

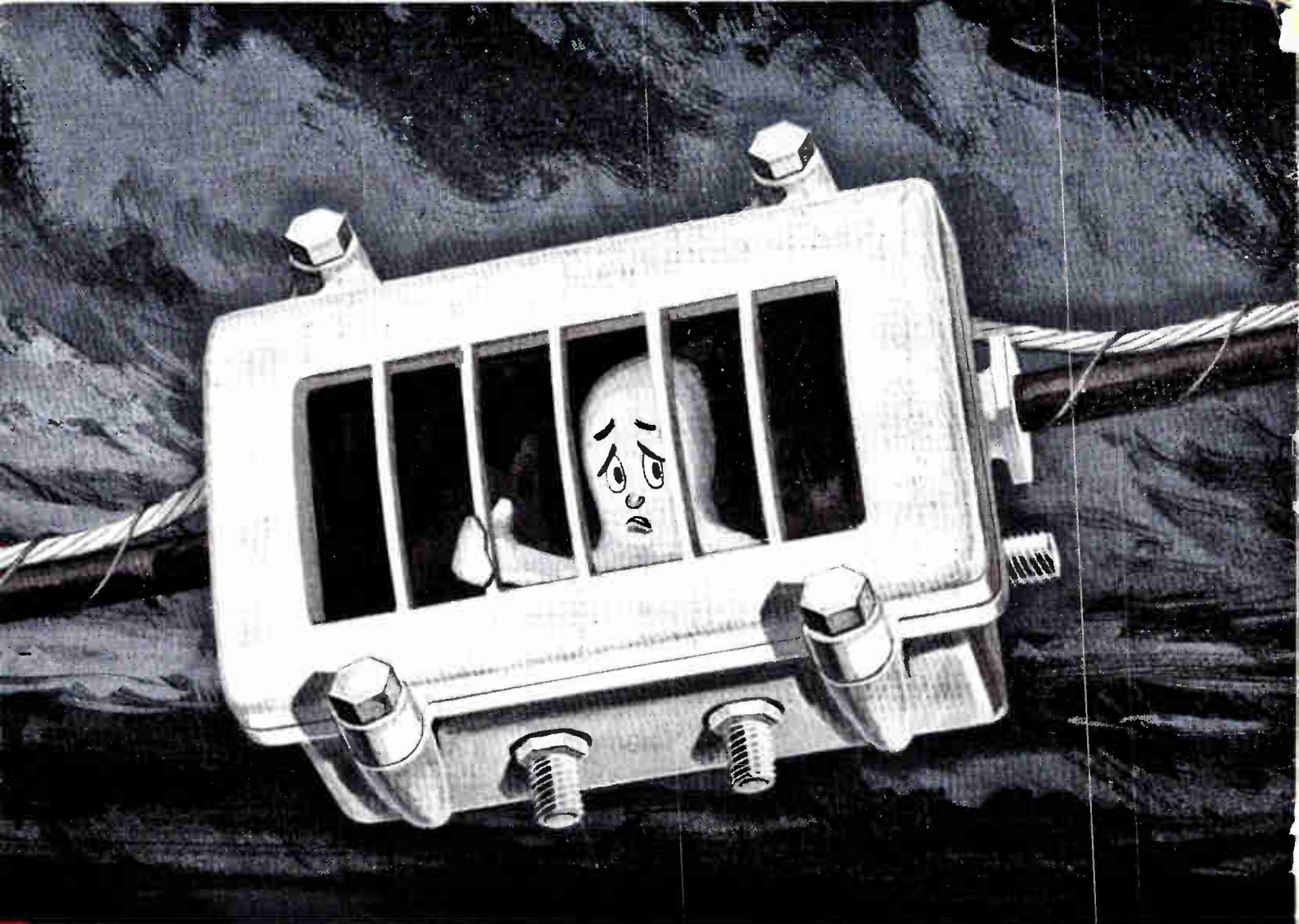
BWV

THE MAGAZINE OF BROADCAST MANAGEMENT/ENGINEERING

audio
and
recording
issue



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with new Jerrold directional-coupler multi-taps

Jerrold's new four-outlet directional-coupler taps minimize ghosts caused by mis-match in the feeder line *beyond* the tap location. They're available in *eight different* isolation values (10 to 40 db). Four outlets are ideal for densely-populated areas. The DCM series taps feature high isolation between outputs, low feed-through loss, seized center conductor facilities, new F-61B chassis fittings for better weather proofing of drop-cable connections, plus weather and radiation-proof housings. For complete details on these reliable, economical, perfect-for-color multi-taps phone 215-925-9870, or write



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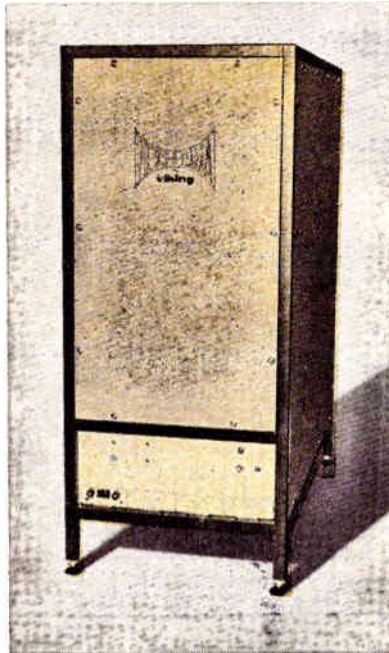
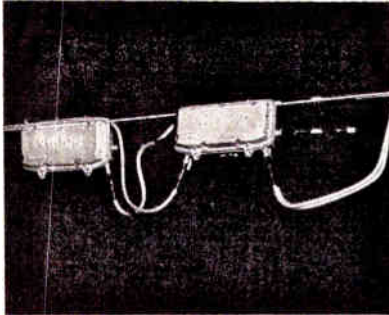
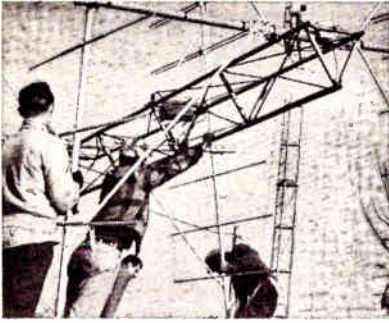
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ment unit is selected with great care. Beginning with select components is the surest way to end with quality CATV equipment.

Another "special" at Viking is the people, who have years of experience in every phase of CATV engineering, manufacturing, construction, and management. At Viking, over 800 people care about the products we make—for very special people.

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... MOVING AHEAD WITH CATV

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BM/E

THE MAGAZINE OF BROADCAST MANAGEMENT/ ENGINEERING

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Publishers also of:
EEE—the magazine of Circuit Design Engineering
ELECTRONIC PROCUREMENT
VOLT/AGE—the magazine of Electrical Operation & Maintenance

It's that time of year again, and to carry the theme of Christmas on the cover of our Annual Audio & Recording Issue we present Santa and his cloven-hoof companions.

With so many sounds on the air these days it's getting harder to come up with ideas for new ones. Fortunately for us, we've uncovered a few new ideas for this month's features, with the hope that they'll help you conceive some new twists of your own. Meanwhile . . . Merry Christmas—and a Happy and Prosperous New Year!

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“...CBS Volumax performs flawlessly. Please do not invent any more until we wear these out. At the present rate of deterioration, we will need to replace them by 2015 A.D.”

This is what station WRNC in Raleigh, North Carolina, said about our equipment. They own both the Audimax Automatic Level Control and the Volumax Automatic Peak Controller. Station WIGS in Gouverneur, New York, wrote, “Enclosed find check for Volumax 400. You couldn’t get it back from us for twice the price . . .” KLIN in Lincoln, Nebraska, purchased Audimax. They told us, “It is an engineer’s dream for absolute level control”. WAYB in Waynesboro, Virginia, tells us, “Purchased a Volumax and we are tickled to 99 and 44/100% modulation with it . . . Congratulations on a fine product”. Station KHOW in Denver, Colorado, said, “It was surprising to receive equipment that exceeded specifications”.

There isn’t enough space here to include all the letters we’ve received praising Audimax and Volumax. But judge for yourself. Like all CBS Laboratories equipment, they’re available for a 30-day free trial. Audimax \$665. Volumax \$665. FM Volumax \$695. Write to us, or better yet call The Professional Products Dept. directly — Collect. Telephone (203) 327-2000. Maybe you’ll be in our next ad.



CBS LABORATORIES
Stamford, Connecticut. A Division of
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BROADCAST INDUSTRY NEWS

Radio to Attract Sophisticated Audience

Within the foreseeable future, radio will enlarge its audience significantly by adding a wide range of listeners, Sherrill Taylor, v.p. for radio, predicted at NAB's opening Fall Conference in Dallas. All demographic groupings will be represented among new converts but the "high income, better educated group" will predominate. In stretching to meet the challenge, radio has introduced "lively news programming characterized by a wide variety of music and information appealing to large but more specific audiences." Radio's diet of pop music has been spiced with country and western sounds, light classics and jazz. Talk radio is here, along with the all-news station, he said, and "the first all-classified-ad station is about to debut in Los Angeles."

Also at the Dallas Conference, NAB introduced "A Broadcast Research Primer," giving broadcasters a practical "cook book" approach to station research. Howard Mandel, v.p. for research, said the primer emphasizes the

"nuts and bolts and how to do it in a way that keeps theory to a minimum." Written primarily for small stations, the primer covers do-it-yourself research and also discusses when research of any kind is in order, how to decide whether research is practical in various situations, and how to tell when it's worthwhile to do the research yourself and when to call in a professional researcher. The booklet also discusses the pros and cons of conducting research by telephone, face-to-face, and by mail surveys. Included are instructions on how to draw a sample, write a questionnaire, hire and train interviewers, set up tables, and a glossary of the most common terms used in research and a bibliography.

Stations Order Color Gear

Meredith Broadcasting has placed an order for three G-E PE-250 color cameras for WHEN-TV Syracuse. Meredith has also ordered five PE-240 second-generation color film cameras, 2 for WHEN-TV and one each for WOW-TV Omaha, KPHO-TV Phoenix, and KCMO-TV Kansas City.

An order totaling about \$1,100,000 for additional live and film color equipment was placed by Post-Newsweek Stations for



First of 5 TV-audio production consoles is now in use at ABC's TV Studio 16 in New York. The consoles are designed and built to ABC's requirements by McCurdy Radio Industries under a contract awarded to Visual Electronics Corp. From a built-in 90-microphone patch bay and a 24-input high level panel, up to 30 program mics, 16 audience reaction mics, and 6 high level channels may be mixed simultaneously. The high level panel also connects to a 24-input video preview switcher. In addition, complete monitoring facilities are included for audio and TV production booths; PA and sound reinforcement are available to the studio floor. Senior audio/video systems engineer James R. Baker is shown standing by console operator.

WTOP-TV Washington, D.C. and WJXT Jacksonville, Fla. The order included twelve PE-250 studio cameras, a PE-240-B film camera, and associated equipment (including extra camera control units for remote vehicles). Seven PE-



RCA recently delivered its 100th TK-42 studio color camera, one of 5 ordered by WLBW-TV Miami, Fla. Shown at the Camden, N.J. plant are Charles H. Topmiller (l), president of L. B. Wilson Inc., owner of WLBW-TV, and Dana Pratt, manager, Southern Broadcast Sales, RCA Broadcast and Communications Products. RCA still has a current backlog of \$30 million in orders for the \$80,000 camera. More than 300 are expected to be in use by NAB Convention time next April.

NAEB Kansas City

Educational TV, with its multi-million dollar assist from HEW, Ford Foundation, etc., is really big-time these days. For evidence, one had only to attend the Annual Convention in Kansas City Oct. 23-26. Officials estimated total attendance at 1700, a new record for this show. Equipment displays, manned by some 500 exhibitor personnel, focused on studio, closed-circuit, and transmitter gear. ITV Fixed Service rated maximum attention; technical sessions on the subject were heavily attended, and more than passing interest was given the various 2500-mc systems displayed.

All the color camera manufacturers were there, demonstrating the impact of color in instructional programming. Color was also emphasized in the VTR exhibits; both Ampex and RCA introduced color conversion units for existing models.

Host ETV station KSCD-TV assisted in program screenings, which were well attended, and carried the closing banquet in live TV. Educational radio KCUR-FM also assisted the NAEB staff and program committees.

What's new in Reelsville, man?

One repeater of an intercity color TV relay system that uses no tubes, no filaments, no high voltages, no mechanical relays.

Microwave Associates' all-solid-state MA-2A relay system owned by WTWO Terre Haute, relays both NBC and ABC programming from Indianapolis to Danville to Reelsville to Farmersburg near Terre Haute through a single feed line antenna system. More than that. The antenna system was already up there, with conventional klystron equipment. But when the second network came aboard, it was add another tube system with antennas, or change over to a solid-state system diplexed into the existing antennas. WTWO opted for the new technology. Color was one of the big reasons. In the MA-2A, the color-determining characteristics are controlled by highly stable semiconductor devices and solid-state circuitry. The system is completely free of the drift and degradation that is associated with thermionic components.

Money was another reason. Paralleling the existing system with new tube equipment, new antennas, new feed lines, rigging costs — would have been expensive. More than they cared to spend for equipment some consider obsolete.

Reliability was still one more reason. Solid-state reliability. Sooner or later, tubes mean trouble. The ultimate solution is obvious. The MA-2A has no tubes.

What's new in Reelsville is also new at Rattlesnake Mountain, Washington; North Pole, New York; Bozrah, Connecticut and other famous places. Should it be near you?

Model	Band MHz	Nominal RF Power	Nominal RCVR without preamp	Noise Figure with preamp	Allocation
MA-2A	1990-2110	2 watts	10 dB	5 dB	TV Auxiliary broadcast, STL, remote TV pickup, intercity relay
MA-7A	6875-7125	.5 watt	12 dB	5.5 dB	TV Auxiliary broadcast, STL, remote TV pickup, intercity relay

Also available at other frequencies in the 1300 to 2300 MHz band for international allocation requirements.



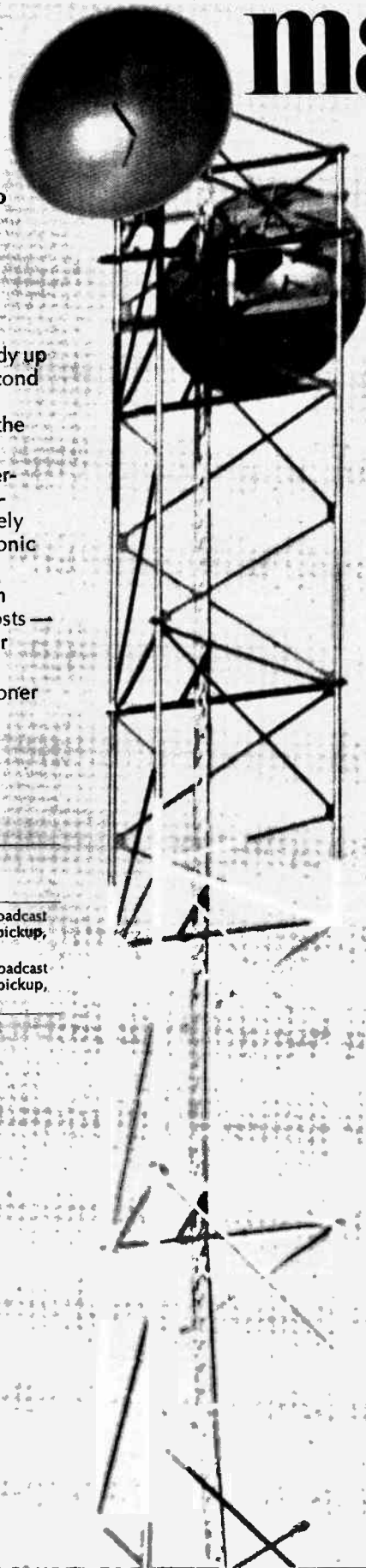
MICROWAVE ASSOCIATES

Burlington, Massachusetts

Offices: Burlington, Mass.; 9911 Inglewood Ave., Inglewood, Cal.

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Subsidiary: Microwave Associates, Ltd., Luton, Beds, England



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4N-1

WILKINSON

4-in-1

Portable Solid-State

1. FIELD INTENSITY METER
2. NULL DETECTOR
3. STANDARD SIGNAL GENERATOR
4. AM MONITOR RECEIVER

□ New Wilkinson Model 4N-1 all solid-state Field Meter combines all the features broadcast engineers have long been awaiting in a completely portable 12-pound unit. □ As a FIELD INTENSITY METER, the Wilkinson 4N-1 measures field strength with 3% accuracy and reduces measurement time. □ As a NULL DETECTOR, for use with a RF bridge to measure impedances, the Wilkinson 4N-1 eliminates the complexity of a multi-instrument AC test set-up. □ As a STANDARD SIGNAL GENERATOR, the Wilkinson 4N-1 is invaluable since its output accuracy of 3% from one microvolt to one volt is essential to many broadcast applications. □ As a MONITOR RECEIVER, the Wilkinson 4N-1 has sensitivity of 5 microvolts

nominal, permitting excellent off-air monitoring in extreme fringe areas. □ The frequency range of the complete Wilkinson 4N-1 is 535-1605 kc. □ The Wilkinson 4N-1 is powered by dependable nickel cadmium batteries, rechargeable from AC or an automobile source. Ease of operation is assured by simplicity of procedure, oversized controls and meter, built-in speaker and illuminated panel. The Wilkinson 4N-1 is packaged in a sturdy and attractive genuine cowhide case.



When case is closed, power is interlocked off.

For complete details write:

WILKINSON

ELECTRONICS, INC.

1937 MAC DADE BLVD. WOODLYN, PA. 19094
TELEPHONE (215) 874-5236 874-5237

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250s go to WTOP-TV and 5 cameras, plus the color film chain, go to WJXT. Initial shipment was to be made the last week in Oct.

NCTA Sees Flaws In Copyright Bill

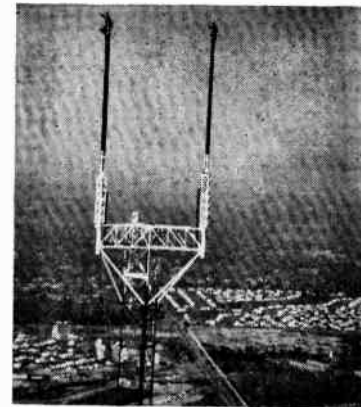
"House Bill #4347 is a complex and loosely drawn piece of proposed legislation replete with ambiguities relating to CATV systems," Frederick W. Ford said of the House Judiciary Committee's copyright bill. "Nevertheless, it is a forward step and with a few appropriate amendments could form the basis for the reception of more diversified programs and clearer pictures by the viewing public." The NCTA president continued, "It is most difficult to understand why the bill arbitrarily prevents the copyright owner from selling the product of his creative endeavor to CATV systems. This penalty is imposed by depriving the CATV systems of exemptions within the normal service area of local TV stations for originating such programs. It is even more difficult to understand why the bill is being used to protect broadcasters from the competition of local live public service programs. It would seem that the entertainment shows are to be protected by denying the public a choice between civic programs of local interest and predominantly entertainment programs."

Helical-Scan Color Conversion

Ampex Corp. has announced mid-1967 availability of color conversion units for two helical-scan model VTRs. The conversion kit cost is expected to be \$500 for the VR-7000, \$1,000 for the VR-6000. More extensive circuitry modification on the VR-6000 Series accounts for the cost differential.

Amperex Will Make Plumbicons

Plumbicon TV camera tubes and CCTV pickup tubes will be among products manufactured in the new Amperex electro-optical facility at Slatersville, R.I. Covering an area of 80,000 sq ft., the plant is being built on property adjacent to the Company's semi-



"Kilgore was here!" The intrepid Kilgore brothers, operators of a Detroit maintenance company, wave greetings from 1,050 feet up, atop the first multi-antenna tower for UHF TV. The tower, originally erected for WKBD-TV (Kaiser) Detroit, is now shared by educational station WTWS. WJMY is expected to mount its antenna on the third corner of the 30' triangular platform. Kilgore brothers are perched on RCA pylon antennas which combine radiator and supporting structure in a slotted cylinder design.

conductor facility. The current schedule calls for operation to begin next March.

Sparta Designs New Tape Deck Drive

Sparta Electronic Research and Development has announced the implementation of a direct capstan drive system in its cartridge tape decks, eliminating the space-consuming belt-driven flywheel assembly. A new design in pinch-roller-to-capstan-pressure regulation is said to offer more uniform pressure and alignment. Rather than adjust pinch roller angular variation, the capstan

A series of special invitational showings were held recently to demonstrate capabilities of G-E's PE-250 color camera. It was the first major demonstration of a production model shown in prototype at last year's NAB Convention. At tendees were generally impressed with results of tests which included focusing directly on a candle flame and light objects with black backgrounds. The PE-250 uses 4 Plumbicons and is completely solid-state with newly designed optics. It weighs 155 lbs and is priced at about \$70,000. James M. McDonald said that the cameras are being assembly-line produced and will be generally available in the first quarter of '67.



**complete
audio-video
package**

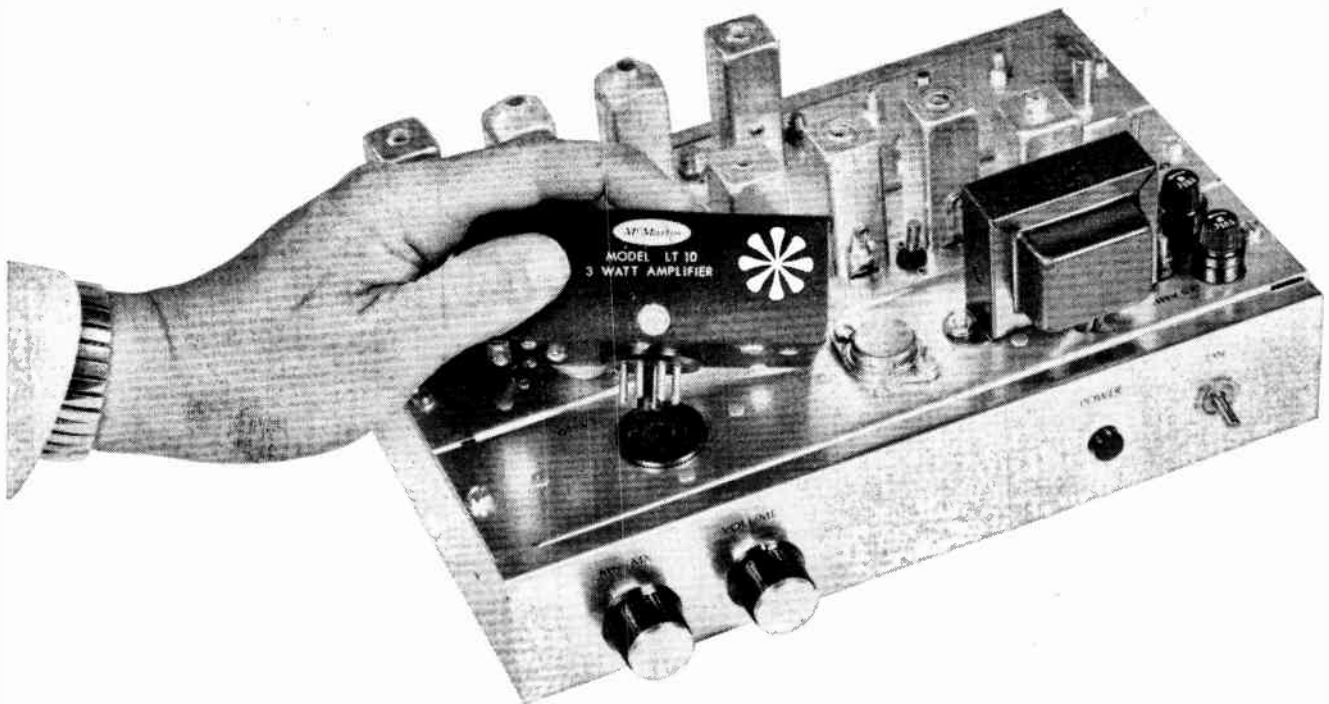
Shopping for the most advanced audio and video equipment, but can't find anything that's really new? Pick up your phone and we'll be happy to tell you about the most exciting developments in audio-video systems, and how they can help you get more for your money. Follow the broadcasting leaders who are switching to Ward—you'll enjoy the company.



WARD ELECTRONIC INDUSTRIES

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Take a Piggyback Ride



LT-10, 3-watt transistor-amplifier mounts piggyback on our SCA Multiplex transistor Receiver, TR-66

Since the LT-10 was introduced earlier this year, background music operators all over the country have been discovering the convenience of the "piggyback" amplifier. It's most convenient for smaller installations where just a few speakers are used. As the picture shows, it just plugs in—no wiring necessary.

The TR-66 has many special features and conveniences. Modular construction permits easy replacement of power supply, main channel or sub-channel circuitry. Servicemen always appreciate the plug-in transistors and straight-line

design with convenient test points. No other manufacturer can guarantee sensitivity of 2 uv/50db, or crosstalk of -55db or better.

McMartin is the leading producer of SCA Multiplex receivers, and the workmanship is guaranteed *forever*. We make this bold warranty because 20% of our people are in final testing of your equipment.

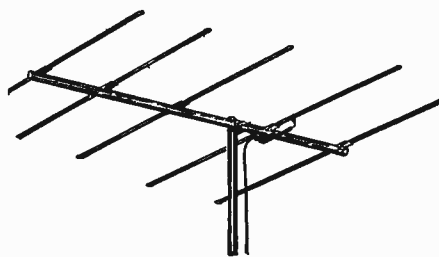
Order your "piggyback" LT-10 amplifier and the TR-66 SCA receiver today, or write for literature.

McMartin

Marketing Manager, Broadcast
McMartin Industries, Inc.
605 North 13th Street
Omaha, Nebraska 68102

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Best reception with the TR-66 SCA receiver is with the A-72-SF exact frequency antenna



The A-72-SF antenna is the only one recommended for use with McMartin SCA receivers. Twenty per cent more gain is obtainable because of the exact frequency feature—not just an “almost frequency.” The added gain and sharp directional characteristics also help overcome multipath.

We are able to practically eliminate co-channel interference because of an exceptional front-to-back ratio. Linear flat response is obtained across each FM frequency. All antennas are gamma-matched and coax connectors are supplied.

In addition to the technical superiority, you'll appreciate the easy installation. With special snap-out lock construction you can install it in three minutes.

Order your exact frequency A-72-SF antenna today—available with either 3 or 5 elements—or write for literature.

McMartin

Marketing Manager, Broadcast
McMartin Industries, Inc.
605 North 13th Street
Omaha, Nebraska 68102

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December, 1966 — BM/E

shaft is moved; the roller and capstan are always parallel and vertical as a result, providing uniform pressure across the width of the tape. These improvements, incorporated in the Model CH-5, simplify operation. As a cartridge is inserted the pinch roller is raised to “ready” by solenoid action. “Play” function is also solenoid-operated.

VTR Module Uses Integrated Circuits

A high-band color VTR module marks the first use of integrated circuits in RCA broadcast equipment. The module, a velocity error corrector, is designed to improve playback quality by compensating for defects caused by mechanical tolerances inherent in the tape system. The module electronically corrects shifts in hue which are caused, for example, by the amount of tape stretching during recording as compared with stretching which occurs during playback. Integrated circuits are employed in about half the module's circuitry, resulting in a module about 1/4 the size of a comparable unit using other components. It plugs into the TR-70 and may also be used on the TR-22, TR-3 and TR-4 after they have been modified for high-band operations.

Halt Pay-TV Tests, NAB Asks

NAB has asked the FCC to terminate its pay-TV experiment in Hartford, Conn., and to withdraw its proposal to authorize a nationwide subscription TV system. The “bold promise” envisioned for pay-TV by its advocates has been “more myth than reality” in past and present experiments and seems no more likely of achievement on a nationwide scale, NAB said, warning that once a nationwide pay-TV system has been established there can be no turning back.

Political Broadcast Questionnaire

The FCC sent all broadcast stations a questionnaire to obtain information concerning political broadcast activities during the 1966 primary and general election campaigns. The questionnaire is similar to the one sent in 1962 (previous non-presidential elec-



Dynair recently broke ground for an extensive addition to manufacturing plant at 6360 Federal Blvd., San Diego. The additional 12,000 sq. ft. extension will more than double present space, according to E. G. Gramman, pres. (That's him on the “dozer.”) Adding to the festivities, 6 pretty employees wear MINI-skirts, tying in with a new line of products created for the ETV and CCTV markets.

tion year) except for the deletion of questions dealing with complaints and other political problems. 1966 questionnaires were to be returned by Dec. 5.

KHJ-TV To Be ON Affiliate

RKO General's KHJ-TV Los Angeles will be Overmyer TV Network's key West Coast affiliate and will also originate programming for Overmyer stations. WPIX-TV New York will be the East Coast outlet. On plans to begin operation next April 3 with nightly 2-hour variety show from Las Vegas.

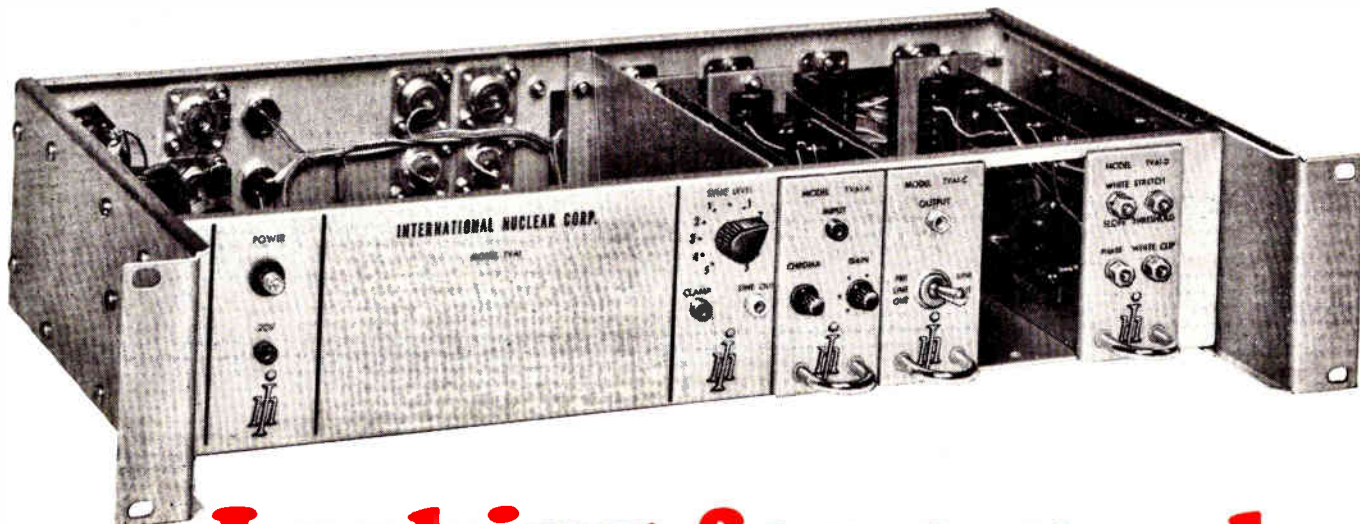
KXLS Programs “Young Sound”

Using CBS programming concept, “The Young Sound,” KXLS Oklahoma City began stereo operation Sept. 15 with 50 kw ERP. Beamed specifically at the 20 to 35 age bracket, “The Young Sound” was developed for CBS O & O FMs and has been made available to selected additional stations in major markets and features top pops of today including rock & roll, “without the noise.”

Broadcaster, Five CATVs Merge

Five CATV systems serving about 9,000 subscribers in Oregon have merged with Liberty Television, Inc., licensee of KEZI-TV, Eugene, Ore. Valued at around \$2.5 million, the five systems (Bend Community Antenna Co., Corvallis TV Cable Co., Newport TV Cable Co., Sweet Home TV

Continued on page 58



Looking for a good video stabilizing amplifier?

International Nuclear's TVA1 is certainly one of the best on the market today. The TVA1 with its associated series of plug-in units offers high level performance and versatility for studio or transmitter use. It removes all low frequency disturbances such as hum, bounce and tilt by sync-tip clamping. This back porch level is precisely stabilized without affecting color signals in any way. Sync is stretched after back porch stabilization and then clipped accurately to desired level. This level may be set by means of a front panel control which can be extended to a remote location. Stripped sync is provided at one 75 ohm internally terminated output connector, at a 4 volt level. The TVA1 chassis contains a plug-in compartment which accepts up to 4 plug-in units. Among these plug-in units is the TVA1-E, providing a stripped color video channel, and the TVA1-D which provides the means of adjusting peak-white clipping, white stretch and differential phase. Other plug-in units are listed below.

PRICES F.O.B. NASHVILLE, TENNESSEE

Model TVA1 Stabilizing Amplifier (less plug-ins) . . . \$1,380.00
 Model TVA1-A, Manually Operated Input Amplifier Unit . . . \$310.00
 Model TVA1-B, Input Amplifier Unit, with Remote Master Gain and Chroma Panel . . . \$425.00
 Model TVA1-C Monitor Amplifier Unit . . . \$265.00
 Model TVA1-D White Stretch and Clip Unit . . . \$240.00
 Model TVA1-E Stripped Video Unit . . . \$450.00
 Model TVA1-S Remote Sync Level Control Panel . . . \$25.00



For more complete information write or phone:

INTERNATIONAL NUCLEAR CORPORATION
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INTERPRETING THE **FCC** RULES & REGULATIONS

Revised Program Forms For TV Stations

ON AUGUST 13, 1965, the Commission released a Report and Order (FCC 65-686) in Docket 13961 adopting a revised program form (Section IV-A) for AM and FM applicants. On October 10, 1966, an additional Report and Order (FCC 66-903) was released in the same Docket revising the TV program forms (IV-B). The February 1966 issue of BM/E magazine carried an article reviewing the changes in the AM and FM program forms. Some of the information and suggestions contained therein apply with equal force and validity to the revised TV forms.

The New TV Program Form (Section IV-B) In General

The new Section IV-B applies solely to TV stations and will replace the old Section IV. Thus, Section IV-A (AM-FM) and Section IV-B (TV) will appear in applications for new stations and changes in facilities (Form 301), renewals (Form 303), assignment of license (Form 314), and transfer of control (Form 315). The new Section IV-B, like its counterpart IV-A, employs different methods of inquiry, expands greatly upon the factual detail required to support the answers to the basic questions, and should better enable the Commission to determine if the applicant has (1) ascertained the needs of its audience, 2) attempted to meet those needs, and (3) performed in substantial compliance with its last proposal.

Section IV-B includes the following major subdivisions:

- Part I—Ascertainment of program needs
- Part II—Past programming
- Part III—Proposed programming
- Part IV—Past commercial practices
- Part V—Proposed commercial practices
- Part VI—General station policies and practices
- Part VII—Other matters and certification

The Importance of Part I

As stated in the previous article, "Part I may eventually become the most important part of your renewal application. "The Commission has consistently reiterated that the local broadcaster knows his own community

This section, providing broad interpretations of FCC rules and policies, does not substitute for competent legal counsel. Legal advice on any given problem is predicated on the particular facts of each case. Therefore, when specific problems arise, you would be well advised to consult your own legal counsel.

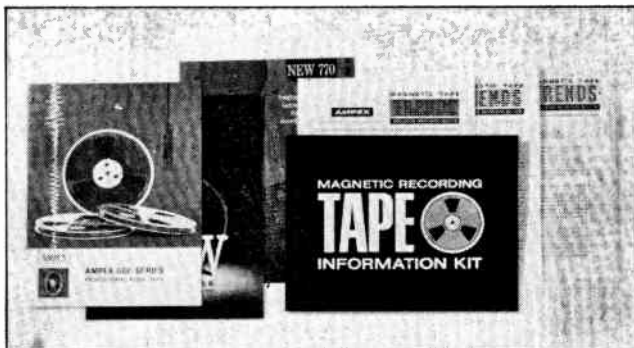
FCC Requests Statements of Proposed Commercial Practices

As part of the Commission's overall review of renewal applications of commercial radio and television stations, it has heretofore been considering representations as to commercial practices made in response to the inquiries contained in Section IV of Form 303. The Commission has recently amended this Section so that the representations and data now sought are stated in terms of minutes of commercial matter rather than the number and length of commercial announcements. The Commission believes it would be more fair and efficient to base its review of a licensee's performance on the factors and data included in the new program forms as quickly as possible, without waiting for all licensees to file renewal applications on the new forms in the normal course of business.

Accordingly, the Commission has requested all commercial television and radio stations, without exception, to file a statement of their proposed commercial practices prior to January 1, 1967, in accordance with the requirements of the recently adopted program forms. These statements will be considered as amendments to each licensee's most recent application for license or license renewal. Any evaluation of commercial practices will be made on the basis of the representations made therein.

The form requires, in addition to a statement as to proposed commercial practices, a statement, where appropriate, as to the basis on which a licensee has concluded that a maximum amount of commercial matter in excess of 18 minutes per hour for radio (AM or FM) or 16 minutes per hour for television (rounded to the nearest minute), as a normal practice, would be consonant with the needs and interests of the community which licensee serves. These limits are in general accord with those generally accepted by the industry as appropriate, as expressed in NAB Codes. The Commission has given great weight to such industry judgment, without denying the right of each broadcaster to make his own different judgment on any reasonable basis in terms of his particular situation.

Licensees are cautioned that responses in the interim form should not be in terms of vague generalities or references to industry codes, but should be as precise as possible. If a licensee proposes to exceed his normal commercial time limits other than in special situations, a question may arise as to whether the proposal is in fact an established norm. By this action the Commission does not imply or seek to impose any particular requirement or limitation on the commercial practices of licensees, but does seek a full, specific and responsive statement as to licensee's commercial practices.



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AMPEX

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- Minimum through loss and maximum return loss.
- New improved Craftsman chassis fitting for .412 or .500 cables.

Once again Craftsman leads the industry with the development of a Modular Amplifier Tap. The Craftsman MAT-18 has advanced two stage, all-channel solid state circuitry with provisions for one, two, three or four modular tap outputs. Powered remotely by low voltage A.C., the MAT-18 is fully shielded against RFI leakage in a rugged cast housing that can be either pole or strand mounted.

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much more intimately than any official at the Commission; consequently, throughout its existence, the Commission has been loathe to interfere with the programming decisions of broadcasters. Additionally, the Commission has and does not desire to become involved in any action that may be construed as censorship, in violation of First Amendment's protection of freedom of speech. However, because the Commission is charged with the statutory responsibility of granting licenses "in the public interest," and since its basic philosophy is to foster greater expression by local interests, the Commission has emphasized that it would be abrogating its responsibility by not establishing certain broadly-stated criteria whereby licensees would be judged to be operating *in the public interest where the station is located*. Part I provides the Commission with a method of ascertaining whether a licensee has (1) made meaningful efforts to determine the tastes, needs, and desires of those within its service area, and (2) provided and proposed programs in response to those needs.

Effective Dates of Section IV-B

The effective dates of the new TV forms (Section IV-B) should be noted. (See Report and Order in Docket 13961, FCC 66-903, released October 10, 1966). They are as follows:

Effective Date	Application
December 1, 1966	Form 301—application for new TV facilities or major changes thereof.
December 1, 1966	Forms 314 & 315—applications for assignment and transfer filed by assignees and transferees.
December 1, 1967	Forms 314 & 315—applications for assignment and transfer filed by assignors and transferors.
November 1, 1967	Form 303—application for renewal. However, applications due to be filed on or after January 1, 1967, but prior to November 1, 1967, shall use Parts I, III, V, VI, and VII of the revised form (IV-B) and Questions 1(a), 2(a), 3(a), 4(a), 5(a), 5(b), and 10 of the present form.

The Commission recognizes that there is wide disagreement over the details that should be required of an applicant in reporting on ascertainment of community needs and interests. An awareness of and a response to such needs is essential. Realistically, a question seeking such information can be phrased only in somewhat general terms. The Commission believes that the question in the form (Question #1), reasonably interpreted, can be readily answered—provided good faith efforts have been made to ascertain needs. While the ultimate program decisions must be made by the licensee, the Commission expects broadcast permittees and licensees to make a positive, diligent, continuing effort to provide a program schedule designed to serve the needs and



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HIGH VOLTAGE
AVALANCHE SILICON
RECTIFIER TUBE
ASSEMBLIES
PROVIDE FOR YOUR DC
REQUIREMENTS.
BUILT-IN PROTECTION
AGAINST VOLTAGE TRANSIENTS.
LONG LIFE, WITH HIGH
OPERATING TEMPERATURE.
NO WARM-UP, MINIMUM
HEAT GENERATION AND
RUGGED CONSTRUCTION.
SYNTRON RECTIFIERS
GIVE YOU RELIABILITY,
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Syntron High Voltage Avalanche Silicon Rectifier Tube Assemblies are tailored to meet your specifications. They are a direct replacement for mercury vapor tubes, with the superior characteristics of silicon. Syntron tube assemblies are experiencing field operation in excess of 15,000 hours.

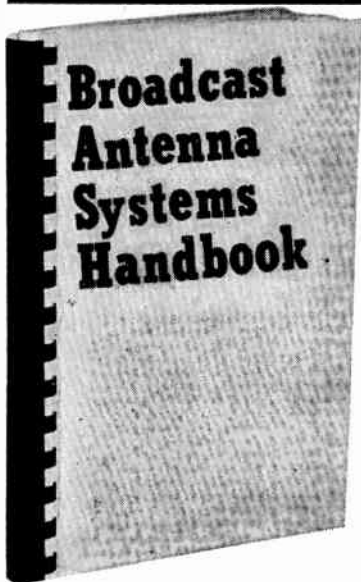


SYNTRON COMPANY
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66STA1

Tells You How to Plan, Install and Maintain Broadcast Antenna Systems

SAVE \$2.00 on this Special Prepub Offer!



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HERE it is—the first practical guidebook to all types and styles of broadcast antenna systems. This brand-new volume—due November 30, 1966—is truly an invaluable book which every radio-TV station needs and should have.

"Broadcast Antenna Systems Handbook" completely covers all aspects of the subject, from preparing engineering data for the FCC, to design, engineering, and operation of systems, to selecting antennas, measuring their performance, improving their coverage, etc. A handy compilation of antenna systems data that puts the information you need right at your fingertips.

Long needed, this new volume will be worth its cost many times over to anyone involved in radio-TV broadcasting. Contains tested and proven data—adapted from material published in BM/E—information essential for practical day-to-day operations as well as for reference.

Broadcast Antenna Systems Handbook is published to sell at \$7.95. Through December 30, 1966, however, the Special Prepublication price of only \$5.95 prevails. Order at our risk for 10-day FREE examination. Send no money! Simply fill in and mail NO-RISK coupon below to receive your own copy of this helpful volume.

QUANTITY DISCOUNTS: 2 to 4 copies—only \$5.45 each; 5 to 9 copies—only \$5.20 each; 10 copies and over—only \$4.95 each.

PARTIAL LIST OF CONTENTS

- **Preparing Engineering Data for Form 301**
- **Design & Operation of Directional AM Antennas (6 Chapters)**
- **TV Antenna Engineering for Effective Coverage**
- **Guidelines for Selecting a UHF Antenna**
- **TV Antenna Systems Performance & Measurement**
- **DA Antenna Systems for FM**
- **Improve FM Coverage With Dual Polarization**
- **Directional Dual Polarized FM Antennas**
- **Getting the Most For Your Microwave Dollar**
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PUBLISHER'S GUARANTEE

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 Please send me.....copies of "BROADCAST ANTENNA SYSTEMS HANDBOOK" at the special prepublication price of only \$5.95 (regular price \$7.95) I enclose \$....
 Please invoice on 10-day FREE trial

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 BA126

Circle 16 on Reader Service Card

interests of the public before making decisions. The "survey" efforts must include consultation with (1) the general listening public, (2) leaders in the community, and (3) professional and eleemosynary organizations. The Commission's experience with the radio form has shown that some applicants are not providing full answers to the questions on ascertainment of community needs (Question #1). It has cautioned applicants to study this question and to supply a complete and responsive answer to each part. As set forth by the Commission, the question is designed to elicit full information as to:

(a) The steps that an applicant has taken to become informed of the real needs and interests of the area served and to provide programming which constitutes a diligent effort to provide for such needs and interests;

(b) Any suggestions that may have been made as to how the station could help meet the needs and interest of the community from the viewpoint of those consulted;

(c) The applicant's evaluation of the relative importance of all such suggestions and the consideration given them in formulating the station's over-all program structure;

(d) The programming that applicant proposes, either generally or specifically, to meet the needs and interests of the community as he has evaluated them.

Program Survey Methods

(1) Have members of your staff, especially those who belong to various civic groups (e.g., service clubs, philanthropic organizations, PTA, citizens' associations, religious groups, and the like) conduct oral surveys and submit periodic memoranda to you as to the results and/or have brief questionnaires completed and tabulated for your use. Actually, the distribution and tabulation of questionnaires on 3 x 5 cards would be less time-consuming than posing the questions orally and preparing a memo on the results.

(2) Keep a record of community (program) contacts by your staff.

(3) Send out form letters, seeking opinions on programming.

(4) You might retain an independent survey firm.

(5) Periodically, broadcast a request for such information from your audience. You might offer a small prize for the best recommendations.

Regardless of the methods you employ to obtain documented indications of the interests of your audience, you should:

(1) Immediately set up procedures, policies, and plans to obtain such evidence;

(2) Examine the survey results carefully;

(3) Prepare a brief resume of each survey to be included in your renewal application;

(4) Make some effort to adopt the meritorious suggestions received.

Again, we must emphasize that a disregard of the Commission's strong interest in this area is at best unwise, and it could conceivably result in designation of an application for hearing.

*You have only
one opportunity
to plug in an RCA
solid-state
rectifier*

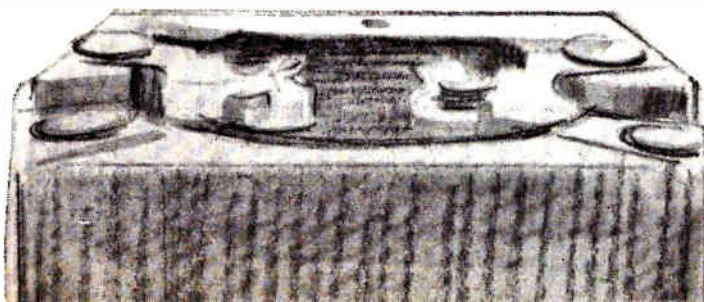
RCA solid-state rectifiers are made to last!
Plug in one RCA rectifier unit as a direct
replacement for one of your mercury vapor
or gas rectifiers and it could very well last
the lifetime of your equipment.

RCA plug-in rectifier units CR273/8008,
CR274/872A, and CR275/866A/3B28 are
available only through your RCA Industrial
Distributor. The three types he stocks, and
can deliver off-the-shelf to you, are of the
same high quality as those which have racked
up 13,338 trouble-free hours in the visual
driver of the transmitter at WBRE-TV
Wilkes Barre, Pennsylvania. In fact, the high
efficiency and performance of the units at
WBRE-TV have remained the same as
they were on the first day of installation.
Realistically, you have everything to gain
when you replace with RCA plug-in
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of RCA solid-state: ruggedness, high-
reliability, plus economy. Maintenance
and replacement costs are practically
non-existent. And costly loss of revenue
in off-the-air time, because of rectifier
failure, becomes a thing of the past.
The time to go to RCA solid-state rectifiers
is now—and the price is right! Ask your
RCA Industrial Distributor for his latest
price and off-the-shelf delivery
of these units. Call him.

RCA Electronic Components and Devices, Harrison, N. J.



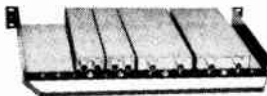
The Most Trusted Name in Electronics



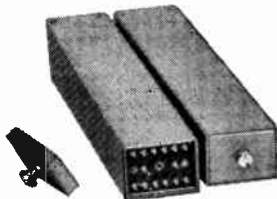
Metro-Tel

PERFORMANCE-PROVEN

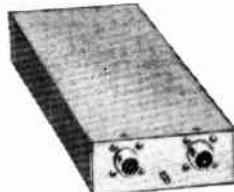
TV equalizers & delay lines



Used by the leading networks in their TV expansion programs. Modular designs; anodized aluminum housing; shelf-coordinated; shelves designed to fit standard 19" cabinets.



TV LINE EQUALIZER 323E
For use with Western Electric 724 Cable or equivalent. Compensates for loss in cable lengths in 50 ft. steps from 50 ft. to 300 ft. Equalizer plus cable = 3 db attenuation \pm .1 db from 0 to 8 megacycles.



TV DELAY LINES 7292
Input and output impedance of 75 ohms; convenient coax connectors for input and output. Delay time: .05, .1, .1, .2, .4, .6, .8, microseconds, steps selected by strapping terminals. Total delay of 2.25 microseconds.



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write us for complete information.

QRK ELECTRONIC PRODUCTS

2125 N. Barton — Fresno, California

Circle 19 on Reader Service Card

Replies which relate to proposed future programming and commercial operation constitute representations upon which the Commission relies. Such representations are not, of course, exact detailed statements of proposed day-to-day operations, and literal adherence to them in that respect would neither be possible nor necessarily desirable. Because the proposals as to programming and commercial matter are representations relied upon by the Commission in determining whether grant of an application is in the public interest, licensees are given the responsibility for advising the Commission whenever substantial changes occur. It is not possible to define what would constitute a substantial change so that it may be applied in every case. This is a judgment to be made by the licensee in the exercise of sound discretion. It does not require that every departure from programming and commercial proposals is to be reported to the Commission. The type of changes in commercial practices which should be reported are:

(1) a station deciding as a matter of policy to increase the maximum percentage of commercial matter which it proposes to allow;

(2) when the station determines that it is exceeding these proposed maximums approximately 10% of the time.

Silence on the part of the Commission is not an indication that the Commission has passed on the matter. The station's performance in the public interest will be evaluated in any event at the time of next renewal.

To avoid any confusion resulting from the adoption of one form for all television applicants, it should be understood that applicants for major changes need file Section IV-B unless a substantial change in programming is proposed. Assignors and transferors need not answer any portion of the form if the information required of such applicants has been filed with the Commission within 18 months prior to the filing of the application and it is referenced and identified.

Conclusion

Many have criticized the Commission for developing another method of harassment of the licensee. However, if the Commission is to carry out Congress' mandate, it must have adequate information upon which to base a valid and informed judgement. While the form was under consideration, there were numerous proposals such as (1) to create one TV form for Renewals and a separate form for all other applications, and (2) proposals requiring programming and commercial information for three weeks rather than one.

The Commission took the licensees' problems into consideration and decided that the above proposals would impose too cumbersome a task; consequently, it decided to (1) use one form (IV-B) for all TV applications, (2) employ one composite week, and (3) discard the necessity of "spot" counting of commercials.

The Commission has forwarded copies of the new form to all licensees. It behooves them to read and analyze it as soon as possible. ●

The "How-To" of Audio Production

By Charlie Buffington

Since audio production is a creative art, it requires a unique combination of imagination and "horse sense." Here are some suggestions for combining the two.

PRODUCTION is one of the most vital elements in modern radio. However, production seems to mean different things to different people. To some it means merely reading copy over a music background; to others it means a wildly jazzed-up format. In reality, production is almost as intangible as the product it enhances. It is that ingredient which permeates the entire program structure.

Whether good music, top 40, country music, or all talk, production intensifies and aggrandizes any format; it is to radio what Adolph's is to steak. Literally, production begins with an idea, nurtured with T.L.C. dressed in the best the proud parents have to offer, then carefully integrated with other program elements on the air.

Idea Sources

The cornerstone of good production is, of course, the *idea*, whether it's for a commercial or a promo. As is the case with fiction writers, creative production people find good ideas all around them; it is simply a matter of recognizing them. Whether the intended approach is conservative, humorous, dramatic, or slice-of-life, a huge variety of ideas are always within earshot or eyesight.

A tie-in with current events maintains a positive degree of freshness and timeliness, an ingredient often conducive to the spontaneous success of a commercial or promo. However, depending on the nature of the tie-in, the production can be short-lived; experience coupled with the commercial's desired longevity are the best guides in basing a production on a particular current

event. Many stations work calamities (fires, floods, etc.) into insurance spots; weather conditions offer a natural local tie-in with clothing, appliance, heating product, etc. An active imagination can weave age-old events into a commercial of enduring value. In our area, an exterminator commercial compares the destruction caused by earthquakes with that perpetrated by termites; using appropriate sound effects it comes off quite effectively by pointing out that the lowly termite can be more devastating than an earthquake. Nothing seems too far out: A fuel oil distributor is basing his spots on historical events: What's wrong with a Wrong Way Corrigan, a Greek Acropolis, or a Roman Coliseum setting?

The advertiser and his customers are likely prospects for ideas. Any aspect which would tie in—relating his product or service to some real or imaginary circumstance—can ignite the creative spark. WFUN Miami sends its creative director, Dave Archard, out to meet the client and learn first-hand the problems involved in getting the story across to the listener. The service of the creative director is actually sold along with WFUN's merchandising and promotional features.

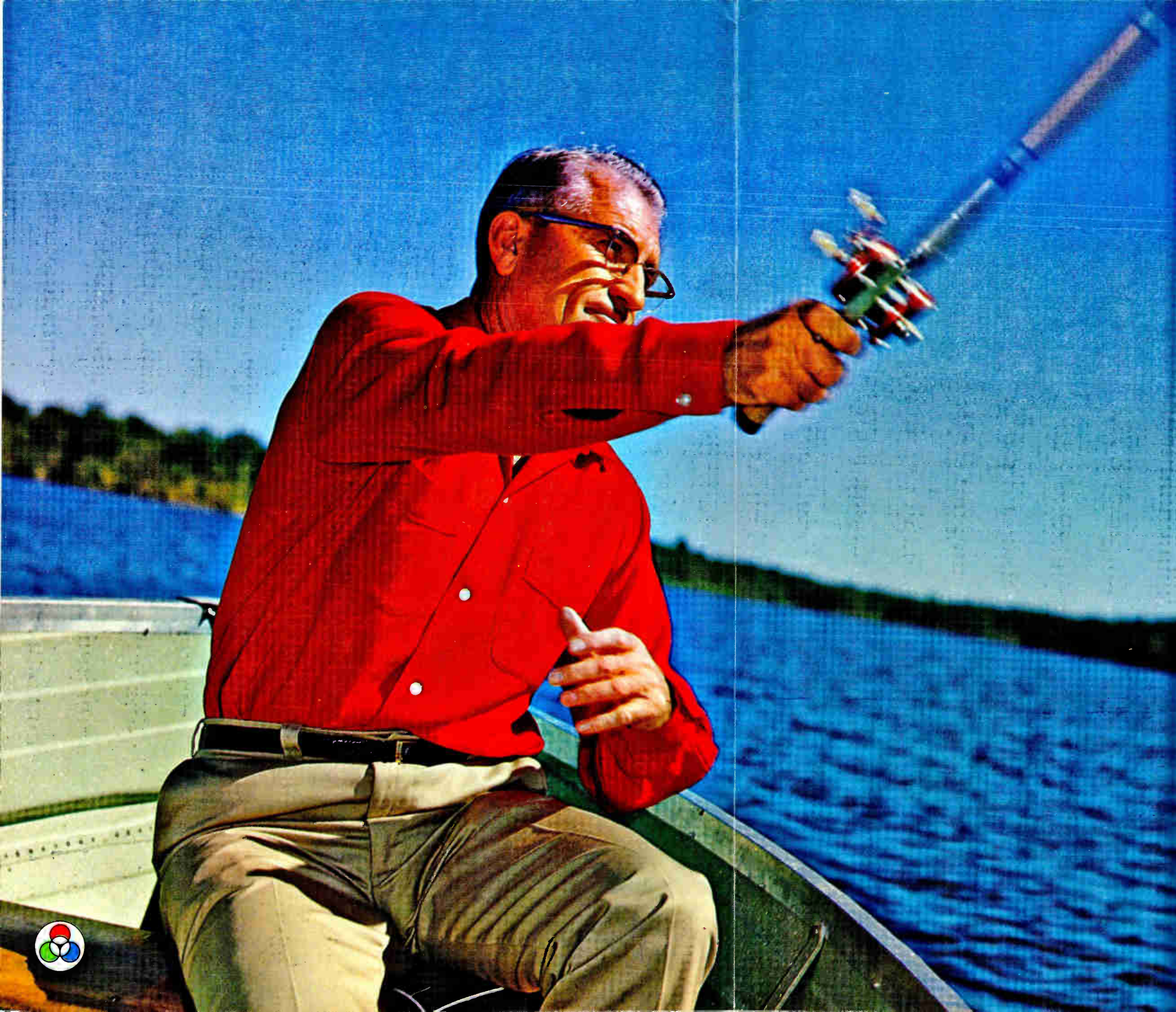
Stations who find it impossible to have their creative director or production man visit clients can achieve something of the same effect by alerting and encouraging their sales staff to search for ideas which might trigger the production department's imagination. It is surely in the salesman's own interest to employ all his intuitiveness in picking up facts and situations which could contribute to a better spot. The

salesman may ascertain from personal contact with the proprietor whether his business can best be promoted with the hard-sell, dollar-down, dollar-a-week approach (characterized by various types with humorous and/or slice-of-life situations), or by a more sedate, dignified approach. The salesman usually knows the advertiser better than anyone else at the station, and he can learn to spot such things as unusual customer relations methods, unusual uses for product(s), local tie-ins with national advertising campaigns (your local leader of the Dodge rebellion) and use them to plant the germ of a great idea in a production department mind. A supplemental or substitute method is to have announcers work with advertisers as part of their normal procedure.

In many stations, particularly small ones, every member of the staff should be encouraged to contribute ideas. As Jim Scott, WSBA York, Pa., puts it, "Our main source of ideas is the people right in the station, including announcers, copywriters, janitors, etc." It's quite surprising what station personnel can contribute in the right climate of encouragement. Ideas spark ideas, and very soon a resourceful production man will find a steady flow of ideas coming to his desk—some quite good, too. William McKeen, WCME Brunswick, Me., says, "Very often our productions start out with ad-lib ideas; most are the result of creative sessions in the production room."

Humor plays a major role in many production philosophies. Karl Hardman, Hardman Associates, Pittsburgh, Pa., says, "We aim to mix orange juice in the form of humor with the castor oil of commercialism." Used tastefully, and if the same production isn't worked to death, humor will win a listener over much more quickly because he is being entertained while being sold.

Comedy takes precedence over any other commercial types at contemporary formatted WFUN. Promotion Director Bob Harris states, "We have found this approach to be the most effective for advertisers. It also blends in perfectly with the station's 'fun' sound. WFUN has found satire to be the easiest method of creating humor because you work with an already established idea. For



**This season
G-E color-film
cameras will take
you fishing
with KCMO-TV's
Harold Ensley.**

**Meredith Broadcasting stations
own eight
General Electric 4-V film cameras.**

Wherever Harold Ensley, noted outdoor sportsman-commentator, goes to catch the big ones, KCMO-TV viewers in Metropolitan Kansas City watch his fascinating excursions with G-E PE-240 color-film cameras. And viewers of other Meredith stations in Omaha, Phoenix and Syracuse will enjoy equally exciting color films telecast with PE-240's.

These second-generation, 4-vidicon, transistorized film cameras give a consistently sharp picture. Whether in color or black and white, they reproduce every ripple on the lake and every strike at the lure.

Color fidelity is one of the primary reasons why General Electric PE-240's are television's most widely accepted color-film cameras. They're on the air for four of the five U. S. and Canadian networks, and many group ownerships plus numerous other stations all across the country.

But see for yourself. This fall watch Harold Ensley catch his limit. General Electric, Visual Communication Products Department, Electronics Park, Syracuse, New York 13201. GE-38.



GENERAL  ELECTRIC

a local photo processor, we did a take-off on Batman. The idea caught on so well that the client now incorporates the lampooned character in his print and TV advertising. To catch the listener's ear for a girl's clothing manufacturer, WFUN poked fun at the current 'Get Smart' TV show".

WSBA injects humor when the subject matter permits, keeping everything as topical as possible. Jim Scott asserts, "In every aspect there is a definite attempt to maintain an awareness of what is happening in radio all around the country. We do not attempt to outwardly steal ideas from other stations, but we have no qualms about developing their ideas to fit out situation."

Testimonials can be turned into good production material. A cookie baker in our area is using an informal beeper phone conversation with product users. This approach also has several good, potentially humorous tangents: a user who discovers an outlandish or far-fetched purpose for the product, for example.

The use of an idea file has some obvious advantages, but as Bill McKeen (WCME) says, it can retard creativity and freshness. Most stations keep tapes of particularly successful productions and, of course, the copy itself. Richard Sklar, Program Manager, WABC New York, says that they maintain an idea exchange with other ABC-owned stations, which affords obvious advantages. They have also found that the practice of pouring through idea columns in trade publications is often very useless since the essence of an idea is often contained within its execution on the air; the written explanation may be next to useless.

Some stations produce their own IDs, either entirely or in conjunction with a jingle package; others prefer to purchase custom-produced jingles and promotionals, in spite of the higher cost. Custom-made material does, of course, offer an exclusive sound. WCME IDs are staff-produced and are continually updated in both music and wording, a necessity if a station is to stay out of a production rut. Show business personalities (recording stars, particularly) often will record IDs and promotionals if you send a tape to their press agent or public relations man. If you catch them when they are in your area, invite them to the station

Gordon M. Day, Inc., New York, produces spots using top-drawer New York talent in both writing and production. Cost of local spots begins at \$1250, regional at \$1800, and national at \$2500.

Hardman Associates, Pittsburgh, Pa., offers exclusive marketing of a group of 40- and 20- second open-end commercials covering products and services most commonly advertised on radio; they are designed to be tagged with live or recorded dealer identification. Costs vary widely from a low of about \$30 for a simple straight recording job (exclusive of talent fees) or \$40 for a syndicated open-end commercial to a high 5-figure amount for custom programming service. Average cost for a custom one-minute spot—written, acted, and produced—runs about \$375.

The firm also produces custom-tailored morning shows for WTAE Pittsburgh and WCOP Boston. The service consists of gag productions and character routines which are dropped throughout the show to seemingly interrupt and harass the host. (The idea originated 15 years ago with KKDKA's Rege Cordic morning show, on which Karl Hardman appeared as writing, production, and voice talent. Hardman is still supplying voice characterizations to Cordic, (now on KNK Los Angeles). **Tel National Advertising**, Hollywood, Cal., offers a retailer advertising campaign consisting of 12 singing commercials per retail category. Each may be customized with an over-dub on a non-rhyme line. Cost for the 12-in-one package is \$100.



Production Director Dave Archard (seated) and announcer Jim Howell shown recording commercial in WFUN's production room. Buttons above the control board operate various audio circuits, including a reverb, equalizers, filter, an Ampex 350 and two 354 tape machines, and two RCA cartridge machines with record. Custom-built equalizers and Hammond reverb can be switched in for special effects and equalizing.

for an interview, after which you can prevail upon them to record some material. Any effort toward improving and updating production is well worth the time spent. With the sameness of many music formats, the only difference in sound is the production and, perhaps, the air personality.

Talent Sources

The best production idea in the world is useless without appro-

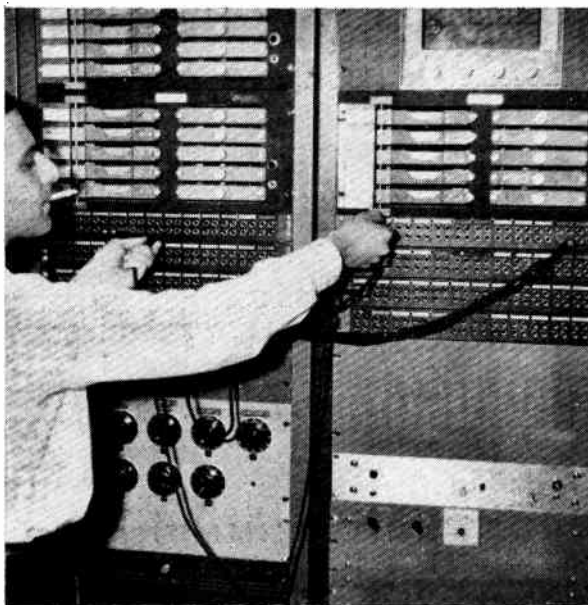
prate voice or musical talent; however, the problem of locating and developing talent is not as awesome, nor as expensive, as some may think. Many stations have far more latent talent than they realize, just waiting to be tapped. Many individuals possess more than one voice. With coaching and diligent practice, nearly anyone can develop several dialects, accents, affectations, and characterizations so that among

even 3 or 4 people you may discover 8 or 10 really good sounds. WCME's operations chief does 4 voices, the sales manager does 3. Actually, all WCME personnel are used in production, including secretaries when a female voice is needed; one up-front distaff employee is a British native complete with accent and acting talent. Among the WSBA air staff (7) there are "Granny" voices, a Bronx cab driver, a French chef, etc. The more voices you can muster among staff members, the more versatile your production department will be. WFUN has a well-rounded cast of characters on its air staff. Each announcer has a distinct style—soft sell, humorous, hard sell, etc. When a female part is called for, station secretaries fill the bill. WFUN's creative director also does several character voices, dialects, and impersonations.

In some cases, the mention of production sends up a hue and cry over manpower shortages. Where manpower is a problem, it is very likely created by the fact that all people aren't efficiently employed or their talents are allowed to remain dormant. It isn't necessary that even one person devote full time to production, although the more time devoted to production the better it will be, naturally. I've seen daytimers with a 2½-man air staff do an outstanding job in production; you would have thought they had a full-time production department. In these cases, management is usually the initiator. If management is doing its job as team captain, the players will *want* to go along, or get off the team.

But why restrict production talent to staff personnel? There may be a great deal of outside talent—free, too. How about advertisers and/or their employees? Some advertisers have enough "ham" that they jump at the chance to get on the air; they may even buy extra spots! Voice tracks can be recorded in the advertisers' office or in the studio and then dubbed into the production. In one case in my experience, the advertiser used his informal family folk music group to record his own spots and jingles; they did quite a professional job of it, too!

For next to nothing, there is undoubtedly quite a lot of musical and voice talent among students suitable for commercials and



WFUN's audio mixing, patch panel, MacKenzie tape decks (with 15 separate playback channels for format sounds), reverb unit, Limpflander, and other terminal gear are rack-mounted in the main control room.



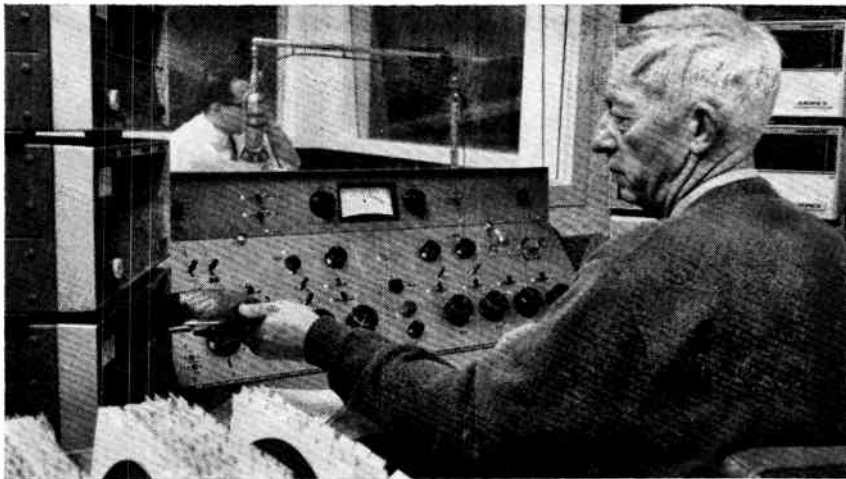
WFUN control room console has remote control pushbuttons for MacKenzie tape decks, 3 cartridge tape playbacks, echo, filter, time tone, etc., a total of 55 illuminated buttons. All amplifiers—completely solid-state—have been removed from console and studio to eliminate the necessity of disturbing the announcer for maintenance. Standby power is supplied by a transistorized inverter with automatic transfer.



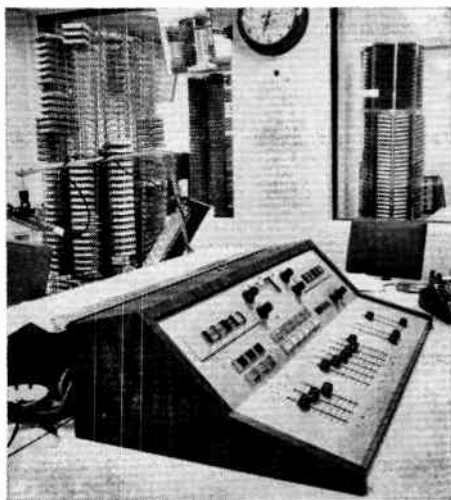
WABC main air studio facilities include 6 remote control ATC cartridge playbacks (two are on opposite side of console desk), a turntable, echo chamber, and Ampex reel-to-reel recorders.

Hardman Associates main control console is custom-built for mixing tape, disc, and mic inputs in multiple units.





Six Ampex Cue-Matic magnetic mat machines are used in KYA control room. Mats are stored in file folders at engineer's fingertips.



D.J. and engineer sit across from each other in WABC's main studio. The Gates console has individual slide faders and switchers for 3 mics, 6 cartridge machines, two tape recorders, network, and 6-position select remote channel. Two recording studios may be used for production. One is an exact duplicate of the on-air studio, the other is more conventional with separate control and studio rooms; a small studio for 4-voice and a larger studio for up to 12-voice conversations.



WCME recording studio has a Gates console, Ampex 601 and 350, and older Magnecord (used mostly for editing), and a Tapecaster cartridge machine for dubbing. In production session shown here are (l-r) Mrs. Roma Gibbs, William McKeen, gen. & sales mgr.; Mrs. Pat Vickers (British secretary), and Jim Roberts, director of operations.

jingles. Hold auditions for individuals; work with them. They may be glad for the experience and you may uncover some inexpensive talent. I've seen this work quite well without intensive exploitation. Local personalities such as sports figures, etc., are often willing—for a fee, of course—to record commercials or promos.

Sound Sources

Along with voice talent a variety of sounds is usually needed to round out or "season" a production. Record albums (particularly seldom used ones), sound effects records, and electronic equipment offer an extensive diversity of sounds. Records and albums provide varying background tempos, bridges, fanfares, and percussion, crescendo, and arpeggio musical effects. Records are also the source of sounds which suggest traffic, crowds, wilderness, etc., plus emotional effects such as relaxation, excitement, pathos, humor, etc. Good sound effects libraries offer almost any imaginable sound, but they do become dated. A Cadillac commercial with the sound of a Model T in the background won't sound too enticing to a listener.

Increasing equipment sophistication offers more and more sound possibilities to a creative production man. Filter mics, echo chambers, and the practice of overdriving equipment for a distorted effect (used with some contemporary records) are some of the means by which distinctive sounds can be produced. By varying the speed of a conventional tape recorder, a series of weird voices (chipmunk, etc.) and other sounds can be achieved. A variable speed turntable offers some possibilities, too.

WFUN maintains an album file for production use as well as several modern sound effect LPs. As Bob Harris says, "Instead of a 1935 Duesenburg, WFUN can deliver the sound of a Mustang when a car effect is needed." On the subject of background music, Bob asserts, "the biggest problem with commercial background music has been the selection of a piece that's too familiar to the listener. If someone hears Night and Day behind a spot, he's going to hum the tune and not listen to what's being said." WFUN announcers have been instructed to select music that will not upstage

Production scene of a humor-style commercial for an automobile dealer at Hardman Associates.



Marilyn Eastman, Karl Hardman (1) and Jason Flake shown producing a commercial for WTAE Pittsburgh's morning show "The Teahouse with Jason Flake."

the copy. WFUN also has several music services which offer original music scored expressly for radio. Richard Sklar indicates that WABC does not rely to any great extent on existing albums or ETs as production aids. They usually prefer to have music composed for their purposes by outside contractors. WABC purchases jingle packages, special music effects, music beds, and most of its production material from outside suppliers—recently, much of it from PAMS, Dallas, working under WABC direction with WABC personnel in the control and editing rooms to direct sessions.

WCME uses record albums as a production music source and a few sound effects records. They also create sounds. Bill McKeen relates, "One time we needed the sound of two men sitting beside a swimming pool, dangling their feet in the water. We took a mic to the lavatory and recorded the sound of a salesman's hand splashing in a full washbowl. We found that two hands represented the sound of four feet very well." WSBA relies heavily on the MARS sound effects file, plus old and often unused albums of every

description—musicals, special effects, comedy, etc. Custom-produced jingles are great for those who can afford them. Syndicated jingle package users do well to keep some on the shelf, releasing them carefully and gradually to avoid the sameness of sound which can result from their use in many markets.

Most stations do not charge the advertiser an extra fee for normal productions using station talent. WSBA charges a fee only when the advertiser uses the spot on other stations and in other markets, and if a specific talent is requested. WFUN does not charge for production; it is used as a sales tool and is believed to have been instrumental in landing many accounts. So long as an advertiser has a current schedule on the station, WFUN will give him as many dubs of his spot as he wants.

Putting It Together

There are two ways to assemble a production. Various elements can be recorded singly or in clusters and dubbed together on a master tape, then transferred to a cartridge or magnetic mat. WABC often works with talent,

director, and recording-editing technician in the same room to achieve a combo effect. To speed multiple jobs, WABC records much of the repetitive material on cartridges which are then used in production work. With the improvement in quality and fidelity, they are thus able to go down a generation without sacrificing significant quality. Some elements of WABC's broadcast day are pre-recorded on carts.

WCME productions are first recorded on reel-to-reel tapes, then dubbed to cartridges, thus simplifying editing, timing, and restarts. All WCME ID's and news intros, plus some commercials, are on tape. WSBA attempts to have definite endings on all recorded spots to assist the announcer in his production technique; all cartridges are labeled with open and close cues. WSBA news intro sound effect are taped for on-air use; commercials with any sort of production are taped—IDs, news intros, and a complete library of pop records on Ampex Cue-Matic magnetic mats. About 1200 mats are used for music.

Hardman Associates employs the technique of mixing music and sound effects wherever possible while the voice portion is being recorded, instead of dubbing the two together. The talent wears headphones to get the feel and spirit of the spot being recorded. WFUN uses a combination of live and recorded spots on the air. They feel that an air personality is essentially a salesman; therefore, a good number of spots (and promos and contests) are live with a recorded intro, insert or tag. This method requires preparations and pre-planning and a high degree of alertness on the part of the air man.

Conclusion

Good production is attainable with any format on any station; its advantages need not be limited to big market stations and top 40 or rapid fire format. The biggest obstacle, in most cases, is the lack of awareness of what can be done with existing personnel and facilities. When management begins to recognize and develop the potential of its present staff, a new era in station production should be forthcoming. Unless a station has a staff of thoughtless automatons and very substandard equipment, it cannot be said that good production is impossible. ●

The "Big Mike" Mobile Studio

by Gilmore F. Frayseth

Using a unique remote unit, KMHL has put some "show" back into local radio.

ALWAYS ALERT to the opportunity for public exposure, as well as striving to provide a thorough broadcast service, KMHL carries a heavy schedule of area play-by-play sports and special events. We carry live broadcasts of the twice-a-month city council meeting and our mike is seen wherever there's activity of local interest. Our 600 sq. ft. studio is still used for regular live broadcasts, including musical groups, though not as frequently as it was 20 years ago.

Today's broadcasts are not as visible or as impressive, however, as they were when a 2- or 3-man crew would set up several suitcases of complicated-looking remote equipment, or when visitors jammed the studio to watch a broadcast in progress. In addition to being heard, we felt a need to be seen more.

The "Big Mike"

Our answer is the KMHL Big Mike and Mobile Studio Lounge. This name is used in our promotion to portray the size of our influence in this community, and to put a little glamour back into radio. When I first started thinking about such a unit, I checked into the possibility of using a small travel trailer. I checked with an Iowa concern (Forester), with the pitch that exposure would be worth some consideration to them, and was offered a trailer at dealer price. As I recall this was somewhere in the neighborhood of \$600, with walls finished inside, but, of course, without closets or furnishings. This may be one way to do it, but I wanted something that would have more individuality.

Woodworking being among my hobbies, I took on the job of constructing this mobile studio in the family garage, with the cars left outside to weather a Minnesota winter. I started with a TeeNee tandem-wheel boat trailer with coil springs and 3,000-lb. capacity. It was ordered stripped of the boat hardware. To this I added a light steel bridgework to support the 7½' by 12' insulated floor. In working space limited to an 8-foot garage ceiling and a 7-foot garage door, I built the Big Mike sections—control room, entrance-way, and the circular studio—and then mounted them on the trailer bed outside the garage. The Big Mike section had to be built lying on its side. The

entire structure is made from exterior grade plywood and pine boards with over a thousand wood screws binding the glue joints, and several coats of XIM and aluminum paint providing a weatherproof base for the auto enamel finish of white, blue and chrome.

In arriving at the design I had made a variety of sketches. One was like a covered portable stage with an open front. Another design had yacht-like canvas and rail construction with an awning top. I really wanted something more symbolic, however, and began trying to incorporate the "mike" theme. Several variations came up until I hit upon the design of the completed unit, somewhat inspired by the "trylon and perisphere" of the 1933 World's Fair. The day I mounted the studio section and mike section on top of the trailer bed (they had only aluminum primer), a city employee working across the street came over to my driveway and walked around the unit, looking it over pretty thoroughly. Then he said, "Say, you did a pretty good job on this. But you must not have had any plans." I answered that other than having first made a sketch, I worked from plans in my head. He then said, "I could tell you didn't have plans—part of it round, part of it square . . . and what's that part sticking up in the air for?" Obviously, he had never seen a velocity microphone. We use an RCA 44-B with call letter plates in the studio section to give a hint of what it was modeled after.

The Big Mike stands 12' tall from the ground to the top of the call letter plate. Inside it's as compact as a camping trailer with space utilized to the maximum. The entrance and control area is paneled with birch, stained a colorful cherry. Just inside the door is a built-in compartment that doubles as a leatherette covered bench and for storage of jacks, wheel chocks, stair posts and chains, and a 12v tractor battery to supply power for the mobile amplifiers and auto radio. There's also a hat and coat rack just above.

The control room is "cockpit styled" for both maximum use of space and space-age appearance. A Bogen transistor mobile amplifier drives the 3 roof-top and inside speakers. Our Marti remote pick-up transmitter feeds

Mr. Frayseth is gen. mgr. and chief engineer, KMHL, Marshall, Minn.



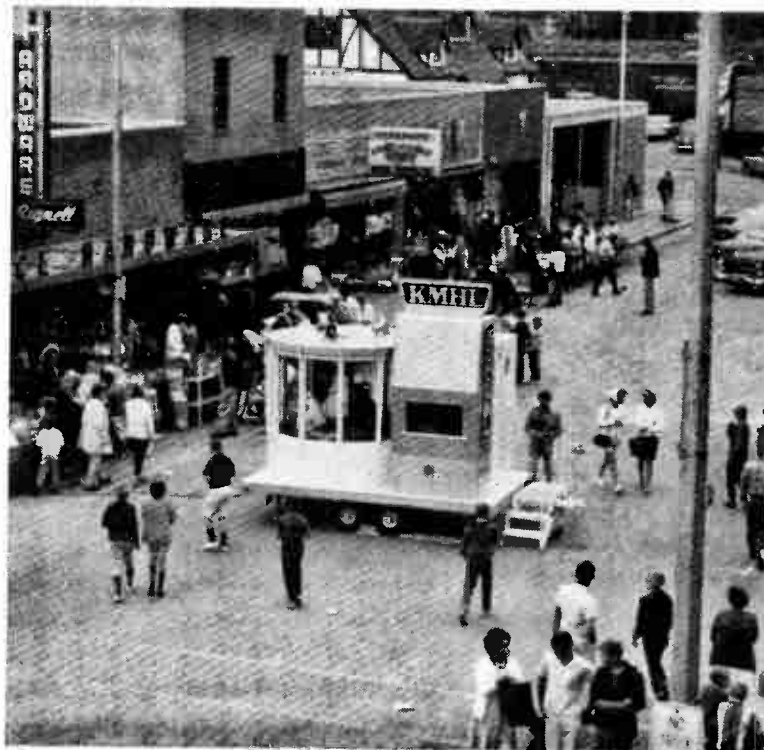
The Big Mike's unusual appearance has proven to be an attention-getter whether it's parked in the station driveway or on-location.



Audio gear and transmitter are located inside the "microphone."



Jim Weatherbee interviews Gene Holter of the Movieland Wild Animal Show during the Yellow Medicine County Fair.



The Big Mike stands-out on a roped-off section of Main St. during Tracy's Stinker Day sidewalk sales promotion.

Big Mike Costs

TeeNee Boat Trailer	\$ 350
Wood and related hardware	400
Iron and welding	100
Primer paint & misc.	35
Finish painting	100
Glass	35
Linoleum & aluminum	65
Upholstery	25
Sheet Metal	15
Air Conditioner	135
Electrical	65
Miscellaneous	50

\$1,375

Bogen amplifier, speakers, mikes, auto radio, transmitting antenna, wire, etc.* 450

1,825

Marti transmitter, previously owned, and used in vehicles as well as in Big Mike 625

\$2,450

There are no labor cost figures. I did the work nights and weekends and kept no record of time involved. I am sure I spent no less than 200 hours from November to the end of May in construction.

*Some of this equipment and material was from stock and not specifically purchased for the unit.

the yagi antenna which can be raised to nearly 30'. Automatic record changers add to the versatility of the unit for public address service as well as broadcasting. For P.A. station promotion, an auto radio feeds the amplifier and speaker system. During actual remotes the amplifier feeds the speakers as well as the Marti transmitter input.

The studio lounge is paneled with padded metallic blue leatherette with a dash of nickel hardware. An electric wall heater keeps it comfortable in near-zero weather. A room-type air conditioner is suspended under the floor, between the axles. Controls were removed and relocated convenient to the operator. The entire unit is insulated with fibreglass. With the foam padding beneath the leatherette panels around the bottom and perforated tile ceiling, the acoustics are surprisingly good—even with so much glass.

The KMHL Big Mike is mobile in minutes. Other than the usual trailer connections, removal of only four bolts allows the entrance steps and landing assembly to be folded out of the way. It trails easily on the road at top legal speeds. Now, with actual use, I'm glad I have a tandem undercarriage. The unit rolls so much smoother and there's no pitching — even LP albums stay in their bin. The only thing we do inside for travel is to take the mike off the stand. Although the completed unit weighs 2,600 pounds, this is only 600 pounds per wheel and 200 on the dolly; therefore, it's easy to maneuver by hand in tight places. Last December I purchased a 4-wheel drive Dodge Power Wagon. (I admit that my love for hunting was a predominate factor.) However, the Power Wagon is equipped for the Marti transmitter to go anywhere for any event or emergency. While a passenger car could easily tow the Big Mike, we use the Power Wagon. It makes a pretty impressive combination.

The prime reason for building our mobile studio was to get public exposure and to put some novelty and vitality back in KMHL programming. But, since we also like to make money, we add a charge, above the normal remote cost, for use of the unit.

The shake-down cruise for the Big Mike was its June appearance at Lyon County Dairy Day in Russell, Minn. Four 25-minute Saturday afternoon program segments were sponsored by participating banks, dairies and related businesses. The appearance grossed \$350. A large crowd gathered around to watch interviews with the dozen Princess candidates, the reigning Princess and her attendants, the County Agent, and Dairy Day committee members. We received numerous expressions of gratitude for bringing the attraction to their town.

It was also rented out as an all-day sound system, with two remote pickups, for the 50th anniversary of a Marshall business firm and appeared on the streets of Minneota, promoting the June Jubilee of a local oil company. The Big Mike was booked for several events in July including part of a \$2,000 package promoting a retail trade event, Crazy Days in Marshall, and 3 days at the Yellow Medicine County Fair

at Canby. In August it was featured at the Lincoln County Fair in Tyler and the Lyon County Fair in Marshall. Our Lyon County Fair, one of the largest of Minnesota's 87, featured a picture of the Big Mike in its Premium Book as one of the attractions of the fair. Attendance broke all previous records, drawing a crowd of more than 36,000. Officials gave us a considerable share of the credit. No charge was made to county fairs for use of the Big Mike; however, in the past we had to pay for booth space. Programs originating from the Fairs were sponsored.

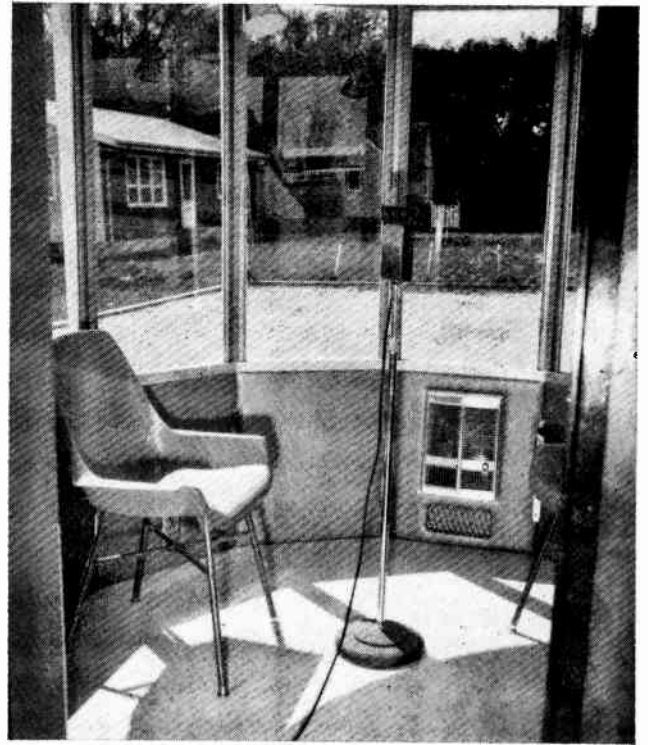
The Big Mike has been a topic of conversation wherever we have been, and it's even a traffic stopper while parked in the station driveway, located on a highway in the eastern section of Marshall. We get choice locations at events, and promoters fuss over us like they did way back when radio was a novelty. We have no way of determining the number of persons who have seen it. Inasmuch as many of the events covered in this article have had the Big Mike located on heavily travelled thoroughfares, it has certainly received the attention of people numbering into the hundreds of thousands. Comments from the public have been very gratifying and promoters have given us much credit for success of the events.

Big Mike Future

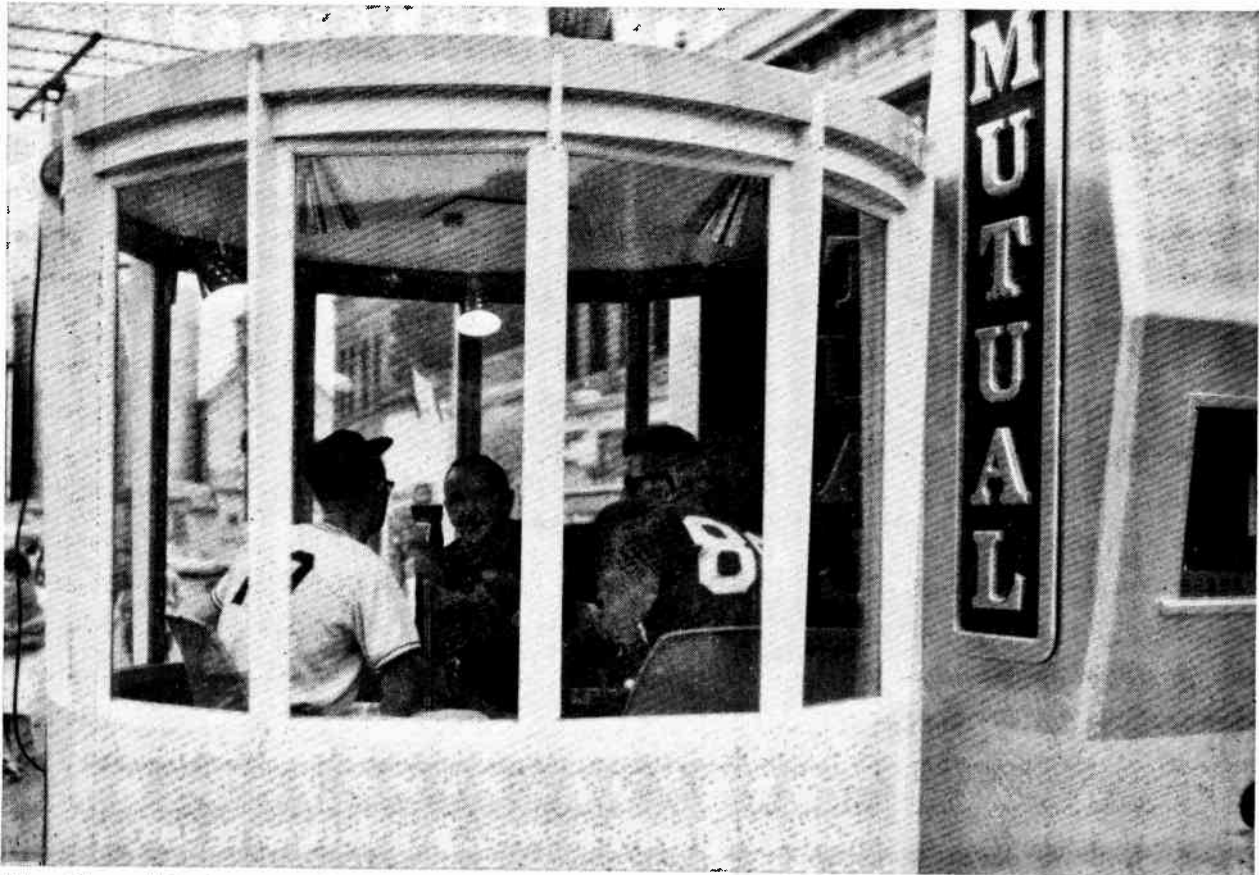
We anticipate much year-round demand for the unit in connection with grand openings and retail store sales promotions. Most of the events covered have been of a seasonal nature. However, they have helped stimulate summer business. We are working up participating packages for merchants in surrounding towns, using the Big Mike as an incentive gimmick tied into the package. At the present time we do have daily participating programs for Tracy, Canby, Cottonwood, and Minneota, programs originating from our main studio/transmitter. However, we think we can get many more towns involved, and stimulate interest in those we have, by including in the package the appearance of the Big Mike in their town for one whole business day a month. We are also giving thought to a pre-Christmas series of appearances of the Big Mike



The Big Mike stands above the crowd during a broadcast of the "Battle of the Beatle Bands," a feature of Marshall's Crazy Days promotion.



With the conveniences of a home-away-from-home, the studio lounge may be both heated and cooled for all-weather comfort.



John Glaser interviews two Tracy merchants dressed as athletes during Stinker Day.

with our own Santa Claus.

Although the unit is electrical-ly heated and could be used any time, we do not anticipate much activity for it during January and February when promotion events kind of slow down here in Minnesota. It just might be seen, though, on some of the surrounding lakes for ice fishing contests.

So far, all of its use—and most of our thoughts—have centered around commercially-oriented activities. However, it was on the scene for the ground-breaking ceremonies of our new Southwestern State College in Marshall in late September, serving not only for our broadcast of the ceremonies, but also available to other media as “press headquarters” on the barren 218 acres that will become the college campus. We also expect to use the unit in expanding our agricultural services, such as coverage of field or demonstration days in the spring, making a little more show of it than in the less conspicuous vehicles. These may or may not be commercial.

Operating Costs

Operating costs are very slight. Using the Marti there are no

lines to pay for. Canby was a marginal distance for the Marti so we put the receiver in the Fair Secretary's office to feed by wire to Marshall. Only the lights, turntables, and air conditioner are AC powered so current consumption is negligible. In a couple of cases, we plugged into private receptacles and slipped them a couple dollars just for the courtesy. At Krazy Days in Marshall, the city utility dropped a receptacle from a street light standard for us.

Manpower is really no different than any other remote. One man could run it but we have tried to make a little more of a show of it. Except for the actual broadcasts it needs no attention. The record changers hold 8 LP's and with the radio feeding the system it can go on and on. We have our own charger for the batteries. The tractor battery supplying power to the radio and transistor amplifiers will hold up for days. We have a battery pack for the Marti when AC is unavailable and that holds up for many hours.

KMHL Thinks Big

We are only a 1-kw day, 250-watt night operation. However,

KMHL Advertisers Say . . .

“Your Big Mike added prestige and a very friendly atmosphere to this year's Krazy Days. It's a very high grade booth and station, and it really looked good on the street.”

Dave Katz
Kays Shoes
Marshall, Minn.

“On behalf of the Retail Trade Council of the Marshall Chamber of Commerce we want to thank you and your staff for the Krazy Days color you provided the 59,000 homes you serve. The cooperation and able assistance of KHML certainly helped to make Krazy Days the success it was.

Don Hudson, Chairman
Retail Trade Council
Marshall Chamber of Commerce

Ed Marcotte, Chairman
Krazy Days Committee
Marshall Chamber of Commerce

“Your air-conditioned mobile unit with direct, on-the-spot broadcasting from the Fairgrounds was a unique feature this year. I am sure the service you rendered was to some extent responsible for the good attendance we had. Our Grandstand receipts were higher than for many years and the mid-way grossed more than any year since 1942.”

F. L. Mitchell, Pres.
Yellow Medicine County
Fair Ass'n.

“Big Mike” Receipts

Date	Event	Town	Fee	Programs	Spots	Gross
6/4	Lyon County Dairy Day	Russell	\$25	\$175	\$100	\$350
6/15	50th Anniv. Appleton Silo Co.	Marshall	25	75	40	140
6/24	Jubilee, MGT Co-op Oil Co.	Minneota	25	40	—	65
7/25-27	Yellow Medicine Co. Fair	Canby	75	225	—	300
7/29	Krazy Day (Retail Promo)	Marshall	25	245	1,670	1,940
8/11-12	Gamble Store Grand Opening	Marshall	50	155	42	222
8/13	Swimming Pool Dedication	Minneota	25	40	—	65
8/15	Belgium-American Days	Ghent	25	75	—	100
8/19	Stinker Day (Retail Promo)	Tracy	25	75	100	200
8/20-21	Lincoln Co. Fair	Tyler	50	150	—	200
8/25-28	Lyon County Fair	Marshall	100	300	—	400
9/4-5	Box Car Days	Tracy	50	140	160	350
		Total	\$500	\$1,695	\$2,112	\$4,332

It is a little difficult to accurately credit a specific dollar figure entirely to the mobile studio. The \$25 per day fee, totalling \$500 in the events listed, is directly added to the remote program charges or figured into the packages. Some of these events have been covered in previous years and cannot be considered entirely “added” business. However, this year's revenue has been increased as much as 100% from the Fair business and some of the other events not covered in previous years likely would not have been covered this year without the Big Mike incentive. Thus, even a portion of the revenue for the spots tied in with the packages might be credited to the unit. The programs originating from the unit were sold in 25-minute segments and the total program time was a little better than 20 hours. The Gamble Store is on a year-around 3-spot-per-day schedule; thus, the small amount of extra spots tied in with their Grand Opening. The Fairs were sold to participating merchants, so money spent for fair publicity (\$300 in the case of the Lyon County Fair) is not included as it has no direct connection with the unit.

we do think big and I feel our Big Mike symbolizes this in the community. We have never backed off for TV or our competing umbrella station. We have always been among the first with the newest equipment and innovations. By the time this article appears, our FM application will be in the hands of the FCC. We will be programming stereo full time with no duplication between AM & FM. Even the sales will be separate, just to keep the two competitive.

We're counting on the KMHL Big Mike and Mobile Studio Lounge to put the picture back in KMHL Radio for the new generation that has never “seen” radio and for other generations who may have forgotten what it “looks” like. ●

Adding Commercial Sound to Background Music

By Gene A. Scott

Commercial sound and audio — and even CCTV — can be a profitable adjunct to any broadcaster's business. WFBM's case offers some distinct possibilities.

Editor's Note: By using or leasing SCA facilities, background music has helped more than a few FM broadcasters get on their feet (see BM/E Dec. '65). In conjunction with this enterprise, it seems appropriate for any broadcaster to go into commercial sound, and even MATV and CCTV. As Mr. Scott points out, they can be hand-in-hand ventures, and can result in a profitable subsidiary or sideline business, depending on the market. Even without the background music operation, the possibilities in commercial sound are worth the consideration of any broadcaster.

CREDIT: Mr. Scott is Chief Engineer, WFBM Sound and Muzak Divisions, Indianapolis, Ind.

THE ADDITION of commercial sound to a thriving background music business makes an interesting and profitable combination. Usually, a commercial sound distributor acquires a background music service; we did the reverse. For 7 years we have been the franchised Muzak distributor in central Indiana. During this time we have acquired more than a superficial knowledge of sound reinforcement techniques and have gained insight and experience in overcoming inherent system difficulties by installing music systems in all types of commercial and industrial establishments, including a kennel where our music literally "went to the dogs."

Our corporate situation is a bit unusual, but not unique. We are owned by the Time-Life organization. By we, I refer to the WFBM stations which form the base of operations for television, AM and FM radio, commercial sound, CATV and background music franchise. Our several divisions enjoy great autonomy. Each has its own budget, manager, sales and production and personnel; one possible exception is the broadcasting engineering staff which maintains both AM-FM and TV facilities.

Background Music

The Muzak franchise was purchased when only three communities were served, all via leased telephone lines; its subsequent expansion to many communities in a 75-mile radius has been due in large measure to SCA multiplex and a great sales effort.

Our sales approach is governed by the product we sell. That product is, at the same time, one and many entities. Basically it is service—quality service—but like anything of quality, we are involved in far more than basics. Muzak is a concept. It is a mood creator, but never a mesmerizer. To management it is a means to a profitable end. It is a reducer of tedium, absenteeism, and production errors. The sales effort of such a product is directed toward business executives. Our agreements are generally made with the owner, president, vice-president, or manager of a firm, and often only with board approval. Most of the agreements include a lease of the equipment over which the music is received, amplified, and ultimately reproduced. Generally the contracts are for a term of 60 months and include all music licensing fees, maintenance, and taxes.

In certain respects, selling Muzak is similar to selling air time—both are intangible. They produce tangible and intangible benefits—percentage of audience, product exposure vis-a-vis increased production, and "warm" environment.

There would appear to be no end to the varied types of establishments now using Muzak either as a production tool or a "warm" mood creator. Almost every conceivable type of manufacturing plant has Muzak—from ladies foundations and candy kitchens to electronic parts and heavy steel fabrication. Most people are familiar with Muzak in their favorite supermarket, retail store, and restaurant. More than 50 million people each day are exposed to its lilting strains.

Commercial Sound and Video

Our decision to get into commercial sound was prompted by a number of factors, aside from profit. Many music subscribers, well pleased with our system installation, would request auxiliary



The author shown with a typical industrial system central control cabinet.

communications systems. Because of the increasing complexity of the auxiliary systems we installed, the need arose for a source of diversified communication equipment.

With our decision to jump into sound distribution with both feet, we acquired the franchise for DuKane communication equipment. DuKane in the sound area and Blonder-Tongue in the video and RF field comprise our basic equipment lines. Also, we distribute other quality lines of smaller suppliers. Until the work load demands personnel increases, the background music engineering department is handling the installation function of the sound division.

Operation of a sound business, or a background music enterprise for that matter, is quite unlike radio or TV operation; it would more nearly parallel a CATV situation. For background music systems, subscribers are sought as they are in CATV. Also, there is a good chance that the subscriber (or buyer) will have more contact with the engineering personnel and installers than with the salesman. The latter is a rather important point. In a very real sense the equipment installers are the deputy secretaries of the company's diplomatic corps. For this reason care must be exercised in hiring technicians. Men who have a nice appearance, get along well with people, and a good tech-

nical understanding are needed. Therefore, we select our technical personnel carefully.

This diplomatic adeptness is just one more stringent requirement in an already tight labor market. It is rather difficult to find experienced people in the commercial sound field—in both sales and engineering—to say nothing of administrative personnel. No matter what size the market, people seem to seek jobs in radio and TV because of the excitement and glamor. Not so in commercial sound. Generally, the manufacturing industry has a starting technician wage that is prohibitive for the sound system proprietor. Large electronic firms will pay top dollar for beginning technicians. For the technician, though, commercial sound is not a one-sided coin. In time, the wages tend to equal that of industry. Moreover, there is more security in the sound business, and the atmosphere is more pleasant and diverse. There certainly is no job monotony in the field of systems installation. The total number employed in the commercial sound business is much less than in other fields (i.e. broadcasting). Because it is smaller, it attracts fewer career-minded people.

From a technical standpoint, learning sound and related systems installation and service is not the least bit difficult. The elements of communication systems are evident in the background music field. Therefore, the adaptation of men and equipment to the commercial sound business is an easy transition.

One area of possible unfamiliarity might be MATV or CCTV. A working knowledge of RF circuits is helpful, but not essential. Being TV orientated, we have not found this to be a problem. In fact, great interest in the TV facet has manifested itself in the installation crews. Along this same line, any new technique or device is invariably welcomed enthusiastically.

With normal sales volume, work is scheduled two to four weeks from the issuance of a purchase or work order. During this time equipment for the job (sound, TV, or Muzak) is ordered or fabricated in our shop. Much of the baffle-and-speaker or equipment-cabinet assembly is performed during evenings and on weekends. During these periods, when not running service calls, service technicians do bench repair and fabrication. Since our foremost product is service, we maintain a 7-day-a-week service schedule.

Installation scheduling can be fraught with headaches. The greatest adversity is the forgetful client. The calls come in something like this: "Seems the carpenters are remodeling the precise location of your amplifier equipment NOW," or "The people are here to put in our new ceiling and we just remembered we have to have the speakers moved." Then, there are the two supermarkets and the auto agency that are having their grand opening the same day—and equipment for each must be installed NOW. Any of the foregoing, though the number of work hours involved may be few, can completely disrupt a schedule.

Potential Clients

There are several factors to consider before venturing into the commercial sound business: size of market and number of competitors, amount of start-up capital available, and availability of a good "prime line" franchise. The latter is not an abso-



Technical Supervisor Gary Hinderliter makes a sound system layout on office building plans.



Bennie Colyer installs one of three power amplifiers in an industrial sound system equipment rack.

lute necessity in that some contractors do major assembly and fabricate components from widely varying manufacturers. This is not for the neophyte, however. Finally, some knowledge of the business is essential.

There are very few establishments that are not users of what the sound distributor has to offer. "Sound distributor" is somewhat of a misnomer in that equipment is certainly not the only thing sold, and the commercial sound company does not "distribute" in the normal sense of the word. The aggressive sound contractor today finds many avenues for the sale of divergent equipment lines.

Master TV antenna installations can account for a good percentage of total business. Any multi-resident or transient-living accommodation is a prospect for an MATV system. Practically all new motel and apartment plans specify an MATV system. Rabbit-ears are passé; both from appearance and functional standpoints. As in CATV, often greater use is made of unoccupied channels for AM, FM, or background music. Sometimes motel room maids are directed to assignments via an unused channel by front desk personnel or the chief housekeeper. It is not uncommon to watch your children in the play yard or pool from the comfort of your modern motel room—again, via the unused TV channel and a CCTV camera.

Closed-circuit TV equipment is becoming smaller and more sophisticated, and yet, much more reliable than the older tube type gear. This, along with a competitive marketing situation, will bring about a very bright CCTV future. CCTV finds surveillance applications in schools, banks, prisons, retail stores, factory gates, etc. In industrial plants it can be invaluable to view objects in unsuitable human environment. It can likewise be used to enlarge small objects simply by using a larger CRT. The larger the picture tube, the greater the enlargement.

Schools and hospitals use all types of communication and signalling systems. Systems found in modern hospitals include nurse call systems for patients to summon help, in-and-out registers for doctors, remote electrical door locks for contagious and restricted areas, closed-circuit TV for surveillance and hazardous areas, MATV for patients' rooms, zone and all-call paging, background music systems, master clock and fire alarm systems.

Schools, in case you haven't been near one in a few years, are not what they used to be. They not only demand the familiar "class change bells" (which now have been supplanted by tones generated in a central console), but such sophisticated techniques and apparatus as vandalism alarms, individual classroom intercoms (with or without "eavesdrop" warning), closed-circuit and off-the-air educational TV language labs or electronic-aided teaching methods, classroom slave and master clocks (which also control remote utility functions such as parking lot lights, steam valves, exhaust fans, etc.), inter-department PABX (private automatic branch exchange), telephone equipment, general page and alert systems, fire detection and warning devices, and concert quality sound reinforcement systems for the auditorium or gymnasium. Alas, the "little red school house" is no more! Realize, also, many of the items mentioned find application in office and industry as well. Just as 50- or 60-speaker school installation is commonplace, so is the 50- or 60-horn factory sound system.

Sales Methods

How do you sell all this equipment? Preferably with a sales engineer, a well qualified salesman with an aptitude in electro-mechanical devices, or a skilled electronic technician or engineer with a penchant for selling.

The sound salesman will spend a great deal of time in architectural and engineering offices. The architect/engineer for a proposed new building is responsible to the owner for good equipment operation. The consulting electrical engineer on bid-jobs is the buyer of all electrical devices for the building. It is his thorough knowledge of equipment function and design that insures the client of his money's worth. Because the consulting engineer acts as the builder's agent he is the prime sales target for the salesman.

Much of the salesman's or system engineer's time will be spent pouring over prints and making "take-offs" (quantity analysis of specified equipment items). This is done either at the architects/engineers office or the "Dodge Room." The Dodge Room is an office of the F. W. Dodge Co., which publishes daily reports of all construction progress in any particular area in the country. They maintain plan rooms where subscribers may read building specifications and make take-offs. In one central office the sound salesman can find several proposed buildings with sound equipment specified. After determining type and quantity, a quote for equipment is developed and submitted to electrical contractors bidding on that particular job. In most cases, in our area at least, the sound or communication equipment is a part of the overall electrical contract; therefore, our quote is submitted to the electrical contractor rather than to the general contractor. From a salesman's standpoint, the final transaction is the receipt of a purchase order from the electrical contractor—and, of course, his commission.

After the job is in the house it generally becomes the responsibility of the chief engineer to "engineer"—which involves working out any special design consideration, ordering the necessary equipment, and making sure the equipment is delivered and installed according to the specifications and standards. Included in the sound distributor engineering phase are several calls, on the phone and in person, to both the consulting engineer and the electrical contractor's engineer. Another function is the preparation of as many as a dozen copies of all equipment spec sheets and system diagrams. These are submitted in bound brochures to the engineer and owner. Then comes working out actual job site discrepancies and location conflicts. For the engineering department the responsibility for the job extends to the end of the warranty period (usually one year), or indefinitely if a service agreement is contracted.

Then comes working out actual site discrepancies and location conflicts. For the engineering department the responsibility for the job extends to the end of the warranty period (usually one year), or indefinitely if a service agreement is contracted.

Equipment Purchasing

Many things can determine success or failure of a commercial sound company. Certainly one area of concern is how you buy supplies and equipment—

that is, at what price or discount. This generally goes hand in hand with where you buy. To many original equipment manufacturers the sound contractor is considered a distributor and is extended the same discounts as the radio-TV parts house. This can increase your cost discount by as much as 40%. Obviously, if you don't buy at "distributor net" and your competitor does, you'd better have something else going for you to maintain a profit margin. Usually, quantity purchases or some "stocking inventory" entitles the sound distributor to the greater discount. If you are able to purchase, say, a dozen microphones in each of at least two or three different models, a half dozen amplifiers or a gross of loudspeakers, you qualify as a distributor.

Selling Prices for Typical Systems

MATV	
100 room motel or apt. bldg.	\$3,500-\$ 5,000
15-story high-rise apartment	\$6,000-\$ 9,000
30-classroom school (elementary)	\$2,500-\$ 4,000
40-classroom school (Senior Hi)	\$4,500-\$10,000
Community swimming pool	\$ 700-\$ 900
Medium mfg. co. (plant area)	\$2,800-\$ 3,500
Large office system (20 Stns.)	\$1,800-\$ 2,500
Warehouse (4-8 stations)	\$ 500-\$ 1,000
Small system (2 stn.) ex: shipping clerk to loading dock, etc.	\$ 100-\$ 150
30-phone office-plant system	\$3,000-\$ 4,000

Sound System Start-Up Capital Requirements Sales Aids & Promotions

Market Size	Capital
50,000-100,000	\$12,000-\$ 15,000
350,000-750,000	\$30,000-\$ 50,000
1,000,000 & up	\$80,000-\$100,000

Sales Aids & Promotions

- Film strip sales aids
- Direct mail promotion
- Radio & TV advertising
- Trade journal ads

Some components are exclusively distributed by only one firm in a given area. Other manufacturers will supply anyone who qualifies (through quantity purchases) as a distributor. Whether or not an equipment or parts manufacturer exclusively distributes his equipment is a facet of the company's marketing philosophy you will have to consider.

It appears from this vantage point that the future will hold great promise in the internal communications and sound reinforcement field. The need for faster and more convenient audio as well as visual communication is ever increasing. As business and industry expand, so will the communications companies. Technological advances will bring forth new concepts in the entire field. For example, our background music service area was expanded many-fold by the innovation of SCA multiplex. This business is obviously not for the faint of heart, but we feel it is indeed a "sound" business to pursue.

Production Techniques for CATV Originations

By Robert B. Cooper, Jr.

Programming concepts and equipment requirements for the cable TV operator thinking of producing local program material.

THE BASIC concept of local public service programming neither new or unique to the CATV industry. Local origination, as a mass concept, began in 1963 with general industry acceptance of time and weather service. But even prior to the information channel idea, systems scattered across the country were quietly, without fanfare, originating local events such as city council meetings and other civic functions. However, it remained, for the industry as a whole, a little known and seldom tapped instrument of business operation until the 1966 NCTA convention, when President Frederick W. Ford urged CATV operators "to proceed to establish local origination as quickly as finances and equipment will permit."

Why this sudden push for local CATV origination? There are many theories, but most boil down to these concepts:

1. CATV has become a broadband communications instrument capable of carrying at least 12 channels of combined video and audio information.

2. With the stringent new FCC rules limiting importation of station signals, the modern cable operator is discovering that he has several unused channels for at least a portion of each day.

3. Many existing CATV systems, plus many planned systems, are located in areas where two or more channels are well received directly off the air. In order to attract subscribers, the

Mr. Cooper is president of Valley-Vision, Inc., Modesto, Calif., and author of the book, "CATV System Management & Operation."

cable operator is forced to offer programs of local interest, preferably of a nature that will not compete with off-the-air material.

On top of these conditions is the hard fact that more and more broadcasters have become CATV franchise holders and system operators. Broadcaster CATV system owners have the benefit of programming experience and they are bringing this knowledge into CATV. However, regardless of the reasons which motivate an operator to jump into local program origination, it is fast becoming a fact of life.

For many, entry into local origination is a slow and carefully planned process. The concept is foreign to many, the problems are new, and the cost can be substantial. In almost all cases, the CATV operator is picking up the entire operating tab and chalking it up to the increased cost of doing business. Very few have franchises which will permit local program sponsorship. So if the cost of local origination is to be borne by the cable operator, he must be very cost conscious; he must see that every piece of equipment is used to every possible advantage.

Local Origination Concepts

There are three types of local programs:

1. In-studio live programs.
2. Out-of-studio live programs.
3. Video-taped or filmed programs.

The first requires some type of studio space. The second requires that the cable plant be designed so that remote video and audio can be plugged in at various points in town for reverse transmission back to the head end where the signals can be introduced into the distribution system. The third method requires video tape (or film) equipment, a means to transport it, and necessary auxiliary equipment such as a camera and audio equipment.

Since none of these methods suggests any radically new ideas, particularly to a broadcaster, what is so new for the CATV operator? Cost, for one thing; ease of operation for another. For example, how about designing the studio so that one man can do all video switching and run the camera and audio equipment with ease? And, in a pinch, achieve the same degree of operational smoothness from the man who is actually *on camera*, i.e., where one man can pre-set his equipment, switch himself on the air, handle his program, and switch himself off the air. Or, how about a studio and control room so arranged that one man can handle the following:

1. Switch from time and weather video and background music to title slide video and program music opener;
 2. Switch video from title slide to program credits on title board;
 3. Switch video to live studio camera, fade program music out;
 4. Bring up studio audio from one of 3 microphones;
 5. Zoom camera in on one program participant, mix microphone inputs for proper levels;
 6. Alternate zoom and pan shots on studio camera throughout program;
 7. Fade down studio video at end of program, bring up title board video and program music;
 8. Switch to title board, hold for required period of time, fade video and audio out, and return to time and weather video and background audio.
- No trick? Add to the list that this same man can also videotape the entire program for later playback. Also add that the video and audio switching equipment can be "home-brew."

Studio Facilities

In most cases studio facilities have to be tailored to utilize available space in an existing building. In addition to actual production area, the studio fa-

WHAT IS THE PERFORMANCE RECORD OF OUR UNITIZED POWER SUPPLIES?

When Townsend Associates first incorporated unitized beam power supplies into their high power UHF klystron transmitters two and a half years ago, some of the industry's best engineers questioned the reliability of such a development. Much of the skepticism was a result of a lack of understanding of the design parameters of the power supplies. What are those design features and how have the supplies performed?

The unitized power supplies consist of a transformer, silicon diode rectifiers and a filter circuit all immersed in an oil filled tank similar to conventional transformers. They are weatherproof and can be mounted on a mat outside the building. AC is connected through a conduit to the primary and the high voltage DC output is connected to the transmitter through a second conduit.

The advantages of this type of high voltage DC supply are:

- #1. Power supply maintenance is virtually non-existent. For instance, the difficult task of cleaning air cooled rectifiers is eliminated.
- #2. The overall transmitter size is reduced.
- #3. Less high voltage wiring to the mat is required.
- #4. High voltage circuitry in the transmitter is greatly simplified.
- #5. No massive high voltage power vault is necessary. This eliminates danger to operating personnel.

All operational requirements then favor unitized power supplies provided that reliability surpasses that of conventional designs. Townsend Associates engineers assured this reliability by designing well below maximum ratings of all components. The silicon diodes are protected by surge suppression filters, and low temperature operation is assured through cooling of the oil by means of radiating fins. This method of cooling eliminates transformer overheating problems inherent in dry type power supplies.

The conservative design of this power supply has been carried over into its application as the klystron beam supply in Townsend Associates transmitters.

All Townsend Associates transmitters contain a thyatron protection device which disconnects the load in a period of time which is much shorter than the capability of the supply to operate into a short circuit. Yet another design feature prevents the supply from ever operating into a short circuit under any malfunction condition.

These design features have been severely tested with both DC short circuits and primary overvoltage surges without causing failures.

The final proof, of course, is in the field performance. There are now dozens of the supplies in operation and many have seen service for over two and a half years. **No failures** have occurred under any conditions.

Obviously, proper design and adequate protective circuits are the determining factors for reliability whether the unit be of conventional or progressive design.

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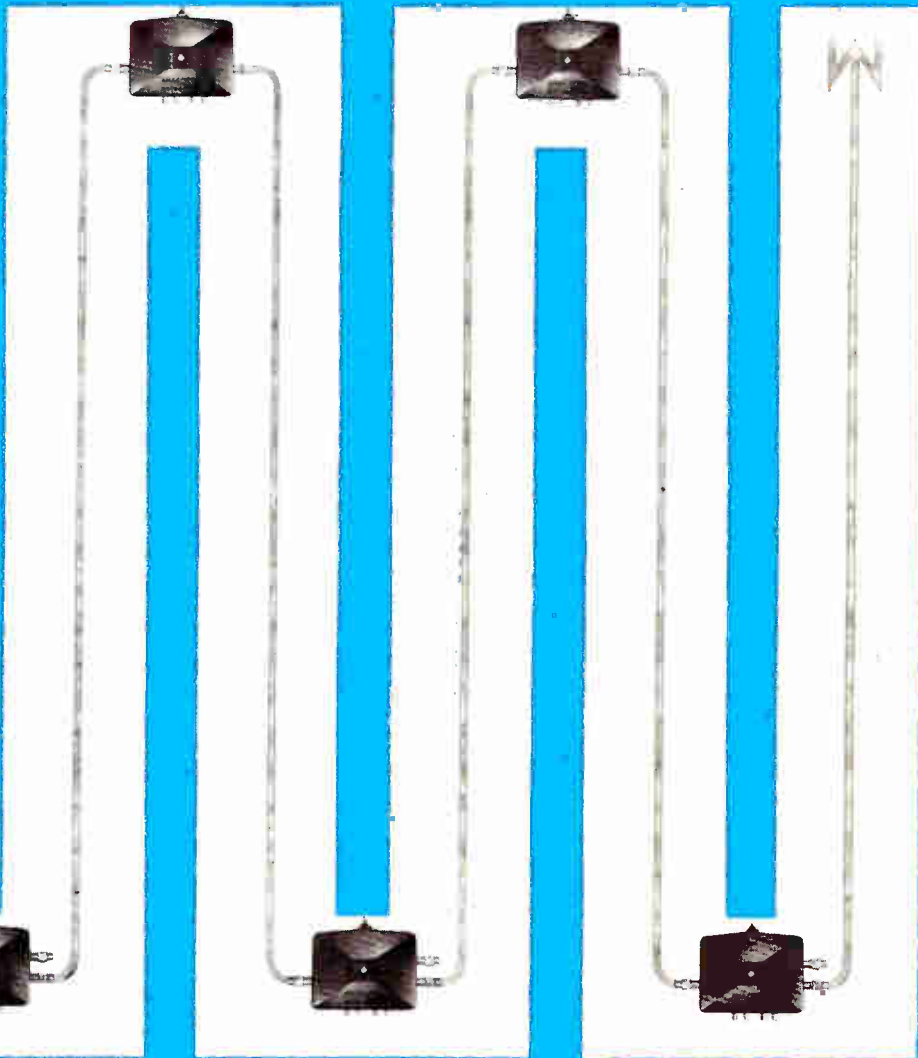


XDR™ Bridgeability

Bridgeability is a new CATV distribution concept. The two subsystem companions that make Bridgeability possible are the XDR Trunkline Bridger Amplifier and the XDR Distribution Amplifier.

SIX XDR DISTRIBUTION AMPLIFIERS PER OUTPUT

XDR
Distribution
Amplifiers



XDR™ Bridgeability sets new performance standard for CATV distribution

Bridgeability -- the number of subscribers that can be served from a single trunk bridging location.

Anaconda Astrodata introduces the concept of Bridgeability with the XDR (extended dynamic range) Amplifier line. The XDR Trunk Bridger, together with its subsystem companions, XDR Distribution Amplifiers, can serve up to 1104 subscribers from a single trunk location.

This new dimension of CATV performance is achieved only with the XDR Bridger Amplifier operating at a high output level feeding longer cascades of XDR Distribution Amplifiers -- up to six Distribution Amplifiers may be cascaded from each of the four Bridger Amplifier outputs. A single Bridger Amplifier output will serve 36 subscribers and six Distribution Amplifiers, each with a capability of 40 subscribers. Hence, 276 subscribers for each of four outputs, or 1104 total for each XDR Bridger Amplifier.

Even when maximum distribution cascading is not required, the new dimension of Bridgeability provides a high-level distribution system with improved picture quality, and makes it technically feasible to install high quality systems in large communities, or financially feasible to install profitable systems in smaller communities.

For additional information on the Bridgeability concept offered by the advanced XDR equipment, contact your Anaconda Astrodata representative.

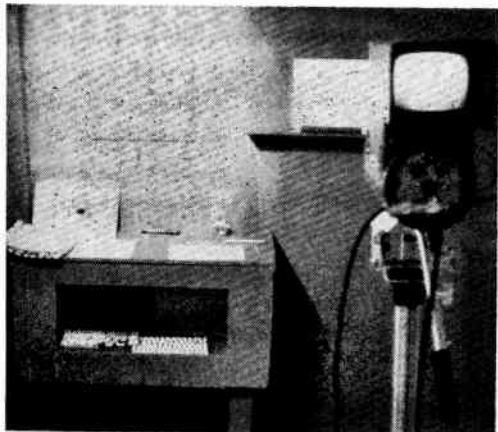
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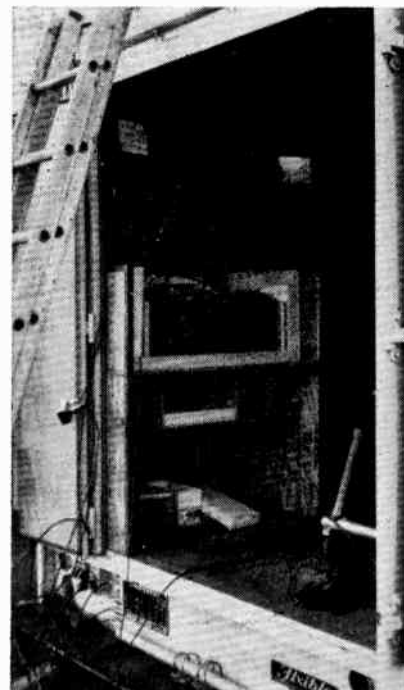
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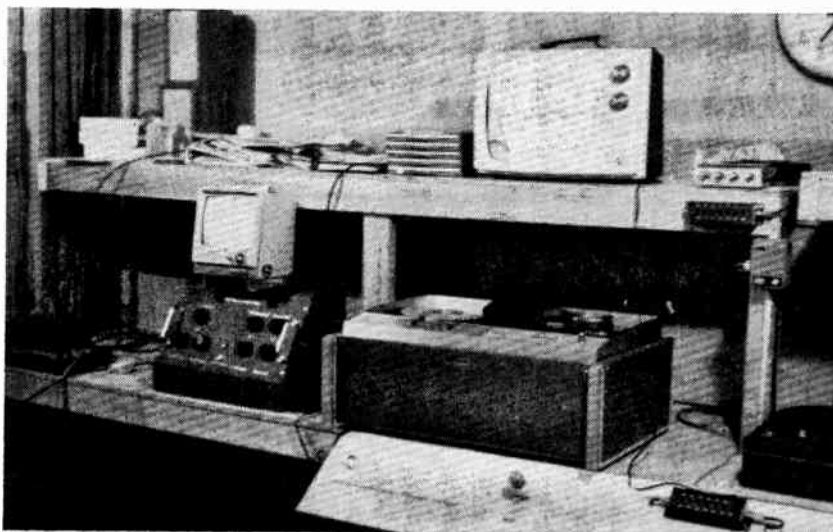
In a corner of Studio B, a G-E TE-20 camera focuses on title board. Artwork and program titles are produced here on camera 2 and integrated into complete program productions.



Inside the van the portable audio/video console selects camera and mic inputs for taping. The program producer commands production from here, communicating with cameramen via walkie-talkie.



Plugs and cables enter the van along the rear deck (lower left).



A corner of the engineering room houses most of the local origination production equipment. Preview monitor on top of audio/video switching and mixing console is seen at left; Ampex VTR 6000 is in foreground and audio turntable is at the right. Audio preamp equipment and a cable line monitor are on the top shelf.



Local origination studio viewed from camera position in Studio B. Directly behind newscaster is frosted glass rear-projection screen lit up with a slide projected from the engineering booth. Knotty cedar paneling fits into decor.



Cable Cast 11 mobile studio van was used during a high football telecast in Jackson, Cal. Standing on top is the operator for camera 1. Just visible to his left is camera 2, 30 feet above ground and 40 yards downfield in the boom chair. Three audio play-by-play announcers follow the action from their vantage point on top of the van.

Using the construction boom chair for local origination, camera 2 pans the field of play from a vantage point 30 feet above the bleachers.



cility should also include separate control room space. If local origination is to be integrated with a 24-hour time and weather service, if you will be employing two or more cameras, or if you will be using both live and videotaped programming, you will have switching, fading, and mixing requirements.

Fig. 1 shows the physical studio and control room layout developed by Valley-Vision in Placerville. The studio complex was designed to fit into existing space with walls on three sides (bottom, left, and right) as shown. The wall at the top of the drawing was added, as was the divider wall.

The studio itself is divided into two separate set areas. Studio A affords two on-camera shooting walls, on the right and at the bottom of the drawing. These walls have been paneled in local knotty cedar to provide a decor that seems "homey" to viewers. Studio B has very dark blue bare walls and is lighted with overhead 300-watt spotlights. On camera, individuals seem to be suspended in space with no visible background — only black. This provides an effective contrast to our floor and ceiling floodlighted knotty cedar studio.

In the top left of the drawing, along the front wall, are studio operating aids, including camera and over-the-cable monitors, sweep second-hand clock, flasher warning lights for cueing program participants, and a title board for setting up program titles and credits. Forms for mounting display cards are also grouped here so that artwork can be integrated with titles and live studio video, to produce a reasonably professional program.

Because the studio has a low ceiling (it was already there and lifting it would have been expensive), overhead boom microphones were out (room echo is high). Thus, our audio pickup system was designed around throat and hand-held dynamic microphones. Two shielded audio lines go from the studio complex into the control room. However, an in-studio microphone preamplifier allows the camera operator to pre-mix up to 3 mics on a single studio-to-control-room line. Two camera-video lines also run from the studio to the control room. A video return line feeds a monitor that can be seen from any point in either studio,

and a fourth RF return line lets those in the studio see what is actually going out on the cable.

Because of the close-knit operation, and the fact that more often than not the control room engineer starts the program and then doubles as cameraman, an audio talk-back system was ruled out. Cable program participants are warned through a simple flashing light system that time is coming up or running out.

One unique professional flavor was added to the studio A design for less than a \$10 investment. A piece of frosted glass 36 x 24" was mounted in the paneled wall behind the studio prop desk. A Kodak projector, mounted in the control room, projects onto the frosted glass from the rear side. A catalog of 35mm slides has been accumulated and are used as news illustrations. Using our titling kit and a piece of clear glass, slides for sustaining programs have also been made up.

In practice, the cameraman can open a show, video-wise, by having a camera zoomed in on the frosted glass projection screen. As the camera zooms out, the screen drops away in the upper right and the studio prop desk and the program participants come into view (see Fig. 2). A control cable, to remotely switch slides, runs from the control room into Studio A. The on-cameraman can then change slides remotely. In operation, the one-man crew runs the camera while the on-air man may be doing an evening newscast. The slides, sequentially pre-programmed, are changed by the on-cameraman with a switch mounted out of camera view. He can change slides to coincide with news items. The cameraman simply runs the zoom in or out to feature either the slide or the newscaster.

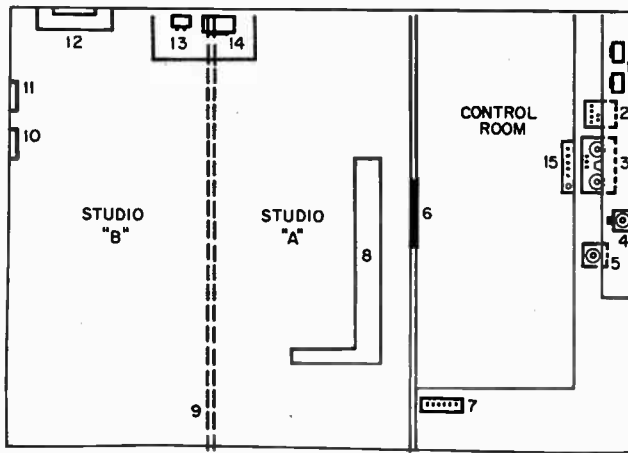
A separate set of control wires, terminating into a small minibox with a series of 5 toggle switches, is also mounted just above the on-air man's left knee. From his on-air position he can, out of camera view, switch himself off camera (by switching to a standby camera preset on a title board for program closing, for example), switch on program closing music (or opening music in the case of a program start), and finally switch from the audio program back to time and weather and audio-video all by himself. Thus it is possible, with

the small control panel by his knee and with pre-set cameras and audio, for an individual to sit down, start a program, switch to himself on-camera, deliver his program, switch back to the program credits, and finally back to the time and weather presentation, all without anyone else in the building. Naturally, you can't do fancy zoom work or mixing in a situation such as this, but in a pinch one man can run the entire show!

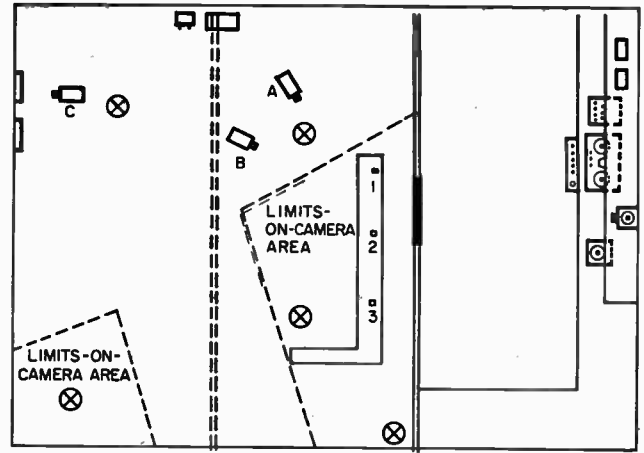
How you go about wiring your own studio and engineering facility will, of course, depend upon the functions you plan to utilize. In our case, we use the studio for live-to-cable transmissions, live-to-video tape recording, and combinations where we show the program live on the Placerville system and simultaneously video-tape it for later showing on other Valley-Vision systems.

Obviously, then, there has to be a system of selecting video and audio signals, mixing audio signals, fading audio and video inputs and outputs, and simultaneous drives for the local channel and the video tape machine. These functions can be accomplished in a multitude of ways. The video can be switched with coaxial relays, or it can be pot-faded. The audio can be switched with inexpensive relays, or switches, or it too can be pot-controlled. Valley-Vision determined that for our budget, commercially available studio switching equipment was just a little rich. But we still liked the functions and professional appearance of this type of equipment. So we compromised and designed our own portable control console, including 3 video channels and 4 audio channels. The unit incorporates 3 linear video amplifiers working into a single (split) video output channel. A cathode follower video amplifier stage is pot-controlled so that the match remains close the desirable 75 ohms. With this unit, any one of 3 video channels can be brought up to level, then faded back down to be replaced by a second or third video input signal. The unit has a split video output, each delivering 3 volts peak-to-peak. In this way we have adequate drive for several hundred feet of cable in a remote application, or we can feed our

*See illustrations on overleaf
Text continued on page 44*

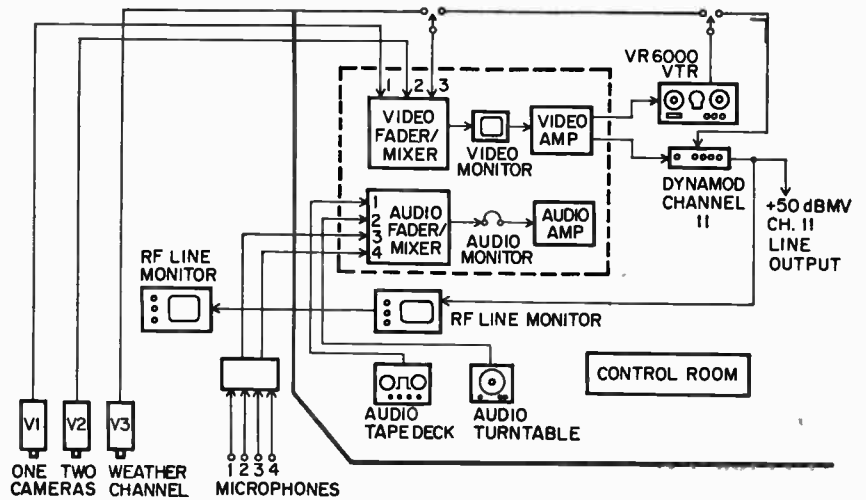


Control room and studio layout at Valley-Vision, Placerville. 1. Line monitor and video console monitor. 2. Audio/video console. 3. Ampex VTR 6000. 4. Kodak Carousel studio screen projector. 5. Turntable. 6. Frosted-glass screen. 7. Dyna-mod Channel 11 transmitter. 8. Studio desk. 9. Partitioning curtain. 10. Art-work title board at camera lens level. 11. Light box title board. 12. Art and title board work bench. 13. Audio preamplifier and mixer for studio mic sources. 14. Studio monitor. 15. Studio lighting control panel.



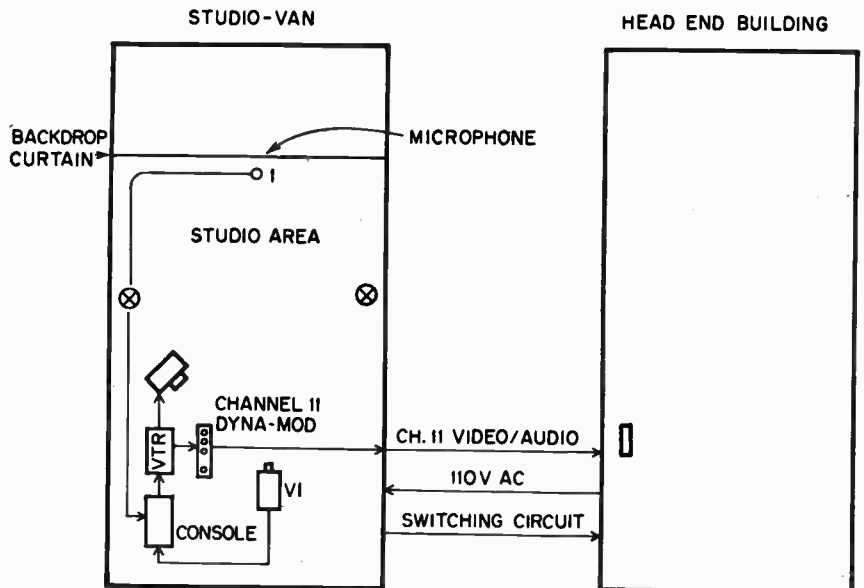
Typical setup positions for studio productions. (X) indicates light sources.

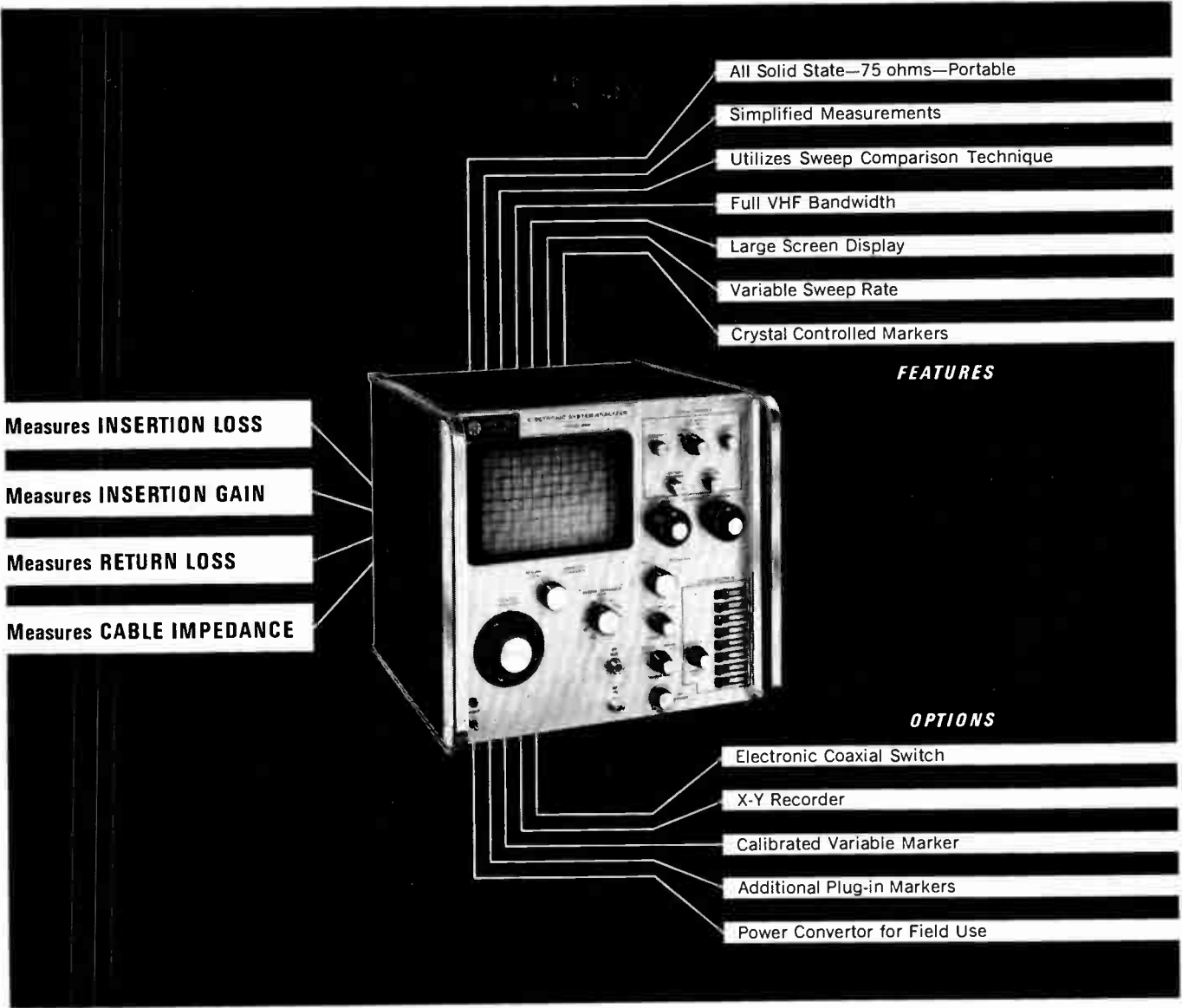
Video and audio circuit diagram.



STUDIO'S A-B

Studio van interconnects to head-end equipment by three cables. One carries composite Channel 11 video/audio; another cable feeds AC power from the head end; the third cable operates switches which transfer the originated program onto the cable.



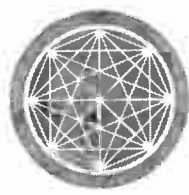


First Complete CATV System Analyzer

Electronic System Analyzer Model 990*
 Anaconda Astrodata's complete CATV System Analyzer, the first of its kind, permits sweep measurement of system parameters with a high degree of accuracy. By combining all required sweep set-up instruments into a solid state 75 ohm portable testing facility, the System Analyzer eliminates errors caused by the use of external jumper cables and impedance matching devices. Measurements are made simultaneously by using sweep comparison techniques.

A variable RF bridge permits cable return loss caused by structural discontinuities to be measured directly by the analyzer against the average cable impedance. By incorporating marked advances in sweep frequency generator technology in an accurate portable testing facility, Anaconda Astrodata again demonstrates why it is the symbol of progress in the CATV industry. Send for details of our advanced test equipment for the finest in CATV. *Patent Applied For

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VTR directly from one output and the cable line from the second.

The audio mixer is straightforward, mixing up to 4 audio inputs. One input is low impedance, the other 3 are high impedance (to match our other equipment, including our tape deck and turntable). Two 600-ohm balanced outputs terminate the audio side of the console, one to drive the VTR audio input, the second to drive the cable input on our Dynair TX4-A modulator. Dow-Key 75-ohm coaxial relays complete the video switching circuits.

\$99.00 portable black-and-white sets have been modified to accept the 75-ohm video (fed directly into the video amplifier stage) for line monitoring during multiple camera productions. In this way the console operator is able to pre-monitor the two camera inputs and select the one desired for actual taping or on-cable transmission.

Chances are your studio will not be located at the head-end site, remote and inaccessible as head-end sites normally are. It will be necessary, then, to interconnect the studio with the head end. Aluminum trunk cable is the most likely transmission medium; however, chances are that you cannot utilize your own existing "downhill trunk" in reverse for this function. With line-powered solid-state systems, the problem of extracting a subchannel carrier (your feedback loop from office-studio to head end) at repeater amplifier stations along the way, and getting around the AC on the line, is difficult at best. For this reason, systems employing a feedback loop from office-studio to antenna site usually install a separate run of .412, .500 or .750 aluminum cable.

Remote Van-Studio

The remote equipment had to do triple duty, serving 5 cable systems at one time. First of all, the unit is used to video-tape football games and other functions in the towns we serve. These requirements necessitate that the van carry a VTR, one or two cameras, audio equipment, and a complement of interconnecting cables.

Secondly, the unit had to be able to pull up to one of several cable plug-in locations in town, where the feedback (studio to head end) cable passed, to allow

Equipment Functions

Valley-Vision's home-made console was designed to provide integration of all video and audio sources. While such a unit was not an absolute necessity, perhaps, it affords a more professional operation and permits more versatile application of studio equipment. The unit was designed to incorporate the following functions:

- Any one of 4 video sources can be selected and switched or pot-faded.
- Any one of 4 video sources can be "previewed" on the Sony 9" monitor. In this way the operator can preview a second, third, or fourth video source ahead of switching or fading.
- Program titles from one video source can be superimposed over another video source.
- Up to 4 audio sources, including a tape deck, turntable and 4 microphones can be selected or mixed.
- There are two 3-volt peak-to-peak video outputs, one to drive the VTR, the second to drive the modulator.
- There are two 600-ohm audio outputs to drive the VTR and the modulator.

live remote originations. Included are City Hall (for council meetings), the city playground (for summer sporting events), and parade locations. The function of the remote van here would be identical to video taping, except, of course, the output (composite video and audio) of the van would feed the cable, not the VTR. Thirdly, the van is also used for VTR playback. In the 4 systems outside Placerville, prerecorded programs are placed on the Ampex 6000 VTR, and the van driven to the head end where the equipment is interconnected by cables to the head-end for direct playback on the system.

Valley-Vision local originations are carried on cable Channel 11 in all systems. The local origination has been dubbed "Cable Cast 11," and is so promoted in all towns served. A Dynair Channel 11 TX4-A modulator is permanently mounted in the van. This provides combined video and audio output for either live, remote, or tape playback to drive the Channel 11 equipment in the head end.

The van is a standard 14' body, with 78" wide opening and 72" ceiling, mounted on a Dodge P600 chassis. Operating equipment is mounted in specially constructed bins. The bins have been lined with 4" foam rubber padding to insure that even our rough mountain roads do not abuse the delicate equipment. During transit the camera dolly is securely held with tie-down hooks, but not knocked down. The camera is dismounted from the dolly and placed in its own form fitting cushion-padded bin, as is the zoom lens. Monitors, audio equipment, etc., are likewise stored

where they cannot roll or be knocked about.

A removable platform mounts on top of the rear-end of the truck for elevated camera work. Another camera may be moved around independent of the van. The operating console is mounted on a platform over the VTR unit, acting as a cover. All controls are mounted along an area 24" wide by 6" deep by 12" high.

The van also doubles as a studio -on -wheels. A curtain, drawn across the front end of the van, partitions off the driving compartment from the rest of the van. Two or three people can then sit down comfortably in front of the curtain and carry on an on-camera conversation, televised with a camera mounted in the rear. Even in inclement weather, a program can be originated live or taped from inside the van itself. This eliminates setup for lighting, audio, and other problems which arise when doing a program from some remote spot.

The van serves double duty when we pull into the head end at Sutter Creek, for example, with a video-tape presentation. By having the local mayor and a councilman meet us at the head-end site, we do the discussion program *live*, right from the van. A plug-in telephone at the head-end site allows viewers to call in questions to local dignitaries; thus, the entire cable audience has the opportunity to participate in these weekly programs. When the program is over, we run the video-tape show, and then in 5 minutes unplug our cords from the head end and drive off into the night!

Our CATV amplifier tubes: 1,000,000 hours MTBF



We upgraded our 6CY5 sharp cutoff tetrode and our two medium-mu twin triodes—the 6BQ7A and the 6DJ8—to Sylvania's premium Gold Brand standards. These three tubes can now provide 1,000,000 hours MTBF.

These Sylvania Gold Brand tubes are remarkably *uniform*. Because they're stringently tested to extremely narrow parameters. This protects you against impedance mismatches that cause "ghosting" on viewing screens. Solves the problem of low gain—with accompanying picture instability and "snow." Gold Brand tubes give high gain bandwidth—for best signal transmission along the cable.

They also cut down the effects of interface impedance as tubes age. Far less worry about troublesome frequency, gain or bandwidth adjustments. Why? Powder metallurgy is a prime reason. By pressing parts from powdered met-

als, we can control properties exactly.

We use our gold intermetallic alloy skin for the grids of these tubes. This eliminates such problems as flaking and peeling.

Designated the GB-6CY5, GB-6BQ7A and GB-6DJ8, these Sylvania CATV tubes retain their stability at extreme temperatures. They stand up at -40° to 435° F.

If you're concerned about maximum reliability and long life, go for Sylvania. And get a million-hour payoff. Sylvania Electronic Tube Division, Electronic Components Group, Seneca Falls, N.Y. 13148.

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GENERAL TELEPHONE & ELECTRONICS **GT&E**

Circle 24 on Reader Service Card

BROADCAST EQUIPMENT

Signal Generator

McMartin, Inc., Omaha, Nebr., has introduced an FM/SCA signal generator which provides 7 frequencies (455 kc to 10.8 mc)



for main and subchannel IF alignment. The TX-100 has been redesigned to include two controls—one for frequency and one for level. Standard equipment includes a 3-ft cable and test clips. Price is \$79.95.

Circle 69 on Reader Service Card

Recording Volumax

An automatic peak controller, designed to solve high frequency overloading in disc recording, has been introduced by CBS Labs., Stamford, Conn. Model 420



is said to permit higher recording levels without distortion. Time-varying functions are used to control low and high frequency amplitudes separately, followed by instantaneous final limiting.

Circle 66 on Reader Service Card

Helical Scan Video Tape

A helical scan video tape line has been announced by the Magnetic Products Div., 3M Co. St. Paul, Minn. Scotch Brand 350 and 351 tapes, additions to Scotch Brand line, are said to offer low abrasive qualities, low noise, minimum dropout, and a high conductivity coating.

Circle 68 on Reader Service Card

Tape Playback Amplifier

Lang Electronics Inc., N.Y.C. is offering a tape playback ampli-

fier for Ampex machines which raises head signal to line level for separate FM stereo programming. The Model LTP features separate high and low frequency stabilization controls to permit tape head output to be adjusted to NAB curve. The 5-stage solid-state amplifier is capable of delivering +24 dbm output with less than 1% harmonic distortion. Units may be ganged for up to 10-channel operation.

Circle 79 on Reader Service Card

TV Camera

Cohu Electronics, Inc., San Diego, has announced a self-contained TV camera with video originating



and processing circuits. Optional video bandwidths (10 through 20 mc) and a selection of scanning patterns provided by plug-in sync generators (525 through 945 lines) are offered. The 3200 Series camera is available in a variety of configurations. One model is designed to televise monochrome positive or negative film or slides; a studio camera model features a removable viewfinder module with tally lights. Base price (less lens and vidicon) is \$2,295.

Circle 72 on Reader Service Card

FCC Rules Book

TAB Books, Thurmont, Md., is offering a collection of the FCC Rules columns which have appeared in BM/E. Titled "Interpreting the FCC Rules and Regulations," the newly published book contains sections on the Fairness Doctrine, the FCC's position on programming and logging, fraudulent billing practices, AM-FM

nonduplication, requirements for maintaining a public file, the Commission's position on lotteries, libel and slander, multiple ownership philosophy, etc. Price for single copies is \$5.95.

Circle 65 on Reader Service Card

New Tone Arm

Gray Research and Development Company Div. has developed a 12" viscous damped trans-



scription arm designed expressly for the professional broadcasting field. Designated as the 206-S, the "baby" arm broadens the Gray broadcast equipment line, which includes the 208-S 16" viscous damped tone arm, 212-TN 12" tone arm, 602-C broadcast equalizer, and the "Telop" and "Telojector", which are used in TV broadcasting. The company states that the new 12" arm was prompted by numerous requests. One of its desirable features is the complete interchangeability of cartridge slides with the existing 208-S arms.

Circle 73 on Reader Service Card

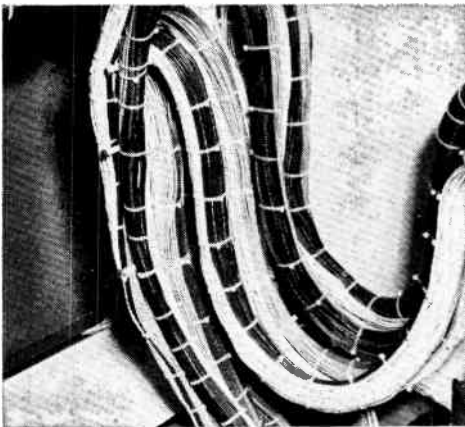
Stereo Cartridges

Stanton Magnetics, Inc., Plainview, N.Y. has introduced a series



of broadcast stereo cartridges, the 500 Series with a .7 mil stylus, Model 500A, has a tracking force

**New
Techniques
for
Communication
Wiring —
the
TY-RAP®
SYSTEM**



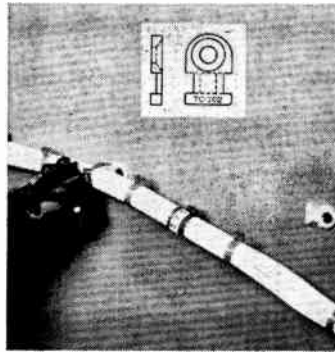
**POINT-TO-POINT WIRE
BUNDLING SIMPLIFIED**

New self-locking TY-RAP ties and manual tools are recommended for field tying and wherever you run wires from one point to another. The photo above is a communications installation which utilizes self-locking ties as well as self-locking clamps and identifying straps.

TY-RAP is a registered trademark of The Thomas & Betts Co. assigned to the line of cable ties, clamps, straps and accessories.



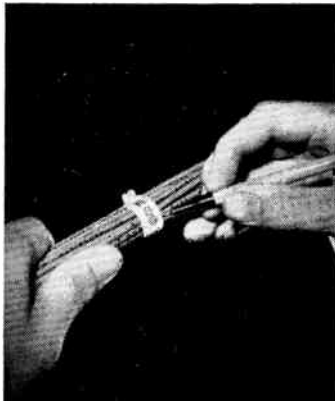
**PRE-MOUNTABLE MINIATURE CLAMP PRACTICALLY
HIDDEN FROM VIEW**



High density electronic packaging and appearance problems are solved with the TY-RAP miniature mount. Harnesses and cables can be tied to these pre-mountable bases with standard TY-RAP ties. The mounts are available in various sizes and accommodate different cable bundle diameters, holding strength up to 50 lbs. Available with screw holes, the mount is easily fastened to chassis. Clamping Section of T&B catalog T66 illustrates over 30 catalog numbers with complete details.



NEW STRAPS IDENTIFY AND TIE



Harnesses, breakouts, cabling, tubes and lab set-ups are easily and quickly tied and identified with TY-RAP Identification Straps. The identification surface is easily marked with pencil, ball point pen, marking pens or heat stamped. Identified wire bundles and harnesses aid trouble-shooting and wire reworking. Since the identifying strap is also a tie, it will not loosen under vibration or stress as can conventional identifying plates. Single and continuous length identification plates are also described in the TY-RAP Identification Section of the 40-page brochure.



NEW SNAP-IN RETAINING CLAMP



Ideal for supporting long runs of cable in point-to-point wiring. This clamp, TC70 series is available in 5 sizes to accommodate bundles from 1/4" to 1 1/2" in diameter. Wire bundles are quickly snapped into place after the clamps have been mounted in position. These clamps are not only recommended for permanent wiring, but also as a handy device for temporary wiring and bread boarding.



NEW KNOCK-IN MINIATURE MOUNT

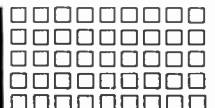


Speed and flexibility are the major benefits of these new knock-in mounting bases. Quick installations are completed simply by knocking in the projecting pin which locks the mount in position. Production flexibility can be achieved by pre-mounting these bases while the harnesses or cable bundles are being fabricated. The clamping section of the new catalog illustrates several types of pre-mountable devices.

SOLD COAST-TO-COAST THROUGH AUTHORIZED T&B DISTRIBUTORS
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In Canada, Thomas & Betts Ltd. • Iberville, P.Q.



THOMAS & BETTS



Circle 25 on Reader Service Card

**if you haven't seen these
all over the broadcast field...**



**it's just because you
haven't been looking!**

Rek-O-Kut has been a household word in the broadcast and recording business for a quarter century. You find them in broadcast operations wherever you go. That's because a Rek-O-Kut is built to perform . . . and maintain peak performance for years and years.

The Model B-12H and B12GH are in use in hundreds of radio stations. We send them a few parts once in a while, but you don't encounter problems with either of these models. Check these specifications. You'll discover you get measurably more from a Rek-O-Kut.

specifications: SPEEDS: 33 $\frac{1}{3}$ rpm, 45 rpm, 78 rpm NOISE LEVEL: — 59 db below average recording level (B-12GH: — 57 db) WOW AND FLUTTER: 0.085% RMS. (B-12GH: 0.09% RMS) MOTOR: B-12H: custom-built computer type heavy-duty hysteresis synchronous motor. B-12GH: high efficiency hysteresis synchronous motor, life-time lubrication 45 RPM HUB: removable PILOT LIGHT: neon light acts as "on/off" indicator FINISH: grey and two-tone aluminum DECK DIMENSIONS: 14" x 15 $\frac{1}{16}$ " Minimum Dimensions: (for cabinet installation) B-12H: 17 $\frac{3}{4}$ " wide x 16" deep x 3" above deck x 6 $\frac{1}{4}$ " below deck. B-12GH: same as B-12H, but 4 $\frac{3}{4}$ " below deck.

rek-o-kut by koss electronics inc.

2227 N. 31st Street ■ Milwaukee, Wisconsin 53208
KOSS-IMPETUS ■ 2 Via Berna Lugano, Switzerland

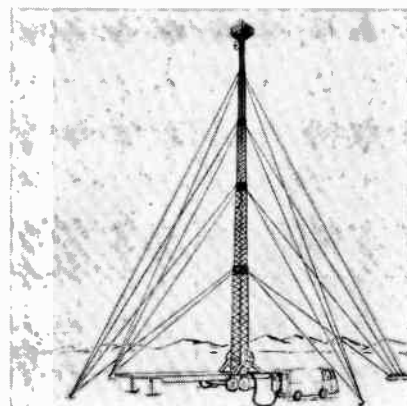
Circle 26 on Reader Service Card

from 2 to 5 grams; Model 500AA has a .5 mil conical stylus with tracking force of $\frac{3}{4}$ to 3 grams; Model 500E has an elliptical stylus with tracking force of 2 to 5 grams. Output is 8mv/cm; frequency response is 20 cps to 20 kc (± 2 db); channel separation is 35 db; mounting dimensions are 7/16 to $\frac{1}{2}$ " centers. Price of 500A is \$25; 500AA is \$30, 500E is \$35.

Circle 78 on Reader Service Card

Mobile Tower

A mobile aluminum tower has been developed by Andrews Towers, Inc., Dallas, Tex. The tower can be adjusted to exact permanent tower height to check preliminary path surveys or for remote broadcast applications.



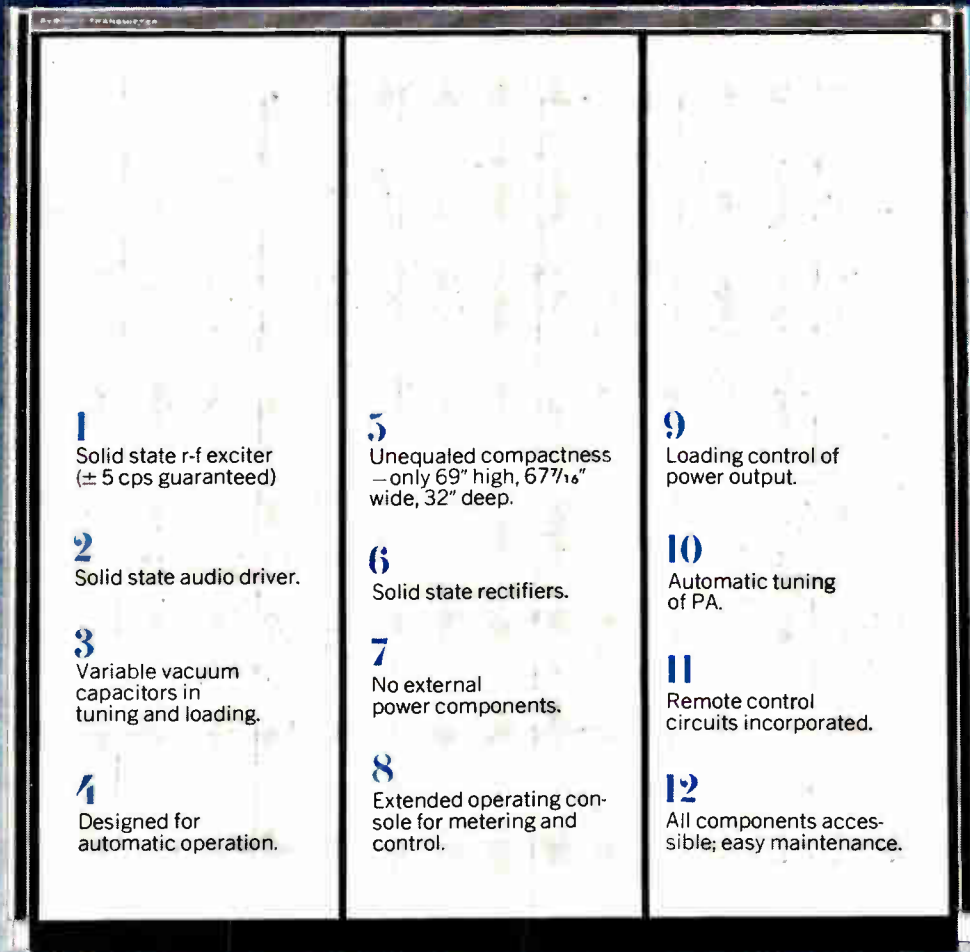
Sections have bellcrank self-latching catches which engage on raising and disengage on lowering. Guys with earth type expansion anchors pull into place as each section is raised; four men can raise the tower to a maximum height of 300' in 4 hours. Features include integrated climbing steps, erection either on or off the trailer and an AC generator. The trailer carries its own erection equipment and has storage space for transmission lines, antennas, etc.

Circle 63 on Reader Service Card

Hi Power CATV Amplifier

Jacobsen Electronics, Rapid City, S. Dak. has introduced an amplifier said to be capable of feeding CATV systems in cities of up to 6,000 with no other amplifiers of any type in the entire system. Up to 4w per channel output drives signal on low-loss radiation-proof aluminum cable to furnish adequate signal levels for several miles. Since one tube per channel is used, any one failure affects only one channel at a time. With microwave or anten-

If a 5/10 KW AM transmitter has all these features



1

Solid state r-f exciter
(± 5 cps guaranteed)

2

Solid state audio driver.

3

Variable vacuum capacitors in tuning and loading.

4

Designed for automatic operation.

5

Unequaled compactness
— only 69" high, 67 $\frac{7}{16}$ " wide, 32" deep.

6

Solid state rectifiers.

7

No external power components.

8

Extended operating console for metering and control.

9

Loading control of power output.

10

Automatic tuning of PA.

11

Remote control circuits incorporated.

12

All components accessible; easy maintenance.

IT HAS TO BE COLLINS

(Only Collins' 820E/F has all of them)

30-DAY DELIVERY

For Details, Contact Your Nearest Collins Sales Engineer or Broadcast Communication Division, Collins Radio Company, Dallas, Texas, Phone (214) AD 5-9511.

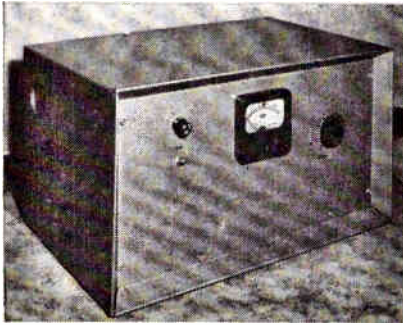
COMMUNICATION / COMPUTATION / CONTROL



COLLINS RADIO COMPANY / DALLAS, TEXAS • CEDAR RAPIDS, IOWA • NEWPORT BEACH, CALIFORNIA • TORONTO, ONTARIO
Bangkok • Beirut • Frankfurt • Hong Kong • Kuala Lumpur • Los Angeles • London • Melbourne • Mexico City • New York • Paris • Rome • Washington • Wellington

Circle 27 on Reader Service Card

na run feeding the center of town, a small city system can be operated with all-electronic



equipment in the central office. Price of the low-band HP-6

is \$200 per channel; high-band models are \$250 per channel, depending on whether or not all 12 channels, plus FM, are required, and required output.

Circle 82 on Reader Service Card

Multiplex Relay Receiver

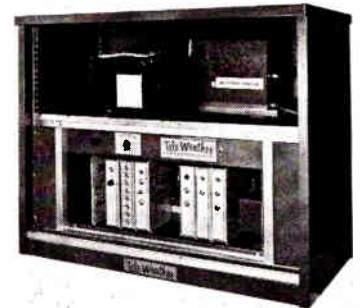
Browning Labs, Inc., Laconia, N.H. has developed a multiplex-to-telephone line relay receiver designed to feed background music to telephone lines. A plug-in low impedance output transformer allows direct hookup to phone lines. The SCA receiver has stereo rejection filtering and tamper-proof

rear-mounted controls. Price is \$119.50.

Circle 77 on Reader Service Card

Weather/Time Display

Electronic Systems Development, Inc., Seattle, Wash. has introduced a new economy model non-scanning video weather/time system. Model TW-2 TeleWeather

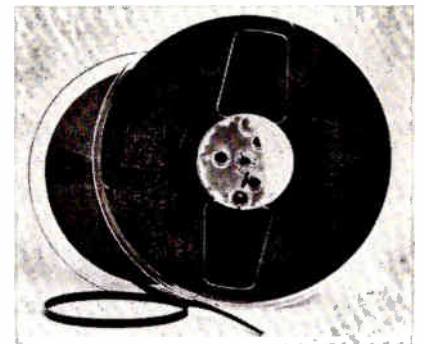


solid-state unit offers 5 weather functions, time, plus 3 message positions. System features pop-on, pop-off dissolve action between display functions, single unit weather head package, and fluorescent-neon lighting. Camera may be removed instantly for studio use. Price is \$4,185.

Circle 62 on Reader Service Card

8-Plus Tape Reel

Magnecord Div., Telex Corp., Tulsa, Okla. is offering an 8" plus reel, said to provide 50%



more storage capacity than a standard 7" reel. The reel holds enough tape for a playing time of 1½ hours at 7½ ips or 2¼ hours at 3¾ ips. Price is \$1.20.

Circle 61 on Reader Service Card

Leveling Amplifier

An electro-optical attenuator system in the Model LA-2 leveling amplifier, developed by Teletronix Engineering Co., S. Pasadena, Cal., is said to be capable of a gain reduction of 40 db with no increase in harmonic distortion. The attenuator is located ahead of the first amplifier stage to prevent large level variations from being applied to the input

Why is Belden specified by most broadcast engineers?

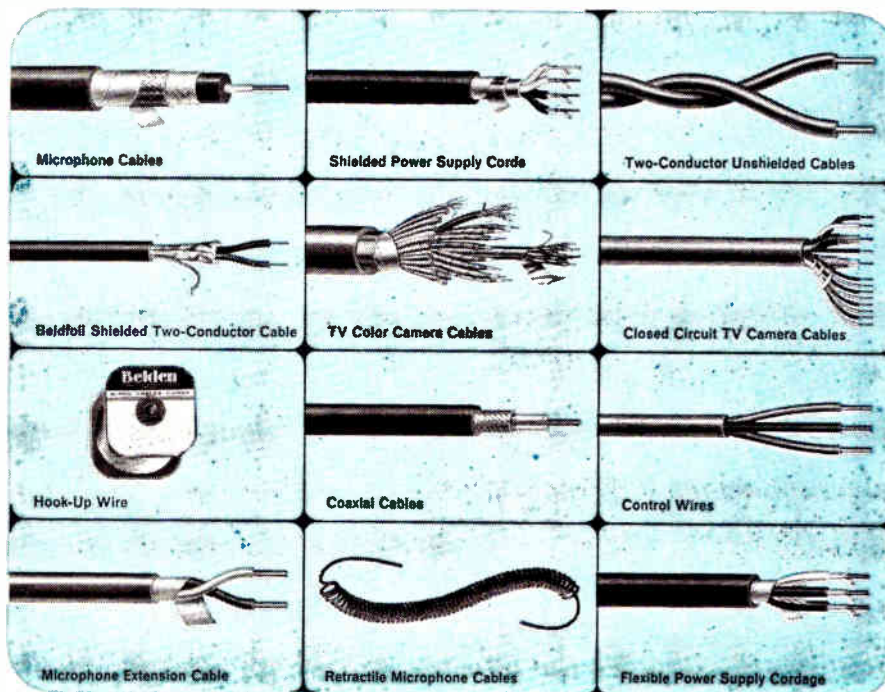
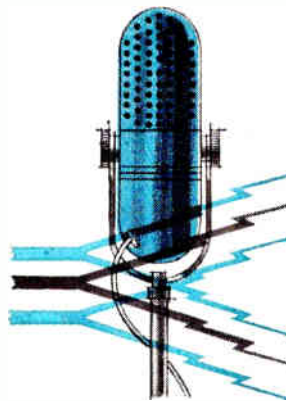
Belden designs and manufactures a complete line of audio, camera, and control cables to meet every TV and radio broadcasting, recording studio, and remote control need.

Many Belden Audio and Broadcast Cables feature Beldfoil* shielding. This superior cable shield provides 100% protection against crosstalk... increases electrical reliability... reduces cable diameter and weight... is easier to terminate... usually lower in cost.

Here is just a part of this complete line, available from stock. Ask your Belden Electronics Distributor for complete information. Request also a copy of the latest Belden Electronics Catalog.

*Belden U.S. Pat. 3,032,604

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8-5-6

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Belden electronic wire and cable

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Circle 28 on Reader Service Card

extremely small



only 1¾" high

extremely reliable
TV SYNC GENERATOR

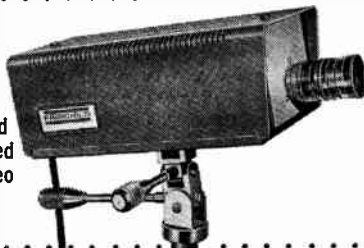
Transistorized, binary-count Fairchild FR-2 TV Sync Generator gives complete U.S. broadcast synchronizing signal waveform with equalization pulses and vertical serrations conforming to EIA RS-170 standards.

Exclusive Fairchild Micrologic® circuitry gives you extremely high reliability in all

broadcast applications. Only 1¾" high . . . dual unit (shown above) can be mounted on a single rack panel with optional manual changeover switch. For complete details, including information on cameras, monitors and other TV equipment, write Fairchild today!

• **TC-175**

- Simple, reliable TV camera. Low-priced, yet with 700 line resolution, regulated power supply, printed board circuitry. Video and RF Outputs.



• **TCS-950**

- Gives extremely sharp pictures with over 1,000 line horizontal resolution.
- 2¾" head. Off-the-shelf price. All solid state. May be externally driven, or comes with integral EIA Sync Generator.



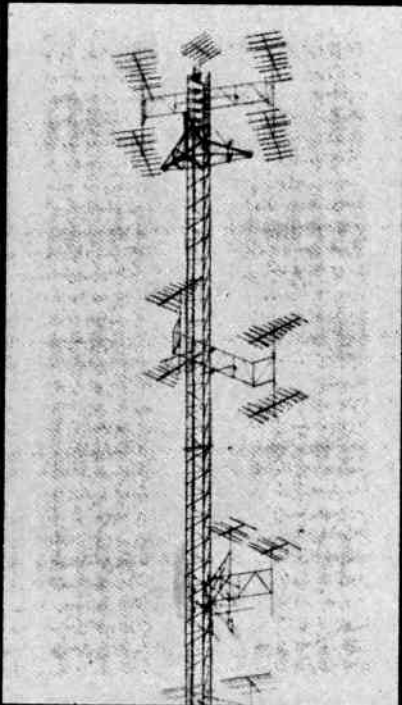
FAIRCHILD

SPACE AND DEFENSE SYSTEMS

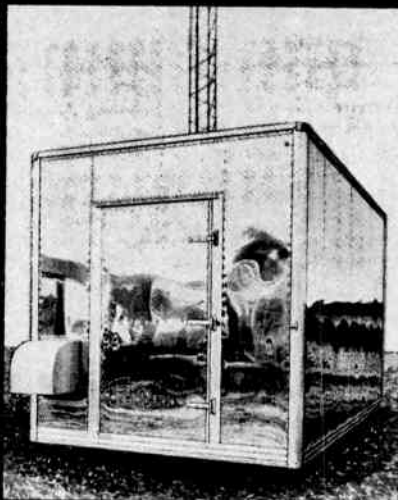
A DIVISION OF FAIRCHILD CAMERA AND INSTRUMENT CORPORATION
30 PARK PLACE, PARAMUS, NEW JERSEY 07652
TEL. 201-262-7000 / TWX 510-230-6610

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THE PACEMAKERS



**CATV-UHF-AM-FM
MICROWAVE
TOWERS**



**PRE-ASSEMBLED
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Self-contained with wiring and ventilation installed prior to shipment.

IMMEDIATE DELIVERY
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Circle 30 on Reader Service Card

stages. Instantaneous attack and a tapered release time eliminates audible "working" and "thumping," and the optical attenuators of left and right channel units may be connected in tandem to preserve original stereo channel balance. Response is within 0.1 db, 50 to 15,000 cps; noise is 70 db below +10 db output level; release time is 0.06 sec. for 50% release, 0.5 to 5 sec. for complete release. The unit requires 5¼" of rack space and is priced at \$312.50.

Circle 84 on Reader Service Card

Digital Voltmeter

A digital voltmeter with an accuracy of 0.1% (plus 1 digit) and 5 manually selected ranges from 100mv full scale to 1000v full scale DC has been developed by Hewlett-Packard, Palo Alto, Cal. Model 3420A employs a staircase comparator which compares

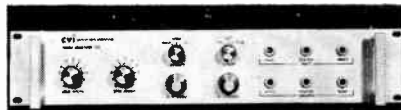


the input voltage to an internally-generated voltage derived from a zener reference diode and precision resistors. Display is retained until the next measurement cycle is completed; it will complete two readings per second on a 3-digit readout (a 4th permits over-range measurements up to 60%). With low input terminal unstrapped from ground, it can measure up to 500v DC removed from ground. Input impedance is 10 meg. on all ranges. Price is \$595, or with optional ratio measurement device, \$675.

Circle 76 on Reader Service Card

Video Analyzer

A video analyzer introduced by Colorado Video, Inc., Boulder, Colo., utilizes the TV camera as a scientific instrument. Similar in



principle to the sampling oscilloscope, the Model 302 allows chart recording of video waveforms and generates a data display on conventional TV moni-

tors. Three scanning modes and one static mode are offered. Several functions may be remote controlled. Price is \$1950.

Circle 71 on Reader Service Card

CATV Non-Dup Switcher

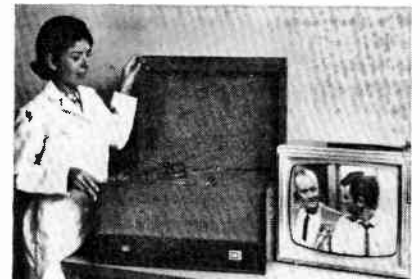


Viking Industries, Hoboken, N.J., has introduced a 6-channel non-duplication switcher which may be programmed to initiate a switching junction every minute during a 7-day period (a total of 60,486 commands) using a depressed-pin concept. The 5967 will switch either B+ or RF coax circuits (RF switching is standard) and may be wall or rack mounted. Price is \$1800.

Circle 85 on Reader Service Card

TV Disc Recorder

Data Disc, Inc., Palo Alto, Cal. has developed a TV disc recorder said to be capable of showing a still picture for thousands of hours without affecting its quality. The F Model stores up



to 20 pictures, each on a concentric track. Each track is continuously scanned by separate magnetic head. The Model M, with single movable head, uses interchangeable discs which store 262 pictures, 131 on each side. Model F is \$5193; Model M is \$4953.

Circle 80 on Reader Service Card

Frequency Standard

A time mark generator designed for use as a frequency standard is being marketed by Dayton



Electronic Products Co., Dayton, O. The TMG-1 offers three pre-selected frequencies (standard is 455 kc, 10.7 mc, and 30 mc), with a 0.005% tolerance or an optional 0.0025% tolerance. A BNC inter-

Ten reasons why Altec shouldn't sell its new condenser microphone systems for \$198⁰⁰...



1. Your choice: AC or DC, Cardioid or Omnidirectional—Order the system you need now and expand by adding the appropriate extra mike or supply at any later time. Get any combination by simply switching microphones and/or power supplies. Model designations: M49—AC/cardioid; M50—DC/cardioid; M51—AC/omnidirectional; M52—DC/omnidirectional.

2. Frequency response from 20 to 20,000 Hz—This is with an essentially flat curve. Output level is—53 dBm re 10 dynes/cm², with balanced system output.

3. Extremely small diaphragm—Under 0.5" in diameter. HF dropoff for sound waves arriving at random, non-perpendicular angles of incidence will occur only at frequencies above 20,000 Hz. All Altec condenser microphones contain diaphragms small enough to insure that HF dropoff does not occur within the usable frequency range.

4. 100% solid-state circuitry—The 195A base utilizes an FET as an emitter follower and also contains a 3-pin XLR-12 connector. No RF or balanced-bridge critical adjustments are used. The FET drops the extremely high impedance of the microphone to an impedance suitable for connection to a shielded 2-conductor standard cable. Power is simplexed over this same cable. The separate power supply provides balanced outputs for standard 150/250-ohm microphone pre-amp inputs.

5. Small, light power supply—About the size of two back-to-back packs of cigarettes, both the DC and the AC supplies provide ruggedness for long-term heavy duty combined with small size and light weight for new ease in handling. Finish is hard chrome.

6. Long-life DC battery operation—Two mercury batteries provide 2500 operational hours, up to a year in normal use. A convenient meter on the supply shows battery condition. Battery drain is prevented when system is not in use by unplugging the 195A base or by operating a recessed switch on the supply housing.

7. Many accessories are standard—With each system a wind/pop screen; microphone holder; and a 25-foot, 2-wire, shielded cable are provided at no additional cost. Connectors and mounting hardware are attached.

8. High-temperature ambient permissible—The systems will operate in an ambient up to 55° maximum (131°F).

9. Exclusive Altec exchange policy—After expiration of the normal full year guarantee, Altec will accept an inoperative microphone in exchange for a comparable new unit at a fraction of original cost. This policy is unique in the industry.

10. Microphone is unusually small and light—This feature—microphone and base are 3½" L x ¾" Diam.; weight 2.2 oz.—designed as a means of eliminating the cumbersome size, bulky shape, and heavy weight of older style microphones.

*** Extra High Sensitivity Models:** Extremely high sensitivity (45 dBm re 10 dynes/cm²) with unusually high signal-to-noise ratio. Designed specifically for use where microphone must be placed at some distance from performers (such as suspended over stage, orchestra pit, or audience, or in footlights). Identical to M51 and M52 systems in other respects, the M251 is for AC operation; M252 for DC. Both are omnidirectional. Price per system: \$216.

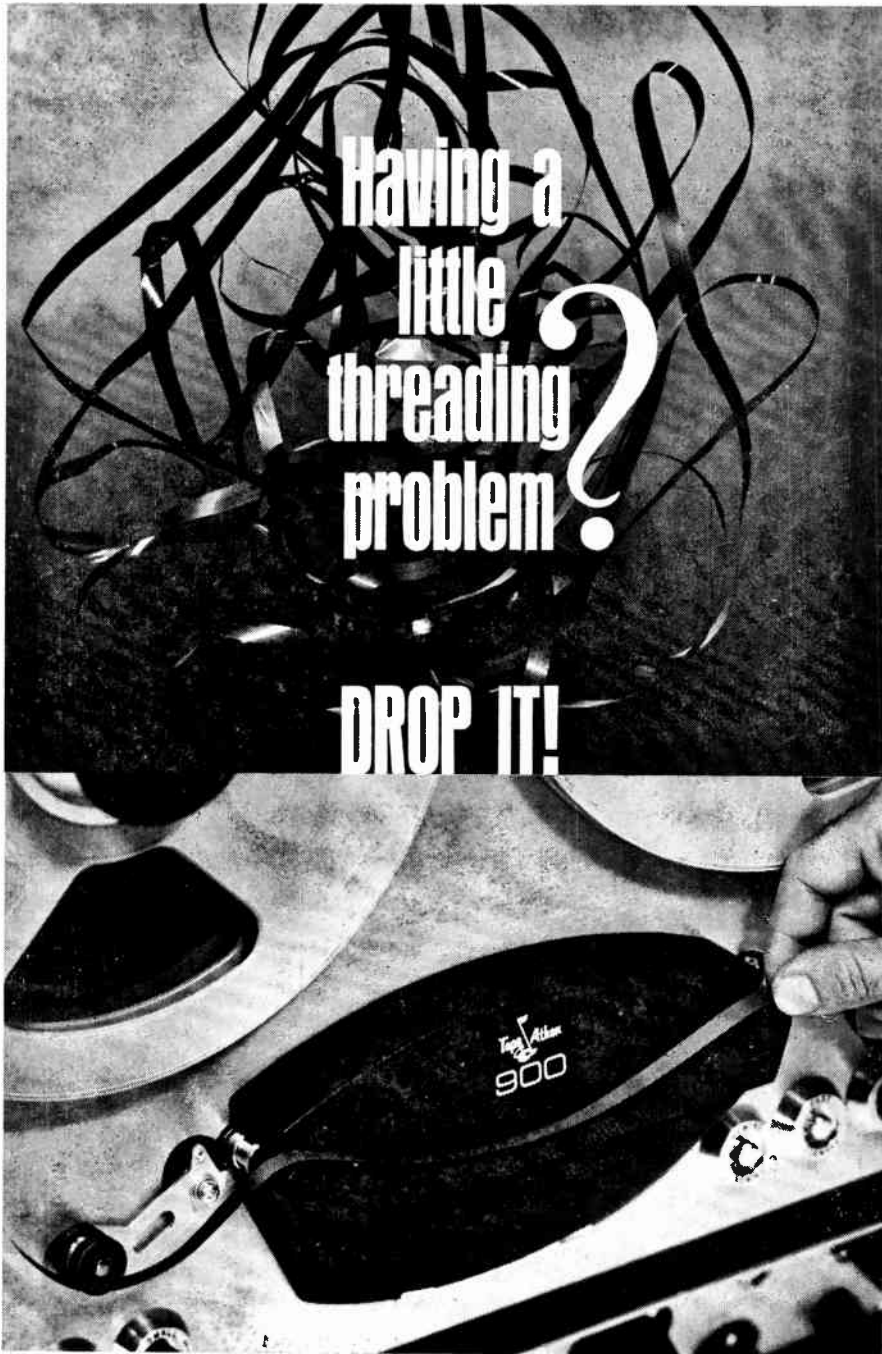
Send your inquiry today for complete technical information. We'll include a recent article on the values of big vs. little condenser microphones written by Alex Badmaieff, our chief engineer of transducers. Also our colorful new 1967 Stereo Components Catalog, just in case you're interested.



A Division of *LSV* Ling Altec, Inc.,
Anaheim, California

And one reason why it can.

How Altec can offer you these superb systems at only \$198 per—Part of the reason is that they're entirely American-made at our Anaheim plant. No import duties or importer profits to pay. Another part is that we know how to build studio mikes. We should—we've been doing it for nearly 30 years! (For example, remember the 21B and M-11?)



Tape threading on a Tape-Athon 900 Recorder/Reproducer has been reduced to a split second job. You just drop the tape—and there it is—right in position beneath the heads. Now, no one buys a professional recorder because it's easy to thread—but that's a start. Look at the other advanced engineering features that Tape-Athon has incorporated into the 900. Like DUAL CAPSTANS for instant starting and stopping; all SOLID STATE electronics for maximum service and low heat generation; VERSATILITY unlimited with variable reel size, variable speed control, and optional editing mode.

Details in the 900 Catalog; or see it at your local Tape-Athon distributor.

SEND TODAY FOR THE 900 CATALOG

Tape-Athon, Corp.

523 S. Hindry, Inglewood, California 90307
Tel: 213-678-5445

Circle 32 on Reader Service Card

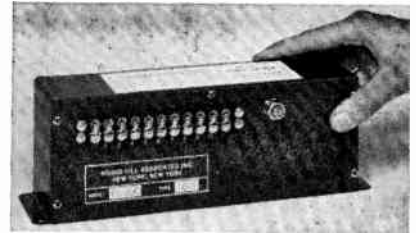


face provides for direct plug-in applications. Unit operates on internal battery. Price is \$79.95.

Circle 64 on Reader Service Card

DC Power Supply

A 9v DC power supply is available from Round Hill Associates, N.Y.C. The 200 ma PS-200 employs zener referenced voltage

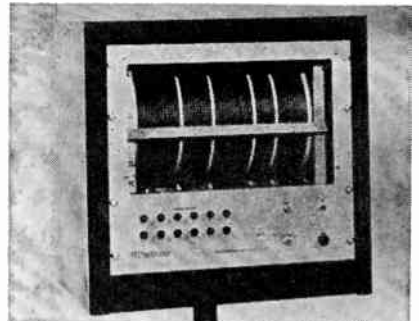


regulation with dead-short protection. A locking screwdriver-adjusted potentiometer permits output voltage adjustment over a 1-volt range. Price is \$24.50.

Circle 67 on Reader Service Card

Non-Dup Switcher

TeleMation, Inc., Salt Lake City, has introduced a 12-channel 7-day non-duplication switcher designed for CATV and broadcast applications. Each of the 12 out-



put channels can be simultaneously switched to select between 2 input channels (24 total) at any minute during the week. Special circuitry is said to allow one switcher event to handle as many as 7 programming changes each on a different day for a maximum capacity of 840 events per week.

Circle 86 on Reader Service Card

CATV Antenna

A tower-mounted antenna said to provide good quality signals at distances of 110 to 130 miles or more is available from Scientific-Atlanta, Inc., Atlanta, Ga. Super - Channeller 16- and 36-element antennas are offered as complete turnkey installations ready to go on-line. Turnkey service includes site survey, tower design, installation, and verifica-

Circle 33 on Reader Service Card

for 3M Co. ad →

8 reasons why we call new
 "Scotch" Video Tape No. 399

color tape plus!



1. Livelier, truer colors:

Colors appear brighter, clearer, life-like. Up to 5db better signal-to-noise ratio for multiple generation copies. New oxide, new binder, new coating technique make this possible.

2. Stronger black & whites:

Compatible high fidelity resolution with startling presence. Minimal background interference or blur. It's a picture that's truly *alive!*



3. Longer life: Capable of 2,000 passes with no oxide rub-off or increase in dropouts; no visible indication of head to tape contact. Almost impossible to wear out. Virtually unlimited shelf life.

4. Improved sound: Dynamic range is substantially improved across the sound spectrum. Tape background noise is significantly reduced. New No. 399 gives you living sound to match the picture!

5. Cleaner running: Will not shed, block or rub-off. Leaves no oxide deposit on heads or guides. Assures better results—averages less than 15 dropouts per minute.



6. Perfect copies: Create up to 4th generation duplicates that only the most experienced eye can distinguish from the master tape.

7. Total versatility: Can be used for both high-band and low-band recording. Recorders need no special adjustments or setups.

8. Field proven: Thoroughly tested and proven in actual broadcasting use by networks, local television stations and production studios.



Scotch Video Tape No. 399

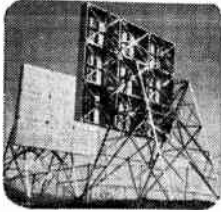
opens a new dimension in video quality. Delivers the believability and presence of live broadcast with the advantage of instant playback. Provides "see it now" control of program content.

color
 tape
 plus! adds a new
 dimension to
 your programming.

FIND OUT HOW Color Tape Plus adds a new dimension to your programming. Write: 3M Company, Magnetic Products Division, St. Paul, Minn. 55119.

Magnetic Products Division 3M
SCOTCH IS A REGISTERED TRADEMARK OF THE 3M COMPANY.

MICROFLECT



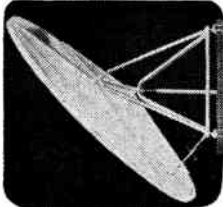
REPEATERS

Ground mounted, flat, billboard type passive repeaters. 30 standard models up to 30' x 48'.

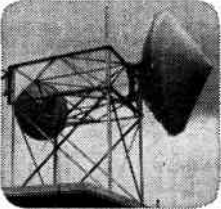
MICROFLECT

REFLECTORS

Tower mounted elliptical reflectors. 5 models up to 12' x 17'. Exclusive Omni-Mount.



MICROFLECT



ANTENNA MOUNTS

Rigid swing pipe, pylon, tripod, tower & frame antenna mounts.

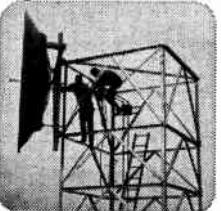
MICROFLECT

SELF-SUPPORTING TOWERS

Quality self-supporting towers. 3 and 4 legged. Heights to 300'.



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Experienced personnel. Dependable construction and erection . . . on schedule.

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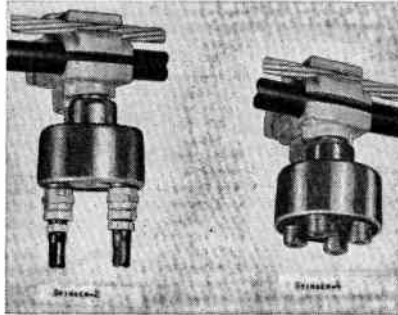
Circle 34 on Reader Service Card

tion of performance; system includes antennas, tower, channel separation and preamplification equipment, and cabling to head-end building.

Circle 81 on Reader Service Card

Multiple CATV Tap

Benco Television Associates, Jacksonville, Fla. is offering a stinger multi-tap transformer with one, two, or four tap spigots. All three



models, backmatched and designed to mate with conventional pressure tap cable blocks, can be used with aluminum or RG cable without cutting the cable. Tap attenuation values range from 13 to 40 db.

Circle 70 on Reader Service Card

Component Freeze

Miller-Stephenson Chemical Co., Inc., N.Y.C., is offering a quick-freeze solution to speed the location of intermittent components. When sprayed on a suspect resistor, capacitor, etc., it reduces



surface temperature of the component to -50°F. The product may be used to prevent heat transfer during soldering; a removable extension nozzle confines spray to a small area. A free 12-oz. sample can is offered in response to company letterhead requests to Route 7, Danbury, Conn.

Circle 83 on Reader Service Card

CCTV Camera System

GPL Div., General Precision, Inc., Pleasantville, N.Y. has introduced

a CCTV camera system available in either a self-contained one-piece model or a 2-piece unit. The



1000 Series is solid-state with plug-in modular construction, offers 15 or 30 mc bandwidth, resolution up to 1100 lines, choice of 7 horizontal scan rates, automatic compensation for 10,000 to 1 light level variations. One-piece unit weighs 15 lbs., may be remotely operated up to 4000'; 2-piece system includes 5-lb. camera and 14-lb. control unit which can be remotely up to 2500'. Price is approximately \$2100, excluding vidicon.

Circle 74 on Reader Service Card

ITV System

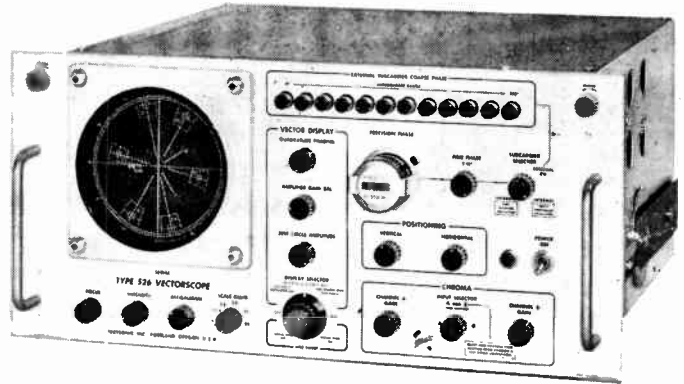
An instructional video-sonic TV system has been introduced by Nelson-Hershfield Electronics Co., Phoenix, Ariz. Model VIS-6 system contains a portable console with two cameras, twin video



monitors, switcher, VTR, TV channel modulator, large screen monitor, and local PA facilities. The unit may be used to make tapes for classroom use, or with the modulator, a TV signal may be transmitted via coax cable on any VHF channel and received on any standard television receiver.

Circle 75 on Reader Service Card

measuring differential gain and differential phase



...with a Tektronix Type 526 Vectorscope

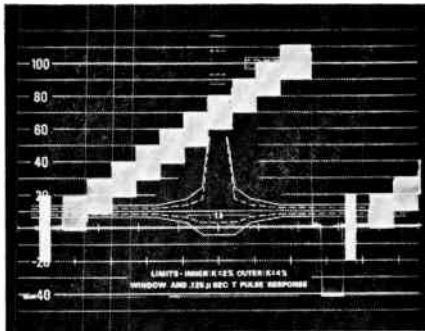


Fig. 1. Display of the modulated staircase showing 10 steps with 3.58 MHz modulation on each step and color burst, viewed on a Tektronix Type 529 waveform monitor.

Measurements of differential gain and differential phase can be made simply and precisely with a Tektronix Vectorscope using a modulated staircase signal. Display of the staircase, with its 3.58 MHz modulation, appears in Figure 1, as viewed on a television waveform monitor, and in Figure 2, as viewed on a Vectorscope. The vector presentation shows changes in amplitude and phase of the 3.58 MHz modulation with changes in the staircase amplitude.

Changes in amplitude of the 3.58 MHz modulation with changing signal level (from black level to white level) is *differential gain*. Changes in phase of the modulation relative to burst with changing signal level is *differential phase*. Measuring amplitude changes and phase shifts can be done accurately, conveniently, and independently with the Vectorscope.

Measuring Differential Gain. A line-sweep presentation of the modulated staircase appears in Figure 3. The display shows that gain has decreased markedly as staircase amplitude has increased. In this instance, gain has decreased approximately 80% from the first to the last step, shown as the difference between the amplitude of the first step **A** (waveform top to reference line) and the last step **B** (waveform top to reference line). Differential-gain displays can be made by using the VIT linearity stairstep signal during color-program transmission. The interfield signal key permits VIT MONITORING.

Measuring Differential Phase. Three line-sweep presentations of the staircase, with modulation locked to color burst, appear in Figures 4, 5, and 6. Figure 4 shows a display of the sine function of the vectors (plotted in Figure 2). Figures 5 and 6 are used to determine differential phase in the system. Figure 5 shows the lowest step on the staircase nulled to the horizontal center line of the graticule and Figure 6 shows the highest step nulled to the center line. The difference in settings of the precision phase control required to null these two points is the difference in phase, in this instance 4.9°.

Type 526 Vectorscope \$1665
Size is 8¾" high, 19" wide, and 18" deep.
Weight is ~ 45 pounds. Designed for rack mounting.

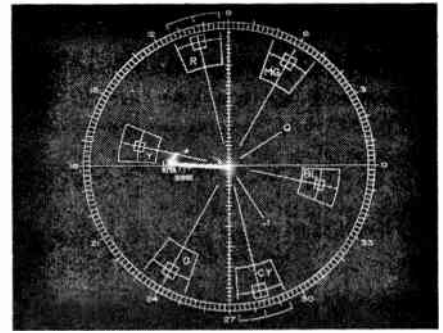


Fig. 2. Display of a distorted modulated staircase, viewed on the Vectorscope. Phase is displayed on the graticule in a circular direction and amplitude in terms of distance from the center.

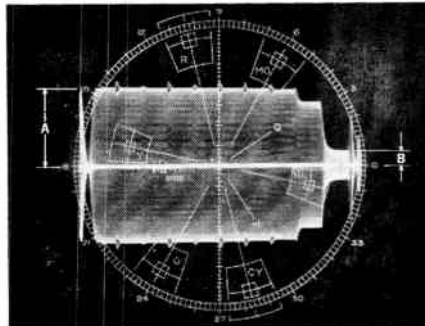


Fig. 3. Display of the 3.58 MHz staircase with the internal oscillator free-running. Differential phase information does not affect differential gain measurements.

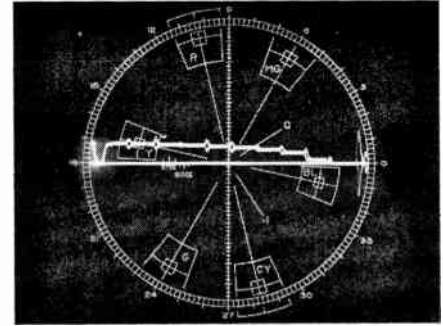


Fig. 4. Display of the modulated staircase with the oscillator locked to color burst, with subcarrier phasing adjusted nearly to null at the white level.

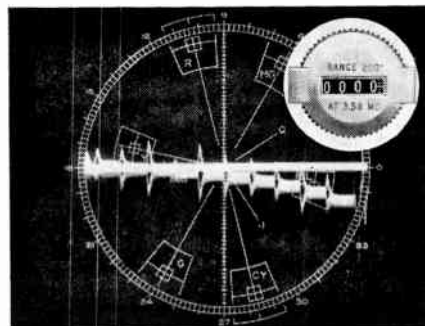


Fig. 5. Display of the modulated staircase (magnified) with the step at extreme left (black level) nulled to the center line.

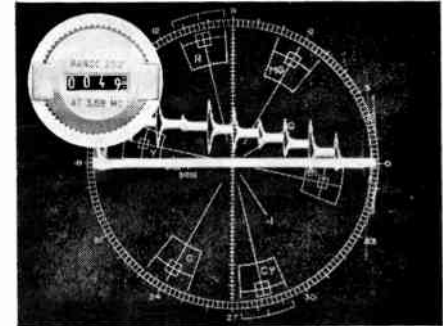


Fig. 6. Display of the modulated staircase (magnified) with the step at extreme right (white level) nulled to the center line.

Tektronix, Inc.



For complete information, contact your nearby Tektronix field engineer or write: Tektronix, Inc., P.O. Box 500, Beaverton, Oregon 97005

INDUSTRY NEWS

Continued from page 11

Cable Co., and Toledo TV Cable Co.) form the greater part of Liberty's CATV division. Liberty holds CATV franchises in Albany and Lebanon, Ore. Ray Siegenthaler and William Elkins, principle owners of the 5 systems, have joined the Liberty Board of Directors and head the CATV Div. Former Liberty president Richard E. Miller is chairman and Donald E. Tykeson, former v.p. and general manager, is president.

Anaconda Astrodata Settles in Anaheim

Anaconda Astrodata has officially established its company headquarters at 1430 S. Anaheim Blvd., Anaheim, Cal. The location was chosen because of its proximity to Astrodata, Inc., one of the sponsoring companies, and its advanced printed circuit facilities, used in manufacturing the "XDR" line of CATV trunk and distribution amplifier equipment.

The Lindsay Communications Sales Div., Anaconda Wire and

Cable Co., Northfield, O., is now the chief sales and distribution arm of Anaconda Astrodata Co. In addition to the new line of XDR® CATV equipment, Lindsay will continue to market Anaconda products to the communications field.

ITV System Begins Operation

The Mifflin Co., Pa. school district began operation of a 2500-mc ITV system this fall, reaching 340 public and parochial classrooms. The systems, constructed under turnkey contract by the Micro-Link Systems activity of Varian Associates, Palo Alto, Cal., provides 4-channel programming to 10,000 students throughout the 40-mile country-wide district at a cost of \$264,195—a one-time equipment cost of \$26.42 per pupil. Enrichment material in science, math, social studies, and language arts will be provided for all grades, plus an intensive program of in-service training and workshops for teachers. The studio is located at the district's administration building in Lewistown and linked by 4,000' of cable to a 100-ft

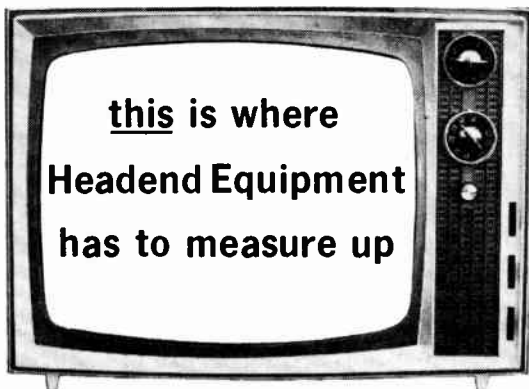
high transmitting antenna. A repeater station using a 50-ft. tower is required to reach some schools in the mountainous terrain. Directors utilized funds available under Title I of the Elementary and Secondary Education Act.

Houston UHF

KHTV Houston, Channel 39, is scheduled to go on the air in late December with complete color origination equipment, including 4 G-E PE-250 cameras, 3 Ampex VR-2000 machines, plus a VR-1200 for the mobile unit, and 2 G-E PE-240 color film chains. The antenna is located on the community candelabra tower at DeWalt used by KPRC-TV and KHOU-TV.

Superior to Buy S & G Corp.

Superior Cable Corp., has reached an agreement in principle with S & G Corp., New Orleans, La., to acquire its assets in a cash transaction. S & G produces cable pressurization equipment, flow metering devices, and mobile power and cable and splicing units.



Sooner or later, somebody turns the set on—that's really when you're glad you chose BENCO. Many companies — big names, big users, knowledgeable and highly sophisticated in electronics — say we outperform the industry. Why? Here are two very reliable reasons:

Benovac Automatic Audio/Video Control Unit
KCA-FM Selective Headend FM Control Unit

Don't take their word or even ours, write for full technical data. . . .



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Canada: Benco Television Associates
27 Taber Road, Rexdale, Ontario, Canada

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STEREO-PILOT FREQUENCY MONITOR



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have purchased the
"SFM-19"

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YOU WON'T FIND A PANIC BUTTON ON A MAGNECORD!



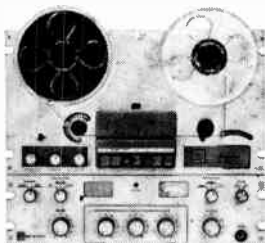
When Magnecord engineered a long list of safety factors into their professional line of tape recorder/reproducers . . . they engineered the emergencies out! A sturdy die-cast mainplate, supporting the transport in every model, insures precise location of internal parts under the roughest operating conditions. Rigid die-cast head mounts eliminate alignment problems. Professional quality hysteresis synchronous

capstan motor and individual reel drive motors are heavy duty models, and the capstan shaft assembly is re-inforced for extra strength and longer life.

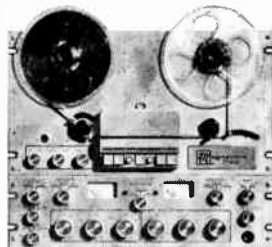
While you are taping, safe-guard operating features protect your thinnest tapes. With Magnecord you get top-notch performance and superb fidelity to keep your taping facility operating at maximum capacity, even after years of constant use. Ask a broadcaster who uses one . . . MagneCORDs are built to take it!

Write now for the full story on the complete line of durable quality MagneCORD tape instruments.

MagneCORD 8+ Reels now available from Audiotape®. See your local dealer.



MAGNECORD MODEL 1021
Fully transistorized professional tape recorder / reproducer for monaural operation. For use in main or production control room.



MAGNECORD MODEL 1022
Fully transistorized professional tape recorder / reproducer two channel (stereo) for use in main or production control room.



MAGNECORD MODEL 1028
Professional quality 2 channel (stereo) tape recorder / reproducer for recording master tapes. (10½" reel capacity) Available in ½- or ¼-track.



MAGNECORD MODEL 1048
Professional 2 channel (stereo) recorder/reproducer for use in main studio, production studio or conference recording. (10½" reel capacity) Model 1048 is available in ½- or ¼-track.

MagneCORD

DIVISION OF THE
TELEX CORPORATION

P. O. Box 1526 / Tulsa, Oklahoma 74101

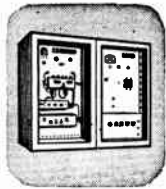
MANUFACTURER OF TELEX HEADSETS
AND OTHER FINE ACOUSTIC DEVICES

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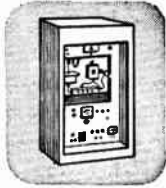
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FROM

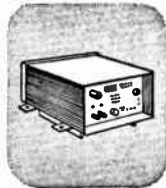
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**Mounting
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positioning
equipment for
cameras and
space-age
instruments**



GENERAL PRECISION LABS Closed Circuit TV Camera on PS-34 Pedestal Stand with Model HD head. Model HD head features internal torsion spring to prevent camera dumping during extreme forward and backward tilts.

The PS-34 makes possible an infinite number of applications for mounting and positioning. It has "floating action," which means the actual weight of the camera is perfectly counterbalanced by a sturdy spring—just a touch and the camera automatically "floats" to the level you desire—stays there.

D & S offers the most complete line of stands and tripods. When standard models will not meet the requirement, we design and manufacture special tripods to order. Send us your specs.

For more information write: Dept. BMD-66

DAVIS & SANFORD

24 Pleasant St., New Rochelle, N. Y.

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mercial stations across the country.

Ga. ETV Station

The Georgia State Dept. of Education has begun operation of its 4th ETV station. Located near Wrens, WCES-TV is serving the Central Savannah River Area on Channel 20 from its 1479-ft. tower said to be the tallest ETV tower east of the Mississippi, with visual ERP of 466 kw. The 5th station to be interconnected with the Georgia Educational TV Network, it operates Monday through Friday from 8 AM to 10:30 PM, and Saturday evenings.

Arkansas ETV

KETS, first ETV station in Arkansas, has installed a complete RCA studio/transmitter facility in preparation for an early on-air date. Studio equipment in the \$500,000 contract includes two TK-60 cameras, two TR-4 VTRs, and two TK-22 film chains. Programming will originate from a new building on the Arkansas State Teachers College campus at Conway, and will be relayed to the transmitter site at Little Rock by a 3-hop microwave system.

TIO Moves

The Television Information Office has moved to larger quarters in the Squibb Building, 745 Fifth Ave., N.Y.C. The new offices will almost double its present space.

CATV Atlas

Television Digest, Washington, D.C., has published a new edition of its CATV Atlas and is offering it in combination with a 67-page bound full-text version of the FCC's "Final CATV Decision—Second Report and Order." Latter includes text of Congressional CATV Bills, common-carrier microwave licensees and applicants with CATV systems served, etc. Price for both is \$12.50.

New Radio MASTER

United Technical Publications, 645 Stewart Ave., Garden City, N.Y. has announced availability of the 1967 Radio-Electronic Master from electronic parts distributors. The 1752-page Master includes 33 product sections listing more than 190,000 items with specifications and prices.

NAMES IN THE NEWS

McMartin Industries has opened a district sales office at 711 14th St. (Suite 914), Washington, D.C., under the direction of Jack M. Ducart.



J. M. Ducart



Lloyd Phillips

Lloyd O. Phillips will direct new McMartin district sales office in Elmhurst, Ill.

Charles J. Chatterton has been appointed v.p., Browning Labs., according to Gardiner G. Greene, Jr., exec. v.p.



C. J. Chatterton



E. Mark Wolf

E. Mark Wolf joins Anaconda Wire and Cable Co. as chief engineer, Communications Div., reporting to Herbert C. Witthoft, v.p. engineering and research.

Fairchild Camera and Instrument Corp. has formed two separate subdivisions within Industrial Products Div., according to Raymond G.



Joseph Murphy



Nat Myers, Jr.

Hennessey, group mgr. Joseph P. Murphy heads Aviation and Photo Products Section; Nat. C. Myers, Jr. heads Audio Visual Equipment Section.

Robert R. Owen, Ampex marketing gen. mgr., was elected a v.p., according to C. Gus Grant, group v.p.

Collins Radio Co. has named John L. Humphreys broadcast and communications sales engr., covering Pennsylvania, Delaware, Maryland, and parts of Virginia and W. Virginia.

W. Warren Barker has been appointed mgr., new product plan-



What do all three Omaha TV Stations have in common?

(Raytheon's Dual-Link II)

Omaha's gone Raytheon in a big way! Each of the network affiliate stations — KETV, KMTV, WOW-TV — now uses Raytheon's Dual-Link II to provide continuous transmitter monitoring, automatic switchover, and duplicated receiver protection. The 1 Watt hot standby STL ends worries about the added demands of color transmission.

The unique design of Raytheon's highly reliable Dual-Link II permits maintenance of one complete STL System during regular programming hours . . . program interruptions are eliminated. Exclusive pull-out drawers provide easy in-service access to all functional modules . . . no extender cards or complicated test cables necessary. Dual-Link II can be supplied with up to four 15 kc program audio channels and is expandable to a completely automated STL system at nominal cost. Naturally, it exceeds all NTSC color standards.

All this, plus a 5-year warranty! Like to learn more? Mail this coupon today.



Sales Manager
Raytheon Company
Communications and Data
Processing Operation
1415 Providence Turnpike
Norwood, Mass. 02062
Please send complete
information on your Dual-Link II

Name _____

Title _____

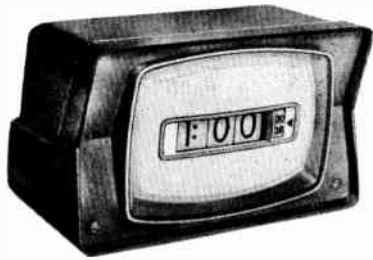
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Address _____

City _____ State _____ Zip Code _____

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Greatest Time—Telling Advance in 7 Centuries!



... and only \$12.95

The TYMETER "Time-At-A-Glance" numeral clock, the greatest advance in 7 centuries of clock-making.

Here is the most remarkable clock ever made, a concept of time-telling that suits the needs of broadcasters perfectly. Anyone who can read is assured of accurate time-telling to the second. Announcers can read time directly—no more "interpretations." This new digital-reading clock makes time-telling accuracy a habit . . . free of "guess-work."

What's more, the price is a low, low \$12.95. Available in white, persimmon, or walnut.

Order Model #765 from your local Penn-wood Numechron dealer, or write.

Pennwood Numechron Co.
TYMETER ELECTRONICS
7249 Frankstown Ave., Pittsburgh, Pa. 15208

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BROADCAST EQUIPMENT

SALES — — ENGINEERING

BAUER ELECTRONICS CORP.

AM-FM Transmitters,
Consoles, Loggers.

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SPARTA ELECTRONICS CORP.

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Consoles, Turntables.

STANDARD ELECTRONICS

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JAMPRO ANTENNAS, INC.

RIKER VIDEO INDUSTRIES

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CHRONOLOG CORP.

Automated TV Switchers.

SONY CORP. OF AMERICA

Videocorders, Cameras.
Tape Recorders, Mikes.

PROPOSALS—FINANCING

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ning, CBS Labs Professional Products Dept., according to Barton C. Conant, Dept. gen. mgr. Mr. Barker will help explore new opportunities for professional products, including broadcast and recording systems.

Richard J. Wakefield joins Jerrold Electronics as assistant mgr., CATV



R. J. Wakefield



H. W. Moffat

Construction Div. **Howard W. Moffat** named field representative, Community Operations Div.

A. E. Kushner has been appointed sales manager, Jerrold Commercial Sound Div., succeeding **William Menezes**, recently elevated to Div. mgr.

Henry Zebrowski appointed N.Y.C. area sales engineer, Memorex Corp.



H. Zebrowski



James Phelan

James J. Phelan has been appointed manager of mfg., Thomas & Betts Co., assuming purchasing, planning, and factory scheduling responsibilities. Under the direction of **H. C. Moses, Jr.**, chairman, a newly-organized sales marketing committee is responsible for sales policies and planning. **J. David Parkinson** has been named gen. sales mgr.

Recent G-E Visual Communications Products Div. sales appointments include **Matthew S. Ceterski**, N.Y.C.



M. S. Ceterski



Harry J. Craig

and **Harry J. Craig** at Syracuse headquarters.

Riker Video Industries has opened a sales office in Dallas, Tex., headed by **Herman Rudolph**.

W. G. Holbert was named product mgr., Anaconda Astrodata Subscriber Carrier Div. by **A. L. Ginty**, v.p. marketing & sales. **Lindsay Communications Sales Div.** has named **Ralph Monroe** southeastern area sales territorial mgr. based at Forest Park, Ga.; **C. D.**

Boykin was named southeastern area mgr., cable and supplies.

Intercollegiate Broadcasting, Southern Div., named **Jack Williams** "Southern Broadcaster of the Year." **Williams** is Exec. Sec., Georgia Ass'n of Broadcasters, and Assoc. Prof. of Journalism at Georgia State College. Last June GAB named him their 1966 Broadcaster of the year.

Albert M. Warner was elected v.p., Sylvania Electric Products, Inc., with responsibility for industrial relations. **John J. Brophy** has been appointed sales mgr. of studio, theatre, and TV lighting for the Photolamp Operation.



John Brophy



Bruce Walters

R. Bruce Walters was named Ameco director of contracting in addition to duties as Remcor pres. **Ray M. Wood** was appointed director of mfg. **Douglas B. Campbell** replaces Mr. Wood as director of quality assurance.

A. Newell Garden has been promoted to newly-created position of mgr., media services, Raytheon public relations dept. **Robert L. May**



Robert May



G. Crowther, Jr.

was appointed national sales mgr., Ray-Tel citizens band product line. **Gwynn Crowther, Jr.** has been elected pres., Machlett Labs subsidiary.

John Sheldon appointed to newly created post, corporate director of marketing, Aerovox Hi-Q Div.

Nathaniel M. Marshall joins Raytheon as marketing mgr., Learning Systems Operation.



N. M. Marshall



S. S. Street

Samuel S. Street, Jr., formerly Director of Marketing, Viking Industries, has joined NCTA as Director. Membership Services.

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A MICROPHONE
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BE SO RUGGED?

It's lovely to look at, delightful to hold . . . and rugged as can be! Small wonder that Shure's new SM60 omnidirectional dynamic microphone was an instant success with both producers and engineers in advance field and studio tests and on subsequent programs with requirements as divergent as outdoor football telecasts and posh variety shows.

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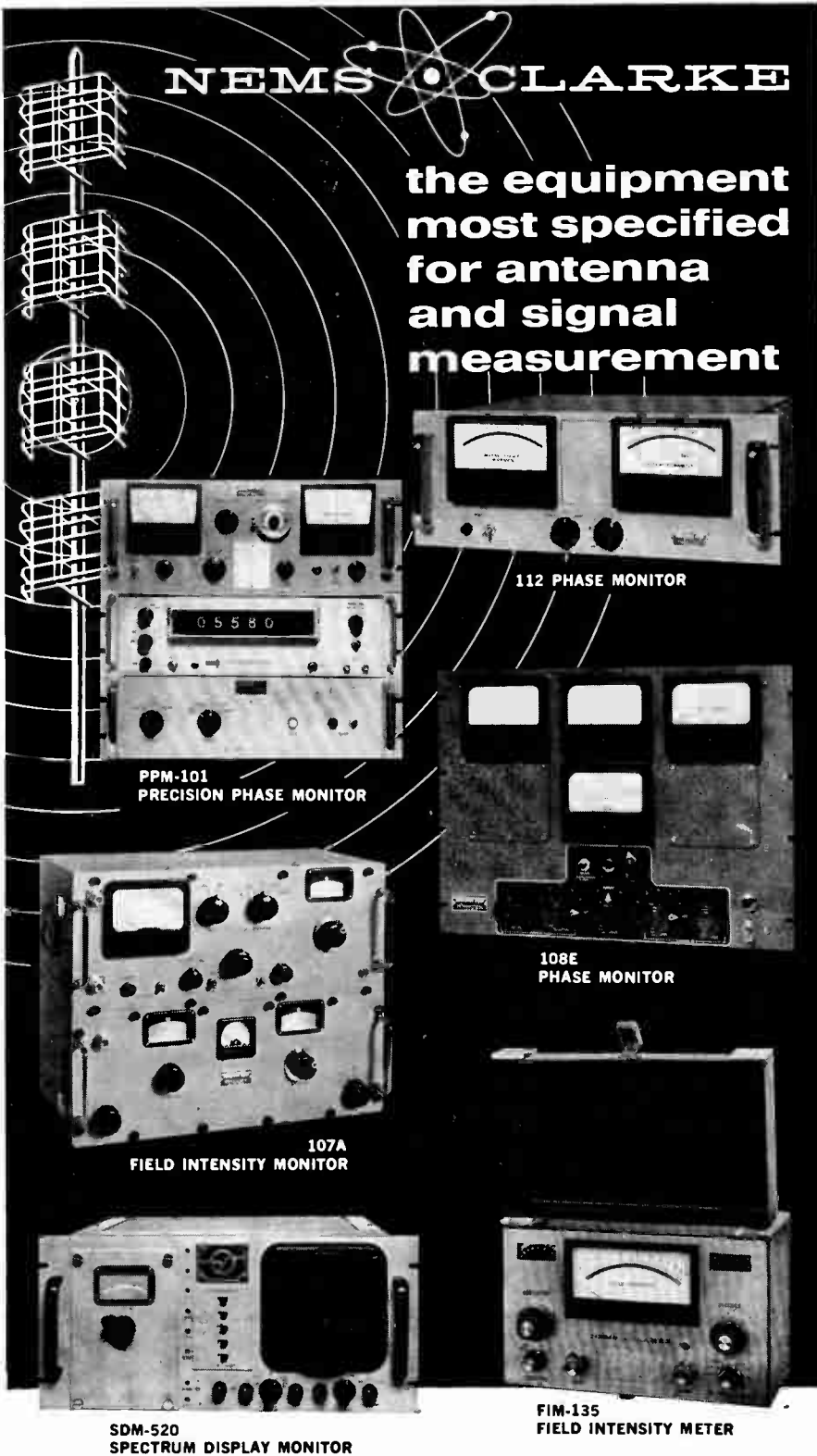
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V-28

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BROADCASTERS SPEAK

Sirs:

For several years at least one magazine of considerable circulation has chosen to write "Commission" with a small "c" when referring to the FCC. The claim is sometimes advanced that appearance is improved by using the small letter. I fail to see that the capital letter produces an unsightly appearance. If anything, I think the appearance is enhanced by the capital "C".

Another claim is sometime advanced that the capital "C" is a deterrent to the reader. To me, it seems just the opposite. My eye, in seeing the capital "C", immediately conveys the thought that it is the FCC. In BM/E I am thankful to find that so far you continue to use the capital "C", and want to sincerely commend you for this practice.

You may think it unusual to receive a letter about this; however unless you occasionally receive some evidence of appreciation for continuing to adhere to the practice, there is always the possibility that you may elect to change your style.

Nathan Williams
Consulting Engineer
Oshkosh, Wisc.

No, we won't change to a small "c"—but we do plan to change from cps to Hertz effective with the next issue. Frankly, we are opposed to this change in a long accepted term, but it's now an international standard, and soon even the Commission will be using it.

Sirs:

It certainly was nice of you to feature Georgia broadcasters as you did in your October issue. We try to swing down here, but without the help of folks like you in your national coverage, no one would ever know about it. I am dropping a note to Jack Williams, Exec. Sec. of our state association, to tell him how nice you have been.

H. Randolph Holder, Pres.
WGAU Athens, Ga.

Go-getter that he is, bet Jack already knew; And so everyone will know, we consider Georgia broadcasters among the best in the world!

Sirs:

May I offer our congratulations on what we consider to be a very fine set of articles in your September issue. The "Theory of Operation" article is particularly well done and gives what we feel is an excellent survey of the industry.

Whoops! Speaking of boo-boos, the gremlins really messed up the November CATV article. To stem the overflow of letters, we apologize, and offer a simple solution to clear up the confusion: Simply mark the pages to show continuity of copy from page 39 to page 42, then to pages 40, 46, and 44, in that order. "Someone" reversed pages 40 and 42, also pages 44 and 46. Sorry 'bout that.

The companion article, "Automation in Action," is likewise well done. It does leave out the negative side of the picture (there are stations which have failed). This, of course, is an extremely difficult job but would, we think, further put the whole matter in perspective. I'd be the first to admit, however, that I wouldn't want to tackle the task.

Again, congratulations on a job well done. The issue contains the high editorial standards that BM/E has maintained in past issues.

Lee Facto, v.p. Station Relations
International Good Music, Inc.
Bellingham, Wash.

Thank you, thank you, thank you—but we feel you may be prejudiced!

Sirs:

In going through the October issue I came across the story, "WHOT's the Formula for Success?" The photos on page 33 clearly identify two Viking tape recorders, Model 88 Stereo Compact plus another in the background which I believe to be a Model 85. I am sorry to say that your editorial equipment listing (page 35) identified these units as Ampex Model 601s.

In the same equipment listing you also include cartridge equipment, although not by brand name. Again, we are the largest manufacturer of cartridge equipment for the broadcast industry.

While we regret having missed the boat in being identified properly, we are still interested in getting some 8 x 10 glossies of these pictures. Would it be possible for you to supply these?

Peter Schwarz
Director of Advertising
Viking of Minneapolis
Div. of Telex Corp.

Our faces are purple! Without even looking for the label, the units pictured are easily identified by anyone who's been in this business as long as we have. Original 8x10's sent, compliments of the house.

Sirs:

In your letter of July 11, you referred me to the Seton Corp., New Haven, Conn., for cast aluminum call letter plates. I have contacted these people, but find they do not offer this type of service.

Could you possibly ask your readers for help? We are looking for a company that makes cast aluminum call letter plates for Electro-Voice Model 630 microphones.

Budd Clain, Prog. Dir.
WSPR Springfield, Mass.

Normally, this should be listed in our Classified ad section but we'll waive the formalities this time. Can anyone help Budd?

Sirs:

May I request the schematic diagram and the article you published some months ago for converting Johnson CB equipment for broadcast use. I have attempted to obtain this information from a number of stations who receive your publication, but have been unsuccessful.

Robert W. Cavanaugh, Gen. Mgr.
KSMN Mason City, Ia.

You finally came to the right "station," Bob. The article was "Mobile News Units On a Shoestring," May 1965 issue. Copy sent.

Sirs:

Thank you for your letter concerning acceptance of the story I submitted on the KMHL "Big Mike."

Now that you have expressed your interest and my comments could not be misconstrued as "soft soaping" to get the story used, I'd like to say what I should have written you long ago. I read BM/E more thoroughly than any other trade magazine. Being responsible for both management and engineering also broadens my personal interest.

Inasmuch as we are working on plans for FM/multiplex I keep a separate file of BM/E's with major articles on that subject. I might also add that "Interpreting the FCC . . ." is a real service to those of us who have neither the time or legal minds to absorb all the "fine print."

Gilmore F. Frayseth, Mgr.
KMHL Marshall, Minn.

Your "Big Mike" story begins on page 27 in this issue. If anyone is interested in a truly unique mobile broadcast unit, don't miss this one.

Sirs:

Please send me any information or reprints relative to UHF station operation.

E. L. Moody, Owner
KCEB-TV Tulsa, Okla.

April, May, June, August, and September 1966 issues—all containing features on UHF, sent.

Sirs:

I am not a broadcaster but I am an inveterate listener with a message for all the broadcasters who are using automatic program control as described by Charlie Buffington on page 22 of your September issue. Not until I read this article was I able to dope out for myself the probable cause of the serious deficiencies in much of the FM programming I listen to. There are several gross deficiencies which, after reading the article, I believe can be directly traced to faulty operation of automated or semi-automated broadcasting stations.

During the past week's listening, I have noted all of the following deficiencies on my favorite FM channels in this area:

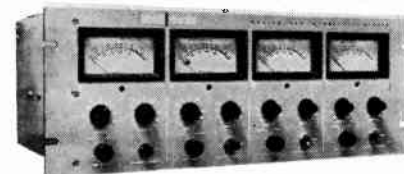
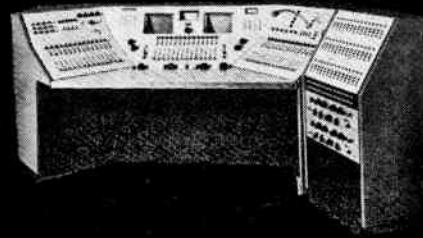
1. Shift in program level of at least 10 db between spots and music selections, or between adjacent music selections.
2. Interruptions in the middle of a music selection for a canned commercial after which the music passage continues.
3. Spots which come over in a very low, muffled tone with barely distinguishable speech.
4. Having the station's announcer do a live station break followed by a canned announcement using the same voice with just enough difference in pitch, timbre or rate to make the difference irritating.
5. Inadequate dynamic range of recorded material, possibly due to the use of excessive compression or peak limiting.

I suppose none of these deficiencies is within the area regulated by the FCC and the listener is therefore dependent upon the good taste and judgment of the broadcaster to see that they are corrected. I wish there were some way this matter could be brought to the attention of the broadcasting fraternity as a whole.

Richard Lewis, Jr.
Westinghouse Electric Corp.
Molecular Electronics Div.
Elkridge, Md.

There is, and it has! However, most of the deficiencies you mention are not necessarily the result of automatic program control—more likely just "sloppy" engineering. Let's keep the FCC out of it. You'd do better to write the station managers—their response might surprise you!

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LITERATURE of INTEREST

For additional data, circle No. shown on Reader Service Card.

Microphones, accessories, speaker baffles, listed in 33-page catalog from Electro-Voice. Includes description, specifications, wiring diagram, frequency chart for each type. 110

Flutter meter described in technical bulletin on Micom Model 8100/8100-w. 111

Programmable cartridge tape recorders for audio automation de-

scribed in brochure from KRS Instruments. 143

CATV amplifiers for high level trunk and distribution described in XDR line brochure from Anaconda Astrodata. 120

UHF transmitters, klystron designs from 15 to 55 kw, fully described in 4-color, 12-page specification guide from Townsend Associates. 147

Books on all phases of radio-TV-CATV, many unavailable from other sources, fully described and illustrated in 18-page literature package from TAB Books. 170

TV Microwave equipment provides automated emergency transmitter switching and duplicated receiver STL protection. Dual Link II described in brochure from Raytheon. 180

Stereo monitor measures 19-kc pilot carrier and 67-kc SCA frequencies. Described in brochure from Electronic Research Co. 144

Pickup cartridges, semiconductor transducer type, described in brochure from Sonotone. Includes application notes and circuit analysis. 158

CATV amplifiers designed for high level application described in literature from Craftsman Electronic Products. 117

Color bar generator described in specification sheet from Riker Industries. Model 5618 provides encoded color bar signals. 175

Tape performance discussed in 24-page booklet from Eastman Kodak. "Plain Talk" covers major aspects of tape performance. 112

Wire bundle ties, clamps, miniature cable mounts detailed in illustrated 40-page catalog from Thomas & Betts. 113

CATV supply service described in brochure from Pruzan Co. Company operation and "same-day service" included. 173

Color video stabilizing amplifier specifications, applications in brochure from Vital Industries. 114

FCC commercial license course described in 24-page booklet from Cleveland Institute. 116

ITV color compatible system for studio-to-school broadcasting in booklet from EMCEE. 118

Audio monitor amplifier, 50w Melcor AB-47, described in brochure from Harvey Radio Co. 119

CATV coax trunk cable 4940 described in literature from Superior Cable. Includes specifications, prices. 121

Towers for CATV-UHF-AM-FM-microwave and preassembled aluminum buildings listed in illustrated brochures from Advance Ind. 122

Slide attenuators 1" wide and 6" long described in brochure from Tech Labs. Also includes video and rotary audio attenuators. 123

Cooling fan 3-dimensional mockup of tiny Sprite offered by Rotron Mfg.

Mockup fits into rack equipment to determine amount of space needed to accommodate fan. 124

Video components flyer, with complete specs for 40 TV camera yokes, from Lake Electronics. 186

5w microwave equipment for long haul video systems described in data from Collins Radio. Discusses IF heterodyne MW-()09E. 115

Yagi antenna catalog from TACO lists 5-, 8-, 10-element designs; almost 150 types for vertical and horizontal polarization. 125

"Sound Scope," periodical issued by Shure Bros. describing audio product applications. 181

PA speakers, mic stands, and accessories for commercial sound applications, catalog from Atlas Sound. 126

Recording head catalog from Michigan Magnetics lists complete line of magnetic record, play, and erase types. 127

CATV head-end, distribution, and drop equipment detailed in 12-page catalog from Blonder-Tongue. 128

Video pulse distribution amplifier described in brochure from International Nuclear Corp. 129

Tape head replacement guide, 4th edition, from Nortronics lists replacement and conversion heads for all recorder types. 130

Microwave reflector designed for tower mounting described in data from Microflect. Elliptical TM Series reflectors are for use up to 13 gc. 152

CATV cable and connectors listed in brochure from Times Wire & Cable. Includes data on seamless aluminum cable, Timatch connectors. 131

Industrial tubes for broadcast and communications applications listed in 26-page catalog from RCA components. 132

Two-way radio Handie-Talkie portable FM units described in illustrated booklet from Motorola. 133

Coax cable for CATV, broadcast, mobile radio listed in "Heliex" brochure from Andrew Corp. 134

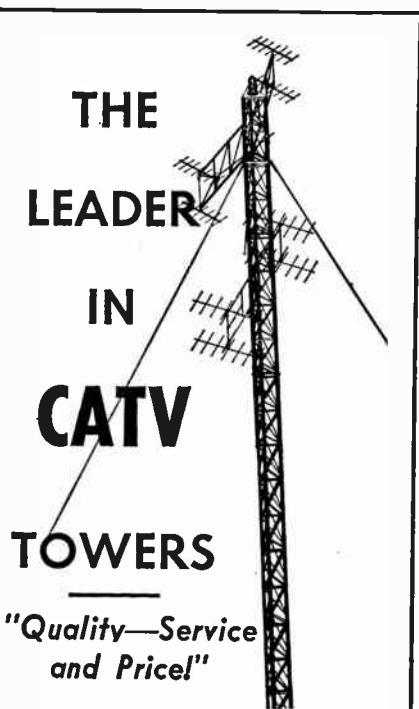
CATV equipment catalog from Ameco lists head-end and distribution amplifiers, accessories, connectors. 135

CCTV equipment catalog from Pye TVT Ltd. lists cameras, lenses, attachments, monitors, distribution equipment, etc. 136

Video tape for helical scan machines described in literature from Ampex. 137

Dynamic lavalier mic for broadcast applications described in literature from Sennheiser Corp. 138

CATV antennas described in catalog from Sitco. Includes low- and high-band VHF types, quads and yagis. 149



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ROUNDTABLE

Continued from page 72

Replies and Rebuttals

The Fairness Doctrine has not created any problems for KABC. "We make a determined effort to get as many rebuttals as possible by seeking responsible groups to comment on our editorial positions so that the audience gets a balanced discussion on vital issues," reports Mr. Hoberman. "On a recent editorial favoring water fluoridation, we had to ask opposing parties to rebut when the expected flood of letters didn't materialize. The same was true when we went after the termite inspector business, a subject we expect to continually hit until something is done."

KLZ has experienced no difficulty with the Fairness Doctrine, and it has not altered its editorial policy. According to Mr. Bennett, "We do point out opposition stands at times, but only to clarify the issue in the mind of the audience. When there is opposition, a letter is written—including a copy of the editorial in question—to the opposing party inviting a responsible spokesman to reply."

WMAL has not had any problems with the Fairness Doctrine.

"We take clear steps to assure fairness by airing a reply to an editorial, labeled as such on the air," reports Mr. Green.

Audience Reaction

KABC is convinced that listeners are anxious to hear strong editorial voices on subjects of community interest. Mail demonstrates that, while listeners don't always agree with the station's stand, few object to the fact that the station is willing to editorialize. KABC asks listeners to write either to the station or to their legislators. Letters received from listeners are turned over to legislators. In the past, KABC editorials have resulted in legislative action. In one case, after the State Assembly had passed a conflict-of-interest bill, it wavered in the Senate. KABC spoke out, reminding Senators of their obligation to the public. The Bill passed the next day. "Recently," Mr. Hoberman states, "Speaker Jesse Unruh of the California State Assembly told KABC that, at this moment, he and his colleagues pay more attention to newspaper editorials. But he believes that when radio demonstrates its willingness to take stands on vital issues, it will have greater impact because newspaper editorials are read only by subscribers while broadcast editorials

are heard by all listeners." In reply to the gun law editorials, over 500 letters were received; somewhat over 80% favored KABC's stand. An official of the National Rifle Association provided a rebuttal. The first three anti-abortion law editorials drew well over 500 letters.

WMAL editorials have resulted in one of the smallest areas of apparent audience action/reaction. However, in a recent in-depth audience survey, the station found that an important percentage of listeners are aware of its editorials. KLZ has received excellent positive reaction to editorials, but no evidence that they either increased or decreased listenership.

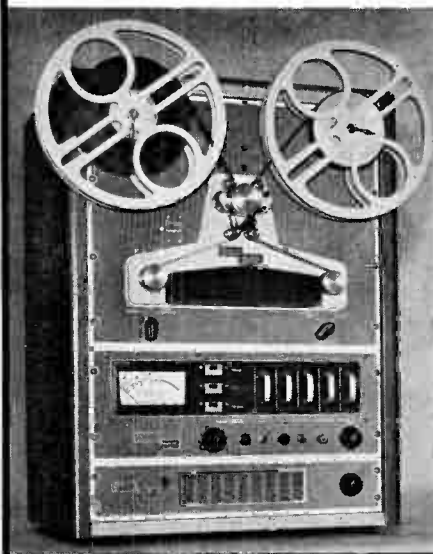
What About Other Stations?

Based on our survey of dozens of stations, both large and small, it seems appropriate for every broadcaster interested in serving local community needs to editorialize, if at all possible. Indeed, in the not-too-distant future, editorializing on responsible local issues may well become a matter of "life and death" for all broadcast stations. Thus, it behooves every station manager to give the matter serious thought, and to determine how he can work an editorial policy into his format at the earliest possible date. ●

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Circle 48 on Reader Service Card

MANAGEMENT ROUNDTABLE

The Case For Broadcast Editorials

Why Should Broadcasters Editorialize, and What are The Problems Involved?

A BROADCASTER should editorialize, we believe, because it serves his audience and therefore his station's image. Editorials can turn apathy into empathy or contemplative rebuttal; they stimulate open expression and discussion. Why do some stations ignore their right to editorialize while others (almost half the AMs and a third of FM's and TV's) jump into the fray with all four feet? There are undoubtedly more than a few reasons—the largest is probably insufficient or qualified personnel. But whatever the reason, we hope that every station manager looks forward to the day when he can editorialize, at least occasionally.

True, certain responsibilities accompany a decision to editorialize, and if they are not handled adroitly, can bring about very difficult problems. To provide some guidelines on the problems involved, we asked several stations how they determine policy, research, prepare and deliver editorials. From the many replies received, we selected comments from Ben Hoberman, KABC Los Angeles; Gary M. Sukow and Harold Green, WMAL Washington, D.C.; and Jim Bennett, KLZ Denver.

General Policy

KABC editorials represent the consensus of opinion of an editorial board composed of the general manager, program manager, sales manager, merchandising manager, publicity director, promotion manager, and community relations director. KLZ's editorial board includes the president and general manager and his assistant, radio and TV station managers, program directors, news director, and editorial writer. Ultimate responsibility rests with the general manager. WMAL bases its editorial policy on traditional station views and those of the Washington Evening Star (parent organization). It is a non-partisan policy in which each issue is weighed on its merit as decided by an editorial board consisting of radio and TV news directors, public affairs directors,

editorial director, and manager of News and Public Affairs.

Scope and Selection of Subjects

KABC editorials do not touch on such national and international issues as Viet Nam or world peace, but they do involve many national issues with local and regional implications. For example, the station recently aired a series of three editorials, endorsing the Dodd Legislation to curb mail order firearm sales since it was felt that local issues are involved. KABC is also deeply involved in an editorial campaign to modify California's anti-abortion laws, taking a firm stand in favor of an amendment to permit humane and therapeutic abortions in certain cases. Other subjects covered include fluoridation, school taxes, pornography, and constitutional revision.

KLZ editorials are generally concerned with local and regional matters, although they have spoken out on national issues which have a direct tie-in with Colorado affairs. Subjects are chosen on the basis of public interest and/or concern. No subjects are banned.

Mr. Sukow advises that WMAL editorial coverage deals mostly with local and regional issues; however, perhaps one in ten will discuss a national or international subject. Subjects are selected in a number of ways, generally based on the news judgement of the editorial director; however, management or any member of the news department may suggest subjects. Listeners and viewers are also providing subjects in increasing numbers. There is no attempt to divorce editorial comment from breaking news; in fact, WMAL is moving in the direction of commenting on major events before the story dies.

Preparation and Presentation

KLZ editorials are written and aired by the editorial editor and run from 2 to 3 minutes each. WMAL's editorial director researches, writes, and delivers editorials which are usually 1 minute long. KABC's community relations

director researches and writes editorials on a full time basis. Drafts are then revised by members of the board and recorded by the general manager. Often a month or more of research is devoted to a single subject. When immediacy is inherent, however, a decision on the topic is reached, a stand taken, and an editorial written, recorded, and aired immediately. Mr. Hoberman cites this example: "Recently, the L.A. County Assessor proposed a plan to switch school taxes from a property to a consumer tax to ease the burden on property owners. The plan involves state legislative action and referendum. Having endorsed such a concept a year earlier, KABC prepared and aired a favorable editorial the same day the plan was announced."

Frequency

WMAL airs a new editorial every day, 5 times on AM, 3 times on FM and twice on TV; copy is prepared twice weekly. As a matter of policy, WMAL continues to hit a subject when it is deemed of sufficient importance. "For example," indicates Mr. Sukow, "six editorials have been presented in 3 months on the District Commissioner's failure to appoint a new corporation counsel. Three editorials have been run in three months on the need for an elected county executive in Montgomery County, Md. A series of editorials have been used, with several on the same subject running on adjacent days."

KABC editorials (about 3 minutes in length) average 9 to 12 exposures each, running 3 times a day for 3 or 4 days. A new editorial or rebuttal is aired almost daily, with an expected total of 75 during '66. "Some issues are one-shot, but more often they are continuing controversies," says Mr. Hoberman.

KLZ prepares editorials frequently but irregularly; each is used twice on TV and 3 times on radio in a 24-hour period. Forty were aired in 1965, and the number of editorial broadcasts in '66 will probably exceed that of '65. According to Mr. Bennett, "A subject is not limited to a single editorial; KLZ broadcast 7 on a proposed multi-purpose stadium, 5 on the need for a modest admission fee to the city zoo so that it might expand and improve and two on a bill to improve bicycle safety and education."

Continued on page 71

1962

Engineering Dept.

1963

Engineering Dept.

1964

Engineering Dept.

1965

Engineering Dept.

1966

Engineering Dept.

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The 668 is guaranteed **UNCONDITIONALLY** against malfunction of any kind—even if caused by accident or abuse—for two years. And, like all E-V Professional microphones, it's guaranteed for life against failure of materials or workmanship.

The E-V 668 is the result of a three year intensive field testing program in movie and TV studios from coast to coast. It has proved itself superior to every other boom microphone available. Find out why with a no cost, no obligation trial in your studio. Call your E-V Professional microphone distributor today, or write us direct for complete specifications.

NEW! MODEL 667 Identical to Model 668 except sharp cutoff filters and HF-rolloff eliminated. List price: Model 667, \$345.00; Model 668, \$495.00 (less normal trade discounts).

Patent No. 3115207 covers the exclusive E-V Continuously Variable-D design.

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