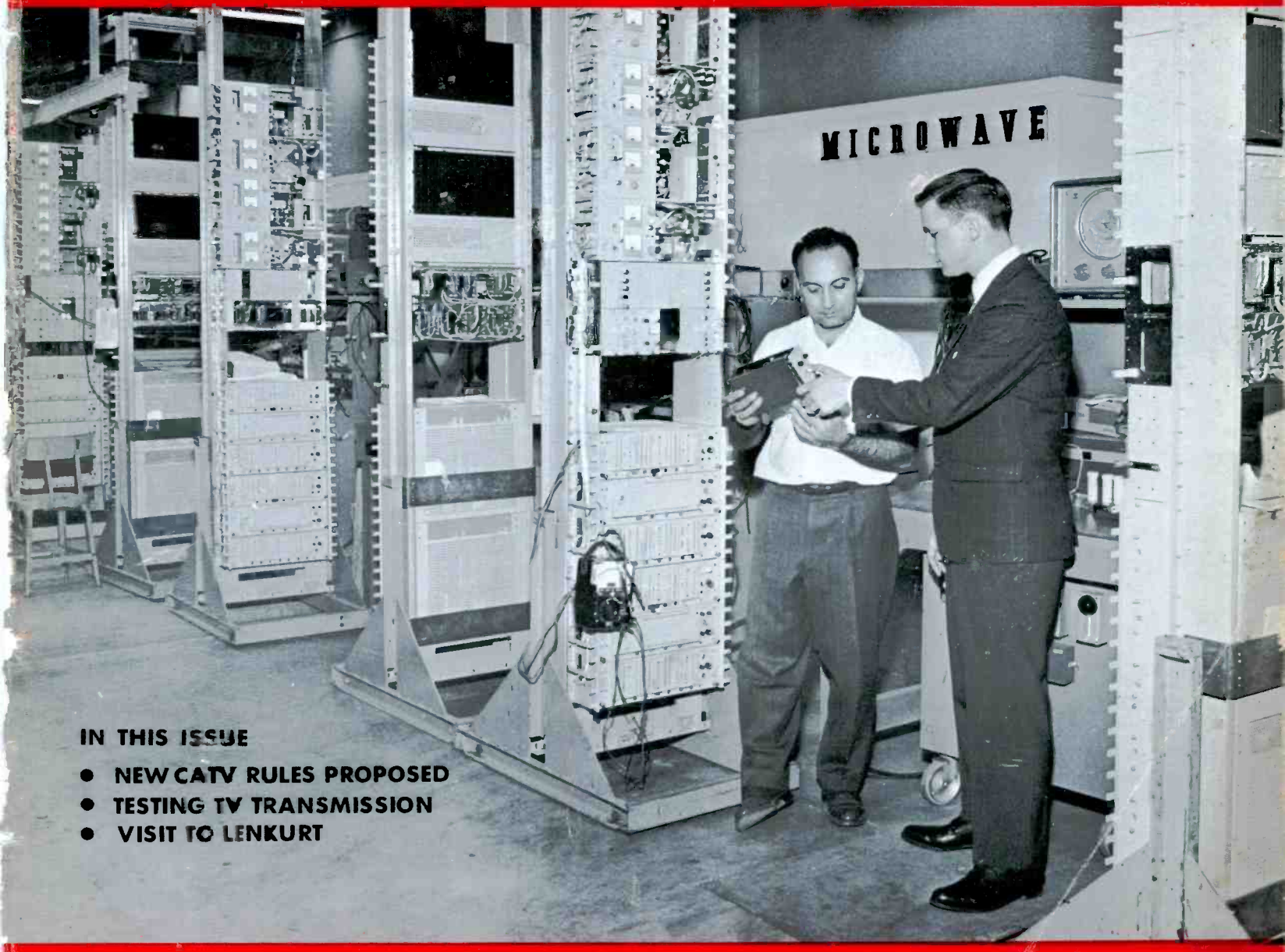
June 1964

TV & Communications



IN THIS ISSUE

- NEW CATV RULES PROPOSED
- TESTING TV TRANSMISSION
- VISIT TO LENKURT

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NEW JERROLD ★ MINUTEMAN IV ★

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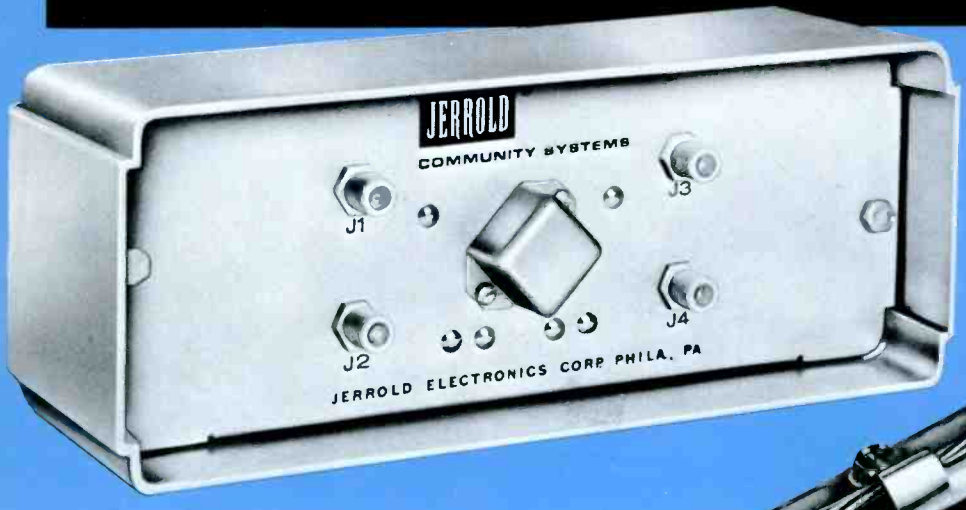

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Positive all-around match lets you deliver FULL PICTURE QUALITY ALL THE WAY TO THE RECEIVER

Heart of the new "Minuteman IV"—the new toroidal-design transformer insert.

Why should all the technical improvements in CATV head-end, trunk-line equipment, and cable go down the drain when signals reach the feeder lines? JERROLD says they shouldn't! And JERROLD has done something about it!

The new "Minuteman IV" quad pressure tap lets you maintain top-quality color and b&w pictures on all 12 channels, without standing-wave mismatch, which has long been the bugaboo of CATV men at the point of tap-off. Especially in systems carrying both high and low bands, "Minuteman IV" prevents the low-channel signal degradation that often ruins color reception.

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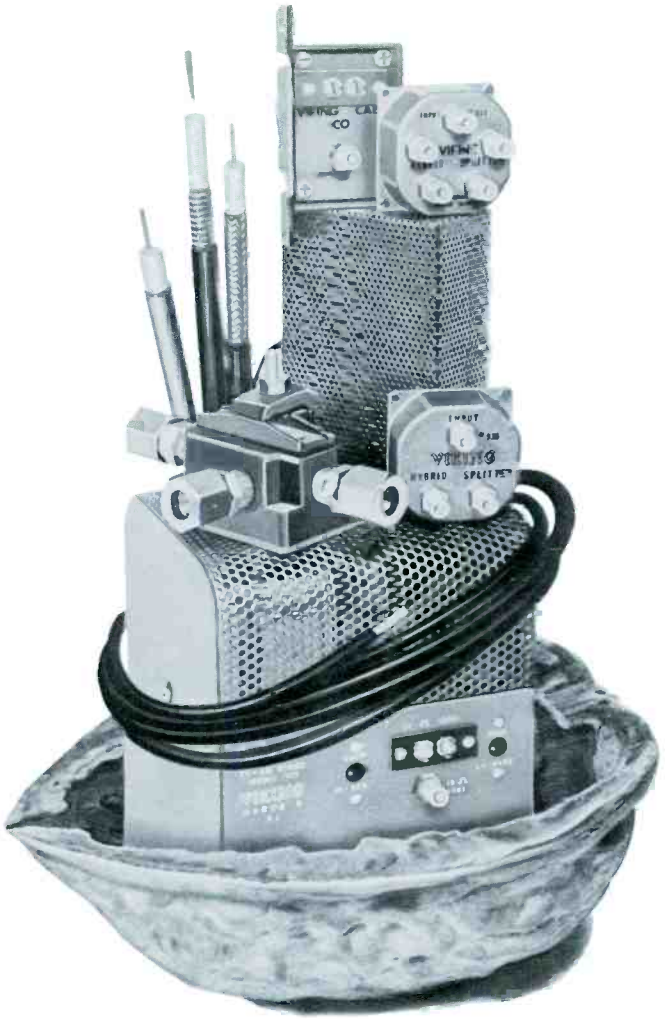

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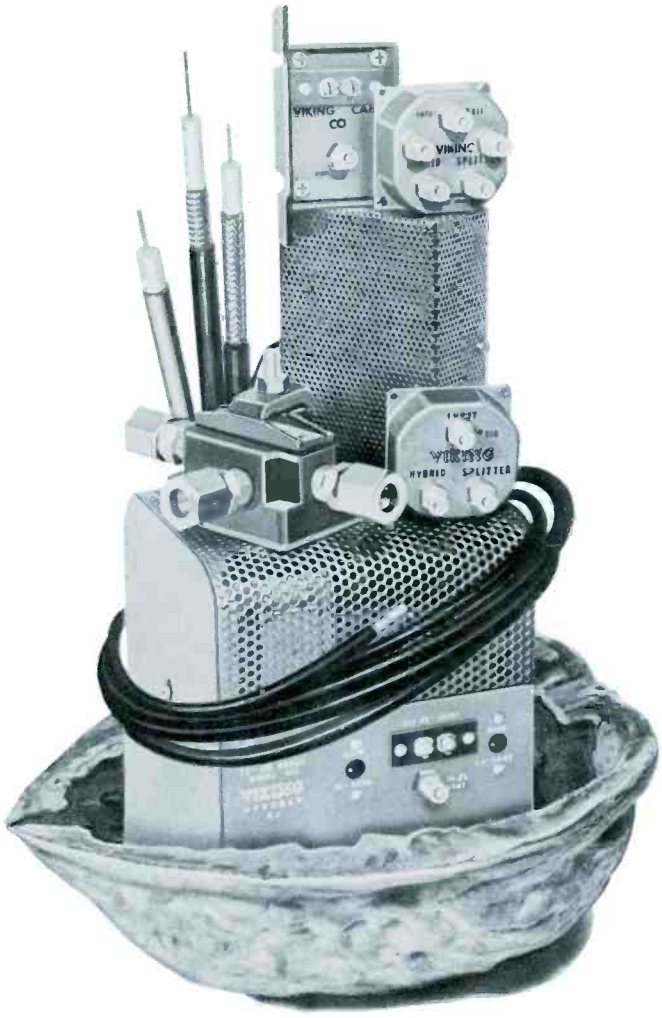

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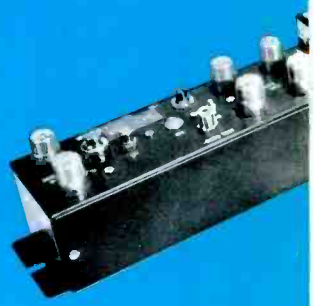

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JUNE 1964
Volume 1—Number 6

TV & COMMUNICATIONS

Published By COMMUNICATIONS PUBLISHING CORPORATION — P.O. Box 63992, Okla. City 6, Okla.

EDITORIAL

The National Association of Broadcasters staff wants to spend $50,000 to $100,000 for a nationwide study of community antenna operations and their effect on television broadcast stations. The specific goal of the proposed "study" is the development of a rebuttal to NCTA arguments for minimal government regulation of CATV.

Clearly, the NAB will always have more money for studying and lobbying that CATV interests can muster. But CATV operators have truth, factual evidence, and the public interest on their side. These elements comprise a powerful bulwark against the well-financed anti-CATV forces.

The only nationally organized CATV group is the National Community Television Association. The consistent watchfulness of NCTA has been by far the greatest deterrent to restrictive and harmful regulation of CATV. Therefore challenges presently being hurled at the community antenna concept make it incumbent upon every system operator who has not joined NCTA to carefully consider the merits of becoming a member.

Although "TV&C" is devoted exclusively to CATV and related industries, we have purposely remained independent to preserve editorial impartiality; this publication has no connection or affiliation with the NCTA. However, for the good of the industry we are compelled to urge your active participation in NCTA.

The cost to you of restrictive regulation would be far more burdensome than the cost of taking an active part in your national association. A strong NCTA will effectively counteract the negative influences of NAB and other antagonists. CATV faces a great future. And a strong national organization represents the best means of protecting your interests. Consider the advantages of joining NCTA. (You may write to this publication for information on whom to contact for membership information).

Stanley M. Searle

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Corr-O-Foam, available with a full line of matching connectors, is setting new standards of economy, ease of installation and reliable performance. Our new catalog provides full details on why Corr-O-Foam is first choice for CATV. Write for your copy today.

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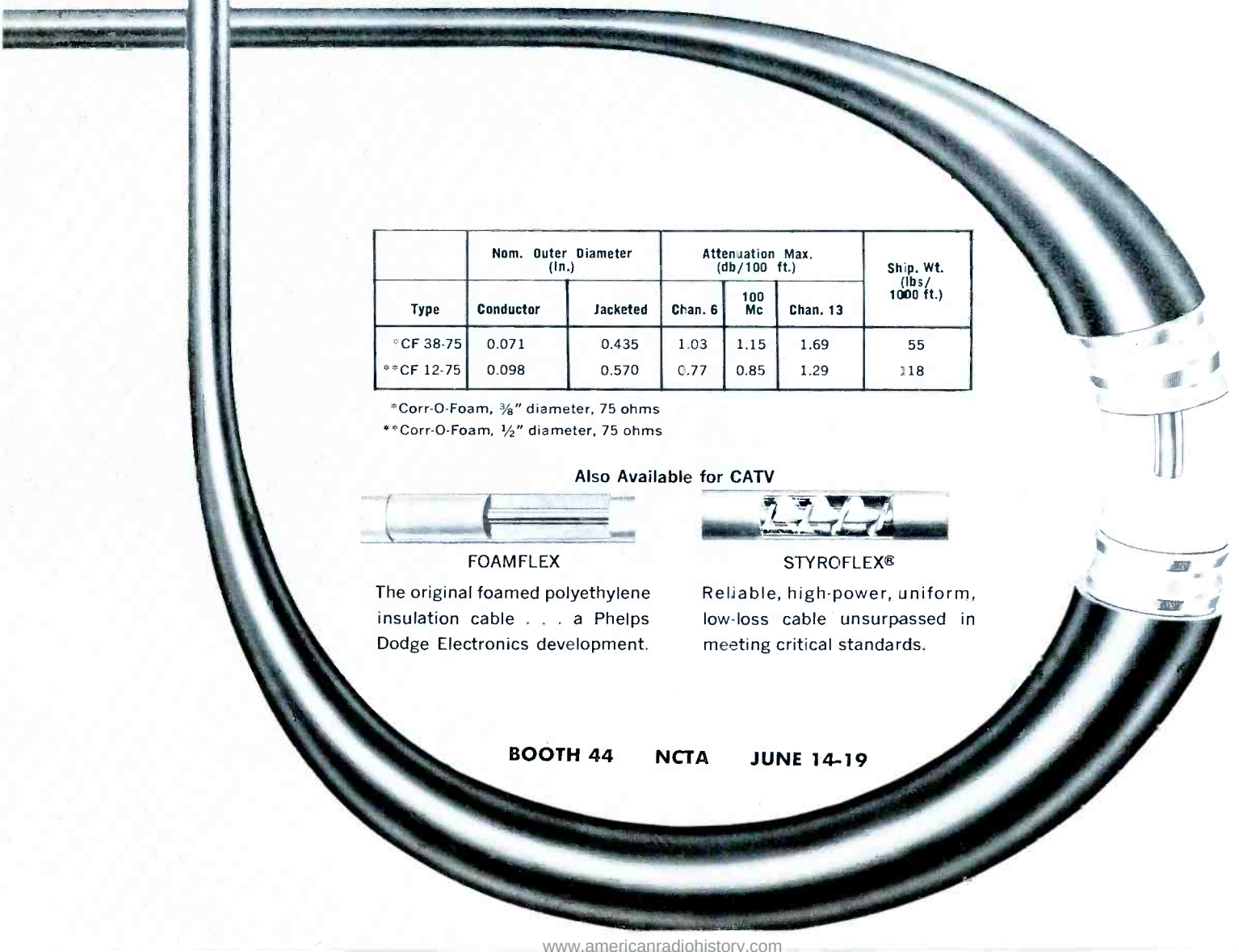

Type	Nom. Outer Diameter (In.)		Attenuation Max. (db/100 ft.)			Ship. Wt. (lbs/ 1000 ft.)
	Conductor	Jacketed	Chan. 6	100 Mc	Chan. 13	
*CF 38-75	0.071	0.435	1.03	1.15	1.69	55
**CF 12-75	0.098	0.570	0.77	0.85	1.29	118

*Corr-O-Foam, ⅜" diameter, 75 ohms
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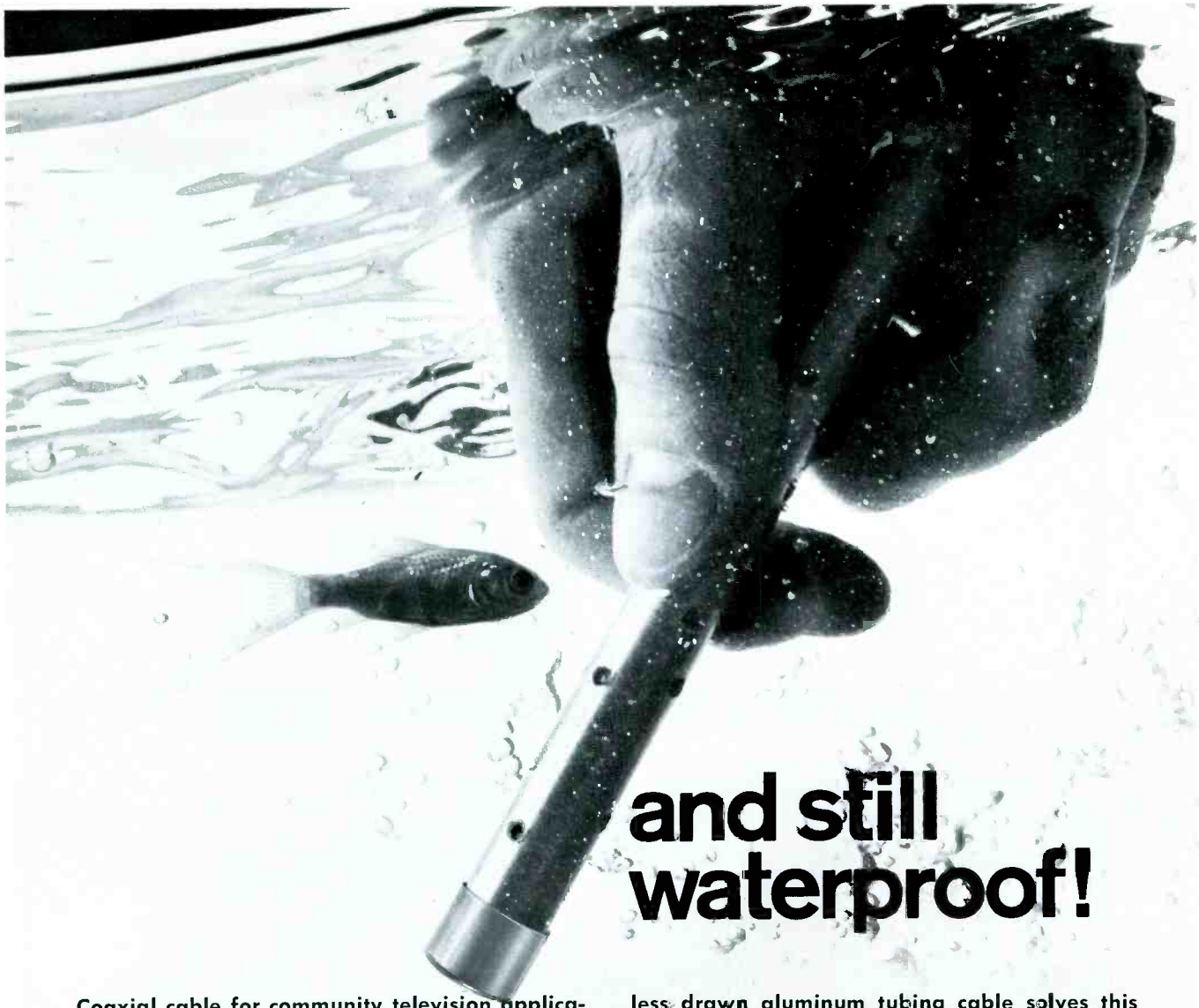

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Coaxial cable for community television applications must provide complete protection from moisture. It can do this only if the following two requirements are met: (1) The moisture barrier material must provide complete protection against water vapor and water when the barrier is still intact. (2) When the moisture barrier is penetrated, the construction of the cable must prevent the longitudinal transmission of either water vapor or water between the dielectric material and the inner surface of the moisture barrier.

Only one cable type will give you this protection: JT 1000 series cable by Times... seamless aluminum tube sheath coaxial cables.

Puncture it, splice it, apply as many pressure taps as you like... water vapor and/or water can't penetrate Times self-sealing solid sheath cable.

Whether buried or up on the poles, the penetration of water vapor and/or water presents the most serious threat to transmission capability, efficiency and cable longevity. Times solid seamless drawn aluminum tubing cable solves this costly problem by swedging the aluminum sheath down to the point where the dielectric (foamed polyethylene) is actually under compression. It forms a complete gas and moisture barrier at all points along its lineal length.

We can prove that this advanced cable will cost you less. Sure, you initially pay more for this self-sealing cable! But the benefits and the system's ultimate lower costs make it more than worthwhile. Ordinary cable, without moisture barrier protection, requires optimum performance of all amplifiers in service, resulting in higher maintenance, higher technician cost, and tube replacement cost. What's more, you must account for increased attenuation when planning and operating your system. Otherwise, you will be faced with the problem of replacing cables much sooner than originally planned.

For long-term, maintenance-free payouts and higher dollar yields per dollar invested, specify Times JT-1000 series solid sheath cables.

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News SPECTRUM

COMMISSION CONSIDERING NEW RESTRICTIVE CATV REGULATIONS

New regulations are apparently being proposed by FCC staff members, according to a Washington source. Reportedly, Mr. Curtis B. Plummer, Executive Director and General Counsel, along with the Chief Engineer and Bureau Chiefs, have suggested that the Federal Communications Commission present the proposed new rules for industry comment.

The primary feature of the proposal is the establishment of a private microwave service to be known as Community Antenna Relay. The proposed CAR service would be in the 12.575-12,825 mc band. Twenty 12.5 mc channels would comprise the service. with these divided into ten channels (125 mc) to be shared with other types of operational fixed services and the other ten channels to be shared with auxiliary TV services. The new service would be under the control of the Broadcast Bureau.

Operators in the new service would be allowed to provide service for other CATVs. However, each CAR would be limited to ten channels.

Provisions planned for moving present CATV microwave common carrier operators to private bands within a five year period wherever possible. Common carrier grants would still be made to CATV provided more than 50% of use is by other non-CATV customers. These grants would all be in the 12 mc service, however, rather than in the 6 kmc band.

Under the proposed CAR rules all present community antenna microwave grantees would be required to vacate the lower band by 1971.

BROADCASTERS DISAGREE ON REGULATION OF CATV AND PAY-TV

Mr. LeRoy Collins, NAB president, recently spoke out *against* the idea of anti-pay-TV legislation, contrary to what was widely believed to be the NAB stand on the matter. However, he did make it clear that the broadcasters favor regulation of CATV.

Mr. Richard S. Salant, CBS, Inc., vice president and assistant to the president, had spoken out in opposition to the (supposed) NAB position on pay-TV. In a speech before CBS-TV affiliates in New York, Mr. Salant stated that broadcasters, in his opinion, should not "adopt a position concerning what the Congress or the FCC should do about CATV based just on the resolution of the issue of whether CATV is competition that hurts us. It seems to us that the principles of free competition apply equally here as in wired pay TV. And so, to the extent that CATV does not use broadcasting channels, I doubt that we can demand regulation and prohibition from the government."

Mr. Salant went on to advocate establishment of broadcasters' rights in order to facilitate "some orderly and sensible basis for our granting or withholding permission for CATV pickups." Salant indicated that if pay-TV succeeds CBS would enter the field.

Another broadcaster view in opposition to NAB proclamations was voiced by Mr. Richard L. Fenstermacher in a letter to *Broadcasting* magazine. He stated, in part, "I cannot understand some of the opinions at NAB on this subject. We are fighting government regulation on one hand and advocating it on the other. Recently Clair McCollough stated his opposition to CATV. How could he so soon forget that one of his stations, WGAL-TV, Lancaster, Pa., received the benefit of thousands of extra homes through CATV? This certainly was to his advantage and many other telecasters receive the same service. I do feel local stations should be protected, but they should be able to meet or beat competition through proper means rather than suppression . . . perhaps the rank and file (of NAB) should be asked for its opinion."

ENTRON EARNINGS AT RECORD HIGH

Net earnings for *Entron, Inc.* for the twelve months ended February 29, 1964, reached $129,062, the highest level in the company's eleven years of operation, according to *Mr. Robert J. McGeehan*, president. This figure represents an increase of 4% over the previous fiscal year's earnings of $123,683.

Although net sales declined in 1963 from $2,468,438 to $1,974,716, pretax income in 1963 was $173,150, up 16% from the prior year. McGeehan said that net income did not reflect the same degree of improvement as gross income because of an increase in the provision of income taxes.

Earnings per share were 47¢ during 1963, a new high, as compared to 45¢ in 1962.

"While CATV continues to receive the largest share of our efforts," said Mr. McGeehan, "other allied areas with profit potential are receiving our attention. Entron is supplying components for Pay-TV systems now under construction in Los Angeles and San Francisco. It is anticipated that such sales will be expanded during the current year."

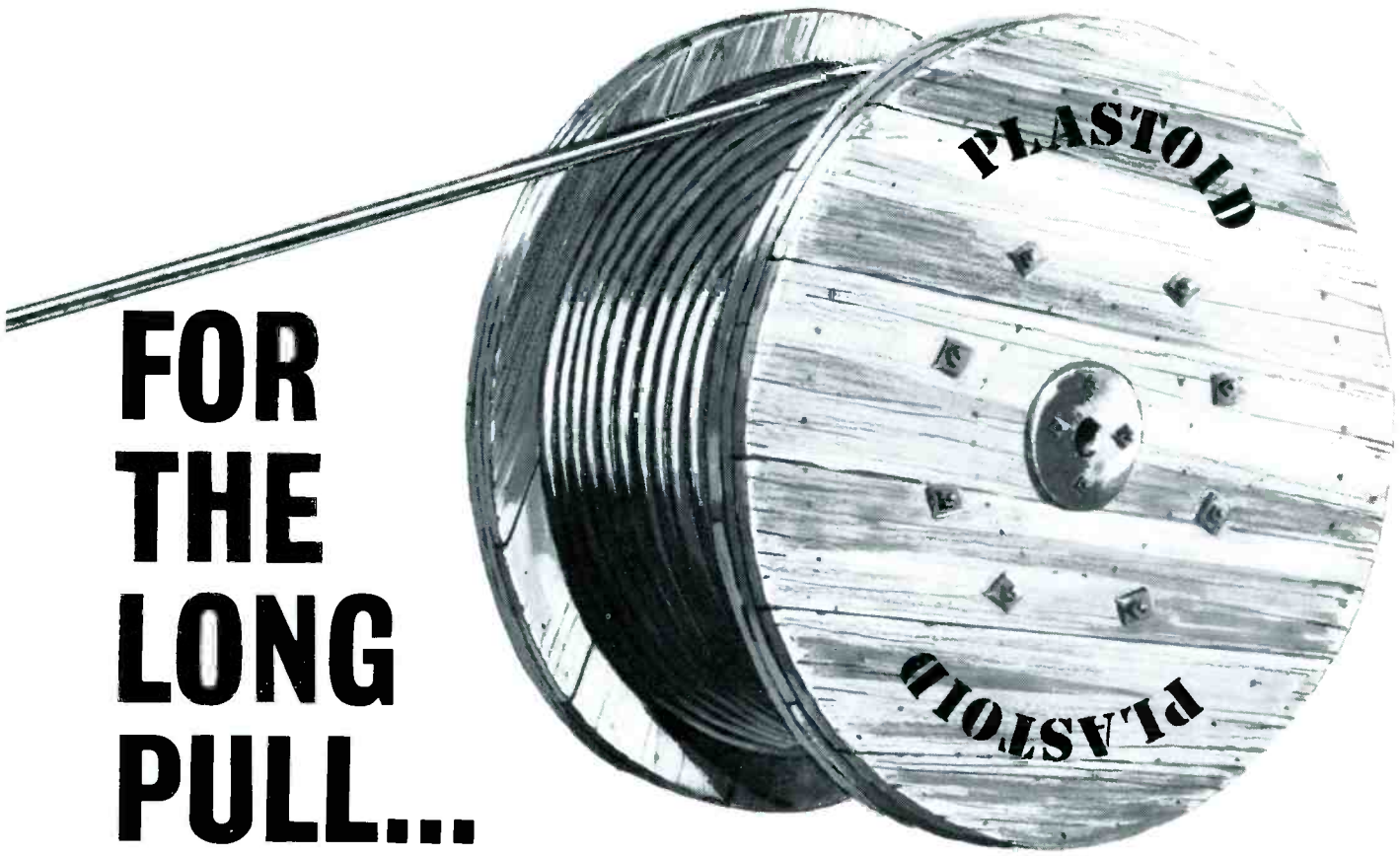
STV TO MONITOR BROADCASTS; CALLS NAB ACTION UN-AMERICAN

Mr. Robert F. MacLeod, vice-president of marketing for Subscription TeleVision Inc., of Santa Monica, has announced that STV will monitor all California broadcasting between now and November in order to detect any violations of the Federal Communications Act.

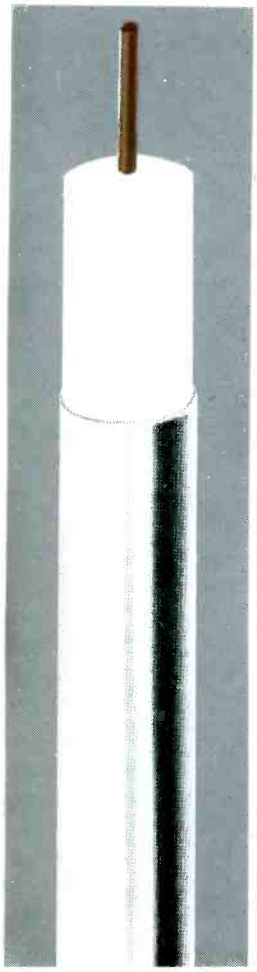
MacLeod has specifically charged that "while most stations, radio and television, have been unbiased in their presentations of news relating to petitioners' signature-gathering and the Initiative measure generally, some stations have not observed all the provisions of the FCA, particularly Title 47, Section 315." The provisions referred to state in part that broadcasters have an obligation under the Act to "operate in the public interest and to discussion of conflicting views or issues of public importance."

MacLeod said that the matter became a matter of "public importance" when the theater owners of California, aided by theater owners across the country, financed the qualification of the Initiative for a place on California's November ballot. "This was done, MacLeod stated, "by means of a million and a half dollars raised by them as a war chest to finance the attempt to strangle a new free enterprise business in its crib.

"Since the National Association of



FOR THE LONG PULL...



Look to Plastoid . . . Strain your solid sheathed aluminum coaxial cable by Plastoid. Tug at it. Put it under pressure. Bend it. You'll find the highest tensile strength cable that also gives you lower db loss than similar seamless aluminum coax. The Plastoid sheath is actually **stronger** because of its weld.

Made under similar exacting quality controls as established by Military Specifications, Plastoid cable employs superior materials, electronically tested for uniformity of gauge before seaming. Thin or weak spots are detected and eliminated. Then, the sheath is welded in a bond that is invisible yet stronger than the parent metal. Proven by the ASTM cone test. Special hydrostatic tests bear out Plastoid strength. **"Under hydrostatic pressures in excess of 2,000 pounds, neither the sheath — nor the seam — split or burst."**

Delivered on sweep tested reels ranging from 1,000 to 5,000 feet in continuous lengths, here is a semi-flexible cable that gives you ease and economy of handling while you enjoy improved electronic characteristics. You get **lower** attenuation across the breadth of the entire band. Longer continuous cable lengths assure fewer splices, less chance for moisture penetration, minimum cable waste, plus reduced connector and labor costs. For extra long life in special environments, Plastoid aluminum sheath also available with an overall Polyethylene jacket.

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TA4	.0752	.362	.412	—	.96	1.60	66
TA4J	.0752	.362	.412	.480	.96	1.60	90
TA5	.0980	.450	.500	—	.78	1.26	102
TA5J	.0980	.450	.500	.580	.78	1.26	132

For immediate delivery or special pricing information about these longer-length, long-pull trunk or distribution CATV cables, wire or write . . .

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Broadcasters' position in this matter seems surrounded by confusion, I feel this notification is necessary," MacLeod said.

"The NAB first came out in favor of this unprincipled attempt to hang a competitor with a rope of ballots instead of dealing with us in head-to-head combat in the market place where such matters should be settled. Since that time, presumably on advice of counsel, they have backed away from that stand stating, however, that they will continue to fight us on other fronts. "For the NAB to have joined with a group of motion picture exhibitors who would legislate STV out of business is immoral, un-American and in direct opposition to the free enterprise system that has made so many broadcasters wealthy.

"Since the NAB's position on the question of free enterprise seems to vacillate with the proprietorship of the enterprise in question, I am concerned over whether or not the broadcasters will fight fairly. For that reason, they have been placed on notice that while the rest of the United States will be watching the attempt to legislate a competitor out of business in California, we will be watching them," MacLeod concluded.

DEADLINE FOR COMMENTS ON CATV OWNERSHIP BY BROADCASTERS IS JUNE 19

Interested groups or persons must file comments with the FCC by June 19, 1964 in connection with the Commission's Notice of Inquiry into acquistion of CATV systems by TV stations. The issue was brought into the forefront by the pending proposal to transfer the interests of H & B American Corp. to a subsidiary of RKO General, Inc., one of the nation's large multiple station owners.

The Commission is sensitive to the fact that this proposed transaction would place under common control one of the largest TV broadcasters and probably the largest group of CATV systems in the country. The FCC wants to "seek a basis for estimating the impact that acquisitions such as that contemplated by RKO General might have on its multiple ownership and other public interest policies."

In addition to the basic question of how many stations are involved in cable system ownership, the FCC wants to know how many of the CATV systems thus owned are within the predicted Grade B contours of the stations which hold interests in the respective systems.

Secondly Commission also wants to know the extent of local organization of programming, including commercial announcements, which may occur in CATV operation.

The third area of interest lies in the question of whether ownership of CATV systems, or interests therein, by television broadcast stations conflicts with Section 73.636 (a) (2) of the FCC rules pertaining to concentration of control. Specifically, the Commission asks these questions:

(1) If such conflict exists, should CATV interests be considered as television broadcast interest under the numerical limits of Section 73.636 (a) (2) of the Commission's Rules?

(2) If it is determined that CATV interests should be so considered, what should be the definition of a CATV system requiring treatment in this manner?

(3) Should such classification depend in any way upon whether or not the CATV system originates some of the programming which it furnishes to its subscribers?

(4) Apart from the numerical limitations, under what conditions, if any, should a television broadcast licensee be permitted to own interests in CATV systems located outside the area served by the television broadcast station?

(5) Should any special significance attach to ownership by television broadcast licensees of CATV systems which carry the signals of television broadcast stations which they own into other seperate and distinct communities?

Fourth point of inquiry is: "Under what conditions, if any, should television broadcast licensees be permited to own CATV systems, or interest therein, where the CATV systems serve portions of the area served by the licensee's television broadcast station? In any event, should the Commission permit ownership of a CATV system by a television broadcast licensee in the principal city or cities served by the licensee's television broadcast station? If so, in what circumstances and under what conditions?

And, lastly, the FCC asks, "Apart from considerations relating to the Commission's multiple ownership rules (Section 73.636), and the policies underlying such rules, does ownership by a television broadcast licensee of CATV interests in substantially the same area or in different areas raise any question of conflict of interest detrimental to the public interest in television broadcasting?

Pending outcome of the proceeding, the FCC has announced that it will withhold action on the application to transfer control of H & B Microwave Corp. (operator of 37 systems in 12 states) from H & B American Corp. to Video Independent Theatres, Inc., a wholly owned subsidiary of RKO General, Inc. RKO General owns five television stations and operates 27 community antenna systems in five states.

$13 MILLION FOR ETV

Additional Federal grants of $13 million for ETV have been recommended by the House Appropriations Committee. The grants are distributed by the Department of Health, Education and Welfare under the Educational Television Facilities Act. The program has been in effect since 1962.

NEDA NEUTRAL ON TAME

The Executive Vice President of the National Electronic Distributors Association has indicated that the NEDA Board of Directors does not wish to support TAME (Television Accessory Manufacturers Institute). Mr. Gail S. Carter said that as far as NEDA is concerned, "the public interest must come first."

He noted that members have "various interests and relationships in the matter of CATV, and therefore NEDA's position must be based completely in sympathy with the interest of the public . . ." Mr. Carter warned members not to allow individual participation in TAME to be represented or construed to be involvement of the National Electronic Distributors Association.

Carter emphasised that NEDA is "Specifically enjoined from taking any stand which might even remotely be construed as being in restraint of trade or collusion with any activity whose purpose could be so interpreted."

NAEB OPPOSES UHF FOR MPATI

The National Association of Educational Broadcasters has indicated opposition to the FCC's proposed allocation of six UHF channels for the Midwest Program on Airborne TV Instruction (MPATI). According to NAEB the airborne UHF channels would eliminate 32 UHF channels from the previously proposed FCC allocation table.

FOCUS
...On Progress

PHELPS DODGE NAMES TRIVELLI ASSISTANT CHIEF ENGINEER

The appointment of *Mr. Benjamin P. Trivelli* as Assistant Chief Engineer has been announced by *Mr. Henry W. Jones, III*, Vice President of Phelps-Dodge Electronic Products Corp.

Mr. Trivelli will work under the direction of Chief Engineer *John Arbuthnott, Jr.*, with emphasis on assignments in the area of special waveguide configurations. Other duties will involve the full Phelps Dodge Electronics line, including coaxial cables and connectors, rigid line, coaxial delay lines, hybrids, power splitters, diplexers, and other systems components.

Trivelli formerly served with Microtech, Inc., division of Talley Industries, as Engineering Manager.

NOWACZEK ELECTED TO S.R.E.

NCTA Director of Research, *Frank Nowaczek*, has been elected an Associate of the *Society of Relay Engineers* in England. According to NCTA, Frank is one of only eight SRE members outside Great Britain. The Society includes engineers and management men involved in cable television distribution in Great Britain.

TELCO NOW TV CABLE SUPPLY

TELCO, supplier to and builder of CATV systems throughout the U. S., announced a name change to *TV Cable Supply Company* (TVC), effective May, 1964.

Mr. Jerry Conn, sales manager for the Company, pointed out that the new name was selected to better identify TVC's business activity in the CATV industry. Since 1953, when the Lewistown, Pennsylvania firm was founded, TVC has been engaged in supplying CATV equipment and. in building Community Antenna systems.

The company will continue to emphasize all phases of CATV service, from franchise procurement and "turn key" construction, to management of the system. With the advent of reasonably priced, high-band equipment, rebuilding of systems has also become an important phase of TVC's operation.

Mr. Conn

Mr. Gardner

Mr. George Gardner, president, pointed out that *Mr. Jim Morton* will continue to serve as sales representative working with Mr. Conn. TVC will exhibit its products and services at the NCTA Convention, Conn said.

JERROLD NAMES TWO NEW GROUP VICE PRESIDENTS

According to an announcement by *Mr. Milton J. Shapp*, Jerrold Corporation President and Board Chairman, two vice presidents have been appointed by the Philadelphia-based firm.

Mr. Robert H. Beisswenger has been named Vice President and General Manager of Jerrold Electronics Corporation and *Mr. Paul Garrison* was appointed Vice President and General Manager of Technical Appliance Corporation, Sherburne, New York. Shapp referred to the appointments as another step in the corporate reorientation resulting from his return to active management last summer. He credited Beisswenger and Garrison with having "worked closely with me in the past few months in reorganizing and reshaping their own subsidiaries," adding that he intends to "utilize their specialized talents in the corporation's overall planning, production, marketing and management."

Mr. Beisswenger has been with Jerrold since 1961 when he became General Manager. He became a Vice President in 1963. Before joining Jerrold he was General Manager of Whitney Blake Co. Mr. Garrison joined TACO in 1961 as General Manager. He had previously been Sales Manager of the Special Products Division of the I-T-E Circuit Breaker Co.

The promotions give Jerrold three Group Vice Presidents. *Mr. Roland J. Kalb*, Vice President and General Manager of Pilot Radio Corporation, was named to a similar post last month with overall responsibility for The Jerrold Corporation's other operations, Pilot Radio and Harman-Kardon, Inc.

TOM HEWITT GETS COLLINS MICROWAVE SALES POSITION

Collins Radio Company's Microwave Marketing Division has announced the appointment of *Mr. Tom Hewitt*, a systems planning engineer, to the position of microwave salesman in charge of a seven state territory.

Hewitt will headquarter in Kansas City, Mo., handling industrial microwave sales for the states of Oklahoma, Arkansas, Kansas, Missouri, Nebraska, Iowa and Illinois. He replaces *Mr. Bud Cummings*, who has been transferred to the company's Systems Engineering Division in Dallas, Texas.

DORNE AND MARGOLIN ANNOUNCES MANAGEMET APPOINTMENTS

The following staff changes for Dorne and Margolin, Inc., have been announced by *Mr. Arthur Dorne*, President. *Mr. Thomas L. Evans*, former manager of marketing, has been named to the office of Vice President; *Mr. Jordan Fishbane*, formerly company comptroller, has been moved to the office of Treasurer.

Mr. David Shapiro, company director, has been appointed corporate secretary and *Mr. David Verplank* has been appointed assistant corporate secretary. *Mr. Patrick Carr, Jr.* recently joined the staff as Director of Market-

ing. Prior to joining D&M, Carr was vice president and co-owner of Argus Industries. Formerly, he managed the Washington office of Pickard & Burns and was industrial sales manager of the Marvland Electronic Division of Litton Industries.

Dorne and Margolin, Inc., with plants in Westbury, Long Island, New York and Chatsworth, California, is a designer and manufacturer of antennas, microwave components and systems.

SONY APPOINTS SALES REP FOR VIDEO TAPE RECORDER

The Industrial Products Division of the *Sony Corporation of America*, New York, has appointed the *Current Controls Corporation of Chicago* as exclusive sales representatives for the railroad industry. According to *Mr. Bruce Birchard*, Sony Vice President, the firm's PV-100 portable video tape recorder is being utilized as an aid in recording freight train movements with one-hundred percent accuracy.

The Sony "Videocorder" can be slowed to 1/60th of its standard speed, or to "stop-look" position for analysis of recorded railroad activity.

COLLINS PROMOTES FOX

In Dallas, Texas *Collins Radio Company* has announced the appointment of *Mr. K. R. Fox* to the newly created position of Assistant Vice President, Microwave/Scatter Marketing Division. Fox was formerly director of the division.

CATV SUPPLIERS DISPLAY AT ANNUAL PARTS SHOW

Taking part in the Annual Electronic Distributors Parts Show last month in Chicago were several CATV industry suppliers. Both Jerrold and Blonder-Tongue displayed home reception aids, with Jerrold promoting an array of 35 new products. Heavy emphasis was placed by both firms on UHF.

Rohn Manufacturing Company exhibited a complete line of towers; Tape-Athon Corporation demonstrated their various background music programing equipment and audio libraries.

AMERICAN CABLE & RADIO CORP. NAMES NEW PLANNING DIRECTOR

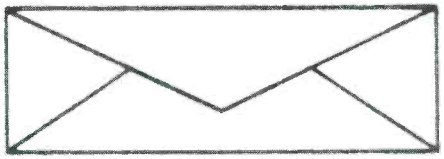
The appointment of *Mr. George S. Mauksch* as director of planning for *American Cable and Radio Corporation*, a subsidiary of International Telephone and Telegraph Corporation, was announced late last month by *Mr. John W. Guilfoyle*, AC&R President.

Mauksch has had nearly 20 years experience in the communications field, including microwave and cable systems, digital communications and data processing systems. Most recently he has served as director of development operations at the ITT Data and Information Ssytems Division. Prior to joining ITT Mr. Mauksch spent 14 years with the Bell System, where he was cnocerned with microwave and cable carrier systems.

WEATHER CHANNEL AT FAIR

TeleMation, Inc announced that their "Weather Channel" equipment has been selected by the operators of the New York World's Fair Hall of Education to be used for a continuous televised display of time, weather, and information.

This equipment, used throughout the country by community antenna television systems, hotels and others operating wired television distribution systems, is manufactured at 2275 South West Temple, Salt Lake City, Utah. The apparatus consists of meteorological instruments and projected slides carrying advertising and promotional information.



LETTERS

Editor:

A recent issue of your "TV & Communications" Magazine made reference to a new CATV pole rights agreement. As I recall, you stated that this agreement was considered excellent from the standpoint of the CATV operator and had been well accepted by telephone companies.

I wonder if you would be able to tell us where and how to secure a copy of this agreement?

Sincerely,
Irving J. Toner
Warsaw TV Cable Corp.
703 Main St.
East Aurora, New York

● *We suggest that you write to the headquarters of Southern Bell Telephone Company in any of the states served by that company. For example, you can contact their Georgia office which is in Atlanta. Another possibility is simply contacting a CATV operator in the Southern Bell territory. If neither of these solutions works let us know and we'll try to locate a copy of the Southern Bell agreement for you.*

Editor:

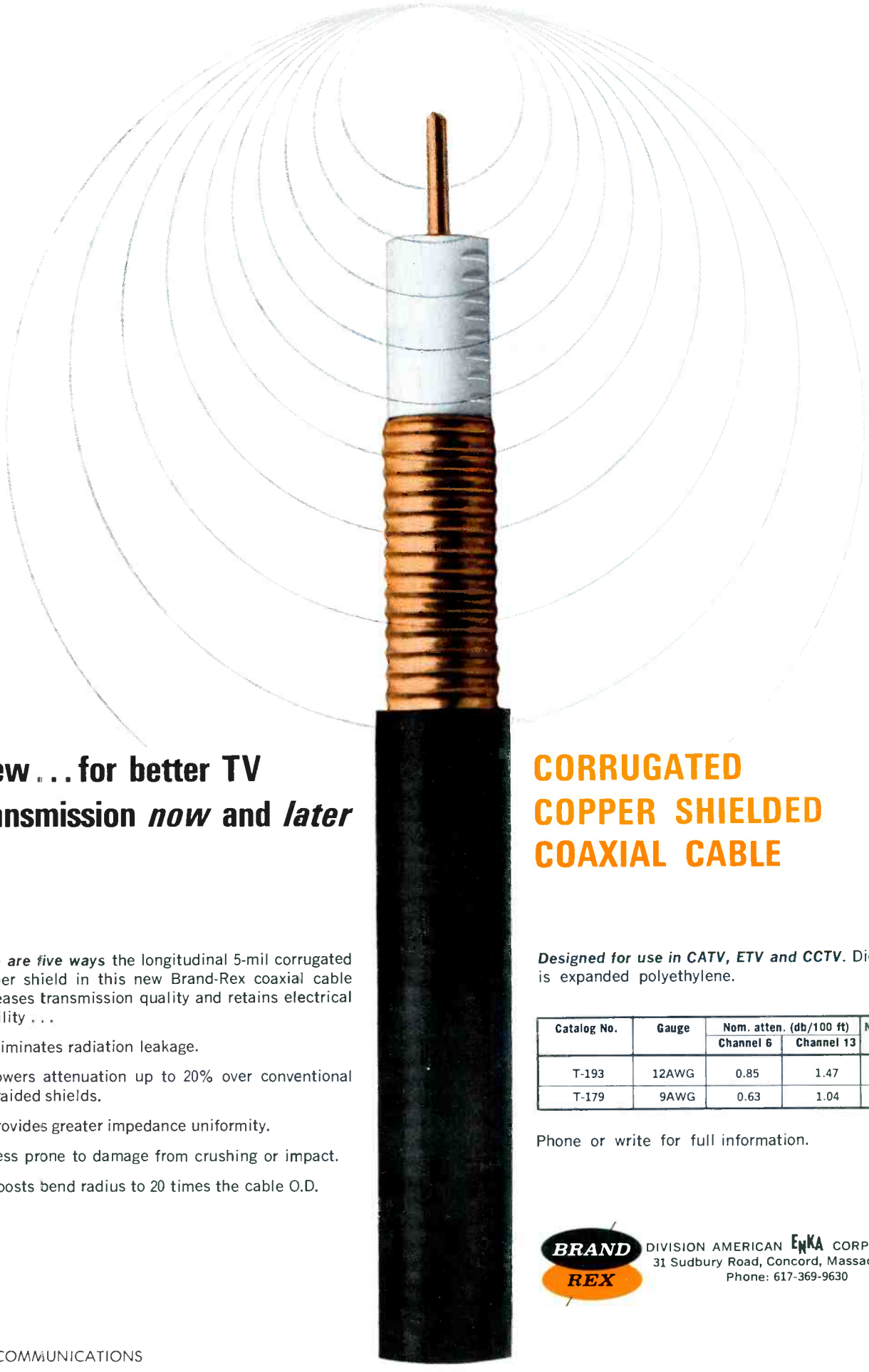
After reading your article "CATV Industry Profile" in the April, 1964 issue of "TV & Communications", I would like to up-date the article by one more statistic.

Since March, 1964 we have had 12 off-the-air channels on our TV cable system. We are now serving 450 customers with a potential of approximately 3,000. As yet we have not joined the NCTA but plan to do so.

We would be glad to provide you with any other information.

Very truly yours,
Edgar J. Rosenberry
Shippen TV Cable Co.
Shippensburg, Pa.

● *Thanks for your interest — and for the statistics. The article to which you refer was based upon research conducted by the National Community Television Association; our thanks to NCTA for the information.*



New . . . for better TV transmission *now* and *later*

CORRUGATED COPPER SHIELDED COAXIAL CABLE

Here are five ways the longitudinal 5-mil corrugated copper shield in this new Brand-Rex coaxial cable increases transmission quality and retains electrical stability . . .

1. Eliminates radiation leakage.
2. Lowers attenuation up to 20% over conventional braided shields.
3. Provides greater impedance uniformity.
4. Less prone to damage from crushing or impact.
5. Boosts bend radius to 20 times the cable O.D.

Designed for use in CATV, ETV and CCTV. Dielectric is expanded polyethylene.

Catalog No.	Gauge	Nom. atten. (db/100 ft)		Nom. O.D.
		Channel 6	Channel 13	
T-193	12AWG	0.85	1.47	.490
T-179	9AWG	0.63	1.04	.650

Phone or write for full information.

BRAND REX

DIVISION AMERICAN ENKA CORPORATION
31 Sudbury Road, Concord, Massachusetts
Phone: 617-369-9630

Superior

THE ONLY GUARANTEED COAXIAL CABLE ON THE MARKET

specifically designed and manufactured for the CATV industry

See us at
Booth No. 6
13th Annual N.C.T.A. Convention
Bellevue-Statford Hotel
Philadelphia, Pa.
June 14-19

Cell-O-Air® Coaxial Cable

has what it takes for top performance!

- **BETTER INITIAL TRANSMISSION QUALITY**
- **BETTER LONG-TERM TRANSMISSION STABILITY**

Superior Cell-O-Air® Coaxial Cable, with the "Coppergard" Shield delivers sharp, clear pictures without interference and provides years of longer service.

- Up to 20% lower attenuation than cables with conventional shielding
- Elimination of radiation leakage apertures which are present in braided shield cables
- Improved impedance uniformity
- Improved resistance to crushing or impact stresses

- Longitudinally-applied 5-mil "Coppergard" Corrugated Copper Shield

Catalog Number "Coppergard" Shield	Attenuation (Nom. db @ 100 ft.) Ch. 6	Ch. 13	Nom. Overall O.D.
4920	0.88	1.50	.480"
4930	0.65	1.05	.652"

ALSO AVAILABLE: Self-supporting IM "Fig. 8" type and Double COPPERGARD shielded types for direct-burial use.

EVERY REEL OF SUPERIOR CELL-O-AIR® COAXIAL CABLE IS SWEEP-TESTED OVER ITS FULL LENGTH!

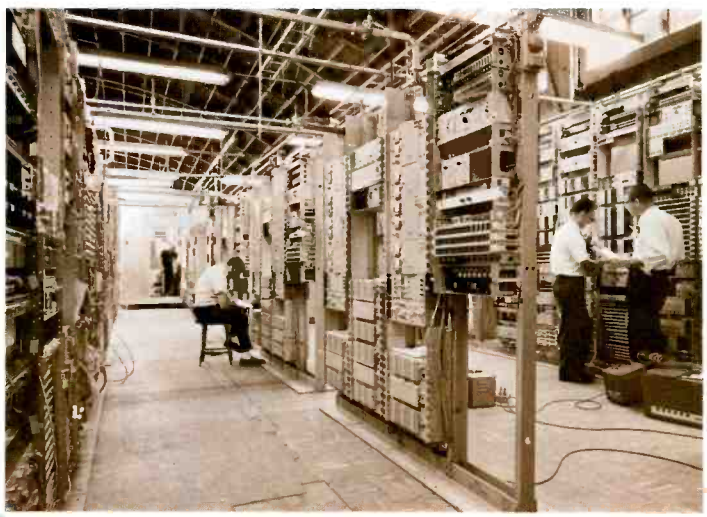
Manufactured by

SUPERIOR CABLE

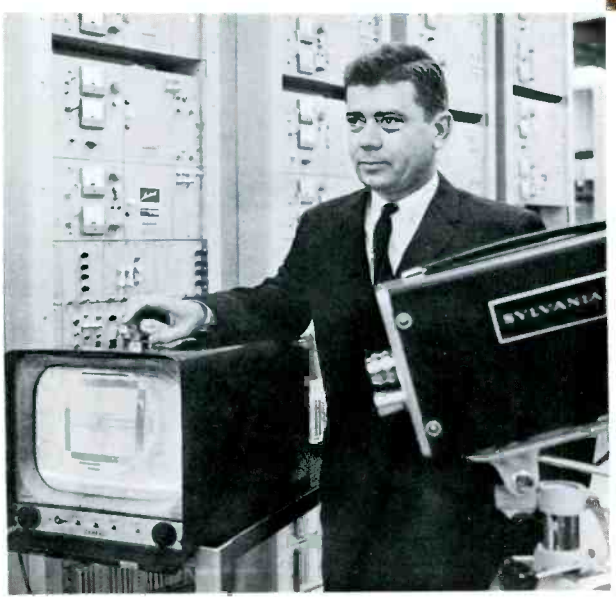
Superior Cable Corporation • Hickory, North Carolina

TV&C STAFF REPORT ON

LENKURT



Just prior to shipment last month, Lenkurt engineers lined up the entire $2 million Bonneville Power Administration radio system for test. Attenuators simulated the 600 mile path of the turnkey system, giving the equivalent of on-site check-out.

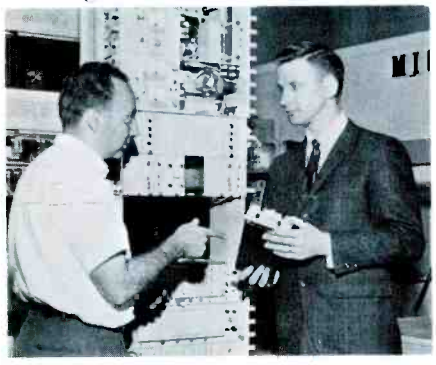


Lenkurt President Robert J. Gressens, in photo at left, demonstrates 76TV microwave equipment. Units are engineered for high quality transmission of both color and monochrome television signals.

An extensive background in communications, dating back to 1935, has established Lenkurt Electric Co., Inc., as a leading manufacturer of microwave equipment for a variety of applications including CATV and ETV. An increasingly popular equipment for these markets is the Lenkurt 76TV microwave transmitting and receiving units. This equipment is completely transistorized, except for single klystrons in transmitter and receiver. The high reliability of this solid state, temperature compensated microwave relay system makes it ideal for community antenna systems, educational television and broadcast use.

At Lenkurt's invitation we visited the company's impressive San Carlos, California facility. We went there to learn more about the firm's general background and especially its capabilities in supplying equipment and engineering services for television distribution systems. What we discovered is an inspiring story of communications pioneering and corporate growth.

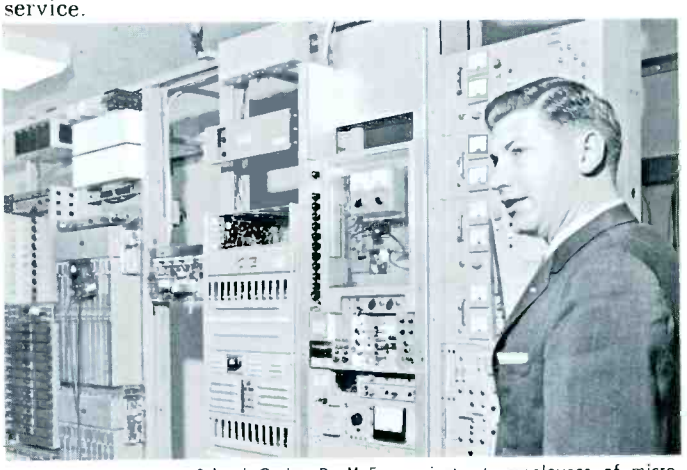
Lenkurt is a steadily expanding company consisting of highly capable engineering, manufacturing and marketing organizations. In 1944 Lenkurt Electric was founded as a partnership by Lennart G. Erickson and Kurt E. Appert, the name of the company being derived from the founders' first names. Originally, the company manufactured custom-designed equipment, and later received development contracts to design and manufacture telephone and communications equipment for the military. By 1947 the firm had advanced to 75 employees and moved at that time from San Francisco to San Carlos. Steady growth has resulted in the present complement of more than 2,000 persons occupying a half million square feet of floor space on a 52 acre plant site. Since 1959 the firm has been a subsidiary of General Telephone & Electronics Corporation.



TV&C Editor, Stan Searle, discusses 76 radio combiner with Leo Menta, Supervisor of Systems Test.

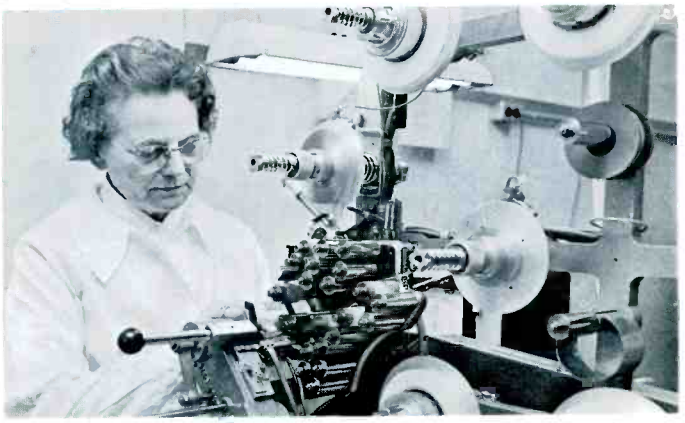
President of the energetic operation is Mr. Robert J. Gressens. His extensive team of marketing and engineering organizations spans the continent and serves in many countries around the world.

To the systems operator a very interesting and important facet of Lenkurt is a group called "E.F.&I." That may sound like the name of a railroad to you . . . but at Lenkurt it means "Engineer, Furnish and Install". The EF&I group is responsible for complete system planning and execution, whether it's a "turnkey" job or simply supplying equipment to your complete engineering specifications. Included in the services available from Lenkurt EF&I are complete planning and cost estimating, path survey and equipment engineering, procurement, equipment testing, personnel training and even complete system maintenance service.



In Customer Training School Carles R. McFarren instructs employees of microwave customers. Thorough training is offered in maintenance and operation of multiplexing and radio equipment.

According to EF&I chief, Rodman Romayne, heavy emphasis is placed on each individual installation in precise detail. The aim is to reduce actual installation time and expense in the field to an absolute minimum. The engineers in the group stress the concept of engineering for total system performance — rather than individual equipment performance.



Lenkurt produces many of its own components to maintain high quality at low cost to customers. Here, Mrs. Anna R. Wolak winds polyethelene capacitors in a clean-room.

During our full day's visit to Lenkurt we enjoyed ample opportunity to observe and photograph many of the company's engineering and production departments. The tour was genuinely impressive as well as informative. Lenkurt claims the title of, "The nation's most extensive independent engineering and manufacturing facilities for telecommunications systems"' And based on our first-hand observations that description is an accurate one. There is no question about Lenkurt's phenomenol growth or the company's established capability in providing qualified microwave engineering, manufacture and installation.

PROVEN BY 3 YEARS' RESEARCH . . .

JERROLD QUALITY *TRANSISTORIZED*

Experienced operators agree that transistorized CATV gear with Jerrold quality and reliability is what they've been waiting for. Don't be fooled by equipment specs; they're meaningful only when they relate to gain and output capability at *usable* system operating levels. Jerrold's new solid-state devices have the highest operational capabilities in the industry, yet are conservatively rated in accordance with our high engineering standards. This is the type of equipment performance you need to keep your subscribers satisfied, your system expandable and trouble-free . . . and this is what you get when you use Jerrold CATV equipment.

NEW SOLID-STATE INTERMEDIATE BRIDGING AMPLIFIER

MODEL TBA-2: Incorporates design features and functions of both the TML-1 and TBA-1. Creates feeder lines at locations between two TML-1 amplifiers. Features built-in directional coupler, 1½ db max. insertion loss, 26 db gain to each of two outputs, variable gain and tilt controls; has the same output capabilities as the TML-1. Mounts in a weather-proof housing and is cable-powered. Internally voltage-regulated and current-limited. Each output fused for fault-protection.

NEW SOLID-STATE FEEDER-LINE EXTENDER

MODEL TLE-1: Mounts directly on the messenger, in line with the coaxial cable. Provides a minimum 18 db gain at channel 13, and is designed for use with 18 to 28 db of cable. Compact, lightweight, features a high output capability of 33 dbj* for 12-channel operation. Separate gain and tilt controls can be set and locked in position. A two-position switch opens or closes power pass-through circuit.

Heavy-duty weather-proof aluminum housing clamps to messenger and utilizes the seized-center-conductor principle for permanent connection to either solid or flexible cables.

*0 dbj = 1000 microvolts across 75 ohms.

NEW "CHANNEL CHAMP" SOLID-STATE PREAMPLIFIER

MODEL TPR- : The most impressive *picture improver* since the development of the famous Jerrold Channel Commander. Features lowest noise figure in the industry (4 db low band, 5½ db high band). AC-powered to eliminate electrolysis problems. Zener diode regulation eliminates signal fluctuations due to voltage changes. Trouble-free transistor circuit enclosed in thick cast aluminum housing will provide like-new performance year after year.

UNANIMOUSLY ACCLAIMED AT THE SHOW!

CATV EQUIPMENT

HERE'S THE BEST-PERFORMING TRANSISTORIZED EQUIPMENT IN THE INDUSTRY!

NEW SOLID-STATE ALL-BAND CASCADER

MODEL TML-1: A six-transistor all-band mainline amplifier designed for rock-steady, trouble-free performance in extremely long cascaded runs. Features high gain (24 db min. full gain; 22 db operational gain); high output capability (44 dbj* per channel for 12 channels at −57 db cross-mod.); flat response (± ¼ db); low noise figure; matched inputs and outputs.

Operates from a 19 to 30 vac source either direct or via coaxial cable. Internally voltage-regulated, current-limited; supplies power to an associated line-bridging amplifier (Model TBA-1). Built-in equalizers and tilt control compensate for varying cable lengths. Gain control accomplished with plug-in pads and variable pot. Heavy solid copper heat-sink chassis.

NEW SOLID-STATE BRIDGING AMPLIFIER

MODEL TBA-1: For establishing feeder lines at main amplifier locations. Similar in construction to Model TML-1, from which it obtains power. Provides 14 db gain to each of four outputs. Features both coarse and fine gain control; high output capability (42 dbj* per channel for 12 channels at −57 db cross-mod.); and 16 db min. isolation between outputs. Each output is fault-protected with a fuse.

JERROLD ELECTRONICS

Community Systems Division • 15th & Lehigh Ave., PHILA., PA. • Area Code 215 226-3456

SHARON, MASS.
No. 40 Lantern Lane
Area Code 617
828-0767

PITTSBURGH, PA.
1301 Highland Bldg.
121 S. Highland Ave.
Area Code 412
441-3050

SAN CARLOS, CALIF.
1042 Terminal Way
Area Code 415
593-8273

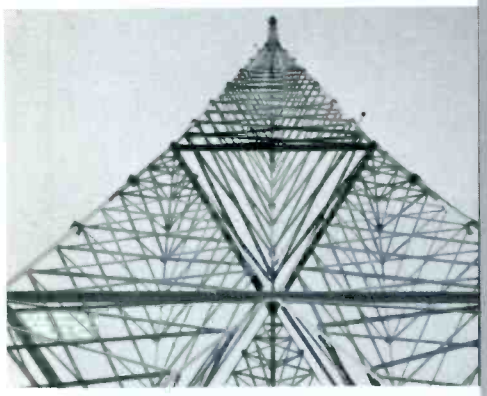
DENVER 22, COLO.
2110 S. Ash St.
Area Code 303
756-6283

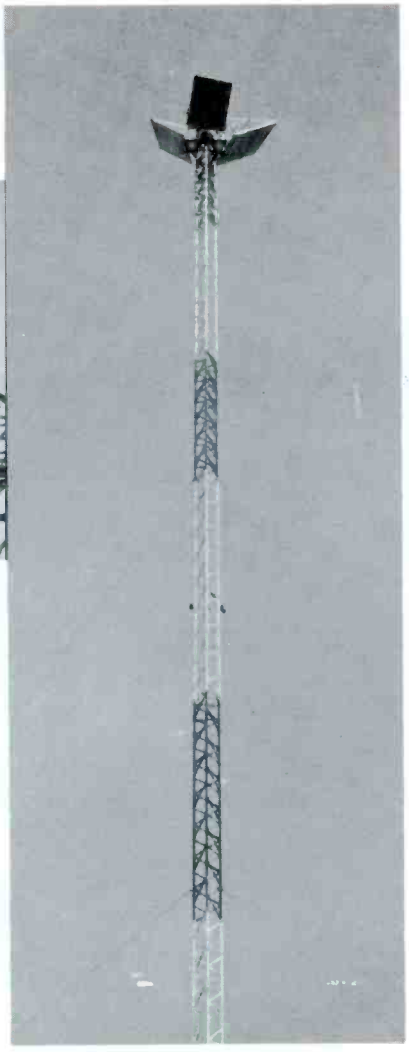
COQUILLE, OREGON
88 E. First St.
Area Code 503
396-3422

DALLAS, TEXAS
4924 Greenville Ave.
Area Code 214
368-1911

YAKIMA, WASH.
Ward Building
1 N. First St.
Area Code 509
248-1717

CHECK ROHN FOR YOUR TOWER NEEDS FIRST!





- ✔ Full line of proved communication towers to fit every need . . . includes heavy duty broadcast, CATV, and microwave.
- ✔ Tower design and engineering is tested by thousands of ROHN tower installations.
- ✔ Complete installation service available to take care of the entire job—professionally and to save you money.
- ✔ Complete line of microwave reflectors and tower lighting equipment available.
- ✔ Deal with one of the oldest and largest tower manufacturers in the U. S.—representatives world-wide.

Write—Call—Wire for Immediate Service

ROHN Manufacturing Co.

P. O. Box 2000, Peoria, Illinois

Phone AC 309-637-8416

Take a close look at the best made TRANSISTORIZED LINE EXTENDER AMPLIFIER on the Market

Model MD-2100

CRAFTSMAN'S MD-2100 is an all-band, fully transistorized, line extender, housed in a cylindrical, cast aluminum, weatherproof container. Housing is also designed to drain heavy condensation. The MD-2100 is cascadable and usable as a line amplifier or in motels, hospitals, etc. In a small CATV system, it could be used as a main line amplifier. A test point for testing RF input is power isolated and -15DB below the RF input signal. May be powered with either 20-30 VAC or 20 VDC. When powered by 20-30 VAC, a self-contained, well regulated power supply provides -15 VDC to the transistor amplifiers. Chassis can be removed for tilt adjustment and response alignment, and to connect jumper wires for DC or AC powering other amplifiers in cascade. Special Neoprene ring insures waterproofing.

Power	20-30 VAC or 20 VDC
Bandwidth	40-220 MC
Response	Flat plus or minus 1 DB
Gain	23 DB at Channel 13
Test Point	-15 DB of input, AC and DC isolated
V S W R	1.25
Gain-Tilt Control	Internal
Response Alignment	Internal
Power thru Connection	Internal
Compensation	Compensated at factory for 20 DB of cable attenuation
Housing	Cast aluminum with Strand Mts. Bracket — 3" Diameter, 6" length
Connectors	2 MF-61 female connectors with 2 MF-59 male counterpart and ferrules included. Available with connectors to fit .41s, ½" aluminum cables or UHF.
Recommended Input	Plus 10 DB
Recommended Output	Plus 30 DB

CEP

CRAFTSMAN Electronic Products, Inc.
133 West Seneca St. Manlius, N. Y.

NCTA Officers and Directors

This month the National Community Television Association is holding its 13th annual convention in Philadelphia. On this appropriate occasion we want to introduce the NCTA leadership to system operators across the nation and to our readers in many foreign countries. The NCTA officers and directors include many of the men who have pioneered in this industry. Expanding the frontiers of telecision reception, and now working together in a mature industry, they have been characterized by ambition, foresight, and imaginative business acumen. In the following pages we present a brief background sketch of each of the Officers and Directors of the NCTA.

NATIONAL CHAIRMAN

Fred J. Stevenson, Rogers, Ark., has been a member of NCTA since 1953. He served on the Board of Directors from 1955 to 1961 and was re-elected to the Board in 1962 for a three year term. He was one of the organizers of the South Central CATV Association and the Arkansas CATV Association. Stevenson is President and principal owner of Rogers TV Cable Co., Rogers, Ark.

NATIONAL VICE-CHAIRMAN

Archer S. Taylor, Kalispell, Mont., is one of the owners of the first community antenna systems built in Montana. Taylor has been associated with the Aircraft

Radio Laboratory, Wright Field, Ohio; the National Bureau of Standards, and Paul F. Godley Co., Consulting Radio Engineers, Montclair, N. J. Since 1947 he has been self employed as a consulting engineer.

SECRETARY

Jack R. Crosby, Del Rio, Texas, holds management posts in a number of CATV systems, including Westex Cable Corp. Jack is active in systems located in Brackettville, Del Rio, Colorado City, Eastland, Ranger, Eagle Pass and Eldorado, Texas. He is also connected with systems in Montpelier, Vt., and Effingham, Ill.

TREASURER

R. L. Stoner, La Grande, Oregon, has been in CATV for a decade, serving as manager of Eastern Oregon Television, Inc., since its inception in 1954. Lee has been President of the Pacific Northwest Television Association and has served for four years as a Director of NCTA.

DIRECTORS

George J. Barco, Meadville, Pa., has been active for several years in NCTA, serving as President, Vice-President, and a member of the Board. George is also Special Counsel to the Pennsylvania CATV Association. He is President of Meadville Master Antenna, Inc.

Benjamin J. Conroy, Jr., Uvalde, Texas is President and Manager of Uvalde TV Cable Corp. He has also been involved in Effingham TV Cable Co., Effingham, Ill. Ben is Chairman of the NCTA Pole Line Committee and has served as Secretary of the Association.

Douglas B. Danser, Naples, Fla., formed General Television Systems, Inc. in early 1960 in Naples, after having spent many years as a municipal and corporate bond broker. Doug's promotional ability has been demonstrated by his obtaining 85% saturation during the first year of operation of his underground system in Naples.

Virgil G. Evans, Alexandria, La., became the Manager of a CATV system in Alexandria in 1959 after spending many years in radio as announcer, program director, sales manager and general manager.

Charles W. Fribley, Jr., Corning, N. Y. is President of Corning Community Television Corp.,President of New York-Penn Microwave. His system carries ETV programs to fifteen schools at no charge. Mr. Fribley's first entry into CATV was a small installation in Gibson, N.Y., in 1951.

F. Gordon Fuqua, manages a CATV system in Bluefield, W. Va. Gordon attended Bluefield High School, V. P. I. and West Virginia University.

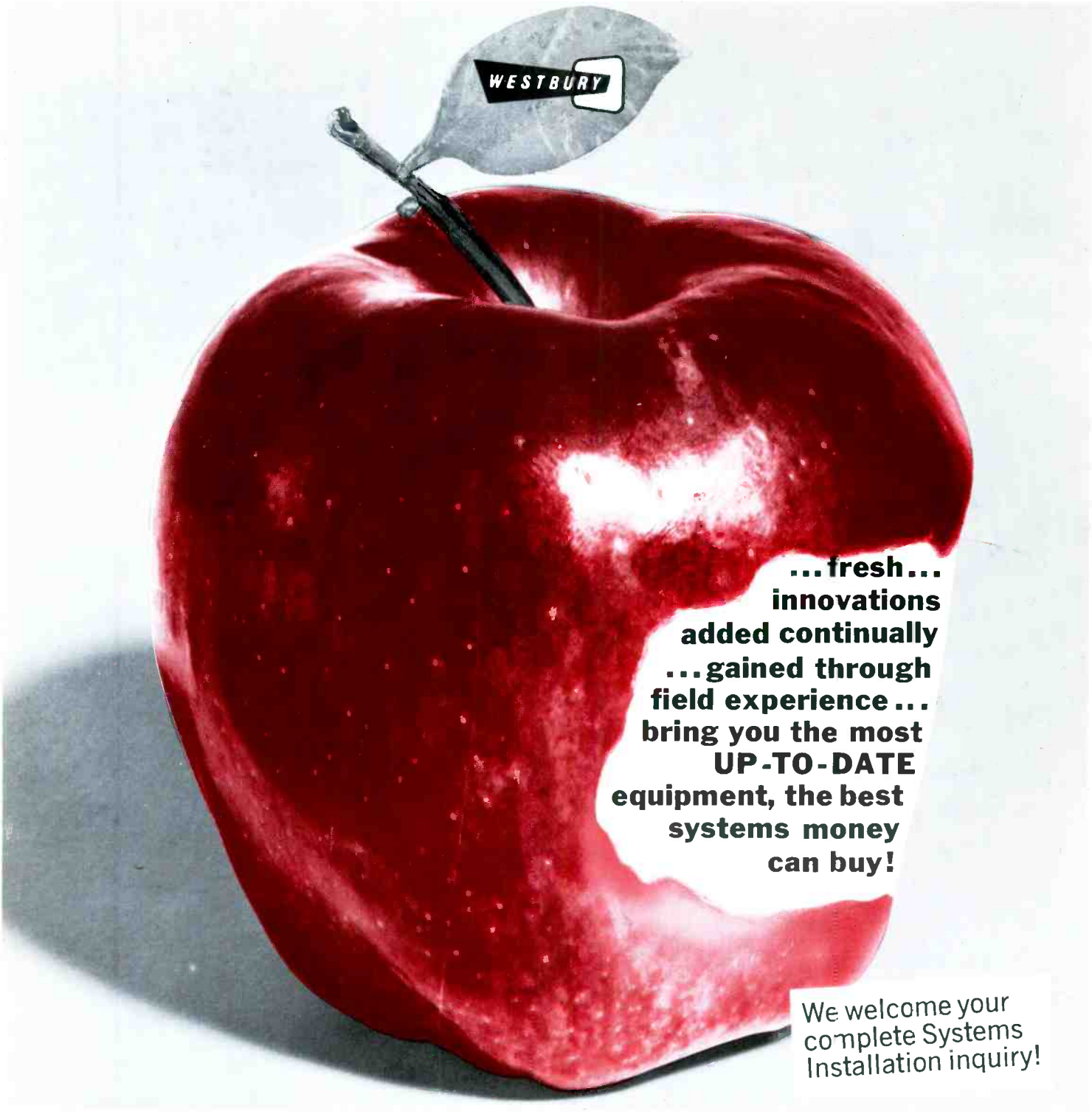
Harry Harkins, Webster Springs, W. Va., a native of Oklahoma, has been involved in CATV operations in Florida, Ohio, and several West Virginia communities. Harry has been active for several years in the West Virginia Television Association and the Mid Atlantic Television Cable Association.

Irving B. Kahn, New York, N.Y., became involved in CATV following a number of promotional positions in theatrical and entertainment firms. He has been President and Chairman of TelePrompTer since the company was founded in 1951.

William R. Maginnis, Yreka, Calif., has been involved in electronics most of his life. He applied for his first electronic patent in 1927 at the age of 12. Maginnis managed radio station KSYK in 1951 and 1952 before entering his own electronics and communications business. In 1954 he built the Yreka system. In 1956 he began construction of Siskiyou Video.

Martin F. Malarkey, Jr. was one of the founders of NCTA and has been active in promoting the cable television industry for many years. His interests now include Trans Video Companies, WRTA Radio, Altoona, Pa., Delmarva Community Antenna Corp., Harmony Hall, Wilmington, S. C., Eastern Shore Microwave Relay Co., Onesto Hotel Co., and HoTelevision Corp.

Bruce Merrill of Phoenix, Arizona has been an active participant in CATV for several years. In 1952 he organized Ameco, Inc., which has been engaged in CATV system operation, common carrier microwave operation, CATV system construction and CATV equipment manufacturing since the company's inception.



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Merrill has held a variety of key positions in NCTA and the Arizona State CATV Association

Robert Regan has built CATV systems in Mankato, Jackson, Fairmont, New Ulm and Winona, Minn. He has practiced law in Mankato from 1937 to present. Regan is the founder of Minnesota TV Signal Distributing Co., New Ulm TV Signal Co., and Casco Construction Co.

J. Leonard Reinsch, Atlanta, Ga., is President of Ohio Cablevision, Inc., Dayton, Ohio and also of Carolina Broadcasting Co., Charlotte, N. C. He is Executive Director of WSB, Atlanta, WHIO, Dayton, and WIOD, Miami.

Robert J. Tarlton, Lansford, Pa., was in the radio and electronics service business from 1933 until 1950. Bob was one of the early users of the master antenna concept which he introduced in Lans-

ford. His first experimental efforts began in 1949 and he organized the Panther Valley Television Co., Inc., in 1950. He was the first operator to deliver multiple channel television over a single cable.

Frank P. Thompson has been Vice President of CATV systems in Rochester, Minnesota, and Brainard, Minnesota, and is in charge of operations for CATV systems in Palm Desert, Rancho Mirage, Cathedral City and Indio, California.

Franklin R. Valentine, Jr., Waco, Texas, has been active in CATV as representative for Charles A. Sammons, Dallas, Texas, in acquisition and legal matters relating to community systems.

John Walsonavich, Mahanoy City, Pa., is owner of Service Electric and Service Microwave. His CATV interests involve Tamaqua, Bethlehem, Allentown and Wilkes Barre, Pennsylvania.

Ralph L. Wier, Jr., of Junction City, Kansas, has been owner of radio station KJCK in Junction City since 1949. He is President of Junction City Television and has CATV interests throughout central Kansas.

Carl M. Williams of Denver, Colo., formerly practiced law in Casper, Wyoming. He is now engaged in a variety of CATV interests. Carl is President of Televents Corp., Systems Management Company, Western Video, Inc. and Laguna Video, Inc.

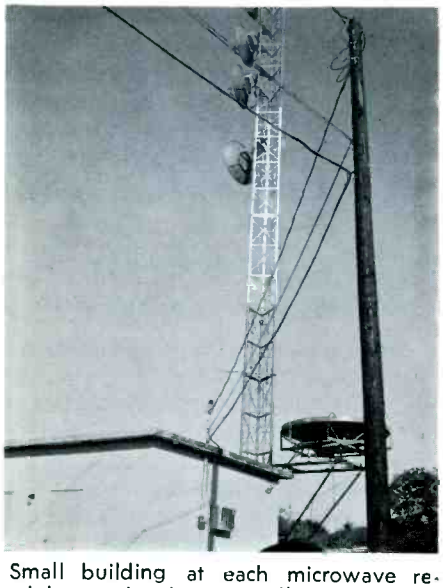
Sidney E. Young, Rutland, Vt., operates CATV systems in 5 towns in Vermont plus the city system in Rutland. He constructed 7 CATV systems in Vermont from 1953 through 1959. He was the first President of the New England CATV Association, from 1953 through 1956.

TV CABLE OF AUSTIN, INC.

Staff Special

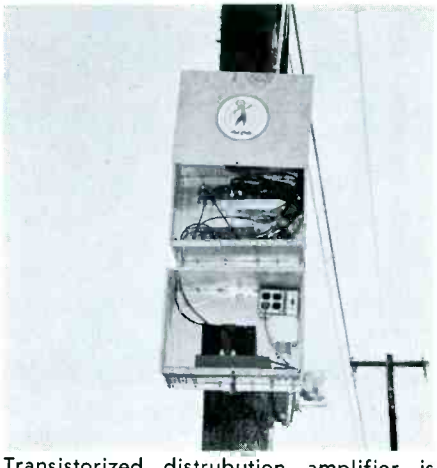
A lot of national attention has recently been focused on community antenna television activity in Austin, Texas. One reason for the widespread interest has been a petitioning of the FCC for relief from nonduplication restrictions by TV Cable of Austin, Inc. *(Spectrum, April '64 TV&C)*. Another aspect of CATV in Austin which has aroused considerable attention is the unusual *intra-city* microwave distribution network employed by TV Cable.

Essentially, the TV Cable of Austin system is comprised of five individual CATV systems, all being fed by microwave from a common repeater station. Here's how it works: initially, three San Antonio VHF channels carrying the three major networks, along with



Small building at each microwave receiving station houses Collins microwave equipment. Photo shows Corr-O-Foam

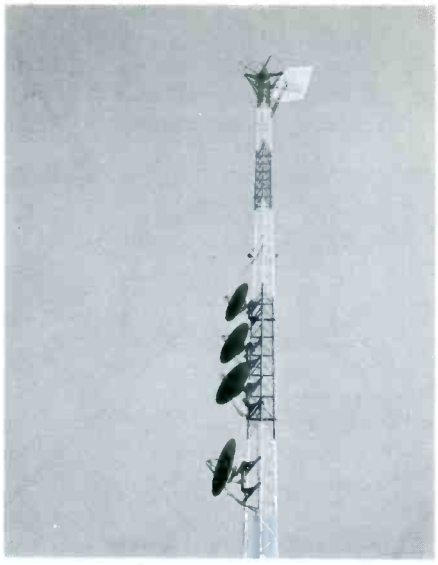
a Spanish language UHF station, Channel 41, are picked up off-the-air by use of a 300-foot tower located on a mountain 10 miles west of San Marcos. These four television channels are then relayed 30 miles by microwave to the 200-foot tower at the South Austin distribution point and microwave repeater station. At this point the four channels are supplemented by the addition of Channel 7, KTBC-TV Austin, the educational channel, an FM music channel, weather information channel and Civil Defense operation and disaster alarm system. All channels are relayed from this site to microwave receivers at the four distribution points within Austin.



Transistorized distrubution amplifier is shown in pole mounted cabinet. Power is received from coaxial cable entering top of housing.

From each of the five distribution points, including the master control site in South Austin, the signals are carried in the conventional manner over Corr-O-Foam air dielectric trunk line cables to surrounding areas. The unique combination of inter-city and intra-city microwave results in good quality pictures being delivered to the city and, secondly, delivery of undeteriorated signals to the widely separated distribution points within the city. Trunk lines are substantially shorter than with conventional all-cable systems. And, consequently, signal interruptions are minimized. Maintenance and servicing are greatly simplified, too, due to the fact that the system contains five independent distribution systems. Transistorized amplifiers are adjusted for approximately 20 db gain in the all-band system.

According to TV Cable President



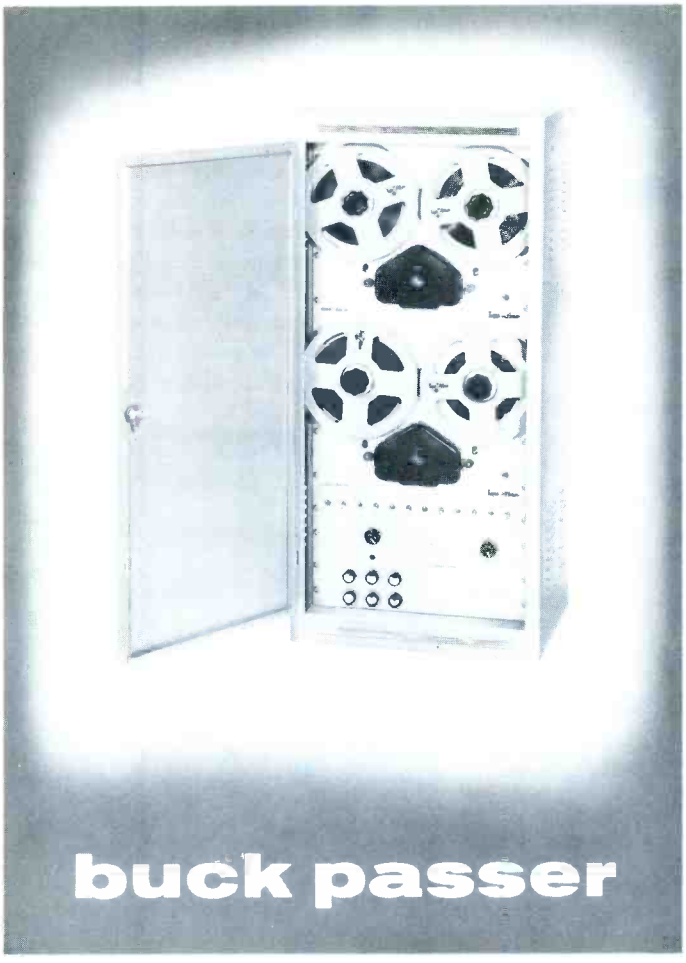
200-ft. South Austin tower picks up microwave beam, relays signal to four other distribution points.

John Campbell, the microwave distribution method was chosen because of the distance from primary station pickup and because of the firm's desire to assure good color reception. The microwave equipment was supplied by the Collins Radio Company. Operation is in the 6 kmc Business Radio Service. Major suppliers of amplifiers and components include Ameco, Inc., and CAS Manufacturing Co. Towers were constructed by Fort Worth Tower Co.

Several hundred Austin homes began receiving service over the TV Cable system last Autumn. Since then new hook-ups have reportedly continued at a lively pace. Austin is also served by a competitive cable system, Capital Cable, and a strong local three-network station, KTBC-TV.

TV Cable technicians install amplifier, operating from radio-equipped service truck.

TV Cable's construction and installation crews are efficiently controlled through the use of two-way radio equipped trucks. Automated billing is another modern innovation which helps TV Cable of Austin, Inc., to serve its customers well—through progressive business methods. □



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Performance Testing of Television Channels

Part Two

by Maurice E. Cookson, E.E.

Lenkurt Electric Co., Inc.

Last month's article in this two-part series discussed some of the more conventional test signals for evaluating video transmission systems. Many of these "steady-state" testing methods share certain disadvantages because they are based on sine waves or other repetitive signals. As transmission requirements have become more severe, particularly with the widespread acceptance of color television, more rigorous testing is in order. So-called "waveform" testing—a means of testing the system's ability to reproduce typical waveforms is generally required. This article discusses the most widely accepted waveform method, the sine-squared or "pulse and bar" test.

The chief disadvantage of sine-wave test signals is that they are not really representative of typical video signals, and thus may not fully reveal how a transmission system actually responds. Television transmission is waveform-dependent, which means that a true representation of the subject cannot be obtained from the magnitudes of the signal spectral components (energy distribution) alone, as in the case of speech or music. A typical television signal is more likely to consist of abrupt "steps" (corresponding to a sudden transition from one value of gray to another), or sharp impulses (light or dark spots against a contrasting background).

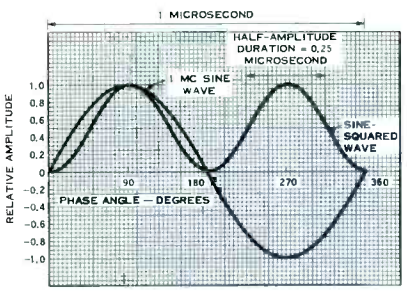

Figure 1. Sine-squared wave can be derived by numerically squaring a sine wave. The sine-squared wave shown contains no significant spectral components above 4 Mc.

An appropriate test signal should include these typical elements in a way that will clearly reveal system performance, but not respond to system characteristics which do not affect the picture. In general, the test signal should:

1. Be representative of the commonly occurring parts of a television signal;
2. Have a spectrum confined to frequencies of interest, so that distortion outside the band of interest is not indicated;
3. Have a simple "mathematical" shape, thus simplifying calculations;
4. Be easy to generate or reproduce accurately;
5. Have a simple shape that permits easy identification of distortion on an oscilloscope presentation;
6. Be sentitive to the kinds of distortion met in actual television picture transmission, thus allowing the detection of very small errors.

These requirements are well satisfied by a test method which employs a *sine-squared pulse*. This type of pulse simulates transcient picture elements well. Unlike a pure sine wave, which has an infinitely narrow bandwidth, or a square wave, which ideally has an infinitely extended bandwidth, the sine-squared pulse has a bandwidth or spectral content which is quite restricted and easily controlled. This is important because unwanted frequency components outside the television band of interest would certainly be distorted and cause misleading test results.

The sine-squared pulse is so-named because its amplitude varies as the *square* of the sine of the phase of the signal: A equals $\sin^2 \phi$, where ϕ is the phase angle. This is nearly as simple a waveform as tne sine wave itself, which is defined as A equals $\sin \phi$. Both waveforms are shown in Figure 1.

An idealized square wave contains a series of harmonics that extend indefinitely. Practical square waves, the type that are obtained in a test instrument, have very extensive harmonics, but they vary unpredictably with variations in circuits and test conditions. The sine-squared pulse, by contrast, has a limited, easy-to-reproduce spectrum controlled by pulse width. A "sharper" and narrower pulse contains higher frequencies than a broader pulse. ence, the bandwidth of the transmission system to be tested determines the duration or width of the test pulse to be used.

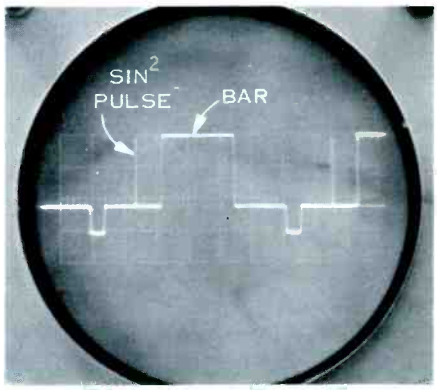

Figure 2. Pulse-and-bar test signal consists of sine-squared pulse and square wave with leading and trailing edges modified to sine-squared shape.

Sine-Squared Spectrum

Normally, the nominal pulse width T is defined as its half-amplitude duration. When the sine-squared pulse has a duration of $1/2f$, energy content of the pulse is 6 db below peak value at frequency f, zero at $2f$, and has no significant energy at higher frequencies.

Square waves provide the best test of low-frequency distortion, but are still more useful if the spectrum can be limited to the frequencies of interest. The square wave used in a window signal can be modified so that the leading and trailing edges have the same shape as the sides of the sine-squared pulse. If a sine-squared pulse is added to each line of a window signal which has been shaped in this way, a so-called *pulse-and-bar* test signal is obtained. This is illustrated in Figure 2.

The pulse and bar test permits sensitive performance evaluation across the entire frequency band. Because of the large amplitude of its low-frequency components, the bar gives the most sensitive indication of distortion at the lower frequencies—up to several hundred kc — just as does the traditional window signal. Unlike the window signal, however, the modified bar contains no significant out-of-band frequency components to produce spuri-

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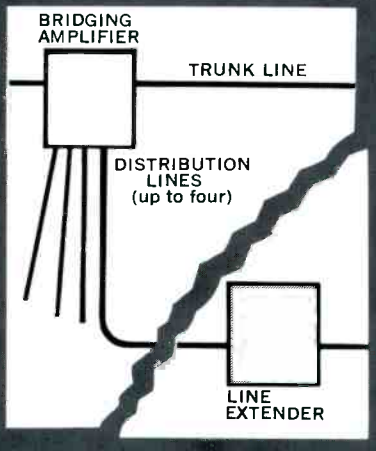

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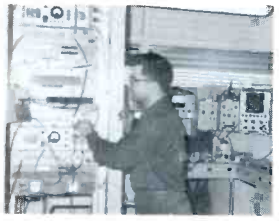

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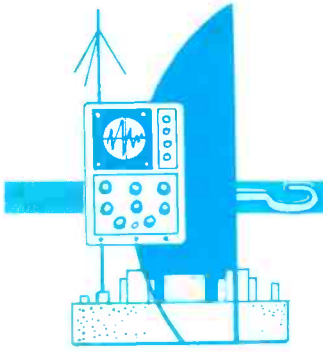

PRODUCT REVIEW

LOG PERIODIC ANTENNA

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Designed specifically as a primary feed for paraboloidal reflectors, the DM AR7-1 provides essentially constant radiation patterns over the entire operating range yielding an average illumination taper of 10 db for reflectors with F/D ratios of approximately 0.4 Gc. Designed for minimum excursion of phase center with frequency, the antenna achieves maximum gain when used as the feed of a parabolic reflector.

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In addition, it can be used as a precise reference frequency source and as a signal generator in laboratory and maintenance applications. Complete information is available from the manufacturer.

"Continued from page 31"

the time series for the tandem connection is obtained and the overall rating factor can be calculated. In some cases the rating factors of the links add directly, but this is not true for random distortion (such as that due to component tolerance).

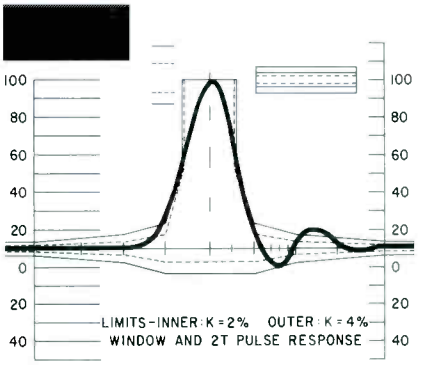

Figure 6. Graticule with limits for 2 percent and 4 percent rating factors. Response shown indicates that system ringing exceeds a K factor of 4 percent.

Conclusions

Although progress has been made in establishing a quantitative limits on the distortion as revealed by various test signals, particularly with waveform testing, the fact remains that most transmission evaluation is done by visual inspection of a picture monitor and oscilloscope presentations of the waveform. This suggests the possibility of classifying *all* test method in two general categories: those used for routine or maintenance testing, and those used for system specifications and for acceptance testing. Thus, most of the widely used steady-state tests such a multiburst, stairstep and the like would go into the maintenance - test category, along with the routine-test version of the sine-squared pulse and bar, without rendering present test equipment and methods obsolete. The steady-state tests are generally quite adequate for maintenance testing, although the pulse and bar method is gradually being accepted as a supplemental test.

The area where waveform testing is strongest is in the specification of performance requirements in terms of *numbers*. The acceptance-test permits the performance standards to be specified for a single link or for a complete transmission system; when the system is installed, the method provides assurance that it actually meets the specifications or reveals how it fails. Although this test method may not be accepted "overnight," it is showing signs of wider acceptance in the United States to match its growing use in Europe in recent years. □

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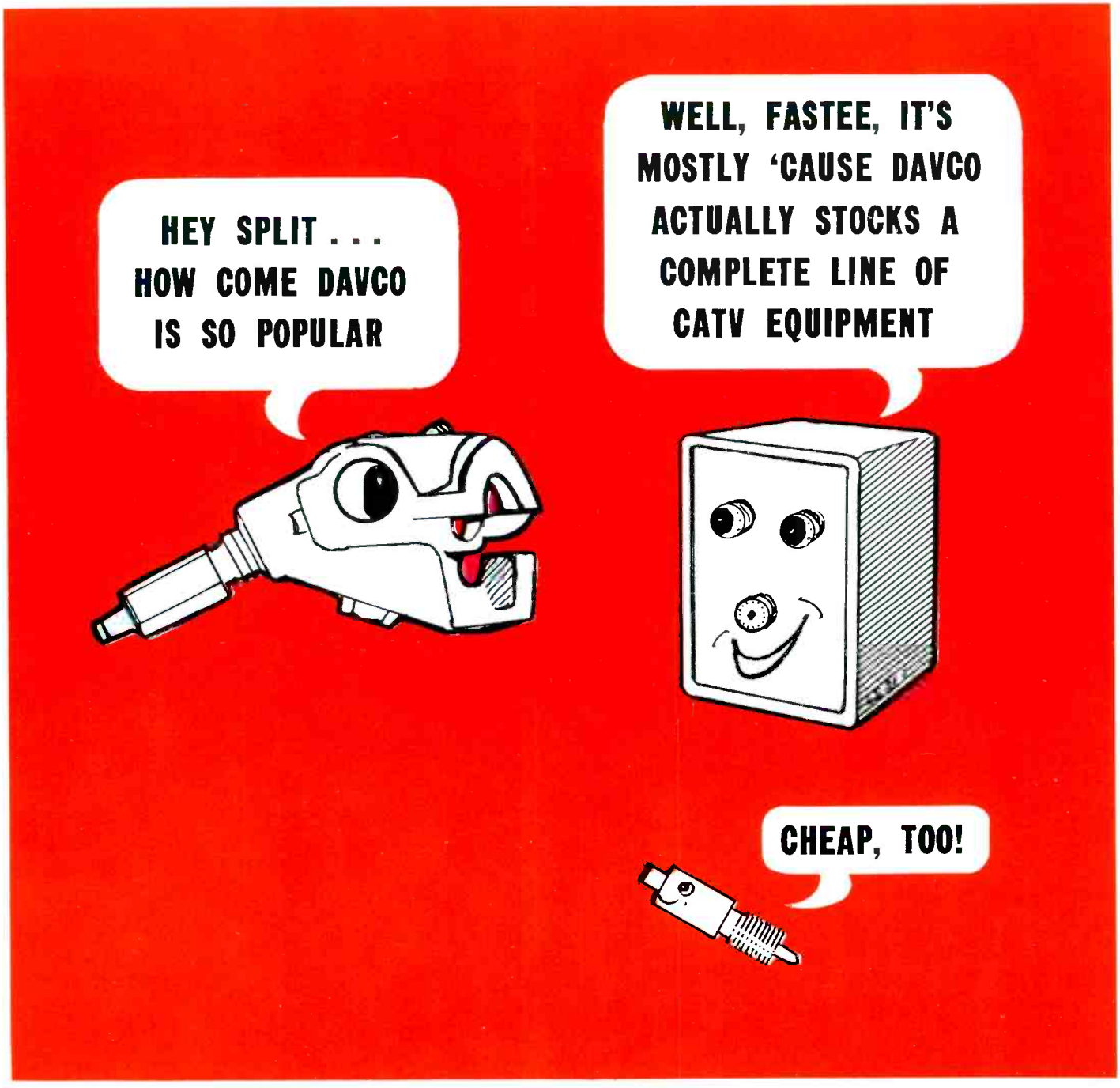

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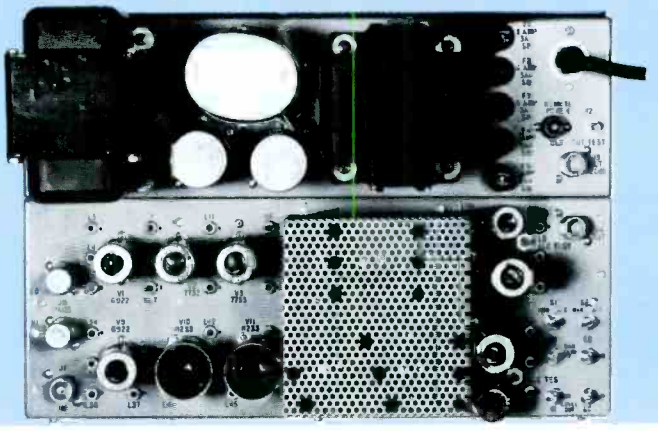

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Dial AT 9-1611
117 East Center St.
ROCHESTER, MINNESOTA

May 17, 1963

Mr. Donald Spencer, President
Spencer-Kennedy Laboratories, Inc.
1320 Soldiers Field Road
Boston, Massachusetts

Dear Don:

All too often, we only write to our suppliers when we have a complaint. This letter, Don, is quite different in that respect.

We are approaching the end of our seventh year in the cable business and our seventh year in the operation of SKL systems. I want you to know that at this stage we can really appreciate the dependability of your equipment. I can honestly state that our Brainerd and Rochester systems have been practically trouble free all these years. You and your staff must enjoy a real pride in your accomplishments and in the contributions you have made to the Community Antenna Industry.

I'll look forward to being one of your many satisfied customers in the many great years ahead of us in our CATV and associated activities.

Yours very truly,

ROCHESTER VIDEO

Frank P. Thompson
Executive Vice President

Abel Cable

NBC
CBS
ABC
NETWORKS

"THE BEST IN TELEVISION RECEPTION"
MEMBER NATIONAL COMMUNITY TELEVISION ASSOCIATION

Frank Thompson has 7 years' experience in the highly successful operation of SKL systems, serving many thousands of subscribers. He has long been a member of the National Community Television Association's board of directors and has taken an active interest and leading part in CATV industry affairs.

Like many other SKL system operators, Frank Thompson knows that the fine quality, low maintenance cost and continuing dependability of his SKL equipment, year after year, have made a real contribution to the outstanding operating record he has achieved.

SKL

SPENCER-KENNEDY LABORATORIES, INC.

1320 SOLDIERS FIELD ROAD • BOSTON 35, MASSACHUSETTS • TEL. 617-254-5400