

# TV Communications

The Professional Journal of Cable Television

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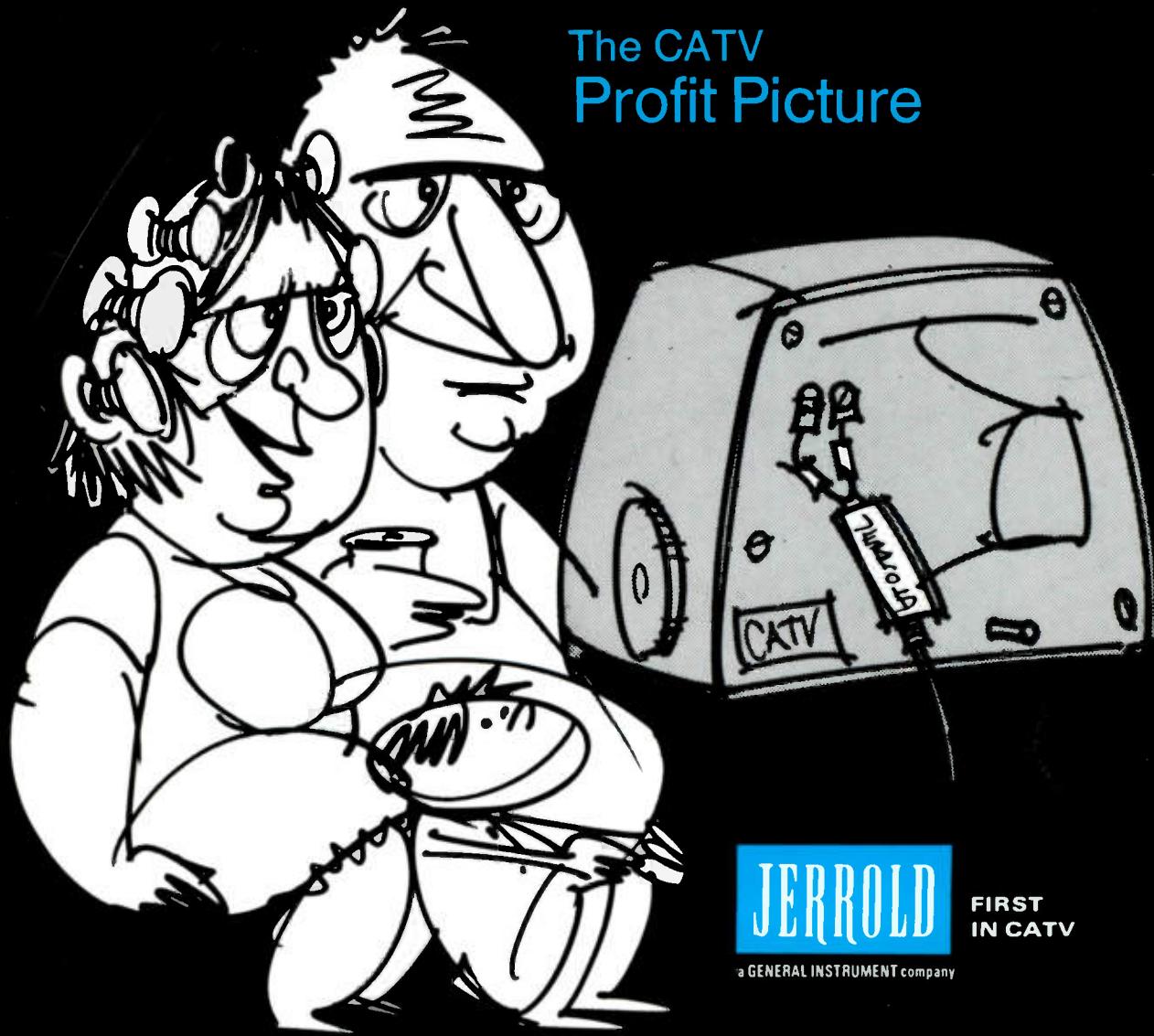
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## The CATV Profit Picture



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**July 1971, Volume 8, Number 7.**

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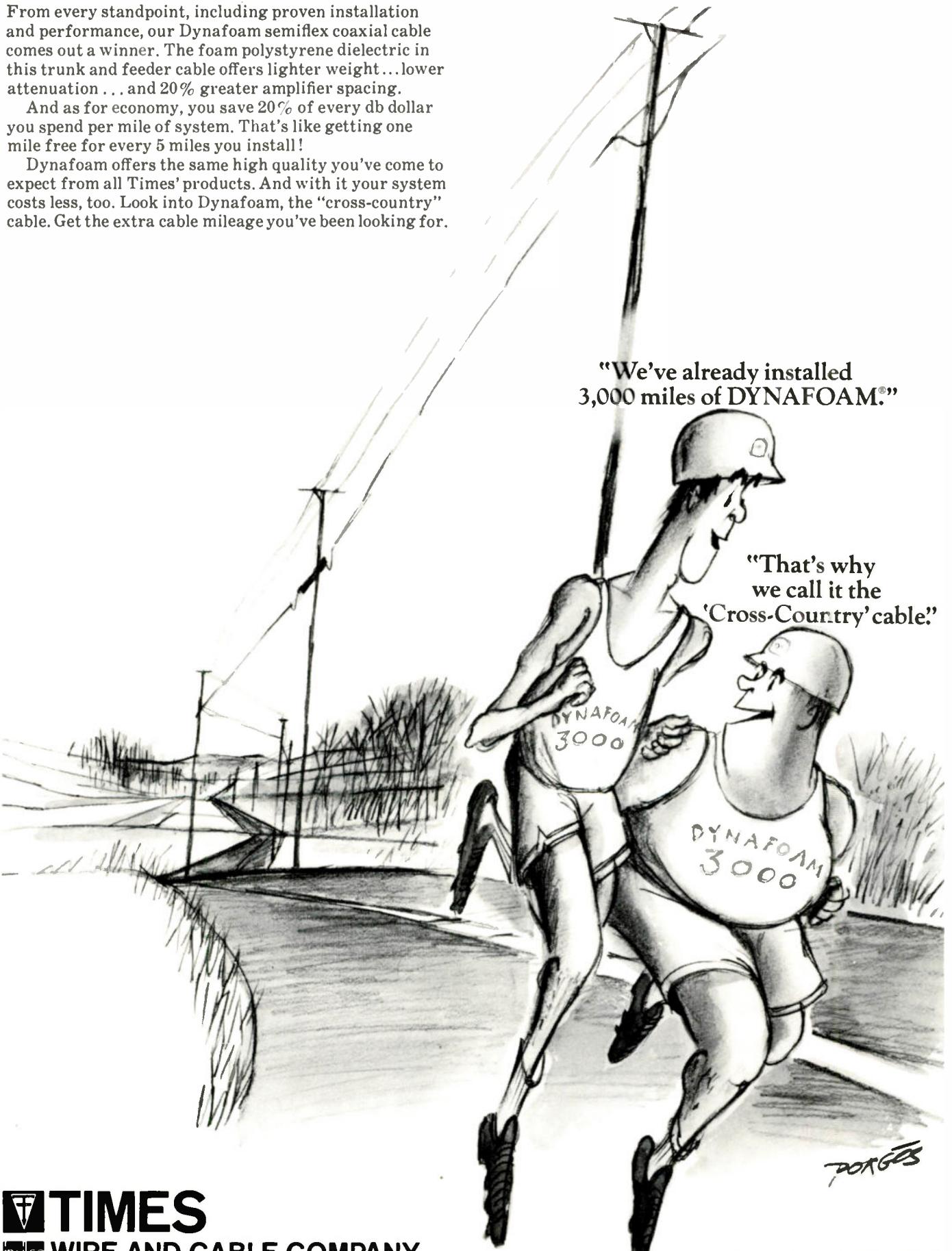
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# TV Communications

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**This Month's Cover...**

As the 20th Annual NCTA Convention gets underway in Washington, TelePrompTer of Mobile (Ala.) Cable TV starts servicing its first subscribers. One of the technicians who helped take the cable by some 5,000 homes (so far) is pictured on our cover. Superimposed behind him is the system's head-end building and tower. Leo Levisay is the system manager in Mobile.



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

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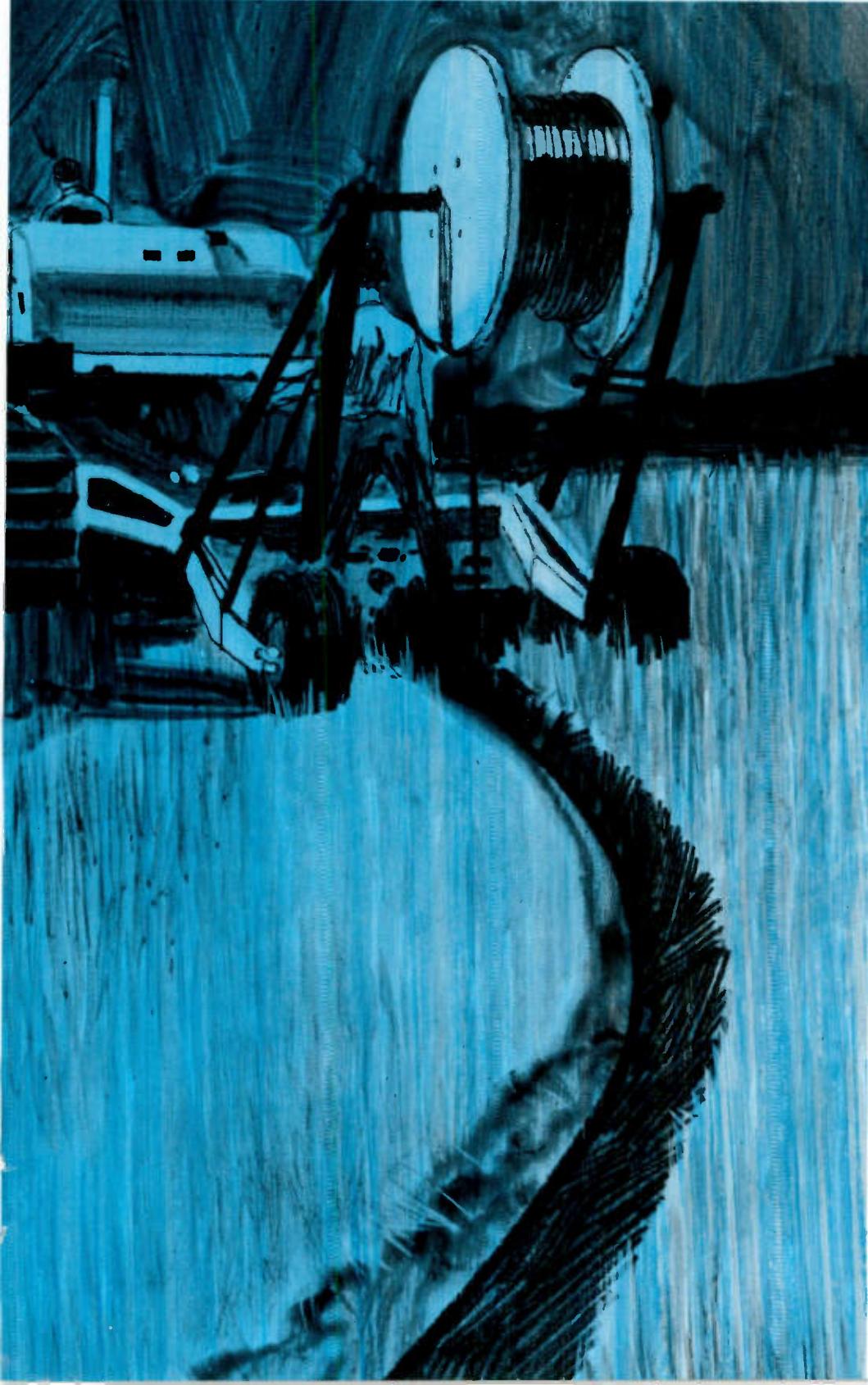
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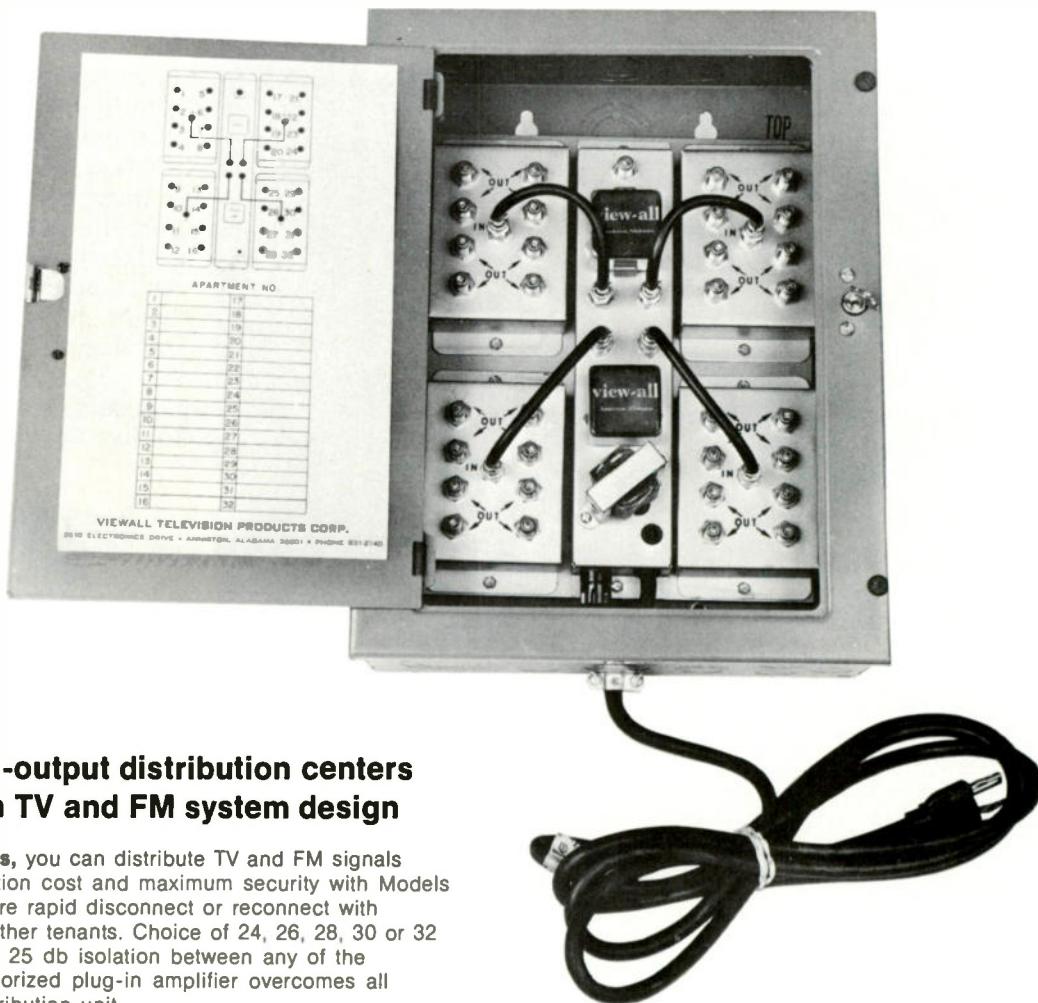
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Ernie Larson

# The TVC Viewpoint

## EDITORIAL



Robert A. Searle  
Publisher

### You're Being Cheated!

If you're a dues-paying member of NCTA, you're being cheated!

But before you send your resignation to Gene Burton, read on.

You are not being cheated by NCTA. But some of its members *may* be getting to you.

This possibility was exposed recently when NCTA officials and the association membership committee compared subscriber figures reported to the FCC with those reported to NCTA. Since NCTA membership fees are based on the number of subscribers a system has, an "error" in dues payment would be reflected if there were a discrepancy.

There was.

As a matter of fact, money owed NCTA amounts to somewhere between \$175,000.00 and \$225,000.00 — nearly 17 percent of the Association's total income from membership fees!

But your fellow association members aren't all trying to make you carry their weight. Some were just misled by an error in an NCTA membership brochure. (The brochure indicates a member doesn't have to pay dues for a system unless he owns at least 80 percent of it. But the NCTA bylaws spell it out differently: you have to pay dues for a system's subscribers if you own 50 percent or more.)

Other members have simply lied about their subscriber count so they will have to pay lower dues. Thank goodness, these are among the minority by far. To those, we simply say, "Shape up or ship out."

To the rest: "Don't resist the correction when NCTA sends you a new invoice. You knew what expenses you were getting into when you joined the Association, so don't expect to get out of it now. Just be happy you have been able to 'borrow' the money

for this long."

Maybe you are unhappy anyway because you feel the dues structure is unfair. (A small operator can pay up to 5.5 cents per subscriber per month, while a large MSO can pay as little as .5 cents per subscriber.) If so, relax, relief is on the way.

The Association membership committee (Bud Weir, Leo Hoarty and Bill Hemminger) and NCTA's Gene Burton are to be commended. They have come up with a plan which will not only change the dues structure, but will result in a better NCTA.

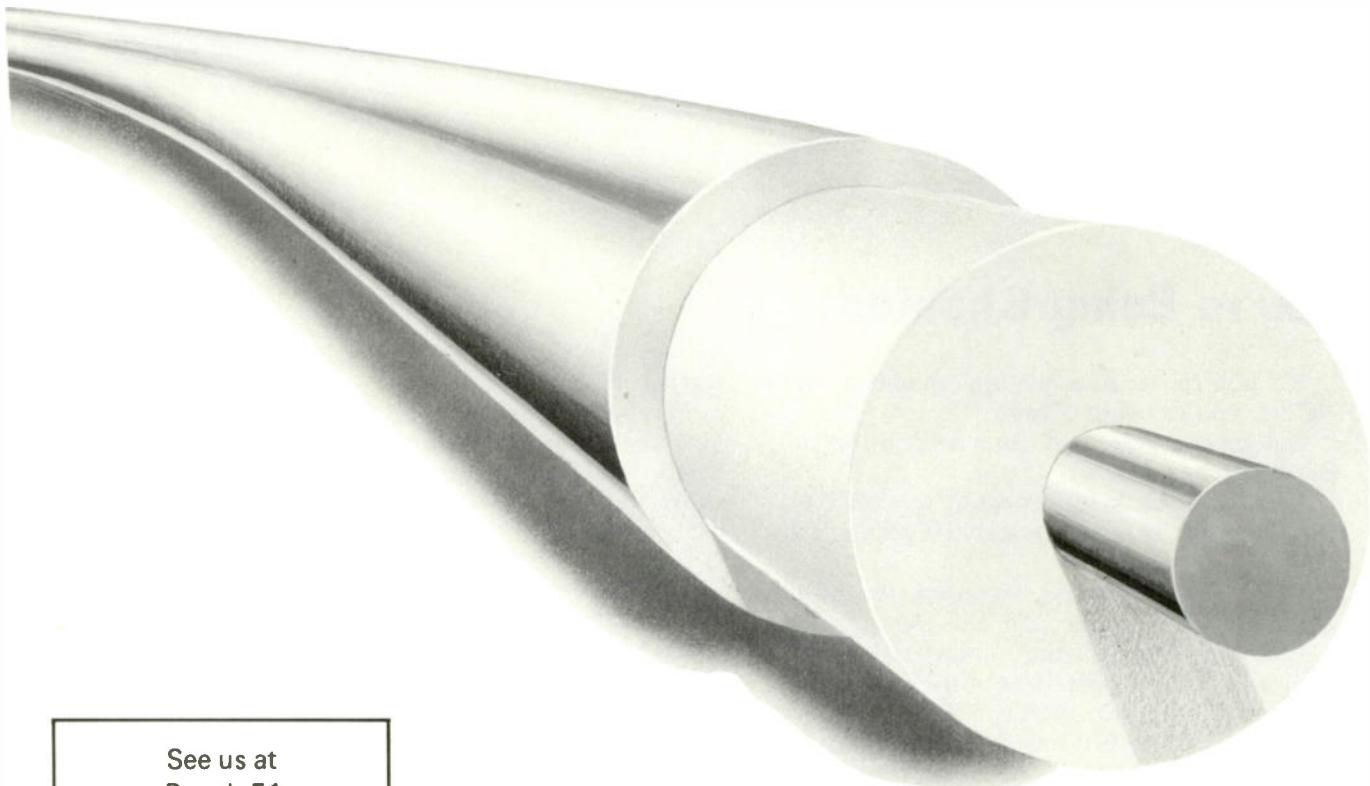
Under the new plan, an operator with 1,800 subscribers (that's the average) who was paying \$102.50 per month, will now only have to pay \$60.00 per month. The plan will still have some relief for major MSO's through a \$50,000 a year ceiling, but other MSO's will have to pay quite a bit more.

We think this is fair. While NCTA does a lot for system operators today, a major part of the work NCTA does is at the FCC and on the Hill. The real fruit of those efforts will be realized tomorrow — in the major markets — and mostly (but not only) by the larger multiple system owners. So they should pay their fair share.

With the change in dues structure, the number of NCTA members should increase (only 38 percent of the nation's systems are now represented). In Ohio, state membership quadrupled in two years when dues were lowered.

The NCTA membership committee and Gene Burton in particular are doing an excellent job. Make their job easier. If you belong to NCTA, pay your dues. If you haven't joined because the dues are too high, take a look at the new plan (only three cents per subscriber per month) and join.

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TA-4J*	.0752	.362	.412	.480	100
TA-5	.098	.450	.500	—	102
TA-5J*	.098	.450	.500	.575	132
TA-8	.146	.690	.750	—	218
TA-8J*	.146	.690	.750	.850	274

CHANNEL	2	3	4	5	6	7	8	9	10	11	12	13
TA-4, TA-4J	.77	.82	.86	.93	.96	1.46	1.49	1.51	1.54	1.56	1.59	1.61
TA-5, TA-5J	.63	.68	.71	.74	.79	1.12	1.15	1.17	1.20	1.22	1.24	1.26
TA-8, TA-8J	.42	.44	.47	.51	.53	.80	.81	.82	.84	.85	.87	.89

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**VSWR maximum 1.4, average 1.2**

**Gain over isotropic source: Dipole:**

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

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

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# Perspective

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## on the news



**B. Milton Bryan**  
Executive Editor

A reasonable posture on CATV has come out of the Federal Communications Commission at last. FCC has proposed to provide up to eight signals in the top 50 markets, seven in markets 51-100 but only 4 in markets 101 and up (See story in CATV News Briefs.)

The plan is not law yet, but the FCC has promised to have an even more specific proposal by August for Pastore's committee to review. Since Senator Pastore's Senate Subcommittee on Communications will adjourn August 6, the FCC must get the rules to him before that time in order for his committee to have a chance to react. Burch has promised to do just that.

Whether Pastore will try to delay the rules at this point is unknown. But he is known to be no friend of cable, and can be expected to jam up the gears if he can. He gave the FCC a rough time in the hearings, and isn't likely to give up easily.

Pastore has no legal foundation for delaying the Commission's rules, however, and the FCC isn't likely to stand still for the stoppage he might try to impose. Some sources indicate the Commission might move ahead without giving Pastore a second crack at the CATV rules, but this isn't too likely. FCC Commissioners are political animals, and don't want to be at odds with a man as powerful as Pastore.

Pastore's "ace in the hole" would be to generate pressure for the White House to intervene. The President's Office of Telecommunications Policy, however, assured TV Communications that no such plan was in the making. But that's no guarantee this couldn't happen.

Cable agreement with copyright interests poses an interesting problem: NCTA/CCO agreement provides a better situation than the FCC proposal in the markets under the top 100, but it virtually shuts cable out of the top 50, where 75 percent of the nation's population (and television audience) lives.

Interesting twist of events occurred due to the fact that NCTA took the agreement to the Commission on the eve of the FCC's appearance before Pastore and the subsequent announcement of the Commission plan. NCTA sources indicate the Association had no previous feel for FCC's proposals — that they expected the Commission to come up with a bummer.

But when FCC plan was announced, Association still showed no indication of being upset about having announced copyright plan which gives less than the FCC offered. A good package in the markets above 100 would be a poor trade-off for a good package in the top 50, so let's hope the FCC doesn't go along with "our" plan.

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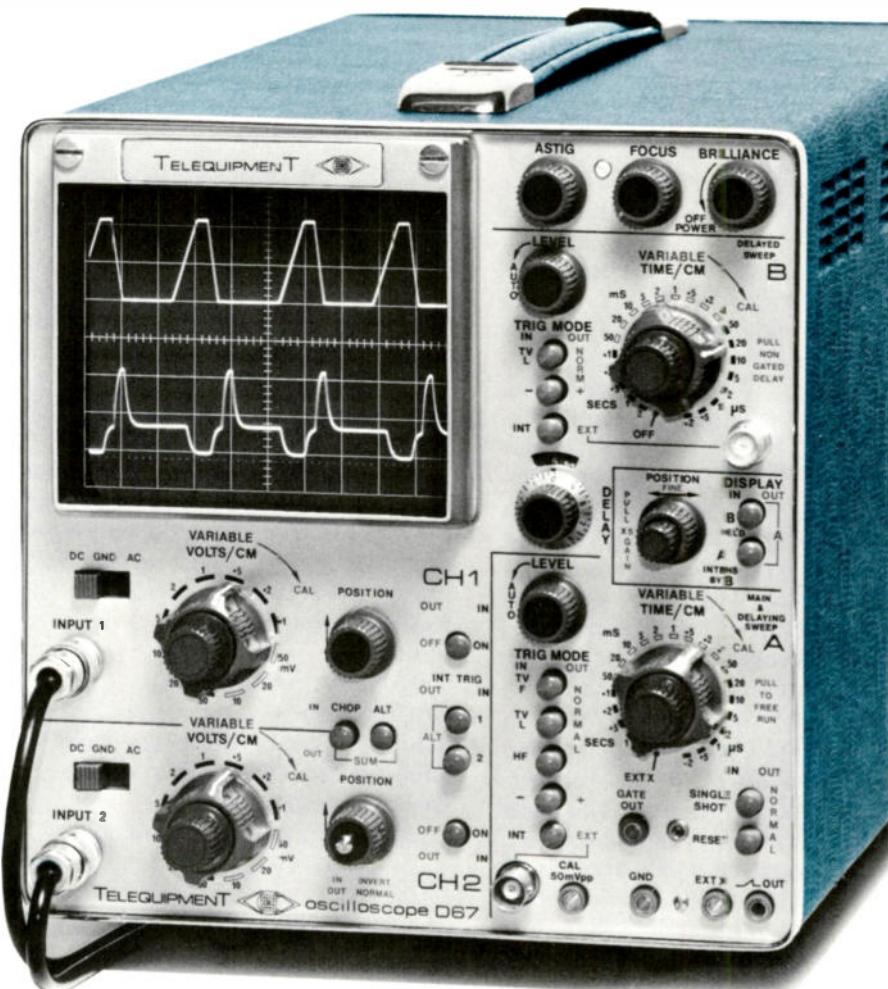
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# LETTERS

## CATV Network Idea

Dear Mr. Searle:

• I read with a great deal of interest your editorial entitled "Ridiculous Proposal" (May TVC). The ideas conveyed in this editorial follow my line of thinking exactly.

We are at present licensed to import two different St. Louis Channels, via microwave, comprised of one independent and one educational. We have not yet added the educational, and the experience I have had with the Independent (KPLR Channel 11, St. Louis) has not really been what I anticipated. Many of our subscribers are not really interested so much in the program material received on Channel 11, since the programming is mostly old syndicated network shows.

I am looking forward, with a great deal of expectation, to the addition of KETC — the educational channel. I believe this will fill a large void in our subscribers' television viewing schedule, but I still do not believe that even with these two channels we are providing programming to our subscribers that will fill the bill. It just seems to lack local flavor.

I have for some time now entertained the thought of beginning a four or five system CATV origination network. I am sure this could be financed, but as you pointed out in your editorial, the availability of programming material is very limited.

What is needed to my way of thinking is several diversified programming or production companies which are capable of using the talents of many well-known personalities. As stated above in regard to "local flavor" to me means not just the Carthage area, but the entire region.

We have been involved in local origination since our system went into operation, and I can say that

local origination, although having its benefits, is severely limited both by cost and programming material — too much so for a small system to cope with.

There are many companies involved in CATV endeavor — many with large sums of money that is now being spent strictly in expansion.

Hasn't anyone thought of going into the production business on a large scale? I know of several small operators who are producing shows on video tape as well as selling their movies. This is not what we need. To cite an example, what the industry needs is its own David Frost or Mike Douglas available exclusively on cable. With use of something like this, it would then be possible to supplement our programming with some syndicated reruns, but emphasis should be put on fresh material.

In my opinion, *TV Communications* is the leading industry journal, and ideas like those set forth in the editorial quite definitely will have bearing on the future developments in the industry.

If any information I have supplied here, or that I can supply, can be used to the furtherance of this industry's success, I shall be pleased.

A. Dean Petersen, Manager  
Carthage (Mo.) Cablevision Inc.

*Thanks for your letter, Dean.  
An occasional "Amen from the  
industry does this editor's heart  
good.—Ed.*

## Low Cost Origination

Dear Milt:

• At the North Central Community Television Assn. meeting a short time ago you expressed interest in the teletype installation we have here.

Having about 660 subscribers here in Guttenberg and needing something really low cost and a little unusual for a different approach to the local news, we resurrected WW II-type teletype equipment consisting of a model 15 page printer, a tape distributor and a tape perforator. We cut the local news on the perforator, paste

the ends together so it will repeat automatically, and then play it through the distributor and page printer for the evening news. We put it on the air at 5:55 p.m. so as to sandwich it in during the commercial time on the other channels.



This set-up gives us a change from the reporter-type newscast and gives the one-man owner-operator more time for other things. The cost of the whole set-up is around \$150. We are in the process of buying a model 19 unit which combines all three pieces of equipment in one cabinet.

Another item that can save the small operator some money is the home-built carousel consisting of a used antenna rotator, a piece of plywood, a couple of micro-switches, a stepping relay and a power supply. Total cost... under \$35. We position the camera back far enough so as to



be able to use standard size greeting cards.

Anyone wishing further information can feel free to write to me.

Neil A. Webster  
Guttenberg TV Cable System  
313 S. First St.  
Guttenberg, Iowa 52052

*Thanks for your tips, Neil.*

# GTE Sylvania, the oldest new company in CATV.



The Sylvania name has been around for a long time.

You'll find it on everything from the earliest receiving tubes to complex aerospace equipment.

But, up till now you haven't found it in CATV equipment. We've changed that.

You'll be seeing the GTE Sylvania name in a lot of places. On trunk amplifiers, line extenders, and other types of CATV equipment. Even on complete systems.

And we're not just offering "another" line of equipment. We'll give you something as advanced as a trunk amplifier that has features you just couldn't get till now. Or we'll give you something as simple as a key.

The key to a "turnkey" installation.

We'll even program our computers to give you the most efficient system layout, project your break-even point and do signal surveys.

We may be new to CATV, but with a name like GTE Sylvania you can hardly call us beginners.

*Sylvania Electronic Components, Seneca Falls, N.Y. 13148*

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(215) 626-9100

Innovation such as yours is the name of the game in small-system origination. I'm sure many small operators become discouraged about origination when they keep hearing about nothing other than the show-case studio systems.

But guys like you continue to show us how small system can originate meaningful local programs. Keep up the good work.—Ed.

### CCTV People Like TVC

Dear Milt:

• Many thanks for your letter. I was most impressed with your magazine, *TV Communications*, and am making sure we send for a subscription. It is indeed a handsome publication, and we would be delighted to supply you with news on our closed-circuit programs.

As you may know, MTS handled all closed-circuit television arrangements for the Ali-Frazier fight which was the single largest CCTV project in the history of the industry — some 450 locations throughout the world.

Let us know if you have any specific needs for stories on CCTV — and I'll be sure to keep you posted on our activities. Also, if you ever get to New York, please give us a call and drop in to see our studios.

Betty Vaughn  
Management Television  
Systems, Inc.  
New York, N.Y. 10017

### Subscriber Marketing Firms

Dear Stu:

• I read with interest the article in your May edition by Robert C. Hilliard, recommending a professional marketing firm for selling CATV subscriptions.

Could you please send me a list of recommended firms?

Robert M. White II  
President  
See TV Co.  
300 N. Washington St.  
Mexico, Missouri

I would suggest the following professional CATV marketing firms:

Bob Hilliard, author of the article you read, is the Director of Subscriber Marketing for National Telesystems Corporation, 6362 Hollywood Blvd., Hollywood, Calif. 90028.

Burt Kittay and Jeff Marcus have shown good results with their firm, *Markit Communications, Inc.*, 1801 Avenue of the Stars, Los Angeles, Calif. 90067.

Ben Kittay has recently organized a new CATV marketing firm called *National TeleMarketing, Inc.*, 1901 Avenue of the Stars, Suite 824, Los Angeles, Calif. 90067.

Mark Van Louchs has a firm known as *CATV Marketing, Inc.* Located at 6908 Village Parkway, Dublin, Calif. 94566. He has been doing subscriber marketing for quite some time.

Malarkey, Taylor & Associates have a subscriber marketing program. You may reach them at 1225 Connecticut Ave., N.W., Washington, D.C. 20036.

Finally, there is a young lady in Pennsylvania that may also prove to be a good contact. Miss Bobbie Weinberg and her cohorts at *Good Communications*, 1845 Walnut St., Philadelphia, Pa. 19103, offer what she calls "a subscriber-increase program."

I hope this list is sufficient and of help to you. If I have failed to list someone... no doubt I will hear about it.—Ed.

### Definitions Project

Dear Editor:

• The IEEE Cable TV Task Group is compiling a dictionary of technical terms used in the cable television industry. Knowing of your interest in CATV, I solicit your help in this effort.

The work will consist of (1) compiling word lists using such sources as existing glossaries, technical papers, trade journals, house organs, training manuals, etc.; (2) reviewing the word lists and deleting inappropriate terms; (3) compiling definitions of each term and adopting the most appropriate for cable TV or writing new definitions where necessary; and (4) reviewing the definitions and making necessary revisions.

# Our CATVgroup celebrates its second birthday with its first installation.



Two years without making a single sale may not sound so good. But that's the way we planned it.

For the first 22 months we didn't even have a salesman. But we did have engineers. Electronic and mechanical specialists that grew up with the electronics industry.

It took them almost two years to design and field test our full line of trunk amplifiers, line extenders, and other passive RF components.

Then we hired a salesman.

It didn't take him long to make his first sale.

A complete turnkey installation for Colony Communications in New England.

Colony liked what it saw, and so did its subscribers.

Since then, we've hired a few more salesmen.

Maybe you should talk to one of them.

They can tell you what we've been doing for the last two years. And we didn't spend them doing nothing.

*Sylvania Electronic Components, Seneca Falls, N.Y. 13148*

## the oldest new company in CATV.

**GTE SYLVANIA**

Your help in any or all of these areas would be much appreciated. We are especially interested in getting as many sources of terms as possible. If you or any of your colleagues know of such sources, or will be willing to help with this work, I would very much appreciate hearing from you.

L.E. Huntley, Leader

Terms and Definitions Project  
c/o Circuit Standards Section  
National Bureau of Standards  
Boulder, Colorado 80302

*Sounds like you have a big task ahead of you. Possibly some of our readers can contribute word lists and definitions.—Ed.*

### Free Pre-Wiring Progress

Dear Stu:

• The grand opening of Phase 1 of our Pt. Pleasant system went great. We had a standing-room-only crowd (well over 500 from a town of 6,000 population) and very high level of interest. Our saturation on the pre-wiring continues near or over 70 percent, and there will be very few cancellations, if word-of-mouth commentary is to be believed.

Paul Crabtree, President  
Paul Crabtree & Associates  
P.O. Box 106  
Pt. Pleasant, W. Va. 25550

*See April TVC for Paul's "free pre-wiring concept." TVC will carry a follow-up report on his Pt. Pleasant trial project in September.—Ed.*

### Booklet Describes CATV

Dear Milt:

• We very much appreciated your recent issue on Local Origination (March). In Canada, as you know, many cable systems are well into cablecasting even though no commercial sponsorship is allowed at this point.

The question of "citizen's access" is one that is gaining increasing prominence in both our countries. It's apparent that both the CRTC and the FCC are looking for ways to ensure that minority community voices and groups can have their say on the cablecasting channel or channels.



We have produced a booklet which serves as a basic primer on the subject. It's designed to answer questions that might be asked by people unfamiliar to this medium and I thought you might find it of interest.

Philip B. Lind  
Director of Public  
Affairs & Programming  
Rogers Cable TV Limited  
25 Adelaide Street East  
Toronto 1, Ontario

*Thanks very much for your letter and the enclosed brochure, Phil. You are right on target. Cablemen need to encourage access to cable by community groups and individuals. Just having the channels and equipment there does not guarantee people will use the medium — at least not at first.*

*I am taking the liberty of giving our readers your address so they can obtain copies of this excellent brochure for their own reference.—Ed.*

### Wants Books on CATV

Dear Editors:

• I have been trying to obtain good technical and engineering books on CATV, central antenna systems for apartments, and closed circuit monitoring systems for hotels and other types of buildings.

Please advise me of a central distributor that would have a good selection, or do you carry a list for sale.

A. L. Meszaros  
542 Upper Wentworth  
Hamilton 50, Ontario  
Canada

*I suggest you contact Tab Books, Blue Ridge Summit, Pa. 17214. This company has numerous books on cable television and related fields.*

Another source of good technical books would be Howard W. Sams and Company, Inc., 4300 West 62nd St., Indianapolis, Ind. 46268. Also watch the occasional "Literature" section in TVC (page 136 this month) for new CATV-related books, catalogs and special reports that come to our attention.—Ed.

### Frustrated Reader Writes

Dear Editor:

• I have been reading *TV Communications* with a great deal of interest and paranoia for the last six months. I use the word paranoia with, hopefully, full awareness of the possibility that I am only imagining what I read in your publication.

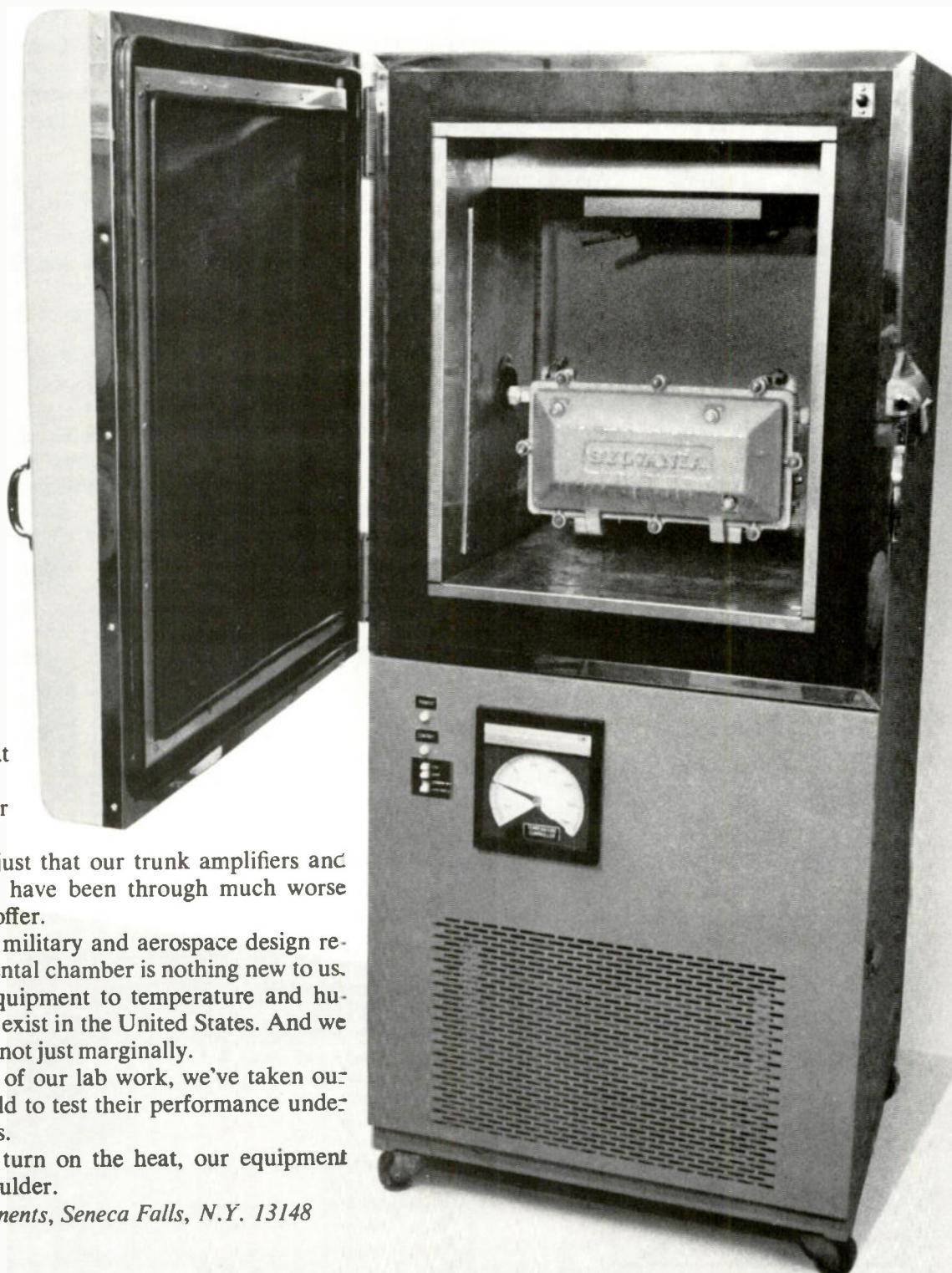
If my survey of the last six issues is accurate, you, and maybe the people (cable owners and operators) you purport to represent have no idea of what is really involved in originating local off-air programming. You have no idea of what can be done with the medium of cable TV as a powerful tool of social awareness and change.

Let's avoid any nonsense about "political left or right" from the outset. Buckminster Fuller has already pointed out that we are all living on a space vehicle called Earth and that nobody has the operating manual for the controls — nobody. We all have to pull together in our planetary circumstances and the best means of implementing human cooperation is through communication.

Communication means giving everybody possible a chance to get said what that man needs to get said, and the freedom to say it in the idiom or milieu that best suits his message.

Your magazine talks in a kind of insistent and monolithic tone about the community of potential cable "producers" or originators as if they all took for granted the values of high-school sport events, promotional bazaars, beauty contests, town hall meetings, and other forms of patently familiar human gatherings as the only conceivable material of interest for cable casting on the free channel(s). This is ridiculous.

# We send our amplifiers to Siberia before we send them to you.



We really don't care what the climate is in your area.

And neither does our equipment.

It's not disinterest, it's just that our trunk amplifiers and other CATV components have been through much worse than anything you have to offer.

With our experience in military and aerospace design requirements, the environmental chamber is nothing new to us.

We take our CATV equipment to temperature and humidity extremes that don't exist in the United States. And we make sure they work. And not just marginally.

And then to make sure of our lab work, we've taken our CATV units out in the field to test their performance under actual operating conditions.

As a result, when you turn on the heat, our equipment won't give you the cold shoulder.

*Sylvania Electronic Components, Seneca Falls, N.Y. 13148*

## the oldest new company in CATV.

**GTE SYLVANIA**

The cable TV medium is too revolutionary in terms of the numbers of people who can successfully and intelligently access its real value as an "output" terminal, thereby moving themselves out of that calcified and delimiting role as mere consumers in the information world.

When a diversity of kinds of people, with a diversity of environments and concerns, can speak for themselves over a powerful communications system (remembering that expression involves more than push-button referendum via interactive home terminals) society changes and evolves with more of a balance than when people's views are interpolated by a production elite in the 2-inch broadcast systems or by a well meaning cablecaster (who assumes without question who or what comprises the fabric of the society in which he and his subscribers live).

Take the Canadian example. Powerful regulations from the CRTC (Can. version of FCC) require cable operators to access

the free channel to a broad cross-section of the community. Grants from the government and from private funding bodies enable groups to equip themselves for field origination and editing in order that the word community does not merely come to mean a community of institutions (who to date were the only ones who could afford equipment.)

Teams of people work all across Canada with the assistance of the National Film Board's "Challenge for Change" program, helping underprivileged and aware people to use the free channel.

And in America, as well as here, note the growing concern on the part of artists and educators to use TV as a creative and exploratory medium in terms of perceptual change. Some of the results of their work is too valuable to be limited to CCTV environments alone.

We are a group in Vancouver who are working with video rovers (Sony AV 3400) and electronic editing one-inch gear (Sony 320) and are attempting to do as many

different kinds of things for cable as possible. The degree of cooperation and encouragement from institutional users in the area and from the local CATV system is phenomenal and incredibly promising. Take a look at yourselves.

Dallas Selman  
Coordinator  
Intermedia Video Resource  
1927 Granville Street  
Vancouver, British Columbia

### When in Hong Kong . . .

Dear Editors:

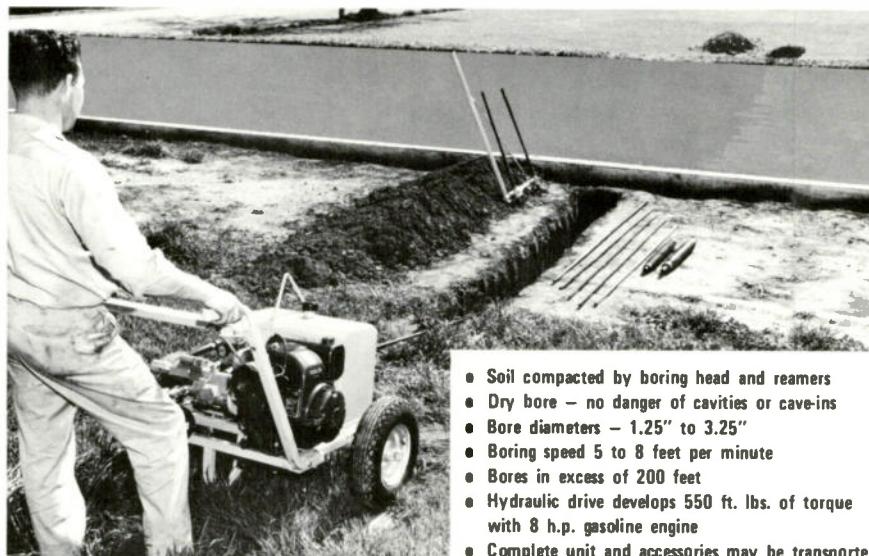
• May we say how interesting we find your publication. As the operators of the world's largest TV single cable distribution system here in Hong Kong, we should be delighted to meet and discuss cablecasting in general, with any of your readers, should they happen to find themselves in this part of the world.

R. L. Kettle  
General Manager (Relays)  
Rediffusion Limited  
Hong Kong

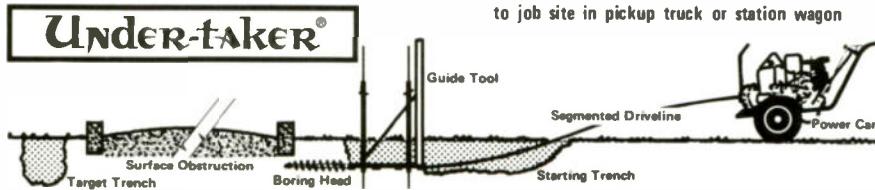
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### WHAT IS MARKETING?

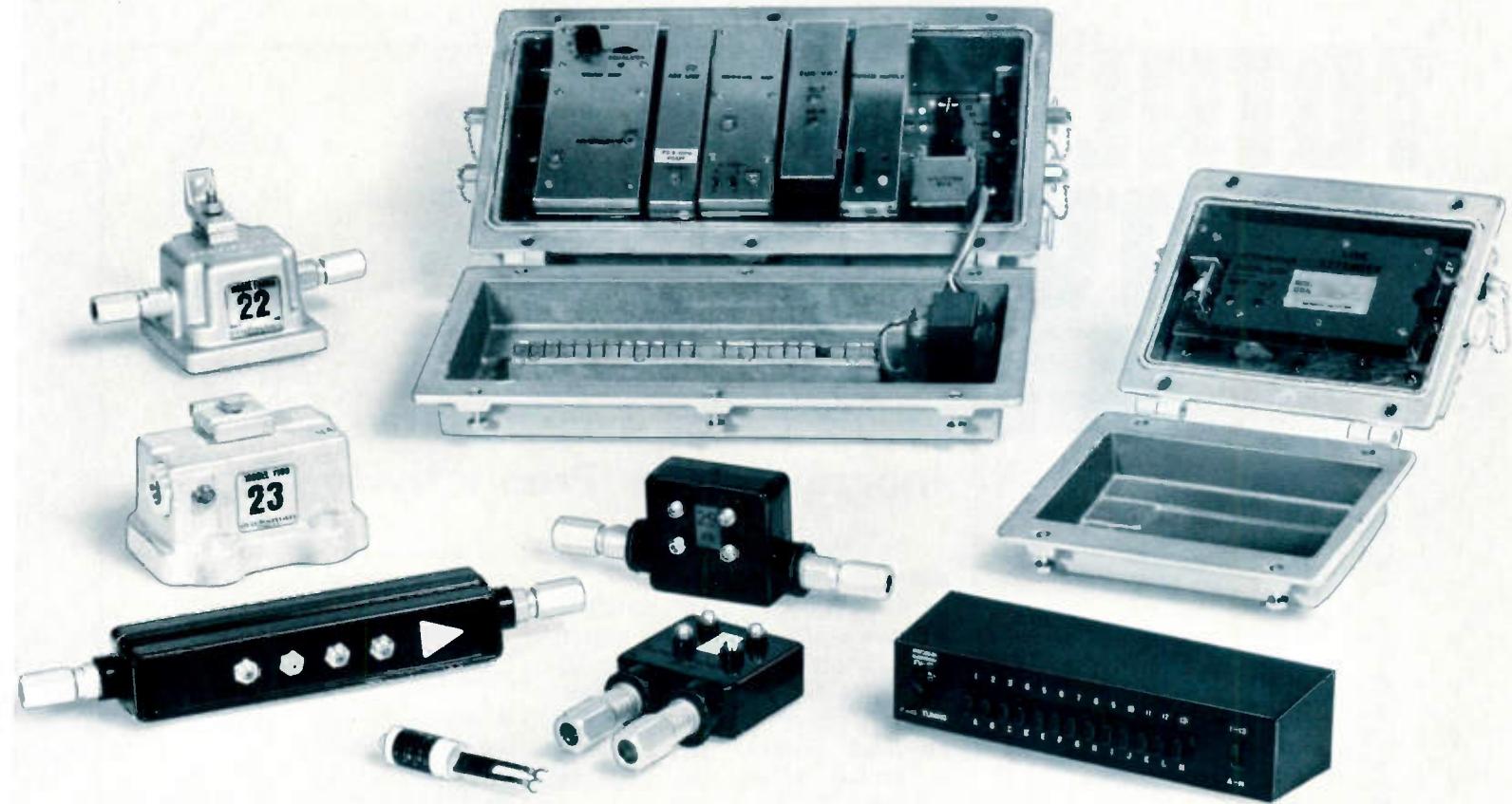
An age old question for which everyone seems to have their own definition. We don't deal in definitions, however, we deal in successfully marketing products and services. We specialize in the communications industry—your industry. We're not just marketing consultants that give advice. We show you how to market your product or service successfully. Effective marketing is our business and this includes effective advertising and public relations too, if needed. It doesn't matter if you manufacture equipment, operate CATV systems, produce or distribute programming, we know your business and your market. Perceptive Marketing is our name and perceptive marketing is what we do! Why not call and chat with us? Talking doesn't cost a thing!

### PERCEPTIVE MARKETING SERVICES

221 N. LaSalle Street  
Chicago, Ill. 60601  
312-267-2645

See you at the NCTA Convention.

If you wish to contact us at the Convention, call Jerry McCalla at the Washington Hilton.



**From origination to viewing,  
we're putting it all together...**

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craftsman catv division



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From the most experienced cable television people in the business.



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## Management Guidelines

D. Stuart MacPhail  
Managing Editor



## Avoid "Time Leaks" And Increase Your Productivity

The men and women who manage cable systems tend to have one predominant problem in common... there is never enough time. The best way to gain time is by eliminating "time leaks." Keep the following checklist handy, and make a conscious effort to improve your use of time.

The effective CATV executive will avoid as many of these "time leaks" as possible:

- Doing things that aren't actually a part of the manager's *real* job... things that can be delegated to another person.
- Doing things that can be delegated to modern equipment or outside service firms.
- Paying too much attention to low-priority, low-yield projects.
- Handling too many... or too wide a variety of duties.
- Doing unproductive things out of sheer habit.
- Keeping too many, too complicated or unnecessary records.
- Failing to build appropriate barriers against interruptions.
- Conducting unnecessary meetings.
- Failing to conduct necessary meetings with staff to keep adequate information flowing to assure reasonable harmony.
- Failing to anticipate problem areas and crises.
- Scheduling attractive (yet less productive) work ahead of more important work.

● Pursuing projects that do not relate to your goals.

● Pursuing projects that you can't reasonably expect to achieve.

● Shrinking away from duties that are unfamiliar.

● Allowing conferences, discussions, phone calls, etc. to wander after their initial purpose has been fulfilled.

● Chasing trivial information after you have already gathered the main facts.

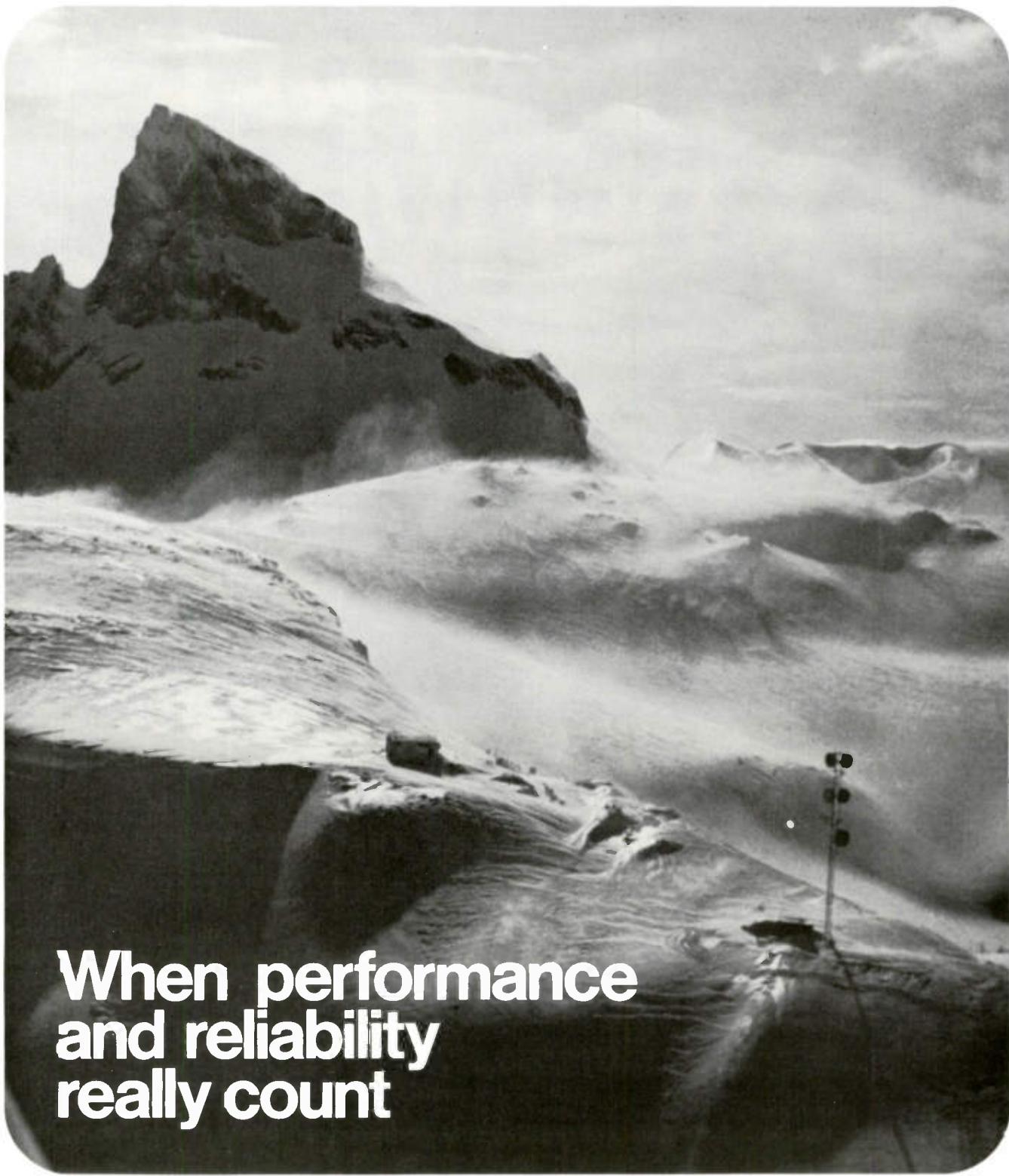
● Engaging in personal work before starting business work... or socializing too much.

Keep in mind that a lot of time can be "leaked" away through excessive reading of trade journals, trade news magazines, newspapers, unimportant documents and reports.

This is one reason why TVC now offers an abbreviated CATV news section. By scanning four pages each month, the system manager can now get a thorough overview of developments in the cable industry. References are included so additional details can be found on any story... again with a minimum of time investment.

One final suggestion. The best way to avoid "time leaks" is to make a periodic analysis of the way you use your time. Take a few minutes (right now, if you can) and review the above list. You can increase your worth... by increasing your productive time.

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and reliability  
really count**

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AMECO's new NOVA series of push-pull amplifiers delivers a signal virtually "FREE" of distortion, whether your needs are 20-25-30 channels or even more.

Features include a fully automatic slope and gain control (dual pilot carriers), plug-in equalizers and true modular, interchangeable design, low second order beat down 82dB and cross modulation down 93 dB.

Housed in an all weather, moisture proof die-cast aluminum housing, the NOVA amplifier will stand up under the most critical climatic conditions. Externally accessible test points eliminate the need for cover removal during field checking.

Planning on two-way transmission? No need for costly investment now. When ready, simply add the specially designed plug-in filters and sub-band amplifier module.

The NOVA series amplifier will operate with either 30 or 60 volt power supply, simply flick a switch. Optional stand-by battery power available.

Consider all the outstanding features of the NOVA series amplifiers and then contact AMECO about your "FREE DELIVERY".

## SPECIFICATIONS

FREQUENCY RESPONSE: 40-300 MHz  
at  $\pm 0.25$  dB

SPACING: 22 dB at 271.25 MHz, 19 dB  
at 216 MHz

NOISE FIGURE: 9 dB at Full Gain

CROSS MODULATION AT OPERATING  
LEVEL (20 CHANNELS): -93 dB

SECOND ORDER BEATS AT OPERATING  
LEVEL: -82 dB

REVERSE DIRECTION FREQUENCY  
RESPONSE: 5-30 MHz

HUM MODULATION: -70 dB

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# CATV News Briefs

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

**CATV Thaw Promised by August:** FCC Chairman Burch, with solid support from other Commissioners, met with the Communications Subcommittee of the Senate Commerce Committee on June 15 . . . promised a specific set of rules by August . . . anticipated rules will make CATV viable in top markets. Senator John Pastore (D-R.I.) said he has no wish to "impede" FCC action. Proposed rules include a distant signal formula . . . surrenders entire copyright issue to Congress . . . de-emphasizes cable's possible impact on broadcast stations. At least one Senator urged FCC to "move ahead." (CATV 6/21 p3, 6)

**"New Look in CATV" Characterizes FCC Proposals:** Principal elements of Commission's new planned rules for CATV (as expressed to Senate Communications Subcommittee) include: Distant signals — markets 1-50; local signals plus signals to provide minimum of 3 nets, 3 independents, plus 2 additional distants . . . markets 51-100: 3 nets and 2 independents . . . markets 100 on: 3 nets and 1 independent. All markets can import unlimited member of noncommercial signals . . . unless local noncommercial station objects. Footnote 69 is modified, more permissive. Sports events to be blacked out where local TV stations are required to blackout. Systems are to have one non-broadcast channel for each broadcast carriage channel (minimum channel capacity). Minimum capacity for two-way, non-voice communication is also proposed. (CATV 6/21 p3)

**Cost of New Rule Implementation Estimated:** In the most recent issue of the *Bell Journal of Economics and Management Science*, Stanford economists William S. Comanor and Bridger M. Mitchell published a study on the costs to system operators of certain proposed regulations. Study discusses costs involved in building new dual-cable systems, new systems using converters, and necessary alterations to existing systems . . . to gain 20-channel capacity. Two-way capability, annual certification expenses and costs involved in upgrading of signal quality are also reviewed. (CATV 6/21 p7, 31)

**Copyright Pact Between NCTA and CCO Term "Practical Solution":** Just a couple days before the FCC announced its proposals to the Senate Communications Subcommittee, the NCTA and the Committee of Copyright Owners unveiled a compromise agreement that was to be submitted to Congress and the FCC. Agreement provides for compulsory licensing of CATV systems under which they could carry 3 nets, 3 independents and 1 educational signal. One provision called for systems in top-50 markets to protect local stations' programming exclusivity against distant stations for the "run of the contract." NCTA Copyright Committee chairman Alfred Stern acknowledged that the agreement would make top-50 markets difficult for CATV . . . but he called the compromise "a practical solution" for progress in the second 50 markets. Pact is at odds with FCC proposals announced a few days later. (CATV 6/21 p13, 31)

**Kahn Stays, Cooke Goes, Schlafly Moves Up:** Jack Kent Cooke has resigned from TelePrompTer Board of Directors . . . rather than leaving the employment of TPT (as had been announced in late March), Irving Kahn will remain as Chairman of the Board and Chief Executive Officer. Hubert J. Schlafly, co-founder of TPT, has formally been named President. (CATV 6/21 p6)

**New York Freezes Franchises for One Year:** Before closing its doors in mid-June, the N.Y. state legislature adopted Assembly Bill 8046 which "temporarily prohibits the award of any franchise by municipal corporation for the purpose of operating or maintaining a community antenna tele-

# CATV News Briefs

vision system." Although the legislature failed to pass the administration-sponsored bill which would have subjected CATV to full PSC jurisdiction, the present law contemplates some such set-up a year from now. (CATV 6/21 p5)

**Taverner Resigns After Executive Committee Review:** NCTA Executive Committee members met in Washington June 6-8 and reviewed all aspects of association administration. Sessions were closed. Between 15 and 20 persons were invited to appear. Don Taverner's leadership for the previous 18 months was discussed in depth. Taverner offered a written resignation. Executive Committee would not accept it. Two days later, NCTA Board of Directors did accept it. . . "with regrets." Taverner will remain as NCTA President until December 31, 1971. (CATV 6/14 p3 and 6/21 p2)

**Presidential Selection Committee Named by Demgen:** Two weeks after Taverner resigned, NCTA Chairman Ralph Demgen announced the committee that will look for a replacement. Members, in addition to Demgen, are: Edward M. Allen, Mrs. Polly Dunn, William Karnes, James Klungness, Robert H. Symons, Robert Weary and (as an ex-officio member) the new national chairman of NCTA to be elected at the July Convention). All members of NCTA are invited to submit information to the committee pertinent to the selection of the new president. . . including suggestions on desired presidential qualities, and names of candidates. (CATV 6/28 p3, 6)

**Viacom Fracas Still Alive:** Marino Iacopi and two other minority shareholders in the CBS/Viacom San Francisco cable subsidiary have kept Viacom's troubles hot with a new filing in the Ninth Circuit Court. Both before the court and the FCC, the cable group is protesting what it terms CBS's "impropriety" in hastily issuing the Viacom stock just as the Circuit Court was issuing an order to stop the stock distribution. On June 3, FCC voted to unblock the spin-off, held up since December. CBS got shares into mail on Friday, June 4. In a petition for emergency procedures filed at the FCC, the Iacopi group has also protested the network's "deceitful abuse of the Commission's processes." (CATV 6/14 p3, 18 and 6/21 p11)

**Kentucky Cablemen Condemn Municipal System:** Members of the Kentucky Community Television Association have unanimously adopted a resolution condemning what they term the "discriminatory practices" of a municipal system in Frankfort, Kentucky. City-owned system plans to over-build a private operator who has been limited to one portion of town. The city has contracted with a local newspaper to produce local origination. The cablemen have attacked the municipal system and the city for unfair competitive practices and abdication of cable-casting responsibility. (CATV 6/7 p5)

**Operators Gather for Largest Ohio State Show:** Spring meeting of the Ohio Cable Television Association drew record numbers of system operators and manufacturer's reps. Meeting held in Columbus featured NCTA President Don Taverner, FCC CATV Bureau Chief Sol Schildhause, New England CATV Association Director Bill Kenny, Avco Broadcasting Sr. Vice President Walter Bartlett and Communications Publishing Corp. Vice President Milton Bryan. (CATV 6/21 p9)

**Ohio High Court Rules Use of Power Poles Okay:** Ohio's Supreme Court has told cable operators they have full rights to use of power and telephone company poles under joint-use agreements. . . and that all easements pertaining to those poles may be assigned to cable operators. The decision reverses an earlier state appeals court ruling. (CATV 5/31 p5)

**Two-way System Being Tested in Kansas:** On June 23, TeleCable Corporation began testing a two-way TV system in Overland Park, a suburb of Kansas City. Experiment uses a terminal unit by Vicom Manufacturing of Dexter, Michigan. A classroom-to-home test is being held to bring special classes to disabled children. . . while allowing students and teacher to have video contact with each other. A second test uses system for shopping from home. Burglar, fire alarm applications and opinion polling are also being tested. (CATV 6/21, p23, 25)

**Cypress Communications Announces Cablecasting Policy:** CC, operator of 43 systems in 17 states, formally announced its local origination policy. . . as a response to events at the FCC and recent court decisions. John Calvetti, Cypress director of programming said Cypress would continue with its plans for program origination. . . the MSO supports voluntary local origination. (CATV 6/14 p9)

**Importation Authorized To Assure Continued System Operation:** Cablevision of Hendersonville, Inc., operating in Hendersonville and Laurel Park, N.C., just 18 miles from Asheville (ARB 33), has been authorized to bring two network signals from Charlotte. System argued that it would have to go out of business if it could not import the signals. System has 475 of an estimated 4,000 potential subscribers. System carried 35 hours of local origination per week. Authorization was made because of the "public interest in assuring the continued operation of CATV in Hendersonville." (CATV 6/7 p3, 7, 12)

**Illinois System Permitted To Carry Distant Signal:** Kewanee Cablevision, operator of the proposed system at Kewanee, Ill., has been granted permission to import KIIN-TV from Iowa City, Iowa. KIIN is an educational station. Illinois Valley Public Telecommunications Corporation, holder of a permit for channel 47 in Peoria, Ill., objected to FCC authorization. (CATV 6/14 p15)

**Telecable of Kokomo (Ind.) Will Carry Chicago:** Two Chicago independents (WGN-TV and WFLD-TV) have been authorized for carriage by the Kokomo, Ind. cable system. System must also carry independent WURD from Indianapolis if the station so requests. (CATV 6/21 p23)

**TM Communications Can Bring In Educational Signals:** FCC has given go-ahead for TM to carry distant educational stations on its system at De Land, Florida. System is located in Orlando-Daytona Beach market (ARB 65). It will carry WEDU from Tampa-St. Petersburg and WJCT from Jacksonville. (CATV 6/21 p27)

**Walson Scores Partial Win in Wilkes-Barre:** CATV pioneer-operator John Walson, head of Service Electric Cable TV, Inc., has scored a partial win in a hearing on his Wilkes-Barre system's signal carriage. Hearing examiner rules that Service is grandfathered in Hanover Township. . . but not in Ashley Borough, since no subscribers were served in Ashley Borough until December 19, 1968. Distant signal carriage in Ashley Borough must be discontinued. (CATV 6/14 p5, 7)

**Meadville Wins Against FCC in Third Circuit Court:** The Third Circuit Court has said FCC must take another look at its non-duplication order against George Barco's system in Meadville, Pa. Barco has been seeking a non-duplication waiver since summer of 1966 when WICU-TV, NBC affiliate in Erie, Pa. asked for protection against WFMJ-TV, NBC affiliate in Youngstown, Ohio. Court said Commis-

# CATV News Briefs

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sion could refuse to grant the waiver. . . but not like it did. . . FCC has an obligation to "consider evidence placed before it and set out conclusions with supporting facts and reasons. (CATV 5/31 p7)

**FCC Turns Down Request for Exclusivity Waiver:** Cable Television Co. of Illinois has lost its bid for full carriage of two Chicago signals on its system at Fairbury, Ill. FCC has ruled that system must protect Champaign-Danville NBC affiliate WICD against programming on WMAQ (Chicago). . . and must protect station WCIA from coverage of Chicago Cubs games over independent WGN (Chicago). Commission ruled that a hearing was not warranted. (CATV 6/21 p25)

**Less-Than-Full Channel Authorized by FCC:** Over the objections of two Commissioners and local broadcasters, a Salisbury, Maryland, cable system has won a waiver of the signal-channel carriage rules. The system will not have to devote an entire channel full time to the local Salisbury educator (WCPB), which will be coming on the air. Ordinarily a system must devote full-channel carriage to local stations. Salisbury has a five-channel system. The system has promised to carry a full schedule of the new educator. . . but not always on the same channel. (CATV 6/7 p5, 6)

**ATC Has Acquired West Virginia System:** American Television & Communications Corp. has announced completion of its acquisition of Capitol Cablevision Corporation in Charleston, W. Va. System serves some 12,000 subscribers in Charleston, South Charleston and Dunbar. Population of the area is approximately 100,000. ATC now operates in nineteen states, serving approximately 202,000 subscribers. (CATV 6/21 p29)

**Action in the Franchise Arena:** The following communities have all reported the granting of franchises in recent weeks: Jacksonville, Ark.; Broomfield, Colo.; Stone Park, Ill. (third of Chicago's west suburban communities to grant a franchise); New Castle, Ind.; Anthony, Kan.; Rockland, Maine; Austin, Minn.; Versailles, Mo.; Fredon, N.J.; Hunter, N.Y.; Kilbuck Township, Mercersburg and Ross Township, Pa.; Columbus, Texas; Fair Haven, Castleton and Pittsfield, Vt.; and Tenino, Wash. (CATV June editions)

**Recent CATV Construction Progress:** Service is now in operation at Plainville, Kansas. . . first subscribers have been hooked up in Jupiter, Fla. . . system in Anna Marie Island, Fla. will be completed this month. . . service has been turned on in Derry, N.H. . . construction has started in Strathmere, N.J. . . Galesburg, Ill. system has been turned on. . . subscriber hook-ups have started in Milan, Ohio. . . service is now on at Mount Airy, N.C. . . the Catskill, N.Y. system will start service this month. . . twelve-channel service will begin this month in Carbondale and Marion, Ill. (CATV June editions)

**Financial Developments Affecting CATV:** TelePrompTer Corporation has announced that it has completed a \$42 million loan agreement (largest in CATV history) with five participating major banks. Agreement was signed simultaneously in New York and Los Angeles by The Chase Manhattan Bank, N.A., Bank of New York, Bank of America, N.T.A.S., Security Pacific National Bank, and Security National Bank. Entron, Inc. reported a new loss of \$1,992,473 for the year ended December 31, 1970. CBS operations, recently spun-off to Viacom International Inc., showed a first quarter net income of \$305,000 with 8 percent share earnings. (CATV June editions)

---

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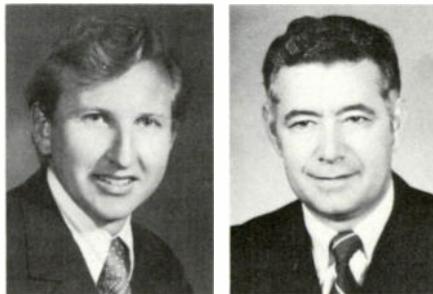
## ... On People

### Systems

Eugene F. Shaw, veteran broadcasting sales executive, has been appointed director of advertising sales for TelePrompTer Corporation's Manhattan cable television system. Shaw will be responsible for advertising sales for the Upper Manhattan system and also will seek national advertising from New York-based agencies for other TelePrompTer systems. Shaw spent 12 years with the Westinghouse Broadcasting Co., beginning as an assistant sales director for WBZ-TV in Boston, Mass., in 1957.

Fred E. Furnish has been appointed manager of General Electric Cablevision Corporation's Decatur, Illinois, cable system. A long-time GE employee, Furnish previously served as a specialist in

sales training for the Audio Products Department in Decatur. Construction of the 270-mile system will begin in July.



Mr. Stein      Mr. Furnish

George V. Stein has been named director of marketing for Nation Wide Cablevision, Inc. Prior to joining Nation Wide, Stein served in various brand management capacities with Proctor & Gamble Company in Cincinnati. His responsibilities include supervision of marketing efforts

encompassing advertising, promotion, strategic planning, agency supervision and product development. Stein has a B.S. degree in finance from Oregon State University and an M.B.A. from Wharton Graduate School of Finance & Commerce.

Clair A. Sundeen, a cable industry pioneer, has been named Lake Hughes, California's Outstanding Citizen of 1970. Sundeen's Lake Hughes Cable Television Service grew out of an early 1950's experiment in improving his own and a neighbor's television reception in the isolated mountain community. The Lake Hughes-Elizabeth Lakes Chamber of Commerce made the award.

### Suppliers

C-Cor Electronics, Inc. has announced the appointment of Anthony C. Reynolds to the position of director of manufacturing. Before joining C-Cor, Reynolds was director of manufacturing at Spitz Laboratories, Inc., a division of McGraw-Hill. Reynolds was graduated from Manchester University in England, where he studied physics, mathematics and chemistry. Other appointments announced by C-Cor was that of Donald A. Carver to the position of supervisor of the Model Shop and the appointment of James E. Fogle as a system engineer in the Systems Engineering Department.

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New western regional salesman for AEL Communications Corp. is Elliot Bell who represented parent company American Electronics Laboratories, Inc. for more than three years on the West Coast. He will handle CATV sales for the states of Washington, Oregon, Idaho, Montana, California, Nevada and Arizona.

Howard Mercer has announced the formation of Macom Industries. The company will engage in the manufacture and importation of a broad line of CATV and MATV distribution equipment to be sold nationally



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through both CATV supply houses and MATV contractors. Seymour Kass has been appointed executive vice president of the new company.

Ben W. Forte has joined Theta-Com as western regional sales manager. Previously, Forte had been with Kaiser CATV, which he joined in 1968. He will represent Theta-Com in the states of Washington, Oregon, Montana, Idaho, Nevada, Wyoming, Utah, Arizona and California. Headquarters will be in Pleasanton, California.

Dolphin Communications Corporation has announced the appointments of Michael Joyce as controller, James Stewart as director of engineering, and Bruce Martin as regional sales manager.

Anthony L. Conrad, executive vice president, services, has been chosen by the board of directors of RCA Corporation to become president and chief operating officer of RCA on August 1.

Jerrold has appointed Peter Van Schenck as sales engineer for Southern California. He will be responsible for sales of home TV antennas, preamplifiers and accessories and other Jerrold equipment.



*Mr. Forte*



*Mr. Ports*

ceeds G. Norman Penwell, who left NCTA to take a position with Malarkey, Taylor & Associates consulting firm in Washington, D.C. Ports was most recently director of plans and development for the electronics and communications division of ARC. Prior to that he served as director of marketing and director of development for ARC's electronics and communications division.

Patrick E. O'Donnell, legal assistant to FCC Chairman Dean Burch, is leaving the FCC for a White House staff appointment, according to a Commission announcement. Replacing O'Donnell is John M. Eger who has been serving as special assistant to the FCC general counsel. In another change in the general counsel's office, William Jensen is leaving the FCC to become Hearing Examiner for the Federal Power Commission. Jensen was an assistant general counsel and was responsible for enforcement. rvc

## Professional

The office of Director of Engineering, vacant for several weeks at NCTA, has been filled by Delmer C. Ports, who comes to the association from Atlantic Research Corporation. Ports suc-



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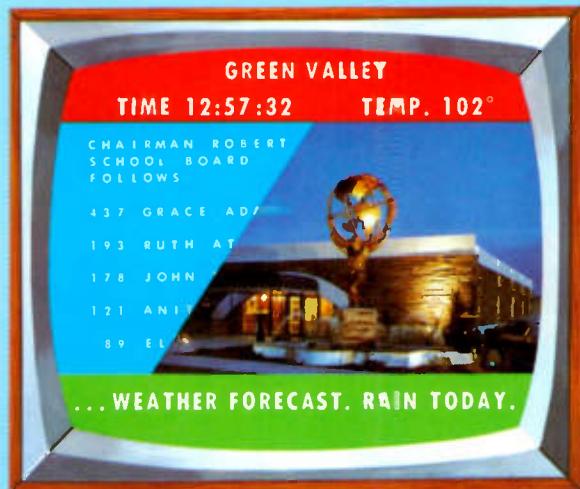
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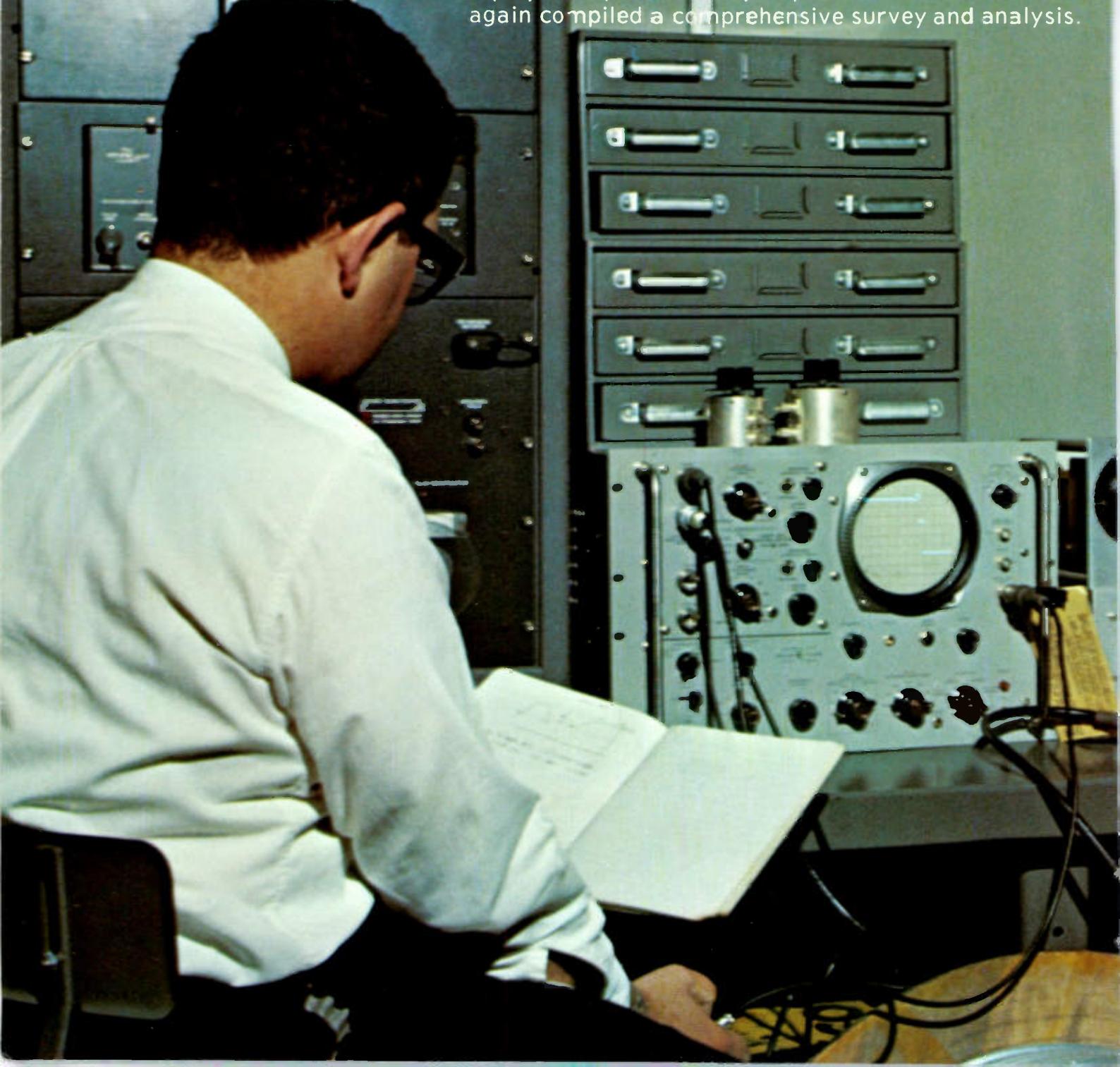
Model DW 1200

Illustrated above is one screen format that includes (1) Time/Temp/Title (2) Color Slides alternating with Local Messages (3) Continuous Weather Forecast.

\*Typical Complete System Price

# A Survey of Technical Personnel: How Does Your Crew Compare?

When CATV managers get together, staffing problems are usually a major topic of discussion. To help cablemen put employment problems in perspective, TVC editors have again compiled a comprehensive survey and analysis.



**Q**UESTION: What are the main problems you find in staffing your technical team?

**ANSWER:** "Finding qualified people who are willing to work. Most qualified men want some sort of bench job . . . and CATV can't run that way."

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

**ANSWER:** "Training people. Many of today's technicians will become glorified installers when technical standards are established by the FCC."

**QUESTION:** What solutions do you suggest?

**ANSWER:** "A possible solution would be to go ahead and establish our own tech standards now, and then train our men to bring them up to a point where they can operate a system to those standards."

Those are the words of a cable system manager. His situation is typical; so are his comments. He operates a 7000-subscriber system (183 miles of plant) in a northeastern state with a crew of seven technicians and installers. He pays his installers \$450 and his techs \$585 per month. His men are a bit below par on performance compared to other systems of the same size in that area, and his pay scale is also below average. He reports that his crew is adequate in terms of numbers but inadequate in terms of skill for his operation. Only one of his men had prior CATV experience when hired — half of his staff have had some formal training in electronics.

Could this manager bring his staff up to par in skill and productivity if he increased his pay levels to average or above? Would a fatter package of fringe benefits help him find and keep more qualified men? Or is training of his present staff the answer? Only the manager himself can make those decisions.

But, from the data provided in these pages he will at least be able to know *exactly where he stands* in comparison with other systems. That is the only objective of this survey.

## How Accurate Is This Survey; What Do Findings Represent?

As shown in Table I, the TVC Technical Personnel Survey is based on data received from about 10% of the operating systems in the U.S. This number is well in excess of accepted minimums for valid statistical samplings. Operators in each state were polled on a proportionate basis, and results broken down into four major geographical areas as shown. Within each state, systems were chosen on a random basis, and replies were submitted anonymously, in view of the confidential nature of the information being supplied.

As many readers will remember, a similar survey was compiled and published by TVC in 1969. Comparative data from that survey and these current

Table I: Breakdown of Survey Sampling

Region	Number of Systems Providing Data	Average Miles of Cable Plant	Average Number of Subscribers	Average Number of Subscribers Per Mile
Northeastern States	49	96	5,165	53.8
Southern States	68	113	3,650	32.3
Midwestern States	68	87	4,265	49.0
Western/Mountain States	60	109	5,555	50.9
Total—All Systems	245	101	4,580	45.7

CATV Employment Survey results represent a sampling of 10% of the industry, taken from every state on a proportionate basis. This provides a sampling well in excess of accepted statistical requirements.

Table II: CATV Installers

System Size (in plant miles)	Number of Systems Providing Data	Average Number of Installers Employed	Average Monthly Total Per Installer	Average Number of Drops Made Per Day, Per Man	Average Cost in Installer Wages Per Drop Made
1 to 25 mi.	18	1.2	\$480	7.0	\$3.45
26 to 50 mi.	53	1.6	\$485	6.5	\$3.73
51 to 75 mi.	28	1.9	\$505	7.1	\$3.55
76 to 100 mi.	23	2.5	\$540	7.2	\$3.75
101 to 150 mi.	21	3.6	\$540	6.0	\$4.50
151 to 250 mi.	27	4.5	\$505	6.5	\$3.88
Over 250 mi.	12	7.5	\$470	6.5	\$3.61
Total— All Systems	182	2.8	\$505	6.7	\$3.78

CATV installers are generally defined as outside plant men engaged primarily in making subscriber drops, and with a limited knowledge at most in troubleshooting distribution system problems.

findings will be noted in this article where meaningful trends or changes are apparent.

Examining the "typical system" in this sampling, we find that it has about 4,600 subscribers and 100 miles of plant, giving an average saturation of 45 customers per mile. It should be noted that very small systems (less than 500 subscribers) were not included in this survey. Usually one-man operations, the personnel situations of such systems have little in common with those encountered by most systems managers.

Also to be noted is the absence of data on the exact function of the system manager. Some managers are deeply involved in the technical work on their system. Others focus their efforts almost exclusively on sales, PR, and administrative duties. Many managers are involved in all these areas, and perhaps in running a cablecasting studio as well. Thus, the system manager's role remains as an "independent variable" in these survey results, and must be allowed for in comparing your specific situation with the data given here.

## Installers Make \$505 Per Month, Average Seven Drops Per Day

**QUESTION:** What are your main technical staffing problems?

**ANSWER:** "Finding installers with experience, and systems stealing employees from each other rather than training their own people."

The cableman quoted above operates a 55 mile plant (2,850 subscribers) in a midwestern state. He

pays his installers \$525 per month, which is just below average for a system of that size in his area. His men make about five drops per day per man, which compares to about seven per day average in that region.

This operator hires all of his men from within his own community at this point, mostly ex-servicemen from a nearby airbase. His fringe benefit package is better than average, and he pays part of the tuition if his men wish to enroll in an outside training program. Although he reports that his staff is large enough to handle his operation, he (like one out of five operators in the midwest) is not satisfied with the skill and performance level of his men.

Of course experienced installers *are* available, if a system operator is interested in offering wages which are well above average. Table II shows the average pay for installers in systems of various sizes, as well as the number of installers employed by systems in each category and their productivity as measured in drops per day. Regional pay differences must also be taken into account, of course . . . and survey results indicate that midwestern and northeastern states are close to the averages shown in Table II, while wages are considerably lower in southern states and higher in the western and mountain states. (It is interesting to note that in the west, where installer wages are highest, systems are getting by with the lowest number of installers per system of a given size.)

Averages don't tell the whole story, of course, and some operators take widely varying approaches to installer remuneration. One southern system pays its two installers only \$325 per month and reports no problems in getting the job done. (The same system pays its technician \$800 per month, interestingly enough, which is almost \$200 per month over the average for a system of that size in that area.)

Table III: CATV Technicians

System Size	Number of Systems Providing Data	Average Number of Technicians	Average Monthly Wage Per Technician	Average Miles of Plant Per Man	Average Monthly Technician Wage Cost Per Plant Mile
0-25 mi.	18	1.0	\$660	19 mi.	\$34.75
26-50 mi.	53	1.2	\$665	32 mi.	\$20.80
51-75 mi.	28	1.6	\$675	38 mi.	\$17.75
76-100 mi.	23	2.2	\$680	41 mi.	\$16.50
101-150 mi.	21	2.8	\$700	46 mi.	\$15.20
151-250 mi.	27	4.0	\$635	49. mi.	\$12.95
Over 250 mi.	12	6	\$690	57 mi.	\$12.10
All Systems	182	2.3	\$670	28.6 mi.	\$18.75

CATV Technicians are generally defined as men capable of maintaining all components of CATV distribution plants and of routine maintenance of head-end components (except microwave equipment).

On the other hand, one operator in a western state pays his installer \$850 per month and complains that he can't find men with adequate training and ability. And that is despite adequate fringe benefits and a bonus incentive plan for his technical personnel!

Referring again to Table II, you will note that the average system surveyed employs 2.8 installers. This compares with an average of 2.4 installers employed in 1969 (and this 17% increase is fairly uniform for systems of all sizes).

Meanwhile, installers' pay has increased only 3% nationally in the same two-year period, and has actually decreased in systems of 150 miles and larger. This latter statistic may well reflect a situation in new systems in larger markets where management has been forced to hire large numbers of unskilled men to fill out their staffs.

Installers' productivity has also increased slightly since 1969 (about 6%) netting a virtually stable labor cost per drop of about \$3.80.

As an industry average, survey results indicate that about 6% of system revenues are spent on installers' wages at present, as compared with about 6.4% in 1969 — the reduction being the result of increased saturation and, therefore, increased income for most systems rather than being due to the cost-effectiveness of the installers.

## Salary Averages \$670 for CATV Technicians—Up 13% from 1969

**QUESTION:** What is your biggest problem with technical staffing at present?

**ANSWER:** "Finding trained people is impossible. I'd

hire a qualified chief tech today if one was available."

Those are the words of a system manager from a southern state, with 5,200 subscribers. His techs are paid \$535 per month, which is considerably below the national average for that size system, and a bit below the average for his region. His technicians are short on ability, says the operator, and his analysis is

Table IV: Combined Technical Personnel

System Size	Average Number of Technicians and Installers Combined	Average Total Monthly Wages For Technicians and Installers Combined
0-25 mi.	2.2	\$1,235
26-50 mi.	2.8	\$1,575
51-75 mi.	3.5	\$2,040
76-100 mi.	4.7	\$2,845
101-150 mi.	6.4	\$3,905
151-250 mi.	8.5	\$4,815
Over 250 mi.	13.5	\$7,665
All Systems	5.1	\$2,925

Average total wage expenditures for installers and technicians combined are computed from data in Tables II and III to provide a direct reading on total crew numbers and costs.

Table V: Personal Safety Equipment

	HARD HATS/SAFETY GLOVES REQUIRED			HARD HATS/SAFETY GLOVES FURNISHED		
Region	Number of Systems Requiring Use	Number of Systems Not Requiring Use	Percentage of Systems Requiring Use	Number of Systems Furnishing Items	Number of Systems Not Furnishing Items	Percentage of Systems Furnishing Items
Northeastern States	21	17	55%	32	5	86%
Southern States	34	18	65%	45	7	87%
Midwestern States	33	17	66%	40	9	82%
Western/Mountain States	126	7	84%	40	3	92%
All Systems	126	59	68%	157	24	87%

born out by the fact that he uses almost twice the technicians per plant mile as the average system in his area (although the fact that his is an older plant may account, in part, for that situation).

None of this system's technicians had CATV experience prior to being hired, and all were hired from within that community. The system has no formal training program in effect. His men receive better than average fringe benefits including a stock option plan, and still he can't find the men he wants.

This manager's difficulty in finding men with adequate technical skill is shared by one out of ten systems surveyed in his area. A much larger percentage of operators comment on this problem as a serious one for the industry in general, although they are adequately staffed at present.

Table III shows the number, pay, and cost-effectiveness of technicians for systems of various sizes. As in the 1969 survey findings, the pay for techs tops out in systems with about 100 miles of plant. The

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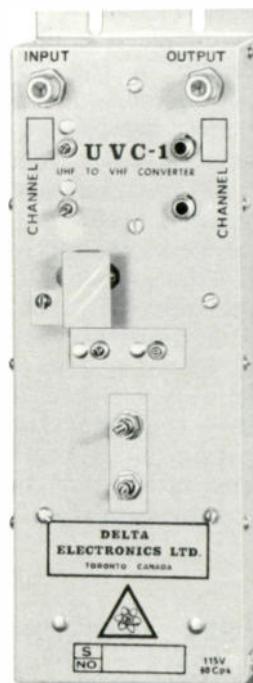
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Table VI: Hand Tools and Uniforms

Region	HAND TOOLS SUPPLIED BY SYSTEM			UNIFORMS SUPPLIED BY SYSTEM		
	Number of Systems Supplying All Hand Tools	Number of Systems Not Supplying Hand Tools	Percentage of Systems Supplying All Hand Tools	Number of Systems Supplying Uniforms	Number of Systems Not Supplying Uniforms	Percentage of Systems Supplying Uniforms
Northeastern States	32	4	89%	26	12	68%
Southern States	45	7	87%	31	21	60%
Midwestern States	44	6	88%	34	18	65%
Western/Mountain States	30	15	67%	25	20	56%
All Systems	151	32	82.5%	116	71	62%

fall-off in tech pay for the largest systems is possibly explained as follows: (a) most of these plants are quite new, using the very latest modular equipment; (b) large systems are able to staff more efficiently, using better qualified technical supervisors to achieve greater efficiency; and (c) these large systems are most often part of an operating group, and can draw on the technical talent of specialists when needed, without carrying the extra salaries alone.

Table III also illustrates the advantage of size in

terms of the cost-effectiveness of each technician. Note that in the largest systems (250 miles and over) the average is about 57 plant miles per man, as compared to only 19 plant miles per man in systems of under 25 miles. Thus the index of technician salary cost per plant mile runs from about \$35 per month in the smallest systems down to about \$12 per month in the largest systems.

Comparing the figures in Table III to those in the 1969 survey, we find that the average number of



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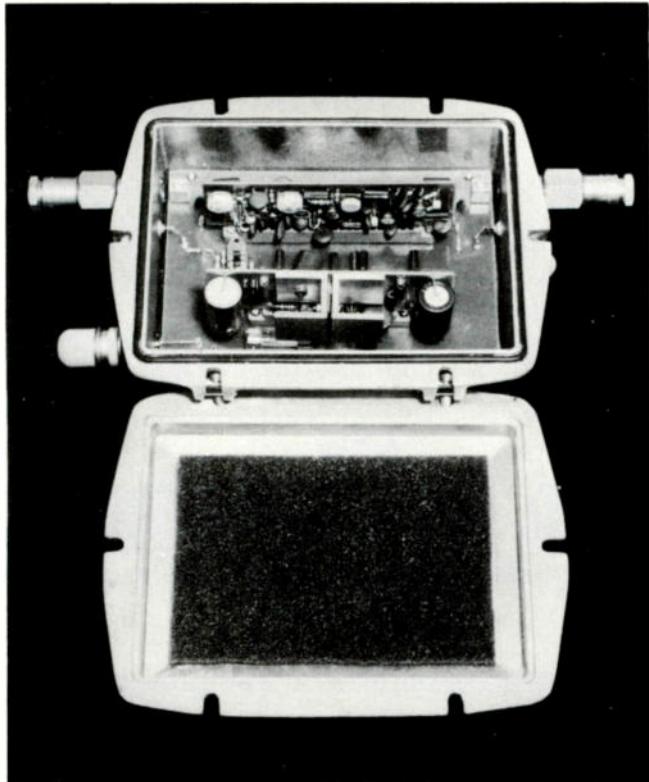
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technicians per system has risen from 1.8 to 2.3, an increase of about 28%. Meanwhile, the average pay for technicians has increased by over 13% from \$590 to \$670 per month.

The tech salary per plant mile index has increased, as result of both larger staffs and higher pay, by over 40% over 1969. Thus, despite a substantial increase in saturation among systems surveyed, technicians' salaries now account for 6.7% of all system revenues, as compared with about 6% two years ago.

On a regional basis, technicians' pay is lowest in southern states, a bit below the national average in northeastern states, just above average in midwestern states, and well above average in the western and mountain states. Systems in the northeast region use the most technician-hours per plant mile, while southern operators use the least.

## Paying High Wages: Do You Get More Productivity Per Dollar?

There is some correlation between higher pay for installers and higher output, according to the survey results, but not as much as you might expect. For example, for every ten operators who pay above average wages and get above average performance, there are seven operators whose pay scale is above average but who are getting *below* average results from their installers. The ratio is a little better with technicians, but hardly decisive.

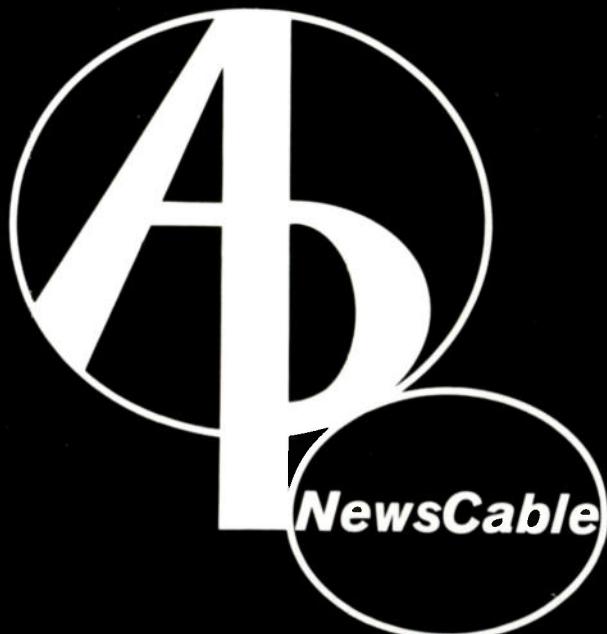
Similarly, for every ten operators paying below average wages who get below average results, there are seven operators paying the same kind of wages who get *better than average* productivity from their technical staff.

Obviously, other factors such as hiring and training techniques, management ability, age, condition and location of the system, general labor market conditions, and a number of other variables affect the wage and productivity relationship to the point where no simple and widely applicable formula exists for determining the relationship between higher pay and better performance.

## Tools, Uniforms and Equipment—Who Pays the Bill?

Does your system require outside plant personnel to wear hard hats and safety gloves? Seven out of ten systems do require their men to use such equipment whenever appropriate. And nine out of ten systems provide this equipment for their technical personnel at company expense. Table V breaks down the survey results on safety gear in each region of the U.S.

Although most operators do provide hand tools for their technicians and installers at company expense (see Table VI), many have a policy of paying for replacements only when the broken or worn out item



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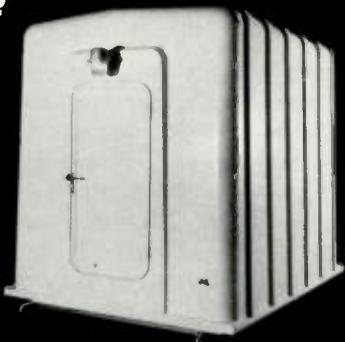
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is turned in. Thus, "lost" items are replaced at employee expense, a practice which makes most hand tools harder to lose or easier to find, according to some managers.

Uniforms for tech crews are provided at company expense by well over half of the systems surveyed. This practice has increased substantially in the last two years, with about 20% more systems doing so now than in 1969. And among systems with more than 100 miles of plant, nearly 80% now provide uniforms for their men.

### Summing It Up: What Technical Manpower Costs You Today

Referring back to Table IV, we find that the average system among those surveyed maintains a technical staff of just over five men, counting both installers and technicians. The bill for this crew averages about \$2,900 per month, or about 12.7% of the system's total revenues. This compares with an average crew of 4.5 technicians and installers in 1969, with wages of \$2,150 per month, accounting for 11.9% of operating revenues for the systems surveyed at that time.

Looking at technical staff costs for systems of various sizes, the advantage of larger systems is again readily apparent. Based on a per plant mile index, the largest systems spend only 40% as much as the smallest operators on technician and installer wages.

Of course wages alone do not fully indicate the full cost of a technical staff. There are company paid Social Security taxes, health insurance and retirement plan payments, paid vacations, sick leave, training costs, etc. which directly affect bottom line. And even more expensive is having the wrong man on the job, or not enough men to do the job, resulting in lost time, inferior service, customer complaints, and ultimately, lower cash flow.

TVC

Coming Next Month . . .

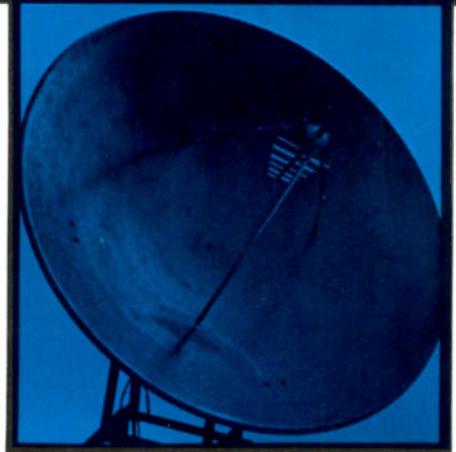
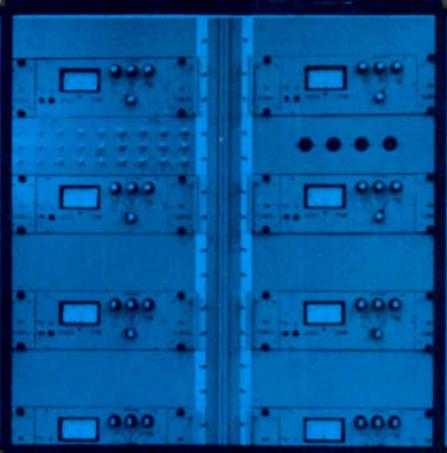
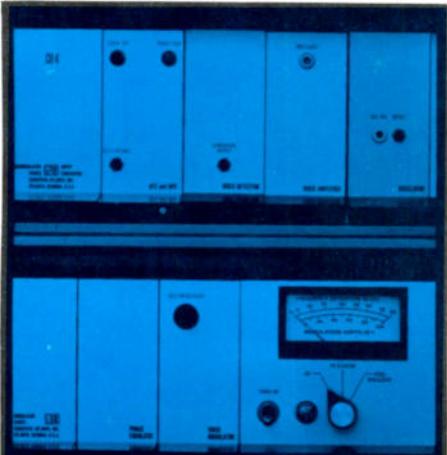
#### CATV EMPLOYMENT SURVEY—PART II

TVC editors are now preparing the second part of this three-part report with more exclusive results from this major, nationwide research project. Statistics and analyses included in Part II will cover:

- Availability & Skills of Technical Personnel
- Recruiting Methods & How Well They Work
- Prior Training & Experience of Job Applicants
- Technical Training Programs & Subsidies
- Relationship of Formal Training to Productivity

This is all vital management information, available to cablemen for the first time. You'll find it in the August issue of *TV Communications*.

# less is more



Less signal distortion, less interference, less noise and less maintenance result in a more profitable operation with Scientific-Atlanta equipment. Consider these examples:

Demodulators have phase-locked synchronous detectors. Quadrature distortion is eliminated. Differential gain and phase distortion are reduced to the lowest levels in the industry.

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Cavity-tuned VHF preamplifiers in weatherproof enclosures minimize adjacent channel interference, noise, and maintenance.

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For more on less, contact Dick Walters, Marketing Manager, Commercial Communications Scientific-Atlanta, Inc., P.O. Box 13654, Atlanta, Georgia 30324, Phone 404-938-2930

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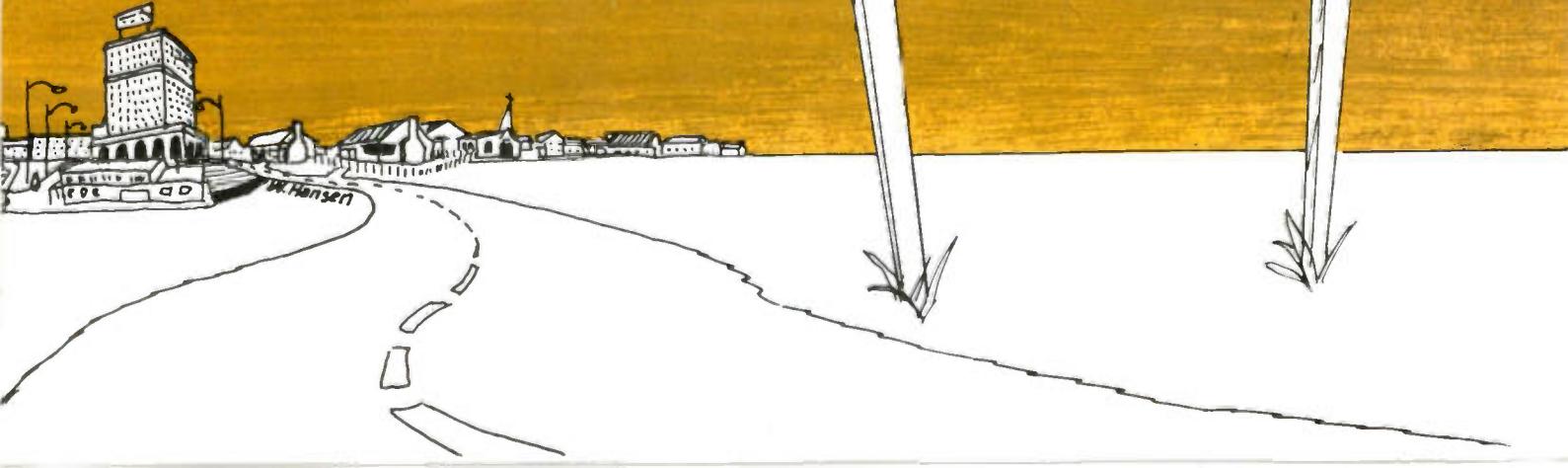
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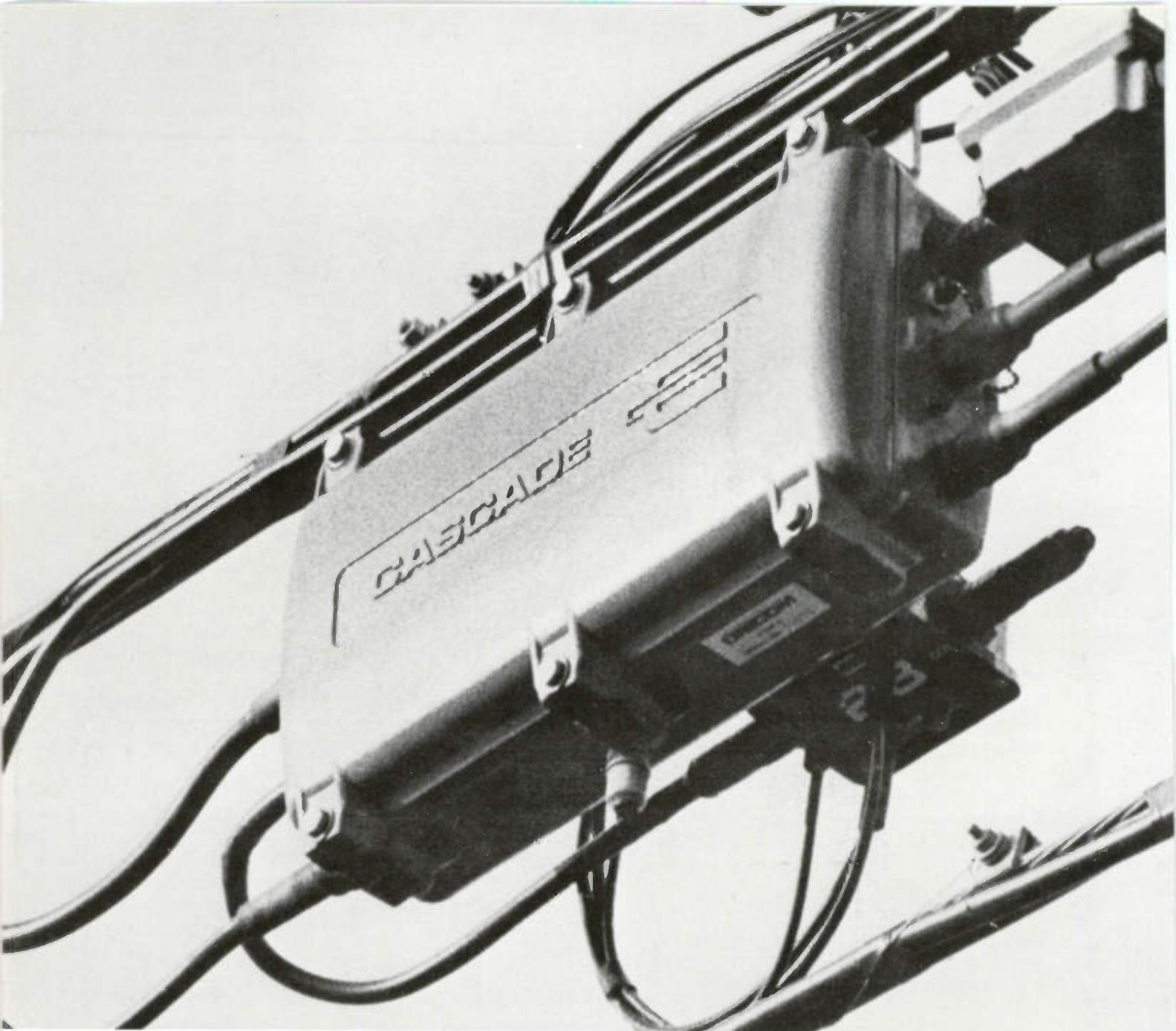
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# OPINION

FROM THE INDUSTRY



Archer S. Taylor, of Malarkey, Taylor & Associates, has been a communications engineering consultant for more than 20 years. In 1953, he built the first cable system in Montana. He is a Professional Registered Engineer and a senior member of IEEE.

## A Proposal to the FCC For Increasing TV Channels

Cable TV has extolled the possibilities . . . both real and hallucinatory . . . of the capability inherent in coaxial cable of carrying many more than 12 TV channels.

Now the FCC has before it a plan which would accept these glowing prospects as the wave of the future, and require that capacity for carrying more than 12 channels be incorporated in new cable TV construction. Few operators today would build systems with capacity technically limited to 12 channels or less, though some are not exactly thrilled by the expected regulatory edict in this regard.

But if the more-than-12 channel world is so great, why is it that only a handful of some 3,000 or so systems actually deliver to customers more than 12 separate program channels? Among the obvious factors are lack of program material, and technical uncertainties about second and third order distortion products.

However, I believe the interface to the customer's display terminal (commonly known as a TV set) is *THE* key problem. If this one was solved, in an economical way, the program entrepreneurs would rapidly develop both the market and the product, and the engineers would quickly take care of the technical problems of the distribution system.

A variety of partial solutions to this interface problem is available:

1. Set-top converters  
R.F. switched or varactor tuned

### 45 MHz IF or UHF IF

Rotary selector or push button

2. A dual-cable system
3. Block conversion to high-band VHF channels
4. Block conversion to UHF channels
5. Pole-top conversion to dual feeders
6. Use of discade (or Rediffusion) system
7. Special TV sets
8. Or, combinations of the above

Of these solutions, only the set-top converter and the discrete cable (Discade) system concept can avoid the serious problem of channels made unusable because of direct pick-up in the TV receiver of strong local TV signals. These solutions utilize only a single carefully selected tuning position (free of direct pick-up) on the customer's TV set.

But why, one might reasonably ask, in order to solve the TV receiver interface problem, should it be necessary to leave largely unused the tuning mechanism already in the customer's TV receiver, only to replace it with another one of no better quality (if indeed as good)?

The dual-cable system has a real capacity of 24 channels, minus twice the number of strong local VHF stations. In only one of the top 25 markets (Hartford-New Haven) could as many as 20 channels be carried, and in four, including the top 2 (New York and Los Angeles), only 10 channels of the dual-cable would be usable at all locations.

The "block converter," which shifts seven super-

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**Table I: Number of Channels Free from Direct Pick-Up**

ARB Rank	City	Dual Cable	Block Under High-Band VHF (Super)	Block Conversion to High-Band VHF Band VHF (Mid & Super)
1	New York	10	8	11
2	Los Angeles	10	8	11
3	Chicago	14	11	15
4	Philadelphia	18	① 15	21 ①
5	Boston	16	15	21
6	Detroit	14	12	17
7	San Francisco	14	12	17
8	Washington, D.C.	10 ②	8 ②	11 ②
9	Cleveland	18	15	21
10	Pittsburg	14	11	12
11	Baltimore	10 ③	8 ③	11 ③
12	Hartford-New Haven	20	16	22
13	Dallas	14	11	15
14	St. Louis	14	12	17
15	Cincinnati	18	14	19
16	Minneapolis-St. Paul	14	12	17
17	Atlanta	18	15	21
18	Providence, R. I.	18	14	19
19	Miami	14	12	17
20	Indianapolis	16 ④	13 ④	18 ④
21	Houston	16	12	16
22	Kansas City	18	15	21
23	Sacramento-Stockton	16	13	18
24	Seattle-Tacoma	12	9	12
25	Milwaukee	16	13	18

- ① There may also be some direct pick-up of Channel 12, Wilmington, Delaware
- ② Includes direct pick-up from Baltimore stations
- ③ Includes direct pick-up from Washington stations
- ④ Includes direct pick-up from channel 4, Bloomington

band channels (above channel 13) to frequencies which permit dual use of channels 7-13, provides a capacity of 19 channels, minus any low-band local TV stations and minus, furthermore, twice the number of high-band stations. Thus, as Table I shows, the top 25 markets would be even more limited than with a full dual-cable.

A refinement of the "block converter" permits use of the channels 7-13 selector positions three times: (1) for normal channels; (2) for 7 converted super-band channels; and (3) for 7 converted mid-band channels. This provides for 26 channels, minus the low-band local TV channels, and minus three times the number of high-band local VHF TV channels. As shown in Table I, the three position "block converter" looks good in Philadelphia, Boston, Cleveland, Hartford-New Haven, Atlanta, or Kansas City . . . though it still fails to deliver 24 or more secure channels. In New York, Los Angeles, Pittsburgh, Seattle-Tacoma, or Washington, it even fails to deliver more than twelve channels.

The "pole top" conversion mainly attempts to optimize costs between the full dual-cable system and



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# video enhancer model 444

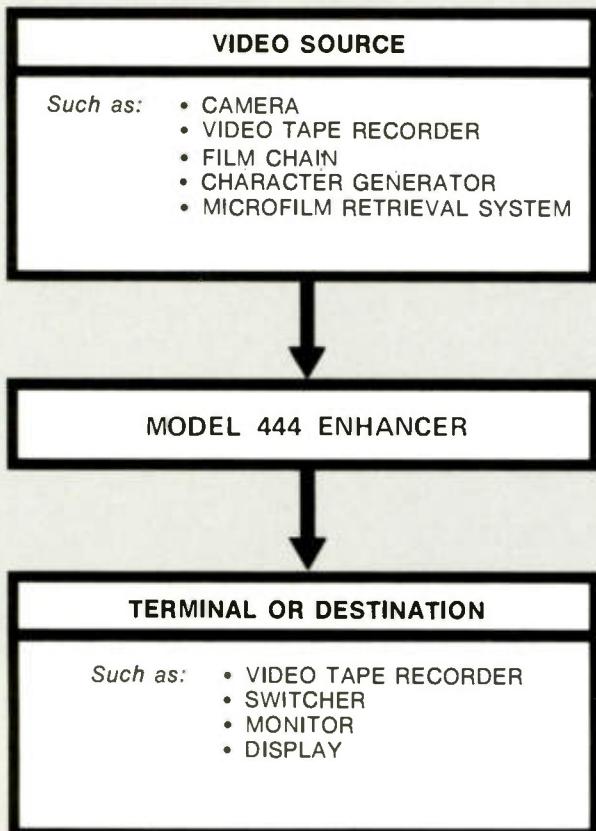
*sharpens  
monochrome  
television  
picture*

*Use  
with  
any  
line rate*



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**NO MODIFICATION TO EXISTING EQUIPMENT**



Frequently, image degradation is encountered in television transmission systems. The Image Enhancer is an electronic unit which corrects this problem by recovering the fine detail lost by two inherent deficiencies in the television image converter: charge bleeding and the finite size of the scanning spot. These two deficiencies result in a picture which is "out-of-focus".

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Dynasciences MODEL 444 Video Enhancer is specifically designed to increase the detail of the horizontal transitions in a monochrome video image. This detail is recovered by monitoring individual picture elements with respect to adjacent elements. As changes are detected between the respective elements, the transitions are emphasized and a sharper picture is presented.

#### **USE WITH ANY LINE RATE**

MODEL 444 Video Enhancer is designed to accommodate a selected line scan rate which can range from 525 to 1225. Particular line rates are factory adjusted, based on system requirements. Circuitry is also provided to clip black and white overshoots, thus preventing overloading of following equipment or causing synchronization jitter. Noise components are removed by level dependent variable coring.

#### **OPERATOR ORIENTED SINGLE-KNOB CONTROL**

The 444 Video Enhancer is designed for simplicity of operation and features a single control for adjustment of the desired amount of enhancement. The signal to be processed is the only input required. (Non-composite operation with external sync input is available on special order.)

#### **NO MODIFICATION REQUIRED FOR INSTALLATION TO EXISTING EQUIPMENT**

The Model 444 Video Enhancer is easily installed by simple connection of any 75 ohm video line.

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the single-cable with block converters for both high- and low-bands. Channel capacity is the same as for dual-cable.

What, then, should be the characteristics of a special TV set to make possible the distribution of 24 (or more) channels without external black boxes?

We would, of course, like a channel selector built-in with 24 or more detent positions, preferably with insertable channel numbers to positively and correctly identify the stations received even when carried on cable at frequencies other than licensed.

However, the one change required above all others to make possible 24-channel capacity without resorting to converters in the home is a properly shielded and balanced coaxial 75-ohm input lead to the tuner.

But, it will not be enough simply to provide a coaxial lead. It will be necessary that the receiver be immune from infiltration in ambient fields as great as 0.5 volt per meter. Loose braid is not good enough. Parallel 300 ohm terminals will probably defeat the shielding effectiveness of a coaxial lead.

But most important, in my opinion, is the necessity for a very low impedance connection between the coaxial shield and the tuner ground plane. The major cause of "direct pick-up" appears to lie in the fact that currents picked up on the drop cable sheath must flow to the tuner ground planes through the input balun. If the baluns provided at both ends of the twin lead were perfectly balanced, there would be no transfer of signal to the tuner. But they are not balanced, and part of the shield current flows through

the balun secondary producing the interfering signal in the tuner.

Unfortunately, safety requires that blocking capacitors be provided in the input lead to isolate the tuners of "hot chassis" TV sets. These capacitors produce a few ohms of reactance at VHF, and therefore tend to reduce the effectiveness of the coaxial 75-ohm lead. It is our observation however, that even with the blocking capacitor, the coaxial lead does definitely reduce "direct pick-up" interference, though it may not provide full security against infiltration in a 0.5 volt per meter field.

There is another serious problem: what to do about existing TV sets? For various legal reasons and potential liability for damages to the customer's TV, we consider it to be less than prudent for a cable TV operator to remove the back of the TV set.

Perhaps the liability can be shifted to bona fide repair personnel by contract, though we would recommend competent legal advice in this matter. It appears that the chances of damage could be reduced or eliminated if the coaxial lead were installed by service personnel duly trained and/or authorized by the set manufacturer in accordance with field modification instructions provided by the manufacturer.

If the FCC really wants to encourage CATV capacity of 24 or more channels, it should seriously consider adopting receiver regulation to properly provide 75-ohm coaxial input for existing TV receivers as well as those to be built in the future. TVC

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This is the Hamlin Remote Programmer. Beautiful. Solid. Heavy. Looks like it belongs on an end table—not on a test bench.

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Indestructible. Die-cast case. Precious-metal plated. Illuminated channel board. On/off switch for darkness. Decorator-styled in rich gold and Autumn brown.

But its beauty is more than skin deep. The Remote Programmer is ready for almost any "talk-back"

interface. The veractor is tuned by low voltage steps. The exclusive slide switch is plated and stressed for 50,000 tuning cycles. The IF is more than twice the frequency of the 30th channel.

Still...the Remote Programmer is *priced at far, far below* old fashioned, top-of-the-set converters.

Sound interesting? See it at NCTA Booth 313 and in many other exhibits at the Show. You'll see why Hamlin International has designed, manufactured and sold more than *four times* the number of converters produced by *all other manufacturers combined*.

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# We're All Salesmen!

That's right, we all have a sales role to play. Like it or not, we constantly find ourselves trying to sell someone on something. These tips will improve personal effectiveness.

Spiro Agnew is a salesman, Martha Mitchell is a salesman, Jerry Rubin is a salesman, Willie Brandt is a salesman, Dean Burch is a salesman. We are all salesmen. Unfortunately, many of us don't know how to sell.

Some of us have the job of selling subscribers on the benefits of CATV or selling the local merchant on investing in advertising. Others have the responsibility of selling system operators on local origination or studio equipment or selling our management on new product development programs. Some have the responsibility of selling the board of directors on the latest operating statement or the banker on the wisdom of extending our line of credit.

Furthermore, we all have the responsibility of selling ourselves to ourselves.

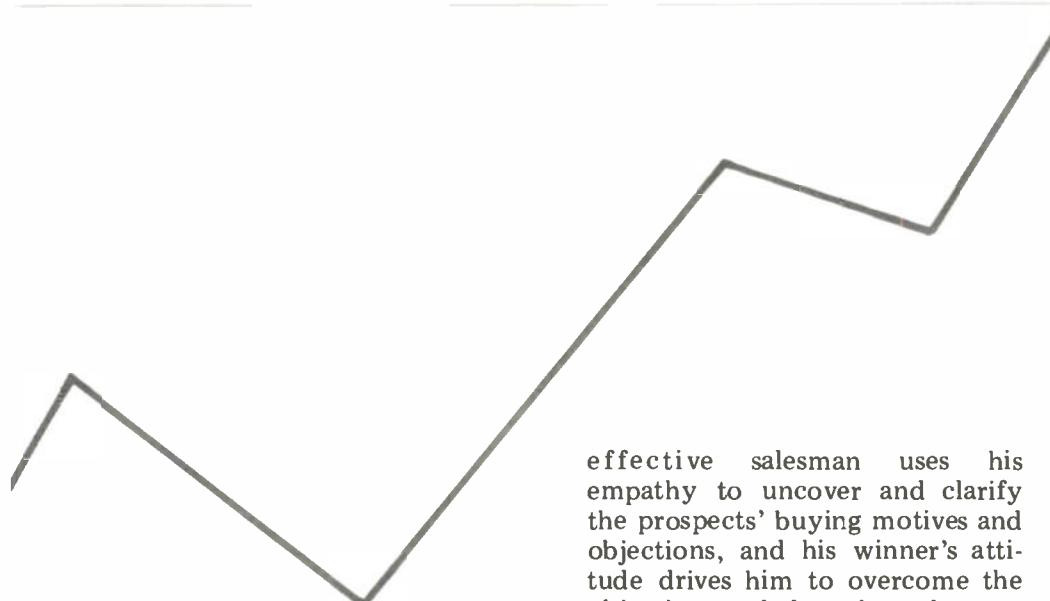
So what's the point? Simply this. Whether you're in construction, on the technical staff, in accounting, in management, or a secretary . . . you are a salesman. Yet, many of us don't even understand the fundamentals of selling.

A salesman is in the business of communicating with people. To succeed he must have empathy, a winner's attitude and the neces-

## ABOUT THE AUTHOR



Frank J. Burge, (BSEE, Notre Dame), is Director of Marketing for Precision Monolithics. He has been in the electronics industry since 1955 as an engineer, product manager, sales manager, director of marketing and free lance sales consultant.



line predictions, cash-flow, etc. If your job is to get subscribers, then you had better be prepared to explain the benefits of CATV.

In many industries, including CATV, people are not equipped with the necessary technical skills to do the job. Quite often this is the fault of the employer. Many companies don't recognize what skills it will take to get the job done. Is it any wonder they do a mediocre job?

It may take one kind of skill to get a CATV system constructed, another skill to get it into operation with subscribers signed on, and still another technical skill to make it grow and produce the expected profit.

But the employer is not always at fault. Too often we recognize that we don't have the skills it takes to do the job, but then do nothing about it. Some of us don't want the jobs we've got.

How often does the entrepreneur quit having fun, once the business is through start-up . . . and yet he almost reluctantly sticks with it until the board of directors boots him out the door. Other entrepreneurs recognize that they don't have the skill it takes to move the business from the \$100,000-a-month level to \$5 million-a-month (and they don't enjoy running a big company) so they step aside and start something else. One of the founders of Fairchild Semiconductors, for example, has started three other semiconductor companies since leaving Fairchild in 1961.

In any case, if you expect to be an effective salesman you had better be certain you have the technical skills it takes for every communicating situation. If you don't, it's your fault.

Remember we are all salesmen. Our personal growth as individuals and as an industry to a great extent depends on how well we do our selling jobs.

Contrary to popular belief, salesmen are made, not born. There is nothing anyone can do to prevent you from being a more effective salesman. All it takes is your commitment to do so. And, as a bonus, you'll have fun doing it.

sary technical skills to effectively communicate with the prospect. Let's examine them one at a time.

Empathy is the ability to put yourself in the other guy's shoes. Call it awareness, perception, or human relations radar. We've seen it in every good salesman. Somehow he has almost a sixth sense that tells him how the prospect feels. He senses the prospect's reaction to his presentation. He is a master at listening. He knows whether he is winning or losing.

Without empathy, he never really knows where he stands. How often have we seen the amateur make a product presentation to a system operator, and walk away thinking that he has the order in the bag . . . while in reality the prospect actually favors a competitor or doesn't have the funds to invest.

Without empathy the salesman is doomed to mediocrity. Without empathy the salesman will find he never seems to do as well in getting new subscribers as is expected. Those potential franchises keep slipping through his fingers. Those irate subscribers always seem to be a little more belligerent when they get him on the phone. Or, he is "unlucky" and gets more subscriber cancellations than any other system operator.

Winner's Attitude . . . George Blanda has it, the Mets and the Jets found it . . . and Vince Lombardi almost invented it. It is that intense desire to succeed . . . to come out on top . . . to win. The

effective salesman uses his empathy to uncover and clarify the prospects' buying motives and objections, and his winner's attitude drives him to overcome the objections and close the order.

Too often amateurs shrug off the desirability of having a winner's attitude because they don't want to be cocky or pretentious or show offs. That's not what we mean by a winner's attitude. On the contrary the "winner" doesn't have to prove anything to anybody. He has already sold himself on himself and that's all that counts.

But, it's more than self-assurance or recognition that he has the ability. It's that extra spark that makes him do something with that ability. In fact the loud-mouth, show-off is probably just another stumbling amateur in disguise.

The effective salesman feeds on his successes and is driven even harder by his failures. When the amateur wins the big color camera sale . . . or the franchise . . . or sets a record for getting new subscribers, he rests on his achievements and takes a week off to enjoy his hard-earned vacation.

The pro recognizes that after that big sale he is better equipped psychologically to take on his toughest prospect. He feeds on his successes and becomes stronger after every sale. He is driven even harder by his failures while the amateur broods about what might have been. The technician, the secretary, and the system manager can apply the winner's attitude to their work, too.

Technical Skills are those skills that are necessary to communicate with those we wish to "sell." If you're dealing with the banker, then it means the financial skill to explain that balance sheet while lending credibility to your bottom

# A Method for Appraising Cable Television Systems

What is your cable system worth?

What is your unbuilt franchise worth?

What should you expect to pay when buying a system?

Here is experienced perspective on how to find answers to these important questions.

Often a need arises to set a value on a cable television property at some stage in its development. The method suggested here may be used to appraise a raw franchise, a partially completed system or a mature system. By substituting actual values for projected values, the method is thus applicable for appraising systems at various stages in their development to maturity.

This appraisal method is not concerned with selecting from alternatives. Rather, it places on a property the value that the property would most likely bring in the open marketplace.

The franchise, pole attachment agreement, head-end and office leases, and any other contracts are first reviewed to determine if they are in any way unusual. Generally, if the system is already in operation, they will present no significant problems. Variations in franchise taxes, pole and other rentals, and other contracted costs will be evaluated when the cost structure of the system is built up, as shown below.

Bond requirements may be considered as decreasing the value of the property if they are excessive in relation to comparable franchises. This decrease

would be the same amount as the excess.

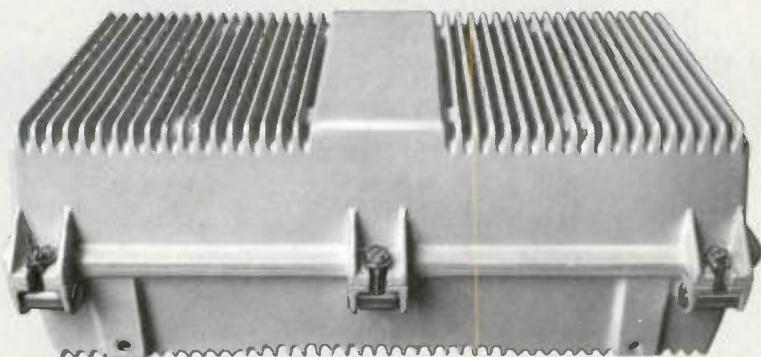
The next step consists of making financial projec-

## ABOUT THE AUTHORS

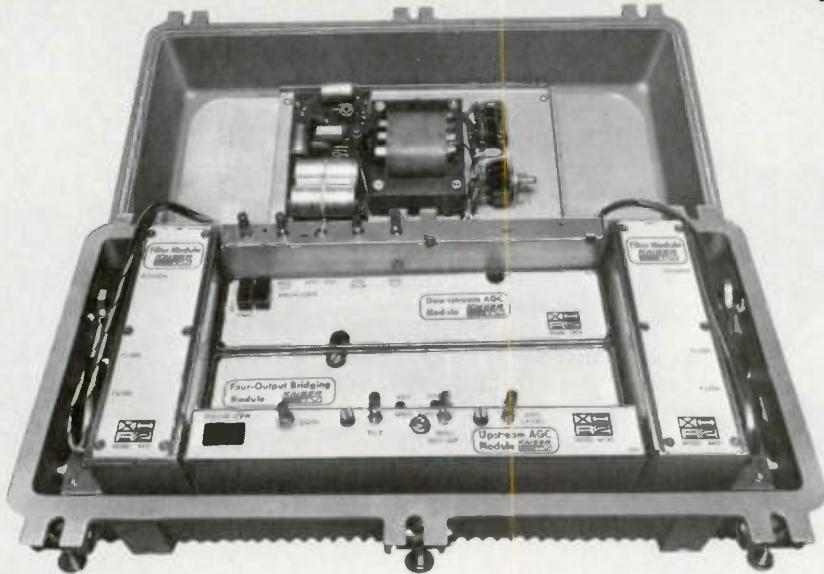
James A. Hirshfield, Jr. is president of Crystal Cablevision, Inc., Seattle. The system serves 23,000 subscribers. Prior to entry into the cable television industry in 1966, he was with the Corporate Planning Department of the Bank of California in San Francisco. Since 1966 Jim has appraised nearly a dozen CATV systems and franchises in the Northwest. His first two years as a cableman was spent as vice president of Telecable, Inc., Seattle.



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



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tions for the property. This can be done whether the property is a raw franchise, a partially completed system, or a mature system. The financial projection involves three basic interrelated areas . . . capital expenditures, revenues and expenses.

Capital expenditures are used in determining the revenues and costs. Additional capital expenditures needed must also be subtracted from total value to establish net value. Capital expenditures for a raw franchise would consist of:

1. Number of cable-miles times per-mile cost.
2. Head-end costs.
3. Initial sales and installation costs.
4. Start-up loss.
5. Other special costs.

Another key variable to be determined is number of potential customers, which may be obtained either for the system as a whole or by multiplying a per-mile estimate by the number of miles. For an existing system, some or all of the above expenditures would already be invested.

Revenues are projected by applying a penetration factor to the number of potential customers. This factor is best obtained by looking to properties comparable in off-air signal quality and demographics, and applying an average penetration figure from these properties to the appraisal subject.

In appraising an existing system, present penetration in that system is often the best guide to use, although comparables may again be useful if it is felt, for various reasons, that system penetration is not what it should be. The monthly charge per subscriber is, of course, an integral part of the penetration analysis.

Table I: Typical Expense Categories

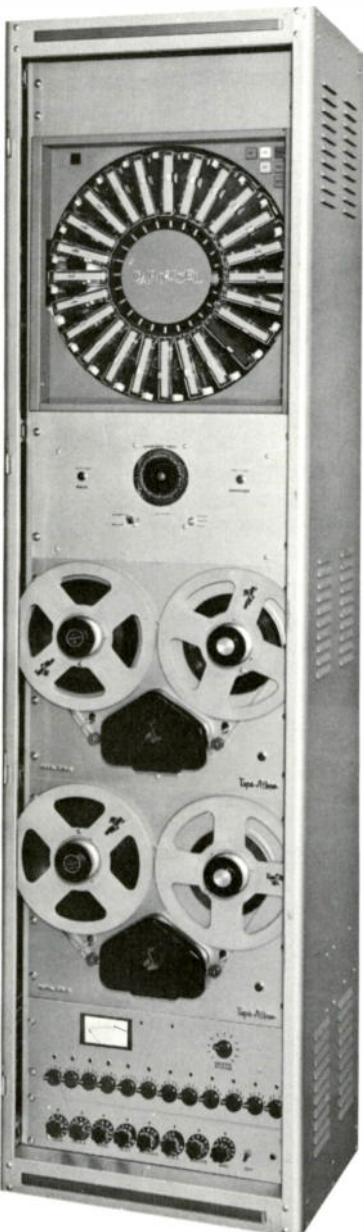
Plant Labor . . . . .	.....
Repair Materials . . . . .	.....
Pole Rents . . . . .	.....
Power . . . . .	.....
Head-end Lease . . . . .	.....
Truck Expense . . . . .	.....
Office Salary . . . . .	.....
Billing Expense . . . . .	.....
Telephone . . . . .	.....
Insurance . . . . .	.....
Bonds . . . . .	.....
Property Tax . . . . .	.....
Franchise Tax . . . . .	.....
Other Taxes . . . . .	.....
Sales . . . . .	.....
Miscellaneous Expense . . . . .	.....

The above method assumes a monthly rate similar to those in the comparable systems. The number of customers times the average monthly rate gives the monthly line revenue. Revenue from other sources should be added only if highly certain. (Or an "expected value" approach can be used if desired).

Expenses are projected based on what it should cost to run a system. The most difficult variable to determine is the number of employees. Other

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expenses should be easily derived. Table I is a listing of typical expense categories.

Subtraction of expense from revenue yields projected operating cash flow. This is the figure on which cable systems, and many other businesses are valued. The value of the property is obtained by placing a multiple on cash flow. In appraising the value of a system in the open market, the multiple should be the average multiple of similar properties in the open market.

Table II: Appraisal Method

1. Review Franchise & Other Documents
2. Make Financial Projections:
  - a. Capital Expenditures
  - b. Revenues\*
  - c. Expenses
3. Determine Operating Cash Flow Multiple\*
4. Obtain Gross Value (Projected Operating Cash Flow X Multiple)
5. Obtain Net Value  
Gross Value Less:
  - a. Net Obligations to other parties
  - b. Additional investment required

\*Obtained through use of comparables.

This author has observed cable systems that have been appraised using multiples running as low as five and as high as twenty-four times cash flow. However, mature systems are generally appraised at eight to ten times cash flow. This illustrates why it is very important to select similar or "comparable" properties in determining the appropriate multiple to use.

The appraiser should analyze three or more similar properties which have been recently sold, or by other means have had an arm's length value set on them... and determine the multiple at which they were valued. It is, of course, necessary to determine both the cash flow and the gross sales price of each comparable property to arrive at the cash flow multiple. This multiple can then be applied to the subject property's projected cash flow, and a value can thus be determined for that property.

The gross value thus obtained must then be reduced to net value by subtracting present obligations to others, and future investment required to achieve the projections. The net value derived is the value of the property as it is presently constituted. Table II is a listing of the total appraisal process.

The above method is based on appraising a system's value on the open market. Discounted cash flow projections or weighting factors may be used when analyzing a property for purchase, where the opportunity rate or weighting factors express the purchaser's criteria.

When appraising the open market value of a property, however, use of "comparables" to determine expected penetration and cash flow multiples is a simple and acceptable solution to the appraisal problem.

TC

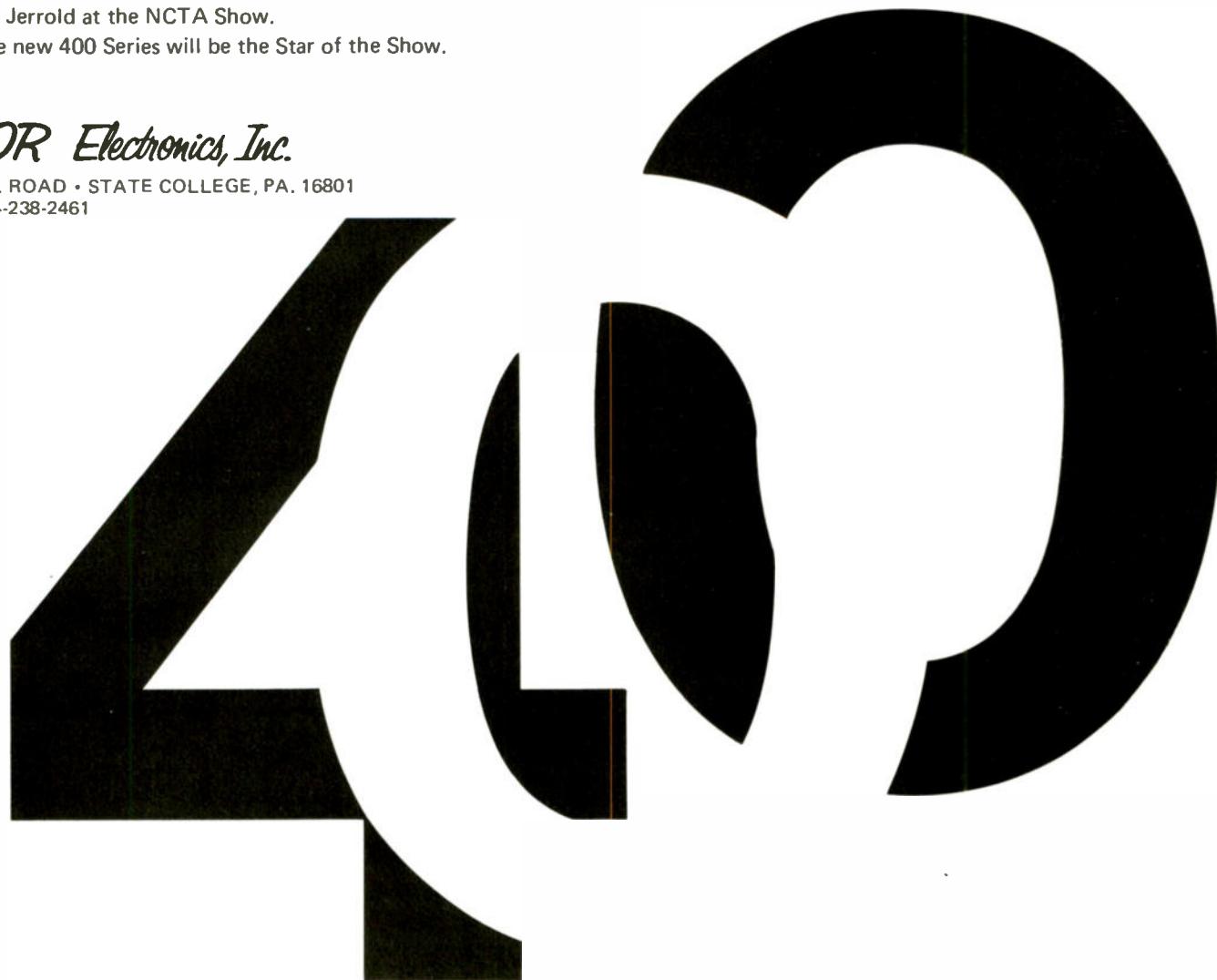
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# **2150-2160 MHz: Competition for the Cable?**

A recently opened broadcast band could open the way for others to compete with cable operators for special private channel services . . . or it could be used by cablemen to get extra-CATV services started now, for future transfer to cable.

**C**able operators are constantly reminded that non-entertainment services are likely to play a major role in their future cable business.

Security services, data transmission, educational programming, all-commercial channels (shopping from home), medical channels, private video links for training, entertainment, sporting events, etc. . . . these services and many more are definite near-future possibilities for the broadband communications entrepreneur.

## **2150 MHz—What Is It For?**

Nearly a year ago, the FCC clarified its rules to permit television transmission in a new band. That band, 2150 to 2160 MHz, was opened up under FCC Memorandum Opinion and Order 70-819, number 49931.

If you see yourself purely as "a cableman," you may be saying "So what?" If you are considering the various ancillary services that have been proposed, you may find a new type of communicator in competition with you . . . that's why the 2150 MHz band should be of interest.

The form of television communications authorized

for 2150 MHz could prove to be a viable alternative transmission path for many of the one-way video services mentioned above. Briefly, the relatively new authorization could be described as:

**An Omnidirectional, Point-to-Point, Closed-Circuit Common Carrier TV and Data Transmission Service.**

It is not often that a new type of communications service is introduced, and when this happens, it takes quite a while to understand its meaning and potential uses. This is especially true when the description of the new service contains contradictory terms and upsets accepted definitions of such common words as "television," "closed circuit," and "data."

Let's expand on the above description by looking at its parts. Normally, "point-to-point" microwave uses highly directional antennas, and transmits a radio beam from one station to the next. This seems to be in conflict with the concept of "omnidirectional." Yet, this is the terminology used by the FCC to describe the new service.

After some deliberation, one must conclude that it means "an infinite number of individual point-to-point microwave beams emanating from a transmitting antenna having a 360 degree horizontal pattern." The Rules for this service also specify that directional antennas be used to receive the omnidirectional transmissions.

# "I Agree..."

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March 10, 1971

Mr. I. A. Faye, Vice President  
AEL Communications Corporation  
P.O. Box 507  
Lansdale, Pa. 19446

Dear Irv:

This is just a short note of thanks to let you know how happy we are with the performance of the AEL Superband amplifiers and converters in the CATV system that AEL designed and installed. Its reliability is remarkable and in the findings of Walter Wydro, our CATV Consultant who recently inspected it, the system is "as good and better than other systems using the latest push pull amplifiers".

During the past two winter months (much snow, rain, abrupt temperature changes) we have not had to put a screwdriver to the system and it has held levels within "spec" and has ticked like a clock, putting out beautiful pictures, thus giving us a chance to devote most of our energies to hooking up customers.

Without a doubt the Coatesville system is a success and is everything you and your people told us it would be at the start of our association. We now deliver 16 channels to the homes with a single cable.

Good luck with Superband. I look forward to seeing you soon.

Sincerely,

*Louis N. Seltzer*  
Louis N. Seltzer  
President



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What about that phrase "closed-circuit"? As applied to uses of the 2150-2160 MHz band, it means non-broadcast or private. The term stressed by the FCC is "non-broadcast," which takes the service out from under the voluminous do's and don'ts of the broadcast TV and CATV industry, and places it in the category of a telephone network or a microwave system available to the general public at specified rates.

Even though it is an omnidirectional service, it is *not* "broadcasting," but is a multitude of individual closed-circuits from a central point to one or more individual remote subscribers or customers.

The phrase "common carrier," as applied to communications and defined by the FCC, is "Any person engaged in rendering communication service for hire to the public."

"Television," again as defined by the FCC, is "A system of telecommunication for transmission of transient images of fixed or moving objects." There are many different kinds of television and many ways to transmit the pictures and sound. The Rules for standard broadcast stations spell out exactly how to transmit television so that it may be received by a standard TV set.

The Rules for 2150-2160 MHz do not include such information or limitations, so variations such as high resolution, slow-scan, or 3-D are possible. Other techniques, such as scrambling, special coding signals for remote control purposes, or non-video data transmission for print-out or visual displays are also

possible. While the most popular use of 2150 MHz may well be standard TV transmission, it is not limited to this format.

"Data" is normally thought of as a series of pulses passing between computers. As applied to 2150 MHz, the type of data being "data-cast" could be pictures, or it could be stock reports. Since the signals from any one station can cover a radius of about 20 miles, the logical use would be for high speed information needed by many people on a one-way basis, and on a time-shared basis.

## Varian Prompted the FCC Action

The FCC decision was prompted by a "Petition for Declaratory Ruling," filed by Varian Associates' Micro-Link Products, through the Washington law firm of Wilner, Scheiner, & Greeley. It resulted in removing a previous restriction on the occupied bandwidth, thus permitting full 10 MHz utilization of the channel.

The explosion, started by MCI in obtaining FCC approval for a common carrier microwave system between Chicago and St. Louis, has now resulted in over 1,700 applications to cover all major routes.

This is typical of what can happen when the FCC takes favorable action. In the case of 2150-2160 MHz, a similar action has occurred, and a comparable result could be expected. (Think of the CATV explosion that could take place if the FCC and/or

National Cablecasting Service (NCS) offers a 5 Star Service Network with programming produced and directed exclusively for your viewers. The service includes EOUVISION, COMMERCIAL, DATA PROCESSING, SHOPPING, and SOUND CHANNELS. NCS is designed to entice current subscribers and attract new ones, providing a profitable 'image' for cable operators.

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Administrative Office: NCS Bldg. East Tawas, Mich 48730	Chicago Regional Office: 2400 E. Devon Suite 219 Des Plaines, Ill. 60018	Detroit Regional Office: 4120 W. Maple Suite 107 Birmingham, Mich 48010
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# CAN A HOLE IN THE WALL SAVE YOU \$9,000?

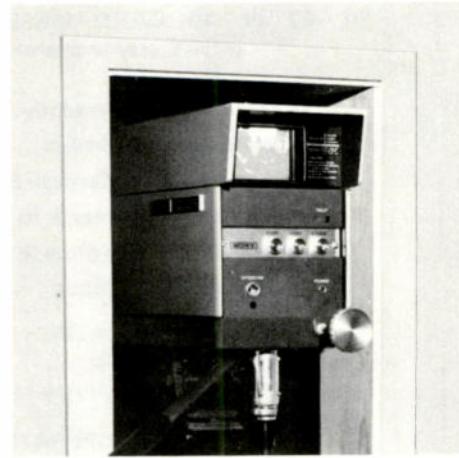
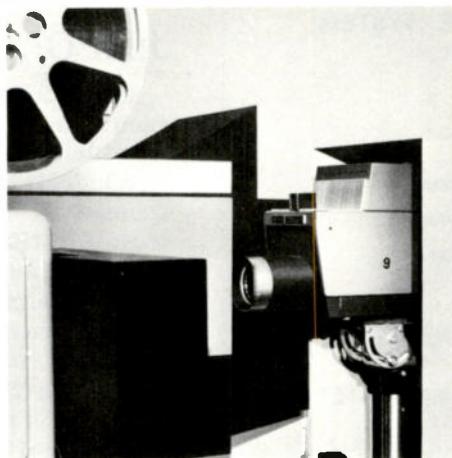
Paul Hancock at Cable Vision in Lewiston, Maine saved more than that. Part of the complete turnkey color system we designed for him included our Media-Plex system, the only non-critical film chain on the market. We saved Cable Vision the cost of a color camera by putting a hole in the control room wall so Paul could use the same camera for both live and film programming.

Then we saved him more money by making the entire system simple. He is generating seventy hours of color programming every week using non-technical operators. First-class programming that sells advertising.

This success is why Cable Vision and so many others are turning to A-V Systems for the design of local origination systems that work.

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Remote Control	Program Repeater Tape
Automatic	Manual

Ideally suited for integration with control centre or Head-End

**IT FITS ANY STANDARD 19" INSTRUMENT RACK!**  
and is ONLY 24 1/4" high. Completely Enclosed!

Camera: 2:1 - Ext. Sync Supplied

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Congress would take favorable action on cable-related issues.)

Already, fourteen applications have been filed for FCC permits to operate video services at 2150 MHz. A typical application of the 2150-2160 band has been filed by Chicago Communication Service, Inc. The firm proposes to operate a common carrier service that "will provide service to all who need it."

The Chicago company expects to sell its video transmission services for: (1) instructional training in industry, (2) continuing professional education for medical people, (3) educational services for private and public schools that cannot afford to finance their own ITFS systems, (4) municipal government services, and (5) convention-related services. Transmission will be in color or B/W . . . as required by the user.

Proposed rates for video only will run \$50 per hour or \$30 per half hour. If both video and sound are used, it will cost \$75 per hour or \$40 for a half hour. The firm expects to amortize its equipment investment over seven years based on these rates. CCSI notes that Bell's interstate video charges run \$12 a mile per day, or \$80 a mile per month, plus approximately \$200 for initial hook-up.

The 2150 MHz transmission system is not cheap. Each receiving installation (exclusive of the TV sets) will cost about \$1,500. A basic transmitter produced by the Varian Micro-Link Company runs about \$30,000. Then there is the transmitter site, tower, studio and related equipment. But then, no electronic communications system is cheap.

At least there are no subscriber fees, franchise fees, pole rentals, etc. At present there is a \$30 FCC filing fee.

## Just One Per Community

Only one 2150 MHz service will be available in each community or metropolitan area. Will cablemen eventually compete with the people who operate 2150 MHz services? Or, will cablemen recognize themselves as communications entrepreneurs and look into the possibilities of this approach to serving their communities?

For the most part, the numerous possible ancillary video services will be better when offered via cable. So, when coaxial cable is running by each home, each school, each business and industry, etc; cablemen will likely be in a most favorable position to offer services flexibly and economically.

However, today very few communities have a high penetration with the cable. And, most metropolitan areas have little or no CATV coaxial cable. Possibly cablemen should consider early institution of limited one-way services via 2150 MHz . . . to be replaced at a later date with the same service via coax.

Cablemen should be aware of the problems of late entry into the video or broadband services field . . . after someone else has a head start on them in the same community. Most cable operators are quite vulnerable to this type of "overbuild" since they have done little or no market research on the viability of non-entertainment services for their community. **TVC**

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when  
these two heads  
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Furthermore, both units use plug-in channel tuners, allowing rapid changes even with power applied.

In so many ways you're headed for success with Modulator 4400 and Demodulator 4500. Call or write for complete details and pricing. Telemet Company, Amityville, New York 11701, (516) 541-3600.



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# How To Get Publicity For Your Cable System

The techniques behind effective publicity efforts are important to any person or firm that wishes to grow. Proper use of this communications "tool" is particularly vital in the cable industry as it contends with numerous uncontrollable influences and seeks to grow within the context of under-informed publics.

By Andrew S. Conklin

There are just two basic ways you can promote your CATV operation: paid advertising, or "free" publicity. (Publicity is not really free, since it does involve effort and material costs, but it is free in the sense that you do not pay media line rates to run your material.)

Advertising is necessary and useful; with it you can control where, when, and how your commercial message appears.

But publicity opportunities . . . often overlooked in the hectic daily activities of a busy CATV operation . . . have considerable benefits for you. If you're not utilizing them you're weakening your total marketing effort.

## Benefits of Publicity

In spite of ever-increasing postage and printing costs, publicity is cheaper than advertising. With just a very limited budget you should be able to get coverage in all local media: daily and weekly newspapers, magazines, radio, TV, and other special publications edited for local readership.

Additionally, with very little extra effort you should be able to get feature article coverage in national business and trade magazines (such as *TVC* and *CATV Newsweekly*). While this latter type of

publicity may not result in any direct hook-ups, it will bolster your business image, and when it comes to recruiting top people for your expanding operation, favorable publicity is hard to beat as a builder of confidence.

The key benefit of publicity is the inherent, implied third party endorsement. When you run an ad in a local paper, readers realize that you can't help but be biased. However, when an article appears about you (supposedly or actually written by an editor or reporter) readers can't help but be impressed with the facts stated.

A supplemental benefit of publicity is that the printed material makes excellent promotion reprints for your hard-selling marketing efforts. Again, prospects receiving a brochure from you view it with considerable suspicion. But, when they receive a reprint of an article on your operation which appeared in a national business paper, they tend to be duly impressed.

## Four Major Types of Publicity

You'll make your publicity job far more effective if you prepare your material according to the major types used and accepted by all editors, whether they work for a local giveaway sheet or the leading

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- Design a profitable 500 to 1,000 subscriber cable television system?
- Design a complete, quality color film chain for under \$10,000?
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Jack A. Rickel Associates are the masters at combining design and quality with economics. We know how to design quality systems at low cost . . . systems that can be expanded to meet tomorrow's requirements. Our experience will allow you to avoid those hidden, profit-killing costs.

Let us show you that this is possible. See us at BOOTH #6 at the NCTA Convention. Or call us today!

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500 Davis Building/1629 K Street/Washington, DC 20006  
Phone: 202/296-1644

national business newspaper.

News releases. The news release is most often a one page, concise summary of facts concerning one news item. You can use it for everything from new employee announcements to reports of major equipment or even system acquisitions.

Short articles. These expand on the basic release, and normally will be from 3 to 5 or 6 typed pages in length. Again it should deal with only one basic news item. Most often you will prepare it only on the specific request of an editor, such requests often being generated by an initial news release which has piqued an editor's interest.

Feature articles. Features can run from 4 to 10 pages (sometimes more) in length. Ordinarily it would be created by a writer for a specific medium, although if you have the talent on staff there is no reason why you couldn't provide it.

Features should be done at a specific editor's request, and may result from interest generated by a news release, a chance meeting with an editor at a display or industry conference, or because you have queried the editor and asked if he would be interested in such an article. It can cover anything from one major news item to a complete background story on your operation.

Round-up articles. Here your efforts will be combined with those of other businesses to complete a total picture of some aspect of your industry. A national trade magazine, for example, might ask you

to prepare some material for use in an article on how subscribers' complaints are dealt with; your effort would show the situation in your geographical part of the country. Or a local newspaper might want to run a round-up article on the communications business locally, and you would be asked to prepare the material showing the CATV picture.

The editor will tell you how much material he wants. While many round-ups are initiated by editors, there is no reason why an intelligent publicity approach could not first suggest the idea to an editor, then offer to handle some aspect of it.

## Use Pictures If Possible

While a photo may not actually equal 1,000 words . . . in publicity, pictures do help. They can often swing an editor to use material he otherwise wouldn't. The use of photos will usually increase the amount of editorial space you get. Follow these simple tips to maximize your photos' effectiveness.

Provide 8 inch by 10 inch glossy (smooth or shiny surface for better reproduction) photos in black and white, unless specifically asked for color pictures. Most media don't have the budgets necessary to run as many color pictures as they would like.

Unless you have a really good photographer on staff, hire a professional to take your pictures. A dollar saved here usually means the entire effort is wasted.

Provide complete captions for each picture, including names, titles, addresses, and what the picture is about. Don't write on the back of the pictures as it may damage the surface; number each picture and on a sheet of paper, list details opposite the appropriate number.

If the material is mailed, use a strong envelope, enclose a backing sheet so the pictures won't bend, and mark on the envelope: "Photos — Do Not Fold or Bend."

## How To Prepare Publicity Material

Well presented material is at least half the battle. Use these pointers to insure that your material will be well received:

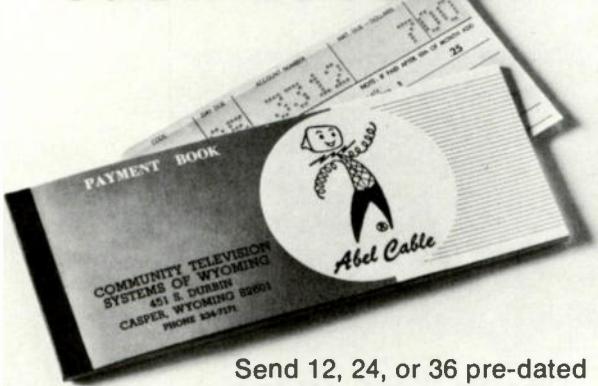
Stick to the facts. Let the editor editorialize. Don't worry about a professional writing job; as long as you have the important points down (who, what, where, when, why, and how) the editor will be able to rearrange as necessary.

Type all material, on one side of standard typing paper, double spaced. Number pages consecutively.

Make sure all material is understandable. What is clear to you may not necessarily be clear to an editor across town or 3,000 miles away. If you have any doubts, give your material to your newest staff member. If he or she can understand it, the chances are good that an editor will also be able to grasp it.

Include all relevant data. While verbosity is not needed, it's safer to include too much than too little. In the former case the editor can cut as necessary, but

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there's no way he can expand the latter without phoning or writing you, and time problems or lack of interest may prohibit that.

Include a phone number and individual's name who can be contacted if clarification or more data is needed. Make sure it is someone who has both the knowledge and authority to give out further information.

Lastly, be sure to include a date on your release . . . so the editor will know if it was delayed in the mails, etc. Often, editors save releases to use in later publications. If the release bears no date, he may throw it out simply because he doesn't know how old the information is.

## Slanting for Specific Editors

This is just common sense. You wouldn't invite one of your linemen to a dinner for your board of directors, and you shouldn't send an editor materials that are not appropriate for him.

For example, the local newspaper probably wouldn't be interested in a highly technical report on how you produce locally generated programs (a national trade magazine probably would be).

Conversely, don't send to a national business magazine a folksy article on the unusual predicaments some of your installers find themselves in (but your local paper might love this).

Before sending out a batch of releases or short articles, simply ask yourself if the editors have used that kind of material in the past. If the answer is yes, or even probably, go ahead and mail.

Selective distribution of your publicity materials also has two tangible benefits. First, you cut down on your printing and mailing costs. Second, you build a good reputation with editors for sending only usable material. This is very important.

Getting your material into various media is your biggest reward, but don't stop there. Merchandise the publicity exposure you have received . . . to increase its impact.

Mail out reprints to key customers, suppliers, bankers, and stockholders. They all like to know they're associated with a successful company.

Use appropriate reprints to mail out to subscribers along with billing statements. An article, for example, on the complex and expensive equipment you need to provide good service would make that rental fee look like a real bargain.

Use attractive reprints as posters for window and internal office displays. You're selling a pretty intangible service, and anything you can use to make it more real to subscribers and employees is useful.

Give selected reprints to all employees. They will be able to use them to show friends, family, and relatives exactly what "their" company does, and every employee likes to work for a firm which has received some public (i.e. editorial) recognition.

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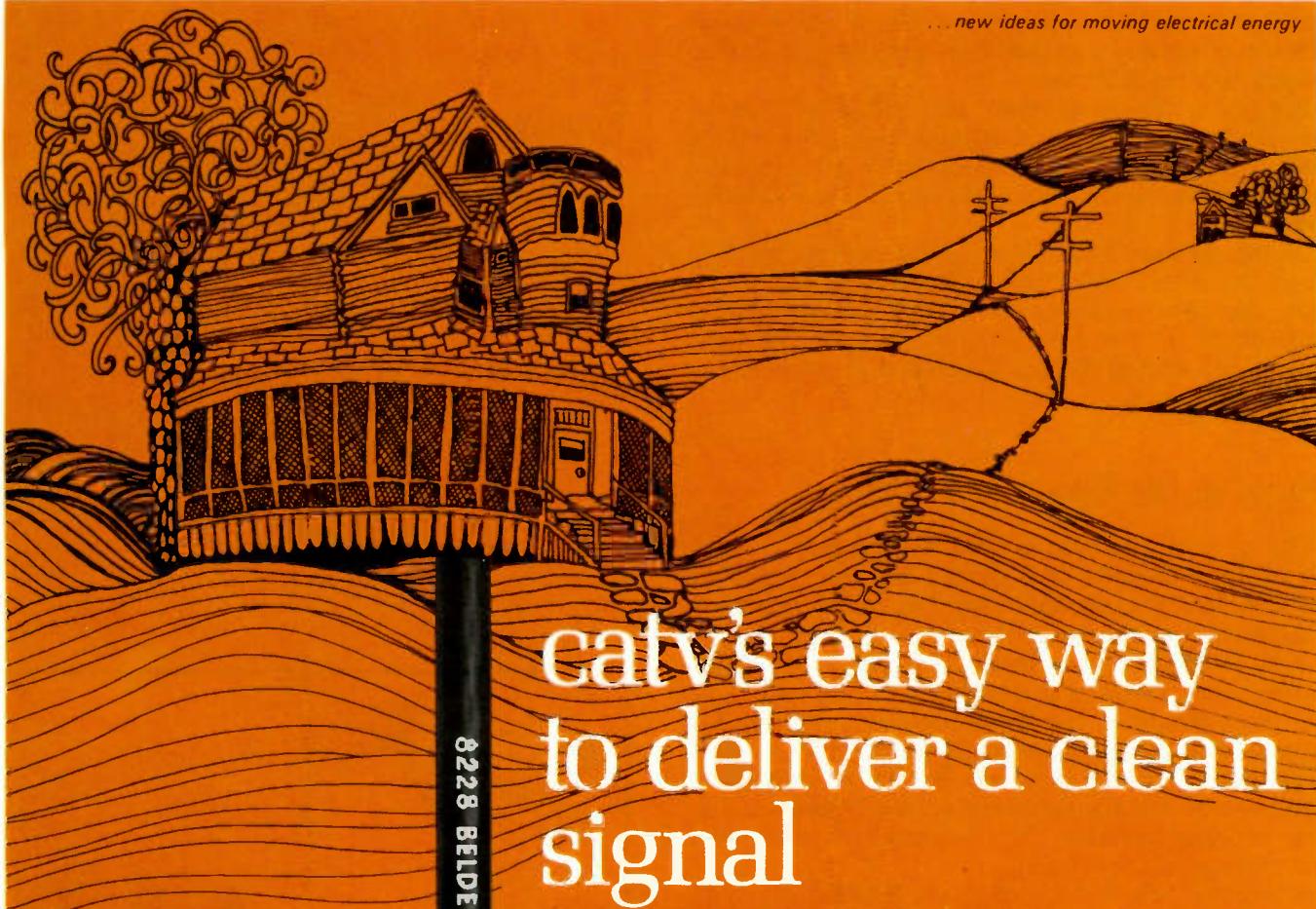
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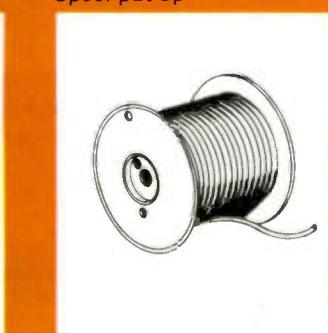
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50	1.5	2.4	2.1	1.0
100	2.1	3.4	2.9	1.5
200	3.1	4.9	4.1	2.2
300	3.8	6.1	5.1	2.8
400	4.5	7.1	5.8	3.3
500	5.0	7.9	6.5	3.7
600	5.5	8.9	7.1	4.1
700	6.0	9.6	7.7	4.5
800	6.5	10.3	8.2	4.9
900	6.9	11.1	8.7	5.2

# Illinois System Adds Emergency Alert System

A \$4,000 investment by Jerrold system (plus another \$1,000 from City and State Civil Defense funds) is designed to warn subscribers of tornados and other emergencies.

**S**treator TV Cable recently "threw the switch" to institute operation of an Emergency Audio Alert System.

The need for an Emergency alert system for Streator came about through contacts made by Civil Defense and City officials. Streator is located in a tornado prone area. Over 90% of the homes are connected to the cable.

The situation seemingly lent itself to a "perfect marriage" between the cable company and the city. The special equipment required was designed and tested at the Jerrold Electronics Corp. laboratory prior to installation.

This specially designed system is "the first of its type in a CATV operation," according to Dave Brody, Vice President of Jerrold Electronics.

Whenever the Civil Defense, City Police, or City Fire Department receive word of an impending disaster, or any situation wherein lives may be endangered, a special restricted "hot line" telephone is energized.

This is accomplished with a separate telephone at each of the three offices mentioned above. The phones are interconnected by a bridge lifter and in turn connected through a line to the system's head-end.

It then passes through process-



Civil Defense Director, Leo Wilkinson, Streator, Ill., tests the new Emergency Audio Alert System installed by Jerrold in its Streator cable system.

ing equipment and is delivered to the subscriber's home via cable. The message will over-ride programming on all channels carried by the cable system.

The video and audio portions of the program are deleted by this procedure. An unmodulated CW carrier, generated by a special device at video frequency on each channel, causes the blanking of the TV screen. A modulated audio carrier provides the source to broadcast the emergency message.

Lifting the special telephone

receiver activates the equipment. The viewer is alerted that an emergency exists and the details are explained simultaneously. Upon completion of the message, the telephone is replaced and normal programming is restored.

Equipment used in the emergency system consists of two (2) Jerrold intermediate frequency switchers (model IFS), a specially designed audio-trol unit (Jerrold model AT-IF), various directional couplers with associated paging and switching relays.



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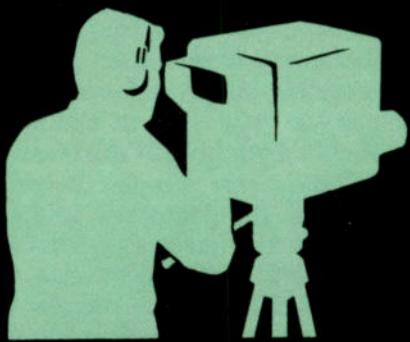
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# STUDIO

## 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 1.

By Jack A. Rickel  
*Communications Consultant*

You can buy a zoom lens with a range of 12 mm to 120 mm and you can get one 15 mm to 180 mm. One has a maximum aperture of f/2.2, the other f/2.8. How do you decide which better suits your needs?

Lenses come in many sizes, shapes, and price ranges. They may have a single piece of glass (one element). Or, they may have a dozen or more different elements mechanically linked so as to move back and forth in complex mathematical relationships.

In any case the object is to focus light rays onto the light-sensitive face of a camera tube. This is the same as with a film

camera. In fact, most television cameras with one-inch vidicon tubes can use the same lenses as used on 16 mm motion picture cameras. The main differences in lenses, intended for one or the other camera, are external. Television camera lenses are more likely to provide for remote mechanical or servo control.

### The Zoom Lens

The most popular lens for studio cameras now is the zoom (or variable focal length) lens. This replaces a rotating turret and three or four fixed lenses. The zoom

lens is not all that new, but has only recently been perfected and reduced in cost to where it is a practical alternative to a set of fixed lenses.

What makes the zoom lens so popular is that it can be smoothly varied from wide-angle to telephoto, while the image stays in focus. To achieve the equivalent effect with a fixed lens, the cameraman would have to dolly his camera toward or away from the subject while constantly readjusting his focus and keeping the image centered and steady. All this requires practice, a smooth floor, and someone to clear away cables and other obstructions.



This photo shows Cohu's model 2305 exposed zoom lens. Zoom range is 20mm to 80mm. Maximum aperture is f/2.5. Price is \$1,440.

To understand focal length, let us start with a simple fixed focal length lens. Focal length is sometimes given in inches but the more common measure is the millimeter. For the one-inch camera tube (or 16 mm film), 25 mm or 1 inch is the so-called *normal* lens.

Thus the relative sizes of foreground and background objects appears to be about the same as for the human eye viewing the same scene from the same place as the camera. Shorter focal lengths are commonly called *wide-angle*

and longer ones, *telephoto*.

Figure 1 shows a camera focused on a subject at some distance from the lens. The inverted image is focused on the camera tube face at the nominal focal length behind the lens.

From this simple diagram we can see the geometric relation of subject and image size. That is, the ratio of the subject size to its distance from the camera is the same as the ratio of image size to focal length. The formula is good enough for our purposes, though it is too simple for precise special work such as extreme close-ups and setting up film chain optics.

Take the example of a 6 foot person at 24 feet from the camera. The ratio is 1:4. For our normal 1-inch focal length lens, the image must be 1/4 of the focal length, or 1/4-inch high. If we went to a 4-inch (100 mm) lens the image would be four times larger, or one inch high, which would give the *telephoto effect*. A wide-angle, 1/2 inch (12 mm) lens would reduce the image of our six-footer to 1/8 inch.

What is important, however, is how this relates to our final picture. Figure 2 shows the face of a 1-inch camera tube (vidicon or plumbicon). For our purposes we will use the part of the scanned area which is actually seen on home television sets (the "safe area"). And if your math is a bit rusty, the easiest thing is to convert everything to inches, and round off long numbers, since we do not need great precision.

To stay within the safe area, the image height is just under 1/3 inch. Of course, the same calculations also apply to subject and image width, where our practical limit is 0.4 inch. In the example, our 6-footer produced a 1/4 inch high image with the normal lens. The picture would thus show his full height, with headroom.

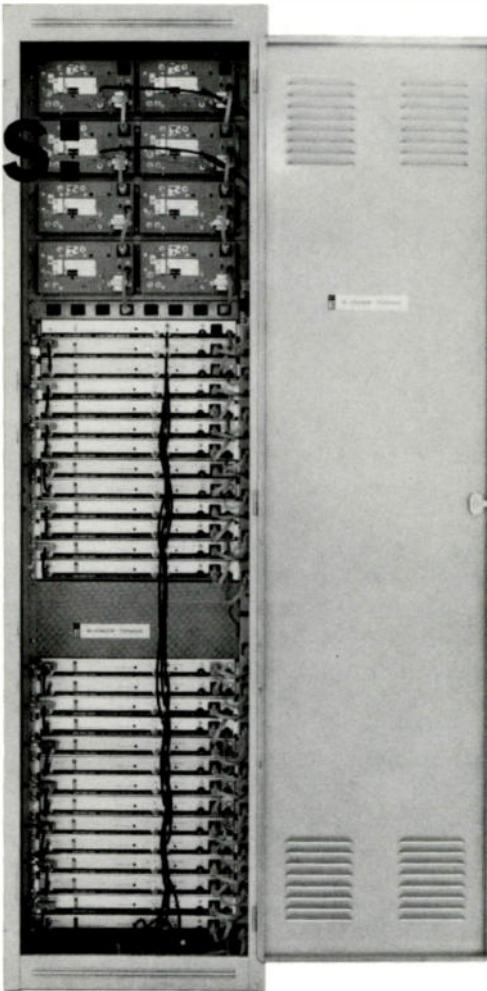
A good practical example is in selecting a zoom lens for a camera which we plan to use *both* for outdoor sports and in our small studio. The subject is now a football player. The camera is by the fifty yard line, and we want a full picture of him as he crosses the goal line, about 150 feet distant. Using the same image height of

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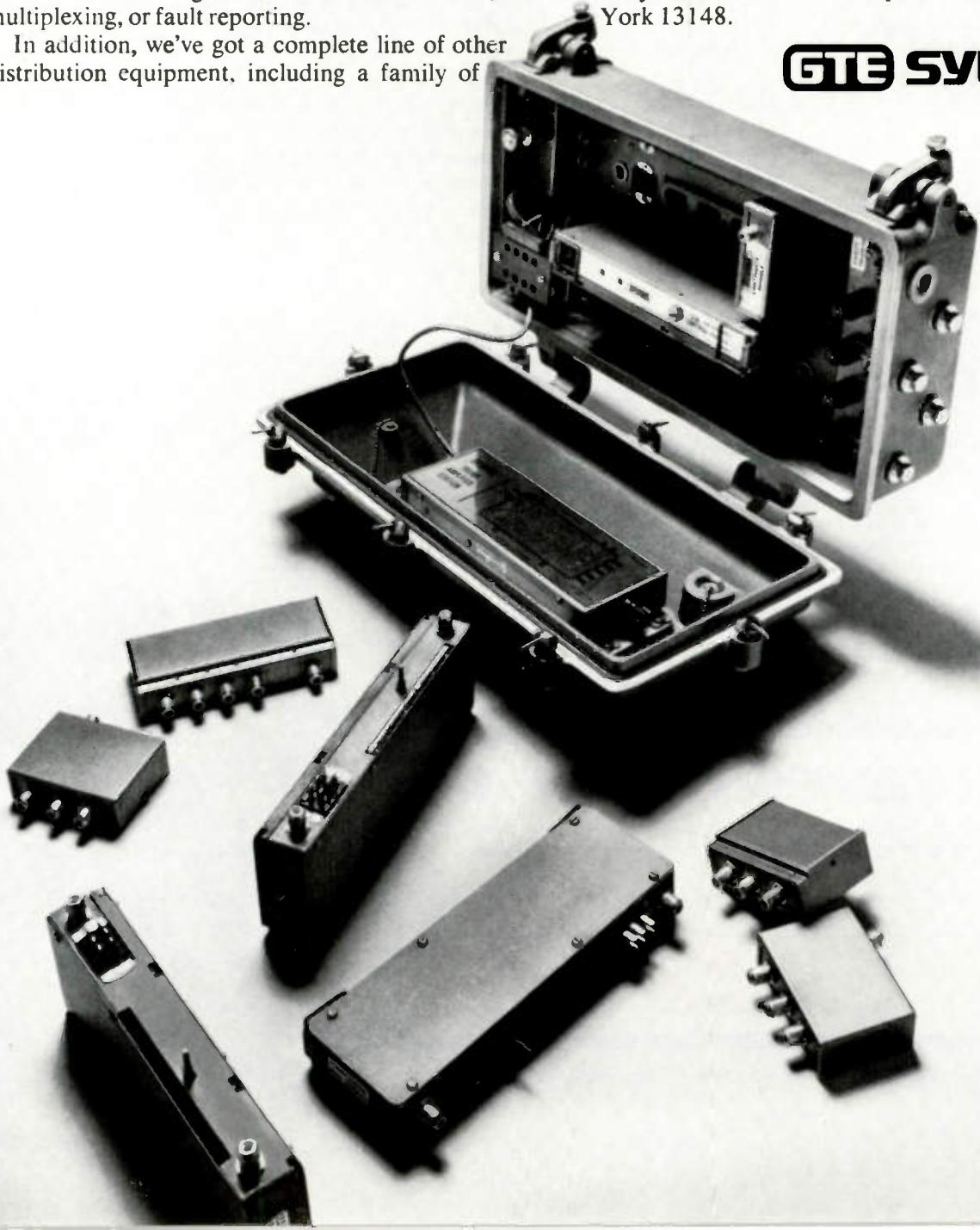
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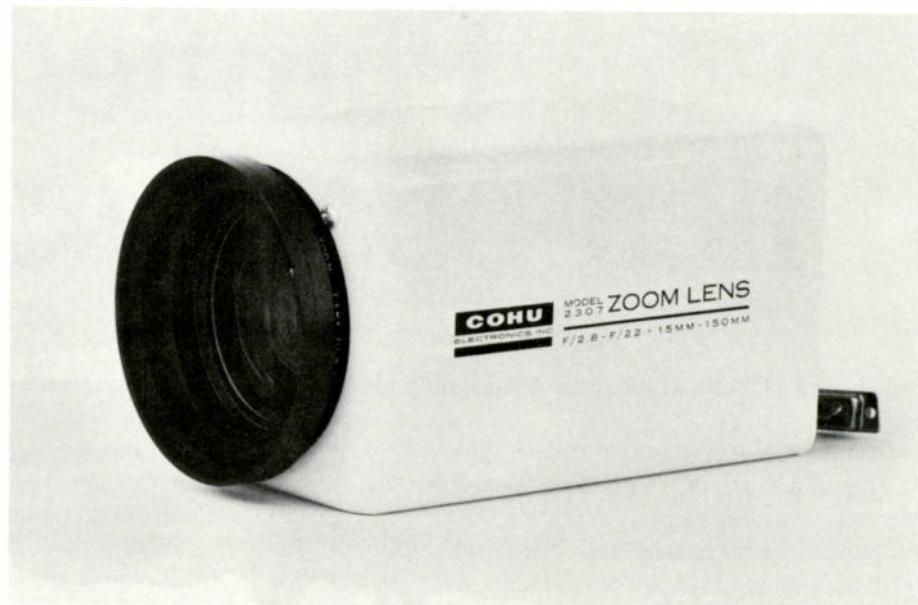
1/3 inch we find that our focal length must be about 7 inches (180 mm).

Moving into the studio we have a maximum of only 12 feet from camera lens to the middle of our set. To show our subject from cleats to helmet, our focal length must be about 6/10 inch (15 mm). Our required zoom range, therefore, is 15 mm to 180 mm, sometimes shown at 12 x 15. A lens of this range is available.

Some other typical ranges include 25 mm to 100 mm and 16.5 mm to 95 mm and price is roughly a factor of range. Since lenses are expensive, a good compromise for a two camera system is to equip one with a wide range zoom and the other with a zoom of more modest range and cost. Roughly figuring your requirements is quite painless.

## The f/Stop

The other major specification of a lens, as far as most buyers are concerned, is maximum effective



Showed here is the Cohu model 2307 exposed zoom lens. The unit features a 15mm to 150mm (10 to 1) focal length range and a maximum aperture of f/2.8. Price of the lens is \$2,050.

aperture or f/stop. This is a measure of the light gathering ability of a lens. That lenses sometime resemble funnels is no coincidence . . . the larger the end element of a lens, the more light it can collect.

Somewhere inside, between the various elements, there is an adjustable iris which varies the effective aperture of a lens. When this iris is fully open, the aperture is a measure of the lens size. Mathematically, the widest f/stop

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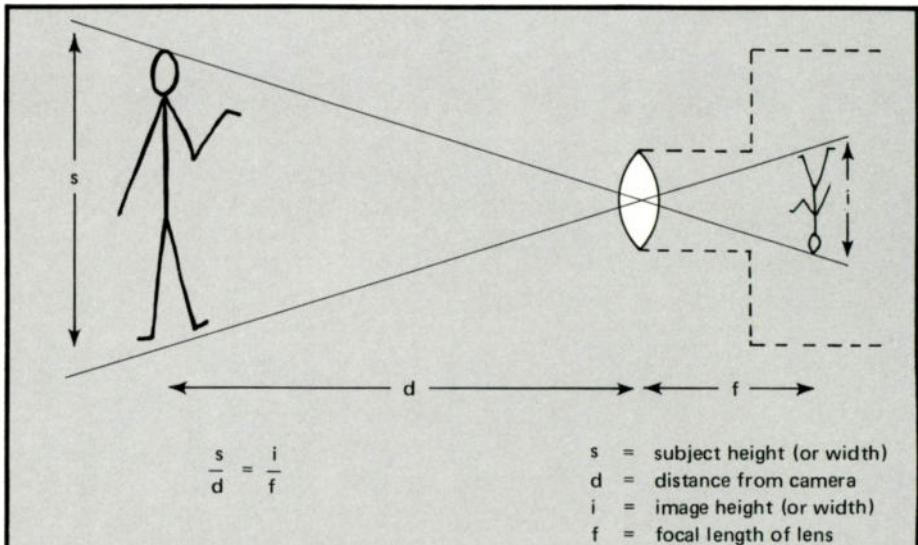


Figure 1: Relationship of subject and image size to lens focal length.

is the ratio of the focal length to the diameter. As the iris is closed the diameter effectively decreases which increases the ratio, and this is why a large opening corresponds to a small f/stop number. So let us step lightly around the theory, lest someone ask about the aperture of a variable focal length lens. This is one good reason why zoom lenses are not cheap!

Each element of a lens must be of high quality glass, ground to an exact curvature. They must be rigidly mounted in precise alignment and, in a zoom lens, some must move in relation to others. The larger an element, the more critical all of these factors are. That is why f/2.0 lenses could cost twice as much as f/2.8 lenses.

Even the f/stop is not an accurate indication of light gathering, because it does not actually measure anything but dimensions. A good f/2.5 lens might transmit as much light as an inexpensive lens rated at f/2.0. Better lenses have T/stops which are f/stop numbers calculated to compensate for light losses within the lens.

A quick, but telling, test of lens quality can be made in the studio with a standard test pattern. Get a picture from the camera and adjust optical focus with the iris wide open (where focus is most critical). Then stop the iris down to f/8 or f/11 and adjust the camera electronics for all-around best picture.

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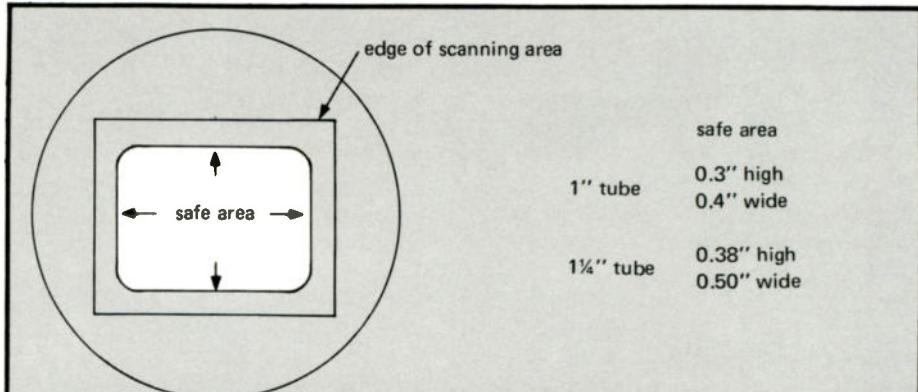
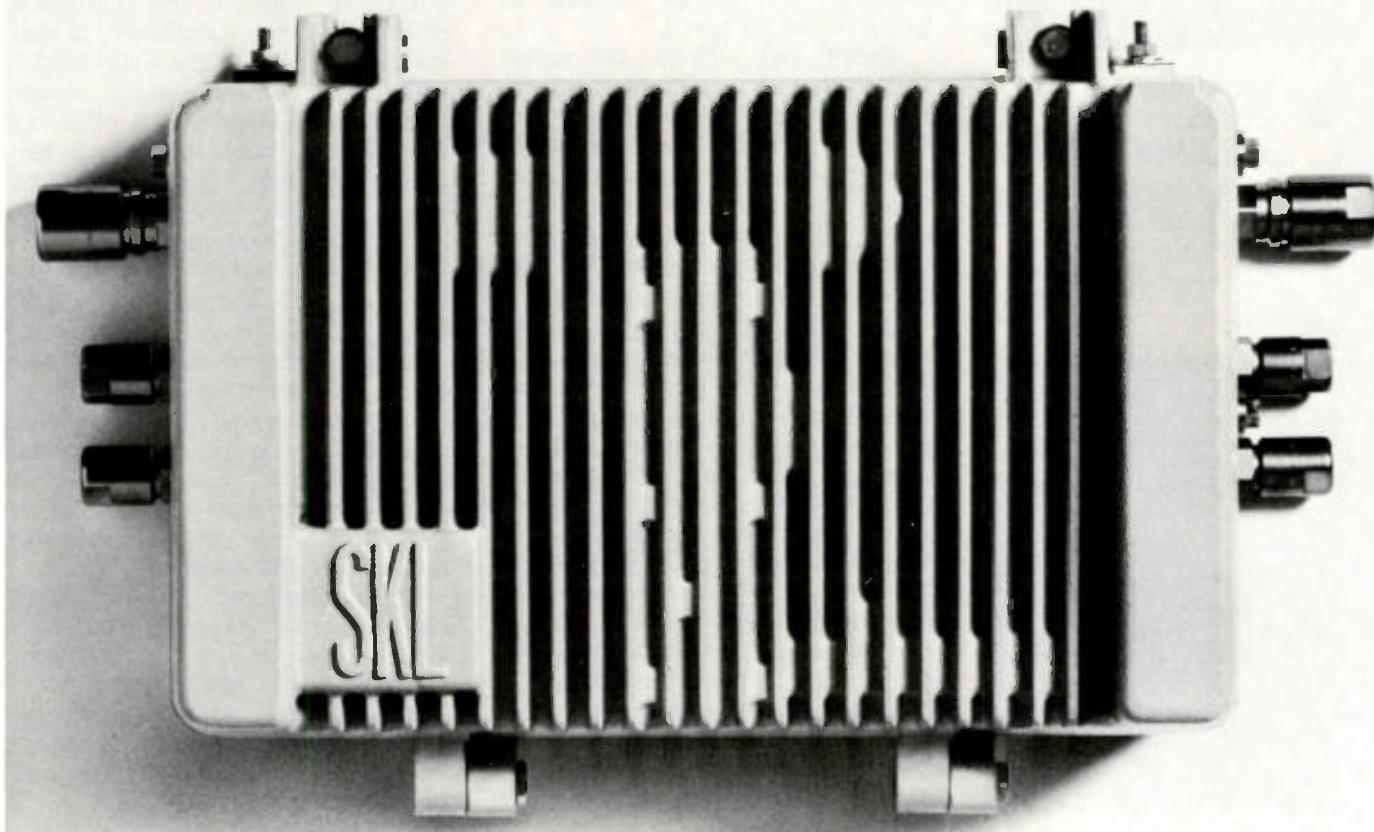


Figure 2: Size of optical image on face of camera tube. Useable size of image will be smaller if camera is adjusted to underscan the tube.

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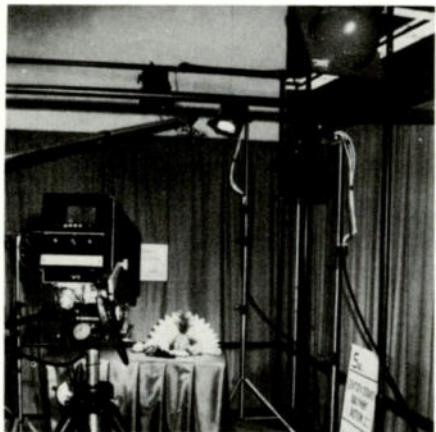


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the iris control on the lens, open the iris while evenly reducing the light level on the test pattern until you have the same brightness picture with the iris wide open. A top quality lens will result in only slight picture degradation, but a poor lens will show significant degradation.

For one thing, resolution will decrease, especially at the edges, which will also reduce contrast. The picture will not be as "sharp" as it was. The entire area of the lens is being used and imperfections in the glass or in grinding will have greater effect.

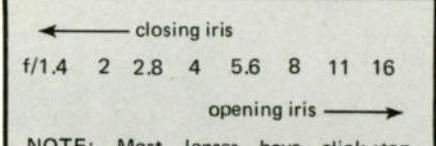
Another effect will be the tendency to *vignette*. The picture will be brighter in the center and dark around the edges. The waveform monitor trace will have an inverted "U" shape instead of being flat as it should.

These two effects are sometimes blamed on camera adjustment or an old camera tube. Cameras should never be adjusted or aligned with a lens wide open, unless you are setting up specifically for low light conditions. Then you may be able to compensate a bit for lens inadequacies.

On a brightly lit scene, where irises can be closed down, an inexpensive lens performs almost as well as a top quality lens. The differences really show up when irises are wide open and video gain and camera tube sensitivity are cranked up. Here the extra cost of a better and more sensitive lens could be equivalent to an even greater investment in a better camera and more lights. Having an f/2.0 lens instead of f/2.8 is equivalent to having twice as much light on a scene, and doubling the light on a large area can be a major problem.

## Filters Can Help

Having too much light is seldom a problem. Noon on a clear summer day, on a concrete parking lot, surrounded by white buildings, is about the worst possible case. If this is too much even with the iris closed down as much as possible, and target at minimum, the least expensive solution is a neutral density filter.



NOTE: Most lenses have click-stop detents at each position. Diaphragm, iris, and aperture are commonly used to mean the same thing.

Table I: Standard f/stops.

These come in various densities and filter all color equally. They are available as sheets of gelatin or glass mounted in sizes to fit lens filter rings. Be sure to specify filter ring size or give complete information on the lens if you order a filter.

Another type of filter that is useful outdoors, and even in the studio at times, is the polarizing filter. Like the sunglasses, it can be used to reduce glare and bright reflections which could cause burns... or overload a VTR or modulator. Its usefulness in the studio comes when someone brings a glossy picture they want to show on camera.

So far we have concentrated on two major considerations of lenses: focal length and f/stop. Estimating the needed range of a zoom lens is not complicated and can save money that might be wasted on too wide a range or having to knock out a studio wall so the cameraman can pull back far enough to get in both the interviewer and his guest.

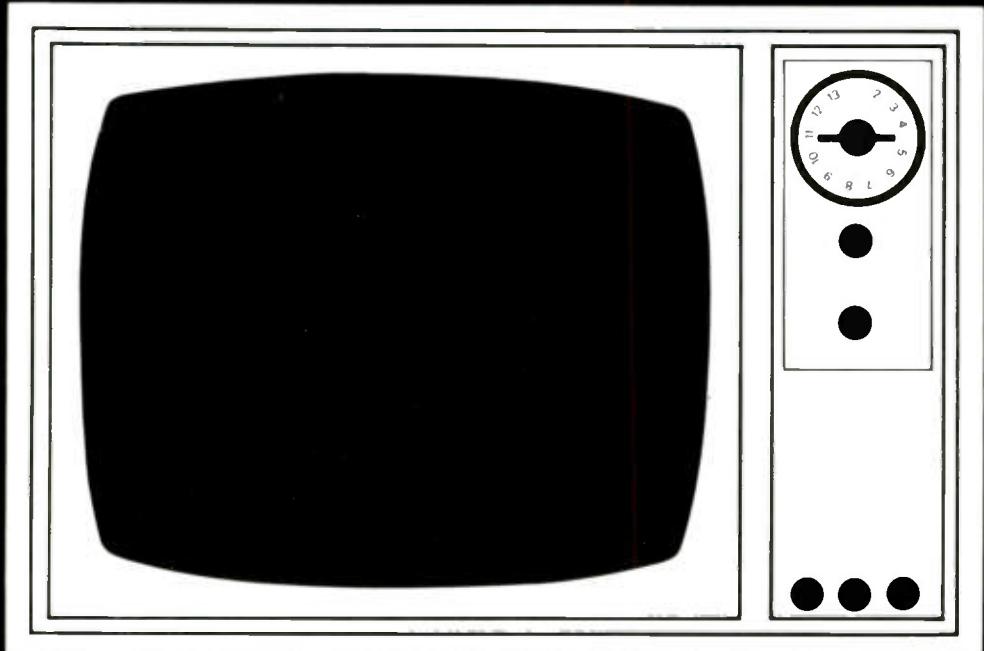
The rating of widest f/stop turns out to be something like horsepower. It may not be there when you really need it. Especially the real cheap or unknown lens should be avoided like cholera unless you can check it out thoroughly.

One final word about big zoom lenses: weight. If you put a wide range, sensitive lens, with servo controls, on a light camera and tripod, it may overload the tripod and make it top-heavy, and it may warp the camera lens mount enough so nothing will focus properly.

Next month we will take up such things as lens controls, zoom tracking, and why your cameramen should *never* touch the glass.

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WASHINGTON--NEGOTIATIONS CONTINUE IN WASHINGTON BETWEEN TEAMSTER UNION OFFICIALS AND THE NATION'S TRUCKING INDUSTRY. MANAGEMENT REPORTS OFFERING A NEW PROPOSAL TO THE UNION IN AN EFFORT TO SETTLE PRICE DISPUTES BEFORE THE CURRENT CONTRACT EXPIRES.

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## 24 HOUR NEWS SERVICE

ALBANY--GOVERNOR ROCKEFELLER PROPOSED A BILLION-DOLLAR BOND ISSUE THAT HE SAID WAS NEEDED TO AVOID A HALT IN ALL STATE HIGHWAY CONSTRUCTION AND MASS TRANSPORTATION PROJECTS NEXT YEAR.

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BOL 96.2<sub>s</sub>6.5<sub>s</sub>6 CS 7<sub>s</sub>77 ROF 354.  
IPC 385.3<sub>s</sub>4 IBC 16 IBM 358

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YOUR VOLUNTEER FIRE DEPARTMENT DESERVES YOUR SUPPORT. THEIR FUND DRIVE STARTS NEXT SUNDAY.

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N.Y.S.E. CLOSING PRICES  
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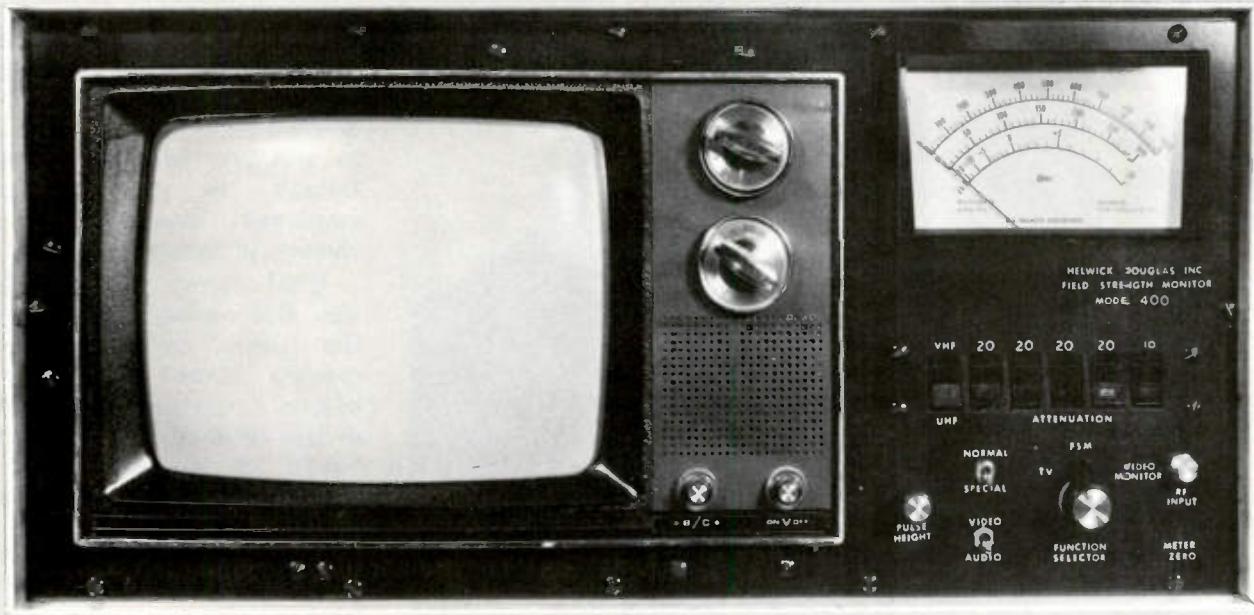


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A subsidiary of Sterling Communications, Inc.

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## ANNOUNCING...A UNIQUE NEW INSTRUMENT FOR CATV FIELD STRENGTH MONITOR



HD MODEL 400

### GENERAL DESCRIPTION

The HD Field Strength Monitor combines the functions of a field strength meter, a TV monitor and a video display in one portable instrument. This permits direct measurements of the field strength of VHF or UHF signals while observing the picture and sound quality on the TV monitor. The Video display provides a unique oscilloscope-type display of the vertical blanking and sync pulse. This indicates any overloading or sync-clipping in distribution amplifiers. This versatile instrument can be used in the lab to calibrate front-end equipment; in the field to adjust line amplifiers and in your customers home to demonstrate picture and sound quality. The HD-400 will improve customer relations and save you money by providing an accurate instrument for measuring and demonstrating the quality of your cable system. Write or call for further information or immediate delivery.

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- Channel to channel compensation is provided internally.
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When Henry Kalinowski, owner of a CATV system high in Pennsylvania's Pocono Mountains, decided to establish a local channel, he didn't expect to make any money on it.

He didn't think local origination would bring him any new subscribers and advertising revenues were unlikely to exceed operating costs. Therefore, he decided that he could not afford to add any help to his payroll. Instead, he and his regular employees manned the local channel in their spare time.

What Henry didn't anticipate was the enthusiasm with which the town of Honesdale, Pa. greeted local television. They offered concrete encouragement in the form of help. They volunteered to do everything from manning cameras to emceeing shows.

The result: in a little over one year, HTVS (Honesdale Television Service) Channel 6 has become a very important part of community life.

HTVS has the support of local and state politicians, businessmen, educators and clergymen. The programs HTVS produces compare favorably with programs presented in much larger communities by systems that have been cablecasting for years. What's more, advertising revenue is over \$3,000 to date.

The Honesdale system was started in 1950 by Kenneth Chapman. When Henry joined the system in 1952, it had just 98 subscribers. On January 1, 1954, Henry Kalinowski and another employee, Wade Taylor, bought out Kenneth Chapman. At that time, they offered three channels and had just 174 hookups.

Sixteen months later, Wade Taylor left CATV for a life of religious work. He became a divinity student, using the money from his half of the CATV system to finance his education. Henry quips, "I sent my first boy through college before I was even married."

Henry has consistently reinvested profits to upgrade his system, adding more channels and better equipment as often as possible. One of the first things he did after

# Pennsylvania System Gets Lots of Volunteer Help

Successful cablecasting does not require an expensive staff of studio professionals. With simple origination gear and enthusiastic volunteer help, this system brings "local TV" to a small Pennsylvania community.

*By Lon Cantor  
Lon Cantor Associates*

taking over the system in 1954 was to go broadband, at a time when almost everyone was using strip amplifiers. He bought SKL 212 A&B broadband amplifiers, which have since been replaced by SKL solid state 265 and 222 amplifiers. His antenna is on a 150' tower at the summit of a hill, some 1,550 feet above sea level. Ameco Chaneleers are the heart of his current head-end.

As a result of Henry's forward thinking, the tiny community of Honesdale, Pa. (population 5,600) offers its citizens more diversified CATV fare than the largest cities in the country. Kalinowski's subscribers get seven VHF channels from New York City (2, 4, 5, 7, 9, 11 and 13), four UHF channels from the Scranton-Wilkes Barre, Pennsylvania area (16 converted to 8, 22 converted to 10, 28 converted to 3 and 44 converted

to 12), plus a locally originated channel.

HTVS is very unusual in one respect. The system has never cut its prices. Every subscriber pays \$135 for a hook-up, plus \$5 per month for the first TV set. If they want FM (choice of 48 FM stations) they pay a one-time-only installation charge of \$10. FM is tapped-off from behind the TV receiver.

Without price cutting or special promotions, HTVS is growing steadily. They now have over 1,650 subscribers out of a potential of 1,800. New subscribers are signed up at the rate of about three to ten per week.

One of Kalinowski's most important assets is his Chief Engineer, Earl Wilcox. Wilcox, whom Henry calls his "left hand man," is technically very competent, and an indefatigable worker.

Their first venture into cablecasting began with a simple rotating messenger center. They focused a camera on a revolving drum and typed out community service cards, local news and weather.

Originally, they used an inexpensive random interlace camera for their message center, but they were not satisfied with the quality. They replaced the camera with a GBC camera with 2:1 interlace.

The response to this simple message center, backed by taped music, was so enthusiastic that HTVS was encouraged to go into a full local origination channel.

Rather than build or rent space for a studio, they bought a large trailer, which they parked near the head-end site. With little modification, this trailer has made an excellent studio. It is roomy,

includes excellent heating and air-conditioning, plenty of AC power, plus kitchen and bathroom facilities.

In addition to the trailer, they bought a panel truck (see photo with this article) which they use for mobile telecasts.

The heart of their cablecasting facility is an origination package, which they bought for under \$9,000 from GBC Closed Circuit TV Corp.

The complete studio package includes a control console; two full EIA sync 5" viewfinder cameras, with 10 to 1 rear controlled zoom lenses, tripods, friction heads and dollies; two non-viewfinder cameras; audio intercoms; tally lights; and all interconnecting cables, pre-wired.

The control console includes five monitors, an audio mixer, a preview bus, EIA sync generator, tally lights, intercom and a model MEA-1002 switcher-fader/special effects generator.

With his GBC console, Henry can select any camera input, fade in, fade out, lap dissolve, super-



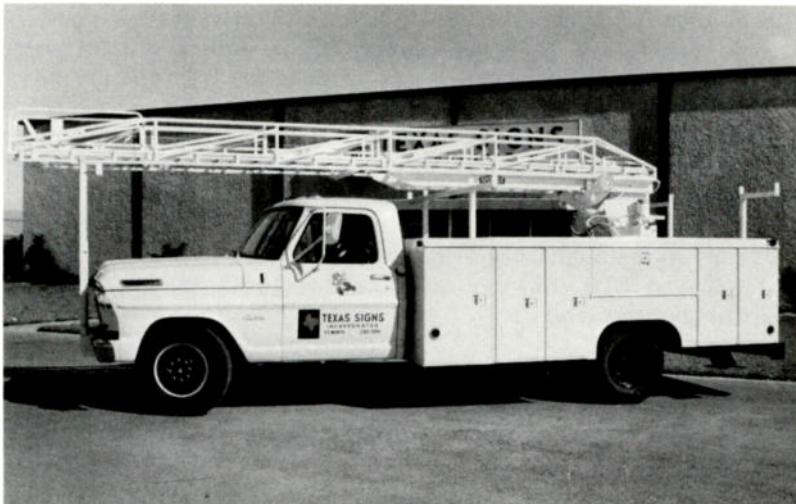
*In trailer studio, Henry Kalinowski switches from message center with background music to videotaped program.*

impose or wipe. Eleven different wipes are available. He can preview any two monitors, set up a special effect, and then switch the video signals previewed to the

output circuit for cablecasting or taping.

Supplementing the GBC package are two Ampex model 5100 1" video tape recorders. For his

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**BOOTH 216**



Inside panel truck is GBC control console, with 5 monitors, switcher-fader/special effects generator, audio mixer, sync generator, intercom and tally lights.

mobile studio, Henry uses an inverter and battery power supply. He tried using a generator for AC power, but this was not feasible because the pulse in the generator is not compatible with the sync requirements of the video tape recorder.

Wilcox mounted the entire

package in the panel truck along with a VTR, power supply and light kits, making the truck a true studio on wheels. Earl and his crew can take the mobile studio anywhere and have it in full operation within 30 minutes. They can also move the console and cameras into the trailer studio when required.

## Mortician and Lawyer Among Volunteer Help

Henry is delighted with the programs his crews have been able to produce. He feels that they are smooth and professional looking enough to compare favorably with the off-the-air programming on the cable system. His subscribers, who are generally rather jaded by the wide variety of programs from which they can choose, are quick to agree. HTVS-6 is watched by as many viewers as any channel on the system, and for special programs, the ratings are astounding.

Of course, equipment alone



Other side of panel truck interior holds two GBC 5" monitors and cases containing cables, intercom headsets and other accessories.

doesn't make good TV programming. It takes people. Strangely enough, HTVS got a lot of help from an undertaker. One of the first in the community to volunteer to help the new channel was Frank Myers, a local mortician.

# SIGMAFORM

*the simpler,  
more positive,  
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## SPICE COVERS for aerial/underground cable

Answer to a growing demand — thickwall, heatshrinkable, selfsealing splice covers offering complete waterproofing, insulation, corrosion and abrasion resistance — for connections and splices in coaxial and secondary power and communications cables. They seal over lead, steel, aluminum, copper and all standard plastic and elastomeric insulating materials and conduit. Thickwall toughness provides extra strain relief. Factory applied sealant remains flexible indefinitely. Installation is simple. No special skill or tools — only an electric hot air blower or gas torch. Slide expanded Sigmaform cover over one end of cable before connecting. Connect cable and slide cover over splice or connection area. Apply heat. When cover has shrunk to configuration of connection and sealant is seen to flow, job is done. May be removed by applying a small



EVEN OVER LARGE CONNECTORS



...A TIGHT SEAL RIGHT DOWN TO CABLE

amount of heat, slitting with a knife and peeling away. Available in standard lengths from 2" to 12" and five expanded inside diameters of 0.4" to 2.0", each of which offers a shrinkage ratio of three to one; also in bulk 4' lengths (without sealant).

Write or call us for complete information and prices. There are also Sigmaform cable end caps, molded boots, aperseal and re-entry enclosures.

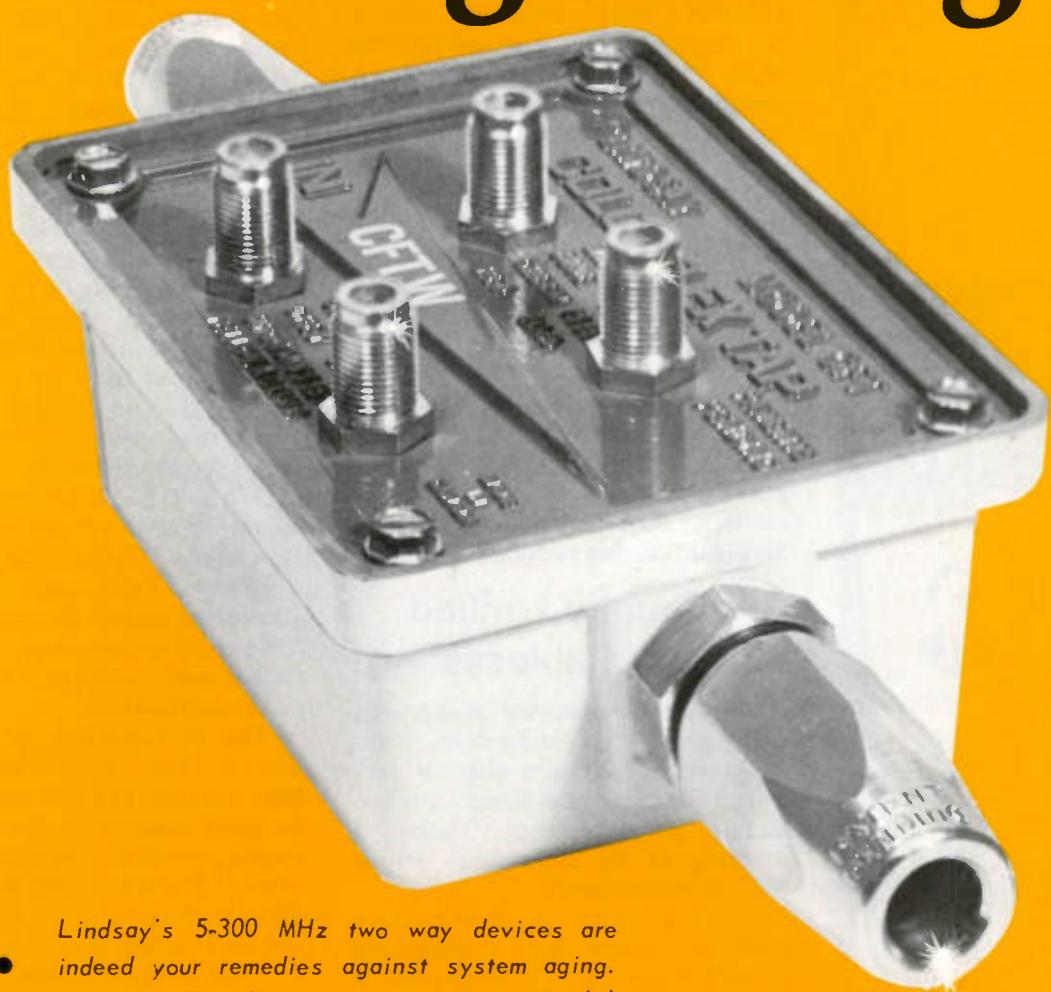


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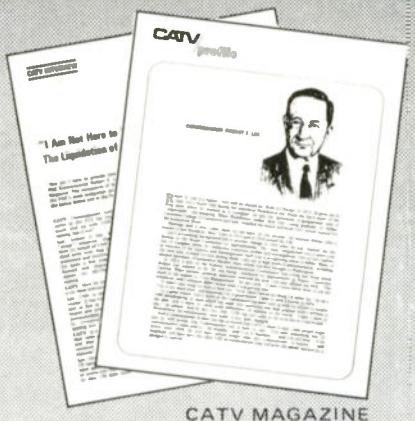
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Frank has always enjoyed electronics as an avocation. When he heard that HTVS was going to produce local TV shows, he thought it would be a lot of fun to participate. Frank helped Earl Wilcox set up the equipment and he regularly acts as a cameraman.

Talent for in front of the cameras was also available on a volunteer basis. Interview shows are often emceed by an art teacher from the local high school. A salesman for a petroleum distributor provides commentary for telecasts of sporting events . . . he has been an amateur sportscaster for years, announcing events like horse races and stock car races.

A very important volunteer was a young lawyer who very capably handled political interviews. He was encouraged by his father, a Wayne County Judge, who said that today, any man with political ambition must know how to be comfortable in front of a TV camera. Therefore, cablecasting is an ideal training ground.

## Community Unified Through Cablecasting

With the necessary equipment and plenty of volunteer help, Kalinowski has been able to produce some remarkably professional programming. There is nothing at all amateurish about HTVS productions.

The result is a much more cohesive, closer knit community in which the cable system plays a unique, vitally important role.

The football series was especially successful. 1968 was the first year that the local high school had a football team. They won only two games and usually had less than a dozen Honesdale rooters at away games.

In 1969, HTVS began telecasting games. Using the mobile studio, they videotaped each game and then played it back, usually in the evening. The result was that interest in football increased tremendously. For example, Honesdale won their Thanksgiving Day game before 1,100 ardent rooters.

The football coach publicly gave HTVS full credit for stirring the community spirit that gave his

team the encouragement to win more games.

The football series was also a financial success. Twelve local merchants paid \$50 each to sponsor football games. Last year twenty \$50 sponsors participated.

Results were just as impressive in the political arena. Prior to the general election in November, all candidates and parties were contacted and informed that the facilities of HTVS channel 6 were available to them. Three parties sent several candidates for videotaped interviews.

For 50 years, Honesdale had voted Republican. However, based on increased familiarity with candidates, the people of Honesdale voted for a young, aggressive Democrat, James Brennan. Mr. Brennan felt that the exposure he got on HTVS-6 played an important role in his election as Borough Councilman. He, as well as a number of other politicians, wrote letters of appreciation to Honesdale Television Service.

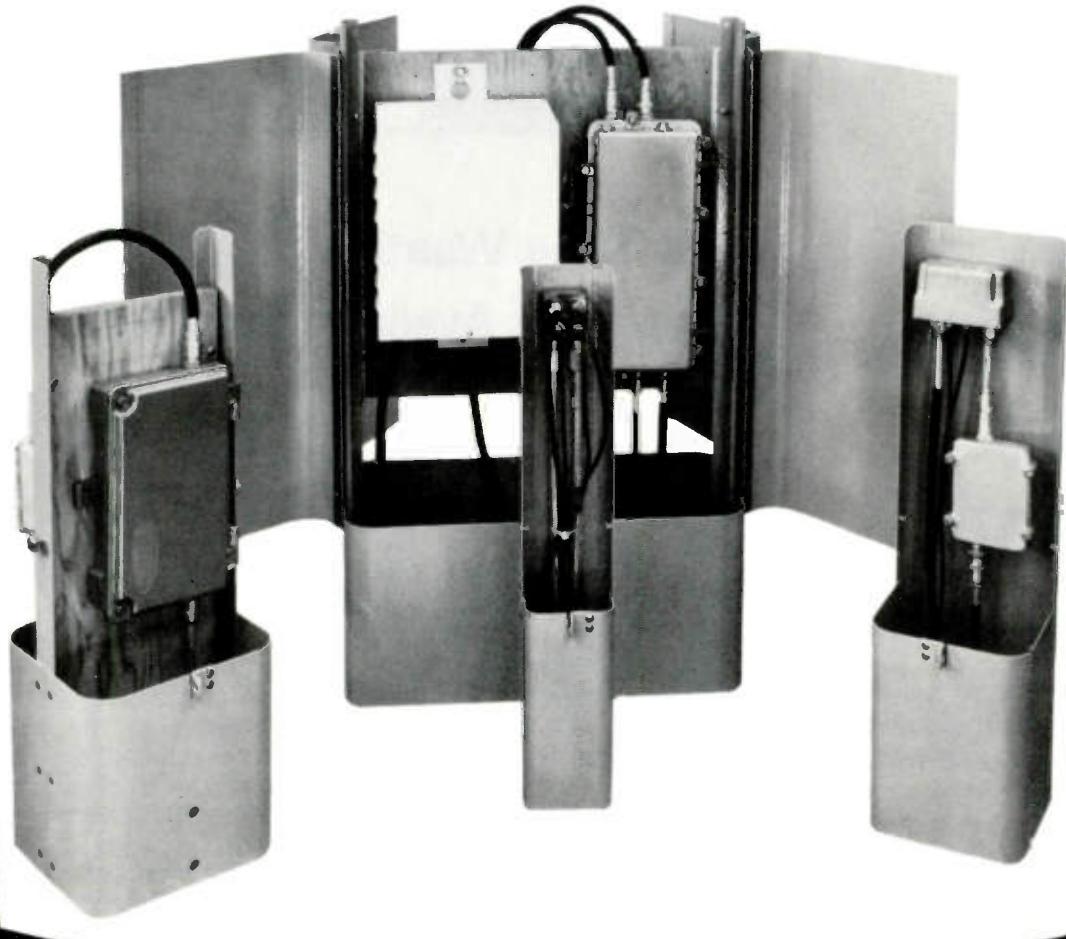
Henry Kalinowski used the Christmas season to emphasize the theme of ecumenism, by videotaping services in local churches of all denominations.

The culmination of his effort was a three hour "spectacular" that emphasized the interdenominational aspects of the Christmas season, entitled "Holiday Inspirations." It started with a 33 minute Hanukkah service, originating at the local synagogue, followed with the Christmas Pageant presented at the Methodist Church, then a Mass videotaped at a Catholic school. It concluded with a program presented by the students and faculty of a seminary.

Many viewers called to say that they were impressed by the similarity of other faiths to their own. For many, this was the first chance they had ever had to see the similarities between faiths.

Local origination is still not a paying proposition for Honesdale Television Service. Kalinowski has spent some \$28,000 for the trailer, mobile van and equipment to date. However, he feels that he is providing a very valuable service to his community and that cablecasting will be a very vital part of the CATV system of the future. **TC**

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weighs  
29 lbs.  
and shines  
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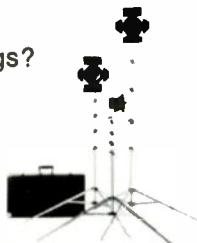
It features three of our versatile, rugged Mini-Pro lights. Draws only fifteen amps at 120 volts. Plug them into any household circuit. Use them anywhere in the world (30, 120, or 220 volt lamps available).

Then we've included three of Colortran's new Pro-Stands. They have the exclusive extendable base legs for positive stability.

What's more there are two barndoors, a set of scrims, one 25' extension cable, a handle, and three 600 watt, 3200°K lamps.

All of this packs into a rugged carrying case, weighing just 29 lbs., only \$350.00

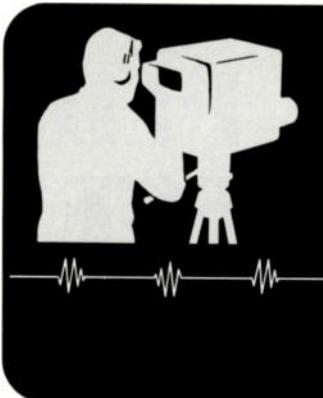
The yellow wings?  
We were  
only kidding.



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

## New Time, Weather and Data Equipment Available from MSI

MSI Television, 535 South 2nd West, Salt Lake City, Utah, 84101, has introduced their new color "Data Weather," automatic 24-hour time and weather system, to the CATV industry. Heart of the system is a totally solid-state alphanumeric character generator, which utilizes the latest digital, integrated-circuit components.

"Data Weather" features include the simultaneous color raster display of: (1) Up to 13 current weather indications, including daily high and low temperature; wind velocity and gusts; rise and fall of barometer and temperature; monthly and daily precipi-

tation. (2) Continuous weather forecasts direct from the U.S. Weather Service, displayed as a one-line crawl. (3) Permanent heading for cable system name. (4) A rolling, programmable local message which can be typed on a standard electronic keyboard.

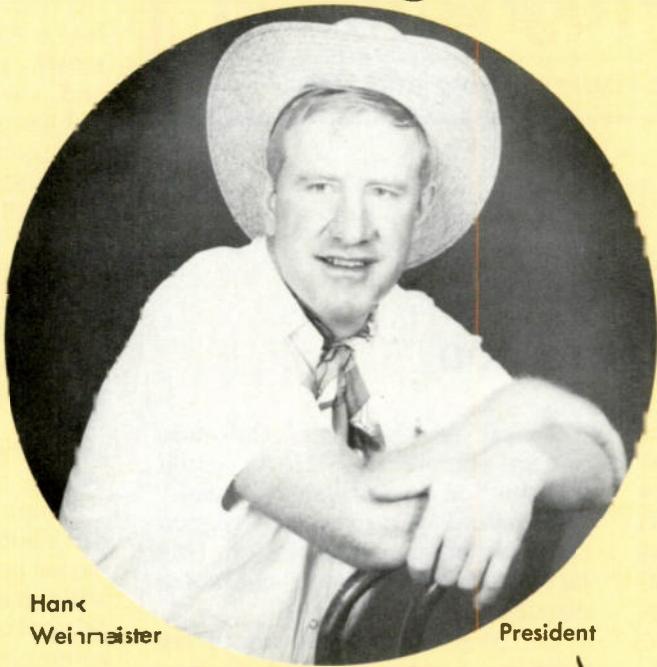
An accessory is a low-cost, full-color flying spot scanner which uses standard 35mm slides for advertising. The slide scanner can serve double-duty by using it with live, local origination programs. The local message keyboard can also be used for titling in live programming.

Standard equipment with "Data Weather" includes all weather sensors, electric clock, three segment screen splitter, adjustable hue generator, EIA color sync generator, and professional, easy-to-read 9 x 14 character font. System prices start at \$2,950. See page 35 of this month's *TVC* for the MSI ad which shows typical screen formats as the subscriber sees the "Data Weather" channel. *mc*

*Ken Lawson, president of MSI, demonstrates the "Data Weather" unit.*



# Sometimes we get more than we bargain for...



Hank  
Weinmeister

President

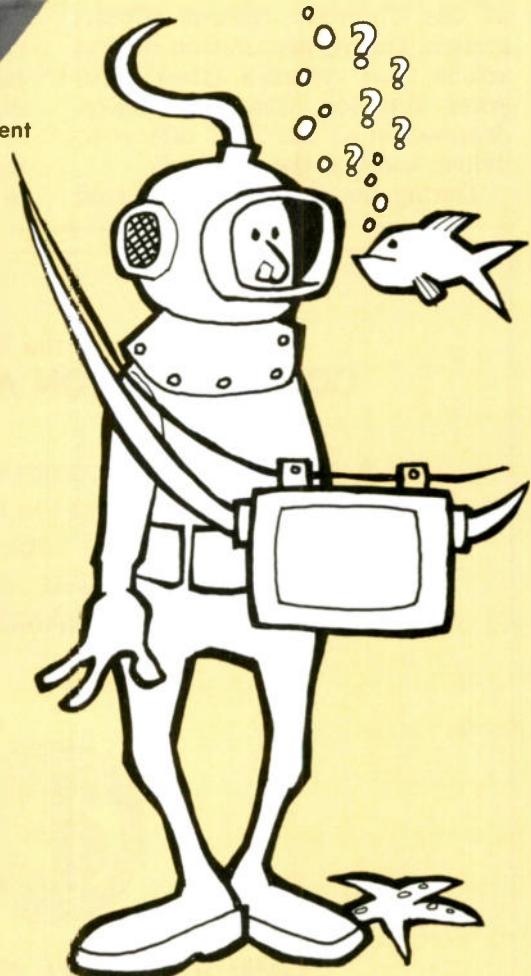
... and you get more service than you bargain for when you turn to Western Community TV Construction, Inc. for system design, construction and rebuild.



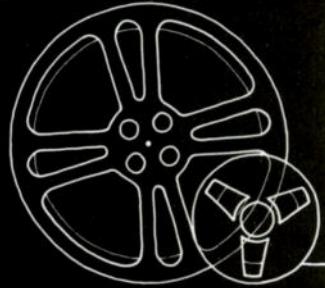
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## CATV Programming

software news and tips

### Colorado Springs System Shifts Gears on Origination

Three months ago (March), this magazine carried an article that featured the cablecasting activities of the Colorado Springs (Colo.) system. During preparation of that article, the system's (then) program director Terence Skelton dropped in at the TVC offices to deliver some of the materials.

During the conversation he told

this editor that the Colorado Springs cablecasting efforts would be run "on a professional level." "We regard ourselves as a regular commercial-type TV station that just happens to use a cable for distribution," he noted.

On May 23rd, after about six months of cablecasting at the rate of about 30 hours per week, the

local origination channel in Colorado Springs went black. Interestingly, *very few* subscribers called in to ask why. Skelton and his entire crew are gone.

There is little doubt that Skelton was trying to make his operation "broadcast-like." He had a sizable staff, some \$200,000 worth of origination equipment and the cablecasting effort cost Cablecom General some \$10,000 per month to operate. Was this a Cablecom General experiment that failed? Maybe, but probably not.

The Colorado Springs franchise specified no advertising on the local channel. Cablecom sought to offer professionally prepared programming that would carry advertising . . . if the city fathers could be persuaded to change their minds.

There was some progress in that direction (in spite of heavy broadcaster pressures) . . . based on FCC willingness for systems to carry advertising . . . and based on attempts to show city leaders that the system really should bow to the guidance of the FCC rather than the city. Had there been more time, the city might have amended the franchise.

Then came the Eighth Circuit Court Ruling. Origination not mandatory . . . FCC's authority in question. Hopes for franchise amendment gone . . . for now anyway.

Will Cablecom General's \$260,000 investment be lost . . . or will it prove to be a worthy investment in the future? Read how the system has "shifted gears," and you judge for yourself.

During the month since "Channel 3" went black, the MSO has had one of its men working with three colleges, five military installations, the Jaycees, the leaders of a local Fine Arts Center and city officials. Channel 3 will be back in business within the next few weeks with an entirely new approach (for Colorado Springs) to cablecasting.

Dick Kirby has been hired as a "coordinator" and an engineer has been secured for the studio facilities. These two people will work with the above named groups (and others) to enable them to use the

#### Announcing the formation of **COMMUNICATION ADVISORS, INC.**

A consulting firm, comprised of professionals experienced in serving the financial requirements for new and existing cable television systems.

- **FINANCIAL PLANNING**
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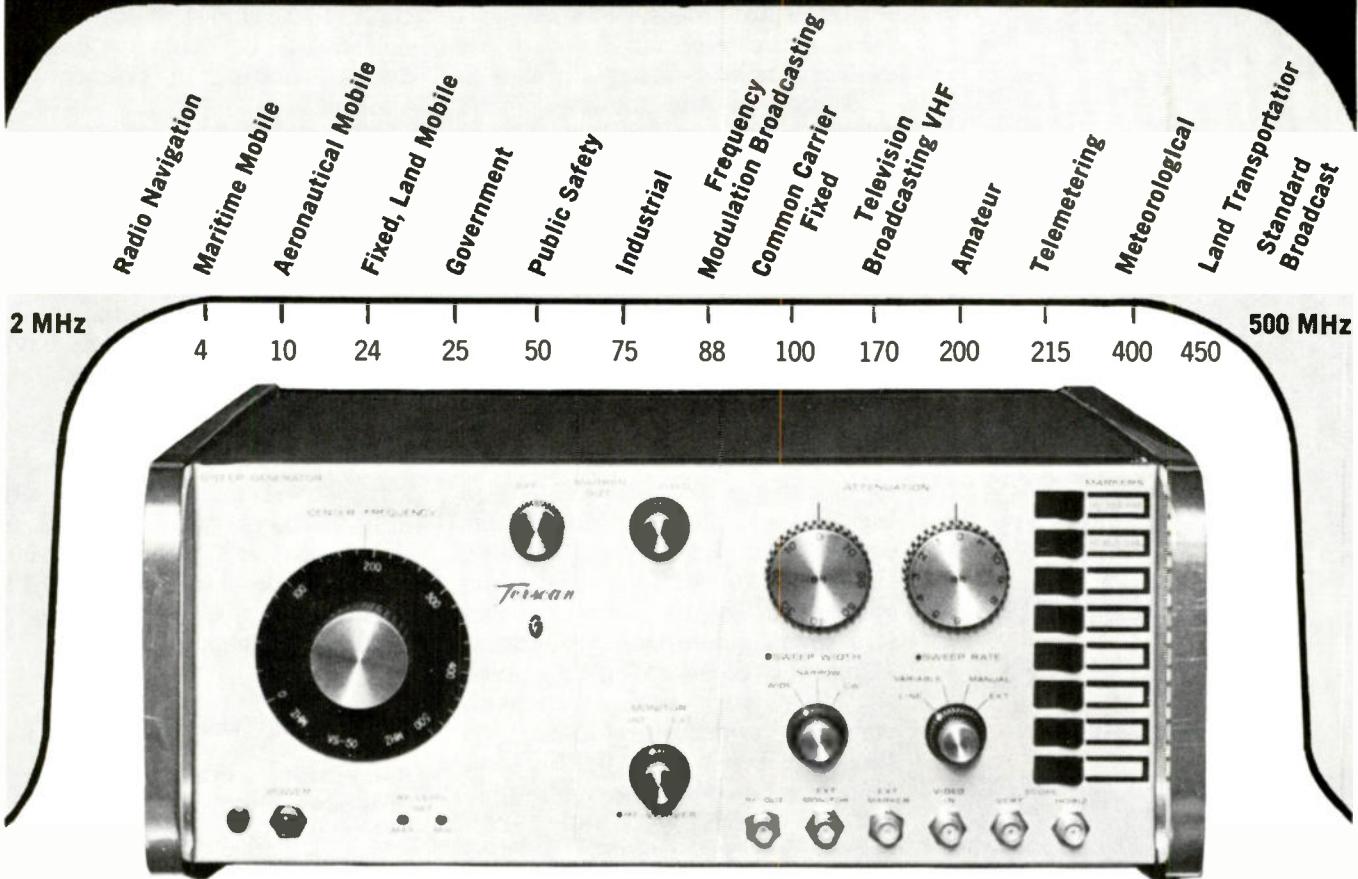


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#### SPECIFICATIONS

Center Frequency Range	2 MHz to 500 MHz
Sweep Width	500 kHz to 500 MHz
Attenuation	0-6 db vernier 0-80 db in 1 db steps
Output Impedance	50 ohms or 75 ohms
Output Voltage	1 V rms

#### OTHER TEXSCAN VS-TYPE SWEEP GENERATORS

VS-20  
200 Hz - 25 MHz

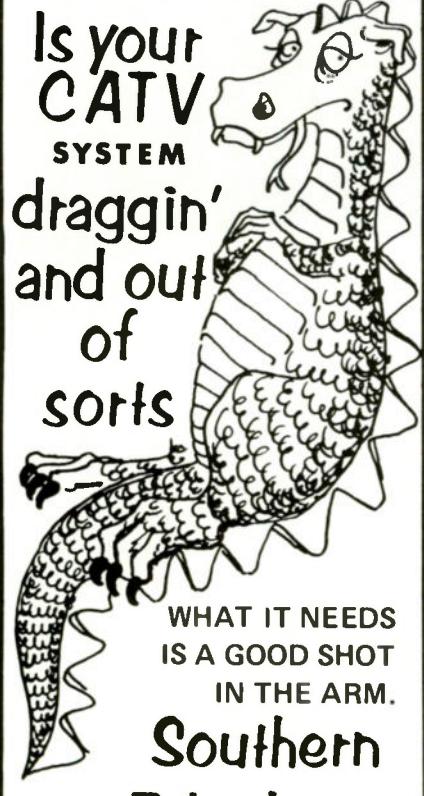
VS-40  
1 - 300 MHz

VS-80  
1 - 1200 MHz

VS-120  
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channel for their programs. The colleges will be able to televise courses and student-produced programming. Theme of the new approach is "access." The system will provide the equipment and coordination so that its subscribers can benefit from the information, ideas, courses and personalities associated with these colleges, military installations, etc.

Access to the viewer. That's what many voices in recent months have called for. That's what Colorado Springs is getting.

It should be noted that Cable-com systems include 13 with operating studios . . . two more are under construction . . . and two more are in the planning stages. Fourteen of these studios operate on this "cooperative access" approach.

While regular commercial cablecasting still has a place in CATV (a big place), local, cooperative, open-access channels are showing themselves to be more and more successful. The tie-in with colleges is a smart move. One cooperative effort between a college, a university and three cable systems is currently under development on the west coast. The public can't help but benefit from such applications of CATV . . . and CATV operators are finding tangible returns from this activity too (once they try it).

### CATV and Public Service

- More than 150 representatives of government agencies and public service organizations were guests of the NCTA at a special "Public Service on Prime Time CATV" conference in Washington, D. C. on June 17th. It was an informative session to expose the public service opportunities inherent in CATV.

FCC Commissioner Nick Johnson was the main speaker. TelePrompTer's Jack Williams . . . NCTA's Wally Briscoe . . . David Moore of the U. S. Department of Labor, Robert Pfannkuch of Telemation, Inc. and Drex Hines of the March of Dimes were the other speakers. Drex Hines couldn't be there in person, so he videotaped his presentation.

Hines told about his success in

working through cable systems in the past year. He reported that cablemen have a great interest in public service material of quality. The National Foundation (March of Dimes) did considerable research on cable before its campaign this past year. As a result of their work, they have developed a master file of cable systems that do cablecasting in one form or another.

The Dimes file is composed of three lists. One list includes all systems having capabilities for all materials including live origination. Another list has those systems having all capabilities excepting slide presentation. The third list includes systems having only automated capabilities.

According to Drex, "Our method of verification and re-checking prior to mailing the cable kits proved most efficient, since only six pieces were returned, out of twenty-six hundred pieces mailed." He further notes, "We found that CATV has excellent fund raising capabilities."

### TPT People Train for LO

- System managers and/or program directors from 64 of TelePrompTer's cable systems met in New York during early June for a local origination training session. The TPT people hear Jack Williams, TPT director of programming, clarify the MSO's policies on origination. Other TPT people offered helpful tips on how to handle news, women's programming, sports, etc.

The "how-to" sessions lasted for two full days. TelePrompTer has indicated that the Eighth Circuit Court ruling has not altered their plans for increased local origination activities.

### LO Efforts Pay Off

- Recently the FCC authorized CATV of Hendersonville, North Carolina, to bring distant signals to within 18 miles of a top-100 market. In authorizing the importation, the Commission noted that "In light of the availability of the requested signals over-the-air and the significant public interest in

**Before lunch Ted Smith prepared and analyzed 2000 non-subscriber call cards, balanced 13 sales routes according to area and potential, analyzed sales results for the past month of 10 salesmen, submitted a quarterly sales projection to top management... and called his wife.**



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Great you say. But does it really work and can my system afford it? Bet on it. *Cable data* is currently in operation in over 50 CATV systems ranging from 1,000 subscribers to 30,000. It is the only computerized marketing program designed exclusively for the CATV industry. *Cable data* . . . tomorrow's answer to selling CATV today. Bet on it.

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# Pre-Fabricated Scenery Solves Important Production Problems



WTOL uses this set of pre-fab scenic units for their local news and special events programs.

Very shortly, many Cable operators will begin originating their own programs. When they do, they will face the problem of trying to make their programs look as good visually as those broadcast by the commercial stations. An ideal solution to the problem is to use pre-fabricated scenery, a material already widely employed throughout the television industry. Basically this material is a series of vacuum formed, three dimensional scenic units which are hand painted and come ready to use. They realistically simulate a wide range of exterior and interior wall surfaces yet are relatively low in cost and can be set up easily by one man. They enable production men to create attractive, impressive looking program settings quickly, inexpensively and with a minimum crew. The set illustrated above is just one example of what can be done with these pre-fab scenic units. For a catalog and more information on this material.

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BOOTH 20-21

## Feller Vacuum Form Studios

Dept. TVC, 381 Canal Pl. N.Y. 10451

maintaining petitioner's CATV system as a viable operation, waiver is indicated."

The ruling continues, "Cablevision has argued that the loss of the programming it now provides to its subscribers (both originated and non-commercial educational broadcast) should be entitled to some consideration, and we agree . . ." The public service the system provides is some 35 hours of locally-originated programming per week, plus educational programming. This is one time that the investment in local origination definitely paid off.

### Animated ID's for CATV

- Dan Weir Productions, P.O. Box 789, Junction City, Kansas 66441, is now offering four computer animated ID's to CATV systems . . . for use as program breaks and station identification breaks.

The 10 second ID's are available on film and on all popular formats of video tape. They are produced in color with electronic synthesizer musical backgrounds.

Each of the four ID's has a different message relating to CATV's part in community service. Weir also offers custom ID's for individual CATV systems and group system operators.

### TeleShop'r Promises Profits

- TeleShop'r, described by its promoters as "a new programming and advertising concept" for use by CATV system operators for local origination, is now available. Referred to as a 100-page, talking electronic newspaper, TeleShop'r is a complete equipment and software package that is designed to assist system operators in starting up origination "to add viewers, subscribers and net profits," according to Elmer W. Metz, 51 Seckelpear Road, Levittown, Pa. 19056.

TeleShop'r uses up to 100 5" x 8" cards, displayed sequentially before a TV camera. A reinforcing audio message is originated at the same time by a tape cartridge machine. When the audio message corresponding to a specific card is completed, the TeleShop'r



The entire package of TeleShop'r equipment takes up a space 14" wide by 40" long and 27" high.

machine automatically advances the second card into position before the camera, and the second audio message is transmitted. This process is repeated throughout the full "deck" of 100 cards.

TeleShop'r promoters suggest that system operators use 50 of the cards for various information to serve the community's needs and to build and hold an audience, while the other 50 cards can be used for classified and display advertising. TeleShop'r revenue projections predict a potential of about \$20,000 profit per year for a system of approximately 3,000 subscribers, based on a suggested rate schedule and advertising frequency that has been pretested in selected cable markets.

The flexibility of the TeleShop'r package makes it possible to "clip and paste" using both syndicated art services and Polaroid pictures.

The TeleShop'r equipment package includes the following: (1) the 100-page card carrier, complete with lighting and camera; (2) Two tape cartridge machines, 1 Synchro Recorder/Repeater and 1 Synchro Repeater; (3) A stereo, sound-on-sound tape deck, complete with dynamic microphone; (4) A starter kit of necessary small items including an 1,800' reel of tape, a 10-minute, 50-card test tape cartridge which can also be used after installation as a system subscriber introductory promotional tape, four empty tape cartridges, a tape cartridge loading platform and a tape splicing kit, splice block, cutter/trimmer, with splicing tape (see photo of the equipment package).

TVC

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# **“It’s Time for the Industry to Say ‘Thank You’ . . .”**



*The family of Mr. and Mrs. Larry Savage, TVC's 100,000th subscribers, receives new color television to mark the occasion. Making the presentation at the Savage home is TVC's Joel P. Smith (right), vice president in charge of the cable television division. The family subscribes to TVC's Malden Cablevision, Malden, Mass., part of the recently acquired CATV complex in the Boston area.*

## **TVC REACHES 100,000TH SUBSCRIBER MARK, CITES ROLE OF THE PUBLIC IN CATV GROWTH**

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is a whole  
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If it were CATV, we'd love to have the contract for engineering, equipment, cable and construction! Congratulations, TV COMMUNICATIONS.



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# TVC Marks Growth Milestone, Applauds Public Acceptance of CATV

Tillie and Larry Savage have been married 11 years, have six handsome children, live in a neat and pretty home in a large New England community, and have never considered themselves especially unique.

But to the CATV industry, the Savage's are very special. They are The Public, The Subscriber, The Viewers who, for over 21 years, have been saying "yes" to cable television and making the industry the viable business it is today.

To TeleVision Communications Corporation, the family represents a very specific accomplishment. As the firm's 100,000th subscribers, the Savage's mark a milestone in TVC's development, a goal reached and a threshold crossed. From a small systems owner and operator with 45,559 subscribers in 1963, TVC has grown to become a major force in the CATV industry, with 23 systems throughout the country, and a subscriber potential of more than half-a-million.

"Throughout this period of TVC's growth, which parallels the growth of the industry, itself, there have been whirlwinds of controversy surrounding cable television," said Joel P. Smith, TVC vice president in charge of the cable television division.

"Yet, while opposing factions have tried their best to thwart the growth of CATV, the public has continued to support the industry, enthusiastically accepting the superior reception and diversified

services which CATV alone can deliver," Smith continued.

"It's time for the industry to say thank-you to these people, who month after month, year after year have welcomed our cables into their homes, welcomed our systems into their business communities, and provided the economic wherewithal that has brought us to the advanced state of the art which we enjoy today.

"TVC is delighted to acknowledge the importance of the Savage family as its 100,000th subscriber," he said, "and to honor, through this one small gesture, the enormous role the public has played in our industry."

To the Savage family, cable television holds many attractions, all of them typical of the reasons cited by subscribers around the country.

"I first learned about CATV through the newspaper publicity in Malden," said Mrs. Savage. "Then my mother subscribed, and her reception was so much better than mine that I decided then and there to sign up for the cable."

Larry Savage, who spends his days as a Certified Public Accountant, is a certified "sports nut" in his off hours.

"When he learned that he could watch hockey and football if we subscribed, that really did it," Mrs. Savage said. "He and our older boys are now avid fans of the sports programs we receive on the UHF channels. Without



Alfred R. Stern is chairman and president of TeleVision Communications Corporation. He founded the firm in 1962, after 10 years with NBC as a division manager and vice president. Under his leadership, TVC has grown to become one of the country's leading CATV systems owners and operators. An articulate and recognized spokesman for the industry, he has served as chairman of the National Cable Television Association and currently heads the NCTA's copyright committee.

CATV, we were barely able to see those channels."

The Savage's also cited the localized service which Malden Cablevision brings to their home.

"Just this past Easter, the cable-casting channel carried our local church choir in a one-hour special program," Mrs. Savage said. "We have several friends in the choir, and really enjoyed watching them on the screen. It's kind of exciting to see your own friends and neighbors on television."

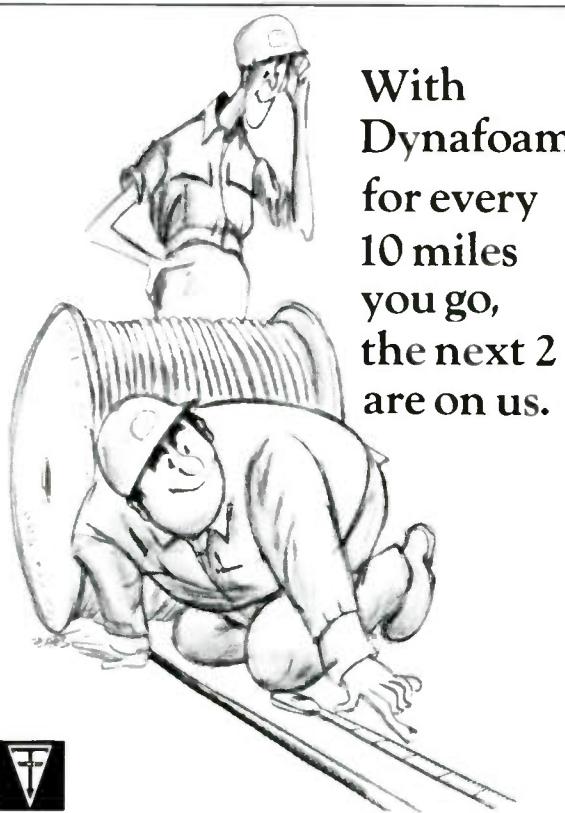
When the family learned that they were TVC's 100,000th subscriber, there was much excitement. This was heightened by the surprise delivery of a new color television receiver.

"With six kids competing for their favorite programs, another television, especially a color set, makes a big hit," said Larry Savage.

The Savage children, who have already adopted the new television as their own, are: John, 10; Theresa, 8; Mark, 7; Denise, 5; Richard, 3; and Gary, 2.

# **CONGRATULATIONS, TeleVision Communications Corporation, on your 100,000th subscriber.**

Vikoa, Inc., which has had the pleasure of serving TVC for all these past years, is proud to have played a part in the continual growth of this successful organization.



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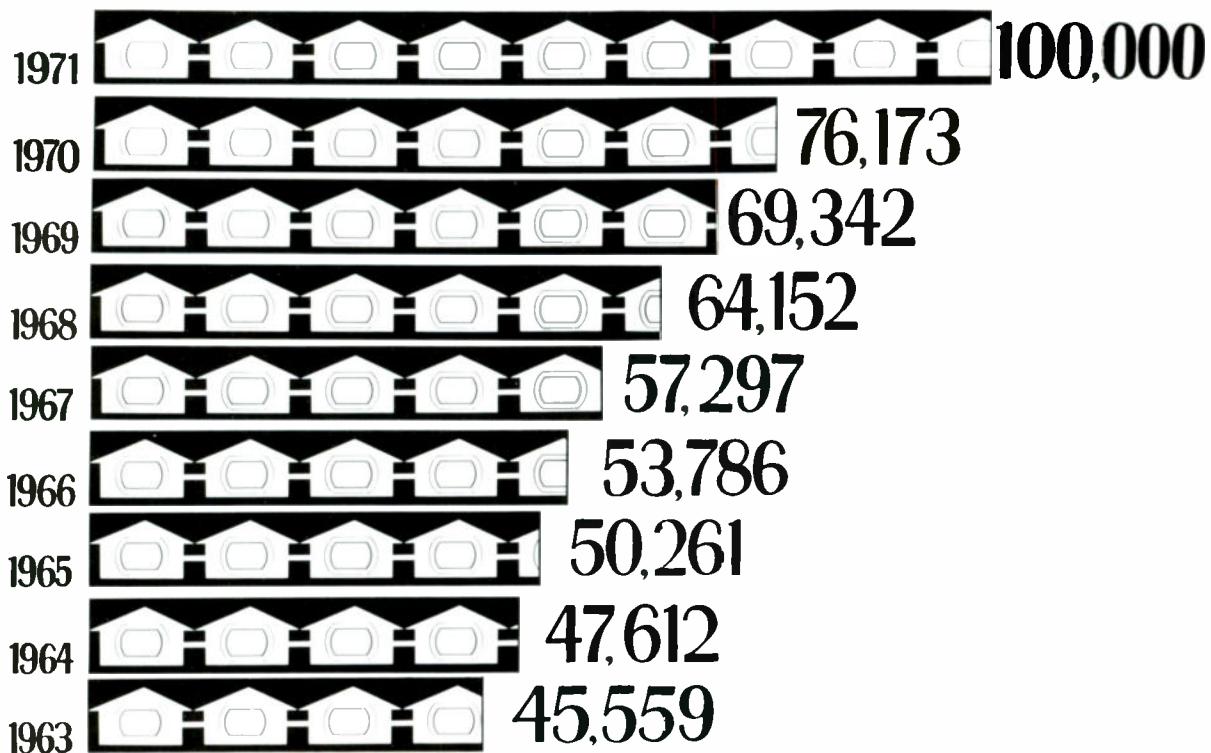


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# TVC SUBSCRIBER GROWTH



The six Savage children watch in eager anticipation as Malden Cablevision installer completes cable hook-up of new color set.



Joel P. Smith, TVC vice president in charge of the Cable Television Division, has overall responsibility for all TVC cable operations as well as the acquisition and development of new CATV properties. A veteran of over 13 years in CATV, he previously was managing director of Bendix-TVC International, responsible for the development of CATV systems in Europe, and has served as assistant to the president of Jerrold Corp. and as director of Jerrold's CATV Systems.

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# Alfred R. Stern Thanks Subscribers, Sees Continuing Growth in Major Markets

"To the Savage family, TVC says thank you, and extends this gratitude to the many thousands of TVC subscribers throughout the country who have made this milestone possible," said Alfred R. Stern, president of TVC.

In referring to the company's latest achievement, the TVC executive said, "It's most significant that our 100,000 mark was reached in the Malden system, for this focuses attention on the movement of cable television into the major markets, and points the way for continuing growth in these urban areas."

Malden Cablevision is part of the major complex of systems and franchises acquired by TVC in February of this year. The new CATV properties, with a total potential of 175,000 subscribers, surround the Boston area, the nation's fifth largest television market. The properties include the Malden, Mass. system, five miles north of Boston; an operating system in Nashua, N.H., 35 miles northwest of Boston; and franchises for Salem, Lowell, Peabody, Everett, Medford, Somerville, Winthrop, Brockton, Amesbury and Foxboro, all Massachusetts.

The addition to TVC of these new systems and franchises brings the company's total number of potential subscribers over the half-million mark.

In commenting on the new properties, Stern hailed the complex as one of the most ambitious undertakings in the CATV industry, and said it represented TVC's second venture in a major television market.

"The Boston-area systems will be, in effect, our next Akron," said Stern, referring to the company's current project in Akron, Ohio, where TVC is building the country's largest CATV

system to serve 150,000 potential subscribers.

"The unprecedented success of the Akron venture — in areas ranging from system design, to construction of the 1,100-mile dual-cable plant, to the massive subscriber sales campaign — qualifies TVC to confidently take on a project as vast as the Boston-area."

The TVC executive emphasized that the move by CATV into the big cities is inevitable, and stated that TVC believes the impact of cable television in these cities could be dramatic.

"At TVC, we foresee the day when the introduction of CATV into the top-100 markets could be likened to the coming of electric power in the early nineteen-hundreds — the impact of which served to draw the people together and stimulate the cultural and economic life of the cities. While we are not so naive as to believe that cable television is the ultimate solution to the problems of the cities, we do believe that CATV technology can serve as an important instrument for injecting a new vitality into the community.

"With our industry's rapidly advancing technology," Stern continued, "CATV can provide not only a wealth of channels for the traditional television services but also a new means for individualized services and intra-community dialogue which could have an important effect on the lives of our cities."

TVC's Akron system, when fully built, will have a capability to pinpoint viewers and deliver specific programming to specific segments of the audience, he said.

This capability, Stern explained, will be made possible by the use of multiple head-end equipment strategically

located throughout the Akron area.

"While these multiple head-ends are made necessary by the limited cascading possible from any one signal source, they serve another purpose aside from fulfilling the technical requirements of this vast system," he said. "By utilizing these sites for origination of programming geared to neighborhood needs, it will be possible to offer to Akron a communications service so localized and so specifically oriented to the special interests of the city that no other medium can begin to match this capability."

The innovations of Akron Cablevision



Edward J. DeMarco is director of TVC's National Systems Department in the Cable Television Division. He is responsible for the operations of TVC's existing systems throughout the U.S. Previously, he held positions as vice president of corporate development for Gulf and Western's Athena Communications Corp. and as manager of system development for Jerrold Corp.

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are serving as guidelines in the further development of the Malden and Nashua systems, Stern said, and will be applied in the development of the company's as-yet-unbuilt franchises in the future.

"We view the big-city markets as a totally new arena," he said, "and strongly believe that our industry must cast an eye towards the future when designing systems for these urban areas. TVC believes we have done just that in Akron, and we expect the innovations of that pioneer system to be mirrored in big-city systems for years to come, once the FCC permits importation of distant signals into these cities and makes these markets truly viable."

While the Akron, Malden and Nashua systems lie with top-100 markets, TVC's surveys determined that all three are viable projects without the attraction of distant signals, Stern pointed out.

"In all three cases," he said, "the unusual reception situations make it possible for TVC to deliver a significant amount of additional channels which a significantly large number of viewers cannot receive with home antennas.

"However, we look to an even stronger demand for cable television in these communities when the FCC does permit importation of distant signals, allowing us to further enhance our already attractive program lineup."



Frank N. Cooper, president of TVC's Gridtronics subsidiary, is directing the development of a hardware-software service for CATV which will provide specialized programs for specific audiences. He also directs CATV franchise activities for TVC. Previously, he held posts as director of CATV brokerage operations for Malarkey, Taylor and Associates, and as manager of CATV franchises and acquisitions for Jerrold Corp.

# TVC ON CATV

During the past year, the management of TeleVision Communications Corporation has spoken out on various aspects and issues in the cable television industry, bringing the CATV story before financial audiences, communications executives, and a wide range of interested publics. A synopsis of these viewpoints appears below:

## CATV AND THE PUBLIC:

The public has always been the foremost champion of cable television. While the courts and Federal chambers have been ringing with debate about the directions the industry should follow, the subscriber has quietly continued to confirm our conviction that the public wants, and is willing to pay for, the unique diversity and innovation which CATV technology alone makes possible. In just the past five years, despite numerous legal wrangles and FCC "freezes," the industry, nevertheless, has increased by over three and a quarter million subscribers — further evidence of the appeal of cable television.

## NEW CABLE SERVICES:

Public acceptance of CATV should be heightened by the low-cost additional services which the industry is continuing to develop. By providing greater utilization of the TV receiver — transforming the set from solely an entertainment outlet into a device which also delivers educational and instructional courses, at-home shopping services, theater channels, professional instruction and a host of new services now being planned — CATV becomes an increasingly economical purchase, giving more value for the dollar than any other medium.

## THE TOP-100 MARKETS:

Big cities must look behind the facade of names on a franchise application and come to grips with the problem of who can actually do the job. They must ask such questions as: What company has the experience? Which of the companies applying has ever built a cable system of the size that these city councils will be asking to be built in their communities? Which company has the financial backing? Which company has a demonstrated track record with the kind of financing that is required?

## CATV AND THE BROADCASTING INDUSTRY:

The last thing cable television wants to do is destroy the broadcasting industry. Obviously, CATV needs broadcasting, and we want both industries to live side by side, not in a jungle of conflicting communications interests but rather in a peaceable kingdom dedicated to serving the television viewer.

## CABLECASTING AND ADVERTISING:

We do not profess to know what the future may be. We are, however, disturbed by the dream merchants who promise a pot of advertising gold or other significant monetary rewards. If the industry is not diverted, by revenue expectations, from the more realistic and promising aspects of cable origination, then we can fulfill the promise others see for us: a community outlet for local expression and services which can be mutually beneficial to the cable operator and the community at large.

## CATV AND UHF:

CATV is friend, not foe, to UHF. There is simply no escaping the fact that the technical limitations inherent in the UHF band are barriers prohibiting UHF broadcasters from ever competing with their VHF counterparts on an equal footing. But CATV alleviates this problem. CATV gets the UHF signal into the home. Moreover, CATV acts as a great equalizer. It delivers the signal on the same dial with the V's, electronically treats the signal so that it attains the same picture quality as the V's, and, most important, stretches the signal far beyond its normal reach, thus making it possible for the UHF broadcaster to fully serve his own market.

## CATV AND THE ECONOMY:

The current economic uncertainty could spur rather than stifle the growth of CATV. In this kind of economic climate, the public traditionally becomes exceedingly cautious with expendable income. CATV systems throughout the country can conceivably enjoy a healthy subscriber growth as the result of this purse-tightening, for these systems make possible for one low monthly fee an inexpensive yet varied source of entertainment for the entire family.

## CATV AND STATE REGULATION:

Every movement towards state regulation must be stopped in its tracks, if the CATV industry is ever to reach its full potential in serving the communications needs of the country. No industry can function under three layers of regulation — local, state and federal. CATV cannot serve three masters and still adequately serve the public.

# To tie-in with TVC is to team up with pros.

# 100,000

That's the way all of the suppliers to Television Communications Corporation must feel. C-COR is no exception.

TVC's latest milestone . . . 100,000 cable TV subscribers . . . is more than a number. It is a symbol of pride and promise. It is indicative of their continuing commitment to people in scores of communities, where TVC acts with vision.

TVC is a company with great concern not only for everyone of its 100,000 subscribers but also for the orderly growth and development of a dynamic industry. Its leadership has not only directed the company's internal growth with finesse and expertise, but that same leadership has also contributed immeasurably to the development of the industry's national and state trade associations.

Indeed, to tie-in with TVC is to team up with pros. Their subscribers know this. Their staff believes this. Their industry has experienced this.

The team of pros at C-COR Electronics, Inc. has been in the best of company working with TVC in Clearfield, Pennsylvania and Martinsburg, West Virginia. We're both "no nonsense" companies with a special commitment to quality. Everyone at C-COR salutes Television Communications Corporation on its 100,000 subscribers . . . and even more importantly, on its high standards of operation and leadership.

*C-COR Electronics, Inc.*

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When CATV amplifiers are mentioned, our name comes up!



## TVC's Mary McCarthy: A Ringside Seat in The Communications Industry

You can hardly find a more authentic pioneer in the communications industry than TVC's Mary McCarthy, whose career dates back to 1948 when she joined NBC's fast-growing television programming department.

"Those were the 'baby years' in television," said Mary, "filled with long but enjoyable hours and surrounded by young experimenters who, in many cases, have become the leading names in the communications industry today."

Mary's own career kept pace with the industry, as she moved from programming, to talent and program procurement, to the film department, until eventually she became involved with NBC's growing color operations and was appointed color coordinator. In that role, she served as liaison with the parent corporation, RCA, and dealt primarily in program scheduling and promotion.

In 1959, Mary became executive secretary in NBC's Enterprise Department, the corporation's international arm headed by NBC vice president Alfred R. Stern. And so began a grand alliance which has spanned three intensive years at NBC and nine years in the cable television business.

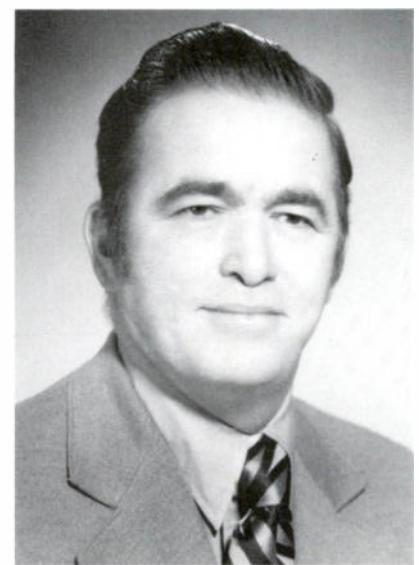
Sharing with Stern his conviction about the future of television, Mary joined him in 1962 when he departed NBC and formed Televents Corp., the forerunner of TVC. Working side by

side with the chief executive and the entire TVC management team, she has watched the company grow from a young systems owner and operator with a handful of CATV properties to a major force in the industry, serving 100,000 subscribers.

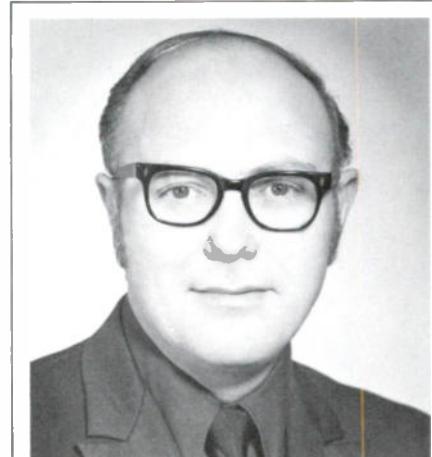
Today, Mary serves a dual role, both as executive secretary to Alfred Stern and as secretary of the corporation, a responsibility she doesn't take lightly.

"I've watched the broadcasting industry grow from a one-room operation into a vast national web wielding great influence on the lives of the public," she said. "Similarly, I've had the good fortune to have a ringside seat as the CATV industry has grown and flourished. The day by day advances in the state of the art are so great that there seems to be virtually no limit to the future of cable television. There are so many directions to be explored that just being a small part of the business is a truly exciting experience for me."

"It's hard to guess where cable television is going, with so many new advances being made every year," she continued. "About the only thing that's certain is that CATV is the communications wave of the future, and I'm happy to be part of this industry."



Richard Vance, national sales director for TVC's CATV systems, is responsible for expanding the direct sales approach throughout TVC's cable operations, and for supervising the training of sales teams within the communities served by TVC. He previously was sales coordinator in TVC's Akron system, where he developed a successful direct sales program for the nation's largest system now under construction.



Mac Ferguson, Director of Engineering for TVC, is responsible for all engineering design and supervision in TVC systems throughout the U.S. Previously, he was system engineer for Akron CableVision, responsible for engineering the country's largest system. A veteran of 20 years in CATV, he is considered one of the industry's foremost engineers. He has held posts as vice president of Gulf and Western's Athena Communications Corp., and as chief engineer for Jerrold Corp.

## TVC CABLE TELEVISION SYSTEMS AND FRANCHISES

ARKANSAS .....	4
FLORIDA .....	1
MASSACHUSETTS .....	14
MINNESOTA .....	1
NEW HAMPSHIRE .....	2
NEW YORK .....	1
OHIO .....	6
OREGON .....	3
PENNSYLVANIA .....	5
SOUTH CAROLINA .....	1
VERMONT .....	1
VIRGINIA .....	3
WEST VIRGINIA .....	1
<b>TOTAL</b>	<b>43</b>

*Any organization that achieves a better understanding between peoples, however small that progress may be, has done this via some form of communication.*

*Television Communications Corp. have achieved a very marked degree of progress.*

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Congratulations, Television Communications Corporation, on your 100,000th subscriber.

# SMITH THANKS SYSTEM MANAGERS FOR GROWTH

The people who "make it all happen" at TVC assembled together once again this spring, as the system managers and the corporate staff attended the annual TVC Managers Meeting on Paradise Island, The Bahamas.

The three-day working sessions at the Britannia Beach Hotel provided an opportunity for a wide exchange of information among the participants, on topics covering all areas of CATV system management. In addition, discussions included the various aspects of corporate management techniques, and an overview of the company's growth and development during the past year.

Joel P. Smith, vice president in charge of the cable television division, in addressing the opening session cited the company's system managers as "the vital ingredient making possible the firm's dynamic subscriber growth.

"To a great extent," Smith continued, "TVC attributes its

prominent industry position to the outstanding management team in our systems throughout the country. The bulk of our subscriber gain has been realized in our existing operations, all of which have achieved exceptionally high subscriber penetration.

"TVC fully realizes and deeply appreciates the role our system managers play, both in providing the basic revenues to the corporation and in creating a wide public acceptance and favorable image."



*Standing, rear (l. to r.): Art Goldstein, director, corporate accounting; Ed DeMarco, director, National Systems Dept.; Frank Cooper, president, Gridtronics, Inc.; Mac Ferguson, director, engineering; Harvey Rennie, manager, Pittsfield-Dalton TV Cable, Pittsfield, Mass.; Fred Schwab, manager, Warren Television, Warren, Pa.; Bill Taylor, manager, Bradford TV Cable, Bradford, Pa.; Mike Arnold, manager, Allband Cablevision, Olean N.Y.; Chuck Klein, CATV market development; Bill Roberts, manager, Claremont TV Cable, Claremont, N.H. and Bellows Falls Cable, Bellows Falls, Vt.; Doug Smith, manager, Berkeley CableVision, Martinsburg, W.Va.; Joel Smith, vice president, CATV Division; Art Harman, field coordinator, CATV accounting; Jim Cavanaugh, vice president and controller.*

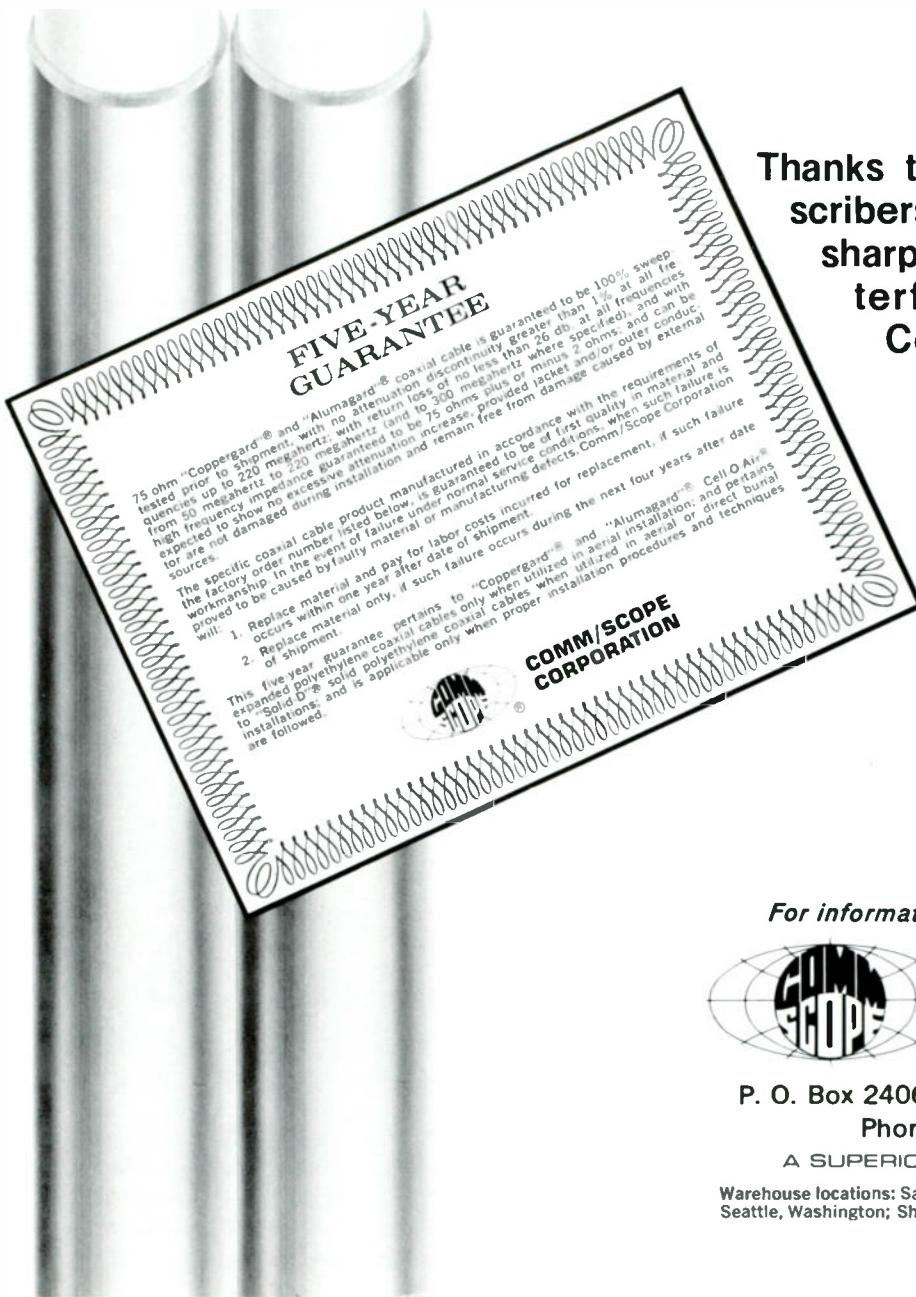
*Kneeling, middle row: Jim Doucette, director of finance, CATV Division; Jim Armstrong, manager, Clearfield County Television, Clearfield, Pa.; Bernie Simon, assistant controller; Bob Felder, manager, Akron CableVision, Akron, Ohio; Austin Coryell, research; Paul Asente, manager, Nashua Cablevision, Nashua, N.H.; Nat Weinberg, director, transportation; Max Traphagan, manager, Pine Bluff Video, Pine Bluff, Ark.; Jack Schmelzer, manager, Little Falls Video, Little Falls, Minn.; George Wylie, manager, Universal CableVision, Winter Haven, Fla.; Don Andersson, director, marketing research, promotion.*

*Seated, front: Bill Dimmerling, manager, Pottsville TransVideo, Pottsville, Pa.; Bob Jernigan, manager, Harrisonburg TransVideo, Harrisonburg, Va.; Paul Van Hook, vice president; Ron Barrett, manager, Mohawk Valley Television, Athol, Mass.; Rip Lindsey, manager, Trans-Video of Arkansas, Fayetteville, Ark. Not shown, but in attendance: Alfred Stern, president; Aaron Fleischman, vice president, general attorney; John Dille Jr., vice president, Communications Division; Bill Sinkunis, manager, Malden Cablevision, Malden, Mass. and general manager and vice president, TVC's Cablevision Corp. of America.*

# Congratulations



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Cited for overall excellence in all areas of system operation, three TVC managers received plaques and awards as winners in the annual managers' contest during the 1971 Managers Meeting. (From left): First place winner, Harvey Rennie, Pittsfield-Dalton TV Cable, Pittsfield, Mass., a seven-day trip to Acapulco for him, his wife, and family; Second place winner, Derek White, Bay Television, Coos Bay, Ore., a five-day trip to the U.S. city of their choice for him, his wife and family; Third place winner, Bill Roberts, Claremont TV Cable, Claremont, N.H., a three-day trip to the U.S. city of their choice for him and his wife.



**James E. Doucette** is director of finance for TVC's Cable Television Division, handling such matters as operational contracts, capital expenditures, franchises and purchasing for the firm's cable operations. He previously was a division controller for Metromedia Music.

## Efficiency, Courtesy, Technical Excellence Honored in Three TVC Systems

Phyllis Creer, office manager of TVC's Pittsfield-Dalton TV Cable system in Pittsfield, Mass., is a snap-to-it girl who sparkles with efficiency.

"Phyllis is the perfect example of the kind of people who keep our systems on the ball," said Joel Smith in announcing that she has been named TVC's "Office Woman of the Year."

"It takes more than good technical quality to keep a system going," Smith said. "The hundreds of details involved in the front-office operation



Phyllis Creer can count as much as the efficiency in the field. Phyllis keeps these office functions moving, and TVC considers this a significant contribution in

service to the subscriber."

Named as the 1971 recipient of TVC's "Courtesy Award" was Mary Jane Leith, office manager of TVC's Berkeley CableVision system in Martinsburg, W.Va.

"Maybe it's just that famous Southern hospitality, but whatever the quality is, Mary Jane has it in abundance," Smith said in announcing the award.

The honor is presented for "courteous and gracious attitude and service to the subscriber," Smith said, citing Mary Jane as "a woman each of our

employees in all of our systems should emulate for her fine manner in dealing with the public."

Turning to the technical side of



TVC's systems, Smith announced the award of "Technician of the Year" to Alex Ethier, technical supervisor of Allband CableVision.

"The superior technical quality which Alex and his staff achieve in the delivery of signals throughout the Olean system qualifies him for

this most important honor," Smith said. "We all realize that this is a most crucial aspect in any CATV system, and we appreciate the job Alex does in guaranteeing a superb level of system performance."

The awards were presented, on behalf of the recipients, to the three respective system managers during the Managers Meeting in The Bahamas.



Alex Ethier

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have cause to celebrate.  
All of cable television  
is ready for a breakthrough.

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communications explosion of the  
seventies.



**ANACONDA**



**James F. Cavanaugh** is vice president and controller of TVC. In this post, he directs all accounting and financial functions for the corporation and its Cable Television, Communications, and Recording Services Divisions. He is a Certified Public Accountant.

## TVC Enters European CATV Market With Cable Television System in Belgium

Bendix-TVC International, a European-based joint venture of TVC and The Bendix Corporation, has acquired the franchise to construct and operate a CATV system in Asse, Belgium, a community six miles northwest of Brussels.

Asse, with a population of 13,000, has 4,300 potential subscriber homes. In addition, Bendix-TVC International expects to extend the system to two adjacent communities, giving the CATV complex a total subscriber potential of 15,000 homes.

Residents of Asse currently receive six off-the-air signals with varying dependability. The proposed CATV service will deliver 10 signals, including: a French-language station from Brussels; a Flemish-language station from Brussels; two stations from France; two from Holland; three from Germany; and a time-weather-FM music channel.

According to Peter D. Warburton,

managing director of Bendix-TVC International, the country of Belgium is considered especially viable for cable television because the government encourages the service; the people are anxious for better reception and greater program variety; and the country is bilingual, making possible the delivery of French and Germanic-language channels from neighboring countries.

Engineering for the Asse system is currently under way, with construction scheduled to begin shortly.

Bendix-TVC International was formed in December, 1969 to explore investment opportunities for CATV in the international market. The firm combines the world-wide technological capabilities of Bendix with the cable television expertise of TVC.



**Peter Warburton**

## Foreign Delegation Hears of TVC's Gridtronics Plan



Members of a Japanese Trade Delegation hear Frank N. Cooper, president, TVC's Gridtronics subsidiary, explain the company's hardware-software plan for providing additional services to CATV subscribers. The delegation, sponsored by the Japan Economist Center, Inc. and comprising technical and sales executives from the Japanese electronics and broadcasting industries, was in the U.S. as part of a continuing inquiry into the CATV industry in this country. Cooper described to the visitors the diversified programming which will be offered on four midband channels via a proprietary scrambler-converter developed by the company.



**Aaron I. Fleischman**, TVC vice president and general attorney, handles a complete range of legal duties for TVC's cable TV and related communications operations. Previously, he was an attorney with CBS, with varied legal responsibilities for that firm's CATV systems. Fleischman has been associated with the law firm of McKenna and Wilkinson, Washington, D.C., responsible for broadcast, CATV and common carrier matters, and has been an attorney with the Review Board of the FCC.

## TVC Serves Varied Communications Needs, Expands Operations in Related Areas

"While cable television ownership and operation is the primary activity of TVC, and will continue to account for the major portion of future revenues, we recognize the inter-relationship and potential of many varied communications services," said Alfred R. Stern, TVC president.

The company has taken major steps in recent years to broaden the base of operations, and is now actively involved in the broadcasting and recording services fields.

TVC's Communications Division currently operates the company's radio and television properties, and is pursuing expansion in this area. The existing broadcasting properties include:

\* WKJG-TV, which serves Fort

Wayne, Indiana, one of the top-100 television markets. The station, an NBC affiliate, is the leading UHF in an all-UHF market.

\* WBNB-TV, serving Charlotte Amalie, The Virgin Islands. The VHF station is an affiliate of the CBS Network.

\* KNWA, an FM radio station serving Fayetteville, Arkansas, the University of Arkansas, and parts of Washington County, one of the most populous areas in the state.

Citing TVC's plans for a sharing of skills and expertise among its divisions, Stern pointed out that Fayetteville is also the site of one of the company's largest CATV systems. As the owner and operator of both an FM radio station and a CATV system within the same community, he said, TVC is exploring the feasibility of combining various technical and operational personnel and functions, in order to provide increased efficiency and an interchange of talents between both facilities. The company expects to add other FM radio operations in several of its CATV communities shortly, Stern said.

Similarly, TVC believes that the management, technical and creative skills in all of its broadcasting operations will be directly applicable to other areas of the company, according to Stern.

"For example, many of our expanding broadcasting capabilities will be valuable in our CATV operations as locally originated programming becomes an increas-



Paul E. Van Hook, TVC vice president, is responsible for directing TVC's diversification and acquisition program in related communications fields. He was previously an account executive with CBS and with Blair Television, one of the largest TV station sales representatives and marketing firms.



John F. Dille Jr. is vice president of TVC's Communications Division, directing the firm's broadcasting operations. A past chairman of the National Association of Broadcasters, he is a prominent figure in both broadcasting and newspaper publishing, and also has followed with interest the development of cable television.

ingly significant part of our service," he said.

The Recording Services Division of TVC operates The Record Plant, a major recording complex of five studios on the east and west coasts with the most advanced facilities in the industry today.

The Record Plant produces master tapes for all of the leading record distributing companies, and serves the best known recording artists in the music industry.

According to Stern, a recent acoustical and electronic redesign added quadraphonic mixing and monitoring capabilities, featuring 24-track tape machines and consoles designed and assembled by the firm's own engineers.

"A most exciting new addition to The Record Plant's facilities is the 22-foot remote recording van which began operating this spring," Stern said.

"The van, with acoustical design and equipment identical in quality to that offered within the firm's studios, enables The Record Plant to record live performances anywhere in the country. This is an important new service for our clients," he said.

## TO TVC's SUPPLIERS:

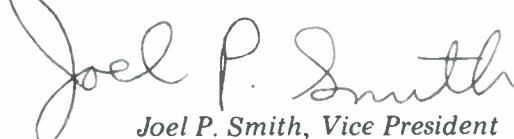
*On behalf of our 100,000 subscribers, TVC thanks you for your consistent devotion to high quality and superior performance in all of the equipment and services which you provide for our cable television systems throughout the country.*

*As the result of your continuing efforts to significantly enhance the state-of-the-art, we are able to assure our subscribers of the finest, most advanced CATV service the industry has to offer.*

*It's a pleasure doing business with all of you.*



Alfred R. Stern, President



Joel P. Smith, Vice President  
in charge of the Cable Television Division

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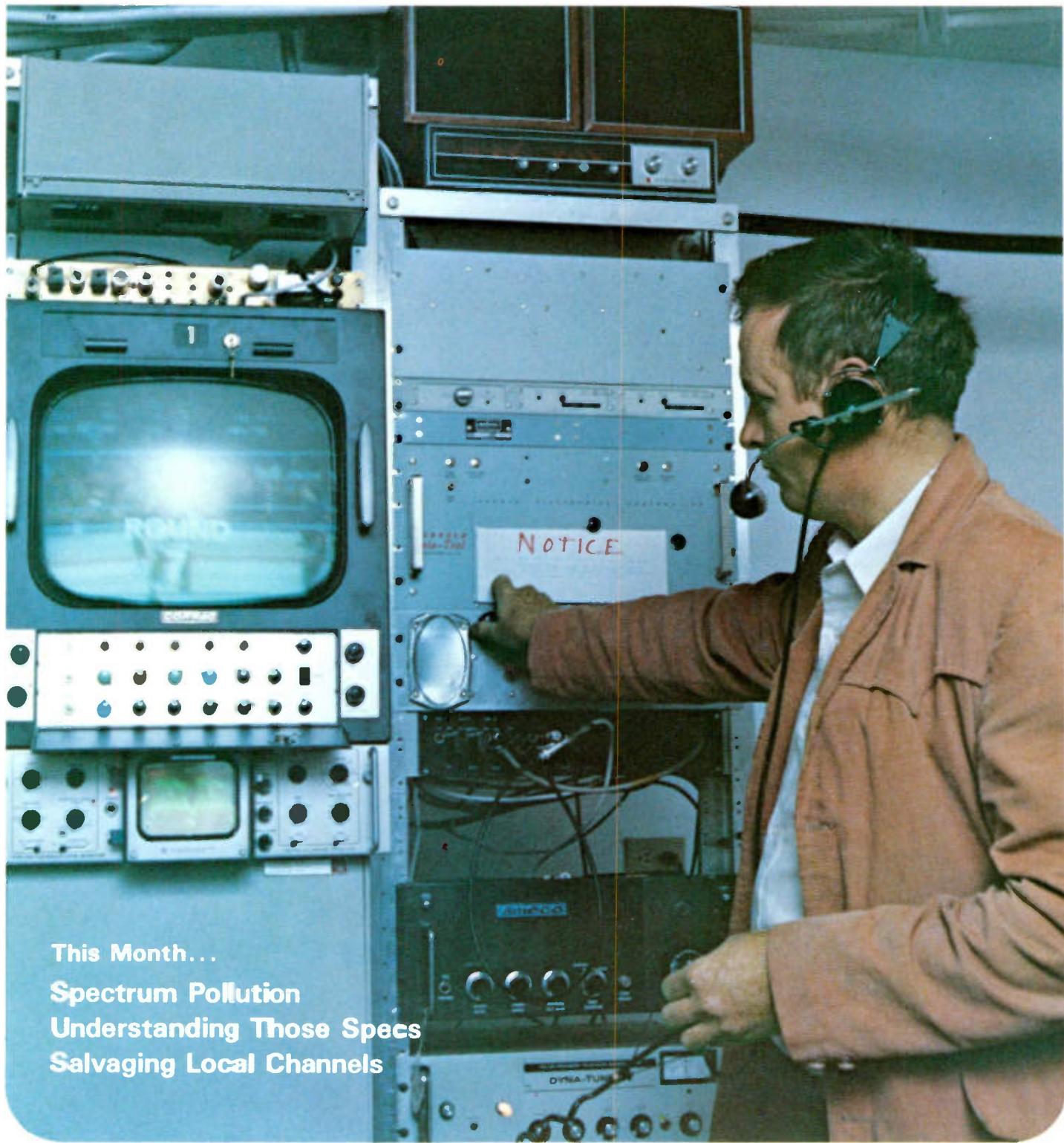
**of a major milestone**



July 1971

*TV Communications*

# CATV Technician



This Month...

**Spectrum Pollution**  
**Understanding Those Specs**  
**Salvaging Local Channels**



# EXPERIENCE

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# Equipment Specifications: Understanding the Language

When shopping for that right piece of equipment to implement system design, the technician must know what to watch for on the "spec sheet." Here are some helpful comparative techniques.

By Robert D. Bilodeau  
*CATV Technical Consultant*

In the January 1971 edition of TVC, we discussed system performance values only (static and dynamic) at the subscriber interface. These numbers implied certain individual component requirements. These components, of course, are the elements of a complete system and an understanding of the language employed in stating their properties is essential. No less important is an understanding of the relationship between individual component specs and the end result for a particular design application.

We can begin by examining some typical "spec sheets" for critical components.

The basic CATV system building block is, of course, the trunk amplifier. Table I is typical of

current "published" numbers for trunk amplifiers with bridging distribution.

Two-way configurations will not be treated in this analysis. Certain non-critical characteristics are omitted, e.g. dimensions, weight, test point values, etc. The emphasis is on those properties that are tied to system behavior.

All the numbers in Table I have been "normalized" where possible to present equivalent comparisons.

A quick glance at the tabulated results indicates some roughly similar characteristics for the five manufacturers studied. I have simplified part of the identification procedure with my attempt to equate the characteristics to like conditions.

An analysis of each item will

reveal the amount of research needed to understand a present day set of specs.

**Bandwidth.** This is the usable spectrum of the device and does not necessarily relate to any other feature. It has become a generic term, more often used to identify, than specify a particular make or model.

It is true, however, that 12, 21, 27, 36, etc. channel capacity implies a proportional increase in bandwidth. It is also true that the transmission response of other system hardware (and test equipment) should be compatible for total system bandwidth to be meaningful.

**Response Flatness.** The alignment of the station (or module) at some (unspecified) operating level

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Table I

Specifications	A	B	C	D	E
Bandwidth — Mhz	50-270	5-300	40-260	50-270	50-230
Response Flatness (Trunk) — dB	±.25	±.25	±.25	±.25	±.25
Output Capability dBmV (For -57dB 12 ch. sync. X-mod 5dB block tilt)	+50.0	+55.0	+53.0	+51.0	+53.0
Noise Figure	9.0	9.0	10.0	8.5	10.0
Operational Levels — dBmV					
Trunk — In	N.S.	+9	+9	+9	+9
Out	+32.0	+33.0	+32.0	+32.0	+32.0
Bridger — Out (Single)	+48.0	+47.0	+49.0	+48.0	+49.0
Operational Spacing dB (cable + flat loss)	22	23	21	21	21
Op. Cross-Modulation (12 ch.) — dB	-93	-100	-99	-95	-99
Op. Second Order Beat (12+ ch.) — dB	-82	-80	-84	N.A.	-78
Hum Modulation — dB	N.S.	-66	-60	-60	-60
Ambient Temperature Range	-40° F/ +140° F				

will fall within the 0.5dB spread indicated. When cascaded in a system 35 times, and added to the other transmission anomalies, the total peak-to-valley will be too great (typically).

This points out the need for system sweep balance which requires that the equipment be provided with proper *field alignment capability* to create the desired flatness.

Often the response flatness is not stated for other than factory settings and might be unacceptable. One manufacturer states that the variation over the gain control range will not exceed  $\pm 0.5$ dB. This is a commendable practice.

**Output Capability.** Cross-modulation values for the selected list are based on the NCTA method of measurement, but values of low band block tilt as originally stated were 3, 4 or 5dB. These have been "normalized" to 5dB block tilt which make them

an estimate on my part.

**Noise Figure.** Noise figures are referred to device values and not station values. Station values can vary with equalizer insertion loss (if external) and two-way filters (if within the station).

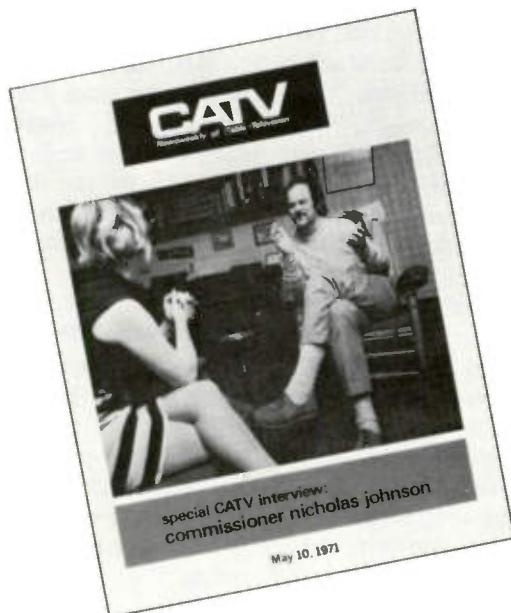
The latter is true of several manufacturers. It is not always clear whether the value as published is for station or device.

**Operational Levels.** Trunk values are important to indicate operational gain, system balance levels, etc. Bridger output levels are important since they relate directly to overall system costs.

**Operational Spacing.** All else being equal (or superior), larger numbers here mean fewer amplifiers in cascade. This translates to better pictures and greater reliability.

**Operational Cross-Modulation.** More recently, manufacturers have achieved measurement capability for the lower values at operational

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outputs. This enables them to state this number is spec sheets; and additionally, to determine the linearity of the X-mod. vs. output curve compared to the theoretical 2:1 behavior.

It is not uncommon for behavior to deviate from the theoretical projection. The difference between the actual and theoretical behavior of the amplifier at different output levels can cause problems.

**Operational Second Order Beat Level.** The equipment mentioned above is of the push-pull or equivalent species. Therefore, this number is important for applications in 12 ch.+ systems.

For the range of numbers indicated, actual system criteria would continue to be restricted by third order distortion — cross-modulation and/or A + B - C components.

**Hum Modulation.** This has become somewhat innocuous with the advent of solid-state equipment. The numbers stated are achievable, believable and demonstrable.

**Ambient Temperature Range.** Within this term lies a great range of unknowns! You will note that all specification sheets employ the same range of temperatures for this "spec." Consequently, if it were possible to apply a common meaning to "Ambient Temperature Range," then ostensibly all equipment would be equivalent in this characteristic.

The range of meanings for A.T.R. can be from "It will still be working" to "It will still be working and meeting specifications."

However, all equipment is not equivalent over a temperature range of this magnitude. In fact, the differences and their cumulative effect in a cascade represent the single most important consideration in the selection of hardware.

The variation in "tightness" from best case to worst case can be approximately 4 to 6 times. Providing for system controls over the effect of temperature on cable is difficult enough. Changes in equipment levels compound the difficulty.

To date there is not sufficient published data to enlighten the buyer towards making an intelligent choice in this one area. This would not be a serious defect if the thermal characteristics of equipment followed closely the pattern of the table of specs listed above. It would be difficult to make a poor choice if only the values in Table I prevailed. The differences on paper of the five shown above are small indeed.

We have spoken mostly of published and implied values for equipment performance. The smart buyer today wants to equip himself better before making a choice. You will discover that most manufacturers are willing and able to demonstrate the features of their product with laboratory data — recorded live.

If the published values are unclear and the dynamic behavior of similar concern, then I recommend that you clarify these unknowns before purchasing. You might even shed some light on the term "ambient temperature range."

TVC



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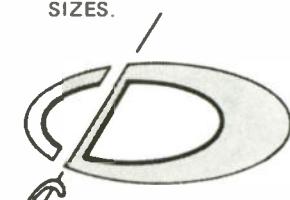


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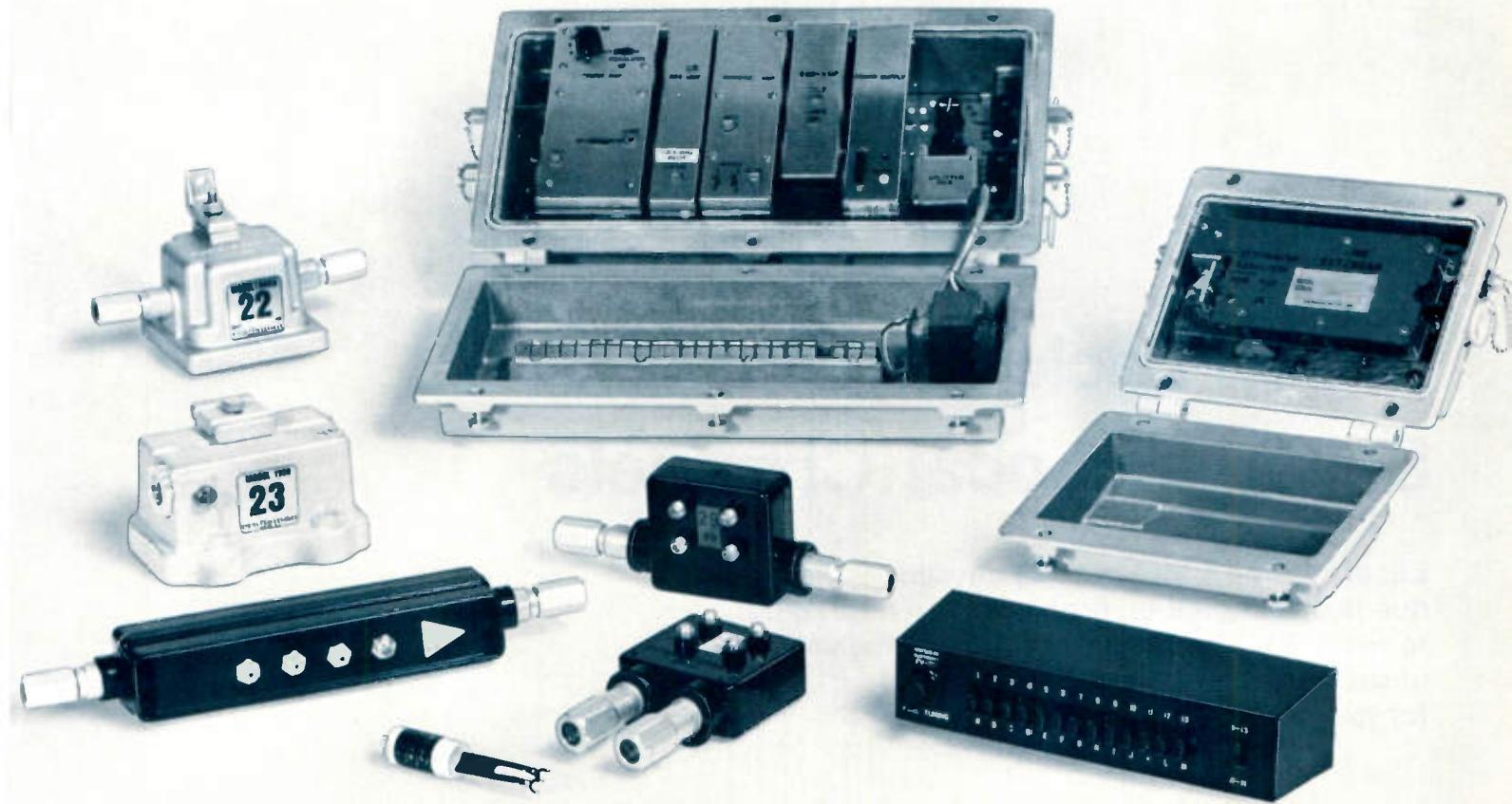
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# Phase Lock Application Salvages Local Channels

Local channels that are left unused due to direct pick-up problems can now be put to work. This technique maximizes the usefulness of such channels so they can be used for low priority video services.

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

**I**t is commonly supposed that the channels on which local television broadcasting stations operate cannot be used for cable television distribution within the same community. "Direct pick-up," i.e. the susceptibility of home television receivers to pick-up strong ambient RF fields even without an external antenna connection, causes the receiver to show two images when connected to a cable system on the same channel as the strong local ambient RF field.

The receiver "sees" two signals on the same channel... the "normal" feed through the cable, and an additional signal picked up from the ambient field. Since the cable signal is usually delayed by some microseconds compared to the ambient signal the resulting display will usually be a "leading ghost." The receiver deflection circuits lock to the stronger signal while the earlier ambient signal shows as a weaker image, displaced to the left of the main image.

In extreme cases the ambient field might be stronger than the cable field. The receiver will lock to the ambient signal and the

cable feed image will appear as a weaker second image delayed (to the right) from the main image.

Local television stations are usually assumed to have priority on cable systems and most cable systems operate in a way which assures high quality distribution of the local television station signals to *all* the subscribers on the system. The usual method used to assure satisfactory distribution to all subscribers is to convert the local channel to another channel for distribution in the system.

These conversions leave the "local channels" unused in the cable system. Some systems make an attempt to make some use of these cable channels for "low priority services" such as background music or automatic time and weather information. These attempts usually meet with only modest success because of the "direct pick-up problem."

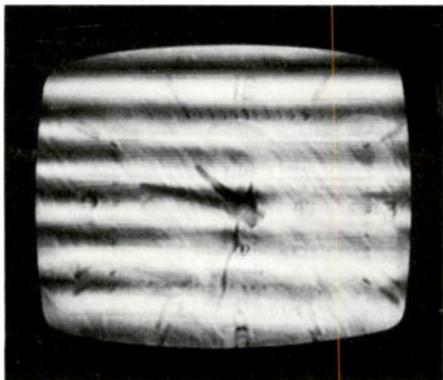
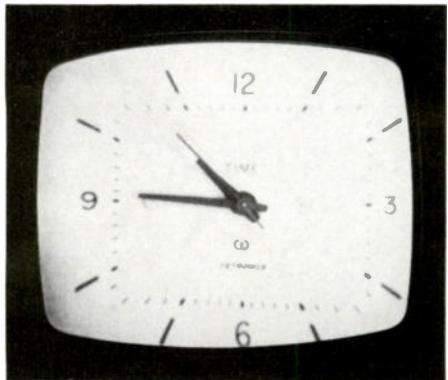
Distribution of a locally originated program on the cable system requires a modulator of some kind. The modulator carrier frequency will only be nominally on the desired channel, because of channel offsets in the assignment of broadcast channels, and

because of the inevitable difference in the frequency of the two independent carrier oscillators.

Broadcast transmitters are required to maintain carrier frequency to within  $\pm 1$  KHz. Most broadcast transmitters better this tolerance by at least an order of magnitude, and actually operate within 100 Hz or so of assigned frequency.

Most modulators used for cable television applications exceed this frequency tolerance, and even if they met broadcast transmitter tolerances, would still produce a "beat frequency" in the receiver when mixed with the "direct pick-up" signal. A beat frequency signal will appear in the displayed picture if there is any frequency difference whatever between the two signals... the cable signal and the "direct pick-up" signal.

In the case of "on channel" carriage of the local channel, there is no beat frequency produced since the two signals mixing in the receiver have been derived from the same transmitter without any relative change in frequency. The cable signal may have been processed to apply gain control and to depress sound carrier level



The left photo shows a TV screen with no interference. The center photo shows the same scene with beat pattern resulting from direct pick-up. At the right is a phase-locked operation with one station superimposed over the other. Due to phase-locking, there is no interference beat. This is an extreme pick-up case.

but this is usually done by double-heterodyne technique, using a common local oscillator so that the signal output from the processor is coherent with the input signal.

Experiments have shown that the beat pattern resulting from the cable system modulator, being different in frequency from the broadcast transmitter causing the direct pick-up, results in an objectionable visual effect similar to the interference caused by co-channel interference. The effect is indeed directly analogous to co-channel interference since it arises from the mixing of two carriers which are nominally on the same channel. In the cable case, the cable carrier has not been precisely controlled, and the resulting interference in the displayed picture has not been reduced in the way that precision offset of interfering carriers can reduce the subjective effect of co-channel interference.

Experiments have shown that the beat pattern (horizontal bars) is more objectionable than the second image or ghost resulting from ordinary "direct pick-up" interference. Fewer subscribers will receive satisfactory service in this case than would have received satisfactory service in the original situation of carrying the local station "on channel."

The effect of "direct pick-up" may be considered in a statistical way. The interference effect is that of a "leading ghost." The unusual -40 dB tolerance may be applied to this kind of ghost interference, i.e. that a good quality picture will result on those

receivers in which the undesired "direct pick-up" is 40 dB below the desired signal.

Sampling the receivers within a given cable service area might reveal that 80% of the receivers meet this standard, i.e. 80% of the subscribers would receive satisfactory service if we carried the local television station "on channel." The actual figure would depend on the proximity of the cable service area to the local transmitter, height and power of transmitter, etc.

In other words, the percentage of subscribers that would receive satisfactory service from "on channel operation" depends on the ambient field strength at the receivers in question. Since we usually consider that the local station must be received on cable by all the subscribers on the system, the 80% figure which I have used as an example is not satisfactory, and the system will convert the local station to another channel.

When the cable system substitutes another signal on the cable it finds that it does not achieve the 80% success it might have expected; because the resultant "co-channel" type interference, caused by the substitute signal (differing slightly in frequency from the local broadcast station) is more objectionable than the "ghost" type interference formerly experienced. We estimate the difference in objectionability to be equivalent to about 10 dB difference in interference protection, i.e. if the interfering signal is different in frequency, it should be at least 50 dB below the

desired signal.

Phase locking techniques permit the locally originated "substitute" carrier to be locked to the interfering local broadcast signal. The technique may be applied to local modulators or to heterodyne type equipment which converts other broadcast stations to the desired "local" channel.

This phase-locking technique eliminates the interference beat produced by differing carrier frequencies. In those receivers susceptible to "local pick-up" the interference effect is that of a second image (the local broadcasting station) in the background.

The protection ratio for this interference is similar to that required for the "ghost" or echo type interference. The interference objectionability is slightly different from that of pure ghosting or echo interference since the second image will be moving with respect to the main image since the sync generators for the two picture sources are not locked together. In some cases it may be possible to operate the local picture source in a "gen-lock" mode.

If the local source cannot be controlled, or if it comes from another broadcasting station, it will not be possible to lock the picture sync together without time base correction equipment of a type not yet generally available. In the case of two broadcasting stations the relative sync differences will be very small since modern color synchronizing generators are very closely controlled for frequency.

The statistical nature of this

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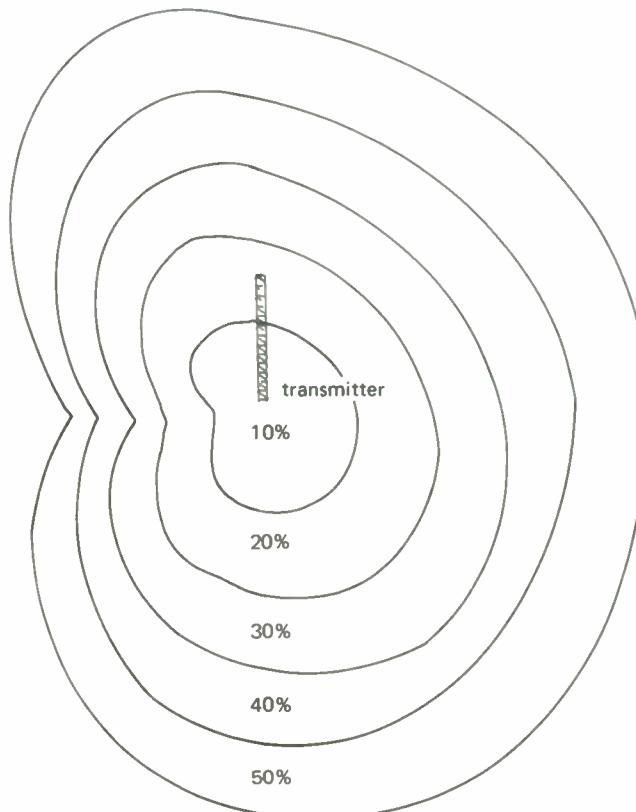
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*Within the inner contour only 10% of all receivers will operate successfully in "on channel" type cable system. Within next "ring" 20% of all receivers will have acceptable service. Contours can be drawn enclosing successively higher proportion of successful operations. The contours have not been drawn to any particular scale, since relationship of field strength to successful operation is not well known.*

phase-lock application may be thought of in terms of "success contours" drawn around the local television transmitter. These contours are related to the station's actual field strength contours since they represent the average susceptibility of television receivers in use in the area. Contours may be drawn outside of which "on channel" operation will be successively more successful.

Thus we may draw contours by 10% increments. Another set of contours may be drawn for the case of substituting another channel using an "unlocked" modulator or heterodyne converter. These contours will be less favorable. The phase-lock technique restores the previous "on channel" set of contours.

The actual relationship between ambient field contours expressed in conventional dBu terms, and the susceptibility of the television receiver population is not known. Such knowledge would be valuable in predicting the success of phase-lock techniques.

Our company is proceeding

with the technique in an empirical way. Present indications are that about 80% of subscribers in our Etobicoke service area will receive satisfactory reception of services distributed on "local channels" in our cable system.

Since the technique cannot assure 100% successful carriage of the "substitute" program or channel, we use it for channels of "lower priority." The "success ratio" is being gradually improved by limited use of other techniques such as increasing subscriber signal level, use of better balanced matching transformers and occasional modification of the receiver to provide improved shielding and field isolation.

The phase lock technique locks the frequency of a locally produced carrier to the interfering local broadcast station. This eliminates the beat interference that would otherwise arise in television receivers susceptible to local field pick-up and improves the utility of these channels within cable systems for other lower-priority type services.

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# Spectrum Pollution And the Set Top Converter

Originally designed to avoid one form of signal pollution, the converter can add to the spectrum pollution problem. This article reviews potential radiated energy problems and reports latest approaches to increased channels.

The system operator is in business to provide clean, clear signals to his subscribers. He has at his disposal approximately 300 MHz of virgin spectrum space.

It follows then that it is only good business that he avoid "spectrum pollution," the term used to describe any unwanted or spurious signal occurring within the CATV signal band . . . whether generated within the system or without. These dirty signals

manifest themselves as ghosts or herringbone beats on the subscriber's receiver.

## Direct Pickup Problems

Historically, the set top converter was developed in order to solve one particularly insidious form of signal pollution: direct pickup. In Grade A signal areas, the "over the air" signal is oftentimes strong enough that the subscriber's set serves as an antenna. Since this signal arrives ahead of the cable signal, the result is ghosting. In some areas, the problem was so severe it rendered some channels unusable.

The basic idea of set top converters was to convert the cable signals to a channel unoccupied by a broadcast signal. A TV type, VHF tuner, enclosed in a shielded structure, was used. The tuner took the cable signals, down-converted them to 44 MHz and then up-converted to the desired output channel. This method solved the direct pickup problem in a very practical fashion.

## ABOUT THE AUTHOR

Gene Walding is Manager, CATV Engineering, Electronics Div. of Oak Electro/netics. He is a graduate of the University of Illinois with a B.S.E.E. His career has spanned both military and consumer electronics. Since 1963 he has been with Oak Electro/netics developing television tuners. He has published several papers relating to tuner design.



## Expanding Channel Capacity

As systems grew, a demand for more than twelve channels was created. The set top converter appeared to be a way to tune in these extra channels.

Again, this was achieved by trading upon TV tuner

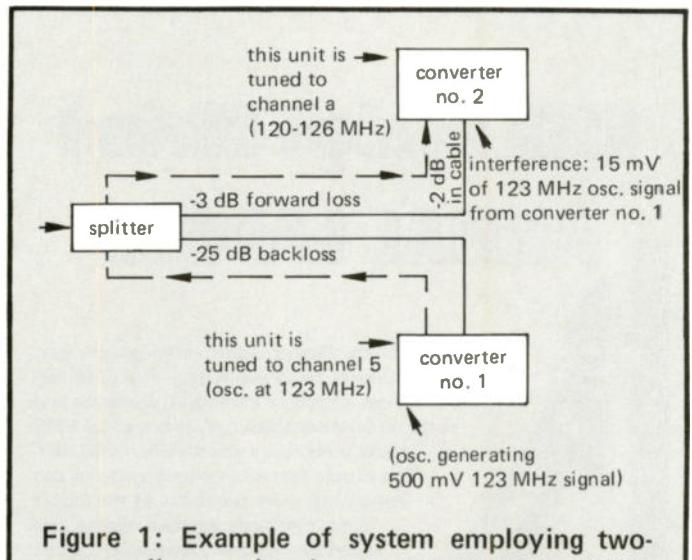


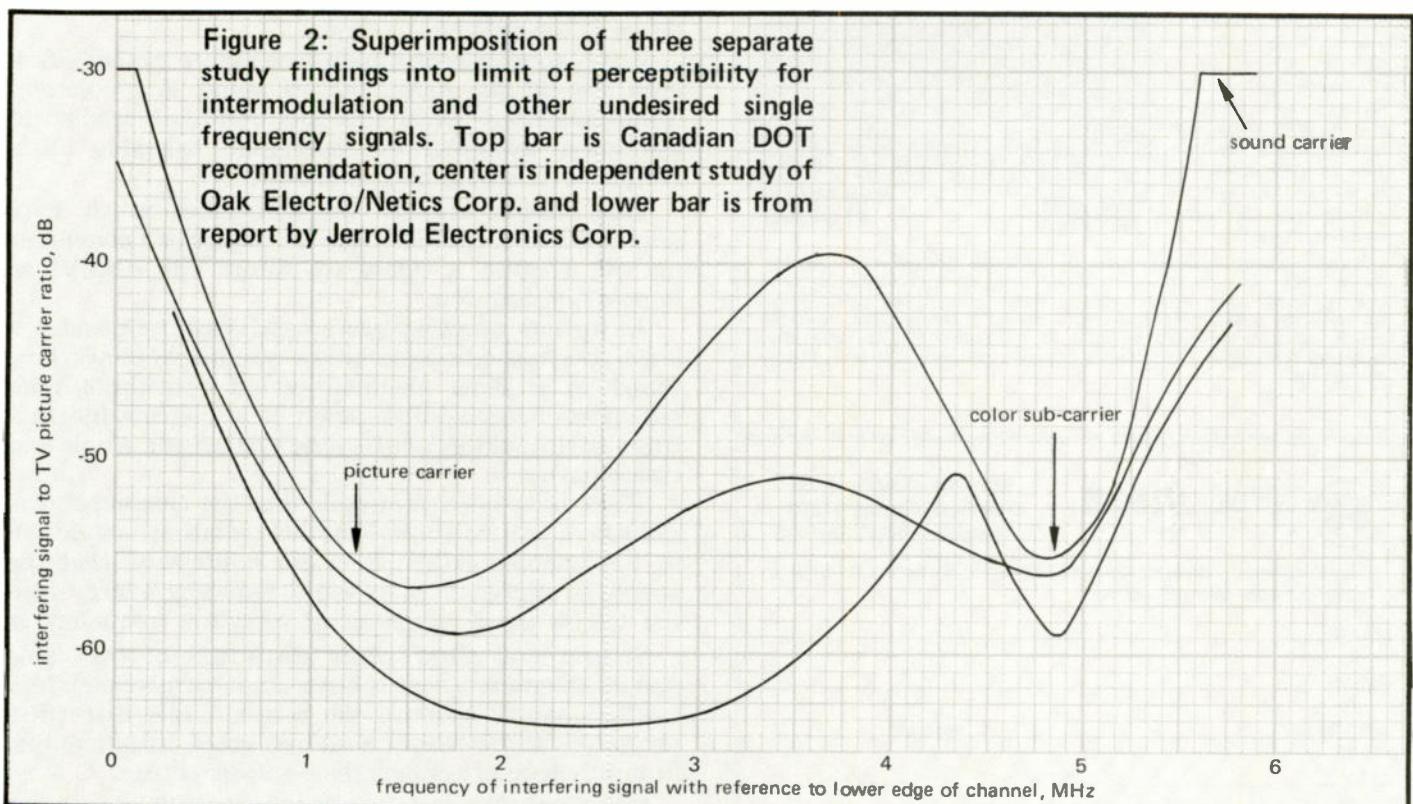
Figure 1: Example of system employing two-way splitter, showing converter-to-converter interference appearing on unit no. 2 in form of 15 mV 123 MHz signal — producing serious distortion or herringbone image on screen. The 15 mV interference level is only down 35 dB from a desired signal of 0 dBmV (1000 mV across 75 ohms).

either case, the received signal was down-converted to 44 MHz and then up-converted to the desired channel.

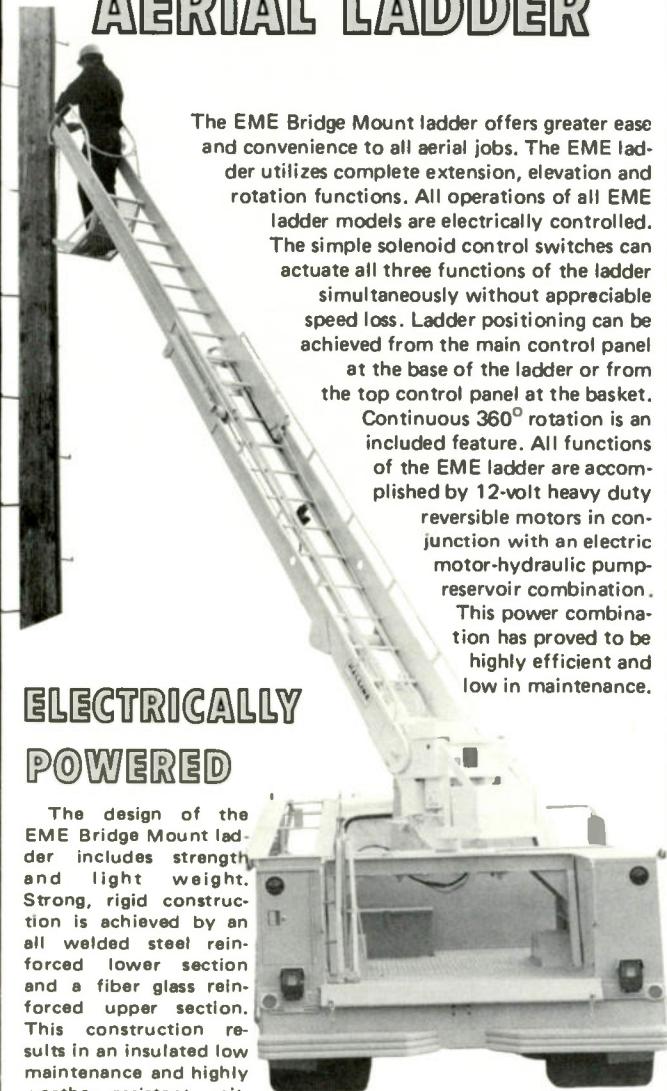
The problem here is that the local oscillator radiated energy into the mid-, high- and super-band spectrum. The result was that the converters could “talk” to each other.

technology. Either an extra tuner was added or else a greater than twelve position tuner was developed. In

Figure 2: Superimposition of three separate study findings into limit of perceptibility for intermodulation and other undesired single frequency signals. Top bar is Canadian DOT recommendation, center is independent study of Oak Electro/Netics Corp. and lower bar is from report by Jerrold Electronics Corp.



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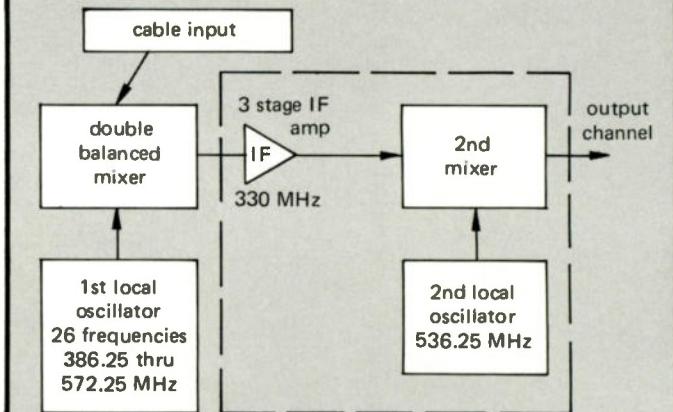


Figure 3: Functional block diagram of Oak's Gamut 26 television converter.

Maximum oscillator energy measured at the tuner antenna is typically between 1,000 and 500 uV across 75 ohms. In terms of TV tuners, this oscillator power is not excessive as the FCC defines maximum LO radiation not at the antenna terminals, but at a distance of 100 feet away from the receiver.

In a cable system it is different. The free space attenuation of a radiated signal is not available.

The isolation between one subscriber's converter and another is in the order of 30 dB (25 dB port to port isolation in one directional tap, about 3 dB forward loss in the neighbor's tap and about 2 dB cable loss.)

This means that about 15 to 30 uV arrives at the neighbor's converter in the form of potential interference. See example in Figure 1.

It is a good rule of thumb (see Figure 2) that signal level should be about 60 dB above any coherent interference.<sup>1,2</sup> With this rule of thumb applied to the cited example, the maximum tolerable interference level would be 1 microvolt.

This means that if the subscriber is to have immunity to cross-talk from his neighbor's converter, he will require a signal of about +30 dBmV, an impossible situation.

A further complication could exist. Consider a large apartment house where a number of converters, tuned to a given channel, would contribute their radiation in an additive way. It is conceivable that this signal could get out in the system as a whole and create havoc.

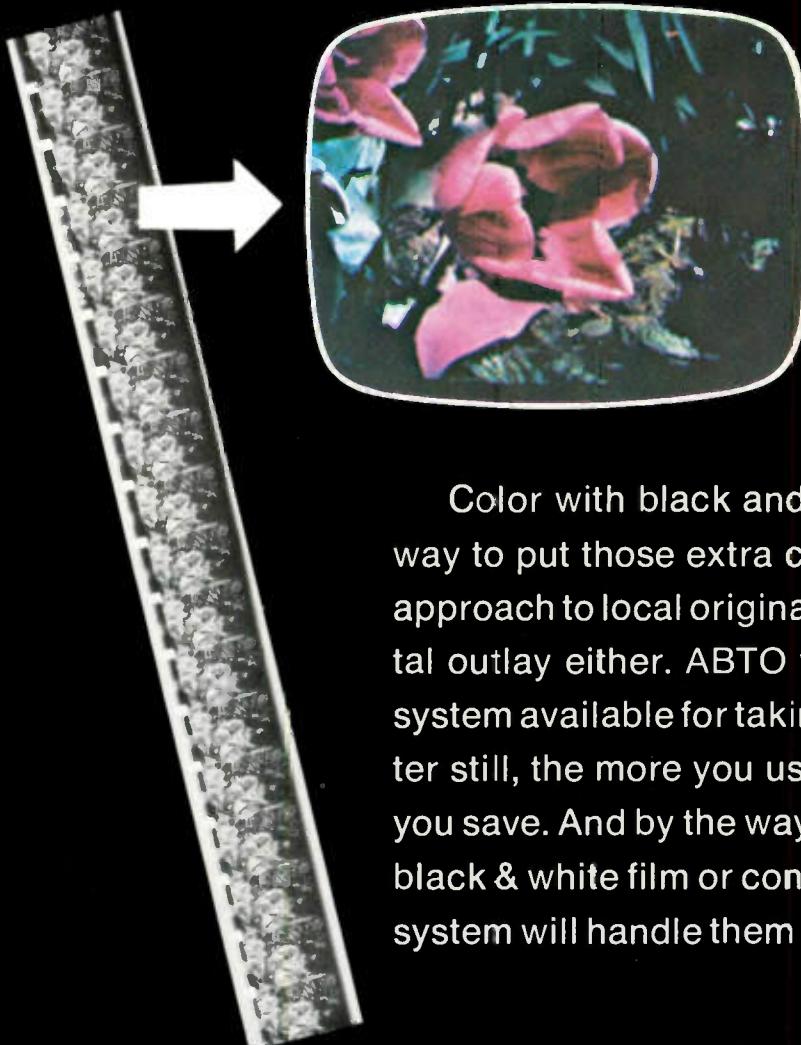
There have been proposals that the channel allocations be modified so that the LO radiations would fall at the channel edges. It is our contention that the soundest approach is to avoid radiating energy into the CATV band regardless of what the frequency is.

Second and third order distortion of the cable signals themselves cause beats and harmonics.<sup>3</sup> In a twelve channel system, the second order distortion products fall between bands and cause little trouble. In multi-channel systems the opposite is true.

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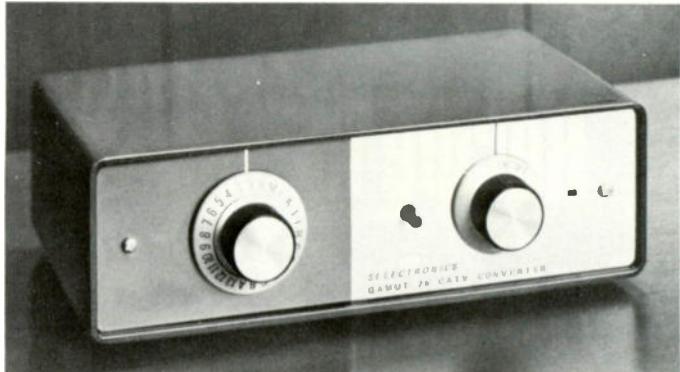
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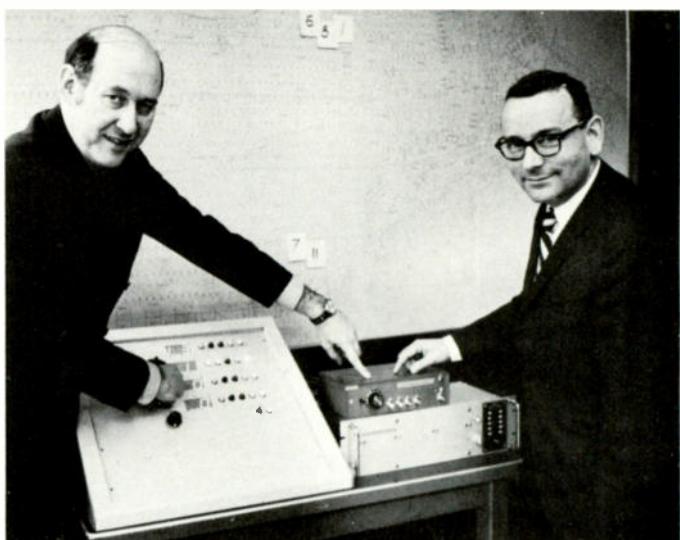
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New self-contained Oak 26-channel converter. Controls, reading left to right: channel selector switch, fine tuning, on/off, pilot light. Single quantity price: \$37.50. Some 30,000 have already been delivered.



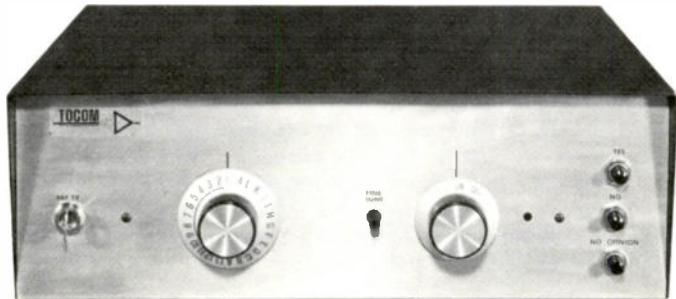
Take one Gamut 26 converter, add a decoding circuitry called the EnDe-Code system, and you have a product marketed by the Athena Communications Corporation. It bears the Oak label, uses the same up-conversion principle... and unscrambles a set of "private" channels for a semi-pay TV application. Athena will market-test the device on six of its systems this fall, and will make the device available to non-Athena cable systems. The all-solid-state device uses the so-called "gray-blank" decoding method. A cable system can use the device to scramble any one (standard or non-standard) channel or all of them.



Video Information Systems also uses the Gamut 26 converter, plus additional special circuits and comes up with what it calls

multi-channel converters, are doing everything possible to minimize spectrum pollution. In our case, it was decided that the proper approach to second generation converters was to avoid the TV tuner concept entirely.

"Video-12 . . . a bi-directional communicator/converter terminal." It was demonstrated in mid-February on the Sterling Manhattan CATV system in New York. Designed for compatibility with any bi-directional system, the unit informs the cable system what channel each subscriber has on . . . and allows the subscriber to respond to televised material. It uses the same up-conversion principle as the regular Gamut 26. Joseph Beck of VIS (left) and Fred Schulz of Sterling Manhattan are shown pointing to the Video-12 set-top device. Also shown is a computer simulator and an address generator used in the two-way communication system.



CAS Manufacturing Company uses an adapted Gamut 26 for the "converter-transmitter assembly" (shown here) portion of its TOCOM system. Notice the same basic configuration as the Gamut 26 . . . plus switches for pay TV and subscriber response. Proximity of the transmitter to the tuner allows the transmitter to see and transmit the on/off status of the tuner while informing the cable system which channel is tuned in. This unit uses the up-conversion principle to offer 26 channels . . . has circuitry for pay TV applications . . . can handle fire/burglar alarm inputs . . . and subscriber/meter informational inputs for opinion polls and utility meter reading.



Tomco Communications, Inc. has developed a converter under a somewhat different approach. It uses the same up-convert, down-convert principle, but it places the signals on the cable in an inverted relationship (i.e., the video and sound carriers are reversed). It uses a non-standard spacing between channels. Channels below 10 have an 8.5 MHz spacing and higher channels have 8.3 MHz spacing. The input low pass filter is designed to lower the LO re-radiation to below +5 dBmV. Output amplifier in the Tomco device raises the channel 12 signal such that the over-all gain of the unit is 6 to 8 dB. The converter is currently being tested in approximately 25 homes in Fremont, California, where it is being used with Anaconda Century 21 amplifiers. Single quantity price for this converter is \$75. This device will be shown as part of the Anaconda Electronics display at the NCTA Convention.

Instead of down-converting, we up-converted to an IF of 330 MHz and then down-converted to the desired output channel. See Figure 3. This places the local oscillator in the 386 to 572 MHz range; well out of the CATV signal band.

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**Optical Systems Corporation** has developed this converter unit which is capable of bringing in 52 channels . . . and decode any one or any combination of channels. Developed primarily to enable the sale of "private channels," the unit features a styling and channel designation system that distinctly departs from typical set-top converters. The manufacturer expects to have the unit in quantity production by this fall.



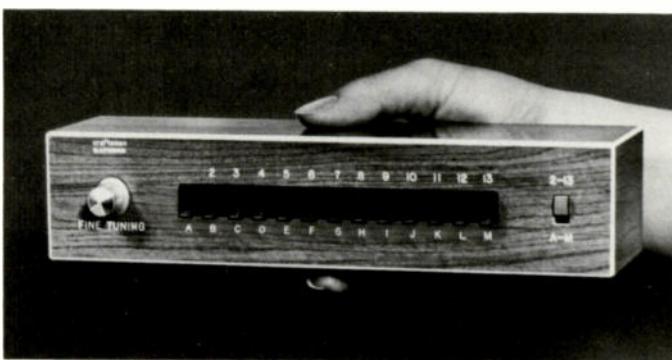
**Hamlin International** has a 30 channel "Remote Programmer" that it will show for the first time at the NCTA Convention. The firm has tried to move away from the "big, black box" type of converter . . . and has designed this unit which again uses the up-convert (to 544 MHz), down-convert principle. It has no dial, no switch and no pushbuttons . . . a slide selector is used instead. Hamlin has been in the converter business for a number of years and claims to have sold more than four times the number of converters produced by all other manufacturers combined. The firm is producing 4,000 units a month now, and expects to be producing 20,000 per month within a year. The 30 channel device sells for \$26.50 and is designed to interface with two-way "talk-back" units. Hamlin will have a 35 channel unit on the market by December, 1971 . . . and both the 30 and 35 channel units are adaptable up to 70 channels.

Compared to broadcast, cable signals operate at nearly equal magnitudes and within a relatively narrow dynamic range. An AGC able type RF amplifier simply is not required.

As a front end, we used a double balanced mixer. One outstanding feature of the DBM is its suppression of intermodulation products.<sup>4</sup>

Another technique employed was to design specific carrier frequencies (331.00 MHz for picture, 326.50 MHz for sound) so that the sum frequencies of the video carriers fell into the television receiver sound traps.

Other approaches being taken by the industry, to solve problems of spectrum pollution, appear to operate on basically the same up-conversion principle. Variations, of course, will occur in such areas as different blocks of frequencies, component changes, suppressive methods, etc. In all, however, it looks like a workable solution has finally been found. [AC]



**Craftsman Electronics** has a 25 channel converter that again uses the up-convert, down-convert principle. It is designated FV-25 and has a single unit price of \$55. The unit features varactor diode tuning for pushbutton channel selection. Any combination of channels can be blanked out (by screwdriver adjustment) to create "private channels." The converter has two parts. The power unit is generally wall-mounted, and can be located up to 25 feet away from the remote control channel selector (pictured above). Craftsman converters have been in production for some months.



Another approach to increased channel capacity is the AEL "tunerless" converter. Shown here is the CVT-3-CS super-band model. A new mid-band model will be shown at the NCTA convention. Both units block convert a series of channels to the regular 2-13 channels. The units sell singly for \$45 . . . in quantity as low as \$19.95. Super-band units are now available in quantity (about 3,000 are currently in use) and the mid-band units will be available in about 120 days.

## REFERENCES

1. Technical Standards and Procedures for Cable Television (CATV) Systems, Figure 1 in Appendix II, Canadian Department of Communications.
2. M.F. Jeffers, "Beat Frequency Assignments for Mid- and Super-Band Channels," Figure II, Jerrold Electronics Corporation.
3. Ken Simon, "The Fundamentals of Distortion in CATV Amplifiers," Technical Handbook for CATV Systems Third Edition, Jerrold Electronics Corporation; pp. 27.
4. R.B. Mouw and S.M. Fukuchi, "Broadband Double Balanced Mixer/Modulators," The Microwave Journal, March, 1969.

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You're professionals in what it takes to make CATV work.  
We're professionals in what it takes to make cablecasting work.  
Can we work together?

#### ATTENTION-GETTING, RESULT-GETTING ADVERTISING TO BUILD SUBSCRIBERS

We offer you total campaigns—newspaper, direct mail, flyers, buttons, bumper stickers—all designed to get quick results from prospects. Each campaign is built around a fast-action theme that makes people react. We show you how, provide the materials and you get customers now!

#### NEW, IMAGINATIVE, ECONOMICAL REALLY LOCAL PROGRAMMING

You choose from 18 different formats—from Game Shows to Gardening, from Auctions to Arts and Crafts—all created to utilize your community, your subscribers and your advertisers. We give you everything you need to build a great show around your own people. People like to watch themselves best of all, and best of all you watch your audience and advertisers grow fast!

#### EASY, STEP-BY-STEP GUIDANCE TO TIME SALES

There's a science to selling advertising time to local advertisers and you learn it quick with our custom-designed

programs for each different kind of sales situations. You sell a bank differently than you sell a baker. You sell a department store differently than you sell a druggist. With our training and tools, you sell them all!

#### INNOVATIVE REPRESENTATION TO NATIONAL ADVERTISERS

There is an enormous job to be done on Madison Avenue. They are really in the dark about CATV. We work with them in developing CATV as an important advertising medium and we represent you while we do it. You have an inside track on the big dollars!

#### OUR PRICE IS RIGHT!

You buy only the services you need. You add on at any time.

#### AND OUR SERVICE IS GUARANTEED!

How can we help you? Call today! (215) 665-8510  
We'll create a program that works exactly right for you. For complete information, get in touch with Perry Silver or Bobbe Weinberg right away.  
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Good Communications, Inc.  
1845 Walnut St., Philadelphia, Pa. 19103

PLAY ON . . . PLEASE . . .

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Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

# Good Communications

Good Communications, Inc. □ Suite 1206

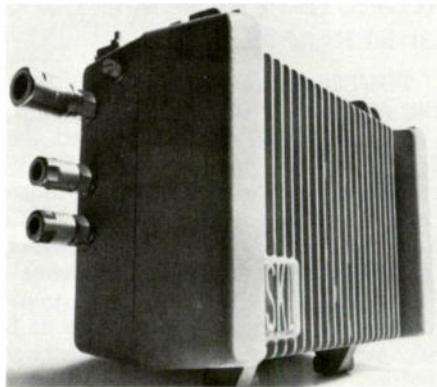
1845 Walnut Street, Philadelphia, Pa. 19103 □ (215) 665-8510

# PRODUCT REVIEW

NEW COMPONENTS FOR CABLE TELEVISION SYSTEMS

## 35 CHANNEL AMPS INTRODUCED BY SKL

Spencer-Kennedy Laboratories, Inc. has introduced a new line of 35-channel CATV distribution amplifiers. Bandwidth of the new 9000 Series amplifier is 50 to 300 MHz, with provision for two-way transmission in the 5 to 30 MHz band. This allows carriage of 35 television channels plus the FM band.

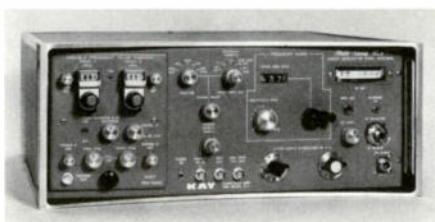


Operational output for the 9000 Series trunk amplifier is +32 dBmV with cross modulation of -93 dB. SKL claims that

the noise figure has been reduced to 7 dB on channel 2 and 9 dB on channel 13. All circuitry is solid-state. Described by SKL as "an industry first," the 35-channel 9000 Series is currently in production.

## KAY SWEEP AND MARKER GENERATOR

Kay Eleometrics, 42 Maple Ave., Pine Brook, New Jersey 07058, has introduced what it describes as "the widest range, lowest cost, CATV sweep and marker generator on the market." The model 162A is designed to cover its 2-1000 MHz range in a wide, flat sweep. The instrument features a digital readout of center frequency, and a selection of calibrated variable birdie, or



harmonic combmarker systems. Standard specifications include a swept signal output of .5 volt RMS into 75 ohms (or 50 ohms), with harmonic and spurious responses more than 30 dB down. It is priced at \$1,495.

## CONVERTIBLE AMPLIFIER FROM GTE SYLVANIA

GTE Sylvania Incorporated, 730 Third Avenue, New York, N.Y., has introduced a versatile new modular distribution amplifier station which can be used in CATV systems as a line extender or economy trunk amplifier. The station is part of GTE Sylvania's "Wide Spectrum" cable communications equipment line. The modular construction of the station is said to permit it to be used in either of two ways, depending upon the baseplate and modules selected. In the line extender configuration, it functions as a push-pull or single-ended amplifier with choice of manual, dual pilot control, or tilt-compensated total automatic control operation. Used as a trunk amplifier, the station features manual or dual pilot automatic operation. In either application, bi-directional transmission is available as an option.

## SUBSCRIBER HARDWARE OFFERED BY MPI COMPANY

The MPI Company, P.O. Box 6130, Philadelphia, Pa. 19115, has developed a new line of CATV subscriber hardware. The line consists of surface-mounted, stud-mounted and hollow-wall mounted multi-directional, directional couplers,

**LRC**  
**ELECTRONICS**

### ALUMINUM CABLE CONNECTORS

LRC Precision Aluminum Cable Connectors feature . . . captive ferrules . . . O Rings . . . positive stop assembly . . . and fewer assembly parts. We also manufacture a complete line of F series. Complete facilities provide maximum service for both standard items and custom engineered requirements.

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Phone 607-739-3844

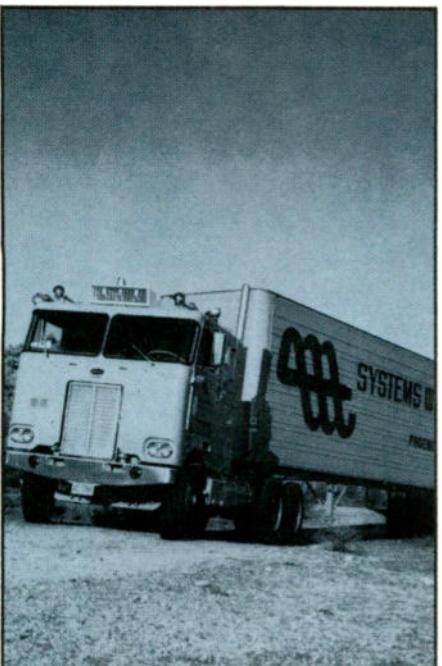
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for CATV people**

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- \* No outriggers
- \* 300 lbs. bucket capacity
- \* 29' working height
- \* 9½' over the side
- \* 360 degrees rotation
- \* Tool tray in bucket
- \* Full control at bucket

*Distributors in most major cities, some territories still open.*

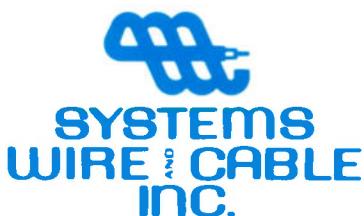
**DUR-A-LIFT**  
Durnell Engineering, Inc.  
2214 Main Street  
Emmitsburg, Iowa  
50536



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Lots of things can happen to cable in transit. It can be delayed. Or lost. Or damaged. Especially when the people handling it aren't cable specialists.

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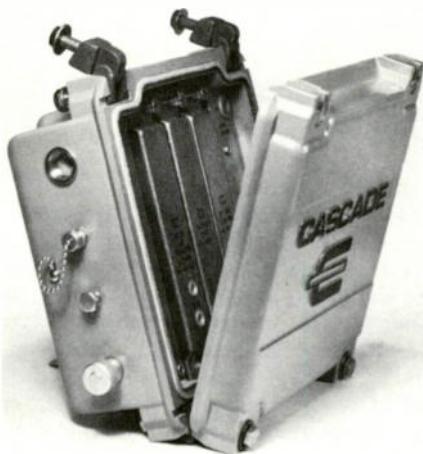
Telephone (602) 268-0289

\*PERFECT CONDITION DELIVERY

hybrid splitters and outdoor aerial mounts. A unique feature of MPI's multi-directional, directional couplers is said to be a center conductor system consisting of a securely anchored mother board and a plug-in coupler of selected rating which enables the installer to change signal flow direction without re-routing cables or moving coupler box.

### SUB-VHF AMPLIFIER NEW FROM CASCADE

Cascade Electronics, 111 C Street, Bellingham, Wash. 98225, has announced a new sub-VHF amplifier.



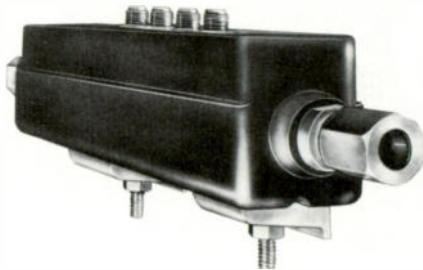
The "Minicom" has been designed for total compatibility with the "Unicom" trunk amplifier. Offering push-pull, two-way, AGC plus TLC, the "Minicom," utilizes conventional Unicom modules. Production of the "Minicom" will commence about November, 1971.

### BENCO AMPLIFIER FOR 40-300 MHz

Benco Television Associates, 27 Taber Road, Rexdale, Ontario, Canada, has announced the model DA 60-300-B, a linear, high output level broadband amplifier with a frequency range of 40-300 MHz. The unit has 45 dB gain, but can be adjusted to 35 dB gain-reduction by means of two switchable attenuators and one continuously adjustable gain control which are distributed within four stages of the amplifier to maintain a linear operation over a large dynamic range. Frequency characteristic of the DA 60-300-B is adjustable.

### CRAFTSMAN REDESIGNS DIRECTIONAL TAPS

Craftsman CATV Division of The Magnavox Company, 133 W. Seneca St., Manlius, N. Y. 13104, announces that



another of their overhead directional taps has been redesigned to give usable performance over the 5-300 MHz range. Model 1300 with the 5-300 MHz band pass width is now designated 1300B. Originally designed for use in highly corrosive atmospheres, the poly carbonate case affords a corrosive proof impervious to the elements. Field changeable through connectors are protected by the exclusive Craftsman connector port sleeves which are used to anchor sealant materials.

### TOMCO OFFERS NEW UHF PREAMPLIFIER

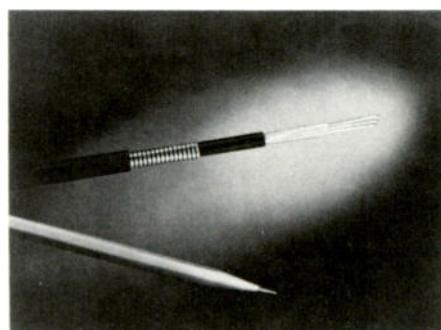
TOMCO Communications Inc., 2239 Old Middlefield Way, Mountain View, California 94040, has introduced the TOMCO A-103 solid state, UHF preamplifier, which is available in the single channel version or broadband. The single channel unit has a preselector factory tuned to the required channel. The A-103 has a gain of 17 dB minimum and maximum noise figure of 5 dB. When ordering, specify channel desired.

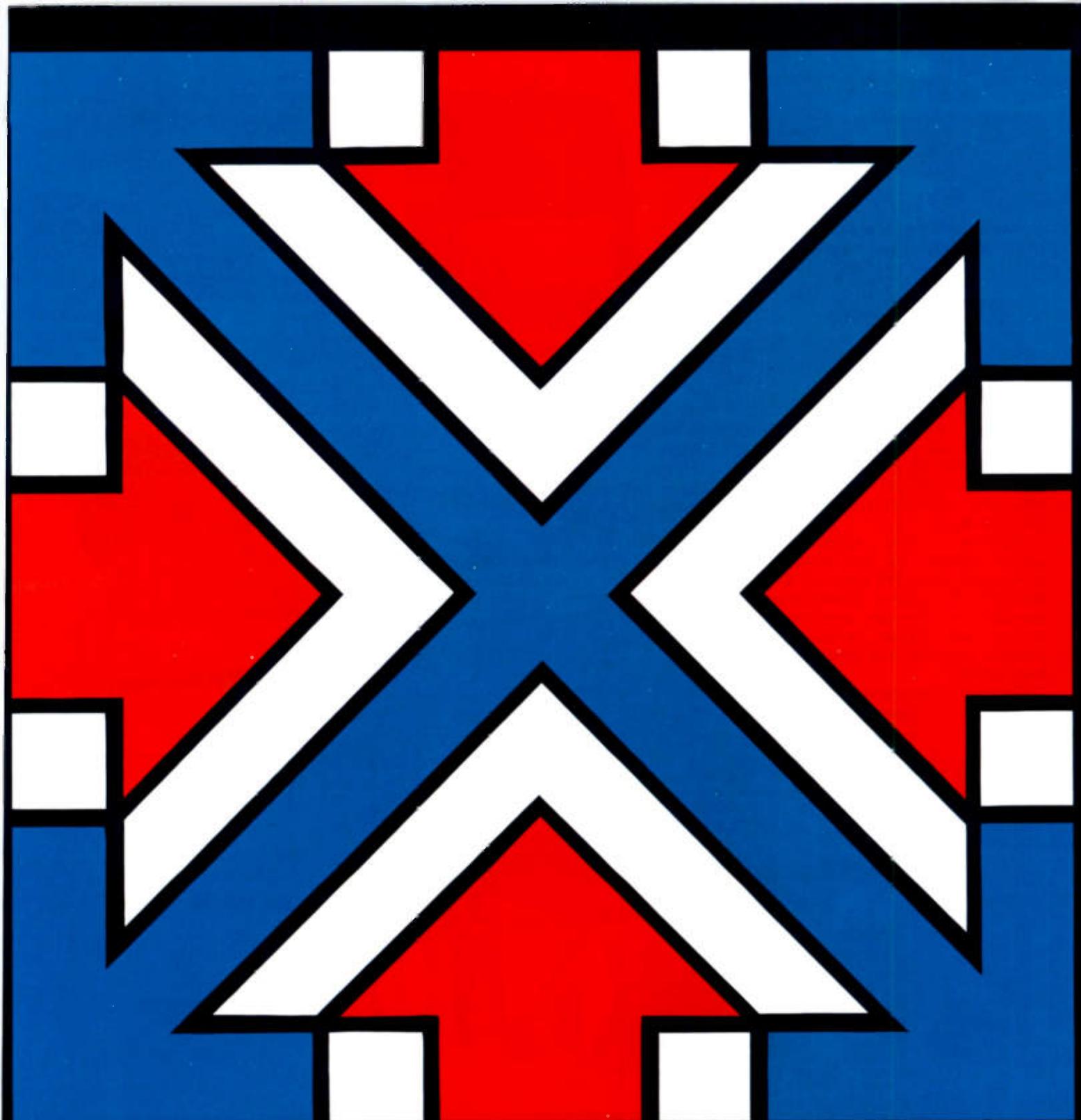
### NEW LIGHT GAUGE BURIED DROP WIRE

A new light gauge, 2 pair 24, double jacketed buried drop wire, featuring bi-metallic shielding has been introduced by Phelps Dodge Communications Company, 60 Dodge Ave., North Haven, Conn. 06473.

The new wire is designed to achieve effective cost savings without impairment of electrical or mechanical performance.

Fabricated very much like larger diameter direct buried cable, the new wire features longitudinally applied bi-





## SECURITY ALERT

From the technology of the computer age direct to your customer, Scientific-Atlanta's new Security Alert Communications System provides your customer with vital services and your system with a second income. Automatically and reliably interrogating up to 8100 locations each 10 seconds. Security Alert reports the status of fire and burglar alarms. Additionally the system can check critical industrial processes such as temperature or pressure, do advertising surveys, play games or call an ambulance at the touch of a button. Most importantly, Security Alert is a fast and flexible monitoring system with high reliability and simple operation. It has broad new market applications for the CATV operator in both residential and commercial areas. For additional information, contact Dick Walters at Scientific-Atlanta, Inc., Box 13654, Atlanta, Georgia 30324. (404) 538-2930, and see Security Alert at Booth 320, NCTA.

**Scientific-Atlanta**

metallic shielding of stainless steel and copper bonded together by a special molecular process. This provides the advantages of strength and flexibility over conventional bronze spirally wound shielding. As a result, the new drop wire has withstood more 180 degree bends before fracturing than standard shielded wire. Further, when properly installed, the new drop wire is impervious to normal rock damage and frost heave and will resist gopher and rodent damage.

## JERROLD ANNOUNCES NEW SOLID STATE FSM

Jerrold Electronics, 401 Walnut St., Philadelphia, Pa. 19105, has developed a new solid state portable field strength meter capable of measuring the signal levels of all UHF, VHF and FM channels, plus mid-band and super band CATV channels.

Designed for the professional TV system installer, the new Jerrold 747 tunes from 50 to 260 MHz and 470 to 890 MHz. For ease of tuning, channel separation is unusually wide, with all picture and sound carriers clearly marked, including mid-band and super band carriers.

Completely solid state, the new meter is compact and balanced to hang in an



easy reading upright position from a neck strap, leaving both hands free.

The meter operates from four miniature 9 volt batteries. Electronic power regulation assures accuracy even as batteries age. To extend battery life, the meter is automatically turned off when the cover is closed.

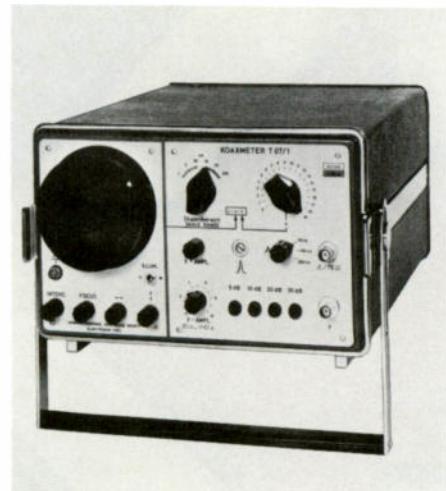
Accuracy of the 747 is  $\pm 1.75$  dB; 50 to 260 MHz; and  $\pm 3$  dB, 470 to 890 MHz over a temperature range from 20 degrees F to 100 degrees F. The meter provides simultaneous readings in microvolts and dBmV, with a range from 10 uV (-30 dBmV) to 1.0 volts (+60 dBmV).

By plugging the earphone supplied into the high level audio output jack,

the technician can hear the sound of each channel as it is tuned in... a valuable assist in identification of FM station interference.

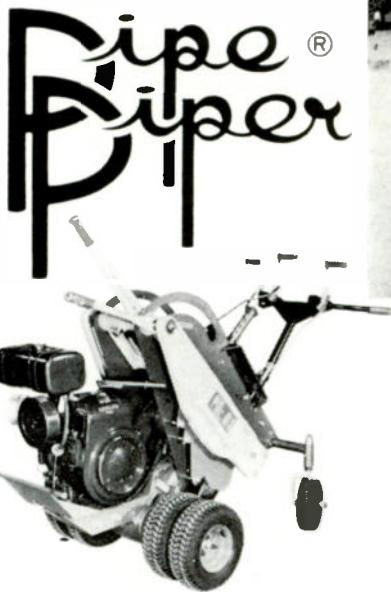
## NEW W & G KOAXMETER PINPOINTS COAX FAULTS

W. & G. Instruments, Inc., 6 Great Meadow Lane, Hanover, N.J. 07936, is marketing the new HDW Model T 07/1 Koaxmeter which takes advantage of the fact that faults in a coaxial cable cause a deviation from the characteristic impedance. The instrument transmits



## Cut your overhead!

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### SODMASTER

(Division of Jacobsen Mfg. Co.)

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*The fastest and most economical way to bury service wire, cable, and pipe.*

Pipe Piper reduces underground laying of wire, cable, and pipe to an easy one-man job. You save at least 80% on burial time and you are never concerned about customer satisfaction because, with a Pipe Piper, no turf or earth is removed! No trench to fill. No turf to replace. No damage to the finest lawns.

Pipe Piper is easy to maneuver in narrow places, around shrubbery, and close to buildings. You can maintain constant burial depths of from 5 to 16 inches with one initial setting. Pipe Piper is available in three models to meet every job requirement.

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We carry the most complete line of Cable TV tubes and semiconductors in the industry.

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pulses to the line to be measured and any changes in its impedance result in reflections whose amplitude and polarity indicate the nature and severity of the fault. By measuring the time required for the pulse to propagate through the cable to the point of the fault and back, accurate determination of the distance to fault can be ascertained.

Designed primarily as a trouble shooting tool for field applications, the T 07/1 can also be used for quality evaluation of coax transmission paths as well. The unit which measures only 7" H x 18" D x 12" W and weighs but 30 pounds effectively locates such faults as corona breakdown points, defective splices, shorts, opens and other deviations from nominal impedance.

#### HP INTRODUCES NEW ECONOMICAL RF SOURCE

Hewlett-Packard Company, 1601 California Avenue, Palo Alto, California 94304, has introduced its new 22 KHz to 70 MHz RF oscillator, which the company describes as laboratory grade in performance but priced for general purpose use. Applications for the all-solid-state HP Model 8651A include testing antennas, filters and amplifiers, driving bridges, and providing calibration signals for wideband test equipment such as scopes, voltmeters, and counters.

Among the major features are: Push-button selection of frequency range (22 KHz to 70 MHz in seven bands); Calibrated output, continuously adjustable



from 3 volts to 1 mV into 50 ohms; Output flatness  $\pm 3\%$  to 22 MHz,  $\pm 5\%$  22 to 70 MHz; Frequency stability of 20 ppm per minute after warmup; Low distortion.

The HP 8651A RF Oscillator is well shielded ( $<10$  microvolts leakage) so it can be used with sensitive or susceptible equipment. Its compact size,  $6\frac{1}{2}$ " high by 11" deep by  $7\frac{1}{4}$ " wide (half rack width), makes it convenient for bench use, for rack-mounting with other equipment, or for field work. Price \$695

TV Communications

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If we financed CATV when it was only a dream, won't we say "yes" to your financing needs? Whether you require \$100,000 . . . \$1,000,000 or much more, we'll be glad to lend you both the funds and . . . the knowledge we've acquired from 10 years of having provided the "money to make money" to more than 20% of the CATV systems in the country. Phone collect today: Ask for Ed Zukerman, C. T. Hux or Harold Ewen.

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## AVANTEK INTRODUCES CABLE TEST SYSTEM

Avantek, Inc., 2981 Copper Road, Santa Clara, California 95051, announces their new, non-interfering CATV - Remote Automatic Sweep System, consisting of the Model CT-1000 Cable Transmitter and the Model CR-1000 Cable Receiver. Avantek combines two essential testing functions in a single measurement system, designed to be operated by one technician.

In one mode, the transmitter injects a continuous, non-interfering, sweeping



test signal at the head-end of the CATV system. This signal is detectable at any point in the system by the CR-1000 which displays the entire swept fre-

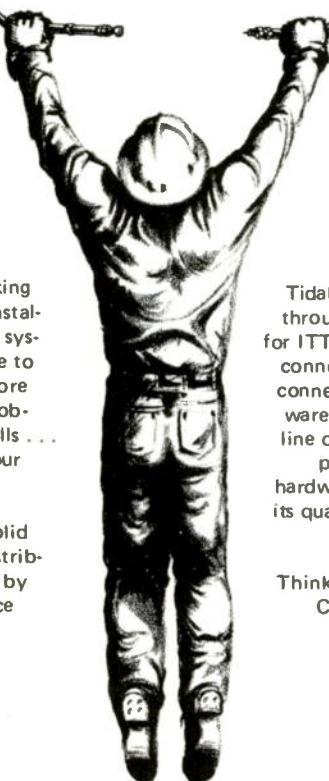
quency response on a large, 5-inch oscilloscope screen.

The second operating mode allows for use of the CR-1000 Cable Receiver as a spectrum analyzer, independent of the CT-1000 Cable Transmitter. One significant testing capability of this mode is the measurement of undesired beats at least 60 dB below the video carrier level.

## SIGNAL LEVEL METER NEW FROM LINDSAY

Lindsay America Corp., P. O. Box 77, Fort Washington, Pa., has announced their new signal level meter, designed to provide the CATV/MATV installer with a quick and accurate method of measuring the RF level of television channels

## there is a right time and a wrong time to think about quality



It is too late to start thinking about quality during an installation problem or a major system failure. The right time to think about quality is before the trouble, before the problems, before the phone calls . . . when you are *planning* your equipment order.

Tidal Sales is building a solid reputation as a leading distributor of CATV equipment by offering quality and service when they count.

Tidal is the major distributor throughout the United States for ITT Gremar Canada coaxial connectors, the finest quality connector in CATV. All Tidal warehouses stock a complete line of CATV passive devices, pedestals, wire, cable and hardware. And Tidal backs up its quality products with *same day delivery*.

Think quality when it counts. Call the Tidal Sales representative in your area.

See us at ITT Gremar's Booth 44/NCTA SHOW

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over 75 ohm cable systems. The DLM-1 eliminates the need for tuning-in the picture carrier by the use of a detent-stop channel selector switch.

## SADELCO ANNOUNCES FIELD STRENGTH METER

Sadelco, 299 Park Ave., Weehawken, N. J. 07087, announces the availability of the first CATV field strength meter, Model FS-3-S, that covers the entire new Super-Band range (216-300 MHz) with a built-in Super-Band tuner. It also has the regular VHF range (54-216 MHz). Further, a low frequency adaptor (5-54 MHz) can be slipped into the meter's accessory compartment, providing a compact field strength meter package that covers the range of from 5-300 MHz. The unit is lightweight,



# *How to get GOOD RECEPTION*

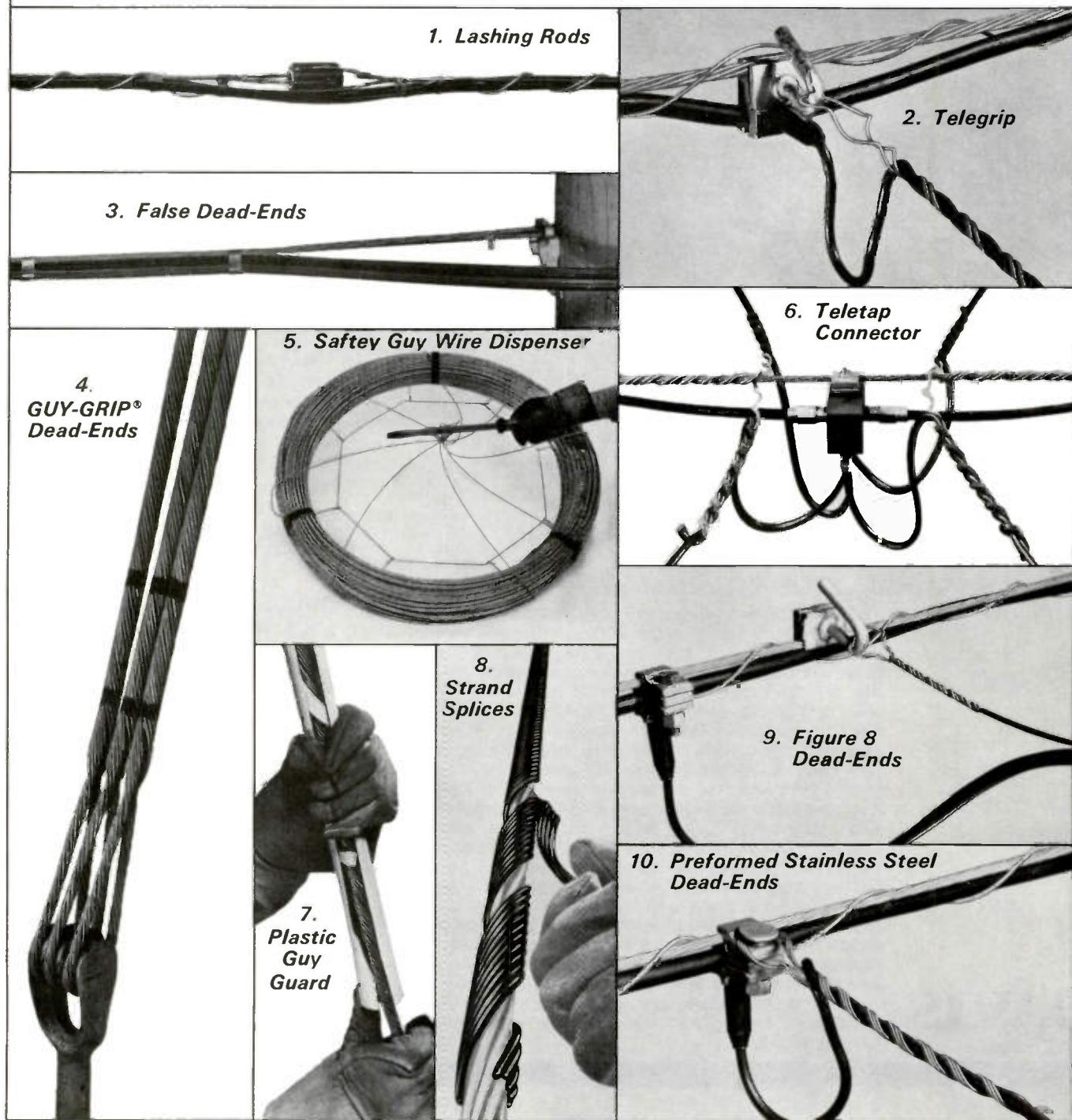
## *Standardize on PREFORMED for your CATV system*

Protect your customers from service failures with : 1. Lashing Rods. Easy on the cable; easy to apply. 2. Telegrip. Takes the squeeze off RG 59/U coaxial wire at tap, pole, and house drop; yet holds full RBS. 3. False Dead-Ends. Eliminate need to cut the strand; permit continuous stringing. 4. GUY-GRIP® Dead-Ends. Easiest, safest, lowest cost method of dead-ending strand on down guys and messenger. 5. Safety Guy Wire Dispenser. Eliminates runaway coils of strand; makes coil payout a one-man job. 6. Teletap Connector. Easy, low-cost way to make a dead-end on coaxial wire without using a span clamp. 7. Plastic Guy Guard. Full-circle protection. No sharp edges; no rusting; no nuts or bolts. Comes in three colors. 8. Strand Splices. Make quick, safe

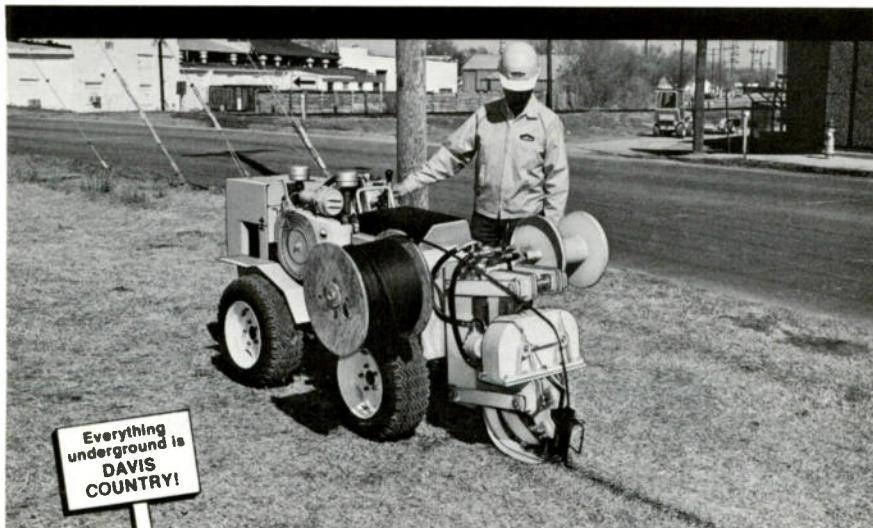
strand splices without tools. Spinner rides smoothly over splice. 9. Figure 8 Dead-Ends. Inexpensive trouble-free dead-end, for use on Figure 8 coaxial messenger. 10. Preformed Stainless Steel Dead-Ends. Custom design dead-end for use with foam type RG 59/U coaxial wire.

Write for CATV FOLIO of product information : PREFORMED LINE PRODUCTS COMPANY, 5349 St. Clair Avenue, Cleveland, Ohio 44103.

## **PREFORMED**



# The new Davis Mini-Sneaker eliminates the compromise in a lawn plow for CATV cable!



## See it during NCTA at Davis Booths 45-46!

The new Davis Mini-Sneaker has the tender touch to direct bury CATV cable without damage to the lines or to the turf. This new 25 hp compact lawn plow will slip in and have the job done while others are spinning their wheels. It has four-wheel drive with limited-slip differentials, hydraulic articulation and the exclusive Davis Mono-Stick that lets you control speed, turns, directions and braking with one hand. It direct buries as deep as 18" at speeds to 200 fpm and has a transport speed of 3.5 mph. Even a cushioned seat is provided for the operator. With its compact, 34" wide design and swivel-hipped maneuverability, the Mini-Sneaker can slip through yard gates, cut around trees, shrubs, house corners and other obstacles. The oscillating knife action with vibration isolated from the drop chute protects the line being buried and the patented skid shoes hold both sides of the cut in place to prevent damage to fine turf so no restoration is required. See it at the show or at your Davis trencher dealer ... or write Davis Manufacturing, Division of J I Case Company, 1500 South McLean Blvd., Wichita, Kansas 67213.

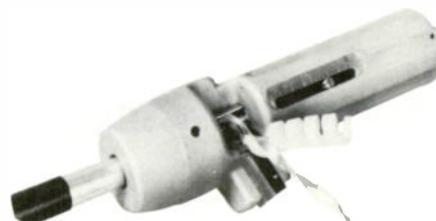
**DAVIS**

MS3-571

battery operated, solid state, and has an accuracy of  $\pm 1.5$  dB. Input is 75 ohm, type "F".

## UTILITY TOOL HAS NEW CABLE STRIPPING TOOL

Utility Tool Corp., Town St., East Haddam, Conn. 06423, announced that it has developed the SST, a cable stripping instrument that will prepare the cable ends of all manufactured brands of 412, 500 and 750 solid sheath CATV coaxial cable having a cellular polyethylene dielectric. The length of the exposed center conductor of the cable can be varied from  $\frac{1}{2}$ " to 2" to accept any CATV connector. Three models,



SST-412, SST-500 and SST-750 prepare the corresponding CATV trunk or distribution cable.

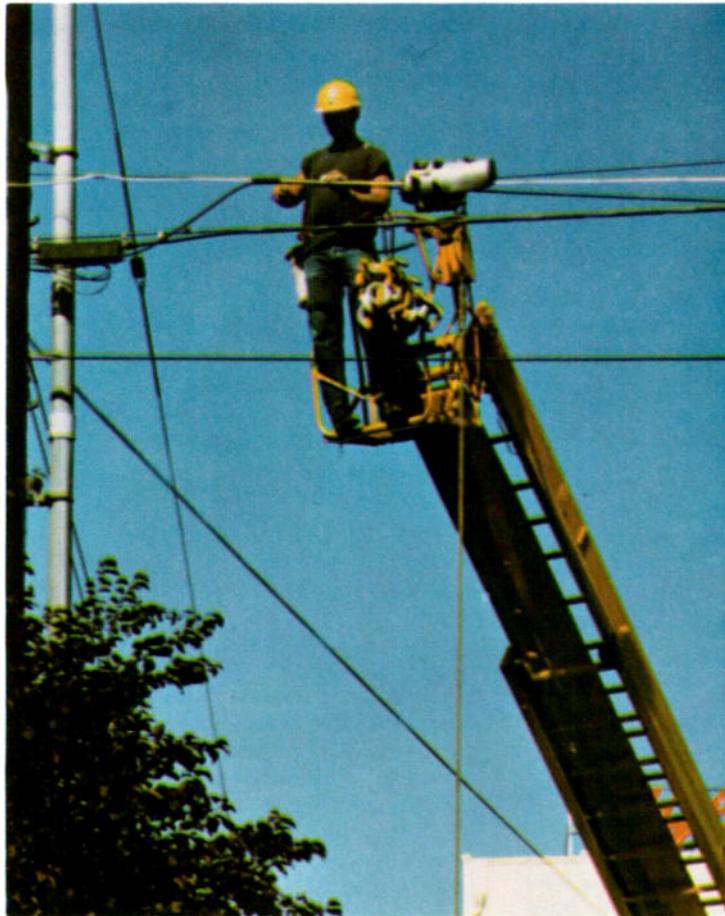
## AC POWER SUPPLY NEW FROM SYLVANIA

GTE Sylvania Incorporated, Seneca Falls, N. Y., has introduced a new AC power supply for CATV use. The Model 3300 regulated AC power supply features a fully encapsulated transformer and is regulated for efficient performance at 60 volts AC output at up to 6 amperes or 30 volts AC output at up to 12 amperes. The unit operates from 115 volts, 60 Hz, single-phased power.

## COLORTRAN INTRODUCES HIGH INTENSITY FLOOD

Berkey ColorTran, 1015 Chesnut Street, Burbank, Calif. 91502, has introduced the Mini-Pan 20, a new lighting fixture for high intensity flood lighting applications. This miniature sky pan





## The cable television industry **needs** qualified technicians.

The following NCTI courses cover the technical requirements of system operation, enabling systems personnel to acquire the technical background necessary for maximum on-the-job performance.

### CATV INSTALLER

The installer's course is designed to teach the basic fundamentals of CATV along with a detailed treatment of the methods and techniques of customer cable installation. NCTI has used experienced industry representatives as advisors and writers in a continuing effort to research, develop, and produce the best available text material to supplement the orientation and subsequent on-the-job training process of new installers.

### CATV TECHNICIAN I

This course is the beginning of a comprehensive study of the basics of electricity as applied to the CATV industry. It begins with the theory of electricity, proceeds through an analysis of basic circuits, and includes lessons on decibels, passive devices, coaxial cable, and troubleshooting.

### CATV TECHNICIAN II

The course begins with a study of electronic circuits including tube and transistor theory, and proceeds through the study of antennas and transmission lines. Application is made to CATV amplifiers, basic system measurements, test equipment, and concepts of the distribution system.

**ADVANCED TECHNICIAN** The advanced technician course is a concise study of the CATV head-end system, antenna design and installation, electronic layout and construction, and basics of studio equipment.

### PROGRAM ORIGINATION BASICS

This course is designed to give the system operator or technician the information necessary to achieve a high degree of technical competence in local origination production.

*Write for Complete Information on NCTI Courses.*



**NATIONAL CABLE TELEVISION INSTITUTE**

3022 N.W. EXPRESSWAY, OKLAHOMA CITY, OKLA. 73112

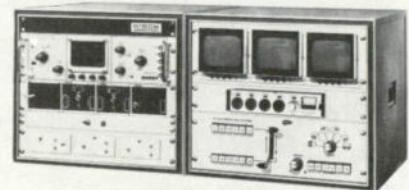
provides flat field lighting which is ideal for "one-light" news setups. The Mini-Pan 20 provides enough intensity for direct or bounce light illumination and the rotatable barndoors (optional) allow tight control. The light uses a heavy duty socket and a well ventilated housing for improved cooling. The Mini-Pan 20 uses a long life 750 hour, 3200 degree K, 2000 watt lamp. The unit is supplied with a 25 foot cord with parallel blade u-ground cap. The switch is located in the housing. The light weighs only 7 lbs. The Mini-Pan has an introductory price of \$78.

## K'SON'S PORTABLE ORIGINATION SYSTEM

K'SON Corporation, 743 Dunn Way, Placentia, California 92670, has introduced a standard portable television system called The Gypsy. The unit provides a complete electronics package to support a multiple camera and video tape system for professional program origination at remote locations or in the studio.

Designed to quality standards, the Gypsy is housed in two compact units equipped with carrying handles for field manipulation.

The Camera Control Console contains



complete camera drive electronics including sync generator, pulse distribution amplifiers, and camera controls integrated with camera intercoms, intercom amplifier with two headphone jacks in controls, tally lights for cameras and waveform monitor.

The Program Control Console features a video switcher/fader with special effects for control of program output, a four-channel microphone with line level audio mixer, VU meter, audio monitor with volume and tone controls, six non-composite inputs and 4 composite inputs.

## VIDEO RECORDER NEW FROM SONY

Capstan-servo electronic editing, a feature previously available only in premium priced video recorders, is now offered in the model EV-320F from

Sony, 47-47 Van Dam St., Long Island City, N.Y. 11101. The editing feature permits sequences to be inserted onto a pre-recorded tape from tape, off-air, live, or film — with perfect synchronization and without splicing.



Once added, the scenes are indistinguishable from the pre-recorded sequences and inserts are undetectable. Moreover, the video recorder has an exclusive ADD feature that allows the operator to assemble new scenes without any loss of sync sequence, and a newly developed rotary erase head to assure that an unwanted image is completely removed.

## CANON INTRODUCES TV MACRO ZOOM LENS

A new zoom lens with macro-capability for CATV is available from Canon U.S.A., Inc., 64-10 Queens Blvd., Woodside, New York 11377.



## New Athena® 4000-TSM 16mm TV film chain projector



- INSTANT STILL/RUN capability for picture and sound; no application bar, no change in light level, no audio roll-in.
- SLOW MOTION.
- UNLIMITED HOLD on single frame; no film damage, no loss of light.
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- FULL COMPATIBILITY with vertical TV scan rate.
- PUSHBUTTON CONTROL.
- OPTICAL/MAGNETIC SOUND with magnetic record.

### AND MORE — ALL AT A SENSIBLE PRICE

Some of the 4000-TSM's features you can find only on projectors selling for thousands of dollars more. Other features you can't find on any competitive projectors. For complete facts on the T-Versatile Athena film chain family, Models 1500, 1900 and 4000-TSM, WRITE OR CALL TODAY.



**L-W PHOTO,  
INC.**

15451 Cabrito Rd., Van Nuys, Calif. 91406  
Phone: (213) 781-0457 Cable: ATHENA

Designed for use on 1" vidicon cameras, Canon V10X15 TV macro zoom has a focal length range of 15-150mm. And a speed of f2.8. Achieves ultra-close up effects by rotating the macro ring. As close as 1mm away from the vertex of the front lens element.

Optical back focal distance is 25mm. With an overall length from focal plane to front of lens of 193.8mm.

Suggested retail price is \$895.

TVC

# CAN A BIG TIME OPERATOR FIND HAPPINESS WITH A BATTERY OPERATED VTR?

Barry Stigers has. And happiness for Barry is local programming that pays off for Columbia Cable Systems in New Jersey.

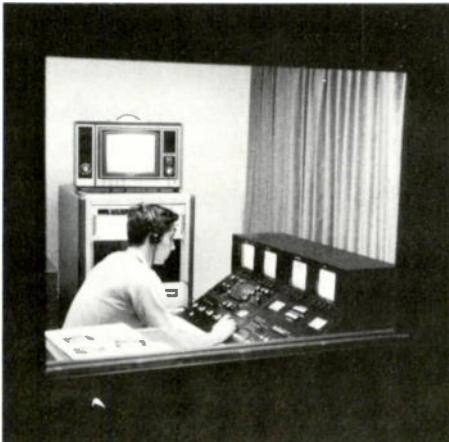
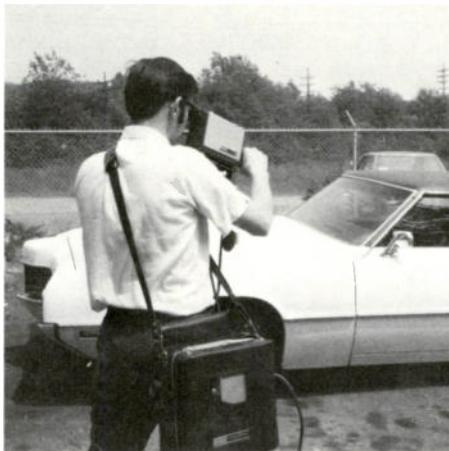
Recently Columbia came to us for a complete turnkey origination facility including studio, mobile and portable sub-systems.

The portable sub-system utilizes a battery operated videotape recorder. Taped information from that recorder goes through a patented video-sync reprocessing amplifier. This low cost reprocessing amplifier reconstructs sync and video information in a way that substantially improves playback quality. The result is local news coverage and spot advertisements that pay off.

And if you prefer color film for local advertising, we also have a complete system built around Super-8 with magnetic sound.

These unique systems concepts are why companies like Columbia Cable Systems, Staunton Video, and Triangle Publications are turning to A-V Systems for turnkey local origination systems that work.

**AV Systems Inc.**  
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Glen Head, New York 11545  
Telephone (516) 671-8010



**CV**  
**systems**

LOCAL ORIGINATION SYSTEMS THAT WORK

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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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### For Information About: ADVERTISING SPACE

Contact Robert Titsch, Phil Cook or Sid Black. They will assist you with specialized market and media information including space rates and deadlines.

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Contact Kaz Miura, Media Brains, Inc., 3-3, Chigusadai, Midori-ku, Yokohama, Japan.

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## Literature

American Research Bureau has published its **Television Market Estimates of TV Households with Color Sets, Multi-sets and UHF Equipped Sets as of February-March 1971**. Estimates were derived from a telephone survey of families selected for participation in a nationwide sampling. ARB's color TV and Multi-set Households estimates are based on each market's Area of Dominant Influence (ADI). A complete listing of these ADI markets and the counties included in them appears in the ARB publication **1970-71 Exclusive Television Market Areas of Dominant Influence in the United States**. Copies of ARB publications are available on request by writing American Research Bureau, 4320 Ammendale Road, Beltsville, Maryland.

**Understanding Oscillators** by Irving M. Gottlieb has been issued by Howard W. Sams & Co., Inc., 4300 West 62nd St., Indianapolis, Ind. 46268. The 160-page softbound book sells for \$4.50 (\$5.40 in Canada). The book describes a variety of basic oscillator circuits, how they work, their "personalities," their strong and weak points, and how they are used in practical applications.

A do-it-yourself filmstrip kit is being offered by Project: Filmstrip, 24038 Mariano, Woodland Hills, Calif. 91364. The complete kit, "How To Make Professional Quality Filmstrips on a Pinch-Penny Budget," is designed to aid people who want to produce their own filmstrips at low cost. This kit shows how to write, photograph and coordinate your script, and includes a complete step-by-step instruction book, storyboard pads, script forms, sequence sheets, acetate cropping guide for 35mm and 2½ x 2½ film, and professional field chart. The complete kit costs \$7.50 postpaid (add 5% California sales tax).

Communications Transistor Corp. has published a discussion of its approach to the design and fabrication of RF and microwave communications transistors. The brochure, titled **Design Process Package Reliability**, includes sections on chip design, chip process, packaging, and reliability studies, including approach to reliability studies and failure mechanisms. The publication may be of interest to cablemen as background information, since integrated circuitry is beginning to play a major role in CATV technology. For free copies, write: Communications Transistor Corporation, 301 Industrial Way, San Carlos, Calif. 94070.

A free catalog for the Telex line of **Broadcast and Industrial Tape Equipment** is now available from Telex Communications Division, 9600 Aldrich Avenue South, Minneapolis, Minnesota 55420. The catalog covers the complete line of recorder/reproducers, reel and cartridge transports, amplifiers, preamplifiers and accessories. Order catalog BI2230.

Keystone Aerial Ladder Division of CAM Industries Inc., Box 227, Hanover, Pa. 17331, has a new brochure on their line of **Trunk Mounted Aerial Ladders**. Brochure No. 7104.30 describes both types of Keystone aerial ladders, outlining "maximum working heights," "optional equipment" and "minimum chassis requirements." TVC

# 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 2½"); 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.

### WANTED

Amherst Cablevision, the largest CATV operator in Western New York, has several openings in all categories — chief technician-installers-television studio technicians — 200 mile system.

All replies, held in strict confidence, should be sent to the attention of Mr. Charles C. Monde, Amherst Cablevision, 602 Grover Cleveland Highway, Amherst, New York 14226.

Amherst Cablevision  
602 Grover Cleveland Highway  
Amherst, New York 14226  
(716) 837-1120

### CATV REPRESENTATIVES WANTED

Mfg. of all CATV products from the telephone pole to the TV set.

All areas except N.Y., Pa., Va.  
AVA Electronics  
416 Long Lane  
Upper Darby, Pa. 19082

### WANTED

Position with a future — management and/or engineering — 7 years experience in all phases of cable TV operations. FCC 1st class license, presently employed as chief technician in a large system. Reply to Box T771-1.

### CATV MGR./TECH.

Small system in Florida needs qualified man to handle entire operation.

Must be willing and able to set levels & assist on installs, then put on a tie and meet with the city manager.

Excellent opportunity for the right man who wants to settle down and run things himself. Reply with resume and salary requirements to Box T771-2.

Our employees know of this ad.

### WANTED

Multiple system operator has several openings for a manager in managing — technician. The location is New York State. Please send resume to Box T771-3.

### WANTED

Experienced technical personnel, particularly with pole climbing ability. Reply to Box T571-4.

**REVERSE SPIRAL**  
PAT

**WESTAY COMPANY**  
P. O. Box 573 • Cupertino, Calif. 95014

## CLASSIFIEDS ORDER FORM

I'd like to reach the entire CATV market with the following classified message in TV Communications. My check is enclosed.

Please assign a reply  
box (\$1 chg. per issue)

This ad is to  
run \_\_\_\_\_ month(s).

Payment enclosed for \_\_\_\_\_ words  
at 25¢ per word (\$10 min.) per month.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

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## 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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Washington, D.C. 20006

Atlantic Research  
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CATV

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## CATV PERSONNEL REQUIRED

TelePrompTer Corporation is selecting personnel for the following positions in both operating CATV systems and new systems beginning construction:

**Chief Technician:** Minimum of 7 years direct experience in CATV system test, maintenance, operation, layout, head-end work, customer service, management of personnel and vehicles, and construction practices. Radio-telephone license desirable but not necessary.

**Construction Manager:** Minimum of 5 years experience in CATV system construction, customer service installations, plant re-

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

**Maintenance Technician:** Minimum of 4 years direct experience in CATV system test, maintenance, operation, head-end work, customer service and service installation.

Join TelePrompTer, the largest and most active CATV operator for the best opportunities!

Send resume to Roger Wilson  
**TelePrompTer Corporation**  
50 West 44th Street  
New York, New York 10036

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Over 200 cable system operators have found NCTI training enables fewer people to do more (and better) work. The result has been better service, more (and happier) subscribers, and fewer disconnects. Net effect: increased cash flow!

For information on how NCTI can help you, send for complete information on NCTI courses.

National Cable Television Institute  
3022 N.W. Expressway  
Oklahoma City, Oklahoma 73112

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## USED CATV EQUIPMENT FOR SALE

Head End-Low Band and All Band Equipment. Write for list and price.

## REPRINTS

Write to:  
TV Communications  
1900 West Yale  
Englewood, Colorado 80110

## Calendar

### JULY

6-9—National Cable Television Association Annual Convention at the Sheraton Park Hotel and the Shoreham Hotel in Washington, D.C. Mrs. Beverly Murphy at (202) 466-8111 is the convention coordinator for NCTA.

7—Society of Cable Television Engineers Annual General Meeting at 4:30 p.m. in the Sheraton Park Hotel in Washington, D.C. This meeting is for members and prospective members of the SCTE and will conclude by 6 p.m. Possibilities of CATV technician certification program will be discussed. Anticipated FCC technical standards will be reviewed. For additional information contact Mrs. Catherine Fahey (203) 438-3774.

9—"Video Cassettes — Looking for a Home" Conference sponsored by the Quantum Science Corporation in New York. For further information write to Quantum Science at 245 Park Avenue, N.Y., N.Y. 10017 or call (212) 986-4410.

14-30—CATV Installers' Course at Texas A&M University. For further information contact CATV School, Engineering Extension Service, F.E. Drawer K, College Station, Texas 77843.

26—Second Annual Workshop in Communications Media opens at Hofstra University, Long Island, New York. Focuses on introductory work in media resources, graphics production and audio and photographic materials. Credit can be earned toward graduate degrees. Cost is \$437 per person. Session runs through August 26.

### AUGUST

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

22-25—Mid-America CATV and Rocky Mountain CATV Joint Association Meeting at the Antlers Plaza, Colorado Springs, Colorado. For more information contact Royce & Meachum, 119 South Jefferson, 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

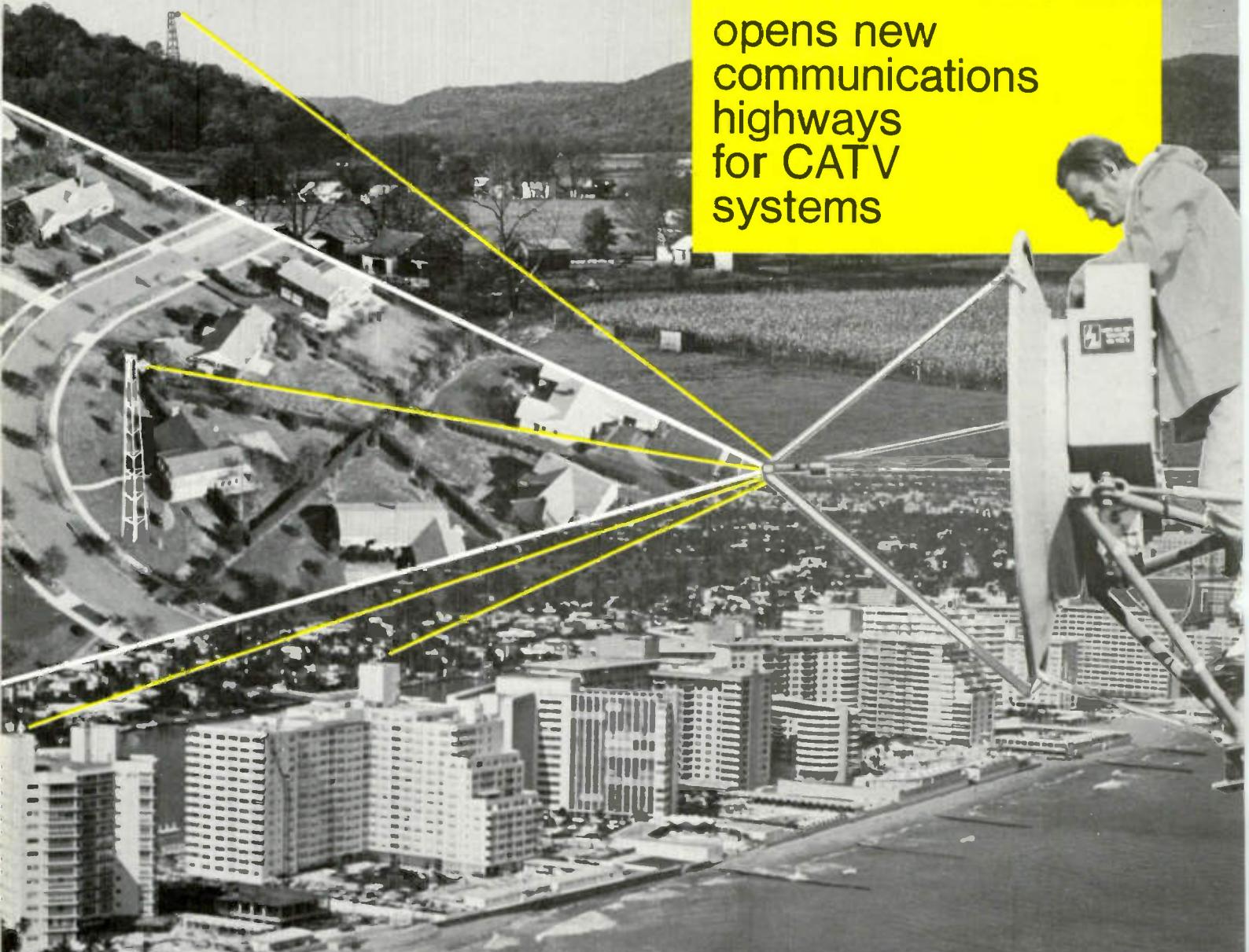
26-28—Pacific Northwest Cable TV Association Fall Convention at the Sheraton Motor Inn, Portland, Oregon. For more information contact Convention Chairman J.B. Dyer, Post Office Box 485, Tillamook, Oregon 97141 (503) 842-4331.

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.

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

# Cableless Laser Link

opens new  
communications  
highways  
for CATV  
systems



Laser Link opens new markets for CATV systems by airlinking existing service to new areas, despite barriers of terrain and water, and makes economically feasible CATV in the nation's top 100 markets.

By adding Laser Link to the head-end, up to 18 channels of entertainment, educational information, community services, business data, and remote pickups can be inexpensively transmitted over 20 mile distances to other contiguous or distant population centers. Local originations can also be distributed at low cost. Cableless Laser Link enables (1) urban CATV systems to reach many other local TV viewers;

(2) suburban CATV operators to reach previously inaccessible "pockets" of population by "Laser-Linking" them with existing CATV head-ends.

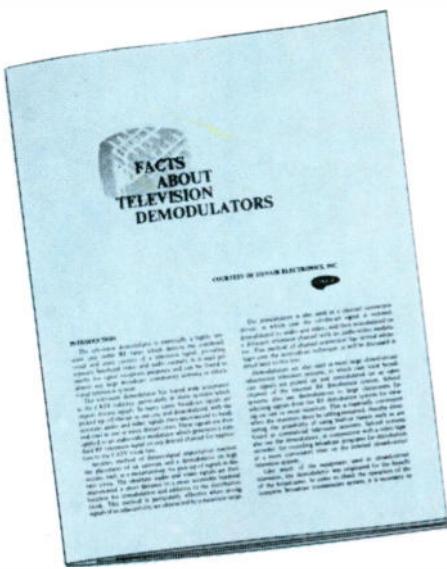
Our engineers and management will be pleased to assist you in your (1) financial planning, (2) FCC documentation preparation, (3) surveys and studies of technical and economic viability of the Laser Link application you require—at no obligation. Write or phone us collect today for prompt action.



An Affiliate of CHROMALLOY AMERICAN Corporation  
**LASER LINK CORPORATION**  
770 Lexington Avenue  
New York, N.Y. 10021



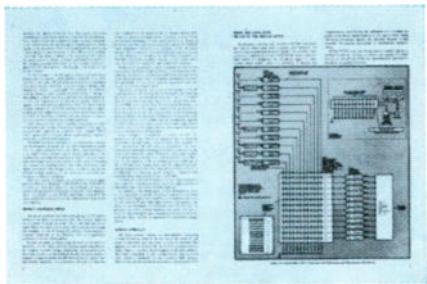
Visit us in Booth 47-48



## If you're wise, you won't purchase a demodulator until you read this free paper.

You learn a lot while spending five years and several hundred thousand dollars in a research and development program. And, when you tell your story, wise people listen.

DYNAIR has included a wealth of original information about demodulators in an 8-page paper called "Facts About Television Demodulators." We think that you will find it very informative, particularly if you are planning a system which involves the pickup of off-the-air signals.



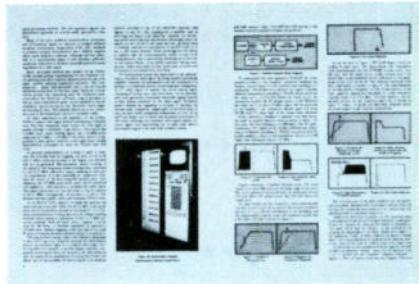
At first thought, it would appear to be a relatively basic design task to engineer a demodulator. Logically, it is often related to the tuner, IF and detector portions of a standard television receiver. However, it is one thing to design a demodulator which is acceptable for driving an ordinary viewing monitor and entirely another thing to design a demodulator which will be acceptable for testing purposes or for the regeneration of broadcast quality television signals. The demodulator portion of even the most sophisticated commercial television receiver

would prove highly inadequate for applications such as those mentioned earlier in terms of sensitivity, stability and the amount of distortion introduced in the process of demodulation.

Until recently, the only available demodulators were of vacuum-tube vintage. These were designed years ago for monochrome applications; however, the complex NTSC color signal and its critical phase relationships require a much more sophisticated approach.

DYNAIR has been involved in a continuous research and development program on the color demodulator problem. After experimenting at great length with virtually every known approach to demodulation, a design was arrived at which contains many new and unique circuits, particularly in the areas of trapping, the control of envelope delay and other distortions and signal restoration. The design is now a product and, at this writing, a large quantity of the units are in the field, performing to industry standards.

The paper we are offering describes many of the problems we encountered



in designing the first quality solid-state color demodulator. The product is also briefly described, along with the many problems it will solve for the cable systems and broadcast engineer.

Shouldn't you add it to your information file?

It's yours for the asking.

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**DYNAIR ELECTRONICS, INC.**

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Please send me a free copy of "Facts About Television Demodulators."

NAME \_\_\_\_\_

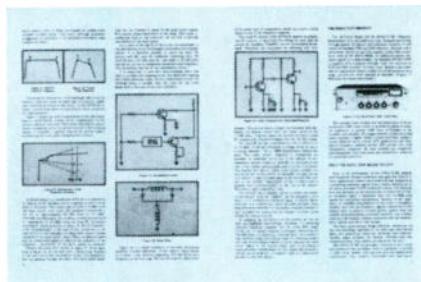
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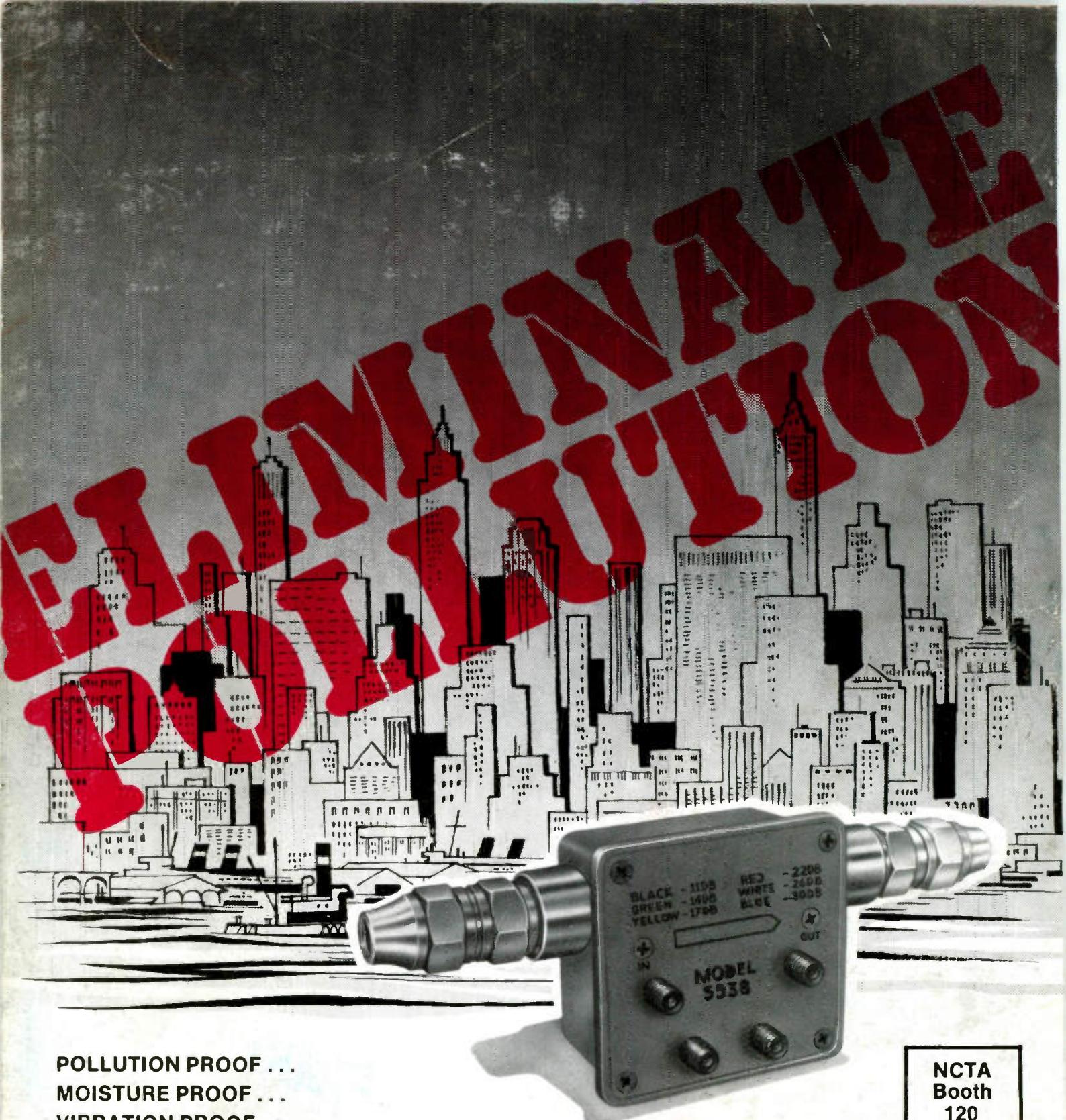
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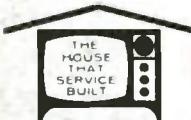
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