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August 1971

TV Communications

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The Professional Journal of Cable Television

In This Issue . . .

CATV Personnel Survey

Convention News Wrap-up

1971 Trade Show Review





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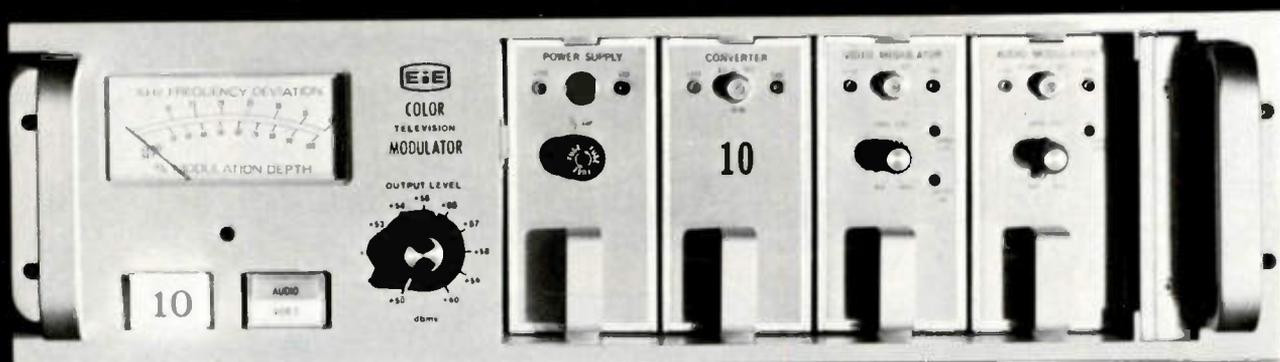
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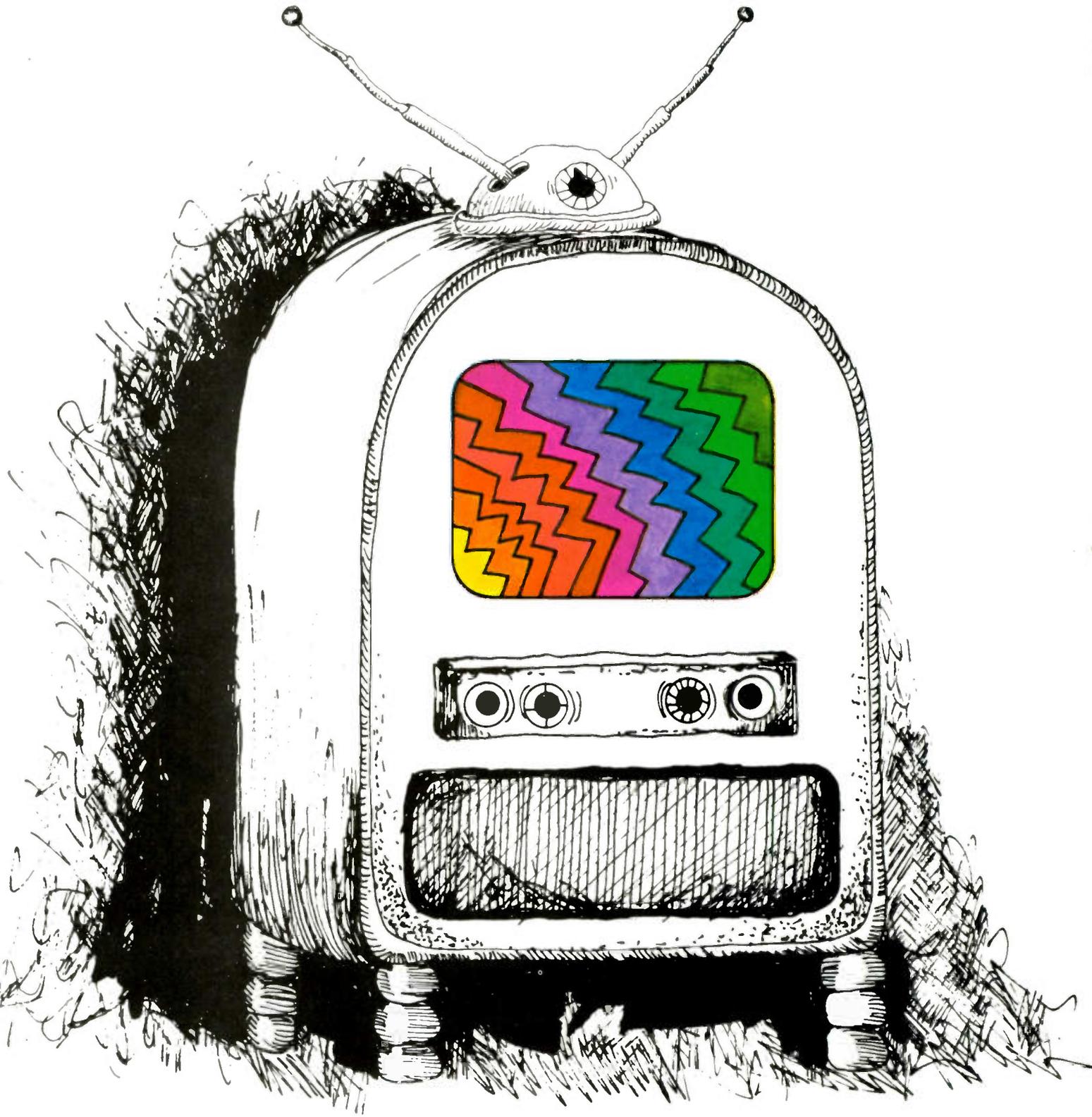
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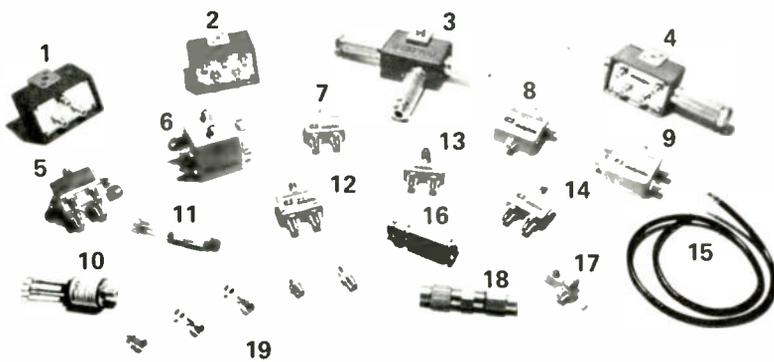
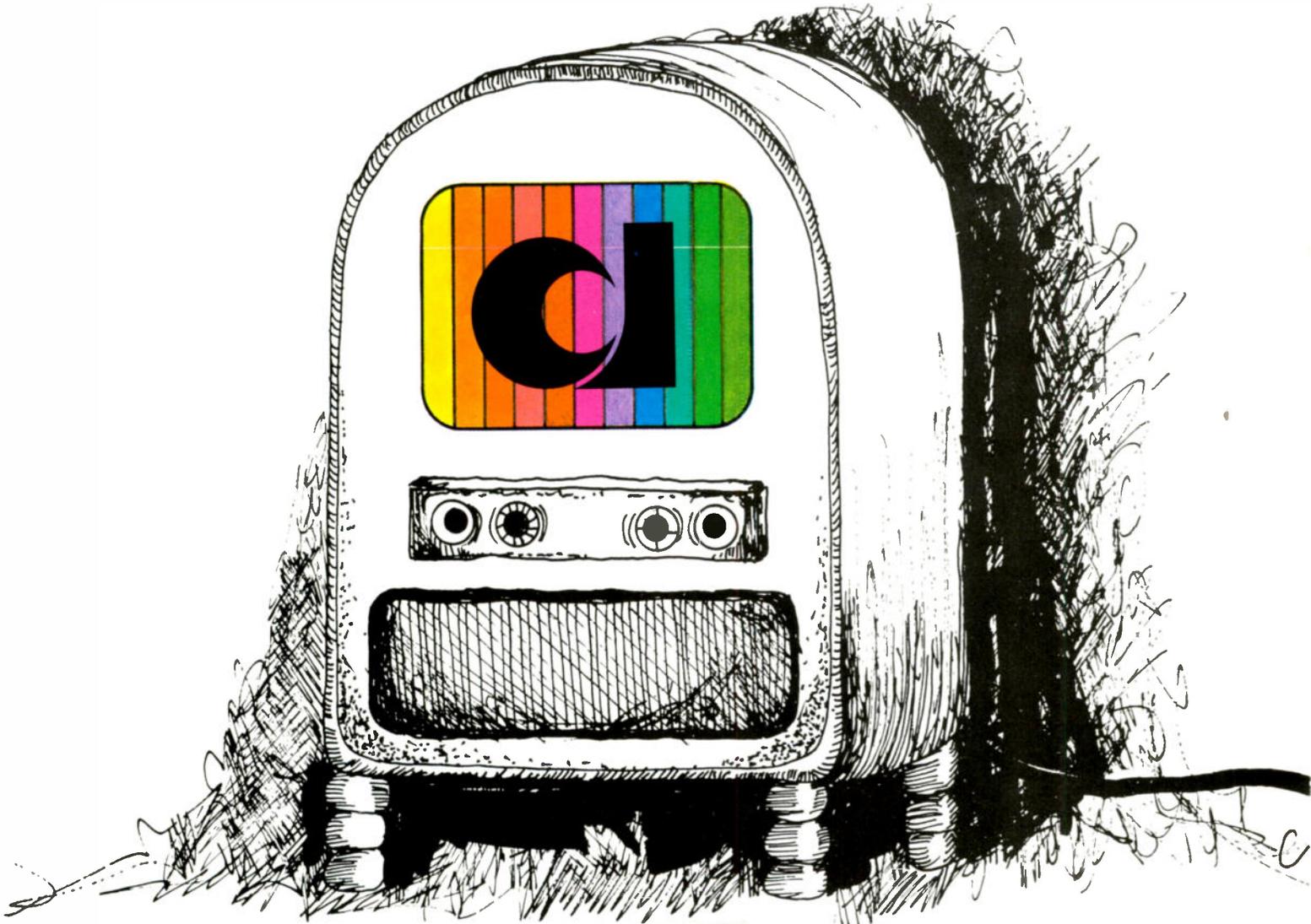
AUGUST 1971, Volume 8, Number 8.

TV COMMUNICATIONS is published on the first day of each month by Communications Publishing Corporation, 1900 West Yale, Englewood, Colorado 80110. Second Class postage is paid at Englewood, Colorado with additional entries made at Oklahoma City, Oklahoma. SUBSCRIPTIONS: One Year, \$10, Two Years, \$17, Three Years, \$23. Foreign subscriptions (except Canada and Mexico) add \$4 per year. Single copies available at \$2 each plus postage from 1900 W. Yale, Englewood, Colo. 80110. REMITTANCE/CORRESPONDENCE OFFICE: Box 6096, Duluth, Minnesota 55806.

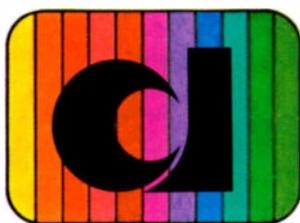
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TV Communications

The Professional Journal of Cable Television

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This Month's Cover...

TVC staff photographers caught this daybreak scene at the microwave relay site that brings Denver signals to the Cablecom General system in Colorado Springs, Colorado. See page 38 for a special feature on the "New Day for CATV" . . . a day with much promise for those who awaken early to the new opportunities of cable communications.

CPC Published by: COMMUNICATIONS PUBLISHING CORPORATION
1900 West Yale • Englewood, Colorado 80110 • (303) 761-3770

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Pruzan's CATV customers are everywhere. (Notice they're all smiling.)

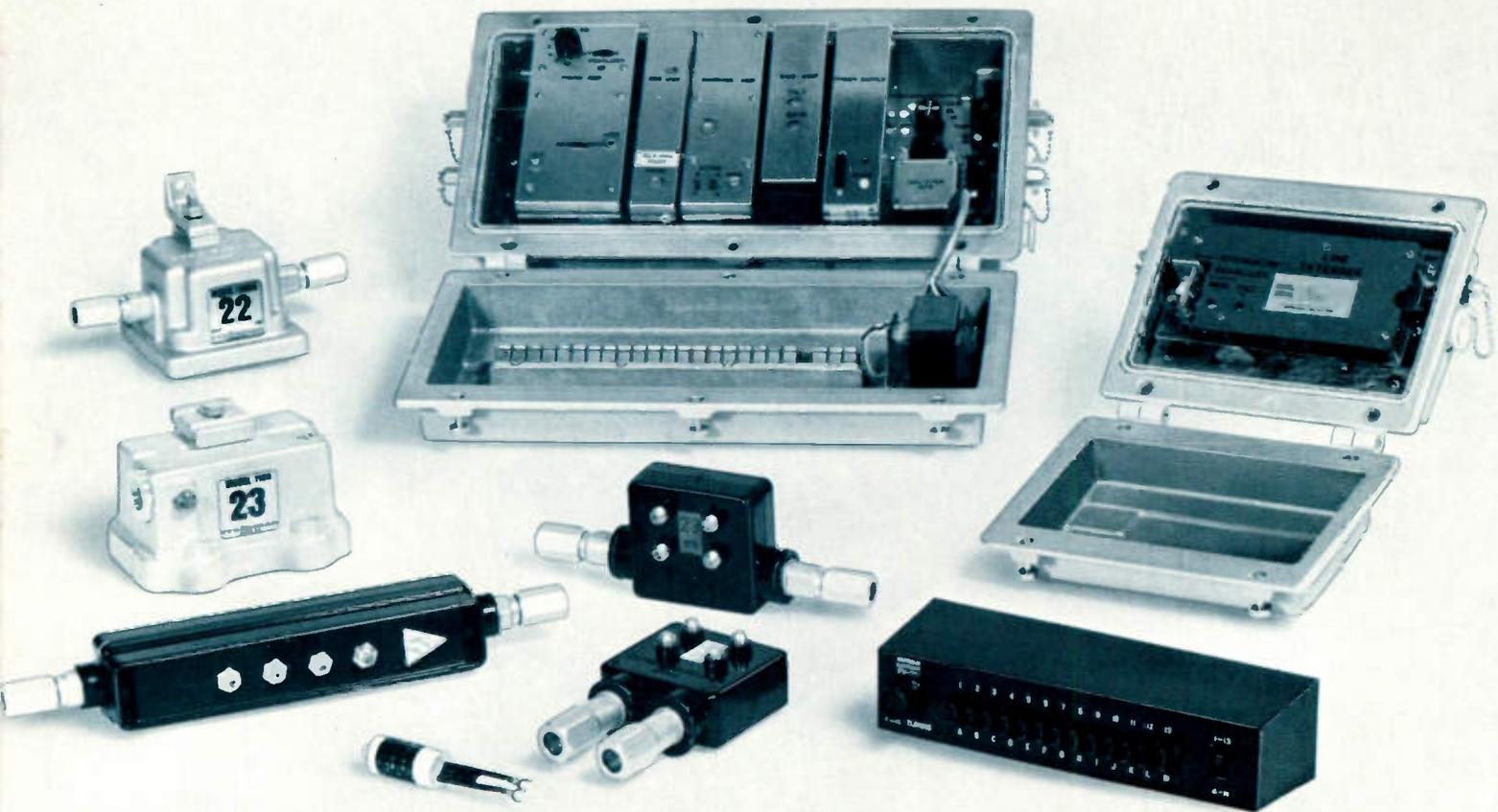
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Alan Scheinman

The TVC Viewpoint

EDITORIAL



*Robert A. Searle
Publisher*

No Paper Ghost

New NCTA Chairman John Gwin has embarked on a program designed to increase the unity in the cable camp. On the heels of the emotional confrontation he and other cablemen witnessed during the annual NCTA members' meeting, he called for improvement in this regard and promised to achieve more unity of purpose during the next year.

Frankly, cable doesn't really have an acute problem in this area. Our industry's basic intents and purposes are shared by nearly everyone. However, as a young industry, we do have our share of petty politics which give the distinct impression of disunity, and these have to be dealt with.

Gwin will not be fighting a paper ghost. The problems he will face are real, and they are tough. They involve entrenched powers, and complex political overtones. If he really does the job that needs to be done, he will have to crack a few heads together and make a number of enemies.

We don't expect him to be liked by everyone — a man who is everybody's friend is a man who is accomplishing nothing. Real leaders seldom win popularity contests — rattling cages and shooting sacred cows are not

actions which produce warm relationships. But then we don't need a Chairman who has warm relationships — we need a Chairman who gets results.

Gwin has our complete support. He should have yours, too.

But he also deserves a kind of support which helps him keep on course. Political voices can sometimes be deafening — their persuasive pleas are often for personal gain at the expense of the majority. If the majority is silent, even the best of intentions can be waylaid.

So don't be a silent majority. Let Gwin know your thinking on such critical issues as copyright negotiations, the selection of a new NCTA president, dues structure revisions and election procedure changes.

If you're not a member of NCTA let him know why you aren't. John is a man of action. Give him a chance to act in the right direction by telling him what you think that direction is.

Do your part to help him toughen cable's muscle and bring it out of adolescence into maturity.

Write John Gwin, NCTA Chairman, Robinson TV Cable, 215 S. Cross, Robinson, Illinois 62454.

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It pays back in the playback.



The Sony EV-320F Videocorder is ideally suited for program origination applications where high quality pictures and sound are essential.

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With features like capstan servo electronic editing and an all-new rotary erase head, the EV-320F allows you to tape your material from other tapes, or off-the-air; or live camera...and insert them into your pre-recorded tapes with perfect synchronization.

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SN-104

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Perspective

on the news



B. Milton Bryan
Executive Editor

Discussion in NCTA membership regarding Don Taverner's firing makes a couple of points come home very clearly: A number of people do feel quite strongly in favor of the outgoing NCTA chief executive, but the majority are convinced the board's decision to let him go was probably right, and that it should stand as is.

Attendance at this year's convention was down (about 4,500 attended the 1971 show as compared with over 5,000 last year). Trend could be an indication of a "down market" in cable — that operators are not buying because of regulatory uncertainty — but this is not necessarily true, since trade shows across the nation are reflecting the general economy pinch.

Tom Whitehead, head of the President's recently appointed CATV study group, assured cablemen at the convention that his group would have no delaying effects on present FCC rules in the mill — indicated clearly that the committee was designed to consider only long-range planning for cable communications.

Although his words were quite reassuring, some cablemen, this editor included, will not rest at ease regarding this group until the FCC's new rules are in force.

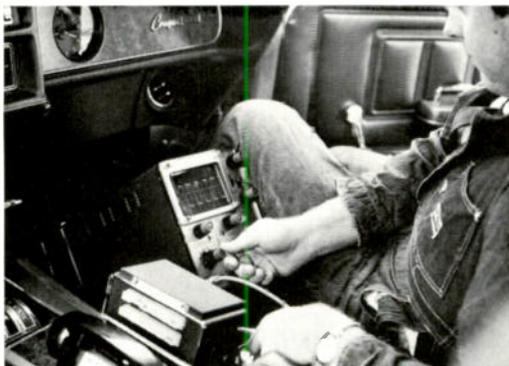
John Gwin's move to make TelePrompTer's Hank Symons head of the NCTA Presidential Selection Committee was a good one. With Symons, Ed Allen, Ralph Demgen, Polly Dunn, Bill Karnes, Jim Klungness and Bob Weary on the committee, the Association's next president will have to have the tough-mindedness and broadband vision of an MSO in combination with a solid understanding of the need of the small CATV operator — a tough bill for anyone to fill.

FCC Chairman Burch's speech at the national convention this year was hardly earthshaking. The speech can clearly be interpreted as a warning: if CATV is not willing to see itself as a broadband communications service, then the FCC is not willing for it to have distant signals in the nation's major markets.

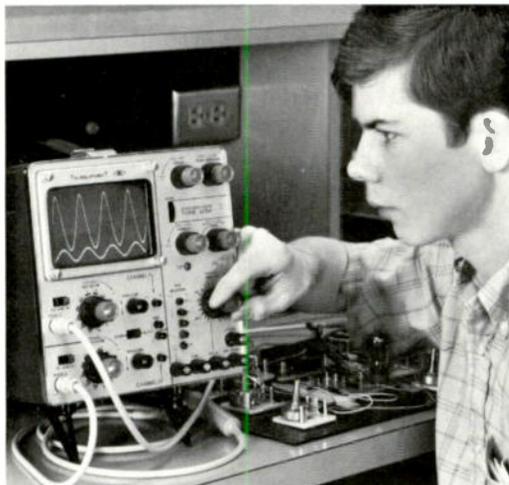
Senator McClellan's address, on the other hand, was quite encouraging. The Chairman of the Senate Subcommittee on Patents, Trademarks and Copyrights said cable should get its opportunity to grow immediately, and urged the FCC to speedy action on cable proposals now pending.



Single Trace—Type S54A—\$450

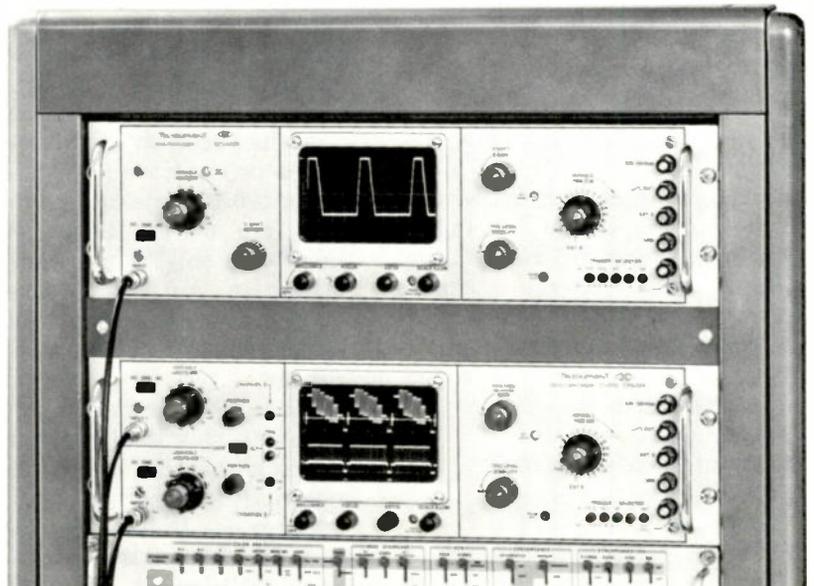


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LETTERS

Words We Like To Hear

Dear Bob:

• Having been a reader of both *TV Communications* and *CATV Magazine* for several years, I would like to commend you and your able staff on the fine editorial content in both magazines. The quality is consistently high and usually keyed very closely to our information needs.

Many of our system personnel have commented on the value of the in-depth management and technical information in *TV Communications*. Our corporate staff and field managers rely on *CATV Magazine* for current news about political and general industry progress.

Keep up the good work.
Douglas H. Dittrick
Vice President
American Television &
Communications Corp.
300 Fillmore Street
Denver, Colorado 80206

Gentlemen:

• My employees and I have been reading *TV Communications* and *CATV Magazine* for years. Our industry has grown very rapidly and we normally find ourselves so busy that we fail to take a minute to congratulate our industry associates for outstanding performance.

Anybody involved in CATV, after contemplating its development, would have to say that one of its mainstays was and is the influence of *TV Communications* and *CATV Magazine*. Indeed, we would find it difficult to imagine the CATV business without them and the dedicated people concerned with their publication.

Congratulations for having the foresight, the courage and the

ability to become the "spokesman" and principal information source for the CATV business.

Glenn R. Jones
President, Jones International,
Silver King Companies and
CATV Fund, Inc.
880 Continental Bank Bldg.
Englewood, Colorado 80110

More on CATV Promotions

Dear Editor:

• In his June letter to the Editor, Mr. "Name-withheld-at-writer's-request" took a healthy swing at a heavyweight. Why did he run back to his corner?

I agree; \$50 per new subscriber is more than a "bit much." We have all spent near that figure on some ad campaigns, but when we do we should consider the effort a failure and find a better way.

It has been my experience that super promotions cost the operator more in time and money than they are worth. There are times when we should put together an attractive institutional campaign designed to boost our company image. But do not expect a lot of return.

The most rewarding approach to advertising is of the simple, but frequent design. Try to reach the potential customer with your message as often as possible.

I am fortunate. Before joining the CATV ranks, I was Copy and Art Director of a daily newspaper; therefore, I am able to design my own brochures. I have them printed on a multilith machine. This saves expensive composition charges. The literature is all hand lettered. Polished? No! It does not have to be.

Some people respond to the eighth or tenth mailing after having thrown away the first seven. Before I mail the brochures I assume that 98% will be dumped in the nearest trash can, therefore, I try to see to it that their trash cans are a ready source of cable information. Don't fool yourself. Trash mail is trash mail, whether it cost \$2 per thousand or \$200 per thousand. You can change the face, but not the fact. People simply object to throw-aways and always will!

Careful! Do not insult your prospective customers. Place yourself in your readers' shoes. How would you respond to the ads you are writing, if you knew as little about cable TV as they do?

If you are giving something to your community, give it without strings attached. When investing in image advertising, do not make the mistake of asking for something in return! If they like what has been done, they will respond to future requests for their subscription. Send some of the neighborhood kids to the big game, but do not ask Mom to subscribe to cable in return. Ask her later.

Simple direct mail advertising should cost not more than \$7 to \$20 per new customer. If it costs much more, you had better take another look at your approach.

Come on Mr. "Name-withheld-at-writer's-request." You made a good point, defend it.

James W. Meador
General Manager
Hampton Roads Cablevision
Newport News, Virginia 23605

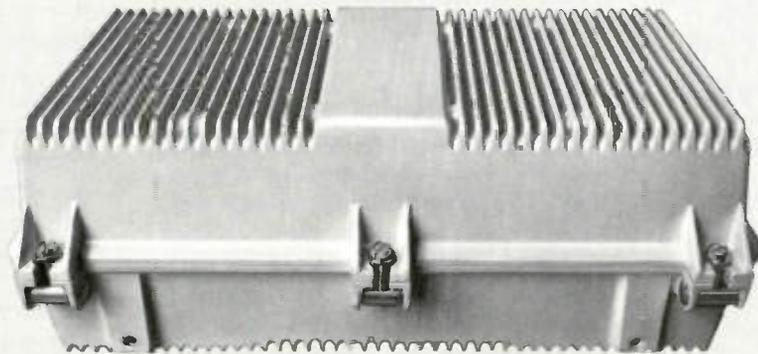
"The Actual Figure"

Dear Editor:

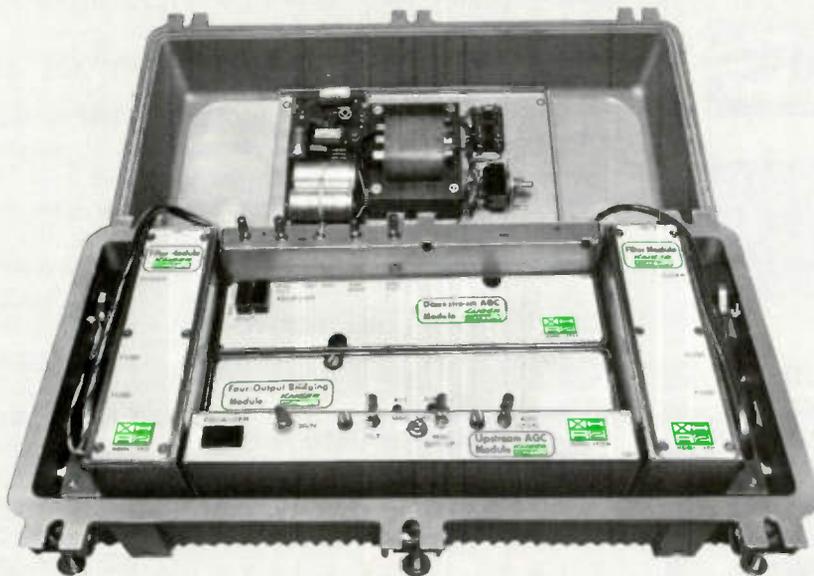
• The June issue of *TV Communications* carried a letter to the Editor which referred to an article on a subscriber promotion run by Jerrold systems. The writer of the letter (who withheld his name from publication) referred to an article which appeared in the May 1971 edition of *Advertising and Sales Promotion* magazine.

The *Advertising and Sales Promotion* article reported that there was a \$300,000 budget for the campaign, which our letter writer worked out to more than \$50 per new subscriber. The figure was incorrect. The information was taken by *Advertising & Sales Promotion* from a related article run by *TV Communications* (Dec. '70), supplemented by a phone conversation. The latter is how the error occurred. The actual figure for the promotion was \$75,000, or a cost of \$12.54 per new subscriber. (As an additional bonus, 1,082 second set connec-

Presenting: THE CASE OF THE KAISER CATV TWO-WAY SYSTEM



And here's the inside story:

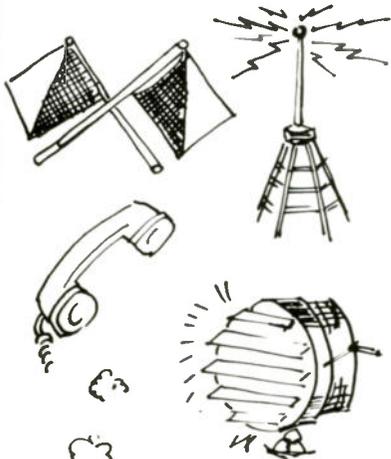


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tions were gleaned from the promotion).

It is further suggested that the promotion may have cost even more than reported. Our letter writer goes on to say, "The systems operations marketing man for Jerrold was quoted as saying 'I don't worry too much about budgets. If I think a promotion will bring in necessary results I go with it and don't keep too close track of how much I am spending.'"

You must realize that when you are working with CATV systems and a campaign is going "great" . . . if you continue the promotion for an added few days or a week and you get additional subscribers, you may go over your initial budget. (within reason of course).

You have taken advantage of a momentum to gain more. So you cut down in the following months on advertising budget . . . or you don't cut down because you have gotten extra *unbudgeted* subscribers and revenue for going over budget.

Yes, the Orange Bowl promotion was expensive . . . (though not unusually so). Promotions run by Jerrold have also had more modest budgets. For example, our 1971 Cable Week promotion averaged out 3,839 new subscribers at \$2.12 each and our post-Christmas promotion netted 3,202 new subscribers at \$2.86 each.

Stanley H. Ogen
Advertising & Promotion
Manager
Systems Operations Division
Jerrold Electronics Corp.

Cash Flow Books

Dear Editor:

• Please send information on the brochures you have prepared which are designed to be presented to city councils, finance people, etc.

Dorothy Smith
Office Supervisor
Compucon
2020 Live Oak Street
Dallas, Texas 75201

I believe you are referring to our "Cable Television Cash Flow Projection" booklets, available for

\$2.50 each. If you would like to have some of these booklets, please let us know. We will be happy to send them.—Ed.

TVC Readers Respond

Dear Editor:

• Thank you very much for your response to my letter concerning the CATV Terms and Definitions Project. Your publication of the letter in (July) TVC Letters to the Editor is very much appreciated. I have already begun to receive response to the publication.

L.E. Huntley, Chairman
Terms and Definitions Project
c/o Circuit Standards Section
National Bureau of Standards
Boulder, Colorado 80302

Readers interested in CATV terminology and definitions will be interested in the first item in this month's Literature Column on page 88.—Ed.

"Dimes" Man at Convention

Dear Stuart:

• It was a real pleasure meeting you at the NCTA's Annual Banquet. If I hadn't selected that particular table for the occasion, we would never have had the opportunity to meet — but I must say I've enjoyed our many chats and discussions via "Ma Bell."

I'm looking forward to the "Convention" portion of your August edition of *TV Communications*.

Once again, my sincere thanks and appreciation for the exposure afforded the National Foundation (March of Dimes) in your July edition of *TV Communications* concerning the special videotape presentation we prepared for NCTA.

Drex Hines, Director
Broadcast Services
The National Foundation
1275 Mamaroneck Ave.
White Plains, N.Y. 10605

For Convention coverage, see page 30 of this month's TVC and be sure to watch for the 1971 Convention Photo Album in an expanded edition of CATV News-weekly on August 16th.—Ed.

tvc

before you can say . . . "AELCC's new Super-Band and Mid-Band Tunerless Converters", they'll already have added 14 additional channels to your CATV system!

The Innovators have done it again with the development of two unique converters, one for Super-Band and one for Mid-Band, each of which can add an additional seven channels to a single cable CATV system. Either model available for rear set or remote mounting.

Featuring:

- no fine tuning,
- Solid State electronics,
- high reliability,
- ease of installation and
- economical feasibility,

these converters offer a simple and effective technique for providing extra channel capacity to existing CATV systems.

Call or write today for more information about AELCC's new Super-Band and Mid-Band Tunerless Converters . . . you'll be turning on to the best when you do.



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Management Guidelines

Evaluate...then Decide Without Hesitation

If you want to become a competent manager or supervisor, you must learn to make a decision without vacillation. You must take a stand, right or wrong. Since you won't always be right, it still won't change the fact that a decision must be made at the right time.

More common than the man in a rut is the man in a hurry; the manager who plunges into a choice as though driven by devils. Hair-trigger decisions (along with ulcers) form part of the manager's stereotype; the urge to decide is part of the essential urge to get things done. Unfortunately, however, some things get done that might better have been left undone. There's a vast difference between prompt, adequate decision based on facts and judgment, and the impulsive driven decision made to "clear the air," "get it off the desk" or otherwise end the strain of suspended action.

Nobody enjoys indecision; once one admits a problem exists, the inclination is to get it out of the way as quickly as possible. Delay is peculiarly tormenting for the manager who sees himself as a tough, decisive man of action. Each moment of hesitation makes him suspect he is losing his grip.

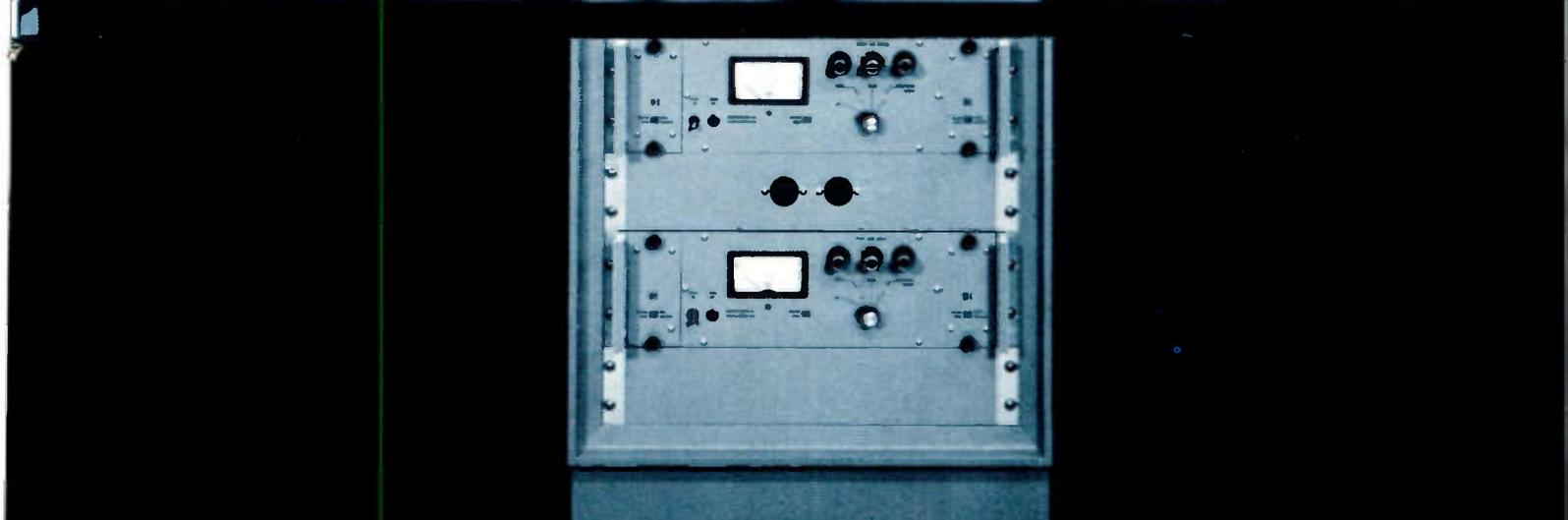
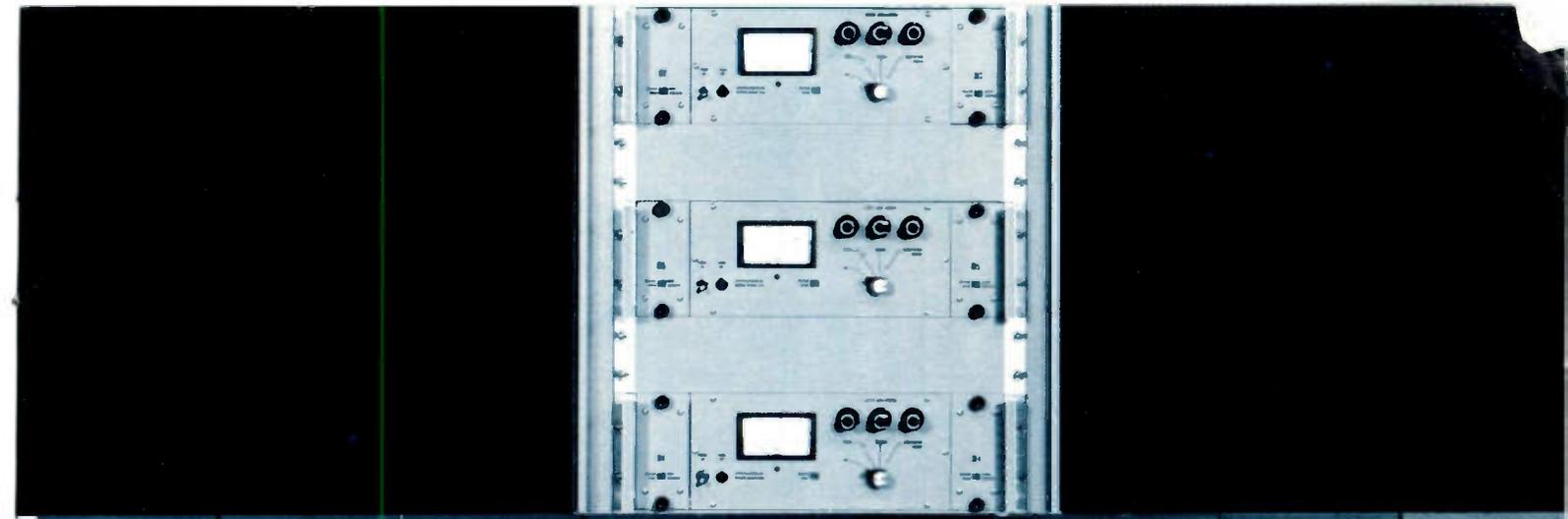
He may feel he has built his career on snap decisions. He has

succeeded, often because his so-called hunches were based more than he realized on unconscious mental activity enriched by the intimate knowledge of his field.

As the supervisor or manager moves up the ladder, he leaves his area of special competence for a wider, less familiar field. The questions confronting him are larger in scope and more complex and the hunches don't arrive with the old easy clarity. This in itself is frightening.

Still more frightening is the prospect of having to take time to think. Squeezed between inner and outer pressures, he may approve a desperate decision that will plunge his business or area of responsibility into more difficulties. Or he may fall back on the ultra-safe alternatives; the tried and true marketing or sales plan, the product as before, a process which kills off new ideas and robs the business of opportunities for growth. Whether reckless or cautious, the driven or forced decision fails in a main function of decision making; *to evaluate alternate ways of reaching a goal, and choose the most productive.* Still the plunger has one advantage; he does make some sort of choice and thus clears the deck for action which has at least a chance of success. But far more sad is the drifter, the man who cannot make up his mind.

TVC

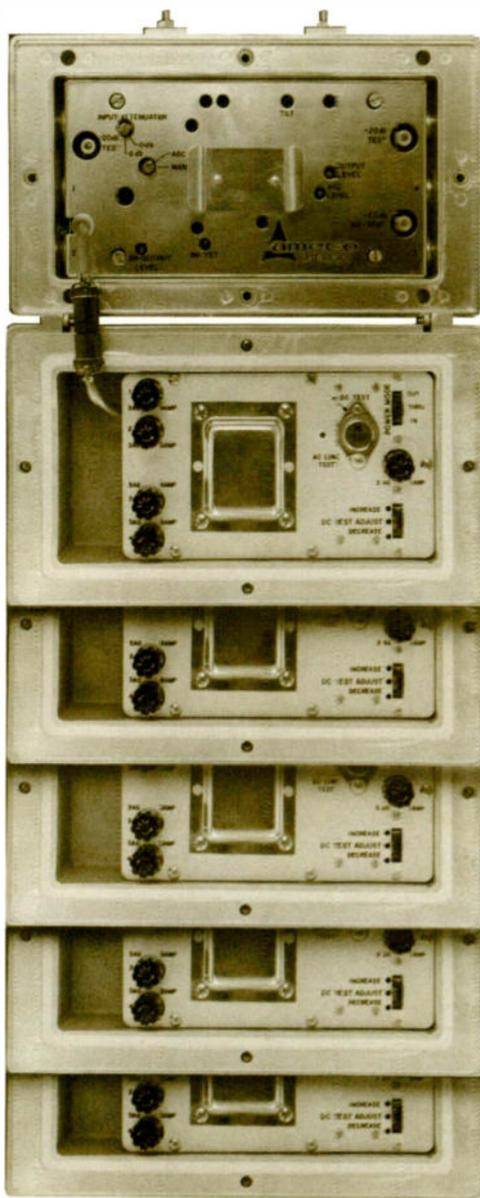


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CATV News Briefs

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

4500 Cablemen Gather in D. C.: Attendance was down 500 from last year's NCTA Convention and Trade Show, but action was "up." (For more details on the meeting and new equipment read special features beginning on pages 30, 62 and 77.)

Most controversial aspect of convention was discussion of Don Taverner's leaving. Membership meeting saw tempers flare as motion to reconsider president's "firing" was soundly defeated.

Outgoing NCTA chairman Ralph Demgen had earlier brought Taverner situation to Convention's attention in his address during opening session. Demgen charged Taverner's demise was engineered by "staff disloyalty" and "small group of industry dissidents." If a dissident crew instead of the captain is going to run the ship, suggested Demgen, "perhaps we ought to abandon it." (NCTA Convention Daily, Thursday, July 8)

New NCTA board of directors "cleared the air" later; gave Demgen thanks for service and presented gifts to him in appreciation. (CATV 7/19 p3)

New Chairman for the coming year is Cox's John Gwin. Gwin is supported by TPT's Bill Bresnan (vice chairman), secretary Gordon Fuqua of Electra Communications, and Treasurer Glenn Scallorn of Del Rio (Texas) TV Cable Corp.

New directors are Bob Tarlton, Charles Henry, Bill Karnes, Ed Allen, Rex Bradley, Dave Brody and Bob McGinty. Theta Com's Bob Behringer was re-elected associate's director at associate's Tuesday meeting.

Politicians and regulators addressing the convention left cablemen with a basically positive picture. Senator John McClellan, OTP Director Clay Whitehead, Senator Birch Bayh and FCC Chairman Dean Burch addressed the group.

Annual Banquet saw Pennsylvania Governor Milt Shapp receive the Larry Boggs award. Featured entertainment included "The Brothers and Sisters" and Don Rice III.

House Subcommittee Rushes into Hearing: Chairman Torbert Macdonald called on short notice House Communications Subcommittee hearings on cable television . . . Macdonald apparently wanted to get his word in before FCC vote on rules proposal for cable, a vote which was expected momentarily at TVC presstime . . . Committee members seemed to have no particular anti-cable bias. (CATV 7/26 Special News Bulletin)

Charlotte Reid Tapped for Commission Seat: Charlotte Reid, Republican Congresswoman from Illinois, has been chosen by President Nixon as next appointee to FCC . . . Mrs. Reid will replace Thomas Houser as soon as her work on House Appropriations Committee is completed. (CATV 7/12 p7)

States Interfere in CATV Developments: New York and New Jersey legislatures enacted bills placing one-year moratorium on cable franchises . . . Iowa legislature studying bill to create committee to set "guidelines . . . for local governments . . ." (CATV 7/19 p16)

OTP Probes Possible Inter-Industry Pact: The Office of Telecommunications Policy headed by Clay (Tom) Whitehead probed into the possibility of a privately negotiated cable-broadcast-copyright settlement. NCTA Chairman John Gwin and general counsel Gary Christensen met with executive branch representatives; copyright groups made pilgrimages later. According to OTP, meetings are designed to "explore the possibilities" of inter-industry agreement. (CATV 8/2 p3)

CRTC Outlines New Regulations: In a 41-page document, the Canadian Radio and Television Commission outlined policies which it hopes will integrate cable television into the Canadian broadcasting system.

CATV News Briefs

According to the new rules, operators can keep three U. S. signals and microwave them to points north, but must pay local broadcasters for programming based on a percentage of gross revenue of the cable system related to the number of miles of trunk cable and subscriber penetration figures . . . CATV systems serving 3,000 or more subscribers will be required to delete a distant signal if program appears at same time on local channel . . . CRTC encourages operators to delete commercials out of programs from stations not licensed in Canada, and replace them with ads sold by local broadcasters. (CATV 7/26 p3-5)

FCC Proposed Regulations to be Unchanged: FCC's new rules package was expected to be voted on by the Commission at TVC presstime. Washington sources indicate the rules as proposed before Pastore's Senate subcommittee (CATV 6/21 p3) will be virtually unchanged. Proposals expected to come from FCC in form of a "letter of intent" to be sent to appropriate Senate and House subcommittees. No "report and order" expected yet, but letter of intent expected to become law around first of year on an automatic basis, unless Congress passes law delaying or modifying proposals.

FCC Dismisses Scores of L/O Waiver Bids: Commission took action on scores of pending CATV requests for cablecasting waivers . . . after 8th circuit threw out FCC's mandatory origination regulations, the rule has been suspended pending appeal to Supreme Court by Commission. (CATV 7/5 p22)

Symons Named Chairman of Presidential Selectors: National Chairman John Gwin named Robert H. Symons of TPT as chairman of NCTA's presidential selection committee . . . Edward M. Allen of Western Communications named secretary. Gwin said association members should submit suggestions for candidates and job descriptions for office of NCTA president. (CATV 7/19 p3)

TelePrompTer and Wrather Agree on Muzak Sale: TPT and Wrather Corporation announced signing of formal agreement for TelePrompTer's acquisition of Muzak Inc. Agreement is subject to shareholder approval . . . stockholders of both companies will vote in late August or early September. (CATV 7/12 p7)

California Cablecasting Seminar a Success: Twenty-eight novice cablecasters attended California Association's local origination seminar in Palm Desert . . . seminar informally taught production techniques, including equipment operation, lighting, audio, editing, staging, directing, and production. Meeting was led by Tony Acone, Chairman of Cablecasting Committee. (CATV 7/5 p12)

Jerrold Cablecaster Wins Best Station Award: KBAL-TV, Cablecasting channel of Valley Cable TV, is 1971 recipient of "Best Television Station" in Starr County, Texas Award . . . this is first time award has been given to Cable TV "Station." (CATV 7/5 p5, 6)

Cableman Accused of "Unfair Competition": John Spottswood, long-time cableman, has been accused of unfair competition by a Florida broadcaster and the FCC has ordered a hearing on the license renewal for Spottswood's Key West, Fla. radio station WKWF. According to FCC, the hearing will determine whether Spottswood has engaged in unfair competition by carrying his station WKWF on his local cable system (Cable-Vision, Inc.) and refusing to afford equivalent carriage to Florida Keys' competing station WKIZ. (CATV 8/2 p5, 7)

Marketing Firm Offers Closed Circuit Fight to Cable: Ben Kittay, president of National Telemarketing, Inc., announced that his company and Video Techniques have obtained cable rights for Mohammed Ali

vs. Jimmy Ellis fight, other theater and sports events . . . events were previously available only on closed circuit TV. (CATV 7/5 p8)

Media Experts See Little Cable Impact: Experts from telephone, broadcast, newspaper industries agreed they see cable having little impact at present on existing media . . . NCTA sponsored seminar featured Richard C. Block, Kaiser Broadcasting, and Thomas T. O'Reilly, counsel to United States Independent Telephone Association. (CATV 7/12 p8)

New England Telco Discontinues CATV Service: FCC's Common Carrier Bureau Telephone Committee has authorized New England Telephone and Telegraph Company to discontinue CATV channel service in two communities . . . communities are Great Barrington, Mass. and Waterville, Maine. (CATV 7/5 p21)

Commission Grants CATV Signal Request: Petition for carriage of two distant signals has been granted Normandy Cable Company's Queensbury, N. Y. system . . . WSMW-TV, Worcester, Mass. and WCAX-TV, Burlington, Vt. will be carried on the system . . . FCC noted that no leapfrogging is involved and no broadcaster opposed the petition. (CATV 7/5 p18)

Telcos Ask Waivers for CATV Construction: Missouri State Telephone Company and Dekalb-Ogle Telephone Company have filed rule waiver applications with FCC Common Carrier Bureau to furnish CATV service to affiliated CATV firms . . . Telcos are seeking waiver to Section 64.601 of rules which prohibits common carriers from providing cable service to affiliated CATV companies in their telephone service area. (CATV 7/5 p18)

Action in the Franchise Arena: Schenectady, N. Y., hoping it has found a way to beat the N. Y. state freeze, is exploring possibility that franchise issued earlier to General Electric may still be valid. It hasn't been able to build because of proposed FCC restrictions; Schenectady hopes to transfer the franchise . . . Tulsa, Okla. has adopted an ordinance granting the city's first CATV license; franchise there held by LVO . . . Five cable television firms have expressed interest in St. Paul, Minn.; city plans to license CATV companies until a new city charter takes effect in June of 1972, then issue an exclusive 20-year franchise . . . WINK-TV, owners of Southern Cablevision in Fort Myers, Fla. has offered the system to the city for purchase. (CATV July editions)

CATV Systems Change Hands: Tele-Communications, Inc. of Denver, Colorado has purchased Tex-Video, Inc., a wholly-owned subsidiary of Broadway Maintenance Co. of Long Island City, N. Y. Tex-Video operates systems in 26 communities in western Pennsylvania and serves more than 14,000 subscribers . . . Cable Corporation of America has acquired its first operating CATV system with the acquisition of Cox-Cosmos, Inc., an operating CATV company in Charlotte, N. C. . . . Comcast Corp., a privately-held communications company which recently announced agreement in principle to merge with Snelling & Snelling, Inc., has signed an agreement to purchase Westmoreland Cable Company, a 9,000 subscriber cable system complex serving nine municipalities in Westmoreland County, Pa. (CATV 7/26 p15, 17)

Minorities Gather for Cable Workshop: Members of American minority groups met in Washington, D. C. June 24-27 for workshop on opportunities in cable television . . . workshop was designed to acquaint minority entrepreneur with economic potential, political importance of controlling CATV in community. Speakers included Commissioner Nicholas Johnson, CATV Bureau Chief Sol Schildhouse. (CATV 7/5 p26)

CATV News Briefs

Gwin Makes First Committee Choice: NCTA's newly elected national chairman John Gwin made his first committee chairman appointment, choosing TelePrompTer board chairman Irving Kahn to head Satellite Committee for the third straight time. Announcement came at close of the first Executive Committee meeting. With the exception of Ed Allen, all committee members — which includes four NCTA officers along with Bill Brazeal and Lawrence (Duff) Klierer — were on hand for the meeting, described as "a nuts-and-bolts session." (CATV 8/2 p6)

Sterling Contracts for Community Programming: Sterling Manhattan and The American Foundation on Automation and Employment, Inc., announced that they signed contract for community use of Sterling's Public Channels . . . Foundation is establishing Community Television Center with studio and recording facilities, connected to Sterling's system by cable. (CATV 7/12 p5)

Madison Square Garden Expands CATV Coverage in New York: Madison Square Garden has signed a five-year contract with Suffolk Cablevision to carry Garden events on systems in Brookhaven, Smithtown and Islip, New York . . . programs will be carried over Suffolk's local origination channels at no additional cost to subscribers. (CATV 7/5 p24)

Investment Analysts Hear Bullish Talks by CATV Panel: Representatives from ATC, TCI, TPT, TVC, and Sterling told financial and investment audiences at Investment Forum in New York that CATV will continue to expand and develop . . . meeting was sponsored by Coleman and Company. (CATV 7/5 p3, 7)

ATC Stock Offering: American Television & Communications Corporation filed a registration statement with Securities & Exchange Commission of a proposed offering of 500,000 shares of common stock; 200,000 by ATC, 300,000 by stockholders. (CATV 7/19 p21)

Vikoa Negotiating for 3 Cable Systems: Vikoa said company is close to completing negotiations to buy three cable systems in Louisiana . . . systems have about 2,000 subscribers. Vikoa intends to acquire at least two other systems before year-end. (CATV 7/5 p5)

TVC Signs Akron Construction Contract with Jerrold: TeleVision Communications moving ahead on construction of country's largest CATV system . . . company signed \$5.5 million turnkey agreement with Jerrold Electronics Corp. to equip and build final 700 miles of plant. System could ultimately serve 150,000 subscribers. (CATV 7/5 p21)

Financial Developments Affecting CATV: TeleVision Communications Corporation signed note agreements under which TVC will receive \$8 million in long-term 15-year financing; proceeds will go toward the final construction stages for TVC's Akron, Ohio system. . . . Sterling Manhattan reached an agreement with Morgan Guaranty Trust of N. Y. for a loan of \$13,150,000. Time, Inc. 47% owner of Sterling Communications, Inc., will support the loan. . . . Viacom International Inc. stock certificates were mailed in June to CBS shareholders following final decision by FCC that the transaction fully complies with FCC rules, contingent upon a divestiture agreement. . . . Burnup & Sims has reported an 85% increase in earnings based upon a 60% increase in revenues for the year ended April 30, 1971 . . . Cox-Cosmos, Inc. completed divestiture of its CATV properties with the sale of its facilities in Charlotte, N. C. to Charlotte Cablevision Co. . . . Cox Broadcasting Corporation reported net income for the three months ended June 30, 1971 was \$2,751,210. (CATV July editions)

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FOCUS

... On People

Systems

Charles Hermanowski, president of Vikoa, Inc., has announced the appointment of Arthur Einhorn as vice president, Continental CATV, Inc. Einhorn retains the title of treasurer of Vikoa. Also announced by Hermanowski was the appointment of David Karmann as General Manager-Electronics/Cable Divisions. Karmann has sixteen years of experience in the communications industry.

Roger G. Wilson, director of engineering for TelePrompTer Corporation's Cable TV Division, has been appointed vice president, engineering, for the division. Wilson will continue to be in charge of all technical aspects of TelePrompTer's national CATV complex.

Cypress Communications Corporation has elected three new board members. They are: William G. Salatich, president, The Gillette Company, North America, Boston; Alvin H. Einbender, president, chief operating officer, Shelter Resources Corporation, New York; Carl D. Glickman, chief executive officer, Shelter Resources Corporation, Cleveland.

Vernon R. Gill, president of The TM Communications Company of Florida, has announced his resignation to form a private venture of an undisclosed nature. Gill joined the Times Mirror organization as vice president of engineering and development in early 1969, following the sale of Co-Axial Systems Engineering, in which he was a partner, to Times Mirror.

TeleVision Communications Corporation (TVC) has named Edward J. DeMarco as director of the newly-formed National



Mr. Einhorn



Mr. Karmann

Systems Group, reporting to Joel P. Smith, vice president in charge of the Cable Television Division. The National Systems Group has been created within the Cable Television Division to provide liaison with TVC's existing CATV operations throughout the country.

Marc B. Nathanson has been named director of corporate development of Cypress Communications Corporation. Nathanson joined the firm over a year ago as director of marketing.

Community Tele-Communications, Inc. (CTCI), a subsidiary of Tele-Communications, Inc. (TCI), has named Graham H. Moore as director of marketing and programming. Moore will be responsi-



Mr. Feldstein



Mr. Wilson

ble for cable subscriber promotion, development and production of original and syndicated programming for CATV systems, and the direction of new franchising activities.

Suppliers

Craftsman Electronics, division of The Magnavox Corporation, has announced the addition of James B. Emerson in the newly-created position of manager of communications. Emerson will be responsible for all marketing and engineering publications and other communications for Craftsman's CATV systems design and manufacture.

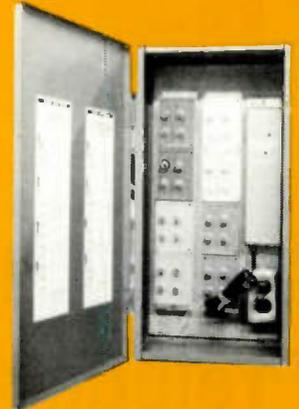
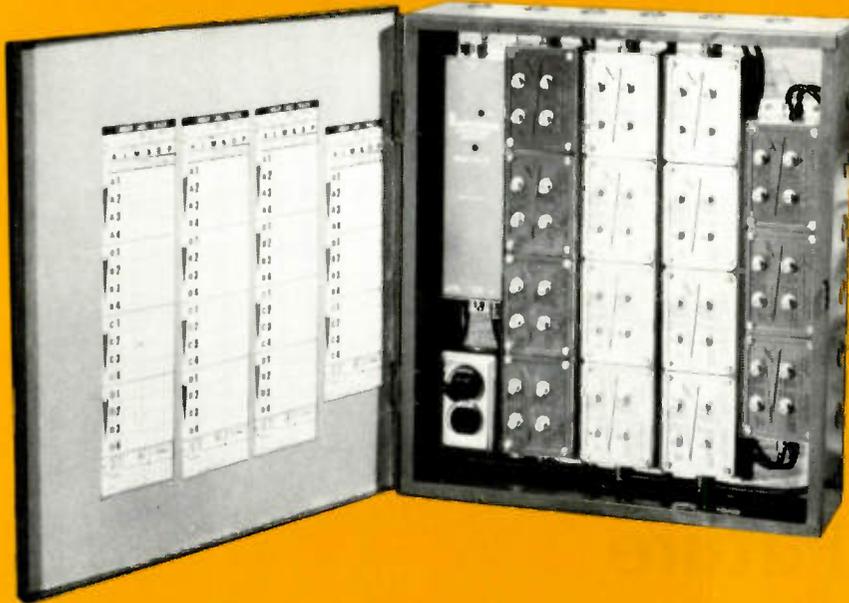
Kaiser CATV has named Charles Auer as western regional manager. Auer will be in charge of marketing Kaiser's turnkey CATV system in the firm's eight-state region. He will headquarter in Oakland, Calif. Another appointment by Kaiser is that of Leo C. Cull as southwestern area representative. He will be responsible for marketing Kaiser's CATV components as well as its turnkey installations in Southern California, Utah, Nevada and Arizona.

Professional

Clay T. Whitehead, Director of the Office of Telecommunications Policy, has announced the appointment of Stephen E. Doyle, formerly his special assistant, to a position as counsel in the Office of the General Counsel. Whitehead also announced that Henry Goldberg has joined the OTP General Counsel's staff.

Stuart F. Feldstein, an attorney with eight years experience at the FCC, has joined the NCTA staff as assistant general counsel, NCTA president Donald V. Taverner has announced. Feldstein has served as a trial attorney in the general counsel's office at the FCC for the past five years. Prior to that he worked in the administrative law section of the General Counsel's office.

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Form 1457-E

The 1971 Convention: Prelude to the Future

The cable industry takes stock at annual gathering. Resolution of distant signal problem seems certain, but cablemen confront question, "Where to from here?"



“**T**he Second Generation” . . . NCTA’s Twentieth Annual Convention last month in Washington, D.C. . . . differed remarkably from cable conventions of the past several years.

For the first time in recent history cable operators felt assured that the distant signal problem (cable television in the major markets) is going to be resolved. Despite this news, and in some ways because of this news, the mood at the Convention was primarily a quiet one, at times a sober one, and occasionally a troubled one.

Industry suppliers, like operators, were pleased with the promise of new growth for CATV. But until the Commission releases its rules (which it had not yet done) on technical standards, access channels, two-way and so on . . . the buyers are bound to be cautious. Browsers shopped the exotic displays — but some operators are more skeptical than the FCC that substantial investments in “other services” can be justified.

The panel sessions, with some exceptions, were surprisingly quiet with limited and unusually sedate give-and-take among panelists and audience. One observer commented, “It may be a kind of ‘battle fatigue’ . . . a reaction now that we’re achieving some of the things we’ve fought so long for.”



Above: Don Rice II and "The Brothers and Sisters" entertain at the Annual Banquet. Pictures at right: Marty Malarkey chats with Senator Birch Bayh (both men participated in announcement of the Larry Boggs Award). Winner of the Boggs Award, Milton Jerrold Shapp (Governor of Pennsylvania) gets warm congratulations from Leon Papernow and Marc Nathanson, both of Cypress Communications Corp. Middle right: NCTA President Don Taverner discusses the convention with Tele-Prompter Chairman Irving Kahn. Bottom right: Clay (Tom) Whilehead, OTP Director, explains the purposes of President Nixon's new Committee on CATV. Opposite page, top: In the exhibit area, Robert Behringer, president of Theta-Com, beams with pride as he explains his AML equipment to Tom Wilson of the First National Bank of Boston (back to camera) and Amos (Bud) Hostetter of Continental Cablevision. Two men on the left, Irving Rabowsky and Abe Sonnenschein, are both with Theta-Com. Opposite page, bottom: Kaiser representatives Jim Taglia (far left) and Bruce Frazier (far right) discuss Kaiser's new two-way gear with John Lazor and Arthur May, both of People's Cable Corporation in Rochester, N.Y.



Conversely, the membership meeting, usually among the less spectacular of Convention events, was far from sedate. Friction erupted into flame over the board's June firing of NCTA president Donald V. Taverner. Despite tense words and high feelings, however, the membership overwhelmingly voted to close the issue . . . a decision which likely relieved Taverner who commented that he felt much like "the football in the game."

The Time Is Now

In keynoting the Convention, Taverner emphasized that the time has indeed arrived for the resolution of the distant signal problem. Referring to the FCC's promised rules on CATV, Taverner said the industry is no longer merely "at the threshold" of major market growth . . . it is virtually there.

None of the three major government representatives who addressed cablemen during the following three days indicated that Taverner was mistaken in his judgment.

Senator John McClellan (D-Ark.), chairman of the Senate Copyright Subcommittee, expressed support for the FCC taking action. Commenting on fears that



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Congress or the recently appointed President's Committee on CATV might attempt to stall FCC action, McClellan said: "The appropriate committees of both Houses of Congress have had ample opportunity to determine whether legislation to regulate cable television is currently necessary or desirable." He also said, "I do not believe that the President is allied with those who are seeking to obstruct a decision by the FCC...it is inconceivable that Members of the Cabinet can make an informed judgment on the specific issues before the Commission in its pending rulemaking proceedings."

Furthermore, McClellan pointed out that there are "other options" to take if the Commission is stalled for any reason.

Once the FCC makes "satisfactory disposition" of the cable issues, said McClellan, "it will then be possible for the Congress to resume immediately active consideration of the long-delayed copyright revision bill."

He outlined for the cable audience five essentials for a workable copyright settlement: (1) Compulsory licensing; (2) Major market program exclusivity; (3) Royalty payments set initially by Congress; (4) A Copyright Royalty Tribunal; (5) Special provisions to deal with professional and collegiate sports.

The Senator's judgment that the President's Committee would not attempt to delay Commission action was affirmed a day later by Clay (Tom) Whitehead, director of the Executive Office of Telecommunications Policy and chairman of the new committee.

"Our purpose," explained Whitehead, "is not to cause the FCC to delay its proceedings...but rather to provide a different perspective on cable regulation...a perspective we feel is badly needed... Our interest is in policy, not the details of rules and regulations."

He told the cable audience something about OTP's function and said, "We would hope to formulate the policy framework within which the FCC, the states, or the courts might regulate."

Cable is unique, said Whitehead, and the Administration is seeking a new and different policy to deal with it. The yardstick the new committee is going to use in coming up with this new and different policy, he continued, will be "effect on the viewing public."

"The cable industry has rightfully emphasized the benefits of cable to consumers," he remarked, "and you must expect this to be the criterion by which you will be judged."

The Administration committee, unlike the FCC, doesn't "get caught up in the short-run dynamics of the competing industry viewpoints," Whitehead pointed out. But that doesn't mean there are not serious political pressures. "Whatever we come up with," he concluded, "will have to be not only a good policy, but a timely and politically realistic policy."

Whitehead made it clear that the committee appreciates the value of present over-the-air broadcasting and would reject any policy that would "threaten this basic level of television service." They are aiming for a policy, however, "which will allow

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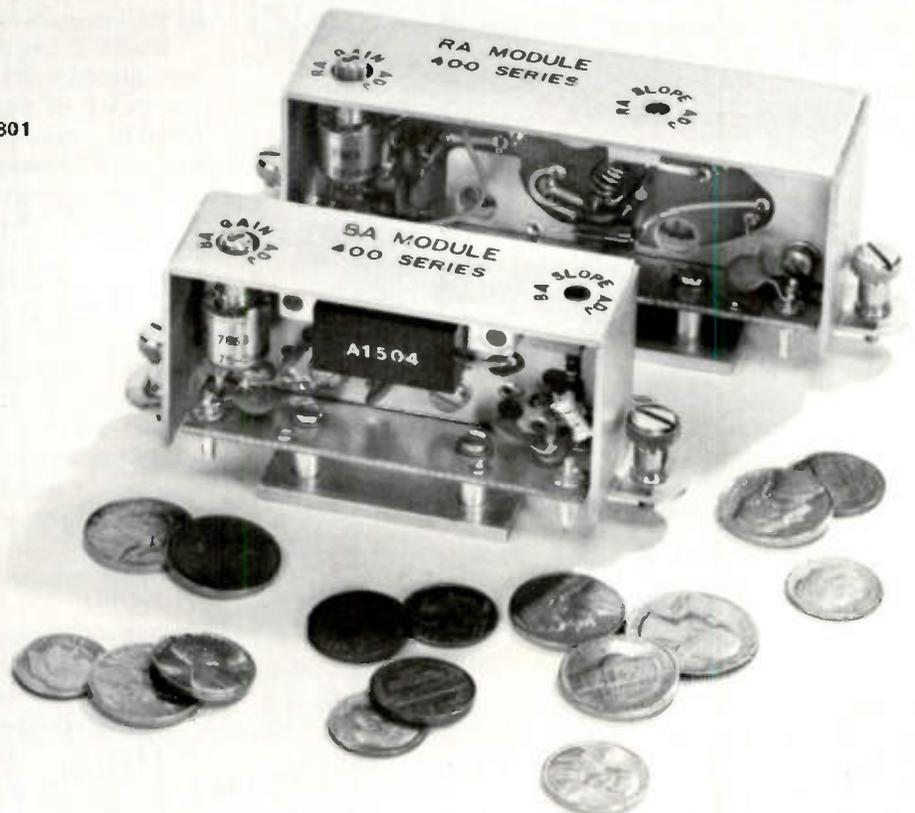
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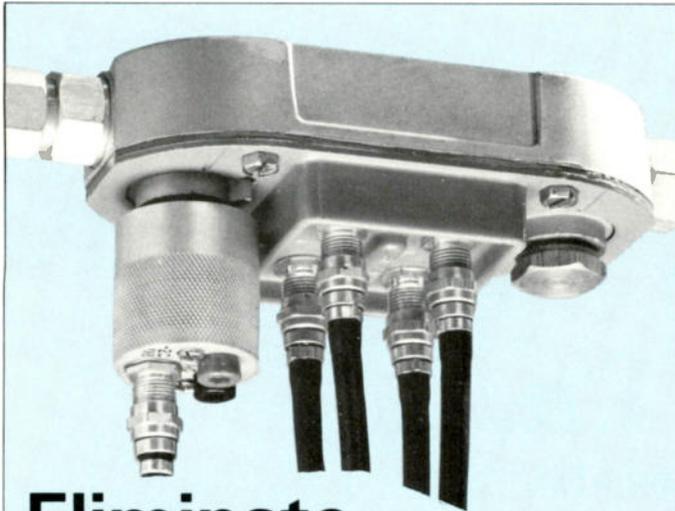
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cable to offer people a wide variety of new services.”

Federal Communications Commission Chairman Dean Burch also leaned hard on “new services” in his address. After reassuring the cable industry that the Commission does, indeed, intend to allow some distant signals, he moved on to what he called the real “game” . . . supplemental non-broadcast benefits such as local news programming, educational cable links, access channels, automated libraries . . . and “cable’s ultimate magic,” two-way.

The experiment in Overland Park (Kansas), said Burch, demonstrates that two-way is “technologically feasible,” and he cautioned the industry that it should not grumble at requirements for 12-plus channel capacity or two-way capability.

“Some cable operators,” he said, “are all ‘get’ and precious little ‘give’” . . . They want distant signals now, but non-broadcast services sometime later. “We just can’t buy that,” stated Burch, “And more important, neither should you.”

He said the Commission *will* require access channels and is contemplating a two-way non-voice capability requirement. “This is now feasible,” he said, “and its availability is the key to many of cable’s potential public services.”

Moving briefly away from the FCC viewpoint, Burch stressed that “what principally is involved is *your* definition of your own industry — and your response, minimal or generous, tunnel-visioned or imaginative, to an opportunity.” If the opportunity is used just to import signals “to make a buck . . . so be it,” commented Burch. “We’ll draw our own conclusions.”

“War of the Roses”

In his address, Dean Burch warned CATVers what this is not the time to engage in “some latter-day War of the Roses within the cable family.”

While it was not precisely a war, the NCTA membership did skirmish during the Convention over the firing of president Taverner. In his opening-day remarks, immediate past chairman Demgen expressed his own regret over the board’s acceptance of Taverner’s resignation and he said he did not know whether “a majority of our members is willing to stand by and accept” the president’s leaving. He accused “sinister forces” within the NCTA staff and outside the board of engineering the move.

At the full membership meeting, a day later, an attempt was made to bring the matter up for discussion. Yolanda Barco of Meadville (Pa.) Master Antenna made a motion which was then re-worded by Irving Kahn, TelePrompTer board chairman. The motion, if adopted, would have requested the board to strike any reference to the resignation out of the minutes of the June meeting, then reconsider the contract renewal decision.

Amidst heated discussion, marked largely by parliamentary wranglings, a past chairman, M. William Adler, moved to table the motion. Overwhelmingly, the voice vote passed his motion and killed the issue.

Newly elected chairman John Gwin of Cox Cable-



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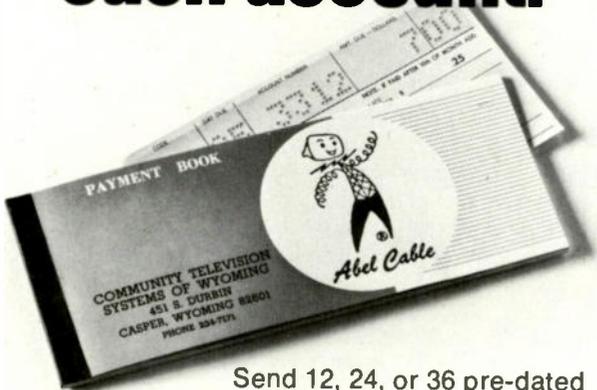
MC	Belden 8228 db loss	RG-59/U db loss	Foam RG-59/L db loss	Foam RG-11/U db loss
50	1.5	2.4	2.1	1.0
100	2.1	3.4	2.9	1.5
200	3.1	4.9	4.1	2.2
300	3.8	6.1	5.1	2.8
400	4.5	7.1	5.8	3.3
500	5.0	7.9	6.5	3.7
600	5.5	8.9	7.1	4.1
700	6.0	9.6	7.7	4.5
800	6.5	10.3	8.2	4.9
900	6.9	11.1	8.7	5.2



Each night of the Convention, cablemen gathered in various hospitality suites until the wee hours of the next day. Here, GTE Sylvania hostess Royette Tarry talks with Steve Aicher (left) of West Jersey Broadcasting, and Joe Certo of Doyle, Dane & Burnbach.

vision, Robinson, Ill., attempted to smooth over the situation at a final-day press conference. He said he intends to work for unity within the NCTA membership although he responded with a "no comment" to the question of how he would effect unity. Demgen, who is automatically a member of the executive committee since he is immediate past chairman, also pledged his efforts to "bring unity."

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Besides Gwin, other officers elected were: William Bresnan of TelePrompTer, vice chairman; F. Gordon Fuqua, Electra Communications, secretary; and Robert (Glenn) Scallorn of Del Rio (Texas) TV Cable Corp., treasurer.

Newly elected members of the board are: Robert Tarlton, Panther Valley (Pa.) Cablevision; Charles Henry, Badger CATV in Iron Mountain, Mich.; William Karnes, National Trans-Video; Edward Allen, Western Communications, Inc.; Rex A. Bradley, TeleCable Corp.; David Brody, Jerrold; and Robert McGinty, Atlantic Coast TV Cable Corp.

Robert Behringer of Theta-Com Corporation was re-elected for a one-year term by the NCTA associate members. Serving with him as an "understudy" will be Ray V. Schneider of Times Wire & Cable who is expected to be elected to Behringer's position next year.

The NCTA also took the occasion of the Convention to honor its own. Awards for "Outstanding Committee Chairmen" went to William J. Bresnan who heads the public relations committee, and Lawrence W. "Duff" Kliever who chairs the legislative action committee.

Among the Bresnan committee's projects was the recent "flower power" campaign built on the theme "Plant a Flower in the Vast Wasteland — Let Cable TV Grow." Under Kliever, the legislative action committee changed the way the membership participates through special legislative regions and districts. The committee's past-year projects have included campaigns to spur member participation as well as briefings and receptions for governmental representatives.

Michael B. Arnold, manager of Allband Cablevision in Olean, N.Y., received a citation for "Outstanding Contribution through State and Regional Associations." Arnold has served as the state group's vice president and legislative committee chairman during the past year's battles over public utility regulation.

A new NCTA award . . . for "Outstanding Achievement in Inter-Industry Relations" . . . went to two more members. Alfred R. Stern, president of Television Communications Corp., won his for his work in chairing the Copyright Committee which recently negotiated an agreement with the Copyright Owners Committee. Ben Conroy, Jr. of Communications Properties, Inc. took his for his work as chairman of the Utility Relations Committee which is, at this writing, attempting to negotiate a nation-wide settlement on pole rates with the Bell system.

The winner of the Larry Boggs Award (the association's annual award for outstanding contributions to cable television) was Milton Jerrold Shapp, founder of The Jerrold Corp. and present Democratic Governor of Pennsylvania. Making the award presentation at the annual banquet was another noted politician, Indiana's U.S. Senator Birch Bayh.

The Annual Banquet, under the hand of mistress of ceremonies Polly Dunn from Columbus, Miss., was the festive climax of the Convention. "The Brothers and Sisters," vivacious young singing group, were joined by Don Rice III for a lighthearted ending for a very full day of conventioning.

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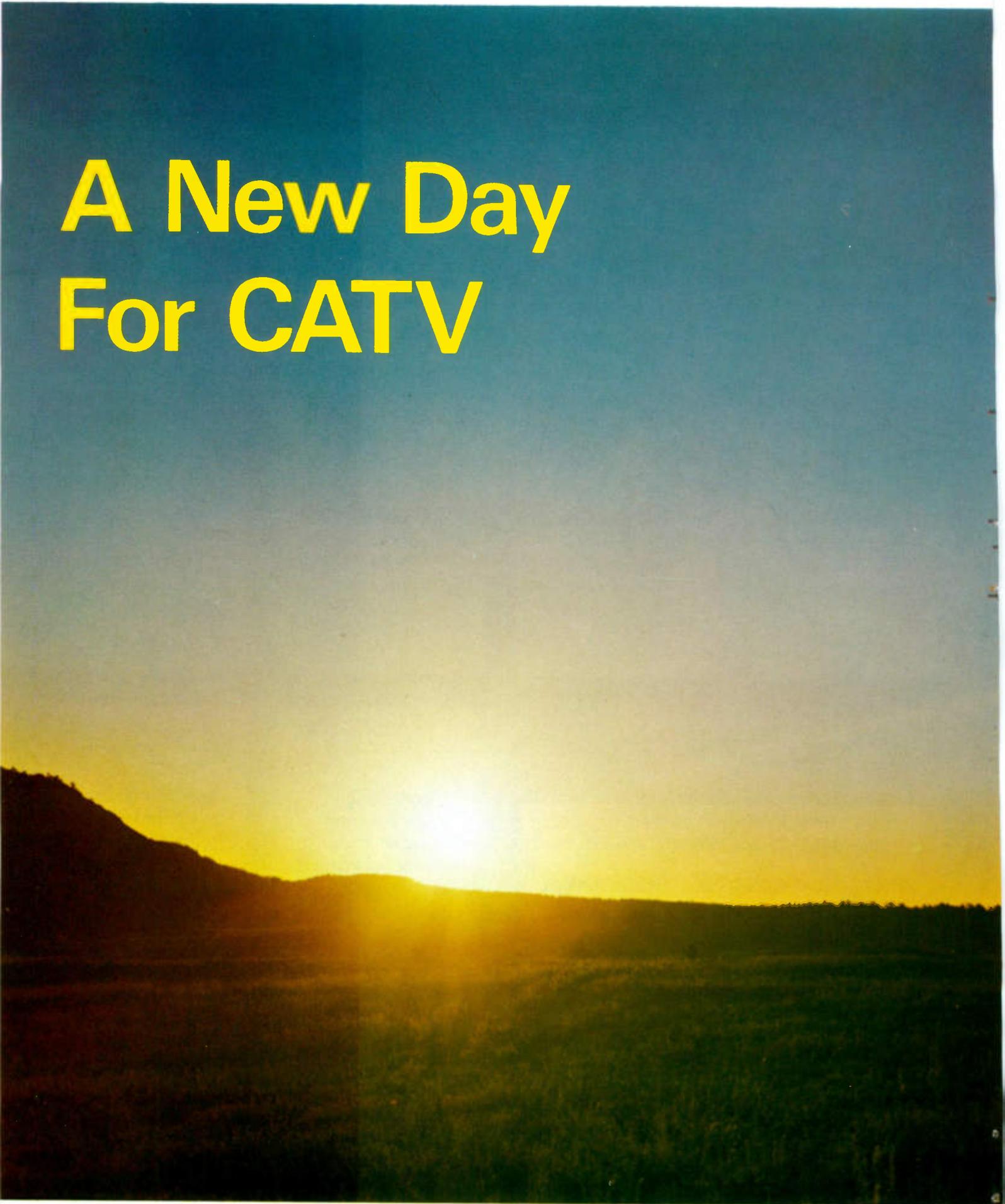
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A New Day For CATV





by Stuart MacPhail

“What CATV was two years ago is quite different from what it will be two years from now.” So goes the profound observation recently expressed by a well-known cableman.

The statement doesn't reveal anything new, but it does cast the spotlight on a truth that many cable operators are slow to recognize. Our industry is changing. Governmental leaders are looking at CATV in a new way. Practical (as opposed to “pie-in-the-sky”) broadband services and hardware are increasing the alternatives.

While some cable operators are not interested in changing the way they do business... and many cablemen have been “ho-humming” at the years of speech-making on the limitless possibilities of CATV... there is a growing contingent of communications entrepreneurs who are recognizing they have a fast-growing set of alternative ways to do business with a cable system.

Yesterday, *community antenna television* limited its activity (with few exceptions) to the redistribution of distant or semi-distant broadcast television signals. Small towns and mountain communities proved to be ideal locations for such a business. Enterprising men and women quickly recognized that the residents of such areas eagerly sought after improved TV reception... and in some cases, the only possible means of TV reception... by way of a community antenna television system.

The “today” of our industry just started some twelve or fifteen months ago. By a much earlier date, we had already become known as *cable television*... a more sophisticated moniker. But it wasn't until the FCC began making noises about requiring local origination that cablemen really began to look seriously at that phase of their business.

Forced origination. Almost no one welcomed their “right to cablecast” within this setting. However, prior to the FCC action, less than 15% of the nation's systems exercised their “right” voluntarily.

During the past year, some large cable operators (notably Tele-

Prompter, Cox, Cypress and some Tele-Communications systems) have moved ahead with new attempts at locally originated television programming. However, no one has reported that their cablecasting investment has produced a financial return... and many have reported substantial investment in their ventures. Now, as a result of a court test, the cablecasting requirement has been suspended.

CATV advertising in a few situations has generated a minor income (usually *very* minor). Some subscribers have been added or retained as a direct result of locally originated programming... but this benefit of cablecasting has not been documented by anyone to a degree necessary to consider it a *profitable* reason for cablecasting.

Very few cable systems are operated as philanthropic endeavors. Thus, in the long run, cablecasting is not likely to grow substantially unless it is required... or unless the art of cablecasting-for-profit is greatly refined.

Yesterday — redistribution of TV signals. Today — redistribution of TV signals; and the cablecasting of local, relatively-mass-interest programming. Tomorrow — redistribution of local and relatively local TV signals; redistribution of distant and greatly distant TV signals; profit-motivated cablecasting for narrow interests; private channel video services; common carrier, "limited carrier" or special carrier leasing of channels; and two-way, non-video communication services.

More blue sky? Not really. "Today" has been a relatively short day. During this past Spring the sun set on "today." Already there is a glow of light coming from "tomorrow's" sun. The sun itself may not be clearly visible yet... but you don't need any mystical powers to know what is there when you look at the glow of hope coming from the East.

Just one thing stands in the way of a reasonable perception of the things to come... and a reasonable certainty of the timing involved. That one thing is the quality called *awareness*.

The wide-awake cableman will recognize the sunrise of a new day... and he will invest a portion of his energy in serious evaluation of his many new alternative ways of doing business. Only a limited number of options are likely to be financially viable during the morning of this new day... but an early, open-minded, thorough examination of one's approach to doing business is prerequisite to cashing-in on cable's future.

Introspection Is Needed

Growth-minded cable operators are recognizing a need for introspective self-evaluation. They are beginning to see that the economic structure of a cable business is likely to have new, important components in the immediate future. In the past, subscriber fees were the one and only basis for economic growth. It will be quite a while before such fees are only incidental to a cableman's income... but the alert cableman will begin to see new sources of income develop within the early hours of "the new day for CATV."

Some cablemen have already begun to experiment with video-shopping from the home, channel leasing, special audio services, etc. These firms that are seeking to give substance to CATV's promises are the ones that are likely to be the first to profit from ancillary services.

Ideas for services via cable have been around for a long time. Development of these ideas has been slow for two reasons. First, CATV-related manufacturers and system operators have been notably slow to invest in research and development. Second, cablemen seem to agree that a "catalyst" is needed to get the cable industry into action on ancillary services.

This writer believes that that catalyst is the right to import distant television signals. Surely such a right is in the making... even if it results in less freedom than would be desired. The rule-makings currently being prepared at the FCC must be regarded as a

first step... not the last word on the future of CATV.

Profitability Is the Key

Will cablemen be reading meters... monitoring fire and burglar detectors... serving as a common carrier, etc. in the next year or so? Probably anyone could set himself up as a prognosticator and get a hearing, but there is considerable doubt as to the worth of such projections. Even the most respected "think tanks" that have studied CATV have done so on the basis of shaky or dubious assumptions.

One well-known cable leader recently commented that "one of the most inhibiting factors in the communications revolution is the tendency to believe that everything can be anticipated if only the proper graph can be designed." He went on to say, "Our own experience has been that the moment we have facilities available, there is demand for their use."

Security services, channel leasing and special video-marketing services will probably be among the first non-entertainment services that cablemen will develop. However, the one factor that will determine this is *profitability*. If a cableman can see a service that can be rendered via his cable system... and can see the necessary equipment available from stock... and can be confident of the marketability of that service... and can conceive of the logical steps involved in getting that service off the ground; he will try it.

When it comes to cablecasting, the cableman must make his decisions based on profit-potential. Opening a channel to old movies, live coverage of city council sessions or production of special local programming must be limited to that which has a potential for generating at least a supporting revenue. Is there anything unwholesome about doing business for profit? Certainly a reasonable profit motive is the basis for an origination channel that will grow in excellence and service.

But, some will say that a profit-

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motivated origination channel will quickly move in the direction of broadcast television . . . and will not provide a vehicle of expression for minority groups, etc. To a degree, that may be true.

If there is someone who wishes to be philanthropic, let them lease a channel or channels or some time on one channel. Some agency or foundation or non-profit organization can provide a service in the bigger cities, by taking the responsibility for libel problems, scheduling problems, etc. The cableman doesn't want to be limited to the role of a passive common carrier, but this is one of several instances when he would welcome such a role.

What about a common carrier or "limited carrier" status for CATV? Last Fall *Computer* magazine carried an article by Roger W. Hough of the Stanford Research Institute. Mr. Hough took a scholarly approach to the future of communications.

He concluded that AT&T could more than keep up with this

nation's communications needs . . . and therefore new common carriers (such as CATV) would not be needed.

Mr. Hough seemed to predicate his study on the assumption that AT&T has some divine right to handle all common carrier communications. No cableman worth his salt will accept that hogwash. "The most dramatic refutation of the telephone company approach is the serious operational difficulties it finds itself in today," notes one MSO head. "Obviously there were plans and projections of telephone traffic in years past, and they are hopelessly inadequate."

No cable operator wants CATV to be regulated in the traditional common carrier manner. However, a growing number of cablemen are seeing the advantages of some "special carrier" status for part of their channel capacity.

The Future Is You

The early part of "tomorrow" is already here. It is technically

and legally possible *now* for cablemen to initiate broadband services beyond cablecasting. One of the faults of our industry is the failure to make fullest use of existing technology.

The men and women who operate cable systems today will determine the future of their business as they decide how, if and when they wish to expand the earning capacity of their business. As FCC Chairman Burch noted in his address during the recent NCTA Convention, "I simply do not believe that the key to cable's future is going to turn up in some FCC document, and not even in actions of the Congress."

Burch went on to say, "There are critical battles still to be fought in both arenas, of course. But, in the end, the key remains right here. Cable's future is in your hands. It depends on the quality of perspective that collectively you bring to bear . . . (It depends) on your own conception of the metes and bounds of your own industry." 



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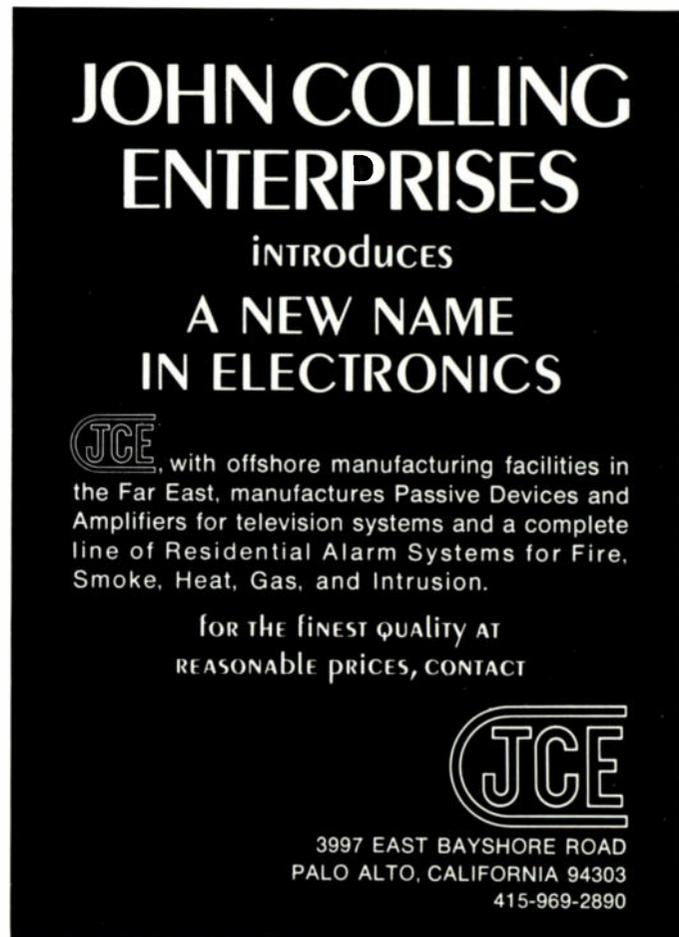
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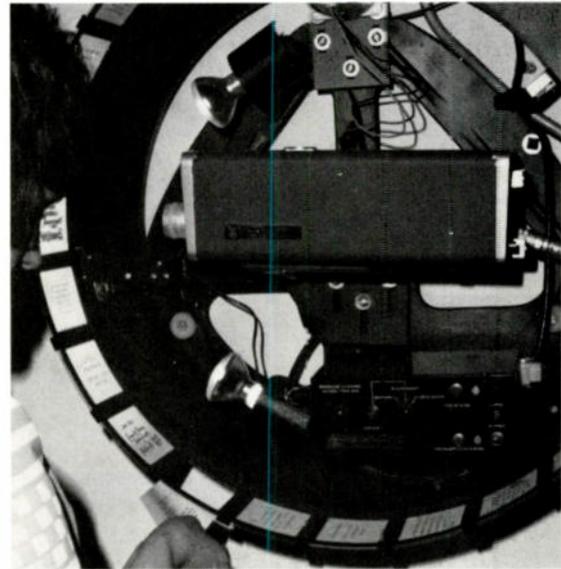
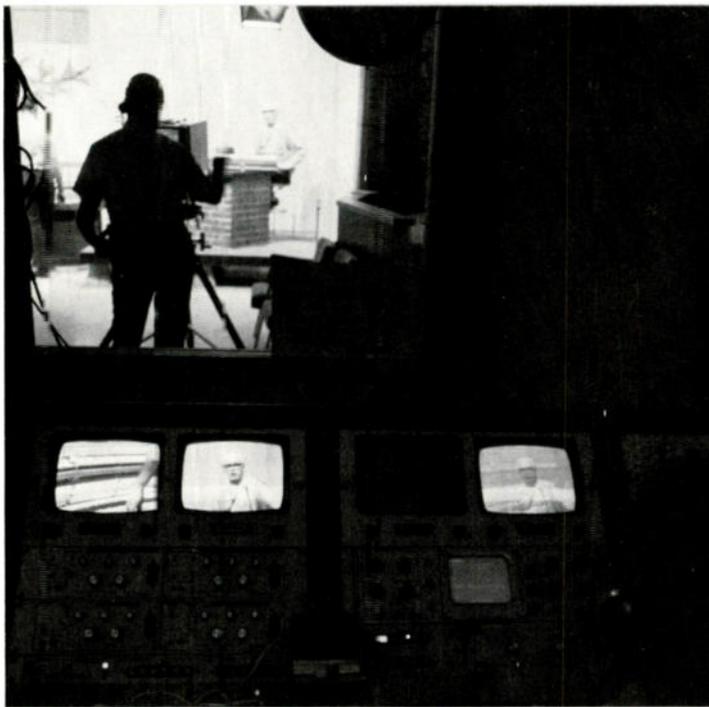


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desired slide changes for public service and commercial announcements. The highly automated TeleMation control room console can be handled by one man. Live and video-taped coverage of a broad range of local news, special and sports events is made possible by a TeleMation-designed and -equipped mobile van system.

Of the 11 TV channels provided by Cablecom General, five are programmed by the cablecaster, with one of the five devoted exclusively to local color origination. Four hours of local programming are offered daily, and plans call for adding an hour or two more.

Looking ahead, Cablecom General Regional Vice President John Monroe says, "Between subscriptions, commercials, and rental fees that we collect from schools using our production facilities, I expect that we

will amortize our studio overhead by the end of 1971."

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Recruiting and Training Techs; CATV Employment Survey Part II

This second installment of a special TVC staff report deals with recruiting methods, training programs and skill levels of CATV technical personnel. New data indicates better training, higher skills. Second of three parts.

QUESTION: What problems do you find in staffing your technical crew?

ANSWER: "The lack of trained personnel in our area. We usually have to wait for men to 'grow from scratch' to have the employees we want."

QUESTION: What are the main industry-wide employment problems, in your estimation?

ANSWER: "The cable industry has no standards in hiring practices, training, benefits, working conditions, etc."

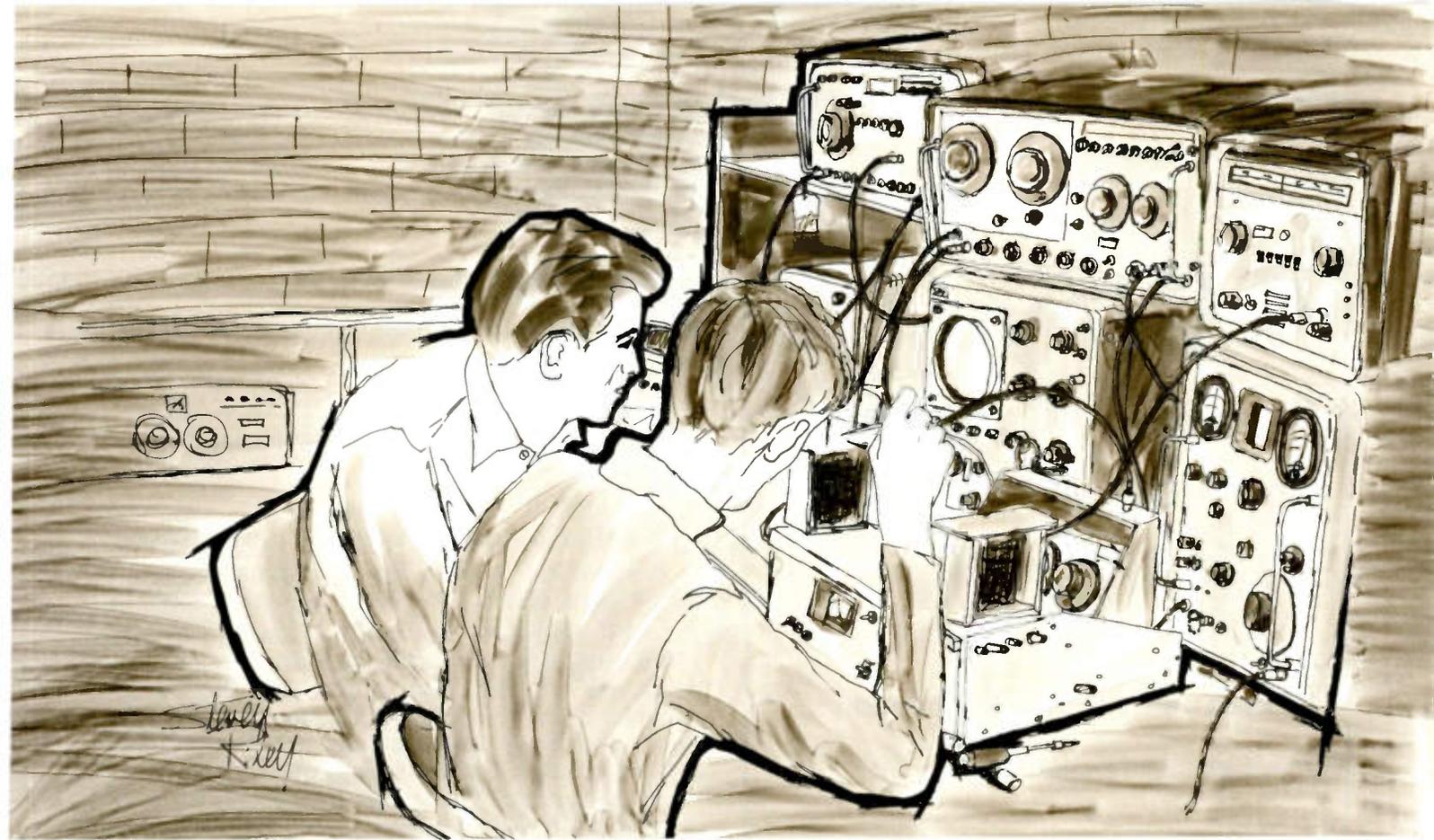
The cableman quoted above is among the nearly 30 percent of operators surveyed who report that their staff is lacking in technical skills. He has apparently given up on finding men with previous CATV experience, for — like one out of two systems polled — his entire crew is from his own community.

Operators Report Improved Skills And Increased Numbers on Tech Staffs

As Table VII indicates, fewer than one out of five systems reports an inadequate number of technical

TABLE VII: AVAILABILITY AND SKILL OF TECHNICAL MEN

Region	TECHNICAL COMPETENCE OF PRESENT STAFF			ADEQUATE NUMBER OF TECHNICAL PERSONNEL		
	Systems Reporting Adequately Skilled Staff	Systems Reporting Inadequately Skilled Staff	Percentage Reporting Inadequate Technical Skill	Systems Reporting Adequate Personnel	Systems Reporting Inadequate Personnel	Percentage Reporting Inadequate Personnel
Northeastern States	26	12	31.9%	32	6	15.8%
Southern States	41	11	21.1%	43	9	17.3%
Midwestern States	37	14	27.4%	42	10	23.8%
Western Mountain States	30	16	34.8%	39	7	15.2%
All Systems	134	53	28.3%	156	32	17.0%



employees. Comparing this figure with the nearly one out of three systems reporting a shortage of men two years ago, it would seem that this problem is fast disappearing. These isolated statistics may well prove misleading, however, when considered in light of industry growth patterns and trends in the unemployment level across the nation.

If jobs become easier to find in general, and as system construction begins to boom again, just finding enough bodies to fill the payroll may again become an acute problem.

The same "false trend" is apparent in the skill level of technical staffs. Two years ago, nearly 40 percent

of the systems surveyed reported that their technical personnel lacked adequate job skills. At present the figure is down to less than 30 percent. But if the current supply of skilled men is stretched to cover rapid expansion into the "top-100" markets, there just won't be enough "veterans" to go around.

Note that the midwestern states currently report the largest incidence of manpower shortage, with the other three regions all falling close together in this regard. The Western and Mountain states report the greatest incidence of inadequate job skills, followed by the Northeastern region. But even in the Southern states, more than one out of five operators report

TABLE VIII: CATV RECRUITING METHODS

Method	Number of Systems Using Method	Percentage of Systems Using Method	Percentage of Users Showing Method As "Most Effective"	Percentage of Users Reporting Lack of Personnel
Local "Help Wanted" Advertisements	65	36%	46%	15%
National "Help Wanted" Advertisements	32	18%	64%	9%
Local Personnel Agencies	59	33%	19%	24%
Specialized (National) Technical Employment Agencies	5	3%	80%	20%
Word of Mouth and Walk-in Applicants	147	82%	43%	22%

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that they need a better-skilled crew to run their system properly . . . so even under the FCC's "freeze" on system construction, the lack of skilled technical manpower continues to plague cablemen.

Informal Recruiting Methods Are the Rule In Our Industry

"The biggest staffing problem I have is locating prospects when we have an opening."

"The main problem is checking the reliability of the man before we hire him."

"It's difficult to find any qualified men in our local area, and hiring from outside is a lot more trouble."

"I would like to see a central employment agency for all cable system jobs, organized nationwide."

CATV managers are hardly unique in their complaints about the difficulties of recruiting good employees. In fact, that is probably the concern common to more kinds of businesses than any other. But the cableman faces a couple of extra difficulties in "finding his man." First, his is still a relatively new technology, which to date has primarily been taught only in on-the-job situations. Thus, there is virtually no labor pool of trained or experienced men who are not already employed by other systems. And second, even if an operator sets out to "steal" an experienced man, he must recruit outside of his own community. Thus, many operators simply hire the most promising trainee that they can find locally and hope that he (1) learns fast and works hard, and (2) doesn't get recruited by another system as soon as he is trained.

Looking at Table VIII, it is obvious that most technical employees are recruited by rather informal methods. Word-of-mouth and walk-in applications are the most common methods by far, although local agencies and want ads are also widely used (note that local agencies are not often felt to be most effective). It is reasonable to assume that the use of national ads and specialized national employment agencies is generally restricted to higher level technical positions, even though these methods are more effective.

Most Men Hired From Community; Half Have Some Useful Experience

Only about one out of four men currently employed by the systems surveyed had CATV experience when hired (see Table IX). Better than half had some type of experience in electronics, and a substantial number had had some formal training in electronics. Four out of five were hired from within the system's community.

About half of systems polled have no technical employees with prior CATV experience, and well over half hired their entire crew locally, supporting the obvious conclusion that those systems willing to go looking for them get the lion's share of the experienced men.

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Less than 1/2-ounce in weight, these microphones can be clipped onto most eyeglass frames, or onto their own special headband. A slender adjustable tube leads from the microphone element to the user's mouth, and is easily positioned a fraction of an inch away, yet out of the main airstream. This insures maximum volume without annoying "pops" typical of normal close-mike operation.

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Wearing an E-V personal microphone quickly becomes second nature, leaving both hands free for paperwork, driving, flying, holding scripts, or any other chores. Because you are never "off-mike", signal-to-noise ratio is always optimum and volume never varies. And because there is no bulky microphone close to the mouth, fidelity is greatly improved.

Radio-TV Model

Based on designs created for the U. S. aerospace program, E-V personal microphones have been proven in years of extensive field testing. The Model RE51 has already proved itself for sports and general announcing on several major radio and TV networks. Response range is from 80 to 10,000 Hz. and

mixes perfectly with all other E-V broadcast models. A transistorized preamp (normally worn on the belt) includes push-to-mute "cough button", on-off switch, battery test light, and cable connector. Balanced Lo-Z output adjusts to maximum of -56 dB to match any standard input. \$134.00 list complete with microphone, headband, and preamp.

Model 651 is similar in design but with choice of Hi-Z or Lo-Z (unbalanced) at cable end. Ideal for lecturing, paging, dispatching and general use. Response 80 to 8,000 Hz. \$100.00 list complete as above.

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Special aircraft communications Model 967M matches carbon mike inputs and provides transistor amplifier built into PJ-068 type plug. Audio quality superior to magnetic types, and much less susceptible to shock damage. No battery needed. Response 300 to 4,300 Hz tailored for highest intelligibility. \$122.00 list complete with microphone, headband, carrying case. FAA approved (TSO C-58).

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TABLE IX: EXPERIENCE AND TRAINING OF TECH STAFF

Region	Percentage of Employees With Prior CATV Experience	Percentage of Employees With Prior Electronics Experience	Percentage of Employees With Formal Electronics Training	Percentage of Employees Hired From Within CATV Community	Percentage of Employees With Adequate Tech Skills
Northeastern States	22%	54%	38%	87%	68%
Southern States	21%	57%	35%	79%	79%
Midwestern States	30%	55%	42%	76%	73%
Western/Mountain States	34%	55%	44%	80%	65%
All Systems	27%	54%	40%	80%	72%

Comparing these figures with 1969 survey results, we find that the trend is strongly in favor of hiring local men with some type of training or experience in electronics.

Most Systems Help On Tuition, More Techs In Training Programs

As Table X illustrates, about two out of three systems now have a policy under which they pay at least part of the tuition for technical personnel enrolled in CATV training courses. Most of the

remaining systems report that they have no fixed policy to date, with only a few reporting a policy of leaving such expenses entirely to the employee. These tuition subsidy policies often call for completion of the course before the full subsidy is paid, and many operators tie in promotions or pay increases with the successful completion of a given course.

Table XI shows that well over half of the systems surveyed have men currently engaged in some formal training program. In the systems polled, more than one out of three technical employees are reported to be enrolled in a training program at present. (In considering that figure, however, it should be noted

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TVC-4

TABLE X: POLICIES ON TRAINING SUBSIDIES

Region	Percentage Paying Full Tuition	Percentage Paying Part of Tuition	Percentage Paying No Part of Tuition
Northeastern	61%	11%	3%
Southern	40%	16%	2%
Midwestern	55%	12%	6%
Western/Mtn.	52%	24%	4%
All Systems	51%	16%	4%

TABLE XI: TRAINING ACTIVITY

Region	Percentage of Systems With Employees Currently In Training Programs	Percentage of All Technical Employees Currently In Training Programs
Northeastern	62%	21%
Southern	56%	17%
Midwestern	63%	53%
Western/Mtn.	72%	59%
All Systems	63%	37%

that the systems comprising the survey sample are substantially larger on the average than the industry norm of about 2,000 subscribers, and are therefore more likely to have an established training policy. By way of comparison the National Cable Television Institute, the largest CATV correspondence school, reports that about one out of ten CATV technical employees is currently enrolled in their courses, on an industry-wide basis.)

Summing It Up: Still A Shortage of Skilled Personnel

Under the *de facto* construction freeze in effect for the last couple of years, it seems that some gains have been made on the shortage of skilled technical personnel in our industry. But the gap between supply and demand has by no means been closed. And cablemen are now looking forward to large-scale system construction in the major markets . . . big new systems which will put a giant strain on the supply.

Recruiting from outside the industry and formal training programs in CATV technology are already the main approaches to meeting manpower needs — approaches which will likely be intensified greatly in the near future. TVC

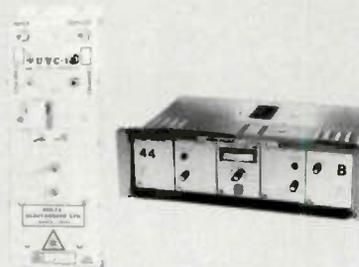
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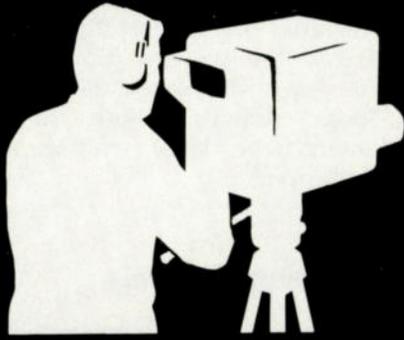
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STUDIO

Technology

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

The TV Camera Lens: Its Role in CATV Origination

The glass-filled tube on the front of a TV camera is a mysterious device... in spite of its reliability and seeming simplicity. This two-part article seeks to dispell that mystery. Part II.

*By Jack A. Rickel
Communications Consultant*

The zoom lens is a marvel of optical and mechanical engineering. As the focal length is varied, various elements must smoothly move inside the lens in such a way that everything remains focused at the same distance and the relative iris setting stays the same. It is only in the past decade that this could be done reliably at a reasonable cost.

This is not to say that now all lenses are the same, or are top quality. There are significant differences in quality of glass used... in grinding, coating, and mounting, which we discussed last

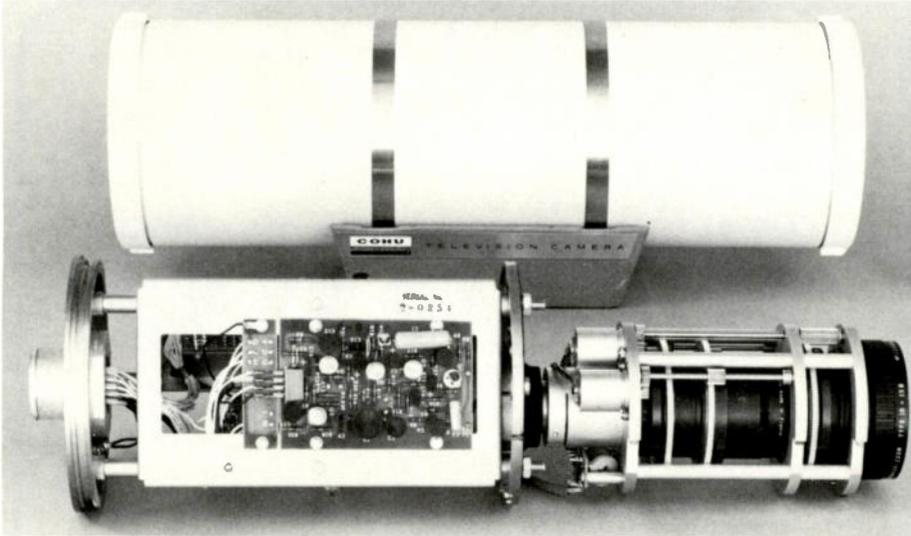
month. The mechanical design of a zoom is also important.

It is relatively easy to keep the fixed elements in place. But moving elements must slide easily back and forth with no slippage or vibration... at proper relationships at each point. They must also be able to withstand moderate shock without misalignment. Since they will be used outdoors, they must also function in a wide range of temperature.

A poorly made or damaged lens will not track properly. Once the focus has been set properly at the ends of the zoom range, the

picture should stay in sharp focus over the entire range. If the picture does become soft in some part of the range, the moving elements are not tracking properly.

Another tracking problem can be seen as a shift of the picture off center. To correct this, set the lens at its longest focal length and locate the center of the picture. Use a test pattern, graph paper or such, since the center of a viewfinder does not necessarily coincide with the center of the picture. Mark the center on the viewfinder screen, and zoom out



The motorized 10 to 1 zoom lens shown on the above Cohu 300 Series camera features an *f/2.8* lens and has a range of 15mm to 150mm. It is priced at \$2,050. (Photo courtesy Cohu Electronics, Inc.)

to shortest focal length. The center of the test chart should still be on or near the mark.

Of course, a shift might not be the fault of the lens. If the lens is not mounted properly, or its weight is not adequately supported by the camera, this same problem will exist. The axis

of the lens should line up with the camera tube axis. When there is an angle between the two axes, the picture center will shift while zooming, and it will not be possible to get all of the picture in sharp focus at the same time.

This latter effect can be seen by rocking camera focus (not the

beam focus) or lens focus back and forth, and watching to see if the area of sharpest focus moves across the picture. Do this with the lens wide open so depth of focus (equals depth of field behind the lens) will be at its shallowest.

Zooming Controls

Now we turn to various means of controlling zoom and focus for cameramen with arms shorter than seven feet each. Basically there are three types of controls: rigid rods, flexible cables, and servo motor devices. Price and convenience increases in that order. Zoom lenses made for television have, or can be easily equipped with, concentric gears to accommodate these controls.

The typical rod control clamps onto the lens body and the rods extend straight back to knobs behind the camera body. The operator pushes or turns, thus driving the lens gears directly or through a worm drive. This system is inexpensive but unsatisfactory.

Friction seems to be relatively high and uneven, so it is difficult to achieve a smooth zoom. This is due in part to the gear ratio, and in part to the ease with which the rods can be bent. And it seems impossible to straighten them satisfactorily. Another problem is that the cameraman has to reach for the knobs, which distracts him from his picture.

Cable drives are much better in this latter respect. One control typically clamps on the camera pan and tilt handle. The other mounts on the camera body, on the cameraman's right, near the camera focus knob. This greatly reduces reaching and fumbling, and gives better control of lens and camera. Gear ratios are better and make for smoother zooming and more accurate focusing.

The most expensive systems are the servo controls. Servo motors do all the mechanical work; the cameraman merely makes a setting and the motor follows. Thus there is no possibility of unintended camera movement as the operator cranks. Some systems provide for pre-set focal lengths and adjust-

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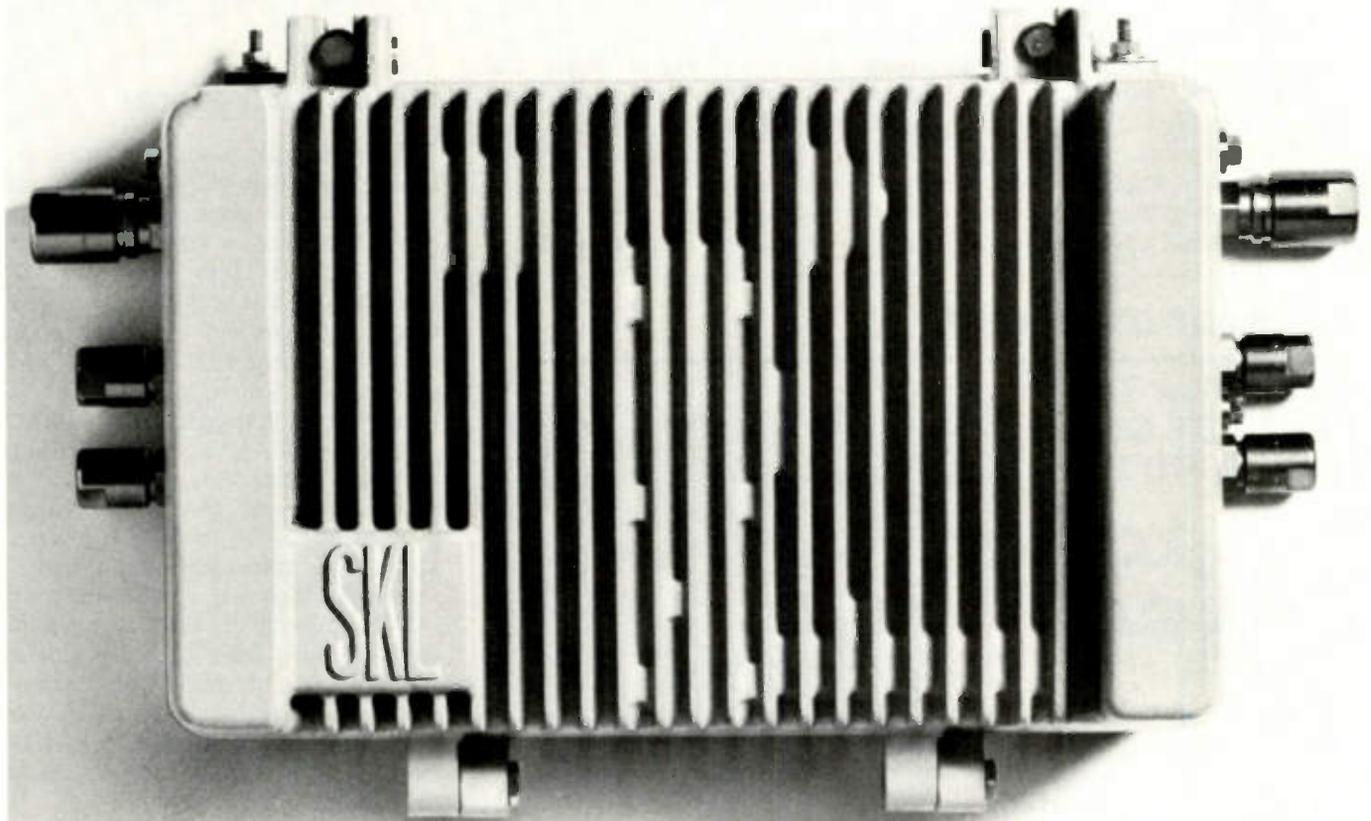
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able zoom rates. The cameraman merely touches a button and the system does the rest, with manual override at any time.

With any of these, a defect or dirt in the gears, or in the lens, will cause rough operation... most noticeable when zooming. This is more likely in the less expensive controls and lenses, but can occur even in the best. Roughness should be fixed early, since it is likely to get worse instead of better.

Depth of Field

Depth of field is an expression which sometimes causes confusion. It is usually defined as the range of distance, from the camera, over which things appear in focus. For example, a certain lens is set to focus at five feet. At a particular *f/stop*, the depth of field is given as from three and one-half to ten feet. This gives the incorrect impression that everything within this range is in sharp focus, and everything less than three and one-half and more than

ten feet is blurred.

In reality, the point of sharpest focus is still only at five feet. Sharpness gradually decreases closer to and further from the lens. Just how gradual this blurring out is depends on the *f/stop* setting of the lens.

The limits of depth of field are simply the distances at which sharpness has decreased by a certain amount agreed upon in the industry. They are used as guides, indicators of how quickly sharpness is decreasing.

The same rules for depth of field that are used in photography also apply to television. The wider a lens is opened, the more shallow the depth of field.

In our earlier example, the iris was set at *f/8*. If we opened it to *f/2.8*, the depth of field is from four and one-half feet to seven feet. Closing down to *f/16*, the depth of field is now from two and one-half feet to infinity. The lens in the example has a wide angle focal length.

A telephoto lens will have a much smaller depth of field for

the same *f/stop*. But then the actual numbers are not important in television where the camera men and director can see exactly what they are getting.

Sometimes depth of field is reduced intentionally, by reducing lighting or putting a filter over the lens and opening up the iris. Unwanted background or foreground will be only a blur. The effect can be used for artistic purposes to bring out a subject.

But more often, shallow depth of field is an unwanted pain. When there is not much light and the lens is open wide, a cameraman must check his focus everytime the subject shifts, especially on a long focal length. And, unfortunately, this is a law of optics, not something which can be cured by buying a better lens.

Please Don't Touch!

Most people seem to know or sense that they should not touch the surface of glass in a lens. This does not always stop them, but they at least feel that there is something holy and pristine about that large, perfect curve of glass with its many subtle colors and reflections. There is, but that is not why they should not touch it.

Lens glass is not as hard as ordinary glass. It is ground to an exact curve and given a very high polish. Then the surface is given a very thin, uniform coating which makes the lens more efficient.

The finger is covered with a soft surface in which microscopic pieces of abrasive dirt may become imbedded. This surface is constantly exuding an oil which is slightly acid. This oil also collects dirt and dust.

When a finger comes in contact with a lens, oil and dirt are transferred. Both coating and glass get tiny scratches... and they are attacked by the acid. The oil deposited collects more dust.

Now this horror story usually occurs on a small scale. But if it happens very often the effects add up and become significant. The picture gradually becomes foggy, bright objects acquire faint halos, resolution and efficiency decrease, and so on. The only cure is to

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return the entire lens for cleaning and resurfacing.

Lens Maintenance

Lens care is really very simple and well worth the effort. Always check the manufacturer's recommendations. He may use a coating or lens cement which would be damaged by some cleaning fluids. Occasional cleaning with fluid or treated paper is needed to remove the film deposited by cigarette smoke and the oil from exhausts.

When the lens is dismounted as for major camera maintenance, the element at the rear of the lens and the camera tube face plate should also be cleaned carefully. After all, the tube face is a part of the optical system.

The more frequent cleaning needed to remove bits of dust and lint should be done with a camel-hair brush. Looser dirt can be blown off before brushing. Never puff your breath on a lens or exhale on it to moisten before wiping. This is almost as bad as a

fingerprint, and covers more area. If the proper brush, paper, or fluid and clean cloth are not available at the moment, leave the dirt where it is.

Sometimes a lens will get dirt or moisture inside, between the elements. This can only be cleaned out by taking the lens apart and should be done only by an experienced person. Because of its complexity and rigid specifications, a zoom lens should be returned to the factory or to an authorized service representative.

Taking a zoom lens to the neighborhood camera shop ranks with taking your VTR to an auto mechanic (with no disrespect intended toward either).

While cleaning and maintaining a lens is important, it is even more important to protect it from dirt and damage. A new lens comes with caps covering both ends. The small cap on the camera end of the lens should be saved and used everytime the lens is dismounted, even if it is only to be set aside while servicing the camera. And you should also use a cap or plug

to close the opening from which the lens was removed.

Cap That Lens!

In normal operation, camera-men should be taught to use the lens cap until it becomes an automatic reflex. If he leaves his camera for any reason, he should always lock the pan and tilt head . . . and cap the lens. Of course, if the camera is "live," he cannot cap . . . but he should lock the head anyway.

Capping not only protects the lens, it also protects the camera tube should a bright light be moved into the field of view. Locking the head may not be necessary to keep the camera from tilting over and falling, but it reduces the likelihood of damage in case someone bumps the camera or trips over the cable. That could result in the camera rotating quickly and the lens hitting something nearby.

Additional protection for the front element of a lens is available by using something like a skylight filter. This is the almost clear filter used in photography to cut ultraviolet light without noticeably affecting visible colors.

Often such a filter is used simply for protection. It is a small investment, and if it gets seriously dirty or is scratched it can be replaced in a minute.

A lens hood, which flares out in front of the lens also gives some protection. However, on a large zoom lens which goes to a wide angle, the hood must flare so widely as to be of little value.

Perhaps some of the things we have covered in discussing selection and care of lenses seem a bit over-emphasized. But a good lens, properly treated, can easily outlive a camera and still have a significant value for sale or trade if it is not suitable for the next camera. On the other hand, a moment's carelessness can reduce the finest lens to junk . . . or require its being sent off for several weeks repair.

In other words, select your lenses carefully, teach people to take care of them, and you have a good, long-term investment. 

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New, Low Cost Concept Creates "Sudden Sets"

Cablecasters can now dress-up their productions with a wide variety of "sets" that can be stored in a drawer. Reflex front projection is the key.

A new production tool is being introduced to CATV operators in the United States. It's called reflex front projection. The system's main purpose is to provide "sudden sets." For CATV operators it also can double in brass as a telecine chain.

Most cable program producers have learned quickly that the "drapes-in-the-background" approach cannot compete with imaginative sets of commercial TV stations which, in turn, create problems of set storage. Further, the time and expense of designing and constructing scenery often make set changes so expensive that it's necessary to settle for a permanent set that can outdate itself in a hurry.

RFP Developed in Canada

Reflex front projection solves the major problems associated with set construction and storage, because a set is "erected" simply

by projecting a slide on the screen. A "sudden set," if you will.

Reflex front projection equipment has been manufactured and marketed for some years in North Vancouver, Canada, by CO/AX Graphic Systems Ltd. The concept is nearly a quarter-century old. But it took Frank Fleming, CO/AX's founder and president, to take the concept from a gimmick to a practical TV tool.

Fleming says he's "an old radio man" who dabbled in motion picture special effects for a number of years before a film production house in Vancouver asked him if he could build a reflex front projection system. Fleming said yes, and proceeded to find out how. Then his potential customer decided against filming the series for which the front projection system was intended.

Fleming had built a prototype but now had no customers. During the course of building it, the greying photographer became

more and more excited about its possibilities. So he decided to form CO/AX Graphic Systems to market his product. His first customers were Canadian TV stations, including a number operated by the CBC television network. Now, Fleming and his staff are "invading" the U.S.

Modest in price, the system can save the cablecaster a great deal of time, worry, and expense. It saves on set construction costs, and eliminates the problem of striking and storing sets because the "sets" are 35-mm slides.

Fleming says reflex front projection (RFP) has a number of other advantages over similar methods of producing composite images of a projected background and live foreground subject. "It takes up no usable studio space, as in rear projection," he says, "and withstands the spill from studio lighting without 'washing out'." The camera is also free to zoom, pan and tilt realistically, without destroying the integrated perspec-

tive of the foreground and projected background.”

“This is not possible with electronic keying, such as chroma-key,” adds Fleming.

“Moreover, RFP works equally well in black and white and color, and setup time is a matter of moments.”

The key to the success of reflex front projection is two-fold . . . a beam splitter mirror and a special retro-reflex screen.

A slide (the background image) is projected onto a screen by reflection from a semi-transparent beam-splitter mirror. A TV camera behind the mirror photographs the composite scenes . . . the foreground subject and the projected background. From its location, the camera cannot see the shadow of the foreground subject on the screen, because the subject is standing directly in front of his own shadow, hiding it from the camera.

An “Ebony” Screen

The part of the projected slide image which falls on the foreground subject is completely “washed out” by even the most modest studio lighting, which is far brighter than the projection beam. That part of the projected background which falls on the screen, though relatively weak, is recorded without difficulty by the television camera, because of the screen’s extraordinary reflective qualities.

The reflex screen returns each projected ray back along its own path, concentrating the cone of returning light rays on to the camera lens. The image received by the TV camera from the screen may be 300 to 1,000 times brighter than if the image had been reflected by a white sheet of paper!

The screen itself originally presented its own set of problems to Fleming. He tried using the reflective material once considered “standard” for the system, but soon ran into complaints. The spill from studio lights washed out the projected background, although it wasn’t supposed to. Fleming went to work to see if he could produce



The front projection technique allows instantaneous scene changes without altering the TV studio set. Although the slide is projected from the front, the “Ebony” screen permits normal studio lighting on the model.

a screen which would absorb or redirect spill light so it didn’t reflect back into the camera lens. Eventually he came up with his “Ebony” screen which looks like a blackboard but beats the spill light problem.

That’s one of the secrets of the screen’s success . . . its efficiency. It permits inexperienced studio personnel to light a foreground subject without spill light washing out the screen image or creating lighting shadows.

Some TV operators who see a

demonstration for the first time compare reflex front projection with chroma-key. Yet, this is not a valid comparison for a number of reasons.

Front projection works in both color and black and white, not just color.

Front projection provides coordinated camera and lens movements. Since only one camera is used and since the projected background is an integral part of the set, both foreground and background subjects are

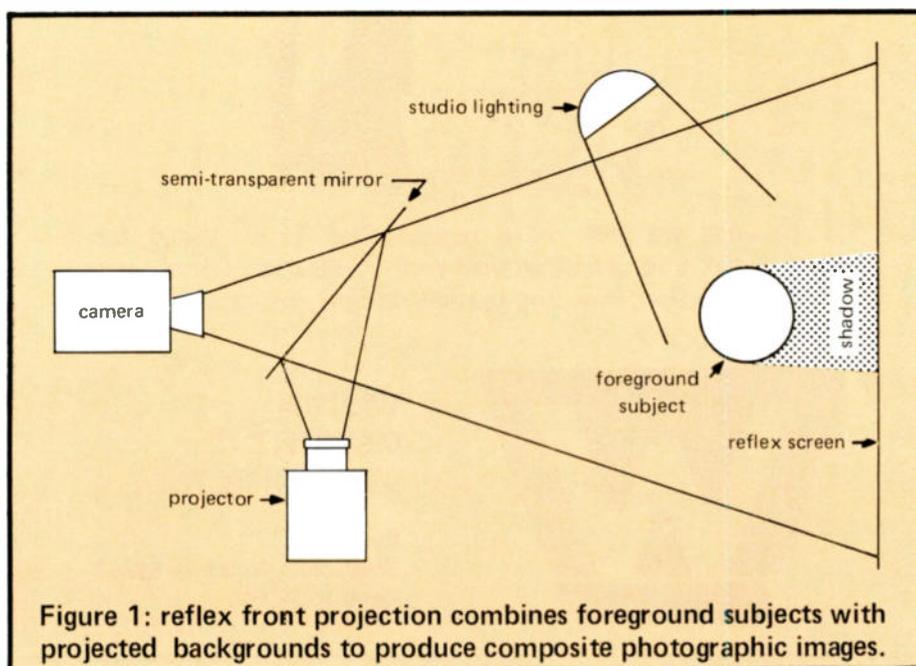


Figure 1: reflex front projection combines foreground subjects with projected backgrounds to produce composite photographic images.

affected when the camera is tilted or panned, or the lens is zoomed.

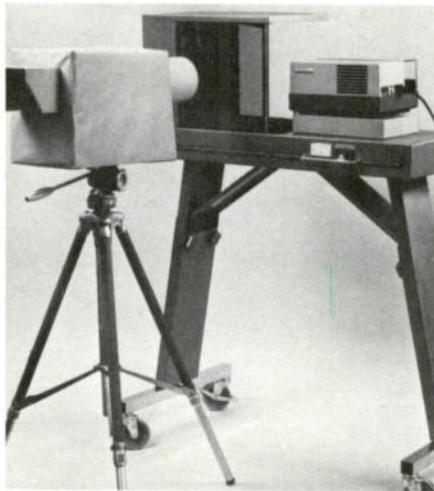
Front projection is an optical process, not electronic. Because it IS optical, there is no electronic "tearing." And because the choice of color backgrounds is immaterial to reflex front projection, a performer can wear any color clothing he desires, without the fear of being "keyed" into the background.

Front projection takes only seconds to set up for use . . . and costs far less.

CO/AX engineers don't compare reflex front projection with rear screen, because, as they put it: "It's not even in the same ball park. Front projection requires half-as-much studio space, far less power, gives flat, even illumination without hotspotting, allows the lighting of foreground subjects, and costs far less."

It Does Double Duty

What the CO/AX engineers have done, is to come up with a special



Only a minimum of equipment is needed for a front projection system.

application of their equipment for CATV operators. By placing the system in the control room, and projecting a slide through a window onto the screen in the studio, the system can be converted, instantly, to a telecine chain. Local films and slides can then be projected onto a smaller, auxiliary screen and recorded by the same camera that, moments

before, had been used in a live studio show.

Another reason for using the system in the control room is the ability to project motion pictures without projection noise affecting the live show in the studio. The slide projector that comes with the system is virtually noiseless and can be used in the studio, but most 16-mm projectors are far from quiet without special "blimping."

This is ideal with an operator building a CATV studio from scratch. In fact, CO/AX has come up with a set of plans for such a setup. But what about the CATV system that's already in operation . . . and where it isn't possible or desirable to place the unit in the control room?

The answer is to place the system in the studio, as commercial television stations do. The slide projector makes very little noise, and with a little care in microphone placement, that factor is eliminated.

Either way, the need for extra studio light is eliminated. In a modest studio setup, only two lighting units are needed. That's because lighting is needed only on the foreground subject or subjects. Since the "set" is a projected slide, no set lighting is necessary.

Besides television applications, reflex front projection is being used widely by movie makers. The technique was employed in filming such movies as "2001: A Space Odyssey" and "Battle of Britain." "Tora! Tora! Tora!" won an Oscar for special cinematography, much of which was reflex front projection.

But the greatest use is in the field of television. CO/AX's Fleming says that what gives the "chroma-key-only" users fits is when they see their competition doing the same thing with reflex front projection, in black and white, and zooming in on both foreground and background images. The "big boys" don't understand how that's possible.

Fleming says it's only because they haven't gotten around to visiting them. The biggest need right now, he says, and their most immediate customers, are CATV operators. TVC

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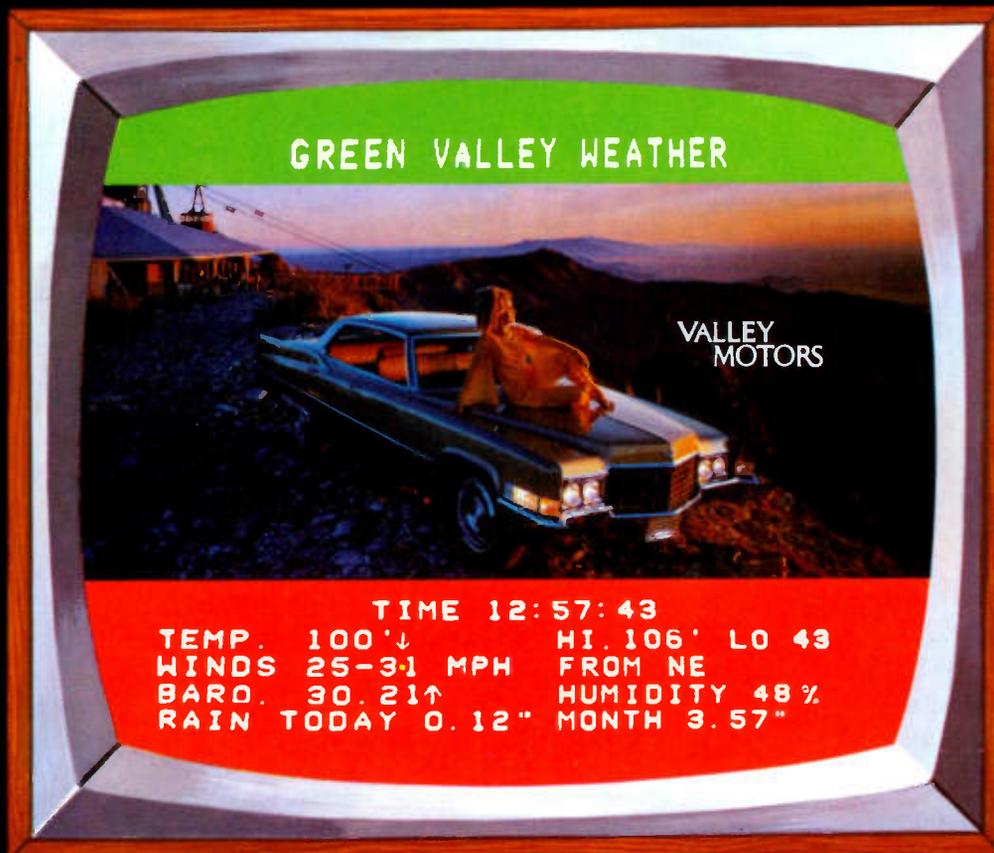
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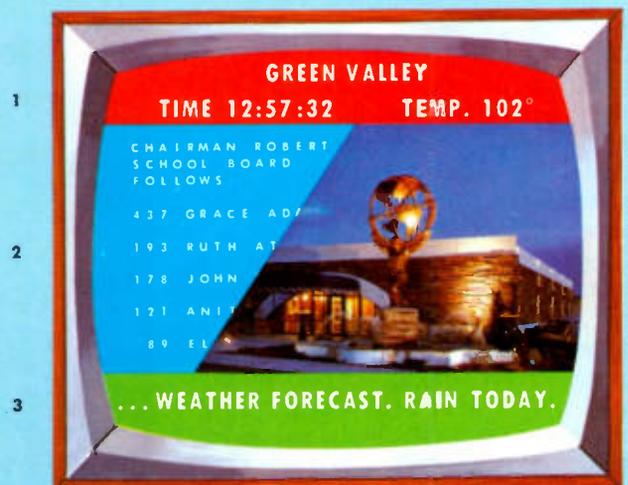
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NCTA Trade Show Review: Equipment for the Studio

Manufacturers reflected better understanding of cablecasting at this year's show. Color gear was more prominent than last year.

*By Jack A. Rickel and Ben Crutchfield
Jack A. Rickel Associates, Incorporated*

Many of the exhibits of studio origination equipment at this year's NCTA Convention looked more like one might expect at the National Association of Broadcasters Convention. There were large elaborate displays, many of which showed a wide array of expensive equipment, a few of which included simulated studios, and all of which featured pretty models.

Color equipment was much in evidence although it was mostly the less expensive units. Unlike last year's show (where many of the manufacturers didn't really seem to understand what the cable originator really required), this year's equipment seemed aimed more toward his needs.

Several of the companies didn't have new equipment to show, but only slightly improved versions of what was shown last year. In this category was RCA, Ampex, Sony, and General Electric. For example, General Electric showed how their TE-201 color camera could be adapted so the same camera could be used on a film chain and for live coverage. However, it would take several minutes to make the changes, which we feel would leave several minutes of

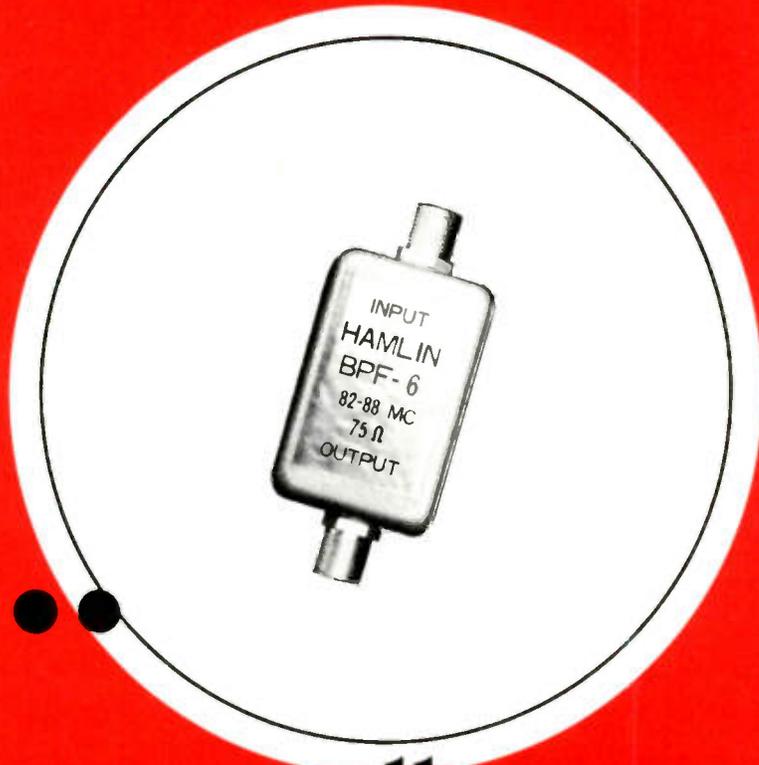
dead time during a live production.

Toshiba showed their new IK-81 two-vidicon color camera which seemed to give good color rendition under reasonable light

conditions. Unlike the Sony camera which uses a special vidicon in the color channel with color stripes made into its faceplate, the Toshiba uses a color stripe filter separate from the



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Harvey Ingham (l) of San Jose Cable TV Service, San Jose, California, and Don Guthrie of Time-Life of Rochester, N.Y. talk with Technicolor representative James Turney about Technicolor's new Super 8 cartridge film system for CATV.

tube, so both vidicons can be identical. The price for the complete camera and camera control including zoom lens was approximately \$8,000.

International Video Corporation showed their new self-contained camera with the extended red response, the model 150. This camera uses the *Tivicon* or silicon diode tube in the red channel for extended red response, and two plumbicons in

the blue and green channels. Its sensitivity is good enough to produce high quality color signals at 10 foot candles.

The camera, complete with internal sync generator, sells for \$14,800. For a little more money it can be remotely operated like its full broadcast sister camera using the *Tivicon*, the model 500, which sells for slightly less than \$30,000.

IVC has replaced their 600 series video tape recorders with the model 700 series which has four motors and full push button control. The 700 series starts as low as \$1,800. IVC also was showing a new line of professional black and white cameras which starts as low as \$1,492. Panasonic has developed a new 1/2" EIAJ video tape recorder which does an excellent job of recording and playing back an NTSC color signal.

Signal Engineering and Sales, Inc. of Birmingham, have a clever low-cost production center which sells for about \$40,000 including a Sony color film chain and two black-and-white Sony viewfinder cameras. One of the features of this center is a dual channel, two-piece audio mixing unit which appears to have a lot of features for \$695.

CO/AX Graphic Systems, Ltd.

of Vancouver have an interesting front projection screen system for projecting an "on-location" background for studio work. See the article on this topic, in this issue of *TVC*. Prices start at less than \$2,500. They will work with any camera.

Shibaden introduced a three-vidicon color camera which uses 2/3 inch tubes. This unit includes a true NTSC color encoder and accepts any standard C-mount lens, fixed or zoom. They claim that tubes do not need to be matched and cost only about \$120 each. Resolution and color appeared to be reasonable without high light levels.

Sony has had a two-tube color camera out for some time; however, TeleMation is selling a modified version, said to give better quality pictures under lower light. The display camera did produce a good, quiet picture.

The "trade secret" was revealed as substitution of plumbicon tubes for the standard vidicon. Red, green and blue signals were brought out to jacks so that a separate NTSC encoder could be used. With modification and encoder, however, the price rises to around that of the Shibaden or similarly equipped IVC.

Generally, it seems that the less expensive color camera market is beginning to get pretty competitive. The system owner can now do some serious shopping for the features and performance he wants. Unfortunately, one of the early entries, the RCA one-tube film chain camera, continues to be a disappointment. One of them, set up to demonstrate a Technicolor projector, produced colorful, but exotic results which could hardly have been blamed on the film.

The Technicolor projector, a prototype, is a modification of one of their standard Super 8 cartridge projectors developed for school use. If the production model is available soon, it may be the first Super 8 projector for TV which does not have to be modified by someone first. It will have two drawbacks: It only reproduces optical sound tracks and film will have to be loaded into a Technicolor cartridge.

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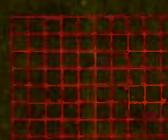
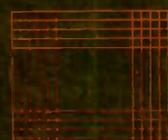
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CATV

(Editor's Note: Technicolor reports they are working on a "tray" for reel-to-reel projection on the same unit.)

Several film chain displays included the Wilcam/Fuji Super 8 projector. Although this projector was not exhibited per se, it appears to be the leading entry into TV Super 8. It is a reel-to-reel projector with magnetic sound track capability. The companion Super 8 camera, Wilcom/Minotta was seen at the Kodak exhibit. This camera seems rather substantial and is equipped for magnetic sound-on-film recording.

However, no one was seriously trying to sell Super 8, not even Kodak. Kodak did have a slide system that was interesting, if not new. They were showing a combination of two Carousel slide projectors connected to an automatic dissolve unit.

This could be used on an optical multiplexer (or directly into a camera) and would eliminate the blackout between slides experienced when using only one projector. While this also can be

overcome with a dual-drum slide projector, the cost of both Carousels and the dissolve unit is about 1/3 or less than that of a dual-drum projector.

One bright light on the scene was at the Century Strand booth. They were showing their Featherlite-1,800 portable lighting kit. This inexpensive, lightweight kit has three focusing, 600 watt quartz lights with stands and cables, all stored in a small aluminum carrying case. The whole thing looked to be very well made and flexible. The price is \$348.

A good switcher-fader-effects combination unit made by Dage was seen in Jerrold and IVC portable production packages. There was also a comparable unit offered by Dynair and both can handle color as well as monochrome signals.

The main difference is in preview. The Dage unit has a separate preview switching bus. In the Dynair, the signal punched-up on the inactive switching bus is automatically previewed. Which is

better is a matter of personal preference. The effects are certainly adequate for most production needs.

On the whole, the origination equipment exhibited was reasonable, with the few exceptions already mentioned. Some, such as the big Norelco and TeleMation color cameras, are beyond the budgets of most systems. The equipment is good, but designed for much more exacting requirements than those of most systems.

Although there were some well known companies which did not have booths, including Dage and Cohu, there was still a good selection of studio equipment. Color was more prominent, but there was a good range of monochrome equipment. And manufacturers are getting geared up for the new half-inch video tape industry standard.

Next year we are looking for even more improvements in small color cameras, a growth in half-inch video tape and more features such as editing, and perhaps a blossoming of Super 8. TVC

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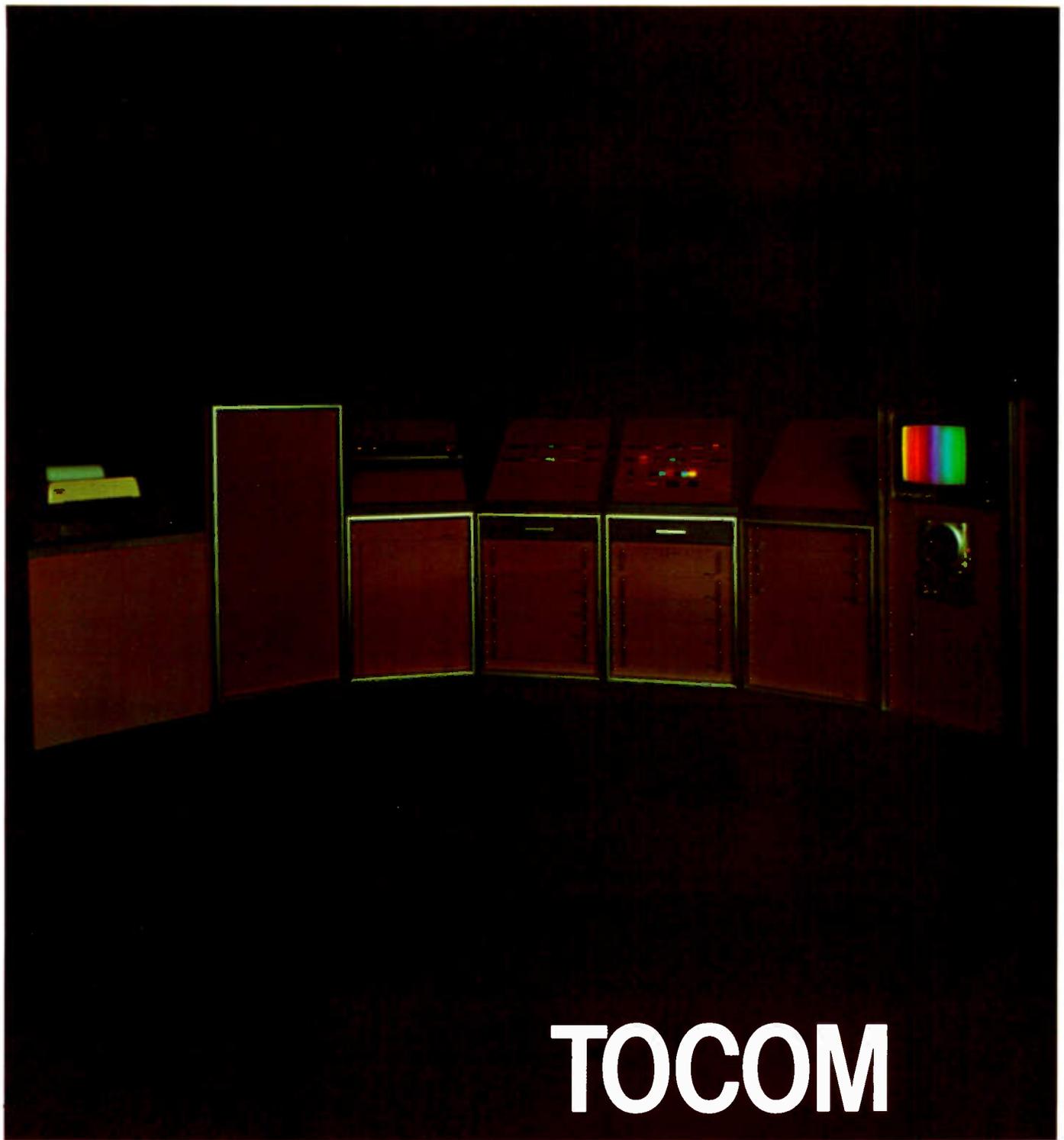
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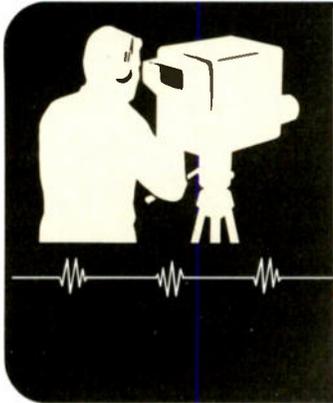
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STUDIO

Equipment

A special monthly section devoted to TV programming equipment for small studios

K'SON Camera Requires Minimal Light

A new television camera has been developed by K'SON Corporation, 743 Dunn Way, Placentia, California 92670. K'SON is the RCA technical distributor for professional television in Southern California.

The new camera, a K'SON engineered adaptation of an RCA camera, has been named "The Moonlighter" because of the very low light levels required for satisfactory operation.

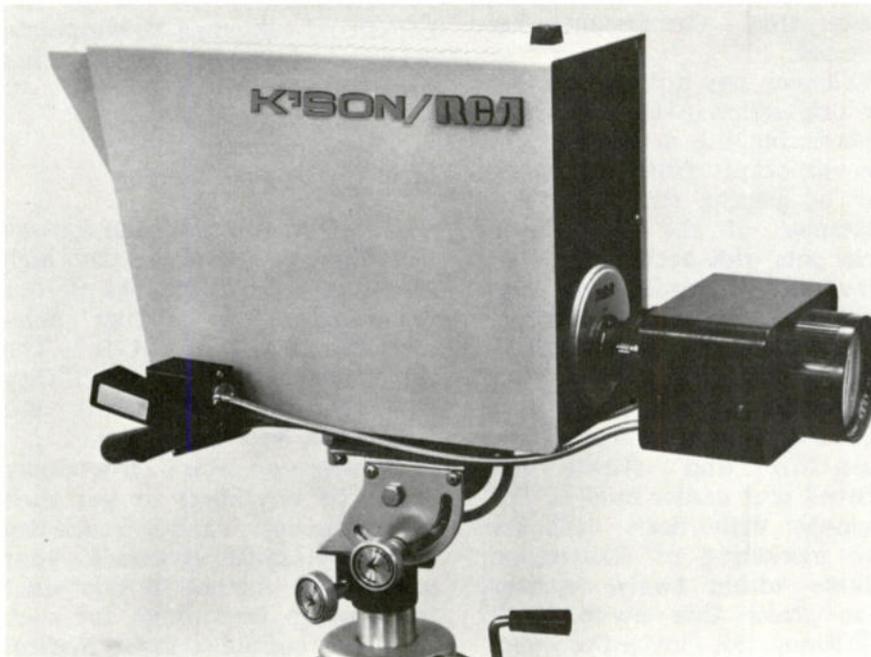
According to a K'SON spokesman, The Moonlighter can operate at one foot-candle power. This characteristic makes it ideal for a wide range of remote location live, filmed and taped programs such as school sporting events, parades, graduation ceremonies or any

events that have insufficient lighting to allow the use of standard cameras.

The K'SON/RCA PK530LL Moonlighter with viewfinder (to give its full title) claims "excellent picture quality, operational simplicity and exceptional flexibility." Basic price for the Moonlighter is under \$1900.

A selection of standard "C" mount lenses is available, including 5:1 and 10:1 zooms. With the exception of the full complement of viewfinder controls, the only external operating control is the on/off switch.

Also available on the rear of the camera is a mechanical focus control to compensate for different-sized lenses. RVC



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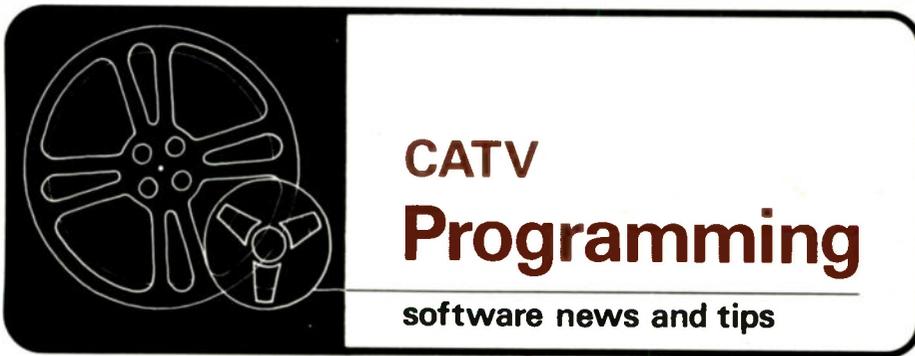
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Standardization Is Essential For Advances in Cablecasting

Cablecasters continue to go in many directions when it comes to non-live programming. Some cablemen use one or more of the several 1" VTR formats... some use 1/2" equipment... others have kept to 16mm film while others have moved into 8mm or Super 8. This is obviously a headache for anyone who wishes to produce commercials or programming for distribution to cable systems.

There is no doubt, if cablecasting is to grow, some format for non-live programming will have to evolve as the predominant standard. It is unlikely that NCTA or anyone else will impose a standard... rather, a standard will probably take hold due to: degree of availability of equipment in a given format, cost of the equipment, etc. Maybe it is a good thing that less than 20% of the cable systems in this country do any form of origination. That means fewer systems will have to change format when a standard does emerge.

At the recent NCTA Trade Show, Super 8 seemed to take on an increased interest for cablecasters. Several firms showed (or talked about) Super 8 cameras and film chains that made the Super 8 format seem like a reasonable possibility for widespread CATV work. If these companies get off their duff and put some action behind their words, film could

eventually play a more important role in CATV than videotape.

Technicolor showed a Super 8 cartridge unit that they plan to offer with a "tray" which will handle reel-to-reel Super 8 film. Williamson Camera Company has developed a Super 8 sound camera and a Super 8 projector for TV film chain applications. But... the big IF relates to the commitment Kodak and friends have toward the potentials of CATV origination work.

Another format to watch is the Cartrivision videoplayer. The week of the NCTA Convention it was announced that Sears and Wards retail chain stores will market the system that Cartrivision has developed.

Cablemen may not plan to buy their origination gear from Sears or Wards, but this development is quite important from the standpoint of gaining standardization acceptance. If the Cartrivision format gets wide acceptance, that form of video recording and playback could evolve into an inexpensive standard for many cablecasting applications.

According to those who have seen Cartrivision demonstrations, resolution and clarity has improved over earlier models. The agreement with Sears calls for active marketing of Cartrivision products within twelve months... at prices that invite home applications. So, maybe the video-

tape people can keep the CATV industry after all... if Cartrivision or some similar format really takes hold.

CATV Networking Studied

Peter D. Shapiro, graduate student at the Institute for Communication Research, Stanford University, Stanford, California, is currently in the process of studying networking activities that involve cable systems.

Network programming and/or advertising for CATV is a likely development as cablecasting efforts grow. Already Tele-Communications, Inc. has worked with a number of cable systems in the Rocky Mountain region to bring special, live sporting events to their subscribers. Some MSOs "bicycle" videotapes and as such develop their own super-basic network.

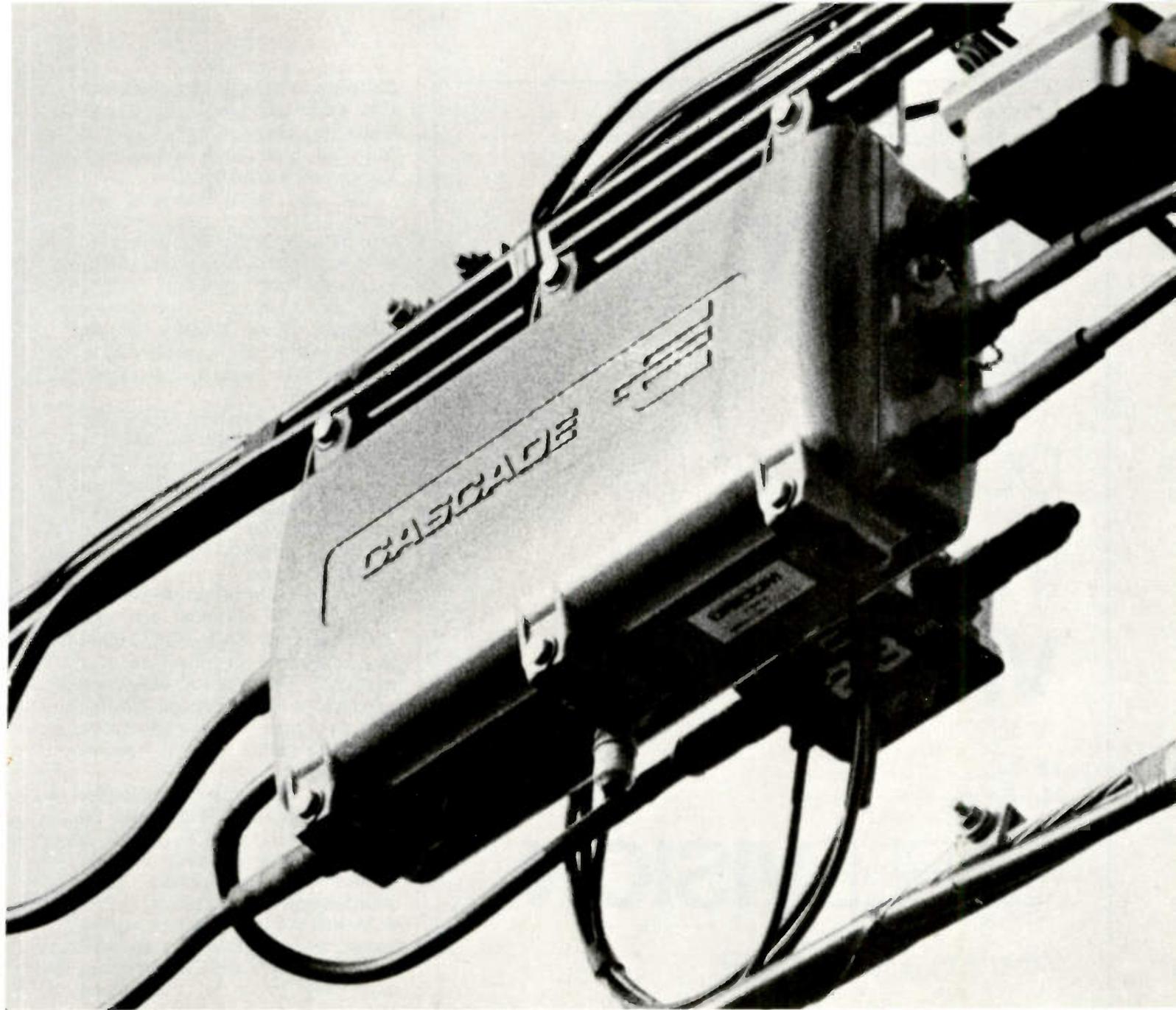
Shapiro will look at technical and regulatory problems related to CATV networking. Hopefully, his findings will help cablemen recognize potential pitfalls associated with network plans... and will help cablecasting grow in professionalism, service to subscribers and profitability.

In the next month or two, Shapiro will send questionnaires to cablecasters. Certainly the cable industry has got to be the most surveyed and studied and examined industry in existence. Nevertheless, it will be to the benefit of cablemen to cooperate with Shapiro when his questionnaire arrives.

Ideas for Program Sources

Have you ever used film footage or videotape produced by high school or college students of your community... or similar communities across the U.S.? The cable systems in Redwood City and Sunnyvale, California and Ringwood, New Jersey have.

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The Du Pont Company has come out with a new, colorful four-minute movie for television. Robert L. Green is featured, doing some gourmet cooking . . . using Teflon-coated cookware, naturally. Want a copy of the film? Write to Mercury Newfilm, 501 Madison Avenue, New York, N.Y. 10022.

Lutheran Television, 210 North Broadway, St. Louis, Mo. 63102 is already promoting a special Christmas program called "Christmas Is!" They have an exclusive cable version this year. It is free . . . and can be sponsored. It ran in 188 markets last year.

Modern Talking Picture Service, Inc., 1212 Avenue of the Americas, New York, N.Y. 10036 has announced introduction of a variety of "priced-for-cable" subjects which feature leading sports and entertainment celebrities. Some "how to" shows are included.

George Schindler, Show-Biz Comedy Service, 1735 East 26 Street, Brooklyn, N.Y. 11229 is now marketing a "cable comedy service" to cablecasters using weather-scan equipment. Pre-printed 3 x 5 cards bearing topical humor and one line gags are sold on a \$9 per month subscription basis. Gag writer for this service has written material for Jack Parr, Red Skelton, and others. Aim of service is to spice up time/weather channel with some light-hearted humor.

Damaged Films Rejuvenated

International Film-treat, 250 West 64th Street, New York 10023 has a service of restoring motion picture film that has been scratched, dirty, torn, brittle or warped.

If you have some film that has one of these problems . . . and if you were considering replacing it with a new print, contact Film-treat. They claim they will treat your first film (color or b/w) at no cost. Their phone is (212) 799-2500.

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Film can help cover your expenses, too. With film you can shoot simple commercials that fit the needs of your local sponsors. Film lets you go out to the advertiser, and record his message right at his place of business.

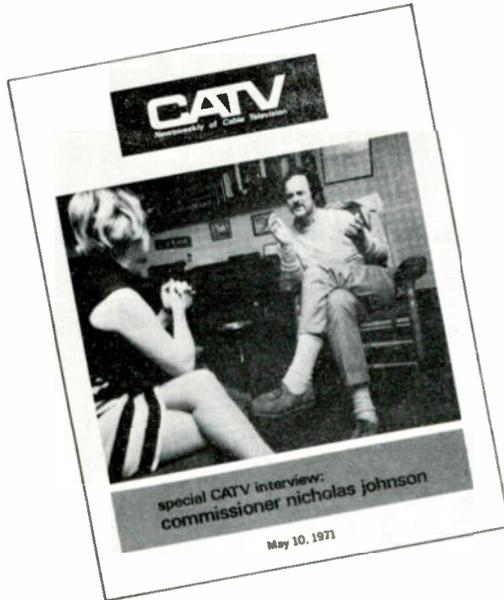
Local origination can be a lot easier with film. And nobody knows more about film than Kodak. If you want the complete story, call the Kodak office nearest you. Find out how easy it is to get the evening news on film, before and after a word from your sponsor.

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August 1971

TV Communications

CATV Technician

A Look into the New CATV Products

Complete Trade Show Review Begins on Next Page

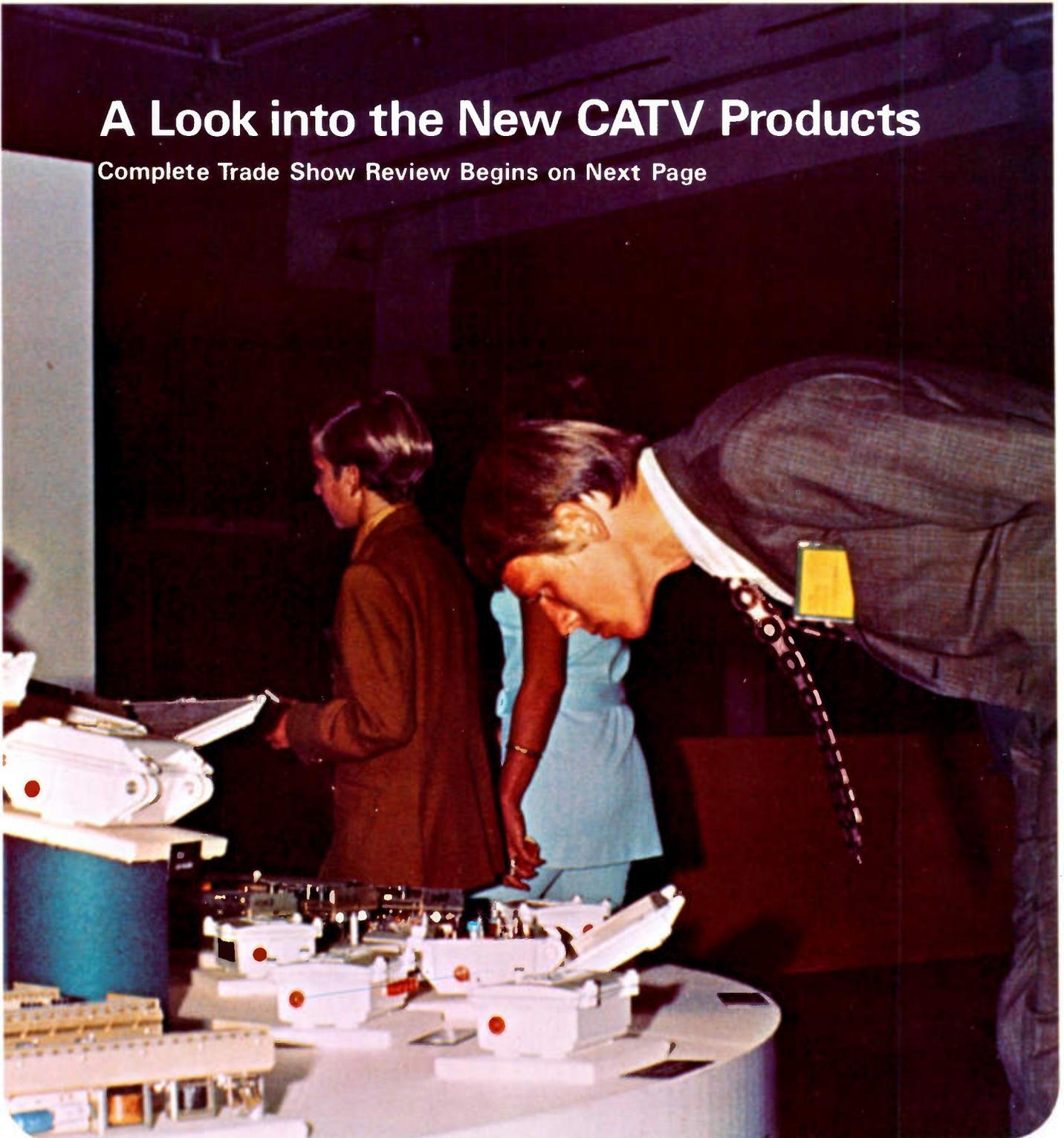
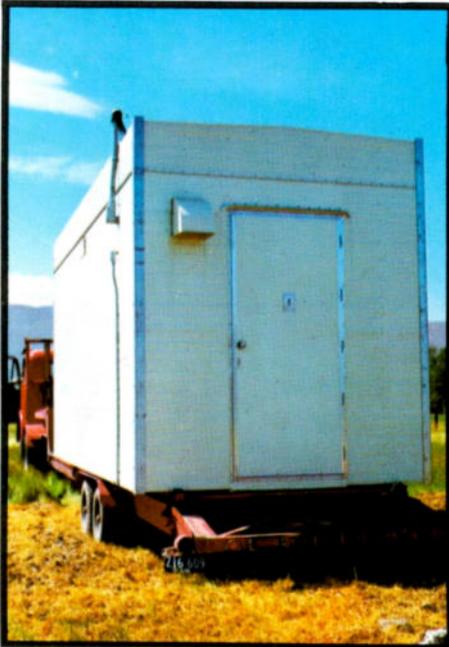
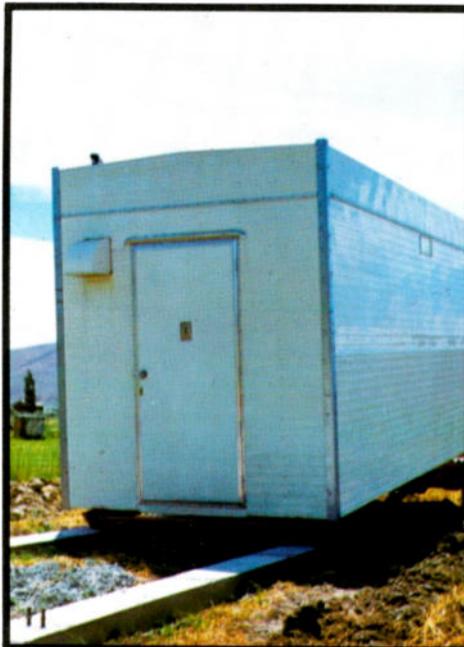


Photo taken during the 1971 NCTA Trade Show in Washington, D.C. by Associated Press.

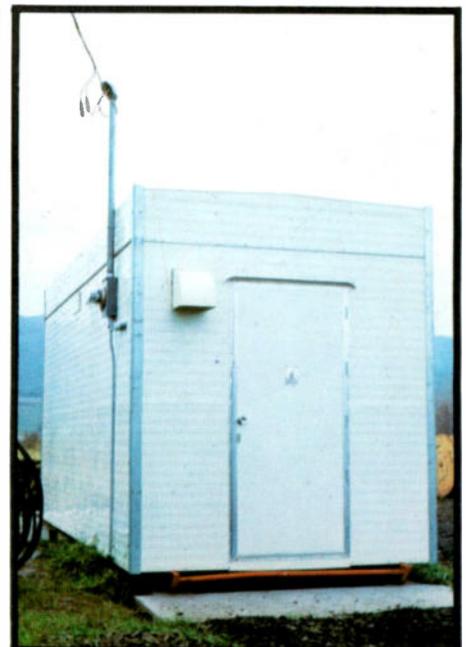
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NCTA Trade Show Review:

An Analysis of New Products

The Chief Engineer for a major MSO offers a critical look at the new cable-related equipment shown at the recent Exhibition in Washington, D. C. Manufacturers put on a big show, in hopes of favorable actions at the FCC.

*By I. Switzer, Chief Engineer
Maclean-Hunter Cable TV Limited*

More than one hundred exhibitors filled the exhibition space at NCTA's 1971 convention in Washington's Sheraton Park hotel. The actual number approached 120.

"Numbers" can be considered the most important feature of the 1971 exhibition; number of exhibitors . . . number of product and service categories . . . number of exhibition visitors . . . number of competing suppliers of virtually all classes of products and services . . . and shortage of a sufficient number of hours to see it all!

The exhibition area was open for a total of twenty-seven hours during the four days of the convention, allowing an average of less than 15 minutes per exhibitor for the durable visitor willing to spend *every minute of the available time* in the exhibition area. In this kind of competitive display situation there is bound to be a considerable amount of showmanship — often more showmanship than solid information. SKL was splashing liquid nitrogen all over their equipment in a spectacular display of hissing chemicals which sometimes masked the more lasting virtues of the equipment.

The only small number was attendance which did not meet expectations. Attendance was down slightly

from last year and traffic on the trade show floor was noticeably light.

Amplifier manufacturers seem to be playing the numbers game. Amplifier frequency range is being pushed upward from the 240 MHz which was the big



Perky Susan Theiss was posted outside the Dolphin display to lure conventioners (in this case its Charles Helein of Dow, Lohnes and Albertson . . . Washington, D.C. law firm) for a closer look. Inside the display area, Dolphin's Bruce Martin (l) discusses a passive device with James Coffey of Colony Communications, Providence, R.I.

number two years ago, through the 270 MHz of last year to the 300 MHz which is this year's magic number. Next year I expect to see a 301 MHz amplifier . . . "just a silly MHz more bandwidth."

Amplifier specifications seem to have reached a plateau. I suspect that current improvements in semi-conductor devices are just keeping up with the additional loading imposed by the extra channels to be carried. This year's 300 MHz upper frequency limit may have been imposed by the fact that most of the available test equipment for development and manufacture stops at 300 MHz.

Most manufacturers had thin-film hybrid circuitry available in line extenders, but I suspect that widespread use of the thin-film hybrid modules in mainline equipment will await the practical results from Anaconda's pioneering efforts in the use of these devices.

Nearly everyone's amplifiers are bigger than previous models, and many housings have sprouted fins to help the growing cooling problem. The original "suitcase" type packaging, introduced a few years ago by Jerrold with their Starline I series, has now grown to "two suiter" proportions. I overheard an "old timer" remark that some bright young technician would now have the idea of bolting the amplifier to the pole because it was too big and heavy to mount on the strand.

New kinds of numbers are now appearing on the specification sheets — specifications for second and third order intermodulation products. These specifications are a little difficult to interpret and compare, reminiscent of the situation in cross modulation specification before NCTA standardization.

Nearly all manufacturers offered push-pull type equipment with single-ended types offered optionally. Some, notably Electronic Industrial Engineering, offer single-ended design only, concentrating their efforts on control of third order distortion and relying on cancellation effects and relatively slow build-up rates to control second order distortion problems.

Most manufacturers, however, have chosen to go the "option" route, letting the customer decide the nature and severity of his distortion problems and allowing him to choose the model best suited to his needs. Jerrold offered a huge, almost bewildering, range of options in equipment variations. AEL, C-Cor and Kaiser again showed their well established lines of amplifiers.

Two-way (optional or standard) was universally available and this year is available right through the line extenders. Information on return path amplifiers seems a little scarce, but I expect that return path amplifiers will develop in variety and versatility as practical experience with two-way accumulates.

Line extenders now resemble "min-mainliners" with push-pull, two-way, extended bandwidth and AGC all commonly available. "Deluxe" line extenders have been popular in Canada for some time and Canadian manufacturers (Benco, Cascade, Delta, Lindsay) showed field-tested versions of this type of amplifier.



Ted Blum, president of MPI Company (r) shows a two-way line extender amplifier to R. Pat Brown of Cascade Electronics.

Cascade showed the versatility of the Unicom series packaging by showing a small rechargeable battery-pack fitted into the housing cover with switch-over equipment to provide stand-by power for the amplifier during cable power failures.

Entron added a touch of nostalgia by showing some of their good old reliable tube-type head-end components among their current model solid-state amplifiers units.

GTE-Sylvania showed a comprehensive equipment line. Sylvania's line is relatively new but appears to be competently engineered. Having GTE-Sylvania influence and prestige helps too.

Channel Conversion Devices

This year's show moved converters high up on the system operator's shopping list. All that spectrum and all those channels don't earn a dime without some way to put them on the subscriber's picture tube.

Oak Manufacturing has radically reworked the inside of their set-top converter. The double heterodyne feature remains, but the IF frequency has been raised and a completely new tuner mechanism developed. Most other manufacturers of set-top converters, perhaps because they lack Oak's years of experience and mechanical tuner mechanisms, have gone to varactor-type tuners.

Magnavox-Craftsman showed this type of converter with the tuner itself housed in a box mounted behind the set and the push-button control head at the end

of a small remote-control cable. Phil Hamlin's new converter, with a slide selector mechanism, was being used in several booths, but I couldn't find Phil or anyone else to explain the converter itself.

Tomco showed its new converter in the Anaconda booth, but its use depends on completely non-standard channel spacings which may be a difficult concept to sell to cable operators.

Optical Systems Corporation had a newly developed converter on display in their suite at the Shoreham as part of their channel system leasing concept. This converter has space for an optional "descrambler." Unfortunately the trip over to the Shoreham took longer than the 15 minute average that many people had available.

EIE's "in-system" block converter is still available, and EIE showed a comprehensive line of dual distribution and dual-drop equipment to go with it.

"In-home" block converters are finally getting the development effort that I think they deserve. AEL now offers their block converter for mid-band as well as super-band conversion and Jerrold showed a very promising mid-band block converter. These will be of considerable interest to those systems without serious high-band direct pick-up problems.

Most of these new converters are pictured and briefly reviewed in July *TVC* on pages 142-148.

Microwave Systems

FCC type approval of two company's local distribution microwave systems was one of this past year's most important technical news items. Laser-Link and Theta-Com both showed working, production models of their systems and were quoting firm price and delivery schedules. Both these systems are now GO . . . and I expect to see a lot of both types of this equipment sold in the next year.

I also expect to see a lot of additional competitors entering this equipment field in the next year. Microwave Associates showed "pre-production" versions of their LDS equipment and are probably not too many months behind Laser-Link and Theta-Com. Microwave systems of this kind seem well within the capability of any experienced microwave equipment manufacturer. The market potential will no doubt attract several more companies into the LDS field.

Microwave Associates showed the Quantronix short-range optical-link, using an infra-red light beam to transmit color television programs over distances up to about 600 feet. I had hoped to see infra-red and laser systems with somewhat longer ranges. I think that the very short range will severely limit the market potential of currently available optical-link systems. Microwave Associates also has low-power, low-cost conventional microwave systems for use in remote program origination and similar applications.

Collins, Jerrold and Raytheon showed their conventional FM-type microwave equipment . . . of continuing interest to cable operators for more distant signal transportation.

St. Petersburg Communications showed a multi-

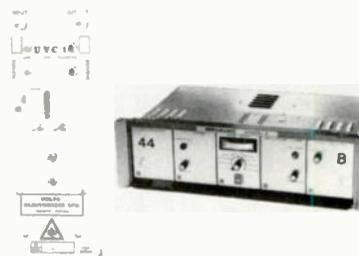
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Kirk Hollingsworth of Anaconda Electronics discusses "Sealmetic" coaxial cable with Robby Terry of Gulf Communicators, Inc., Cape Coral, Florida.

channel digital multiplex system for carrying audio channels on microwave. Cable TV applications may be limited, but it is evidence of their growing commitment to digital techniques for cable television application.

Interactive Terminals

I don't know just what is the proper generic name for these systems. I think you know what I mean . . . a computer at the head-end (or cable office) interro-

gates subscriber terminals by digital transmission on the cable. The subscriber transponder answers back by digital transmission on the "two-way" cable with information ranging from the channel being tuned, the subscriber's opinion on the issues of the day, the reading on the gas meter and the state of his health.

Several systems of this type were at the show . . . and working. The CAS "TOCOM" display was probably the most elaborate, showing a complete control center with mini-computer, information print-out, the whole works . . . all ready to deliver to the cable operator willing to pay \$100,000 to be the first on his block to own one. Set top terminals are built around the Oak converter with CAS "TOCOM" transponder equipment built in to provide the "interactive" features.

This and the other similar systems on display all work and will no doubt begin moving out of the labs and model-shops just as soon as cable operators develop the necessary two-way transmission facilities on a scale big enough to justify the additional investments in the interactive systems.

K'Son showed an interactive system principally intended for pay-TV use, but with other possible applications, which appeared ready for almost immediate installation. K'Son uses tone control for information transmission.

Theta-Com showed prototypes of interactive systems which they are presently field-testing. Technician indicated they were working on a system but were unwilling even to show sketches.

Scientific-Atlanta's offering was rather interesting in that they have limited the ambitions of the particular system shown to alarm reporting. Home alarm terminals are interrogated by a special mini-computer using digital techniques. Alarm condition reply is carried back to a central office on a special return cable network built out of low-cost drop-type cable. Return carrier frequency at about 800 KHz



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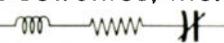
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Some "inter-active" applications require "scrambling" of the picture to provide a greater measure of security than is provided just by the use of non-standard channels. Optical Systems and Athena showed scrambling systems (in their Shoreham suites) and "scramble" systems will no doubt be available for other "inter-active" systems when required.

Head-End Equipment

Manufacturers continue to refine and expand the capability of established head-end principles. Ameco showed a modernized version of their pioneering "Channeleer." Jerrold now makes available mid- and super-band input/out modules for their Commander II series, something that smaller companies have offered for some time.

Vikoa's heterodyne processor has been improved and Anaconda now offers their own head-end processing equipment. Scientific Atlanta showed their heterodyne processors and modulators and demodulators in racks equipped for showing rigorous performance tests.

Modulators shown by Telemet, EIE, Anaconda, Jerrold, Scientific Atlanta and Dynair offer significantly higher performance specifications than previous generations of equipment. Demodulators, available from most of these same companies, also offer significantly improved performance.

Several manufacturers of heterodyne equipment, including Benco and CAS, offer UHF tuner modules for their processors, as well as a wide variety of non-standard channel plug-ins.

Blonder-Tongue continues to offer high quality "strip"-type head-end equipment for those applications in which its use is appropriate.

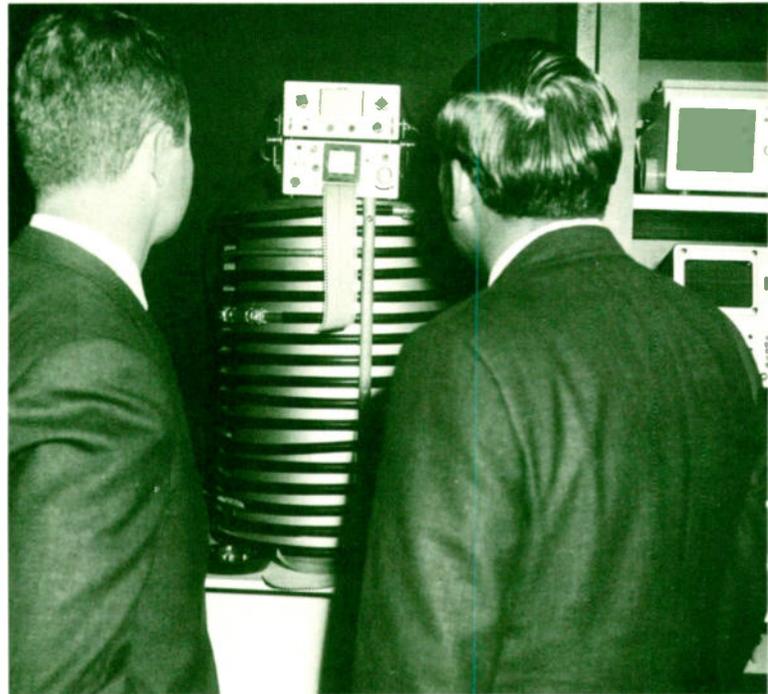
"Switched Systems"

"Switched systems" which perform channel selection in a remote switching unit were represented by Ameco and Rediffusion. Rediffusion's pilot system is now operating on Cape Cod and was not available for display at the show. Ameco showed a working system.

Both systems use low frequency carriers on individual trunk cables, routing the selected program through the switching unit to the subscriber under the control of a dial or remote control selector at the subscriber's set. Ameco now multiplexes two television channels on each individual trunk cable, converting to individual channels in each switching unit.

Switched multi-channel operation does not appear to have attracted attention from any other cable equipment manufacturers. These two companies will probably continue to be alone in the field, developing appropriate applications for this class of equipment.

Log periodic antennas from established manufacturers continue to dominate the CATV field.



John Lady (r), Director of Information Services for NCTA and Tektronics representative Steve Roth inspect Tektronics' new time domain reflectometer which features a strip chart output.

These are apparently so well established that the exhibitors showing antennas . . . Jerrold, Lindsay, RF Systems and Scientific Atlanta . . . did not feel it necessary to actually bring very many of them to the show. RF Systems offered Zig-Zag types for CATV operation, an innovation at this show.

Cable and Specialties

Funny that the foundation of our industry . . . coaxial cable . . . should receive so little emphasis from exhibitors, and consequently so little comment from me. Anaconda, Anixter-Pruzan, Belden, Comm-Scope, Essex, General Cable, Phelps Dodge, Plastoid, Systems Wire & Cable, Times and Vikoa all showed cable . . . but not very enthusiastically. Mostly the same products as last year (and the year before).

The only innovation of note was the appearance of copper-clad aluminum material in drop wire braids, either alone or in conjunction with aluminum foils in double-shielded construction.

Applied Information Industries showed their digitally controlled non-duplication switcher. This unit uses digital computer techniques to program switching in one second increments, and appeared capable of handling the most complex type of switching schedule that any operator is likely to have.

Network Analysis Corporation staffed their booth with an expert staff of computer design specialists. Their computer-executed system designs were very impressive.

They publicized an interesting system design contest for "human" system designers with a \$1,000 prize for the best "human" design submitted for the sample layout which is the subject of the contest. I

presume that the intent is to show up the shortcomings and variability of "human" design efficiency.

Gilbert Engineering had some improved versions of their well known line of connectors. Preformed line again showed their first class hardware.

Test Equipment

"In-service" system testing is now very much in vogue . . . and rightfully so. In-service systems introduced last year by Jerrold are now available from several manufacturers, including Texscan (marketed by Jerrold), and Kay Elemetrics.

Jerrold has announced that it will phase out its own test equipment development in favor of marketing Texscan products. Kay showed a comprehensive line of sweep generators in addition to their "in-service" sweep system. Wavetek Indiana, long a supplier of test specialties to the television receiver manufacturing industry, showed their sweep generators and test accessories for cable TV applications.

Dynamco's line of waveform monitor oscilloscopes has been very popular in Europe. Their booth at NCTA is possibly their first test of the North American market. Dynamco monitors are notable for their ability to display either waveform or the actual picture on the same oscilloscope.

Tektronix showed several new items of interest to cable operators in addition to their longer established oscilloscope lines. Their new video test generator incorporates a calibrated video noise generator and gating system for gating calibrated noise levels into selected lines in vertical interval. A portable TDR system for cable testing was also new.

Helwick-Douglas showed a combination TV receiver and field strength meter intended as a single test set for most subscriber service problems. St. Petersburg and Lindsay America had small, low-cost

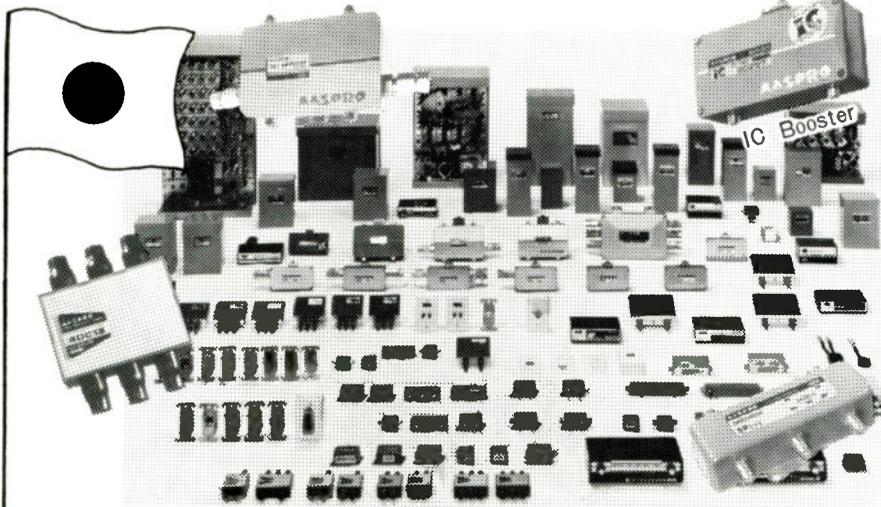


Pretty Betty Torray was on hand to attract attention to the new Magnavox television receiver that has been designed especially for use with CATV systems. Leon H. King of the Internal Revenue Service (that's right!) is the gentleman with his back to the camera.

signal level meters intended for installer use. The ultimate compact signal level meter must surely be the pen-sized go/no-go meter shown by Jerrold for similar applications.

The most interesting "in-service" test system was the one shown by Avantek. This system operates a sweep generator at the head-end at about 40 dB below system carrier levels, so that sweep interference is not visible to the subscriber. The sweep receiver is a special purpose spectrum analyzer, which tracks the low level sweep signal by means of information on a special pilot carrier transmitted through the cable system.

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B&K Instruments showed a high quality signal level meter which represents a long awaited development of an earlier B&K instrument. There are a number of cable television applications for a precision instrument of this type.

Hewlett-Packard was conspicuous by its absence. Tektronix has shown its confidence in the cable television industry by exhibiting at the industry's annual convention. H-P owes the industry the same measure of confidence and support.

Passive Devices

Hope springs eternal in the heart of specialty manufacturers of passive devices. I certainly hope that there is a viable market for the 22 exhibitors of passive devices listed on the official exhibition directory. I cannot begin to discuss all of these exhibits in detail.

Generally speaking most passives have been improved to offer full 5 MHz to 300 MHz capability, consistent with the expanded channel capacity of new cable equipment. Some special features were displayed and some particularly caught my eye. Ceracche's directional tap (shown at the LRC Electronics booth) built into a cable connector was particularly interesting. So were the variety of posted passives and specialty hardware items for multiple-drop installations offered by other suppliers.

A Special Cable TV Receiver

I have saved the "goody" for the last, Magnavox unveiled its special receiver for use on cable systems. They plan to offer it through dealers in cable TV areas.

This large screen color TV receiver has a 31-channel tuner built right in. It covers the 12 standard VHF channels plus 19 additional mid- and super-band channels. The receiver also paid special attention to adjacent channel selectivity . . . and has a completely shielded tuner system. The UHF tuner is present to comply with the all-channel law, but is of little interest to cable TV operators.

This is not the first cable TV receiver with a built-in multi-channel tuner, but is the first by a major receiver manufacturer with a substantial sales organization. It finally shows that the receiver industry is recognizing both the importance and the special problems of cable television.

From Here . . . Up or Out!?!

The 1971 NCTA trade show was the biggest and flashiest ever. There were a number of significant innovations.

There was still the feeling that a great deal of the show was a brave front from a segment of the industry suffering through a long drought . . . and hoping for early relief (or an early death and release from economic misery). TVC



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PRODUCT REVIEW

NEW COMPONENTS FOR CABLE TELEVISION SYSTEMS

JERROLD ANNOUNCES STARLINE 20 ADDITIONS

Jerrold Electronics, 401 Walnut St., Philadelphia, Pa. 19105, has introduced a wide range of new product additions to the Starline 20 push-pull one-way CATV systems.

New products for the Starline 20 system include model SAS-300 Starline automatic slope trunk amplifiers, the SP-11 and SP-13; models SLE-300 and SLE-300A line extender amplifiers; models STP-S power packs; and models STC-*B VHF broadband directional couplers.

The Model SAS-300 Starline automatic slope amplifiers are dual carrier push-pull trunk amplifiers which are designed specifically for direct and internal plug-in usage in Starline 20 or Starline 20 push-pull trunk stations. The "trunk only" dual carrier station is designated SP-11. The trunk and bridging dual carrier push-pull station is designated SP-13. Both stations feature automatic slope and gain control.

The Model SLE-300 series line extender amplifiers are designated SLE-300 and SLE-300A, and are solid-state hybrid integrated-circuit amplifiers. The SLE-300A incorporates the additional function and capability of automatic gain control and provides a slope control through AGC.

Models STC-*B VHF broadband directional couplers are passive devices for CATV distribution systems in the 5-300 MHz range. All of the new STC-*B couplers are powered pass to all ports.

The company also announced the introduction of its new models SLE-300-2W and SLE-300A-2W two-way line extender amplifiers which incorporate hybrid thin film technology. The SLE-300-2W is a manual station which has been designed to realize the RF amplification required for the forward direction and to cover the frequency spectrum of 54-300 MHz. The unit is specified for 30-channel capacity with an output capability of +4 dBmV/channels at -57 dBXmod.

The SLE-300A-2W line extender is identical to the SLE-300-2W with the exception that closed loop, single

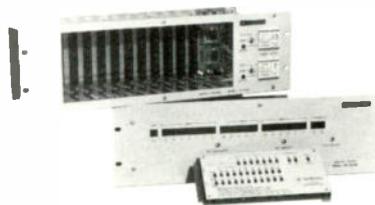
carrier, sloped pilot-controlled AGC action is provided within the amplifier.

Other new products include model SCD-2W and SCL-2W connector chassis; models TF-30 and TF-108 high-low split trunk filters; model DF-30 high-low split distribution filter; series TRA-30 and TRA-108 trunk return amplifiers; and two new antennas, including a high-gain search antenna, the J-283-X, and a new highly-directive antenna, the Jerrold Color Captain.

TELEMATION INTRODUCES MODULAR SWITCHER

TeleMation Inc., P.O. Box 15068, Salt Lake City, Utah 84115, has introduced a modular, all-solid-state non-duplication switcher, TMP-1000, which uses plug-in printed circuit cards to accomplish switching.

The TMP-1000, which contains no mechanical components, was designed on a building block concept, so that



cable operators can buy only what their system requires to switch as few channels and events or as many as necessary.

The switching system consists of four basic components. The MC-1000M master clock sends, in digital form, the real time to one or more OC-1000 output control chassis. The OC-1000 contains receptacles for up to 12 program control cards for each of two output channels, or for three-input/single channel operation.

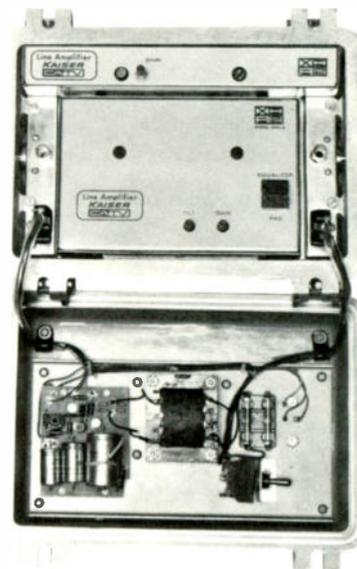
To program each switching event, the operator sets day, hour and minute on a PC-1000M program card. A switch occurs when coincidence exists between real time and the time set on the card. All plug-in cards are identical.

To extend event capacity, in increments of 15 program control card slots, one or more EE-1000 event extenders may be added.

KAISER ANNOUNCES NEW TWO-WAY SYSTEM

Kaiser CATV, 2222 West Peoria Ave., Phoenix, Ariz. 85020, has developed the first operational two-way, one-cable system, according to the manufacturer. The system is called the XR-2 and is designed to adapt to existing cable systems as well as for new plant applications.

The heart of the system is the line amplifier with its specially-designed hybrid microcircuitry. The amplifier housing is engineered to contain both



forward and reverse automatic gain control amplifier modules, downstream and upstream filters and either an intermediate, two- or four-output bridging module.

The system is capable of delivering 30 channels, 50-300 MHz, downstream and four channels, 3-35 MHz upstream. Amplifiers are also available in manual gain control.

CATEL ANNOUNCES FM RECEIVER-MODULATOR

The Catel Corporation, 1030 W. Evelyn Avenue, Sunnyvale, California 94086, has added the FMW-2000 Weathermod to its line of specialty products for FM applications in cable



systems. This new product combines a VHF-FM receiver and an FM modulator to add weather information services to CATV systems.

Radio weather broadcasts from the National Oceanic and Atmospheric Administration are usually on the 162.55 MHz or 162.40 MHz bands. The

This non-metallic tap
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. . . only 2 or 3 times longer than other taps
with metallic cases, particularly in highly cor-
rosive atmospheric conditions. The Model
1300 now with 5-300 MHz is another proven
tap from. . .

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Weathermod can convert the signal to any frequency in the FM band from 88 to 108 MHz. Audio output is provided to add the broadcasts to the aural frequency of a CATV weather channel. Input jacks facilitate the addition of a microphone or music source to the system.

The new unit is solid-state, using silicon transistors, integrated circuits and FET. The receiver sensitivity is 0.5 μ v for 20 dB quieting, and adjacent channel rejection is 80 dB. The use of crystal-controlled circuitry insures a stability of 0.005 percent. The output is 45 dB, continuously variable, and the spurious beats are 60 dB below the output level, according to the manufacturer.

The Weathermod requires 3½" of vertical space in a standard 19" relay rack.

IVC INTRODUCES VTR AND COLOR CAMERA

International Video Corp., 675 Almanor Ave., Sunnyvale, Calif. 94086, has recently introduced many new products including: the IVC-700 Series videotape recorders and the IVC-150 color camera.

The IVC-700 Series VTR comes in three models including a playback-only

version and electronic editing model with capstan servo. All models are available in either color or monochrome. Prices range from \$1800 for the monochrome playback-only to \$3900 for the record and playback color version with capstan servo.

The IVC-150 color camera utilizes a silicon diode tube with Plumbicon tubes. According to the manufacturer



the camera will produce quality pictures under field operating conditions at below ten foot candles. The camera is priced from \$14,800.

NEW SOLID-STATE SWEEP GENERATOR BY WILTRON

Wiltron Co., 930 E. Meadow Dr., Palo Alto, Calif. 94303, has introduced a new solid-state sweep generator designated the Model 610C. It features new detector and marker options with a new combination cabinet-rack package which is seven inches high and weighs under twelve pounds.

The unit offers a broad range of solid-state plug-ins, covering from 100 kHz to 18 GHz in user oriented frequency bands.

Some of the main frame features are a Birdie bypass type crystal comb and fixed frequency markers, as well as variable frequency markers presented as RF or video pips or as an intensity dot.

Programming inputs are provided for remote control of center frequency and sweep width. The cost is \$1390.

RICH LAB'S NEW REMOTE CONTROL RELAY

Rich Laboratories, Inc., 138 Fern Street, Santa Cruz, Calif. 95060, has introduced a new remote control relay designed to operate with only one telephone line from programmer to head-end for non-duplication functions. It consists of a transmitter with three audio oscillators and a receiver with a high gain integrated circuit amplifier with three relay stages tuned respectively to the three oscillators. All switching circuits are independent and can be operated simultaneously.

Additional units can be connected for additional switching functions still utilizing one phone line.

Overall gain of the system is adequate to operate over telephone lines of over 30 dB attenuation, according to the manufacturer.

APPLIED INFORMATION HAS NON-DUPLICATION SWITCHER

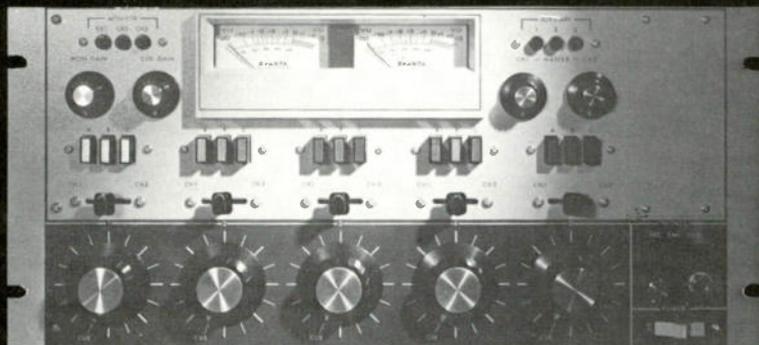
Applied Information Industries, 345 New Albany Rd., Moorestown, New Jersey 08057, has announced the PSC-100 non-duplication switcher. The PSC-100 is a new programmable switch controller for non-duplication switching. The unit has timing accuracy to within one second, according to the manufacturer.

Switching instructions in the form of digital coded tones are previewed and recorded on audio tape cassettes by the use of the integral keyboard.

Tape capacity provides for more than 3,000 switching instructions, said to be more than ample for a several-weeks' or even a month's programming.

The unit provides an output of 20 solid-state switches, and will operate a 19 x 19 matrix of 361 crosspoints.

LOCAL ORIENTATION MADE EASY



Run the program down the line while doing production work. The new A-16R dual channel audio console has five mixers handling three inputs each. The fifteen inputs have push-button selectors. A removable front panel is provided for custom needs. The A-16R uses only 8¾" standard rack space or comes with handsome custom cabinet as an option.

Learn how much more this console can do for you. \$1,250.



SPARTA ELECTRONIC CORPORATION

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A DIVISION OF COMPUTER EQUIPMENT CORPORATION

Circuit design utilizes digital computer technology with error detection, and solid-state integrated circuit electronics.

KAY ANNOUNCES NEW TEST GEAR

Kay Elemetrics, Maple Ave., Pine Brook, N.J. 07058, has recently introduced a new series of test equipment including the Model 793A CATV noise test set, and the 9000 Series scope display mainframe.

Kay's line of solid-state automatic noise figure meters has been extended to include an instrument for simplified testing of CATV equipment.

The new Model 793A CATV Noise Test Set offers both a 1000 MHz wide hot wire noise source and a noise figure



meter which features a channel selector input for CATV channels and sub-channels.

This instrument sells for \$1,140.00 complete — including noise source and noise figure meter.

The 9000 mainframe of the receiver system includes a 6½" cathode ray tube with associated control circuitry. With the 9020A CATV receiver plug-in, the display is triggered by the summation



sweep of the Kay 159D, 160A, or 162A sweep signal generators. Kay reports that a system can be swept with the loss of less than one line of video information, thus allowing testing without interruption of subscriber service.

The P9020A CATV receiver plug-in features a 42 dB attenuator, six selectable single frequency birdie markers and two selectable harmonic marker combs. A built-in RF Detector, scope triggering controls and output circuits are also included in the plug-in.

NEW PRE-AMP OFFERED BY C-COR

Now available from C-Cor Electronics, Inc., 60 Decibel Rd., State College, Pa. 16801, is the Model VPR preamplifier for VHF TV and FM

signals. The Model VPR is said to provide both a low noise figure and a good input match.

Additional features the manufacturer lists include FET circuitry for minimum third order intermodulation, a bandpass filter which provides maximum out-of-band attenuation consistent with good phase transfer, input transient protection, excellent temperature stability, mast or strand mounting and weather-proofing.

Specifications for the low VHF TV and FM bands include 26 dB gain with a 3.5 dB noise figure. For the high-band VHF TV channels, the preamplifier has a 20 dB gain and a 4.5 dB noise figure. The nominal bandwidth is 10 MHz within the rated spectrum of frequencies.

Accessories include: power supplies for cable or 3rd-connector powering; and bandpass and bandstop filters for suppression of high-level interfering signals.

SYLVANIA INTRODUCES COLOR SLIDE STUDIO

Sylvania Electric Products, Johnston Rd., Seneca Falls, N.Y. 13148, has introduced a color slide studio which uses 35 mm slides and a flying spot scanner instead of a camera.

The principal use of the scanner is to display color advertisements with prerecorded narration between live show segments, or automatically with time and weather service.

An especially appropriate application of the unit is for a continuous advertising channel. When used with a "screen splitter," it can display continually changing color ads, and show simultaneously 24-hour time and weather reports, news or other special information.

DYNASCIENCES INTRODUCES AMPLIFIER SYSTEM

Dynasciences Corp., Video Products, Township Line Rd. at Blue Bell Rd., Blue Bell, Pa. 19422, has introduced their 6000 Series video processing system. The solid-state system was primarily developed for color and helical scan recorders. It includes the Model 6100 processing amplifier, Model 6500 sync generator, genlock and power supply units.

The system offers full video processing in one unit, designed to be operator controlled to restore video signal to the correct level, remove hum, and restore proper vertical interval in helical scan signals. Black and white overshoots are clipped from the luminance signal with-

Calendar

AUGUST

2—New deadline for reply comments in the FCC's inquiry into children's TV programs. Previous deadline was June 1.

18—New deadline for reply comments relating to the FCC's proposed rulemaking on one-to-a-market rules and cross-ownership of CATV and newspapers.

22-25—Mid-America CATV and Rocky Mountain CATV Joint Association Meeting at the Antlers Plaza, Colorado Springs, Colorado. For more information contact Donald Royce of Royce & Meachum, Post Office Box 869, Elk City, Oklahoma 73644 (405) 225-2220; or Don Williams, 220 E. Second, Winslow, Arizona 86047 (602) 289-2652.

24-27—Western Electronic Show and Convention at the Civic Auditorium in San Francisco.

SEPTEMBER

21—The Canadian Radio-Television Commission will hold public hearings at the Inn on the Park, Toronto.

26-28—Pacific Northwest Cable TV Association Fall Convention at the Sheraton Motor Inn, Portland, Oregon. For more information contact Convention Chairman J.B. Dyer, Post Office Box 485, Tillamook, Oregon 97141 (503) 842-4331.

28-Oct. 2—Radio-Television News Directors Association annual national conference and workshops at the Statler Hilton Hotel in Boston. CATV newsmen are being considered for membership in the RTNDA. For more information contact Rob Downey, executive secretary for RTNDA, care of WKAR, East Lansing, Michigan 48823.

OCTOBER

3-8—Society of Motion Picture and Television Engineers 110th technical conference and equipment exhibit at the Queen Elizabeth Hotel in Montreal, Canada. Two days of the conference will be devoted to a symposium on video cartridge, cassette and disc player systems.

10-12—Mississippi Cable Television Association will hold its annual meeting at the Broadwater Beach Hotel in Biloxi, Mississippi. For further information, contact John F. Humphries, the Association's Secretary-Treasurer, Post Office Box 1206, Biloxi, Mississippi 39533 (601) 436-4346.

20-22—Pennsylvania Community Antenna Television Association will hold its annual fall meeting at the Host Farm in Lancaster, Pa. Milton Schmidt of Ephrata, Pa. is chairman for the meeting. For further information, contact Mrs. Sy Barash, PR Counsel to the Association, c/o Barash Advertising, Post Office Box 77, State College, Pa. 16801 (814) 238-5051.

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

TV

Literature

The first, authoritative **Dictionary of Cable Television (CATV) Terminology** has been compiled by Jones International, Ltd., CATV management firm. Copies, at \$2 each, may be ordered from Jones International, 880 Continental National Bank Bldg., Englewood, Colorado 80110. Prompted by the need to aid communications between the CATV industry and those interested in it, the dictionary will be updated periodically by a board of editors composed of engineers, CATV executives, lawyers and others.

Amphenol's **Catalog of Tools** lists a complete line of tools for crimping, inserting and removing connector pins produced by all manufacturers. The publication identifies the correct tool to use for any specific connector according to size of contacts, wire gauge, and component types. Connector series included are those with power contacts, shielded contacts, filter pin contacts, and Amphenol's Poke-Home (R) contacts. Details are given of the firm's new Auto-Feed Crimping System, designed as a compact, fast-cycling unit for crimping a wide range of pins and socket types. For a free copy, order catalog CT-1 from the Amphenol Connector Division, 2901 South 25 Avenue, Broadview, Illinois.

Selected Articles from the Lenkurt Demodulator, Volume 2, is now available from GTE Lenkurt Incorporated, 1105 County Road (Dept. C134), San Carlos, Calif. 94070. Containing 468 pages plus a 35-page cross-reference index, the book incorporates 46 of the most popular articles that appeared in the monthly editions of The Lenkurt Demodulator from 1966 to 1970, and is a continuation of Volume 1, which was first published in 1966 and is still available from the company.

AEL Communications Corporation has issued a **Position Paper on the Single-Ended Amplifier**, presenting their case for the single-ended amplifier as compared to all other designs. The paper reviews push-pull, distributed and split-band amplifiers, stating objections to these alternate designs, particularly push-pull. Copies are available from AEL, Dept. 1123/SBA, P.O. Box 507, Lansdale, Pa. 19446.

Hewlett-Packard offers a brochure on its **Quantitative Spectrum Analyzer Family**, 20 Hz to 40 GHz, listing its product line and outlining key features of all equipment. HP's plug-in, solid-state spectrum analyzer line has been expanded to include four tuning units, three display units, and two IF Sections. Also described are companion instruments (tracking generators, automatic preselector) and accessories. For the free brochure, contact Inquiries Manager, Hewlett-Packard Co., 1601 California Avenue, Palo Alto, Calif. 94304.

Allied Radio Shack's new **Spring/Summer 1971 Electronic Parts, Accessories and Kits Catalog No. 212** is a handy buying guide for specialized items like tubes, transistors, cables, tools, connectors, wire, plugs, adapters, antennas and test equipment. Catalog 212 is available free from Allied Radio Shack, 2725 W. Seventh St., Fort Worth, Texas 76107.

RVC

out affecting chrominance, according to the manufacturer. The Model 6500 sync generator provides the system with new sync pulses, blanking and burst. However, at the user's option, the sync pulses, blanking and burst may be regenerated by the Model 6100 processing amplifier, since it contains circuitry which restores the sync pulses on the input video to the correct shape and level.

The 6000 Series system allows the operator to control video gain, pedestal, sync level, chroma level, and burst phase.

TEXSCAN OFFERS BANDPASS FILTERS

Texscan Microwave Products Corp., Indianapolis, Indiana, has introduced the new model DTF series detuned tunable bandpass filters. The filters are designed to provide the user with a high degree of repeatability and selection when using a tunable filter.

The design incorporates a fixed detent for up to 24 different bandpass filters. Any octave range from 48 MHz to 4 GHz can be provided with a predetermined detent arrangement. The degree of rotation is 360 degrees with each detented position covering 15 degrees. This type of filter can be useful when used in conjunction with a pre-selector or tuned receiver network.

The units are available with either a three or five-section response with 3 dB bandwidth coverages of one to ten percent. The dial can be calibrated in frequency, numerically or alphabetically, depending on customer specifications.

A wide selection of connectors is available at no additional cost. Prices range from \$350 to \$700.

RCA INTRODUCES COLOR CAMERAS

A complete family of cameras which produce color from a single pick-up tube are being introduced by RCA, Front & Cooper Sts., Camden, N.J. 08102.

Included are the PK-730A studio color camera; the PK-701, a color film or live camera, and the PFS-710, a self-contained color film system. These cameras utilize many common components, to afford economies in operating and maintenance costs, according to RCA. They use the same single pick-up tube for producing color pictures; the same plug-in modules and circuitry and the same controls.

Another camera being introduced is the PK-430A, a monochrome camera

which has the capability of being convertible at any time for color operation.

Additionally, RCA is announcing a "stop action" camera tube with potential applications as a communication/data transmission device.

DAVIS INTRODUCES NEW LAWN PLOW

Davis Manufacturing, Division of J I Case Company, 1500 S. McLean Blvd., Wichita, Kansas 67213, has introduced a new lawn plow for direct burial of housedrops. The plow, called the Mini-Sneaker, is powered by a 25-hp Onan air-cooled gasoline engine. It direct-buries varying sizes of lines to depths of 18 inches at speeds up to 200 feet per minute, according to the manufacturer.

Newest in the line of Davis Line-Layers, the plow features one-hand control, four-wheel drive with limited-slip differentials and hydraulic articulation for increased maneuverability and to prevent wheel slippage on lawns and turf. Large 23 X 8.5 tires are standard. Vibra-Powr drive in the plow provides oscillating knife action. Spring-loaded skid shoes hold both sides of the cut in place.

A removable gate in the cable guide permits stopping, making loops and restringing without cutting or making splices. An optional bullet blade is available for pulling in lines. A special offset attachment for the plow blade permits shallow plowing-in next to fences and foundations.

A double reel carrier has been provided so more jobs can be handled without restringing.

SADELCO ANNOUNCES TESTING AID

Sadelco, 299 Park Ave., Weehawken, N.J. 07087, has announced a new portable device which makes possible the measurement of many cable system parameters without the need for the conventional oscilloscope/sweep generator method.

The unit, called the Porta-bridge, is used in conjunction with any VHF field strength meter for the measurement of return loss or VSWR as well as the response, gain or loss of amplifiers, filters, cables and other CATV-MATV equipment.

It can also be employed to check the flatness of field strength meters. Noise figure measurements are also possible. Return loss can be measured down to 40 dB, and frequency range is 48-230 MHz, according to the manufacturer.

The unit is battery operated and weighs 1½ lbs.

RVC

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TV Communications ADVERTISING DATA 1900 WEST YALE • ENGLEWOOD, COLORADO 80110 • PHONE 303/761-3770

TV Communications is published by Communications Publishing Corp., publishers of CATV Weekly, the CATV Directory of Equipment, Services & Manufacturers, the CATV Systems Directory Map Service, the NCTA Convention Daily, and CATV Product Showcase.

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Contact Traffic Supervisor Carol Falconer for full information on production requirements, copy modifications, or creative services.

THE CATV

CLASSIFIEDS

Rate for classifieds is 25 cents a word for advertising obviously of non-commercial nature (employment, used system equipment, etc.). Add \$1.00 for Box Number and reply service, per issue. Bold face type available for headings at 50 cents a word. *Advance payment required*; minimum order \$15.00. Classified rate for commercial advertising or requested display space is \$35.00 per column inch (1" x 2 1/4"); minimum order \$35.00. Frequency discounts available. Deadline for all classifieds is 1st of preceding month. Please mail Box Number replies to TV COMMUNICATIONS, 1900 W. Yale, Englewood, Colorado 80110.

DESIGN OR PROJECT ENGINEER

To take charge of group designing full line of MATV equipment, passive and active. Future plans for CATV equipment. Experience in MATV equipment design required, and some experience in CATV equipment design desirable, but not mandatory. Great Lakes area. Strict confidence. Send resume to Box T671-4.

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arrangements, strand mapping, pole line engineering, to supervise contractors during new plant construction, provide liaison with engineering, coordinating flow of materials, etc.

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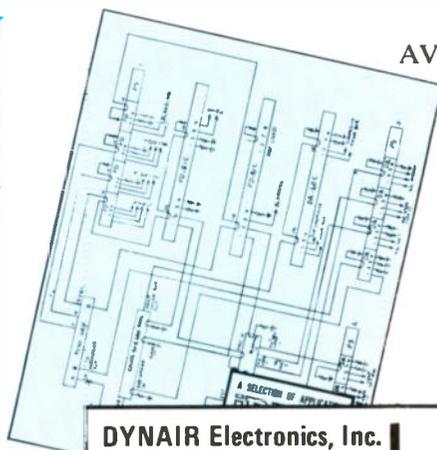
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