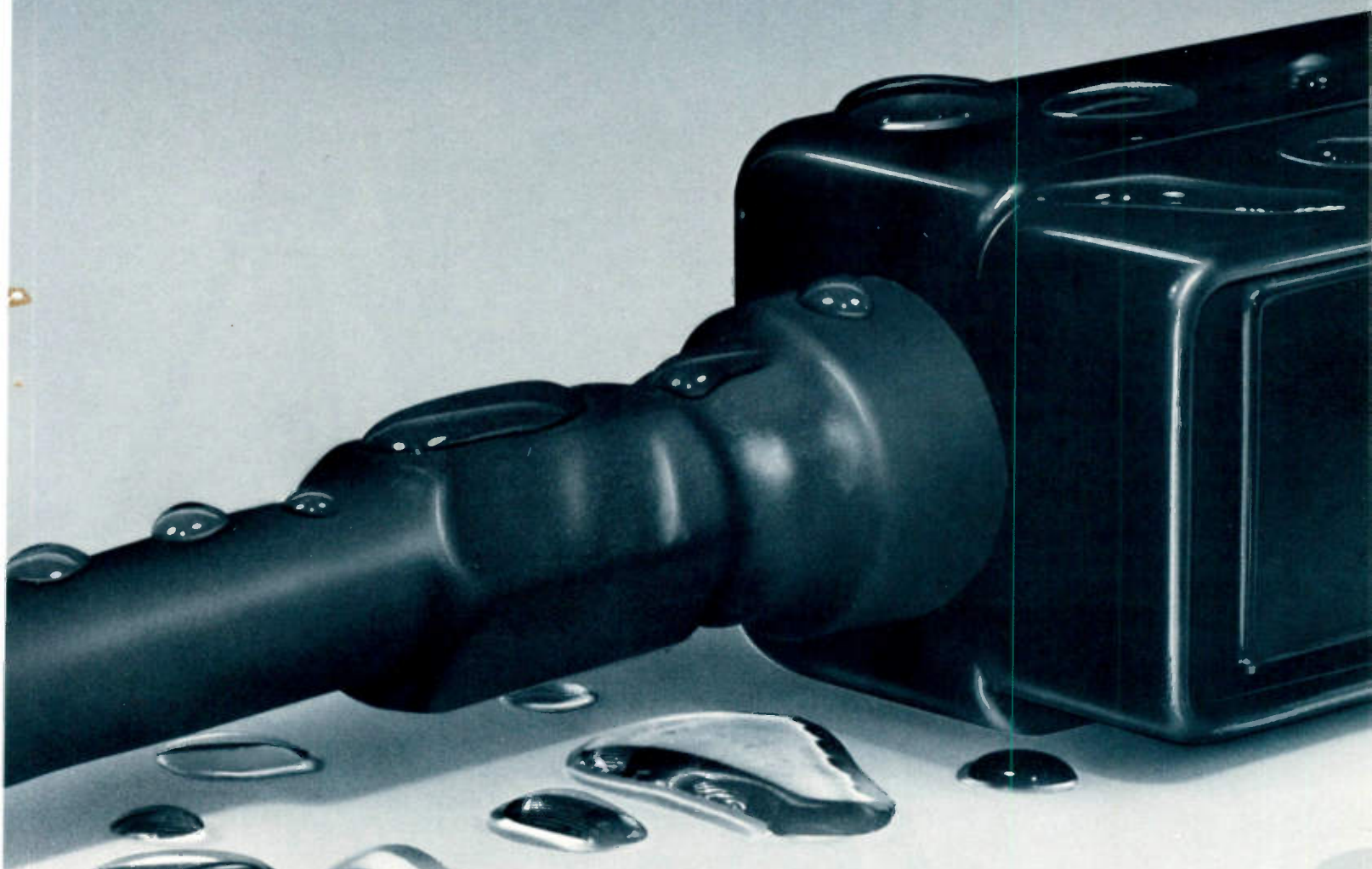
Major market systems are required also to provide: rudimentary two-way capability; free dedicated channels for education, local government and public access; one channel (6 MHz) of non-broadcast space for every broadcast channel carried, to be made available for lease after dedicated channels have been provided; additional channel space on demand under a formula specified by the FCC.

(Continued on Page 102.)

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Build Your Own Handy-Dandy System Construction Computer

Constructing a cable television system is a complex undertaking. This simple, but remarkably efficient, system may be just the answer to your problem: the new home-made, system-building think machine.

By Gary A. Dent
Scientific-Atlanta

A CATV operator in the Southeast plans a 50-mile extension. Everything seems in order, but when the crews arrive on Monday morning it is discovered that someone forgot to order the proper hardware.

Result: Several days of costly "down time" — and perhaps loss of the crews to another job that *is* ready.

A newly-formed MSO undertakes its first major system-construction project. The tower is erected, antennas mounted, head-end building in place . . . stringing strand from the tower starts across Farmer Jones' leased pasture (tower site) to the main highway. Oops . . . Farmer Jones didn't agree to running any wires over his land. Nothing was said about cable on those convenient utility-poles that go right by the tower.

Result: A hard-fought easement for cable . . . a bit of newly acquired wealth for Farmer Jones . . . one sadder, but wiser CATV entrepreneur.

A massive system-expansion is under way. Crews are all over the city running cable at a breakneck pace. Suddenly the supervisor discovers that a utility-work-order was misplaced . . . only half of the poles are cleared.

Result: Frantic negotiation for temporary attachment permission. "Sorry, CATV, but utility policy won't permit illegal attachments . . ."

Results: An expensive, frustrating delay which you can contemplate while you watch the contractor leave town, your banker frown, and those waiting subscribers grow a bit unhappier day-by-day.

Every CATV operator, contractor, manager or chief technician has his own story to tell about the difficulties that may be encountered in the course of building, extending, or rebuilding a system.

Few projects are completed without some kind of "hitch." Costly delays, oversights, and confusions are minimized in direct proportion to the degree of preliminary planning and organization that is applied to the project *Before It Starts*.

Obviously, CATV construction is a complex process made up of myriad details encompassing manpower and material. Perhaps, the old-pros who have built hundreds of miles of plant can mentally keep track of these details and have everything and everybody in their proper place at the proper time. But, these same old-pros are the first to organize their projects as *Early As Possible* to assure the most profitable success for their company.

In the larger system-groups, and among leading manufacturers, there are definite systems employed to assure a smooth flow of work and to avoid costly oversights and mis-scheduled events. Some employ complex industrial-planning techniques, developed over the years, such as PERT or CPM systems.

These fairly complex scheduling, planning, and projecting systems are effective for those who have studied them and know how to apply them.

Often, however, the average CATV manager, or chief technician may not have been exposed to PERT or other similar organizational systems. He can still take a few simple steps to assure himself and his

Figure 1: Check List for New System Construction (Sample)

- ___ 1. Market Analysis of Proposed Area Potential.
 - ___ a. Signal Analysis of off-air competition.
- ___ 2. Franchise Acquisition.
 - ___ a. (detail various sub-steps, etc.)
 - ___ b. (detail various sub-steps, etc.)
- ___ 3. Negotiation of Pole Attachments Permits.
 - ___ a. Highway Permits
 - ___ b. Crossing permits (railroads, etc.)
 - ___ c. Easements —Right-of-way
 - ___ d. FCC permits — waivers, etc.
 - ___ e. PUC permits ?
- ___ 4. Preparation of Strand Maps.
 - ___ a. Determination of area (streets) to be cabled.
 - ___ b. Note unusual crossing-guying-access problems.
 - ___ c. Ground wheel measurement, pole-to-pole.
 - ___ d. Drafting or draw-in of strand routing.
 - ___ e. List of pole numbers (for later application).
 - ___ f. Home count (location of potential subs).
- ___ 5. Tower Site Selection — Determination — Acquisition.
 - ___ a. Site Testing for signals (survey)
 - ___ b. Selection & acquisition
 - ___ c. Site preparation
 - ___ d. Tower installation
 - ___ e. Building installation
 - ___ f. Antenna & Equipment installation
 - ___ g. Fire-up & testing
 - ___ h. Introduction to system & balance
 - ___ i. Proof-of-performance
- ___ 6. Determination of methods of building plant.
 - ___ a. Turnkey
 - ___ b. Semi-Turnkey
 - ___ c. Self-built (bill of materials)
- ___ 7. Selection of Bidders (contractors).
- ___ 8. Submission of Maps & Specs to Bidders (contractors).
- ___ 9. Begin Utility Clearance Ride.
 - ___ a. Clearance measurement & engineering pole-changes.
 - ___ b. System layout changes to avoid clearance problems.
 - ___ c. Make specific pole-applications
 - ___ d. Approve clearance work-orders
- ___ 10. Clearance work begins.
- ___ 11. Receive Contractor Bids & decide upon method, source, etc.
- ___ 12. Select Contractor, Supplier, etc.
- ___ 13. Revise Electronic Layout as required.
- ___ 14. Determine date of completion of clearance work.
- ___ 15. Obtain final easements (except continuing pole clearances)
- ___ 16. Determine Equipment Delivery Dates,
 - ___ a. Manpower availability
 - ___ b. Associated Material
 - ___ c. Co-ordinate Timing with Clearance, etc.
- ___ 17. Alert Manufacturers, Suppliers, Contractors to Anticipated Start-up Dates.
- ___ 18. Prepare Warehousing — Construction facilities.
- ___ 19. Receive Material.
- ___ 20. Begin Plant Construction.
 - ___ a. Pole Framing
 - ___ b. Stranding & Guying
 - ___ c. Cable lashing
 - ___ d. Mounting equipment — power supplies, etc.
 - ___ e. Splicing
 - ___ f. Fire-up (sectionally or totally)
 - ___ g. Balance
 - ___ h. Proof-of-Performance
 - ___ i. Commence sub. installations.
- ___ A. Co-ordinate with Tower-Site Installation—
- ___ B. OPERATIONAL EVENTS (concurrent at proper timing).
 - ___ a. Office selection, furnishing, etc.
 - ___ b. Organization of office procedures and functions.
 - ___ c. Organization of staff requirements, selection — training.
 - ___ d. Selection of test equipment, tools, vehicles, etc.
 - ___ e. Marketing Program
 - ___ f. Installation of House Drops.
 - ___ g. Organization of ancillary services, cable-casting, etc.

Figure 2:

	Target Date	Completion Date	Time Span
Tower Site Sig. Survey	July 12	July 15	4 working days
Selection & Acquisition	July 19	Aug. 13	20 days
Site Preparation	Aug. 16	Aug. 25	8 days
Tower Installation	Aug. 23	Sept. 7	12 days
Building Installation	Aug. 26	Sept. 10	12 days
Antenna & Equipment Installation	Sept. 4 Sept. 13	Sept. 7 Sept. 17	3 days 5 days

employer that the project will proceed smoothly with a minimum of costly surprises.

Your Memory Machine

The simplest form of Project-Organization can be the trusty check-list. Your wife probably uses one for the weekly grocery shopping and if she doesn't, perhaps that's why your food-bills have been soaring and you have a pantry full of stuffed artichokes.

Someone once compared the human mind to a bucket of water. If you fill the bucket right up to the brim with water . . . then each time an additional drop goes in a little bit spills over and is lost down the side. Perhaps your mind works similarly. If you are involved in a complex project you have many details to remember. Each time you try to retain another specific detail . . . it seems that a little of what you have already jammed in there spills over and is totally or partially lost.

Let your check-list or work-chart, or whatever you design and apply, become your *spare money machine*. When you think of something that requires attention . . . put it down on your list or chart . . . then, if it doesn't need *immediate* attention . . . FORGET IT.

Your mind is now free to concentrate upon that which is immediately necessary. All you *do* have to remember is to look at your list or chart.

Then let your organizational system, check-list, or

chart do your remembering. You are free to do the important thinking.

A Sample Check-List

Glance at Figure 1. This is a rough example of a possible check-list that might be prepared prior to the early stages of a new system's development. These steps may not always be encountered in building a system — depending upon your specific situation and requirements you will develop your own details. Probably, it will contain the general subject items on our sample.

Your objective is to try to detail into your organizational system those events or requirements that are imperative to success of the project . . . and to attempt to arrange them in a most-likely order of sequence or occurrence.

Build Your CATV - Project Computer

It is rather difficult to sit down and (starting with the first step of your CATV-project) list in exact order all the necessary events you expect to encounter. If you are relatively new to system development you may not know all of the steps. If you are experienced, you may find the list changes too rapidly in sequential-order as you think of items to add, re-position, or scratch-out.

To get your computer started, try this simple organizing trick. Obtain a stack of 3 x 5 index cards. Get away from distractions and interruptions. Close your office door, slip off to a quiet corner to do some serious thinking.

Envision the project you have ahead. Ask yourself, "What is the very first thing which must be done?"

Write that thought down in some shortened form on *another card*.

Don't try to list more than one brief thought on each card.

Continue the process of thinking through your project. Don't worry about getting everything in any order-of-sequence right now . . . just jot down each event or process step as it pops into your mind.

Figure 3:

	1st Week	2nd Week	3rd Week	4th Week	5th Week	6th Week	7th Week	8th Week	9th Week	10th Week
Week Beginning --	7-12	7-19	7-26	8-2	8-9	8-16	8-23	8-30	9-6	9-13
Tower Site Sig. Survey	█									
Selection & Acquisition		█	█	█	█					
Site Preparation						█	█			
Tower Installation							█	█	█	
Antenna Installation									█	
Building Installation							█	█	█	
Equipment Installation										█



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On your desk... the kitchen table... any large flat surface... arrange your event cards in some order-of-sequence.

After arranging your cards... step back and take a look. Examine each event-card. Your project should begin to take form. As you examine it, you will think of additional items that must be accomplished. Jot them down on their own card and insert the card in the proper position.

Examine the sequence of the cards. Ask yourself if the process seems logical in the natural course of events. If an obvious misplacement appears... rearrange the cards accordingly.

Continue rearranging... writing down new thoughts... and discarding redundant cards that cropped up.

By now, if your project is of any size at all, and, if you have honestly tried to make up a card for each detail, you will have a host of cards spread around over a pretty wide area. You certainly can't run your project with that mess. It's time to transfer your organizational system of event-cards into whatever form you feel will be sufficient and comfortable for you and your needs.

Perhaps, you will be satisfied to simply transfer your event-card-titles onto paper. In that case, you might have a check list of reminders of Things That Must Be Done — somewhat similar to our previous example in Figure 1.

You can stop right there, if you wish, for at least you have thought through the project and have a pretty good idea of what you must eventually do as time progresses.

From Check - List to Scheduling

Glance at Figure 2. This portion of your earlier check-list has added three columns: Target Date, Completion Date, and Time Span.

The Target Date is when we hope to actually begin work. The Completion Date is when we're finished. The Time Span is simply the time, in working-days or weeks between the two dates.

Perhaps you will wish to employ professional consultant services. Even if you have already decided to contract for a total-turnkey on your project, you still can make your life (and that of your turnkey-contractor) easier with good preliminary planning.

As you begin to fill in the target-dates, completion dates and nail-down time-span estimates, you will quickly see that, while some events can be done within the same time span (or in almost any order), other events can't be started until specific earlier events are completed. Obviously, you can't lash cable until the strand is pulled-in, etc.

Therefore, as you fill in your target dates, you will naturally be certain that before you try to start any part of your project, you have allowed for the completion of all the required preliminary steps.

The result is a logical plan for sequential events. In other words... good preliminary planning... minimization of errors... avoidance of oversights... conservation of time, manpower, and material



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costs leading to a more economical construction through better efficiency and organization.

Keep the Computer Flexible

Figure 3 shows another simple method of organizing a project. Here we have listed the events or projects and sub-projects in a sequential manner down the left side of the board . . . and then divided the remaining space into time-periods of weeks. Each column standing for one week (it might just as easily be days or months depending upon your project).

Beginning with the date of the earliest event we can date the columns. Then, show the beginning and completion period for each event in a manner similar to that in the example.

This layout permits you to *visually* examine your project and all of its integrated events in a form enabling you to keep track of your progress (or lack of it) and detect at a glance when delays in one area can cause you later problems.

Remember, we suggested you make your entries with pencil and keep that eraser handy. As your project unfolds you will find that delays do occur. Material can't be delivered as promised. Manpower wasn't available as anticipated. Utility-pole clearance is delayed by that unexpected spring blizzard.

Whatever the delaying factor, you must adjust your dates and time-span estimates. Again examine your system-layout to determine what these delays will do to other events and their schedule and adjust them accordingly.

Used in this manner your chart becomes a working tool of continuous planning and re-organization.

Fringe Benefits

Keep your working system (whatever form it finally takes) posted and up-to-date for staff members or other personnel to examine. If these personnel have a hand in building the program for the project and are aware of its progress or difficulties, they can contribute to overcoming problems or be stimulated to make deadlines and keep on schedule.

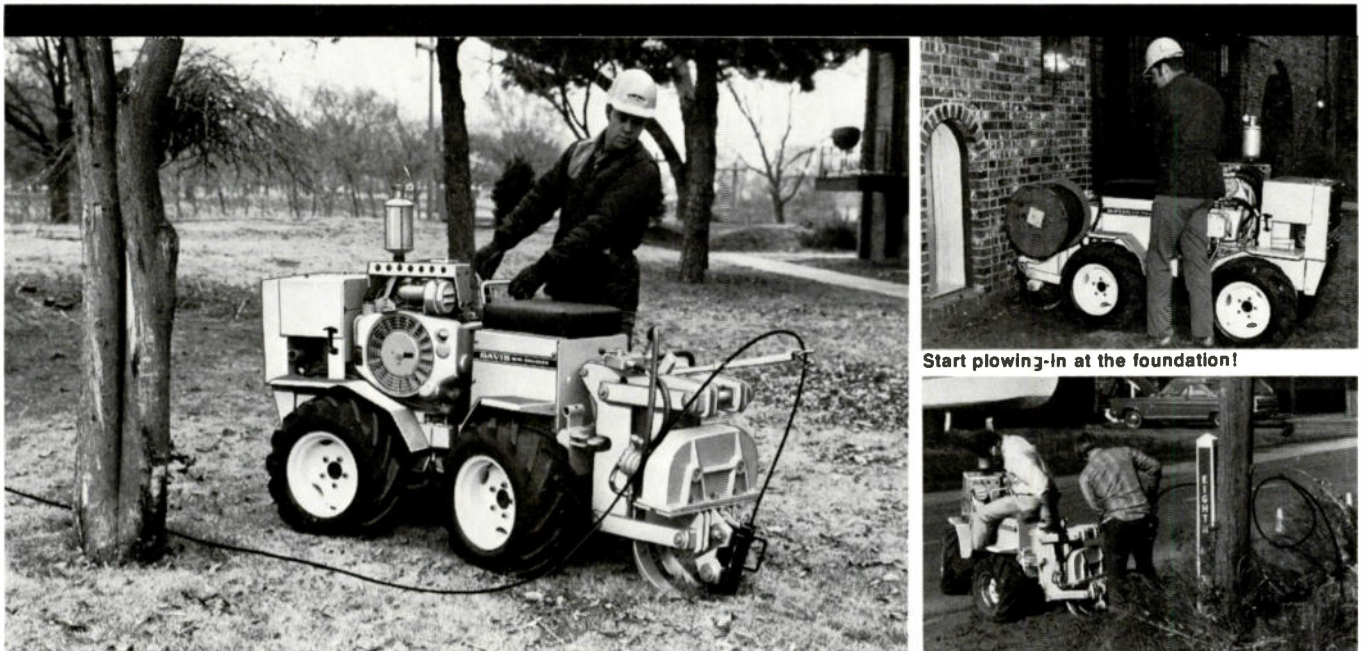
If you make your program attractive enough, it's a fine visual-display item to take along to civic-club meetings and council-chambers to show how things are proceeding.

Use it as a diary by noting the actual dates that events are completed. It even becomes a good source for future reference.

As the major markets are opened for CATV development, the complexities of system construction will be compounded. While these major-market projects may not be organized quite as simply as our samples, you can bet they will require similar planning procedures.

If you have ambitions to be involved in the top 100 somehow . . . or are anticipating that 5-mile extension . . . why not pick up a pack of 3 x 5 index cards, a pencil, an eraser, and start building your CATV computer.

Come clean in Davis Country with the Mini-Sneaker!



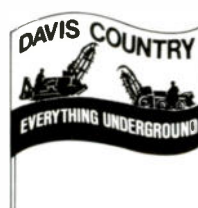
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This compact lawn plow accepts no compromises!

Here's the compact lawn plow that has made everything else in its class obsolete! Designed specifically for planting housedrops, including CATV cable and even lawn sprinkler systems, it direct-buries lines, cable and flexible tubing at speeds to 200 fpm at depths to 18" maintaining a constant depth because of hydraulic down-pressure. This 25 hp power-packed package has four-wheel Hydra-Static drive, limited-slip differentials and hydraulic articulation for swivel-hipped maneuverability around house corners, trees and other obstacles. Equal torque to all four wheels prevents wheel slippage on fine turf while the plow's pivot mast lets the blade perfectly trail the machine. The exclusive Mono-Stick puts complete control of the machine in one hand while oscillating knife action with patented skid shoes and vibration isolated from the drop chute prevent damage to manicured lawns and delicate lines. In transport, you have nearly 12" of ground clearance, even with the 18" blade attached. Now you can go clean through the underground without accepting any compromises. The Mini-Sneaker stands alone. Compare to see if you don't agree!

Underground systems for the 70's!

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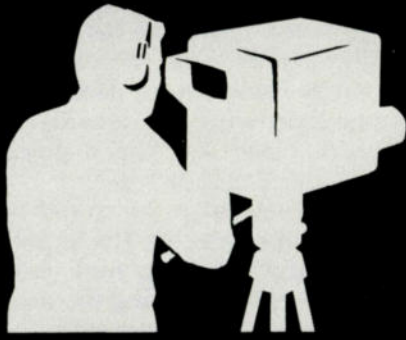


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STUDIO

Technology

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

Local News Coverage: Realism with Newsfilm

Using film or videotape for local news coverage allows the viewer to participate . . . to be at the scene of the news. Knowing how to produce newsfilm professionally adds to success.

*By Sam Kuczun, Ph.D.
School of Journalism
University of Colorado*

Film is the most efficient tool for letting the viewer see, as well as hear, the news. A news story may be only something that occurred to someone; but on film, there is an experience to be shared with the viewer. The facts are represented by the pictures of the events, places and people.

The major advantages of film over videotape are its ability to go to the scene and condense action. A motion picture camera can weigh but a few pounds and go anywhere that a person can go. There is no need to worry about external power sources (since they are battery or spring operated), nor is there necessity for set-up

time. The camera that is loaded with film can record images almost everywhere in color or black & white without special lighting.

In this discussion, we'll talk about silent film first. That is, the film is projected with an announcer (or the newsman) doing "voice-over" the film, without lip-synchronized sound. Most local news programs are produced with silent film this way. Occasionally, there is sound provided by magnetic audio tape — one of the participants explaining what is on the film; or natural background sounds.

On the other hand, an advantage to a videotape unit is its

lip-synchronized sound capability. However, that capability frustrates editing of videotape without sophisticated equipment.

There are other disadvantages with newsfilm to the system operator just beginning news origination: the film has to be processed and then edited. The systems located within a short auto drive of a large city with a film processing lab could get along with having their film done by the lab.

The costs of a film processor vary from a thousand dollars up to tens of thousands depending upon whether Super-8mm or 16mm is the film gauge used, and whether

the film shooting will be in black & white or color. A good case can be made for Super-8mm equipment with the improved cameras and film now available. A good summary of the state of the art up to last summer appeared in the September *TV Communications* ("The Case of Super 8: Can It Find a Place in Cable?").

Eastman Kodak since has announced a new high speed Super-8mm Ektachrome film which gives Super-8 cameras almost all the versatility of professional 16mm

The advantages are often seen in spot news coverage where the cameraman must shoot what is available when it is available. In such circumstances, there is no time for set-up of a videotape unit and location of the nearest power source.

For example, a warehouse fire is reported out of control. By the time the cameraman arrives, the fire is almost knocked down. He must shoot fast to get the flames at their height. He takes various "scenes" at different distances. As

filmed. With a simple lens, this means the cameraman would have to stand quite far back from the warehouse fire to include the entire building in flames. For a medium shot, he would have to walk closer to film a portion of the burning structure).

In a close-up, he would have to be quite close to the building to give the viewer a shot, say, of a small sign indicating the name and address of the occupants.

However, professional 16mm cameras have three lenses which do the work of the cameraman's legs. He rotates the lenses on the camera depending upon whether he wants to film the scene as an LS, an MS, or a CU. On Super-8mm cameras, there is usually a zoom lens which can be rotated to act as the three lenses described.

He may still have to move closer or farther away for each scene, but with the proper lenses, not as often.

In reconstructing the processed film, the editor knows that he must put the scenes in some order. If the cameraman has taken these scenes, the editor might construct his film in the following manner:

- 1) 10 sec: LS warehouse burning and firemen, north side.
- 2) 6 sec: MS north side of burning building.
- 3) 4 sec: CU sign on building giving name of firm and address.
- 4) 6 sec: MS west side of building.
- 5) 4 sec: MS crowd gathered watching fire.
- 6) 4 sec: CU several faces in crowd.
- 7) 6 sec: LS warehouse burning and firemen, west side.
- 8) 4 sec: MS firemen with hoses and equipment.
- 9) 4 sec: CU firemen with hoses and equipment.

10) 12 sec: LS building with flames out and billowing smoke.

Although this was not the order of the exposed film, the editor cuts the processed film into the scenes and then splices them with a splicer and cement. The result is a one minute long newsfilm that makes sense to a viewer who did not personally witness the fire.

To air the film, a script will be written to be voiced-over the silent film explaining what went



Sterling Manhattan Cable TV cameraman Gerard Hurley zeroes-in with a 16mm film camera on a building being leveled.

color films. One service that tested the film called the quality "nothing short of remarkable — surprising exposure, fine grain, and pleasant color tones."

As with videotape, there is an industry problem with standardization. It might be better for system operators to standardize on their film capability before expensive film chains are purchased.

Film editing has advantages over videotape editing. As was stated in the September article, "Helical scan video tape editing is a rather clumsy process, unless you have some rather sophisticated and expensive equipment. Film editing, on the other hand, can be done very precisely with a minimum of equipment. "What's more, the cost difference for the same results can be ten to a hundred times more for tape."

the last flames are licked and smoke begins to dominate the scene, the cameraman can now take various scenes of human interest: the crowd that gathered, closeups of firemen sweating in the heat (or in freezing weather, the icicles hanging from fire equipment), a general scene of the fire apparatus, etc.

The cameraman was not able to arrange the scenes on his silent film as he shot. It will be necessary for someone (or himself), after the film is processed, to rearrange his scenes so that when the film is projected, it will appear to make sense to the viewer.

When shooting film, the cameraman normally has three shots he uses to record a scene. There is the long shot (LS), the medium shot (MS), and the close-up (CU). These shots are really the distance from the camera to the scene

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on in the film. The script should describe the story as closely to the picture as possible, but not in radio-fashion action. Note for example, the amount of description of a football game on radio and the same game on television. But the script should identify each person, and supplement the visual "facts." Any effort to give unrelated facts over the film is usually distracting to the viewer's understanding.

The technique of LS, MS, CU is used for all filming, although the shots may be varied as the film progresses. Normally, at the beginning is the necessity for what is

(XCU), or medium close-up (MCU). An experienced cameraman uses whatever shot is necessary to help the viewer see the action, always remembering that the viewer cannot see what is not filmed.

Good advice for TV is to keep long shots to a minimum and to have many close-ups. However, too many confuse the viewer because he tends to lose all orientation.

Whatever the subject, the cameraman must act as the eyes of the viewer and make judgments on the proper shot. A little watching of newfilm in local or network

able to move within the fire lines and employed his different lenses to magnify parts of the scene while spectators were kept back from the fire by authorities.

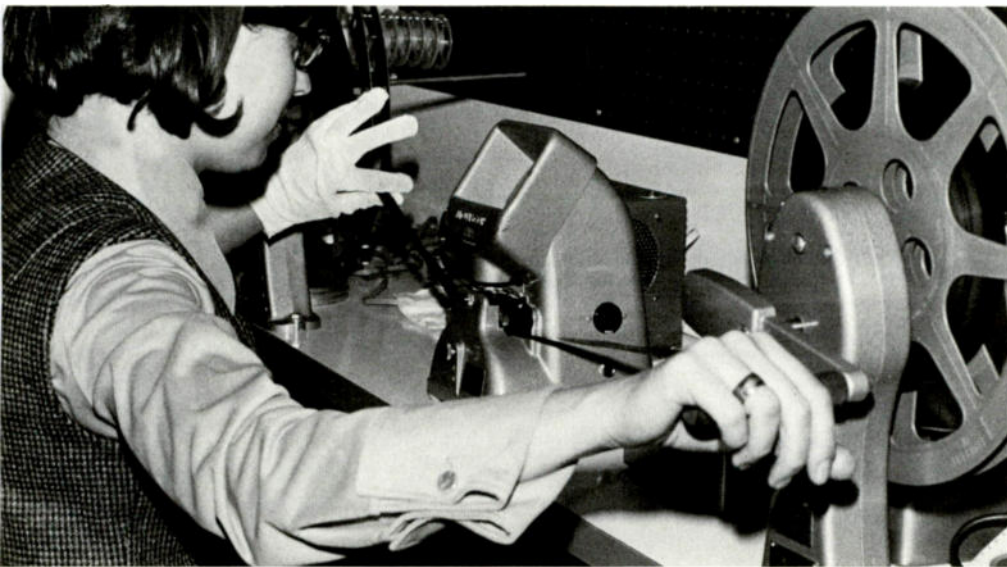
It should be pointed out that the normal portable videotape equipment being used by system operators is equipped with only one lens. To go into the three lenses, or a zoom lens, would raise the cost of the equipment tremendously. Zoom lenses are also extremely heavy.

What about sound film capability? It will be necessary eventually to supplement the silent film capability. One advantage of starting out with silent film cameras is that the cameraman learns to concentrate on the visualization at the beginning. Then with sound camera capability, he will still be thinking in visual terms but will recognize sound as the supplement that it is. Another advantage of starting with a silent camera is that it can be hand held, while sound cameras are heavy and require a tripod or shoulderpod.

The single system sound camera is preferred in news situations. That is, a camera that records both picture and sound on the film. The film is stripped with magnetic tape such as used for tape recorders. It does not suffer from being processed with the film in various chemicals.

One final piece of advice from Kodak: "If you're uncertain about film-making equipment, one excellent possibility is to try it out before you invest the money. There are many reliable firms renting all kinds of film equipment . . . You can rent the type camera you're considering, and see if it really fits your needs. A few days using a particular camera should help you decide whether it's the type you need."

Thus, the system operator can get his feet wet with film capability. He can rent equipment and have processing done by a nearby lab to help him decide whether to invest the sums required. He can go either into Super-8mm or 16mm, noting the cost advantages of Super-8, but also noting that the standard in television broadcasting is 16mm for news and commercials. RVC



Using a viewer makes editing film easier.

called an establishing shot which is often an LS (scene 1).

Its purpose is to establish in the viewer's mind where the action is taking place and what the action is about. It should prepare the audience for the type of news story to follow. Later in the film, there will be a need for a re-establishing shot (scene 7) so that the viewer does not forget what he is witnessing. Its purpose is to re-establish in his mind the whole picture, while the MS and CU shots focus on small portions of the action.

There are no absolute distances for a CU or MS or LS. It depends on the size of the scene and the lens used. The CU does serve to give us much detail about the thing filmed. There are variations of the three basic shots to include, for example, the extreme close-up

news programs will make the techniques more familiar to the would-be cameraman or editor.

There is also the concept of recording reality on film vs. interpreting the reality so that the viewer can share the experience of being at the scene. In the warehouse fire film, this is partially accomplished by shooting film of the crowd and its reaction (scenes 5&6), and of shooting MS and CU of the firemen (scenes 8&9). Also the cameraman attempted to shoot the fire from different sides of the building in order to give the viewer an interpretation of the severity of damage to the structure.

In fact, more actual information is conveyed to the film viewer than the spectator of the fire because the cameraman was

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Practical Studio Lighting: Illuminating the News

Cablecasting the local news is one of the most important functions of many cable systems . . . and proper lighting is essential. After all, the news is bad enough as it is.

*By James L. Moody
Lighting Designer*

The mainstay of cablecasting in the foreseeable future will be the news/commentary program. And local news which can be more exactly tailored to the taste of local residents is one important key to subscriber interest.

Small studio facilities will probably dictate that productions be limited to small sets. Since this type of program is produced on a regular basis, a semi-permanent lighting set-up is desirable.

If there is not enough lighting equipment to accomplish a permanent set-up, and you have tried several lighting methods and feel you have a set-up which best suits your needs, use white paint or tape to mark the location of each instrument used. Indicate the type of fixture and function, i.e., 6" Fresnel/Key or Vari-10/Back, on the marker. This will be especially useful if there are only a few lights which must be re-positioned quickly from program to program.

As was pointed out in the first part of this series, there is no truly right or wrong way to light anything. The trick is in getting the instruments arranged so that they

do the job desired. There are, however, guidelines for the beginner to follow.

Not enough can be said for just plain experience. Any time the studio is free and you have time, place fixtures and practice lighting on a plaster bust or real people (if you can get someone to sit still for you). Move the instruments on vertical and horizontal planes to visually see the effect that angle has on the subjects.

By way of example, let's examine three programs currently being produced at Theta Cable of California in their Los Angeles studio. The sets and basic techniques employed typify possibilities for cable set lighting. Although they have a full-time staff which handles set construction, design, props, cameras and lighting, they only have one man, Production Manager Dean Russo-Metevia, specifically trained in television. Most of the staff is composed of young persons schooled in theatre, so television lighting is something new to them.

Since all three programs use the same basic set with background

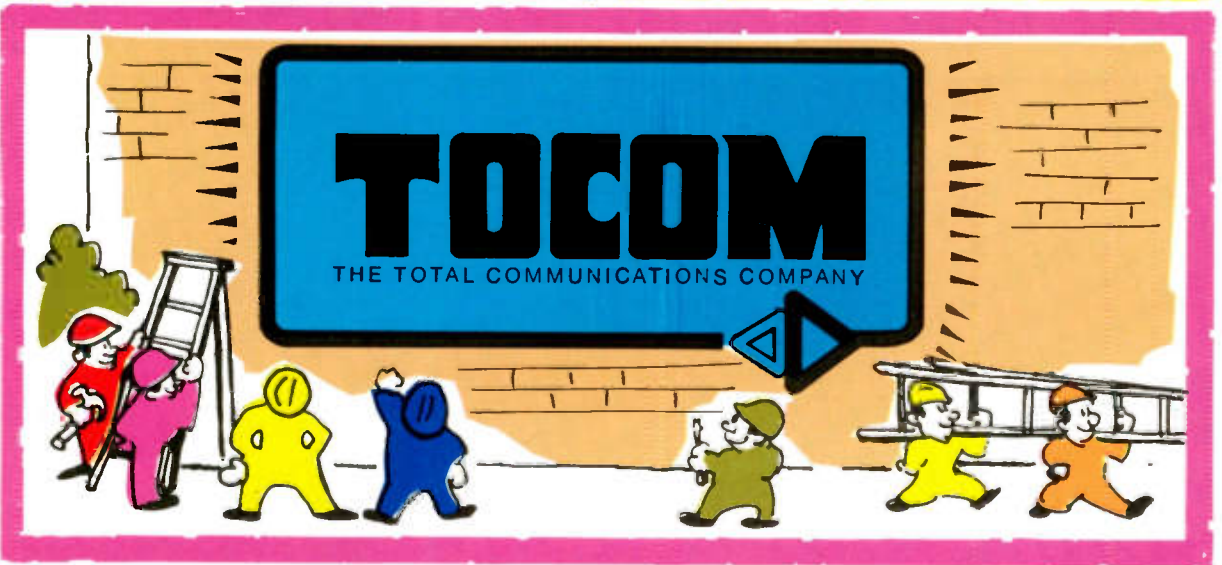
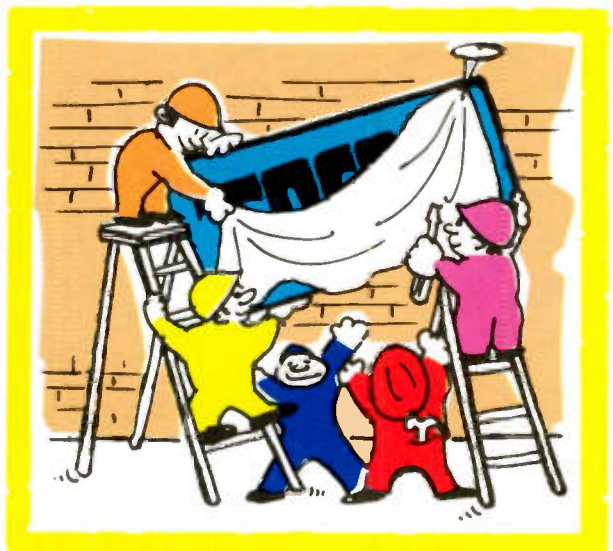
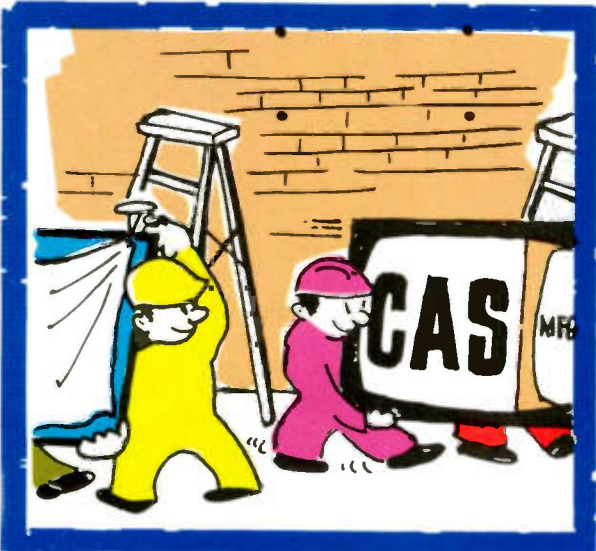
substitutions, they will be discussed simultaneously. The light plot and photographs will help to orient you to the changes between the programs. (See Figures 1, 2 and 3.)

Set Considerations

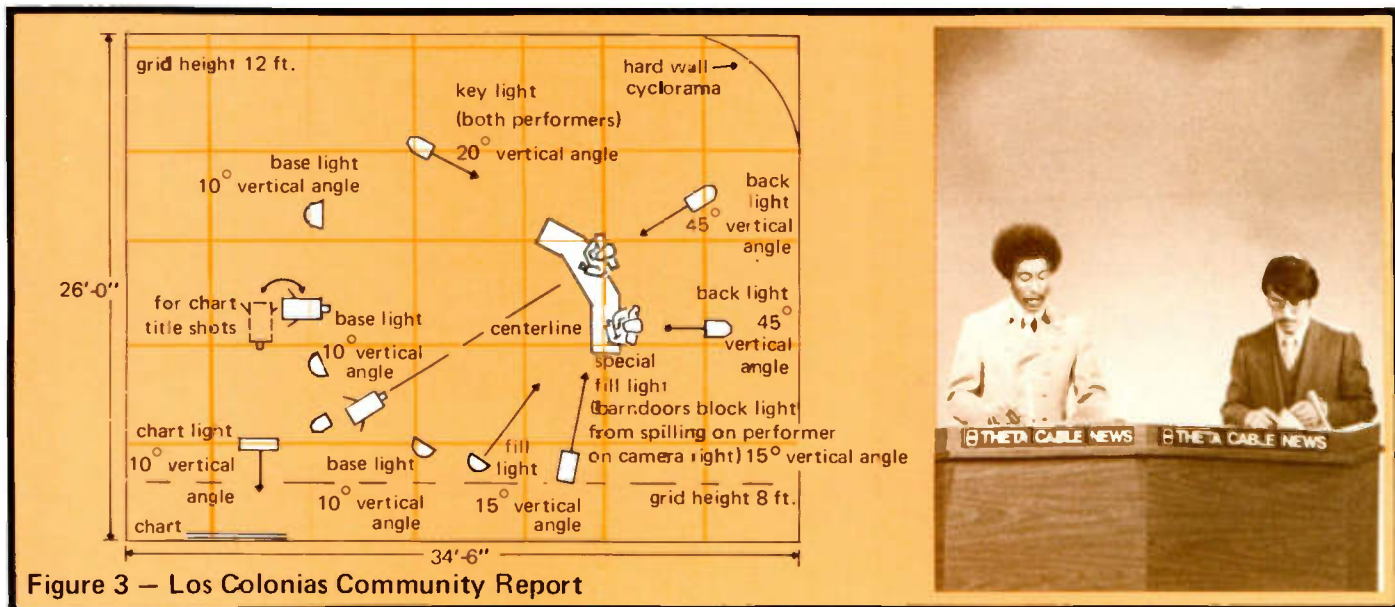
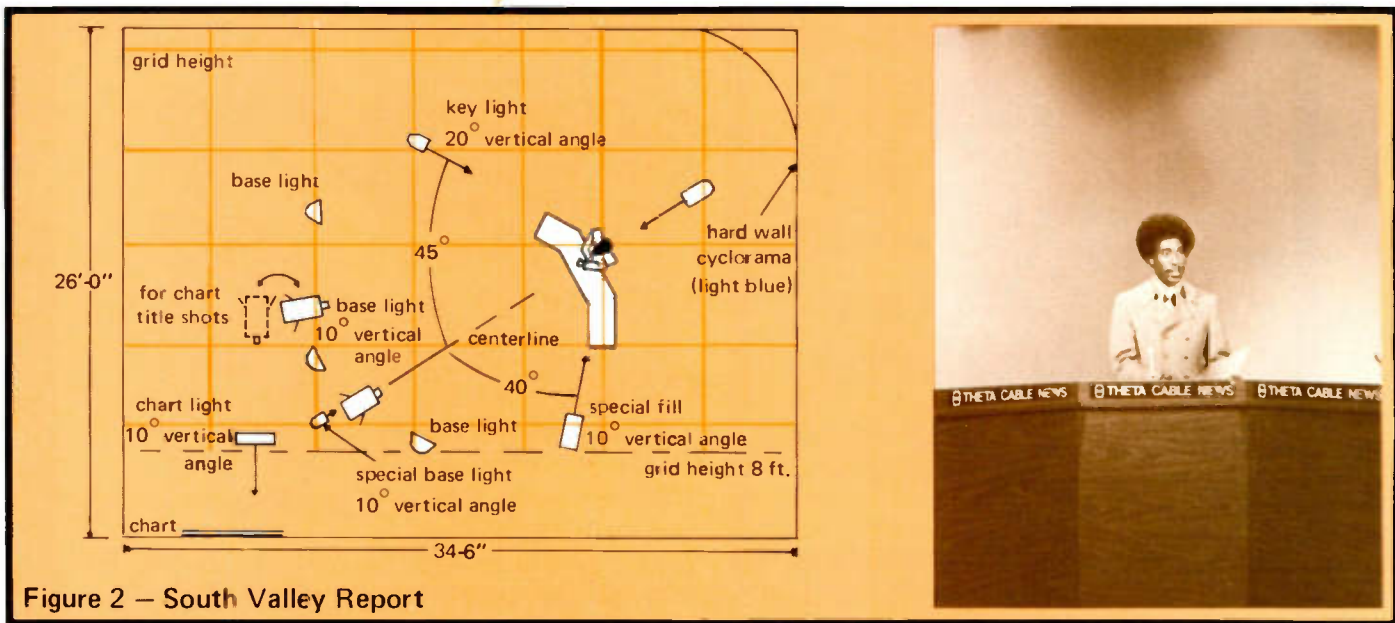
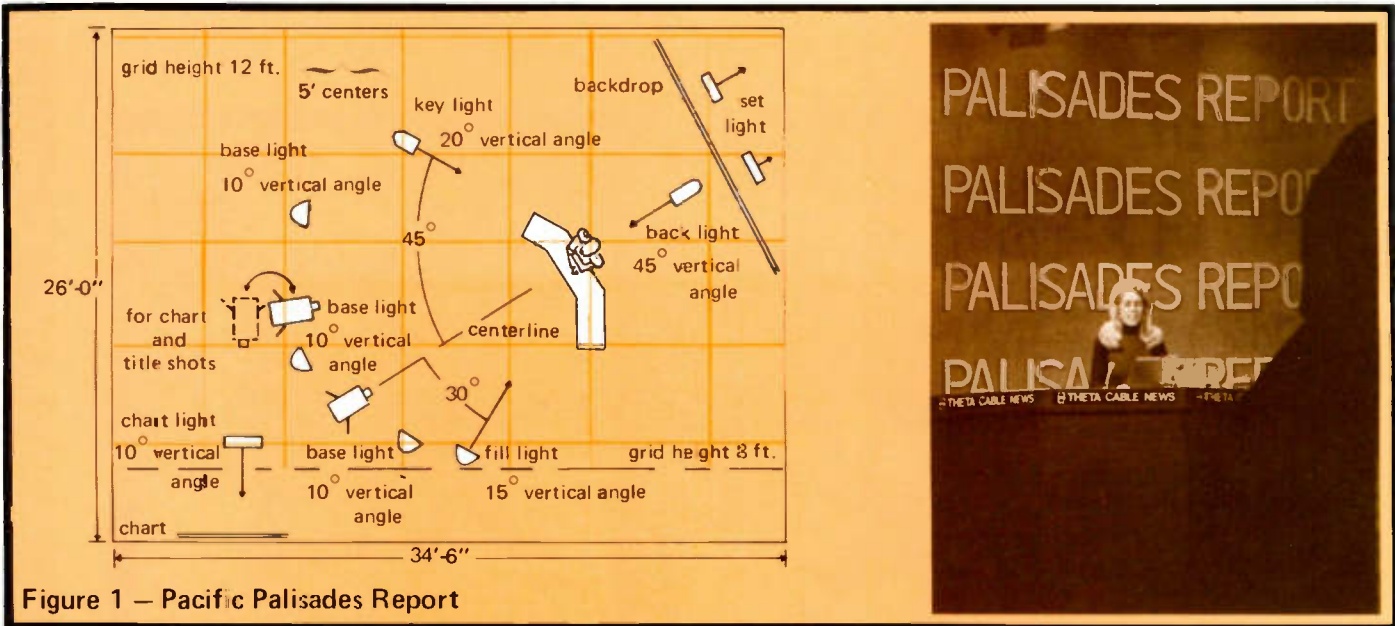
A word about sets in general: be very careful to check contrasts between colors on a black and white monitor before painting the set. This will save a lot of repainting when contrast values turn out unacceptable. Even if you are cablecasting in color, remember that some viewers still have black and white receivers.

If wall paneling is used, light may be reflected from its shiny surface. It, and other shiny objects, needs to be dulled. Dulling spray should be a stock item around the studio for microphones and stands and other objects which can reflect light.

Although the Theta Cable set shown uses a high desk which allows the performers to stand, the same lighting set-up could be



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used if the performers were seated.

Background

Whether drapery, plaster wall, flats, paneling, three-dimension pieces or signs are used as the background, they must be illuminated. Only when you wish the performer to appear in a void should the background appear dark. This is good theory, but in the small studio it would be difficult indeed to get enough separation between background and performer to achieve this black-out. Thus, the background is the one place the lighting designer can have a free hand.

For instance, he can use a plain wall upon which to project patterns or slides. The patterns or shapes can be created by using ellipsoidal reflector spotlights with pattern holders. These instruments give a sharp-edged light when metal patterns are inserted at the primary focal point. The standard patterns can be purchased from a lighting fixture manufacturer.

Slides can be used in a standard slide projector. There are more problems with slide projectors than ellipsoidal reflector spotlights so they should be tested before use on the set. Additional separation between performer and background is necessary if projections are used. The horizontal angle of both the key and fill lights must be wide enough to allow the shadows created by the fixtures to fall outside of the projected area. Secondly, the angle of the projector must be as flat as possible or distortion will occur in the images. Thirdly, and in many ways most importantly, the amount of illumination from other sources on the projection surface must be as low as possible or the image will appear washed out.

Background Color

Drapery is the most common background cover. Drapes can be changed quickly — and can give a homey feeling to the set. If a neutral cloth color is used, colored light can be projected onto it to

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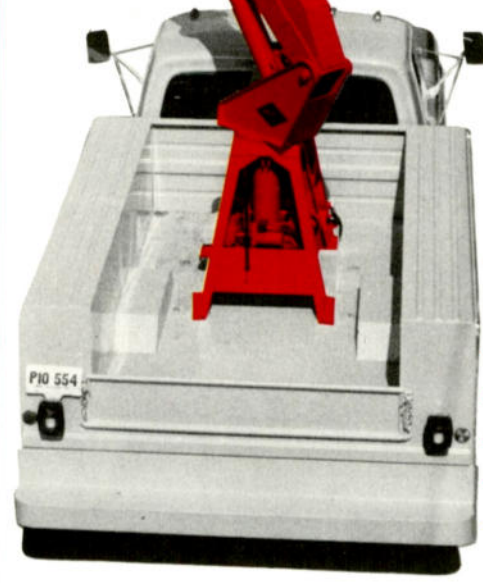






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change the color of the background without changing the drapery itself. This is a very useful technique. It can save time and money by eliminating the necessity for many different colored materials to be kept in stock.

The addition of color to the background can also be done on plaster walls and flats of a neutral color. The lighting equipment used is varied. There are, however, two which are designed for this purpose specifically. The cyclorama fixture is a high-intensity strip light with anywhere from two to twelve lamps wired in two or three circuits. These are placed three to four feet in front of the drapery or cyclorama. The multiple circuits allow for color changes without the physical change of the color medium. Scoops and broads can also be used to introduce color.

In all cases, the choice of color is very important. It is best to utilize the primary colors. Red and blue are the most often used colors, because other colors can be created by mixing these together. If you can afford the three-circuit design, then all three primary colors can be combined to achieve a rainbow of colors or, theoretically, white light. The major factor here is cost. Cyclorama fixtures are the most expensive single item in a lighting arrangement because of their bulky size. A continuous strip of lights must be used the full length of the background.

Photo four illustrates a use of rear-illuminated backgrounds which are very simple to create. Here a scrim-type material is stretched on a frame and the styro-foam letters are glued onto it. By placing lighting fixtures behind the background, the letters will appear in silhouette if no frontal light is present. A very interesting effect can be created this way by presenting the performers silhouetted under the opening credits at the beginning of the program.

Three-dimensional letters can be used without rear-illumination and will contribute to a feeling of added depth in the picture. Set pieces which are three-dimensional will also add to this depth.

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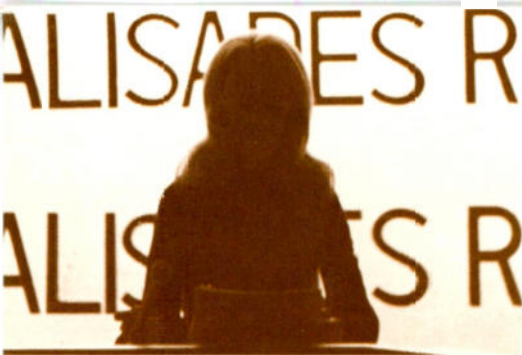
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The major factor to consider in lighting backgrounds is evenness of lighting. The intensity of the light at the top of the set should be the same as that at the middle and the bottom. If the light values are different, it will cause the unevenness to distract the viewer's interest from the performer. This is one of the disadvantages of the scoop or broad for background lighting. The set or cyclorama fixtures are best for this function.

If no special light is used on the background, several things result. First, the shadows from the key and fill lights will be seen and can be very distracting. The separate background light will assist in wiping these unwanted shadows out of the picture. Secondly, if the background is not in total darkness, the spill light from the other fixtures will give it a spotty appearance. Tied to this is a contrast value problem. In some cases base light will produce enough light on the background to eliminate the need for additional illumination. The set shown has 250 fc on the background.

Back Light

The basic rule of back lighting is that it be made more intense than the key lighting, sometimes by a ratio as large as two to one. However, style, texture and color of the performer's hair is the final determinant. When planning the backlight, it is best to be prepared for a 2:1 contrast ratio and then adjust to suit the performer.

The difference in the hair color and texture of the black performer

in photo five, gives an added dimension to the back light problem. Since the set is used by another performer who has blond hair (Photo six) and a man with brown hair (Photo seven), the intensity must be changed. Because of the light intensity required to adequately light the black performer, the Vari-10 fixture used for the other performers was not used. A more powerful fixture, a Super-10, was used. This fixture uses a 1000-watt lamp axially mounted. It produces as much light as most 2000-watt fresnels and can be an advantage when power is restrictive. Theta Cable uses the Vari-10 for all other back lights.

The loose, afro hairstyle of the black performer absorbs more light than the Mexican-American performer of the Las Colonias Community Report, who also has dark hair. To be adequate for variations such as these, the lighting must be flexible and able to be adjusted quickly to meet the individual needs.

Since back light is the most important light in a non-critical function, it becomes a second area for creative lighting in television. (By non-critical function, I mean that if the light were not used, a picture with only frontal light would still be possible. However, it would be a dull and flat picture at best.)

One of the most common errors is over-powering of the back light. This darkens the performer and reduces facial definition. The first instinct is to add more frontal light, but that is like shoveling more dirt into quicksand. If the engineer complains about the faces seeming dark, check the back light first. Often the problem can be corrected quickly by simply decreasing the intensity of this one fixture.

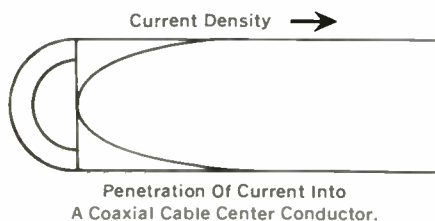
Key Light

The positioning of the key light affects the overall quality of lighting more than that of any other single fixture, especially with regard to the "dramatic" appearance of the picture. This effect is determined by both the vertical and

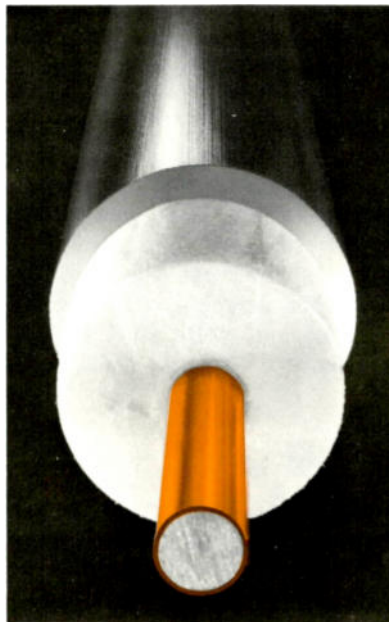
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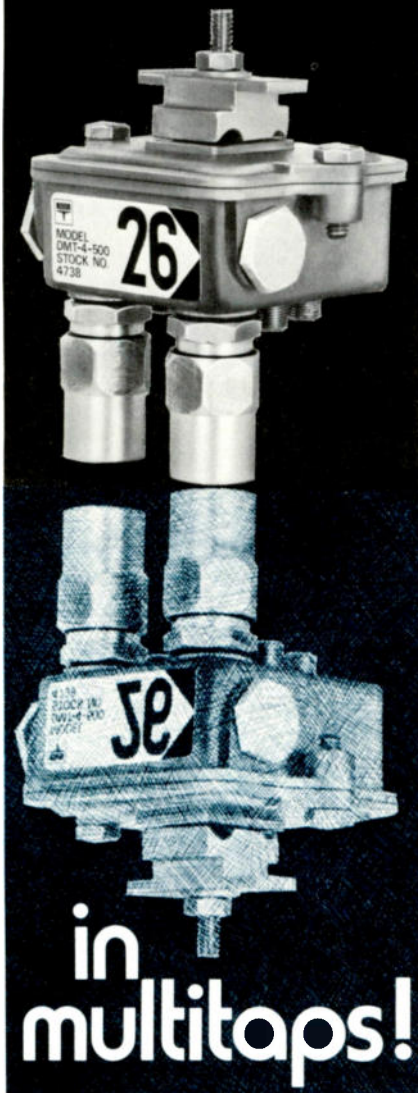


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horizontal angles of the fixture. The contrast between the key and fill light will be the secondary determining factor. The more contrast between the key and fill light, the more dramatic a picture will seem. The higher the angle of the key light, the more rugged the facial features will appear by the emphasizing of the facial lines and depressions of eyes and chin.

If lines of age need to be eliminated, simply lower the angle of the key light and decrease the horizontal angle of that light in relation to the camera.

The wider the angle on a horizontal plane the better chance the shadows from the key light will fall outside the picture frame. Dramatic quality decreases and flatness in the appearance of the performers increases as the light is moved closer to camera position. This is sometimes desirable and depends completely on what the producer wants.

In the examples shown, the angles are: 20° vertically and 45° horizontally. The key light is set at 800 fc. (Note: Refer to the first of this series of articles for the median angles for functions of light.)

One additional factor should be noted as to the manner in which the key light has been used on this set. Only one fixture, a 2000-watt 10" fresnel, has been used for both performers (Photo eight). Normally, it is desirable to have separate fixtures for each performer's position. This enables the control of each position separately. But because the studio has 2000-watt fresnels, which have a very flat and wide spot position, one fixture covers both areas.

Fill Light

The function of fill light is to fill in the shadows created by the hard edge of the key lights. Sometimes these shadows are desirable, but not generally in news programs. The position and intensity of the fill light is gauged by the key light. If, for instance, 800 fc were used in the key light, then 400 fc to 600 fc would be desirable for the fill light. The exact contrast must be adjusted with the

camera and monitor. In the examples shown, the fill light is 640 fc. The angles are 15° vertically and 30° horizontally.

Base Light

The need for base illumination depends on the camera used. In this case, the need for an unusually high illumination level was determined by the engineering department after extensive discussions with the camera's manufacturer.

There are two ways to approach the question:

If the need for higher illumination levels for key and fill light are known before lighting is set, the base light can be positioned first. The best placement is a low angle, 10-15° vertically and as flat as possible on the horizontal plane. The number of instruments required simply depends on the amount of light required. In these examples, 470 fc was required.

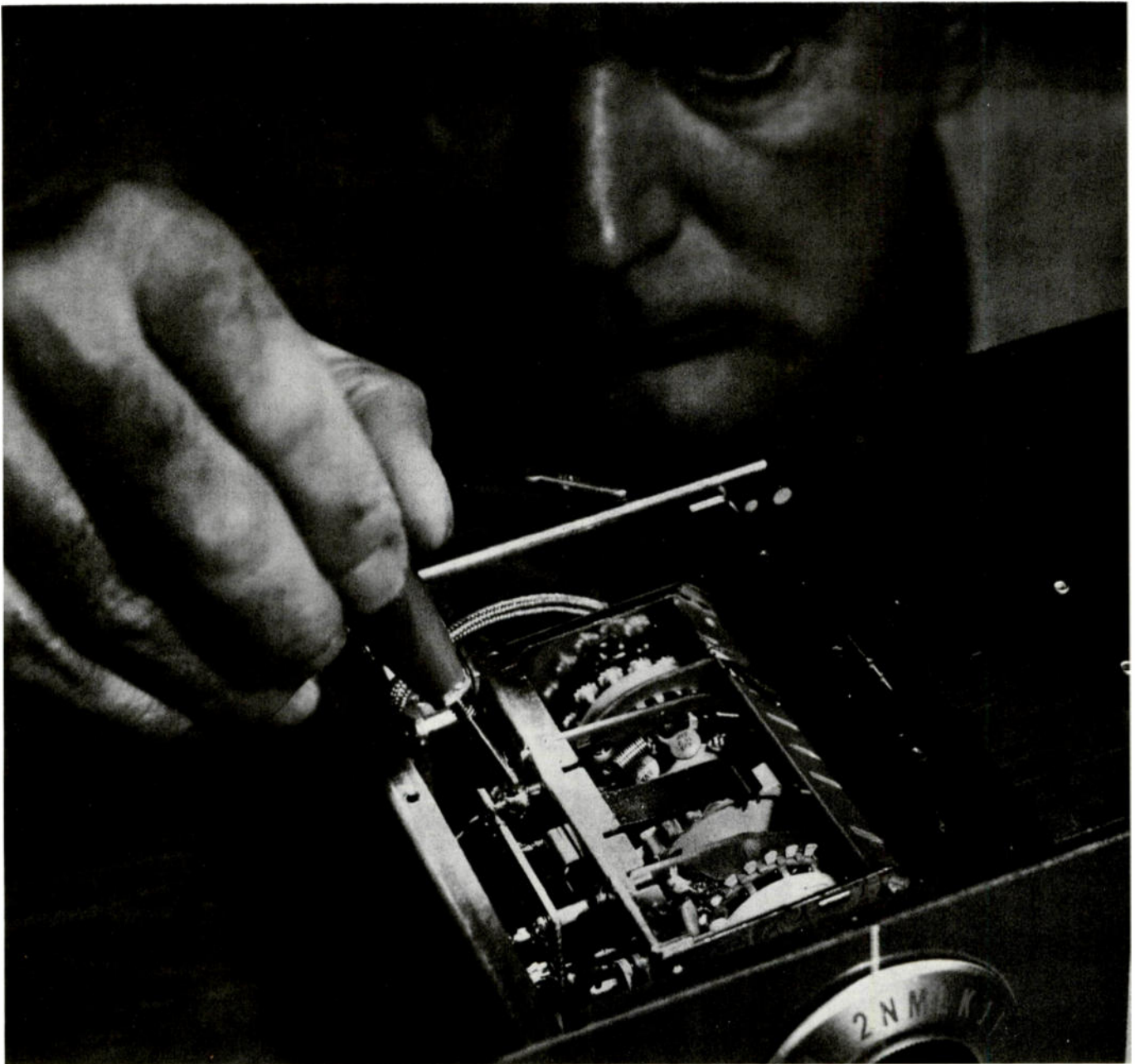
If the key and fill light, as well as back and set lights, had already been positioned — and then a higher overall illumination level were needed for better signal-to-noise ratio, the base light can be added without changing the position or intensity of the key or fill lights.

Remember, light is additive, so the contrast or intensity between the key and fill lights will remain constant, assuming the base lights are positioned in such a way that they cover all surfaces illuminated by the key and fill fixtures equally.

It will not be as simple for the back light. Since the intensity is based on the highest frontal illumination (normally the key light) the intensity will have to be raised to maintain the desired control and balance. The effect of the base light on the background light is difficult to determine until the actual situation is seen.

The only answer is to increase intensity of these fixtures — or increase the angle of the base light. The latter is undesirable.

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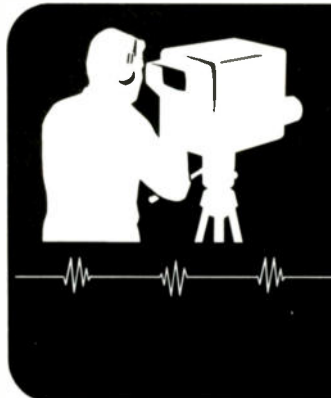


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The fast transfer from source to source is made possible because the mirrors are motor driven in a straight vertical plane through a captive aperture/cam coupling (model 5400 only). According to the manufacturer, the transfer time is in the order of 50 milliseconds. Because the mirrors are moved vertically, the manufacturer claims there is no undesirable image displacement or de-focusing during the shift.

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Standard interlocking pedestals allow the accommodation of a wide variety of projectors and cameras without prohibiting the use of free-standing equipment. Special adapter mounts permit precise optical-path alignment.

The unit occupies a space 51 $\frac{3}{4}$ " high, 13" wide and 36 $\frac{1}{4}$ " long. Deck plate height is 38 $\frac{1}{4}$ ", with an optical height of 48". The unit weighs 90 pounds and has a

baked-on blue and gray enamel finish.

The multiplexer operates on 117 volts AC with an average power consumption of 20 watts (250 watt peak). Six grounded outlets are provided for cameras and projectors. Overload protection is provided by a 20-amp resettable circuit breaker.

An internal DC power supply provides 24-volt DC for local and/or remote control. Lighted, momentary push-buttons enable control from either local or remote locations.

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CL-26 and CL-713 (channels 2-6 and 7-13):

Front-to-back ratio 25 db minimum.

VSWR maximum 1.4, average 1.2

Gain over isotropic source:

CL-26	10 + db	Dipole:	8 + db
--------------	----------------	----------------	---------------

CL-713	11 + db	9 + db
---------------	----------------	---------------

Gain throughout any channel is within 1/2 db, and throughout the spectrum within 1 db.

FM Log Periodic Antenna

Model CLFM (88-108 MHz)

Front-to-back ratio 25 db minimum.

Frequency range: 88-108 MHz.

VSWR: Maximum 1.4:1

Gain over isotropic source: 9.14 db. Dipole 7.0 db.

Gain throughout FM band (88-108 MHz) is within ± 1/2 db.

Color Log UHF Antennas:

CL-1483 (channels 14-83)

Front-to-back ratio: 35 db minimum

VSWR: Maximum 1.3, average 1.2

Gain over isotropic source 10 + db. Dipole 8 + db.

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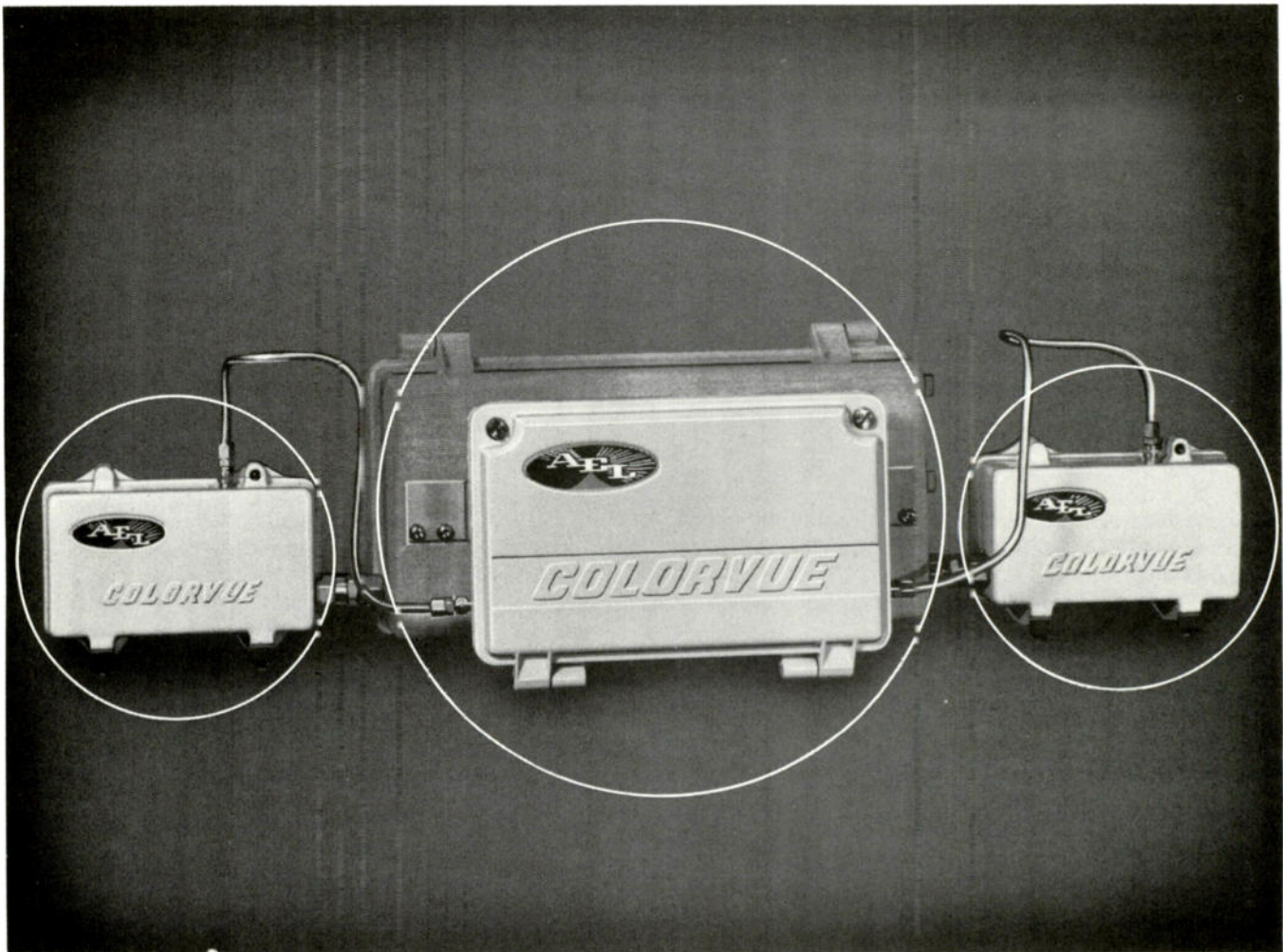
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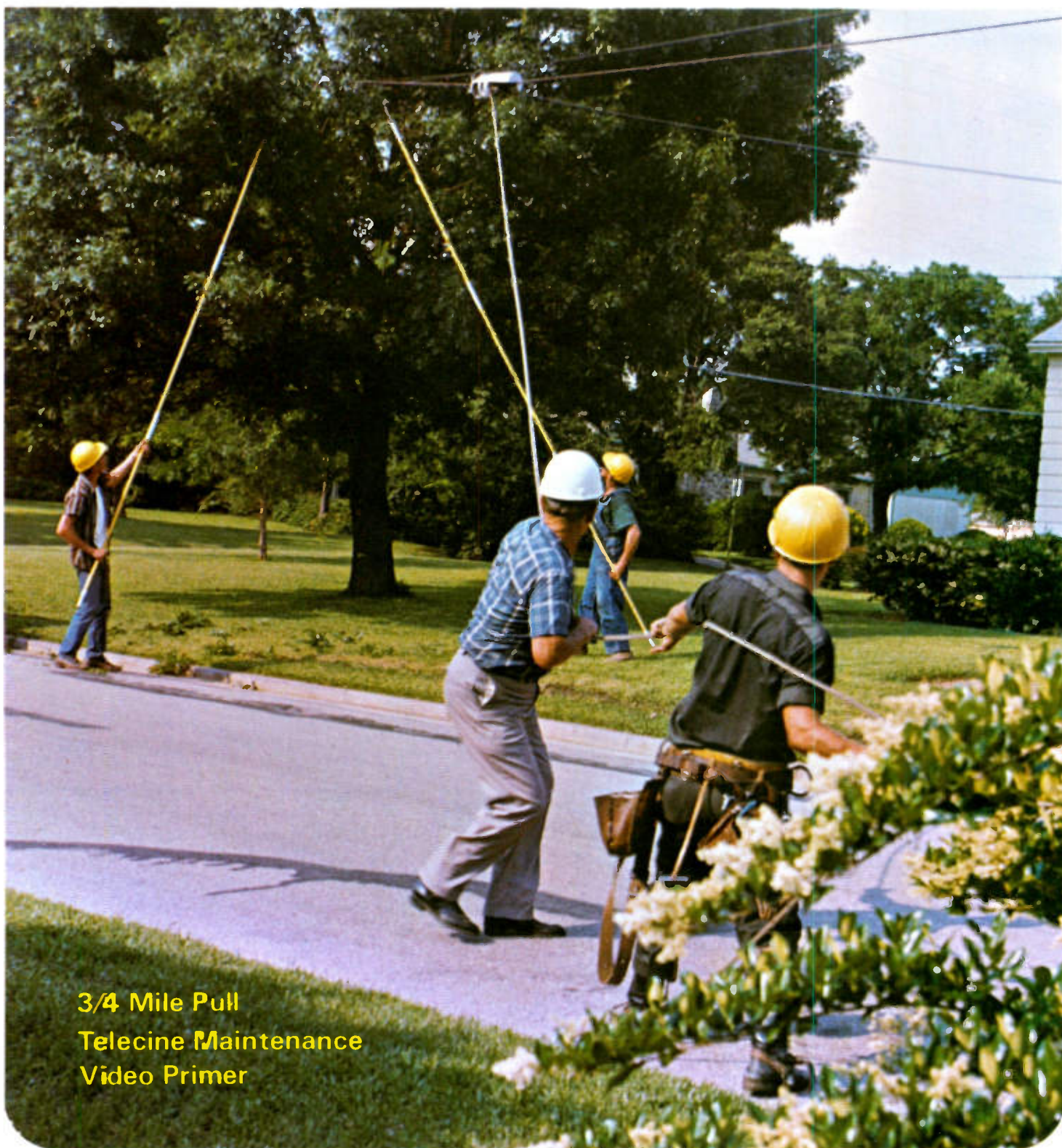
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Keeping the Film-Chain Free of Weak Links

Telecine system maintenance is vital to the smooth operation of most cablecasting operations. The film island is one of the most used pieces of equipment in the cablecaster's studio—and must be reliable.

*By Robert A. Bass, Training Supervisor
Philips Broadcast Equipment Corp.*

In the typical television station, be it broadcast or cable, the most often used piece of camera equipment is the film island. The film island — whatever its approach — enables films and slides to be shown on television.

The most simple and direct application is the Uniplex system (Figure 1). A single light source (film or slide) is directly projected into the camera. The lens on the camera is deleted, and an image is formed directly onto the face of the pick-up tube. The lens in the projector is chosen so that the proper size image (1/2" by 3/8" for a 1" tube) is formed by the projector six- to 10-inches in front of the camera.

It is possible to uniplex with a color camera. However, it is economically more advantageous to multiplex a color camera system. Multiplexing is two or more light sources projected through a suitable optical system into one camera.

For monochrome and Plumbicon color cameras, the simplest type of multiplexer, utilizing a

prism, may be used (Figure 2). In this application, a 50/50 prism is placed between the light sources and the camera. Dowsers, or opaque flags, are used to block the light from all but the source in use. Generally an auxiliary lens, called a field lens, is used to form an image at some point in space, and all the system lenses are focused on this point.

For Vidicon-type color cameras, the light losses in a prism are too high. Therefore, front surface mirrors are used to select the light source being sent into the camera (Figure 3).

In general, most multiplexers are of the three-in/one-out type, and most often consist of two 16 mm telecine projectors and one 35 mm slide projector. For special applications, four-in/two-out, three-in/two-out, and other configurations are available.

As previously indicated, 16 mm is the most widely used film source. However, it is possible to utilize Super 8 mm film with the special telecine projectors being made available today. (Note the

system shown in Figure 4.) The limit to the size of film is mostly one of resolution, since resolution falls off rapidly as the size of the film is reduced. Special projectors must be used so that shutter bars are not visible. The normal 16 mm projector shutter is designed to show each frame twice during each pull-down period. Since this period is 24 frames per second, the actual projection rate is 48 frames per second. Television in the U.S. operates at approximately 60 frames a second, therefore the shutter operation is modified to convert 48 to 60.

There are 35 mm telecine projectors available, but the cost of film versus the increase in resolution hardly warrants its widespread use.

For 35 mm slide work, the normal format is that supplied by the standard 35 mm still camera, less some border area. This slight reduction is to allow for the lack of precision normally found in 35 mm slide holders. Any type of 35 mm slide projector will work; however, there are certain para-

meters that should be met for a professional television system. Among these are the following: remote operation capability; high lens quality; rigid mount and flat light source.

Uniplex Installation

As with all telecines, it is most important that the optical axis of the projector lie exactly in line with the optical axis of the camera. To accomplish this in the easiest manner with a uniplexed system: open the iris on the pro-

jector to its maximum aperture, and use either a variac on the lamp of the projector, or neutral density filters in front of the projector lens, until the camera can easily handle the light.

With a piece of black and white film in the gate (such as SMPTE registration film, type 16 RT-RP20 for 16 mm) project an image onto the face of the pick-up tube and focus by direct view. Over scan the tube (show corners) and adjust the camera to projector until the corners of the chart just touch the corners of the target ring. Observe that the focus field

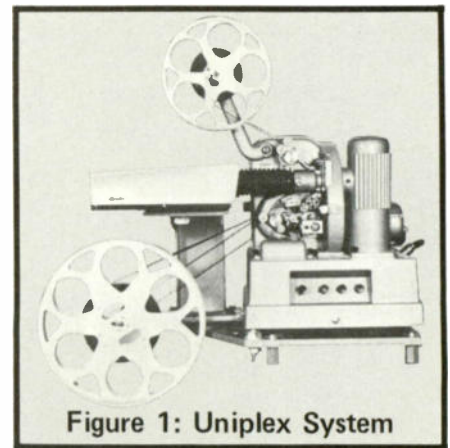


Figure 1: Uniplex System

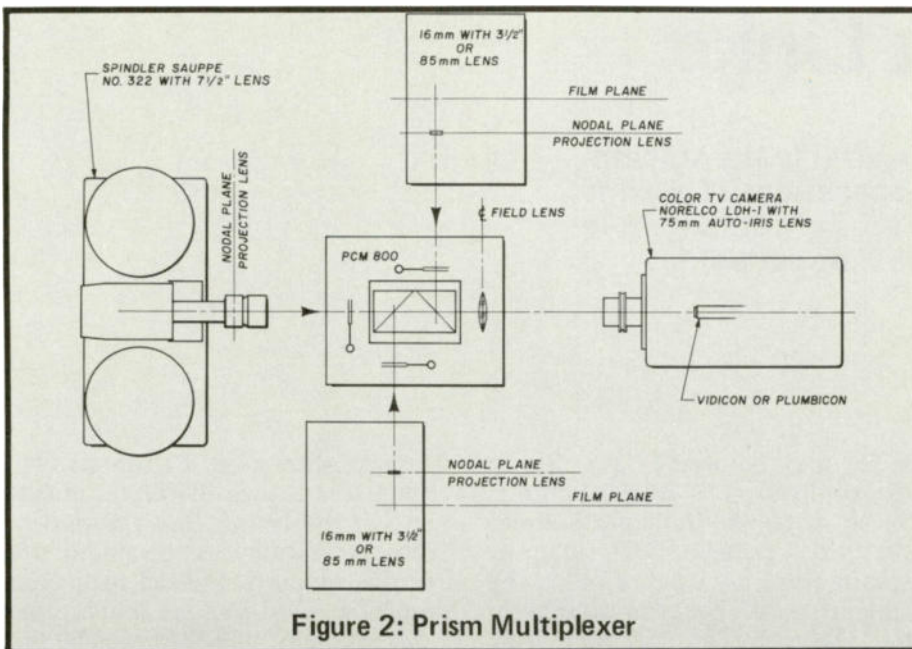


Figure 2: Prism Multiplexer

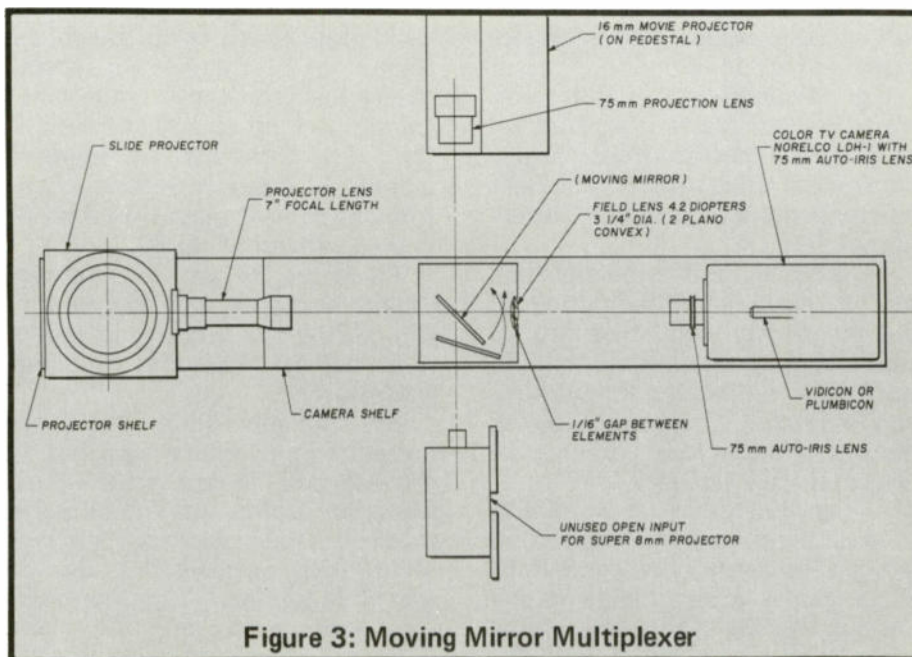


Figure 3: Moving Mirror Multiplexer

is flat, i.e., as the focus adjust on the projector lens is rotated through focus, the total image should come into focus, at the camera output, at the same time.

If the axes are not correct, a different focus point will be evident for different parts of the image. Adjust the camera to projector position until the focus field is flat. Then, close the iris on the projector down, and adjust the light so that the image is still visible with the iris closed. There should be no image cropping (i.e., corner cutting) and the picture should remain flat, as observed on a waveform monitor (such as the Tektronix 529) at both the vertical and horizontal rates.

If these criteria are not met, first check to see that the light output from the projector is flat. Remove the film from the gate, and focus the open gate on a piece of plain white bond paper. Any shading will be visible on the back side of the paper. Many good projectors have lamp position adjustments to eliminate this type of shading. If not, try other lamps, until minimum shading is obtained.

If the light source is flat, make slight adjustments of the camera until the picture, as observed on the camera output, is as evenly shaded as possible: Re-open the iris; check that focus has not shifted. It should be possible, by careful "nit-picking," to achieve both flat focus field and minimum shading. Be sure to put a light shield over the light path to prevent light streaking in the picture. The iris on the projector should be left at f5.6. A larger opening will result in critical focusing, while a

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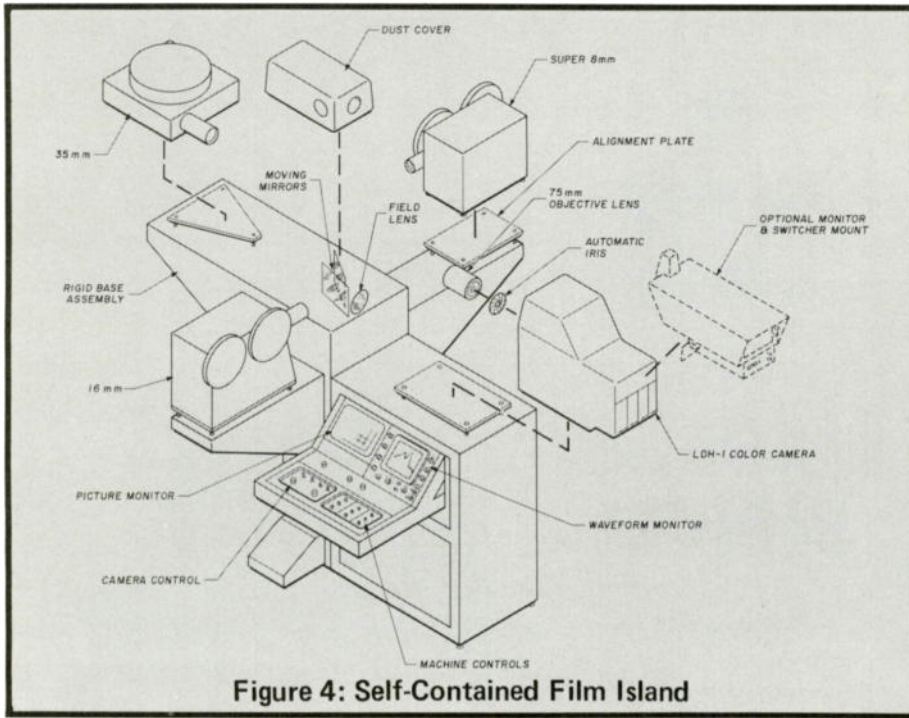


Figure 4: Self-Contained Film Island

smaller opening will result in such a large depth of focus that any dirt in the optics will become objectionable, and the filaments in the projection bulb will become visible, causing vertical bands in

the picture.

It will also be necessary to reverse the sweeps in the camera, since the absence of a lens on the camera means the image on the pick-up tube is not inverted.

Multiplex Installation

To install a multiplexed system, first determine the approximate positions for each component. Place a pre-focus screen on the field lens, and adjust each source for the proper size image, in focus at the pre-focus screen. Make sure each component is level, both front to back and side to side. The center of the gates should be at the same height exactly as the center of the field lens, and the center of the camera lens should be at this same exact height — 48”.

Select one of the 16 mm projectors and shut the other sources off, for now. Remove the pre-focus screen, and place a piece of white bond paper between the field lens and the camera. Move the paper slowly along the light path until the sharpest spot of light is noticed. This point is the exit pupil of the optical system, and the iris of the camera lens should be at this point. Before the exit pupil, the spot of light will

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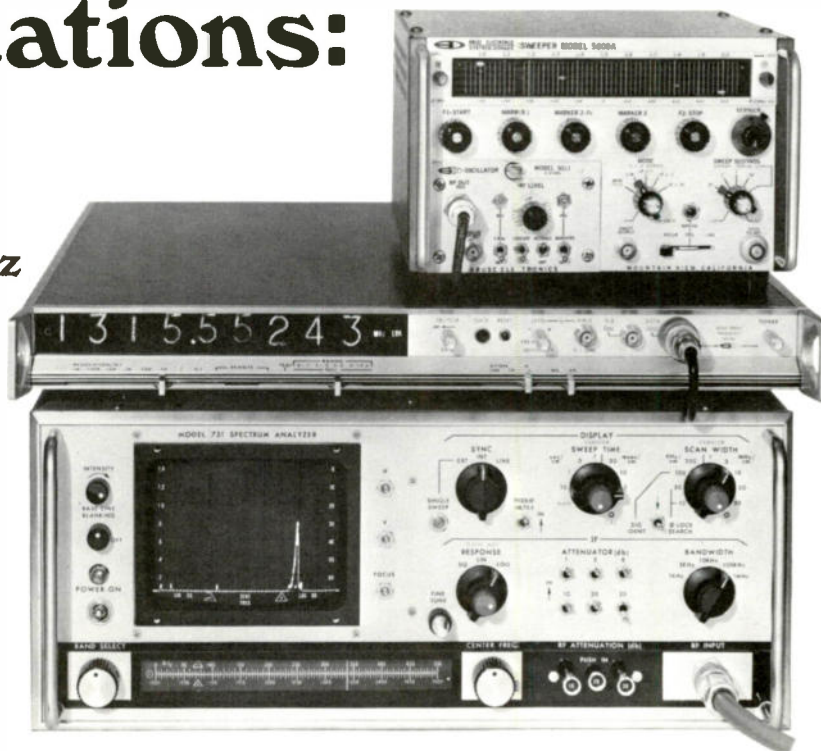
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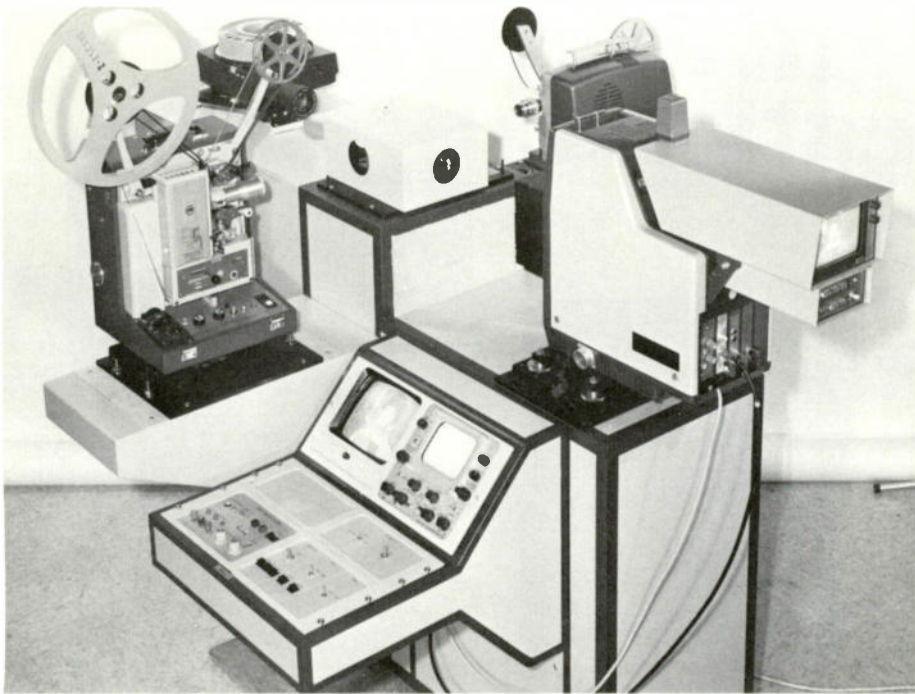


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A professional color telecine origination system for the cable industry. Key component of this configuration is the 3-Plumbicon camera. System includes a 16 mm motion picture projector, Super-8 projector, and 35 mm slide projector.

have a red edge around it, while after the exit pupil the edge will appear blue.

Once this point is established, move the camera into position so that the spot of light can be seen on the iris leaves. The spot should be centered as closely as possible on the iris. With the camera over-scanned, the edges of the image should be just touching the edges of the target ring and no shading should be evident upon closing the

iris ring on the camera lens.

Should the image size be wrong, and, if the size is off just slightly, move the camera until the size is correct. If the size is off by a relatively large amount, the problem lies with the optical system. Recheck carefully to be sure all lenses, including the field lens, are correct for the system parameters in use. Typical of a three-in/one-out system would be: 85 mm lenses on both 16 mm projectors,

and 75 mm on the camera, a 7 1/2" lens on the 35 mm slide projector, and a four diopter field lens.

These parameters are for a camera utilizing 1" pick-up tubes. The image size at the field lens for this format will be 1.8" x 2.4".

The following formulas should be useful in determining the actual power, in diopters, of the field lens. (The other lenses in the system will be marked as to their focal length [f].)

Power, in diopters =

$$39.4 \times \frac{1}{f} \text{ when } f \text{ is in inches}$$

$$1000 \times \frac{1}{f} \text{ when } f \text{ is in millimeters}$$

To determine f, focus a bright light, at least 15-feet away, onto a flat surface with the field lens. Measure the distance from the center of the lens to the surface. This is the focal length [f].

If shading or cropping exists, there is not an exact 90° angle between the projector and camera. Since the optical axis of the projector is not necessarily parallel with the projector sides, a certain degree of "empirical" adjustments will need to be done ("side of the foot" approach) until the correct angles are achieved. It is possible to get very close to the correct position if the following procedures are followed:

- 1) Roughly align as above.
- 2) Close down the iris on the light source.
- 3) Place a small hole in the exact center of the pre-focus screen.
- 4) Adjust the projector carefully until the image is exactly centered on the pre-focus screen.
- 5) With a piece of white paper over the front of the camera lens, adjust the projector until the spot of light is exactly centered on the front of the lens.
- 6) Remove the paper and close the iris on the camera all the way down. The spot of light should be exactly centered on the iris. If not, change the camera angle with respect to the multiplexer until both 5 and 6 occur simultaneously.

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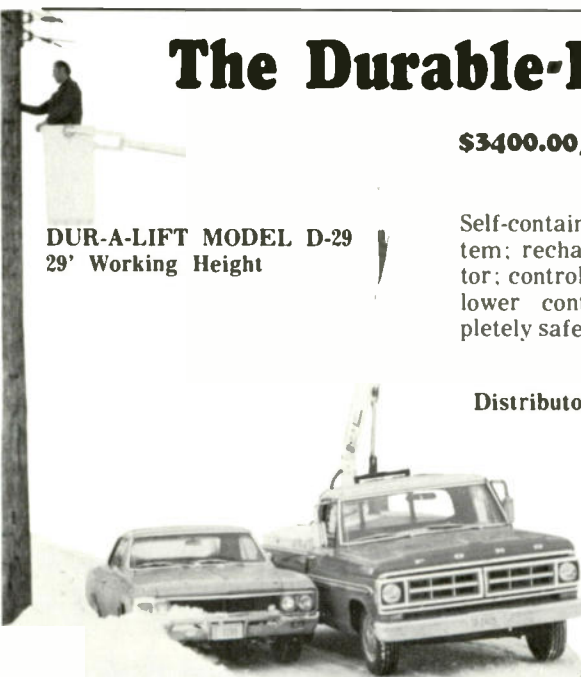
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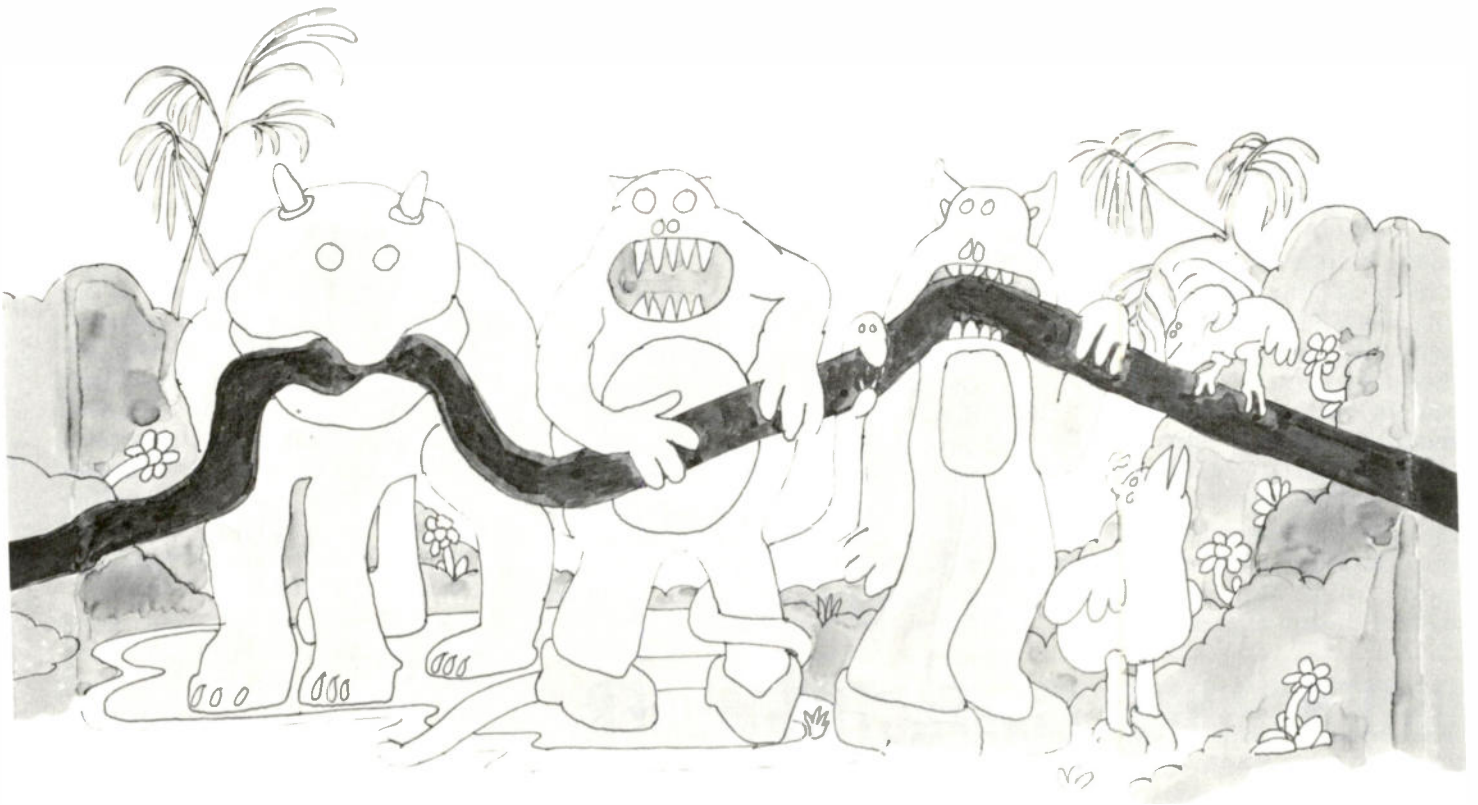
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7) Place a cover over the camera lens with a small hole in the exact center. The image should now be at the camera output, with little, if any, shading or cropping, and properly centered on the target ring. It might be necessary to *slightly* change the camera angle to achieve this.

Once the above criteria are met, be extremely careful not to move either the camera, multiplexer or first projector, but do not nail into place as yet.

Shut off projector one, and turn on projector two. Position the second projector until the image is centered on the pre-focus screen, at the proper size, and focused. The resultant image, after removing the pre-focus screen should be centered properly at the camera output and no shading should be evident when the iris is closed down on either the projector or the camera. If either of the above is not correct, proceed with the steps outlined before, but move *only* projector two to achieve optical alignment.

Repeat the above procedure for the slide projector. When all sources are properly aligned, it should be possible to close all irises and still see a full picture from all light sources.

When this point is achieved, mark and secure all components, using extreme care not to move anything. If it is necessary to move one or more of the components, mark their position carefully. It will most likely be necessary to recheck alignment after the final mounting.

Balancing Sources

In order to utilize more than one light source into a single camera, it is necessary to balance the three sources so that average density films will generate approximately the same output from the camera. In black and white, all that is necessary is to place a variac on each light source and adjust each for equal output with an open gate. For color, an additional step is necessary.

The first step is to set the same voltage on all lamps. (A good set point is 100 V as this will extend lamp life considerably without reducing color temperature much.) With the camera optically aligned with the multiplexer, select one source (usually one of the 16 mm projectors) as a standard, and adjust the color channel gains for equal outputs with an open gate. Change over to the second 16 mm projector and observe any differences in level.

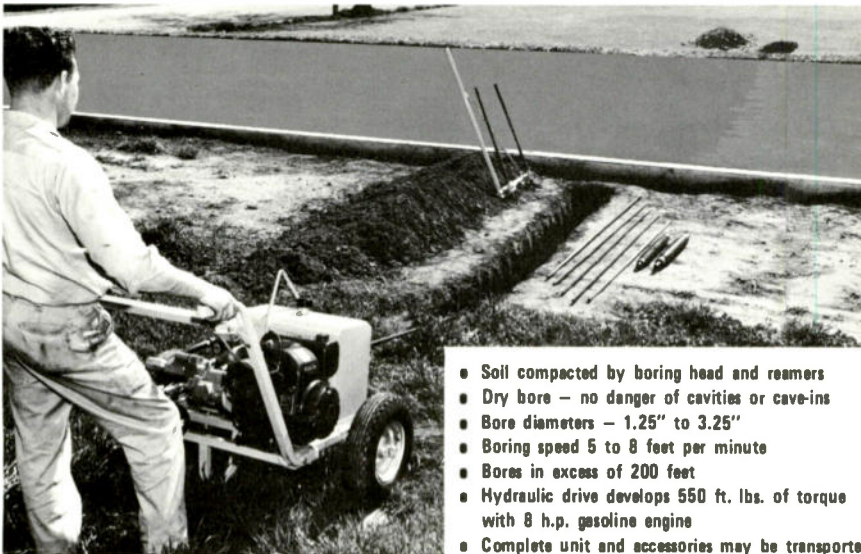
Select the proper filter so that, when placed in front of the projector lens, the three color channels are once more equal in amplitude. As an example, suppose that, on the second projector, the blue amplitude is higher than red and green, and red and green are equal. Place a minus blue filter (yellow) in front of the lens. These are available as either gelatin or glass filters, and the density is indicated by the number before the color indicator, (i.e., CCO5Y is a yellow color correcting filter, with a relative density of .5).

These are available from most photographic supply houses, and come in 3" x 3" as well as larger sizes. They are available in both the primary and the negative primary colors, i.e., red, blue, green, cyan (minus red), yellow (minus blue) and magenta (minus green). Once the proper filter pack is found to correct the second 16 mm projector, affix the filters in place and follow the same procedures with the remaining light sources.

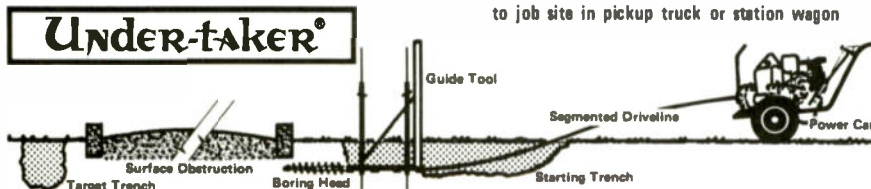
This procedure will color balance the light sources themselves. Color film, by virtue of the many different processes as well as different manufacturers, will vary in color balance not only from film to film but from cut to cut on the same reel. In this case, each reel must be handled as a separate set-up situation, and "painted" for best color reproduction. Painting should be done with camera gains, and the pre-set position easily re-obtainable to return to the balanced condition at the end of each reel. This may be accomplished by carefully marking each gain control position after doing the initial color balance with the first projector.

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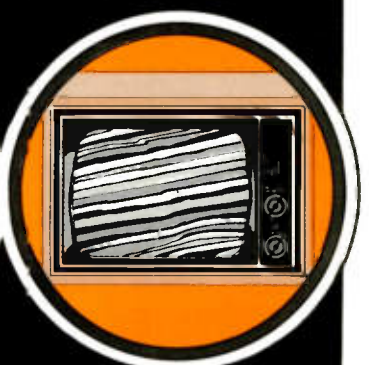


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Clearview cablemen recalled that famous old Irish sea chanty as they made a three-quarter mile cable pull across Andrews Bay near Panama City, Florida—perhaps the longest pull in CATV history.

“We couldn’t find anyone who had ever attempted such a pull before,” said Delson Ryland, vice president of Clearview Cable TV’s mechanical services division, “so we had to engineer the project from scratch.”

The project was a three-quarter mile stretch of cable attached to Hathaway Bridge in Panama City, Florida.

System manager Leonard C. Gregory pointed out that the cable crossing will open up the Panama City Beach area for Clearview, a division of Westinghouse Broadcasting Co. The cable firm, from a single head-end, now serves Panama City and suburban cities of Springfield, Callaway, Cedar Grove and Parker and expects to soon begin serving Lynn Haven.

Panama City Beach stretches for almost 20 miles along Florida’s famed Miracle Strip resort area,

and Clearview officials had been planning to extend their service to the motels and beach homes since acquiring the system in 1967. But other areas on the eastern end of St. Andrews Bay required attention first, and for several months discussion was centered on the best method of crossing the bay—which is 3,369 feet wide at its narrowest point.

“Microwave was the earliest choice, and we bought a tower site near the center of the beach area,” Gregory said. “This was later ruled out as too expensive. Then the talk turned to submarine cable.”

Ryland approached two companies about turning out a special reel of armored submarine cable in a single length of 4,000 feet. This would eliminate possible trouble spots at splices. Neither manufacturer could handle the project. Then repeated fathometer read-

ings indicated strong currents in the channel were causing shifts in the bed that would make burying cable extremely difficult and impractical, according to the engineering report.

The only feasible route to the beach was attaching to Hathaway Bridge, and in previous years the Department of Transportation had been reluctant to permit anyone on their bridges—particularly four-lane concrete spans across the Intracoastal Waterway.

“But the Bay County Water Commission had secured a permit to attach a water main to the bridge, so we thought piggybacking on the water main might save us a lot of trouble getting DOT approval,” Ryland stated. “But some clearance problems prevented us from going this route.”

There were conferences with DOT officials, and the U.S. Coast

Guard, Corps of Engineers and representatives of Bay County and Panama City were contacted. The package of documents necessary for DOT approval not only included drawings of the proposed attachments and the conventional correspondence with utilities in the immediate area, but also engineers' reports on the fathometer readings in the bay and a corrosion study of the proposed installation by a corrosion engineer approved by DOT.

DOT approved the package: and the package called for 4-inch PVC conduit mounted in 14- and 16-inch heavy-dipped galvanized steel hangers, field-dipped with PVC. All hardware was either field-dipped or sprayed with PVC after installation.

Since maintenance was prohibited from the bridge, amplifier housings were planned for each end of the 3,359' span. Conventional 22 dB spacing would not provide sufficient amplification,

so C-Cor high-gain amplifiers were selected.

Superior shipped in 4,000' reels of cable. Again, no splices were acceptable, and the reels contained only single lengths of one-inch vinyl-jacketed flexible coax (4940) and half-inch six-pair control cables. Two of each were to be pulled through — with one each to serve as spares.

A high tension pull wire left in the conduit by the contractor was used to first pull through the messenger strand that would absorb the strain of the cable pull. The interior of the conduit was prelubed by a swab pulled through by the strand. It passed through gallons of lubricant poured into the conduit at the mid-span sections of the bridge.

When the messenger strand was through, MSD personnel began pulling cable from four reels and taping it to the strand every four feet. Mobile radio was used to direct the crew at the winch truck

across the bay. Lubrication was applied continuously as the bundle of cables started the long haul to the other side of the bay.

"We were very cautious and pulled much slower than necessary," Ryland said. "We had to handle the cable so it would not be damaged in any way. We couldn't have any change in impedance, and there was some concern about two offsets where we would be pulling almost directly against the conduit. Stress of 800-1000 pounds was anticipated after the last offset, but it turned out the stress on the support strand was never greater than 575 pounds — and there was virtually no tension on the cable."

The pull took seven and a half hours. About 50' was being pulled every three minutes, then setup time for taping required four to five minutes.

On the opposite side of the bay the setup time was used to snip the excess strand and remake the



The three-quarter mile cable pull along Hathaway Bridge across Andrews Bay at Panama City, Florida, was coordinated by Clearview Cable TV personnel using two-way radios. Lubricants were liberally applied — continuously — during the unusual cable installation.



Clearview personnel start the long pull that extended over almost eight hours.

performed strand deadend — which was separated from the nylon pull rope by a constantly monitored dynamometer. “We were using a standard takeup reel off a winch drum assembly which permitted slipping in case of

trouble or severe strain,” Ryland explained.

Anticipated problems never materialized, and the Clearview executive termed the long pull “highly successful.” Tests indicated no cable damage and the

impedance remained well within specifications.

And St. Andrews Bay was spanned with the cable that will soon carry eight-channel TV to the residents and motels along the Miracle Strip. TVC

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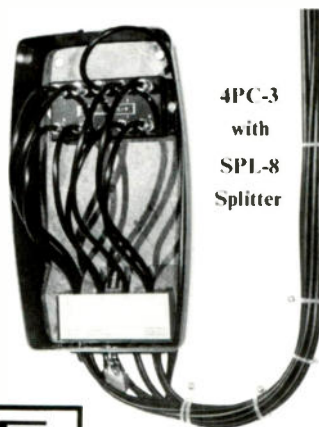
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Part II

A Basic Video Primer For CATV Technicians

A fundamental understanding of video technology is essential for the CATV technician who maintains studio equipment. Lyle Keys continues his coverage of the basics in Part II.

*By Lyle Keys, President
TeleMation, Inc.*

Editor's Note: Last month Part I explained video waveforms, the three main types of video systems and switching and distribution. Part II talks about video recording equipment, video modulation, vidicon camera adjustment and operation, and levels and terminations.

Video tape recorders (VTR) are available from perhaps thirty different manufacturers. VTRs come in two basic types — the transverse scan or quadruplex recorders and helical scan or slant-track. The former are used primarily by television broadcast stations and adhere to requirements set forth by the Society of Motion Picture and Television Engineering Practices (SMPTE). These machines are expensive, costing from \$30,000 for inexpensive monochrome models to \$100,000 for sophisticated color recorders. They are seldom used by cable operators because of their high initial cost and high operating and maintenance costs.

There are many varieties of the

latter type, mostly of foreign manufacture. They utilize tape widths of one-half inch, one inch and two inches. There is no compatibility between manufacturers even when using the same tape size. Often machines from the same manufacturer are incompatible. In general, machines using one-half inch tape widths are not satisfactory for local origination use by cable systems. One-inch machines usually produce adequate picture quality while two-inch machines offer additional advantages, especially with regard to stability. The present trend in education and cable origination applications is towards the one-inch machines. Several manufacturers produce these with color capabilities although most of them do not meet broadcast standards of reproduction of either monochrome or color pictures.

The following criteria are suggested as guidelines to assist the cable originator in the selection of video recording equipment:

1) Interchangeability. All manufacturers claim full interchange-

ability of tapes made on like machines. This means that the tape produced on one machine will play back on any other machine of the same type. Unfortunately, all manufacturers to some degree fail to meet this objective, at least to the extent that they produce an occasional machine that will not properly interchange with every other machine of similar type. There has been considerable improvement in this area recently — and we hope that within the next few months all machines of a given type will interchange reliably. The best protection for the user is to inquire of other users of identical equipment as to their experiences. And, as an added precaution, the user should obtain assurance from the supplier that his tapes will interchange with those produced by other companies' machines.

2) Follow-up capabilities of the supplier and manufacturer. This includes field installation assistance, spare parts and maintenance capability, the availability of schooling both in operation and



The cornerstone of most cablecasting operations is the video tape recorder.

maintenance and the reputation of the supplier and manufacturer for supplying such services.

3) If you can't afford two machines, don't buy any. Invariably the cable originator with only one VTR finds that he must simultaneously play back one program while recording another or that his machine breaks down just when he needs it most. VTR's are extremely complex devices having myriad mechanical components requiring considerable maintenance and adjustment. They cannot be expected to deliver the same degree of reliability as cameras, sync generators, etc. Neither can it be expected that they can be operated and maintained by personnel having no formal training or experience with video recording equipment.

4) If video recorders are to be used for recording or playback of color it is important that the user specify that the machine must be compatible for use on cable television systems and that the signal from the recorder will be usable on conventional television sets.

This requirement is important because manufacturers sometimes tend to gloss over the fact that their machine requires a separate "Black Box" to work into unmodified TV sets, or in some instances the only way the machines can operate is into specially modified sets. The state-of-the-art at present is such that the best helical scan color machines leave something to be desired.

Film and Slide Equipment

There are three different methods commonly used to couple optical projectors to vidicon cameras. The first of these, known as uniplexing, involves focusing each projector on the target surface of a separate vidicon camera. This is a satisfactory method of obtaining film and slide reproduction — except that it requires a separate camera for each source.

The second film pickup method is by means of an optical multiplexer. Optical multiplexers consist of a relay lens system and

optical switching capabilities, usually by means of movable mirrors, whereby three and sometimes four different optical sources can be switched into a single camera.

A third method of film pickup is by means of the shadow box technique. This involves projecting onto the rear of a lenticular screen with the camera view directed at the front of the screen. Unlike uniplexers and multiplexers where each device must be precisely centered on the optical axis, shadow box projection allows off-axis location of the camera or projectors. This permits more than one projector to be directed at the same screen. It also allows live cameras to be used for film pickup purposes, since the precise positioning of uniplexer and multiplexer techniques is not required.

Film projectors used for television must be specifically designed to make the 24 frame-per-second projection rate compatible with the 30 frame-per-second television scanning rate. This is accomplished by means of a film

pull-down system known as a 3:2 intermittent. This intermittent mechanism plus the special shutter provides a scanning sequence where one film frame is scanned by the television system two times, and the next three times. The use of conventional projectors with television systems results in a "shutter-bar" which floats through the picture making it substantially unusable for television purposes.

Video Modulation

Video modulation is the causing of the amplitude of a radio frequency carrier to be varied in accordance with an input video waveform. American standards call for the carrier to be at peak power during the synchronizing portion of the waveform and for the modulation to be in a negative direction, i.e. reduced power. Television transmitters in the U.S. are rated in accordance with the amount of power they produce during the tip of sync. The power

rating of television stations use the transmitter rating multiplied by the effective horizontal gain of the antenna; thus a station producing 316 kw E.R.P. may do so using a transmitter rated at 25 kw peak with the transmitter operating at an average power output in the order of six or eight kilowatts.

The aural portion of a television signal is frequency-modulated and generally it maintains a power output at about 20% of the peak video power output. Each television channel maintains a 4.5 MHz difference frequency between the aural and visual carriers. Receiver manufacturers take advantage of this constant frequency difference by building what are known as intercarrier sets. In intercarrier receivers, the video is detected resulting in the production of a 4.5 MHz difference-frequency. This difference-frequency is used as the carrier for aural RF and is subsequently amplified before being frequency-demodulated.

It is obvious that if either an aural or visual carrier frequency is

absent, there could be no 4.5 MHz subcarrier generated within the receiver. It is equally obvious that if the modulation level at the transmitter is excessive, the transmitter visual carrier will be modulated in a negative direction and be cut off. When such over-modulation occurs it generally repeats at a 60 Hz rate and produces a loud buzzing sound on the viewer's set. This is known as intercarrier buzz.

These considerations dictate the need for accurate control of video levels into television modulators. It also points out one of the more serious problems of video operation — the means of measuring depth of modulation of television carrier frequencies. An approximation of modulation depth can be obtained by rectifying the video output with a DC-coupled detector. The residual DC would provide an accurate indication of the depth of a modulation (the separation between the peak whites and zero carrier) were it not for the square law characteristics of diode detectors. Another

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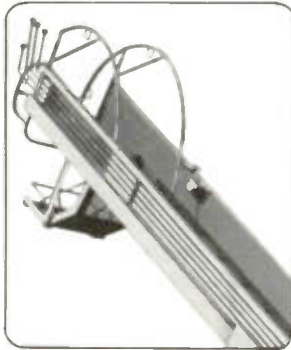
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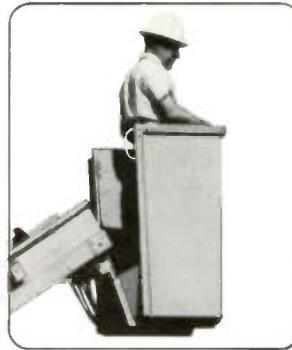
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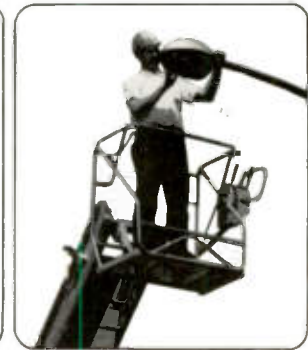
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method of measuring depth of modulation is to equip a television tuner with a chopping device which intermittently shorts out the detector output at a 60 Hz rate. This chopper thereby provides a zero carrier reference point. Choppers can also be used to momentarily switch off RF or IF stages to accomplish the same purpose. Still another method of modulator video gain adjustment is by comparing the contrast produced by the local channel on a conventional television set with that produced by commercial television channels. With practice this adjustment can be accomplished to an accuracy of about 1 dB.

Vidicon Camera Operation

Following are the principal setup and operating adjustments found on most vidicon cameras with a description of their function and instructions for their proper adjustment:

Beam Control. The beam control supplies the negative voltage applied to the control grid of the vidicon tube. Proper adjustment of the beam control is accomplished by turning the control clockwise just beyond the point where full detail is apparent in the whitest portions of the picture. Excessive beam voltage results in defocusing, while too little beam results in "pasty whites." Any substantial change in the target control setting will likely require readjustment of the beam control.

Target Control. Determines the voltage applied to the target for signal electrode of the vidicon tube. Since the signal electrode acts as a variable resistor controlled by the light falling on the tube, any change in the voltage applied across the resistor results in a commensurate change in signal current. Therefore, the target control of a vidicon camera adjusts the camera sensitivity. If the target setting is too low, the signal-to-noise ratio will suffer; whereas, if the target setting is too high, the tendency of the vidicon tube to "stick" or "lag" will be increased. Extraneous shading effects are also the consequence of too much target voltage. The cor-

rect setting for the target control is at that point at which the signal-to-noise ratio is satisfactory. The camera video gain control should then be adjusted to provide the correct video output level.

Focus Control. Adjusts the voltage applied to the focus electrode of the vidicon. It should be adjusted when viewing the test pattern, and particular attention should be paid to corner resolution with the adjustment being made for best overall picture detail. It must be kept in mind that the electrical focus cannot improve upon optical focus, nor vice versa. Therefore, when adjusting either focus, the other control should be alternately adjusted in order to achieve best overall results.

Pedestal or Black Level Control. Determines the setup interval and can best be made when viewing the output video waveform on a waveform monitor. If a waveform monitor or oscilloscope is not available, an approximate adjustment can be made by viewing the picture monitor. The pedestal setting is first decreased until the detail starts to disappear in the blackest portions of the picture. It is then increased to a point just beyond that where the detail reappears.

Gain Control. Provides a means of maintaining the correct video output level of the camera. The interaction of the gain control with the lens iris setting and the target control must be considered.

Mechanical or Optical Focus Adjustment. Most cameras are equipped with a means of moving the vidicon assembly to accomplish optical focus in addition to the focus ring on the lens assembly. These two adjustments can be made interchangeably, although normally the vidicon positioning control is used as a coarse adjustment with the focus ring of the lens as a vernier. With zoom lenses the vidicon position is set to provide best focus in the wide-angle position, with all subsequent focusing accomplished by means of the lens focus ring on control.

High Peaker and Aperture Correction Controls. Maintenance adjustments normally used to provide improved high frequency

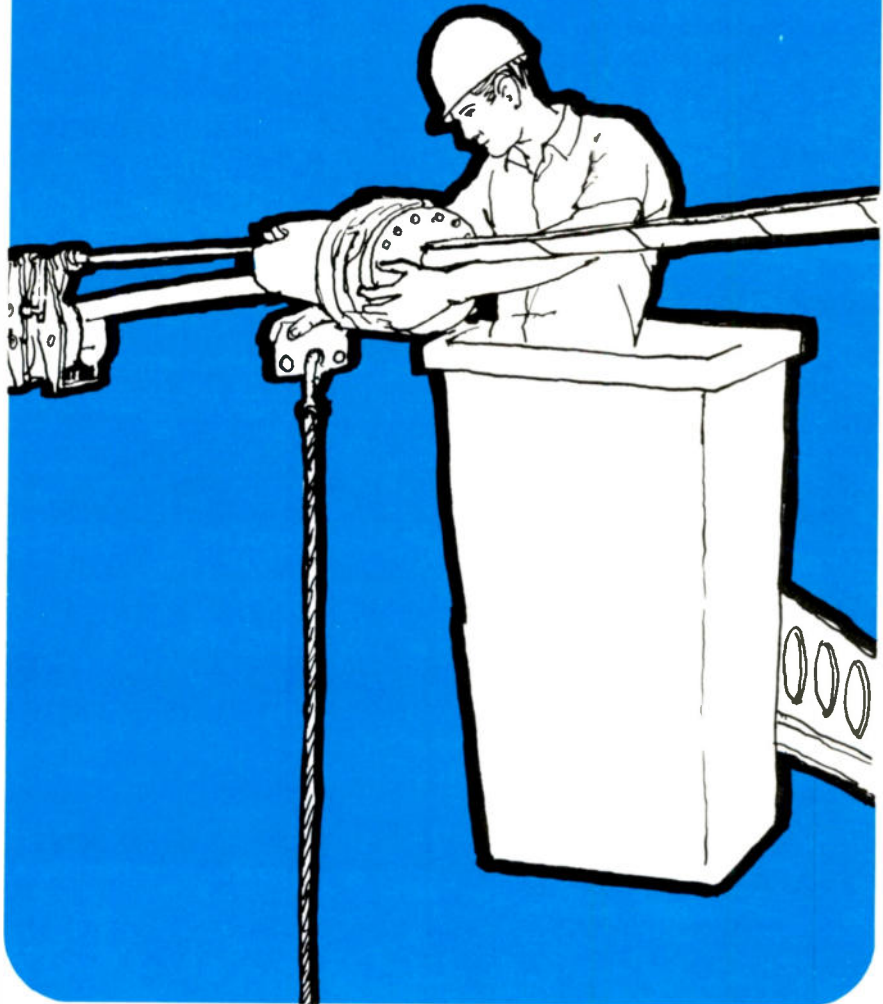
response. They should only be adjusted while televising a test pattern. The limit to the amount of high peaking or aperture correction that can be used is normally found either in the increased high frequency noise or in the tendency for the video output to produce overshoot and ringing or oscillation.

Beam Alignment Controls. There are two forms of beam alignment found on vidicon cameras. Less expensive cameras generally employ permanent magnet rings mounted around the vidicon tube just behind the focus coil. Positioning these two magnets allows control of the magnitude and direction of their resulting fields. This alignment field serves to neutralize other permanent magnetic fields present in the camera and/or to correct for imperfections in the vidicon geometry. The second method of beam alignment utilizes two electro-magnets acting in quadrature on the vidicon beam. The direction and intensity of their magnetic fields is controllable by two potentiometers normally designated Align-1 and Align-2. Correct adjustment of the beam alignment controls is accomplished by rocking the electrical focus control while observing the picture. The picture should rotate about its center in a uniform manner when the beam alignment controls are properly adjusted. As a further refinement of the beam alignment positioning the shading waveforms (dark areas in the picture) and uniformity of focus throughout the raster should be observed. Often final adjustment of the alignment controls will improve both shading and resolution.

Positioning and Size Controls. These adjustments can best be made with the camera directed at an illuminated test pattern. The correct procedure is to increase the size of both vertical and horizontal scans until the entire vidicon target is visible. The camera is then mechanically positioned so that the test pattern corner-to-corner occupies approximately 90% of the tube diameter. Then without repositioning the camera the sweep sizes are reduced and centering controls adjusted so that

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the test pattern fills out the entire raster.

In this manner the correct positioning in the raster relative to the target center is assured. It is most important when replacing vidicon tubes that the size and positioning controls be properly adjusted since a few hours of operation with improper size or positioning of raster will create a "raster burn," causing permanent damage to the tube. For the same reason it is necessary working with a vidicon tube that has been previously used, that the scans be of correct position and size so that the scan area corresponds to any previous raster burn. This may necessitate rotation of the vidicon tube to obtain correct positioning.

Levels and Terminations

If this, the video primer, does nothing more than give the reader a proper respect and understanding of the importance of levels and terminations it will have more than accomplished its purpose.

These are by far the most important considerations in handling video signals.

All video equipment is designed to operate at a certain signal level. Industry standards for composite video signals are 1 volt p-p, while non-composite video (video before sync addition) is 0.7 volts p-p. It is necessary that all levels in a system be periodically checked, using a television waveform monitor or accurately calibrated oscilloscope. As an alternative, a reliable peak reading video level meter can be used, providing the meter calibration is periodically checked against an accurate oscilloscope. When video levels are too high, the result is either compression of the white or sync portion of the signal, or cross-talk between video sources. When the video levels are too low, the picture appears "washed-out" on a TV screen and/or the signal-to-noise ratio is poor.

Terminations are extremely important in all video circuits. Every video line must be terminated once and once only, and that

termination must be at the extreme end of the line. This means that "T" connectors and splitters cannot be used when handling video. It does not mean that a given video signal cannot be routed to more than one location, provided the equipment through which it passes is designed to present a bridging input. Such equipment is normally identifiable by the presence of dual input jacks, otherwise known as "looping" inputs. Any time video has to be routed to two different destinations, it must either go to one destination, loop-through, and then to the other destination, where it is terminated, or it must be fed first into a video distribution amplifier and then from separate outputs of the distribution amplifier to the two destinations, where each is terminated.

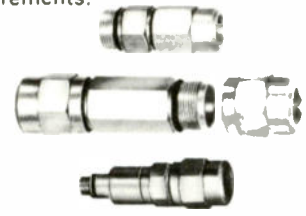
It is most important that persons designing and operating cable origination systems properly respect this requirement since any violation is likely to result in severe degradation of picture quality. TVR

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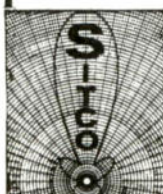
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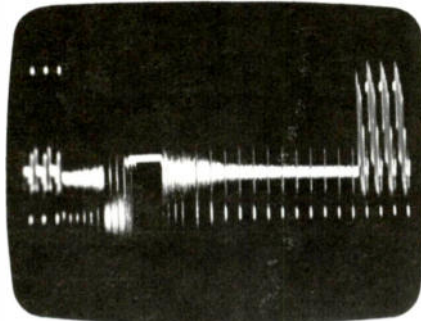
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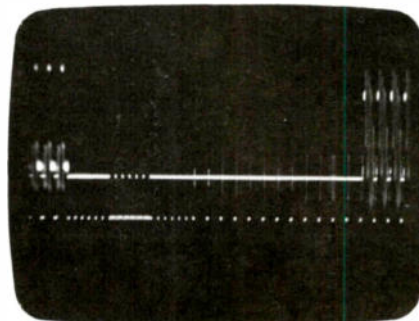
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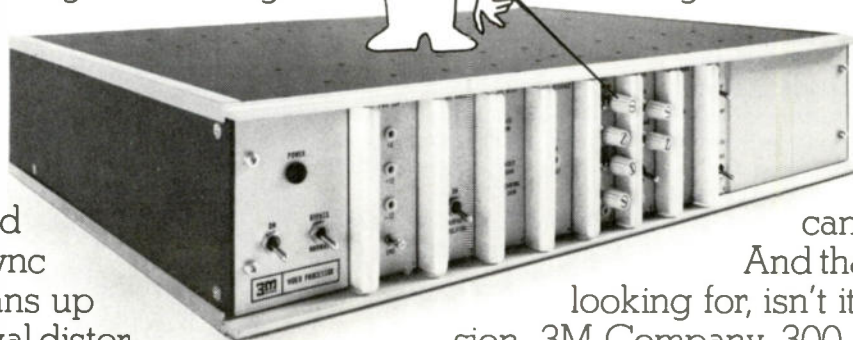
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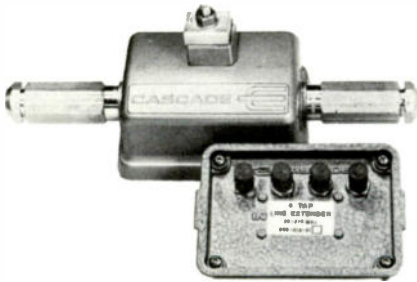
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Cascade Electronics, Electronic Ave., B.C., Canada, has introduced a new line extender amplifier. This 9 dB-gain unit



has a bandwidth of 50 to 270 MHz and features a built-in 10 dB, four-drop directional tap. It is line powered from a 30 V or 60 V source and is available

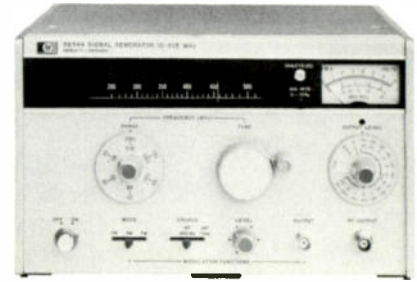
with a waterproof housing including 412 AL connectors, or less housing, for insertion into existing directional taps. Prices for the complete amplifiers are — \$35.00 for 30 volt, or \$40.50 for 60 volt.

HEWLETT-PACKARD OFFERS NEW SIGNAL GENERATOR

Hewlett-Packard's new Model 8654A signal generator has a frequency range of 10 to 512 MHz. This generator is suitable for testing receivers, amplifiers, antennas, and filter networks. It's compact enough to fit easily into mobile test locations, and rugged and light-weight enough for field maintenance and service applications.

The unit generates calibrated power levels between +3 dBm and -120 dBm

(into a 50 Ω load) over its 10-to-512-MHz frequency range. Power output is accurate within ± 1.5 dB plus attenuator accuracy (± 0.5 dB, 10 to 50 dB; ± 1.5 dB, 60 to 120 dB). Output



power is automatically leveled to within ± 1 dB over the entire frequency range, and a front-panel meter displays the output level in dBm and volts. A rear-panel auxiliary uncalibrated output is available for use with a counter or other equipment.

Price is \$1,135.

DAVIS INTRODUCES NEW ATTACHMENTS

A new style Davis D-130 backhoe with retractable stabilizers and a new hydraulic angle dozer for the Davis Fleetline 70+4 trencher have been intro-

For Maximum Safety, Long Life...NON-CONDUCTIVE, FIBERGLASS LADDERS

(Single and Extension)

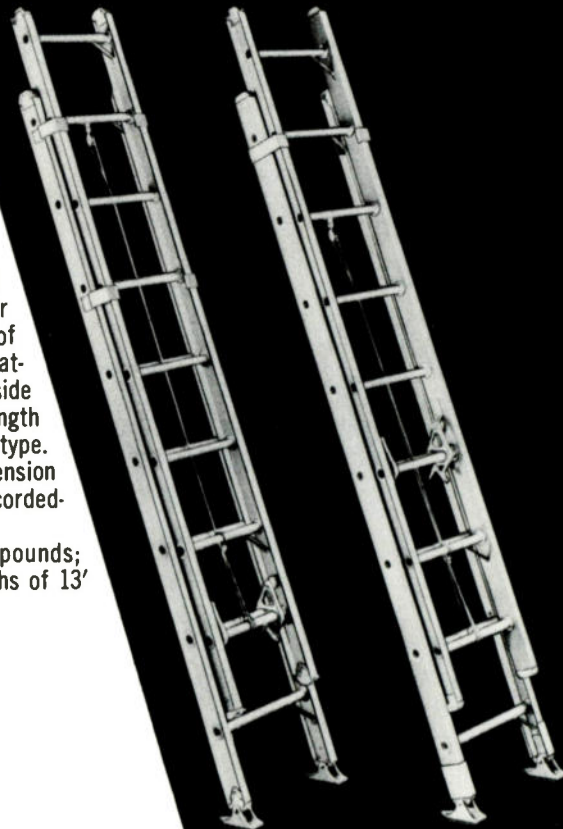
These are Type I, Heavy Duty Ladders (250# Workload) in which high-strength, fiberglass siderails combine with strong and light-weight aluminum rungs. They are spark-proof, moisture-proof, acid-resistant — safest of ladders for electrical work — meet all ANSI requirements for portable metal ladders. 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-crimped 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.

Write or call for full information, prices.



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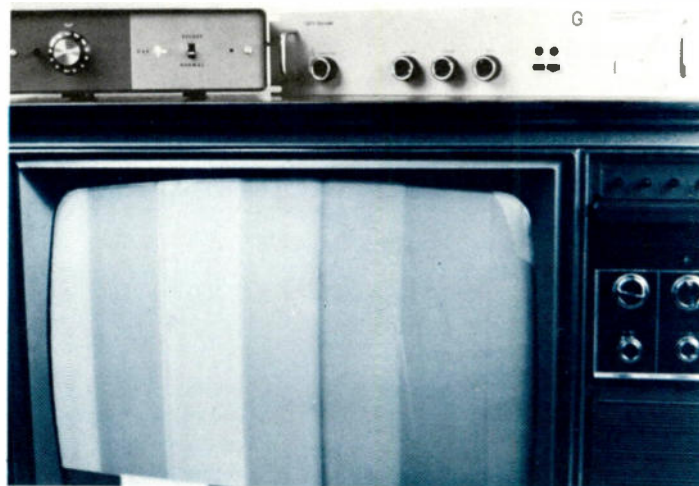
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Telephone . . . Area Code 614 . . . 488-0655



EnDe - Code

LOW COST SCRAMBLER & UNSCRAMBLER DEVELOPED

Athena Communications Corporation has developed a low-cost system to scramble and unscramble cable TV programs called EnDe-Code. The system uses a decoder (left) 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 (right) for photo purposes. This patented system and a special program package will be offered to subscribers on six of Athena's Cable TV systems this Fall, and will be made available to other Cable TV operators as well.



The EnDe-Code system provides controlled access to any CATV channel.

EnDe-Code makes it possible to encode any standard or non-standard TV channel so that standard TV sets receive scrambled pictures and no sound.

A decoder that connects to the antenna terminals of the TV set restores the picture and sound.

EnDe-Code's advantages are:

- Security on any channel.
- No modifications necessary to existing system.

- Does not affect existing service.
- All equipment is solid state.
- Accepts color or monochrome signals.
- Pushbutton selection of normal or encoded mode on encoder.
- Encoder fits in 3½" rack space.
- Multi-channel decoder/converter available.
- Special programming.
- New revenue potential.
- Special services - channel leasing.



Athena Communications Corporation

A GULF + WESTERN COMPANY

TV Communications

1 Gulf + Western Plaza
New York, N.Y. 10023
212-333-4400

duced by Davis Manufacturing, Division of J I Case Co., 1500 S. McLean Blvd., Wichita, Kans. 67213.

The new wide-set stabilizers for the D-130 backhoe provide a stable base for digging and allow the machine to level up to dig vertically on uneven terrain.



The new 72-inch hydraulic angle dozer angles either left or right 40° with automatic 15-inch offset to counter side thrust and permit the machine to parallel backfill with the wheels a safe distance from the trench.

PHASECOM PRESENTS PHASELOCK MODULATOR

Phasecom Corp., 6382 Arizona Circle, Los Angeles, Ca. 90045, announced the introduction of a CATV modulator with built-in phaselock capability. The model 7120 modulator is compatible with Phasecom's SYSTEM/7

main frame which accommodates up to seven channels of signal processing equipment. The availability of this modulator with internal phaselock circuitry allows the system operator to utilize channels that, up to now were vacant.

The unit's output carrier frequency can be phaselocked to a sampled off-the-air TV signal from a local or nearby



station. This technique eliminates differential frequency beats on subscribers' pictures and reduces the risk of interference with non-subscribers' reception.

The unit also finds application in dual cable systems where it eliminates co-channel beats caused by carrier leakage.

Price is \$1,575.

AMPEX MARKETS PRODUCTION CENTER

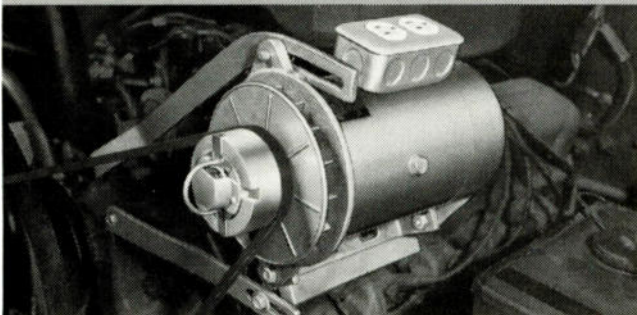
A new color television production center designed for CATV has been placed on the market by Ampex Corporation, 401 Broadway, Redwood City, Ca. 94063.



The model AC-500 is a six-input control center includes a video switcher/special effects panel. The two cabinet system provides special effects, video monitoring and control, audio mixing and optional waveform monitoring.

The Mark III video control panel is a vertical interval switcher/fader and special effects generator for use with new Ampex CC-500 color television cameras and all Ampex one-inch videotape recorders.

For field monitoring—the Auto-Gen!



The Auto-Gen generator (now available with manual clutch) can turn your vehicle into a 115 volt AC power plant. It provides up to 3500 watts where ever you go. Presently in use for field monitoring, service, and emergency power by many CATV companies. Belt driven from your vehicle engine, the Auto-Gen generator can be used in pickups, service trucks, automobiles, and most other vehicles. Complete, ready for installation. Available with or without manual clutch. Send coupon for literature and address of nearest Auto-Gen dealer.

T-4

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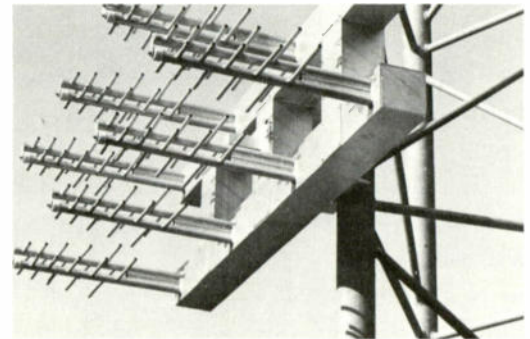
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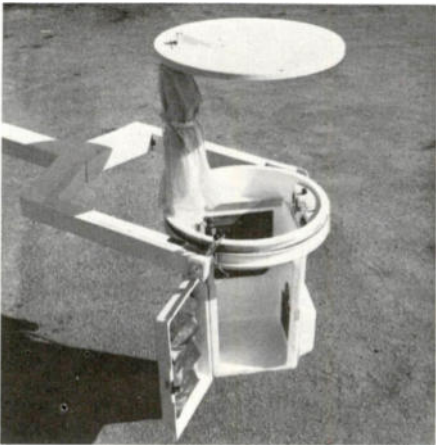
Mrs. Rudy Riley, President

Price of the AC-500 color production center is approximately \$8,000, depending on features.

TIME ANNOUNCES NEW AERIAL LIFT

The Versalift SV-26 is a new aerial lift, designed for cable splicing use, and featuring a revolving bucket for alignment of the bucket to the work area. The unit is being offered by Time Manufacturing Co., 3131 Gholson Rd., Waco, Tex. 76704.

The unit has a ground-to-bucket floor height of 26 feet and a nominal working height of 31 feet. The molded polyester



fiberglass bucket is 24" x 24" x 42" and is completely fitted with storage bins, air lines, splicer stand, 1500 watt heater, seat, and grounded duplex power outlet.

The unit is controlled from the bucket, with duplicate controls on the pedestal for extra convenience.

Safety features of the unit include counter-balanced holding valves to prevent creep and to lock hydraulic cylinders in position in event of line failure, a drag brake to prevent free-wheeling in rotation system, and an emergency hydraulic system powered from the truck battery.

E&M LABS ANNOUNCES WAVEGUIDE MIXER

E&M Laboratories, 5388 Sterling Center Dr., Westlake Village, Ca., announces the introduction of its latest product addition: broad bandwidth mixer amplifiers.

Multi-octave amplifiers combined with waveguide mixers are said to provide minimum noise figure operation. Units are available in the frequency range of 8.2-40.0 GHz.

Typical characteristics are: RF bandwidths to 20 percent; IF bandwidth: 10-300 MHz; Noise Figure: 5.0 dB; RF-IF gain: 50 dB, IF Power

TV Communications

Output: +13 dBm and RF input VSWR: 2.0 max.

Mixer-amplifiers are shipped as a totally integrated package. Custom units available on inquiry.

OMNIX ANNOUNCES NEW COLORIZER

Omnix, 2261 S. Carmelina Ave., Los Angeles, Ca. 90064, has announced an instrument that will add color to monochrome video, generate color audio shows when connected to any audio signal source such as music, or mix the audio with the video to provide some unusual effects.

The unit is packaged in a 1 3/4" frame and is comprised of three printed circuit boards. It comes complete with remote control.

With this device it is now possible to fill blank channels with color audio shows and originate an inexpensive color video signal. Its price is \$1150.00.

EMI DISPLAYS PUSH-PULL AMP

EMI Electronics Ltd., Hayes, Middlesex, England will be displaying their "Colorline" range of push-pull ampli-



fiers at the 1972 IEEE Intercon, March 20-23. The amplifiers are designed for use with up to twenty television channels in the 40-270 MHz band.

TELEVISION ASSOCIATES MODIFY SONY VTR

Television Associates, Inc., 1157 Saratoga Ave., San Jose, Ca. 95129, has developed a series of modifications that will convert the Sony 320 or 320F VTR into a vertical interval editor with increased production flexibility. With these modifications the user can make video only, audio only, or video/audio edits using the same audio track.

In addition, a stability modification is available which will cut the VTR

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January, 1972



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lockup time to one second and assure a master tape free from any sync problems in editing or duplication, according to the manufacturer.

TEKTRONIX INTRODUCES GAIN NORMALIZER

Tektronix, Inc., P.O. Box 500, Beaverton, Ore. 97005, has introduced a chrominance/luminance gain normalizer which simplifies the measurement of chrominance to luminance gain differences and the calculation of delay when testing with modulated sine-squared pulses. The normalizer is a passive, signal-quality measurement tool. It is not a device for improving the quality of the signal and is not designed for in-line testing.

The Tektronix 137 chrominance/luminance gain normalizer is designed for systems using 3.58 MHz subcarrier.

The normalizer is installed in the video line to a waveform monitor. When measurements are to be made, an "operate" (measurement) mode is used. The normalizer is used to balance chrominance deviation around the baseline of the waveform monitor display by inserting calibrated luminance or chrominance attenuation until deviation symmetry is achieved.

After symmetry is achieved, the luminance or chrominance gain distortion is read directly from the attenuator controls. Delay distortion is calculated. The normalizer can be used with modulated \sin^2 pulses of any duration. A "bypass" mode is available when no measurements are to be made. Price is \$345.

TAPS OFFERED BY ANIXTER-PRUZAN

Tech Taps are now available from Anixter-Pruzan, 1963 First Ave. South, Seattle, Wash. 98134. The 4000 series is available in four non-convertible models, with either two- or four-output for aerial or underground installation.



The 3000 series which are convertible for either aerial or underground use, are also available with two- or four-outputs. The convertible tap allows the operator to stock one model for both aerial and underground use.

Both series will fit on four inch

March, 1972

pedestals. All models have two-way capability for bi-directional systems with a range from 50-300 MHz.

DITCH WITCH OFFERS NEW TRENCHERS

Ditch Witch, division of Charles Machine Works, Inc., P.O. Box 66, Perry, Okla. 73077, has announced the new M-Series trenchers.

The series comes available in either nine- or 12½-horsepower rubber tire models or a 12½-horsepower track



mount. All are self-propelled. The trenchers have a mobile range for maneuvering around the job site and three digging speeds, plus reverse. They will dig to depths of five feet, widths to 12 inches.

The digging chain is 20,000-pound test with replaceable heat-treated manganese teeth.

STELCO MARKETS NEW LIFT DEVICES

Stelco, Inc. 7700 Wedd, Overland Park, Kans. 66204, has introduced its new Stel/Lift aerial devices. Available in 28-, 30-, 31- and 33-foot ground-to-bucket floor height models, the units feature 370-degree rotation with a 350-pound bucket capacity.



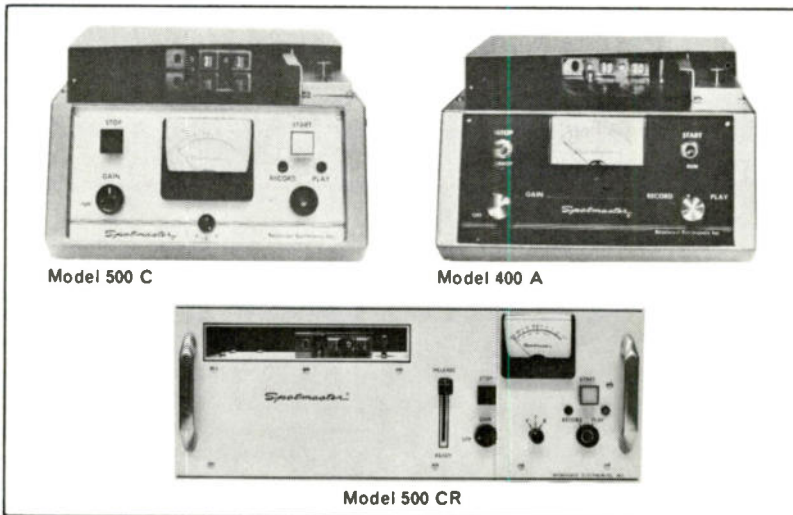
The units come with a mechanical bucket leveling system and full-pressure, full-hydraulic controls in the bucket and the truck bed. TVC



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ECONOMICAL 400 A SERIES—Now even the smallest stations can enjoy Spotmaster dependability with the low-cost, all solid state 400 A series, available in compact record-play and playback-only models. Performance and specifications are second only to the 500 C series.

For complete details about these and other Spotmaster cartridge units (stereo, delayed-programming and multiple-cartridge models, too), write, wire or call today. *Remember, Broadcast Electronics is the No. 1 designer/producer of broadcast quality cartridge tape equipment . . . worldwide!*

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Can be redeemed through local authorized distributor; or call or write for catalog and price list: BROADCAST ELECTRONICS, INC., 8810 Brookville Road, Silver Spring, Maryland 20910 • (301) 588-4983

Offer expires April 30, 1972

T-3-15

It's Not Over Yet...

(Continued from Page 42.)

Only major market systems must comply with these regulations under the FCC, but local governments may make similar (although not greater) demands, via franchise agreements, on smaller-market systems. It is inevitable, therefore, that the "new" CATV character the Commission is trying to shape will filter down through smaller market operations.

While the FCC has not entirely pre-empted the field of CATV, it has taken several steps in that direction. As mentioned earlier, all systems must obtain a certificate of Compliance which will enable the Commission, (1) to be certain the system is complying with federal regulations, and (2) to examine the local franchising requirements.

Local franchises will not pass muster if they vary

widely from the FCC standards governing franchise fee (if over three percent, special showing must be made of appropriateness), construction deadlines, public proceedings to examine applicant's qualifications, provision for handling subscriber complaints and so on.

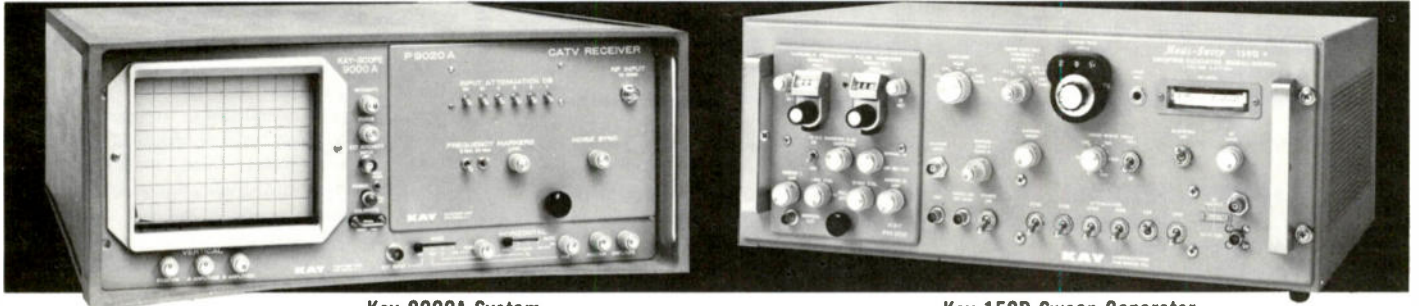
How efficiently the new regulatory program will operate remains to be seen. Once a CATVer applies for a Certificate of Compliance, the FCC will issue a Public Notice of the application. During the following 30 days, parties may make objections. The Commission has announced its intention to process applications largely on a go/no-go basis. That is, if the franchising process, the intended signal carriage, access plans and so forth seem to meet the FCC regulations, the application will be processed promptly. Anyone experienced in the red tape of Washington remains skeptical, but only experience holds the answer. TVC

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A nationwide independent telephone construction company has formed a cable television division and is interested in obtaining *top management* personnel to develop and operate this new division. Applicants should have experience in CATV construction, project cost accounting, personnel management, marketing, and production and quality control procedures. Those interested in discussing these positions with the Directors of the Company should submit a complete resume detailing experience and references. All replies will be held in strict confidence. Send to Box T472-1.

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CATV/CCTV

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Atlantic Research Corporation



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Calendar

MARCH

1-3 1972 General Convention of the
Florida State CATV Assn. will be held at
the Ramada Inn in St. Petersburg, Fla. For
further information contact J.P. Michaelis,
TM Communications of Fla., 1111 N.
Westshore Blvd., Suite 700, Tampa, Fla.
33607.

3, 4 Georgia Cable Television Association
will hold its 1972 Convention at the
Regency Hyatt House in Atlanta, Georgia.
For further information, contact Secre-
tary-Treasurer, W.H. Keller Jr., Post Office
Box 340, Dublin, Georgia 31021.

5-10 First International Market of Tele-
vision by Cable (MICAB), will be held in
Cannes, France in the Festival and Con-
gress Palace. For further information
contact Bernard Chevry, Commissaire
General, 42 Av. Sainte-Foy, 92-Neuilly,
France.

8-10. Ohio Cable Television Association
Convention at the Sheraton Columbus,
Columbus, Ohio. For further information
contact Don Shuler, Convention Chair-
man, c/o Cypress Cable TV of Ohio, Inc.;
120 W. Auglaize St.; Wapakoneta, Ohio
45895.

20-23 IEEE will hold its International
Convention at the New York Hilton Hotel
in New York City. For further infor-
mation, contact H.Q. North, Northrup
Corp., 1 Research Park, Palos Verdes,
Peninsula, Calif. 90274.

APRIL

15-18. Southern Cable Television Associa-
tion Convention in Myrtle Beach, South
Carolina. For further information contact
John Thorne, TV Cable Co., P.O. Box
895, Myrtle Beach, S.C.

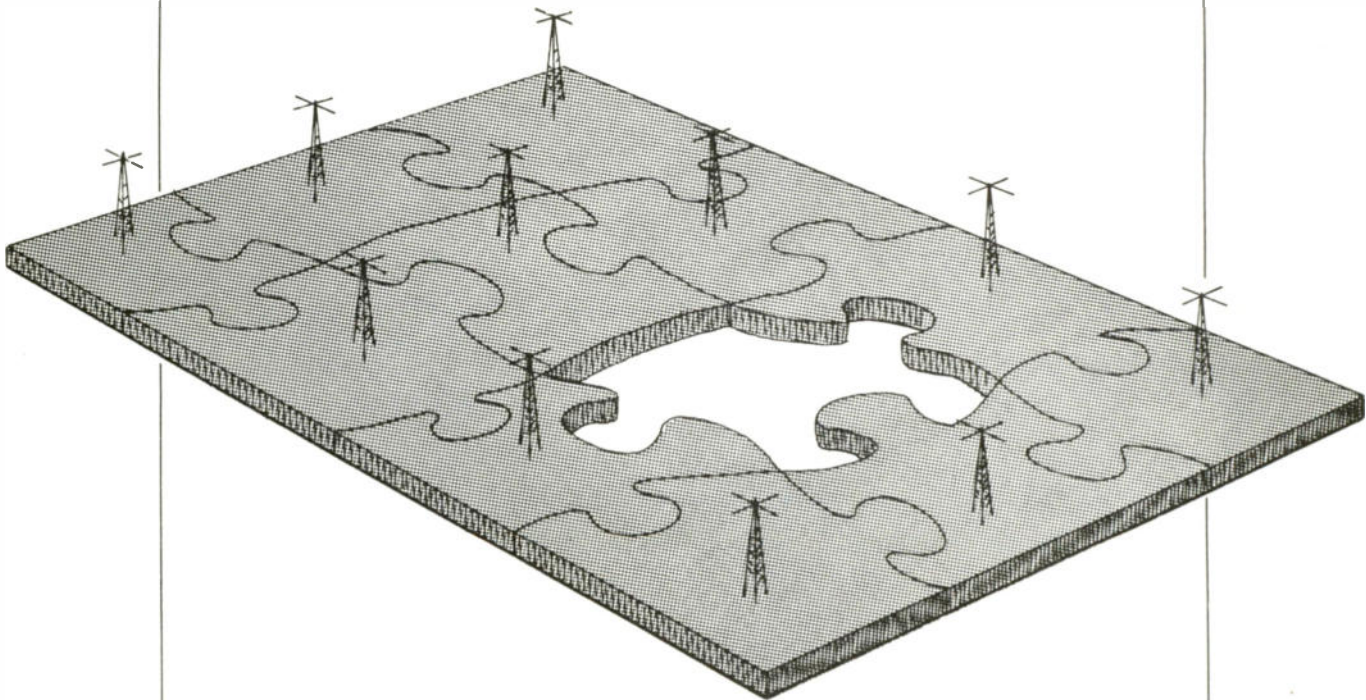
16-18 Annual Illinois-Indiana Cable TV
Convention will be held at the St. Nicholas
Hotel in Springfield, Ill. For further infor-
mation contact convention chairman John
Stelzer, First Illinois Cable TV, Inc., P.O.
Box 3066, 2820 S. MacArthur Blvd.,
Springfield, Ill. 62708.

26-28. Pennsylvania Cable Television
Association annual spring meeting at the
Holiday Inn in State College, Pa. For
further information contact Mrs. Sy
Barash, c/o Barash Advertising, Inc.; P.O.
Box 77; State College, Pa. 16801.

26-28 Texas CATV Association will be
held at the Marriott Motor Hotel in Dallas,
Texas. For further information contact
John Mankin Sr., the Association's Execu-
tive Secretary, P.O. Box 989, Tyler, Texas
75701.

NOTE: If you have listings to be included
in this calendar, please send them (as early
as possible) to 1900 West Yale, Engle-
wood, Colo. 80110. All CATV-related
events and important dates will be listed.

Solving the MSO puzzle



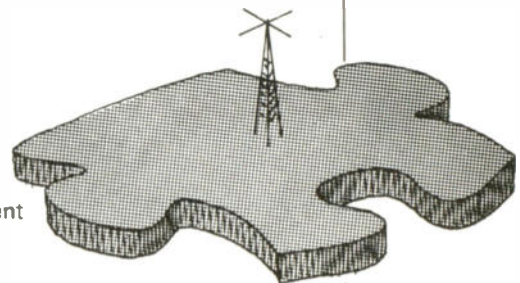
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Address inquiries to:
James E. Turney, Jr.
President

Info-CAM

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Signals received off-the-air are often severely attenuated at the higher frequencies. Unfortunately, the color subcarrier, whose frequency is 3.58 MHz, may be attenuated to the degree that it is impossible to realize a useable color picture. This, of course, does not occur on all signals received off-the-air. However, when a group of a dozen or more signals are received, chances are that one or more of them will have severe roll-off, inhibiting proper color reproduction.

In most cases, by replacing your headend processing unit with a DYNA-TUNE/DYNA-MOD II combination connected in demodulator-modulator configuration, this type of deteriorated signal can be restored.

With frequency-selective amplification, it is possible to correct for the rolled-off condition, restoring the signal across the video bandwidth to approximately its original amplitude. The DYNA-TUNE demodulator has such a capability. With a simple front-panel adjustment, most signals can be adequately corrected for roll-off in the 3.58

MHz area. Correspondingly, this restores the color information. A second control allows easy correction of certain problems in the lower-frequency sync areas.

Other advantages are also obvious with a demod-mod processor. Since the broadcast signal is returned at the headend to its original baseband video and audio condition, other problem areas can be selectively corrected.

For example, envelope-delay correction can be accomplished at baseband with commercially available filters. If desired, a processing amplifier can

be added to completely replace the sync and timing pedestal and provide a degree of overall signal restoration. Individual carrier levels can also be easily and accurately controlled, as can percentage of modulation; differential phase and gain can also be adjusted. And, if you

really want to get down to it, non-duplication switching is also much simpler and less expensive. All things considered, you simply have more control over a signal at video frequencies than at IF or RF.

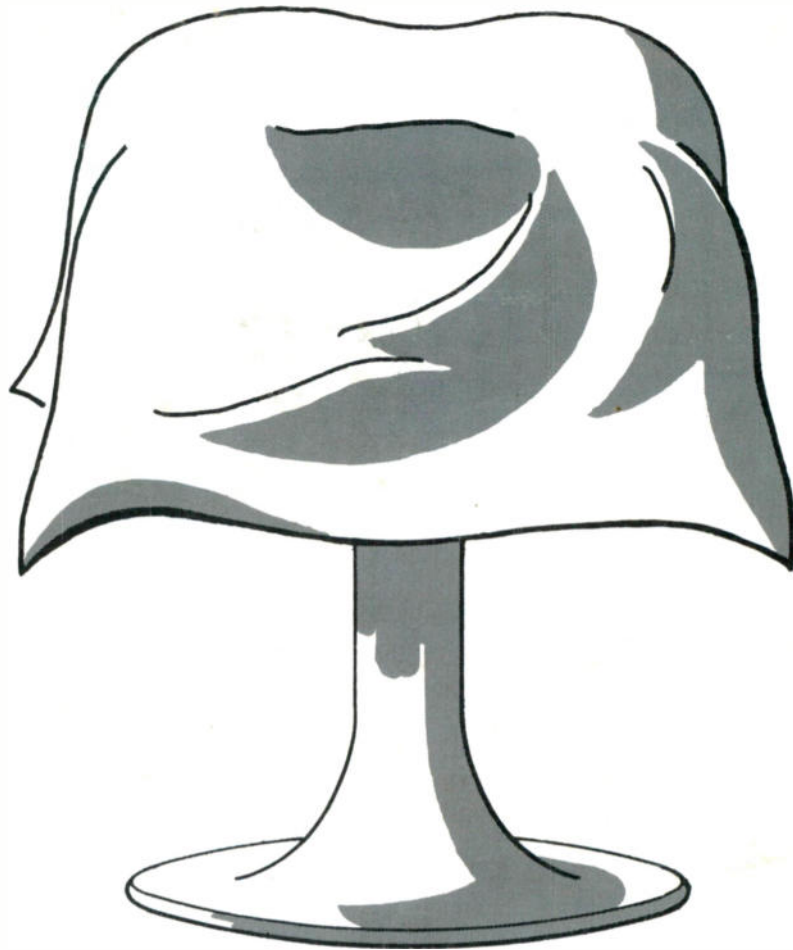
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