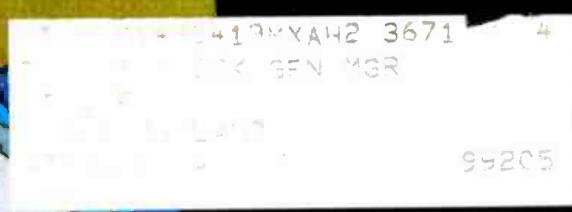
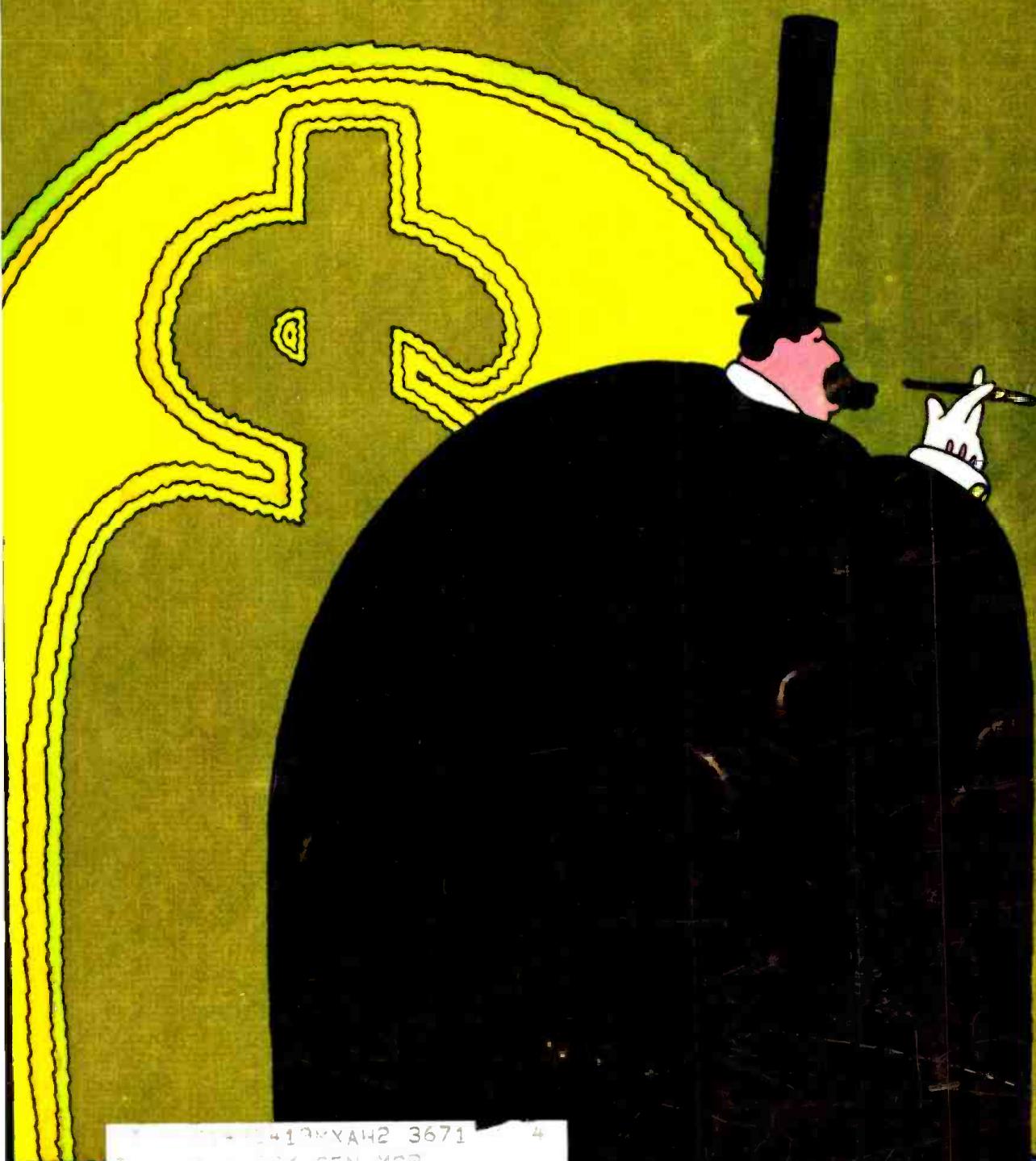


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# BME

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# how to ease into a deluxe color sync generator without straining your budget

In three easy steps, you can build your way economically to the same high quality celuxe color sync generator used by the major TV networks. Start out with Riker's basic EIA sync generator—four modules, rack frame and power supply—\$2900. When your budget can afford the expansion, add two more modules for deluxe sync lock and you get the advantage of three selectable speeds for locking to an external composite video or sync signal. Cost: \$790.

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OCTOBER 1967/VOLUME 3/NUMBER 10



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**This Month's Cover:** This clearly recognizable profile conveniently symbolizes success.  
Turn to page 26 and away we go on detailed profile of success.

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# Look what your cameras can do with display units like this



CBS Laboratories' Digital Display Units are part of a low cost, compact system that works daily wonders in any size TV studio!

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NOMINEE	2 6 , 4 8 0	

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#### ELECTIONS—No contest.

These modular units were designed specifically for TV use to give optimum clarity up to 70 feet — from any camera angle up to 145 degrees.

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Rugged electro-mechanical operation is fool-proof and built to last. No bulb burn-out or the other problems of rear-illuminated displays.

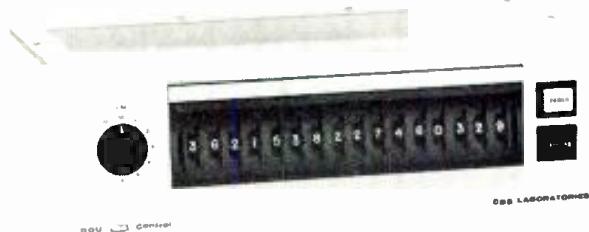
METS	1 0	CLEVE	6
CUBS	4	TWINS	1 2

#### WEATHER—Cool operation.

Only 2.7 watts required per unit, with no power between postings. Glare-free even under the strongest lighting conditions.

And all operated by one Controller that can handle 192 units — as many as 12 groups of 16 units each. This means up to 12 two-candidate election races; or runs, hits and errors for all major league teams; or 40 local stock issues plus volume and Dow Jones closing. A one-time investment for the professional way to take care of all your daily display needs.

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# BROADCAST INDUSTRY NEWS

## Independent Telcos Schedule CATV Session

A full morning session on the status of CATV regulations and current CATV system trends will take place at the 70th Annual Meeting of the U.S. Independent Telephone Association.

The session takes place on Thursday morning, October 12, at the Convention Center in Las Vegas.

The Status of CATV Regulations will be reviewed by Warren E. Baker, USITA Counsel. CATV Systems will be discussed by various telephone companies. Head End Equipment will be discussed by J.C. Henderson of Rochester Telephone Corporation (N.Y.); Distribution Facilities by Frank S. Barnes, Jr., Rock Hill Telephone Company (S.C.); and Subscriber Drop Facilities by Richard A. Lumpkin, Illinois Consolidated Telephone Company, Mattoon, Ill.

A report of the TV Services Committee will be made by its Chairman T.A. Saunders.

Several CATV equipment manufacturers will be exhibiting their wares.

## NAEB Convention

Chairmen for nine special interest sessions at the 43rd annual convention of the National Association of Educational Broadcasters have been announced by William G. Harley, president of the NAEB. A total of seventeen such sessions are planned for the meeting scheduled for November 5-8 in Denver, Colo.

Vernon Bronson, executive consultant, Office of Research and Development, NAEB, will act as chairman of the session on "Education Comes of Age in American Samoa." Dr. Robert Hilliard, chief, Educational Broadcasting Branch, FCC will be chairman of the session on "ITFS/ETV: New Relationships." O. Leonard Press, executive director, Kentucky Authority for ETV, will serve as chairman of the session on "Physical Plants and Facilities."

## Armed Forces TV Meet

The 8th Armed Forces Television Conference has been set for Lowry Air Force Base, Denver, Colo. November 6-8, 1967.

Primary purpose of the con-

ference is to facilitate the exchange of information between users of television.

The conference is being held in conjunction with the annual conference of the National Association of Educational Broadcasters being held in Denver, November 5-9, 1967.

Keynote speaker for the Armed Forces Conference will be Thomas D. Morris, Assistant Secretary of Defense for Manpower. Noted educationalist and television personality Dr. Albert Burke is scheduled to be the guest speaker.

## Editorial Rights & Responsibilities Aired

There is little likelihood that Congress will tamper with broadcasters' fundamental right to editorialize, Hollis M. Seavy, assistant to NAB's vice president for government affairs, told the fifth annual National Broadcast Editorial Conference. But, he said, broadcasters are not "free from threats of unacceptable restrictions on this right." He added broadcasters must be ever alert to "proposals

## What's Missing From This View?

. . . A 528-Foot Antenna



Bent like a pretzel, a tower lies on the ground beyond transmitter building on New York's High Island. The tower, formerly shared by CBS and NBC, was struck by a privately-owned aircraft on August 27, silencing WCBS-AM and WNBC-AM. CBS constructed a 200-foot temporary tower which at press time was functioning with difficulties. NBC got their a-m operation back on the air by making arrangements to use an antenna owned by ABC.

Microwave links — for now TV. Bring local news and specials to the people that matter most . . . while they're happening, from where they're happening. Visiting VIP's, community functions, local news and sports. All live, all exclusive, all under your control with a minimum of fuss. In color or black and white.

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a little  
local  
color**



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that would in any way inhibit this right."

He noted as an example a suggestion by Sen. John O. Pastore (D-R.I.), chairman of the Senate Communications Subcommittee, that the "equal time" section of the Communications Act be invoked when a station endorses a political candidate. Under his proposal, each opponent would be granted "equal time" under Section 315 for a personal reply. During the last election, Rep. Emanuel Celler (D-N.Y.), chairman of the House Judiciary Committee, petitioned the FCC to prohibit broadcasters from endorsing any candidates.

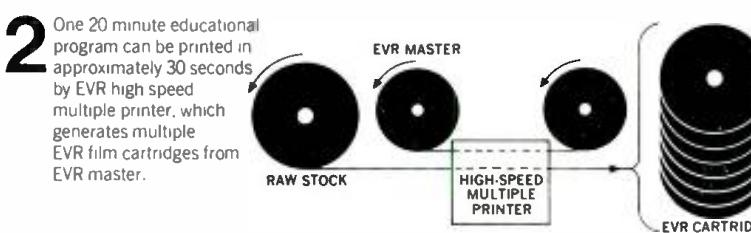
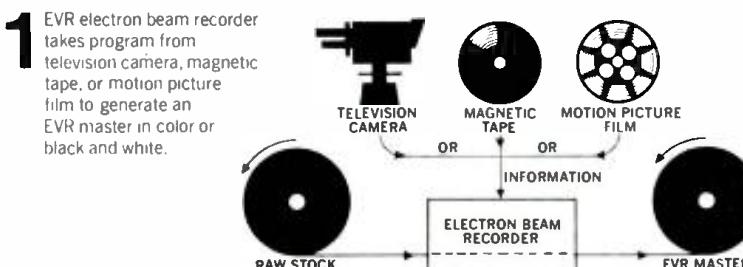
Robert V. Cahill, legal assistant to FCC Chairman Rosel H. Hyde, speaking to the same group, said "... the FCC strongly encourages editorial leadership by broadcasting stations." In commenting on the fairness doctrine, Cahill said: "I have a feeling that perhaps the real difficulty lies with broadcasters who are not seriously committed to the journalistic function or to the exposure of controversy. They use the doctrine as an escape hatch to avoid involvement in community affairs. The 'fairness doctrine' becomes a convenient whipping boy to excuse nonaction and they would continue on the same course in its absence."

Cahill said it is up to the licensee "to choose the particular method or methods to discharge his fairness obligation. For example, he can make announcements over the air that such an opportunity is available, or he can make specific offers to persons who he believes would be appropriate spokesmen, or he can present the conflicting viewpoint himself (either in the same program or in a later program), or he can schedule a program which he believes will present the other viewpoint."

Cahill added, "The doctrine does not say that conflicting views must be presented . . . but rather that the opportunity for the presentation of such views must be afforded."

## New Video Process

Imperial Chemical Industries Ltd. (England), CIBA Ltd. (Switzerland) and Columbia Broadcasting System, Inc. (U.S.A.) have formed a partnership in the United Kingdom to market a radically new audio-visual system called EVR—Electronic Video Recording. The system represents a technological development expected to have a



substantial impact in the field of education.

The EVR system makes it possible for the first time to show on conventional television sets, in the home or classroom, prerecorded programming from motion picture film and videotape at low cost. There are three main stages in the system: 1. prerecording—a sophisticated electronic process transfers any film or videotape programming to a special 8.75mm unperforated thin film, 2. cartridge—the film is then stored in a cartridge seven inches in diameter and approximately 1/2 inch thick, and 3. reproduction—the cartridge is inserted into a player attached to the antenna terminals of the television receiver and automatically "played" on the television screen. The film cartridges played in the system can only be made in processing facilities specifically designed for that purpose.

Dr. Peter C. Goldmark, president and director of research, CBS Laboratories, who spearheaded the development, has demonstrated that a great deal more pictorial and sound information can be stored on the EVR cartridge reel than is possible on a reel of magnetic tape of the same diameter—and at a much lower cost than with conventional motion picture or magnetic tape techniques.

EVR cartridges are capable of carrying up to one hour of black-and-white, and yet reproduces in full color on color television sets.

Home or school operation of the EVR players is accomplished simply by inserting a cartridge into the player where it is automatically threaded, "Played," rewound and ejected. The player, which is

roughly the size of a bread box, can be attached externally either to a single television set or a number of sets simultaneously. For example, receivers in all of the classrooms of a school can be connected to a master player.

EVR film moves at a speed of five inches per second. A major advantage of EVR over magnetic tape, most important in education, is that the EVR film can be stopped anywhere and a still frame displayed. Film strips as well as moving pictures may be shown on the same machine.

The first full-scale application of EVR will be in England, using existing black-and-white receivers. As soon as there is sufficient demand for color television in England, color EVR programming will be marketed.

EVR programming and color and black-and-white equipment will be demonstrated next spring, and cartridges and players will be available in the spring of 1969.

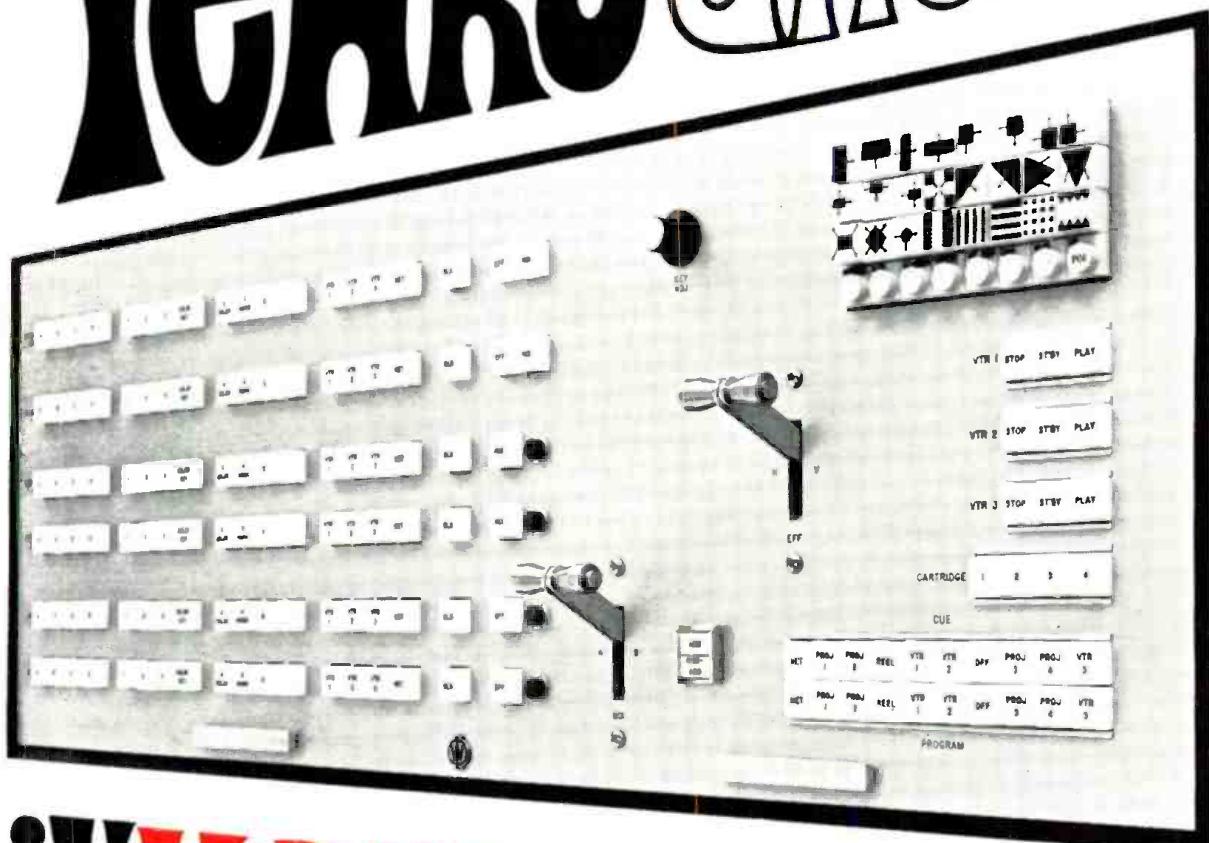
Ilford Ltd., a jointly owned subsidiary of ICI and CIBA, and a major manufacturer of photographic materials, has been collaborating with CBS Laboratories on the development of the specialized film required for the system.

## Copyright Plan Brightens

Guarded optimism over prospects of a possible settlement of the cable television-copyright issue has been shown by NCTA President Frederick W. Ford and Register of Copyrights Abraham Kaminstein.

Ford, in a special President's Letter to all NCTA members on August 29, said it was "encourag-

# YEARS AHEAD



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ing" that key participants expressed a "willingness to bargain on the question of copyright payments—without filing suits or even threatening to file suits—so long as all parties seemed interested in reaching a reasonable solution." Others at the meeting, Ford noted, stated their intention "to acquire authority from their clients to make such a commitment." This is understood to include the formation of a central collecting agency.

Kaminstein has asked all parties to file comments on specifics of the copyright issue and announced plans to hold additional meetings separately and then jointly with all participants.

## TV Income \$2.2 Billion

Revenue of \$2.2 billion and pre-tax profits of \$492.9 million is the FCC tally for the 1966 operations of the television broadcasting industry. These figures include the three networks, their 15 o&o stations and 593 others, and they represent gains of 12 percent for revenue and 10 percent for profit over 1965.

These impressive records are being used by the National Associa-

tion of Broadcast Employees to negotiate new contracts with ABC and NBC.

The networks themselves improved their profit by 8.7 percent, which is not as good as the record of the o&o's which retained 41.2 percent of their income. The 593 remaining stations had a pre-tax profit of 29.6 percent. Incomes were: networks, \$1,166.3 million; o&o's, \$262.4 million; all others, \$1,036.7 million.

The uhf stations as a group increased their revenues 20.3 percent compared with 9.6 percent for vhf stations, but their losses went up largely reflecting the addition of 12 new vhf stations. Eighty-seven percent of vhf stations reported a profit and 59 percent of the U's (four U's ceased operation in 1966).

The median revenue of profitable vhf stations was \$1,553,043. The median revenue for profitable uhf stations was \$771,431 (21 percent made over \$1 million).

Network sales (\$616.7 million or 34 percent), national spot (\$871.7 million or 47 percent) and local time (\$346.4 million or 19 percent) all increased, but the proportional share of national

time sales continued to decline (1 percent).

The original investment in tangible properties was placed at \$728.2 million for 479 vhf stations (slightly more than \$1.5 million each) and \$80.68 million for 114 uhf stations (\$710,000 each). The depreciated investment is \$375,376,000 and \$48,290,000 respectively.

## Fairness on Personal Attacks Amended

News broadcasts and on-the-spot coverage of bona fide news events have been exempted from personal attack provisions of the fairness doctrine in an amendment to Part 73 of the Rules by the FCC on August 22nd.

The obligation to notify the party being attacked and provide him with a transcript of the material involved will no longer be required for newscasts and coverage of breaking news stories. The Commission emphasized, however, that news interview shows and news documentaries must continue to meet all fairness doctrine requirements.

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Then it goes to the pre-checking department where each stereo monitor is aligned to the customer's frequency requirements. Although this is a fairly simple operation, we take about a half a day just to make sure we're right.

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## CATV News Service

The first all electronic news service designed specifically for CATV systems has been announced in New York City by Television Presentations, Inc. The company indicated that the service will be made possible by agreements now being concluded with United Press International and the New York Stock Exchange.

Using the service, subscribing CATV systems will be able to display news direct from UPI news wire, and stock sales prices from the New York Stock Exchange. In addition, each local CATV operator will have cut-in capability for displaying news programming.

Heart of the CATV news service system is an RCA-designed electronic character generator that takes information fed into it in the form of impulses from the UPI telegraph news wire, and converts it into 525 or 625 line video signals which then can be displayed on standard TV monitors or receivers.

Charles F. Dolan, president of Television Presentations, Inc., has established a target goal of 50 installations by early next year. Present plans call for leasing the sys-

tem to CATV operators at a rate of \$157 per week for a complete and typical one-channel installation. The cost includes access to the two information services, all equipment associated with the RCA character generator, teletype writer, and complete maintenance.

## CCBA Convention

The Central Canada Broadcasting Association will hold its annual convention on October 22-24, at The Inn on the Park, Toronto. This is a joint Engineering Management function, with separate programs for each group.

## IEEE Broadcasting Group Western Conference

The Broadcasting group of the IEEE will hold its Western Conference on Broadcasting November 9 and 10, 1967 at the Ambassador Hotel in Los Angeles, it was announced recently by E. Dale Bureus, general chairman.

Approximately 300 engineers, managers and university students are expected to attend. They will hear papers presented on inter-

ference-producing ground coupling, laser communications, satellite broadcasting, antenna design, color TV, and CATV.

## FCC Offered Equal Time

A very perspicacious radio station has offered the FCC time to reply to an attack on the FCC which was broadcast over its facilities during a syndicated program, reports the FCC Complaint Branch. Or is cautious the better adjective?

## Tall Tower Id Changes

The FCC has amended Part 17 of its Rules to make obstruction markings for towers over 1500 feet, up to and including towers of 2100 feet, conform to FAA regulations.

## Visual Acquires KRS Instruments

Visual Electronics Corp. has acquired the assets of KRS Instruments, Pasadena, Calif., a division of Datapulse Inc.

The newly-acquired facility

# Every TBM-4500A is CALIBRATED

For another half day your TBM-4500A stereo monitor is calibrated. The three meters, which allow simultaneous reading of right, left and TOTAL modulation, are checked several times. The entire circuitry is checked to make sure solder connections are firm.

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# Every TBM-4500A is COOKED AGAIN

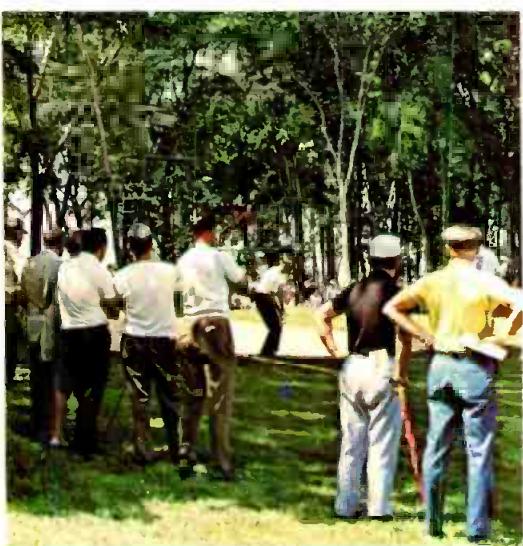
For the last 72 hours we simulate actual operating conditions by cooking again. We check the frequency alignment again. We check the calibration again. We make sure that all meters are working with the modulation applied. Is it any wonder that we guarantee our workmanship FOREVER? Or any wonder that we sell more FM broadcast monitors than all other manufacturers combined?

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# CBC "big tube" cameras put sharp TV coverage where the action is!

Three color TV mobile units similar to this one near the 18th hole were used by CBC to cover the event.





One of a total of eleven TK-42 cameras in use—located at several strategic points to pick up all the action.

During the Canadian Open Golf Championship at Montreal—an Expo 67 feature which attracted "name" golfers from all over the world—11 TK-42 "big tube" color cameras were deployed, 3 of them around the 18th green and fairway where much of the action took place.

These cameras were operated throughout several days of changeable weather and with widely varying light levels, constantly producing pictures of brilliance and sharp detail. Long shots depicting the milling crowds of spectators watching a long drive, or close-ups showing the details of tense putting sequences were equally effective.

A total of three RCA Victor-built vans, equipped with eleven TK-42 color cameras, was used to give the very

finest coverage from any vantage point. Narrative was simultaneously done in English and French—the usual procedure in Canada. The English program was fed simultaneously to an American network.

Whether you are interested in large-scale remote pickups, such as this out-size one for the Canadian Open Golf Championship, or for local remotes around town, get the facts on RCA's "big tube" color cameras. Call your RCA Broadcast Representative. Or write RCA Broadcast and Television Equipment, Building 15-5, Camden, N.J. 08102.



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manufactures cartridge tape recording and playback equipment for application in the professional broadcasting and data instrumentation fields.

## BUSINESS OF **CATV**

**Westinghouse Buys CATV System.** Westinghouse Broadcasting has purchased approximately 80 percent of the Panama City, Fla., Cable Television System from

Bruce Merrill, president of Ameco, Inc. in Phoenix, Ariz. A local Panama City stockholder holds the remaining shares. The system has 110 miles of plant serving 2600 subscribers, and has a potential market of 6000 customers.

**Ameco Building Systems in N.C. and Calif.** Ameco, Inc. has announced the start of construction of two new CATV systems. Construction contracts have been signed with Riverside (Calif.) Cable Corp. and United Antenna Service of Boone (N.C.). Boone is a

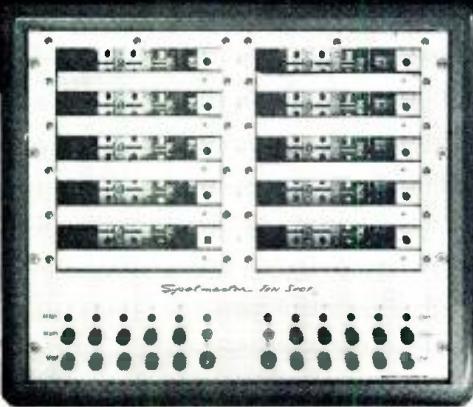
mountain resort community 70 miles from Asheville, and has 1500 potential subscribers.

**Mountain States Video, Inc. Receives Second Denver Area Permit.** MSV, headed by Bill Daniels, scored its second consecutive victory in the metropolitan Denver CATV area when the Golden City Council passed its resolution granting the firm a fifteen-year permit to transmit cable television to Golden residents. MSV recently was granted a fifteen-year permit to transmit cable television to all Jefferson County residents in its unincorporated areas.

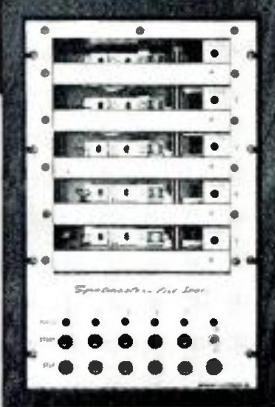
**Engineering-Contractors Attend TV Systems Course.** Forty-nine engineering-contractors from 11 northeastern states, the District of Columbia and Canada recently attended a major technical seminar held by Jerrold Electronics Corp. Similar regional meetings will be held by Jerrold this year to cover all of the company's nationwide engineering-contractor organization, according to Vroman Riley, manager of the Educational and Communications Systems Division.

**General Instrument and Jerrold Agree to Merge.** Martin H. Benedek, chairman of the Board of General Instrument Corp., and Robert H. Beisswenger, president and chief executive officer of the Jerrold Corporation, have announced jointly in a recent statement that the respective Boards of Directors have agreed in principle to the merger of the two companies. It is contemplated that Beisswenger and Paul A. Garrison, vice president-operations of Jerrold, will become directors of General Instrument.

## *Spotmaster* **Multiple Cartridge Playback Units**



Ten-Spot Model 610B



Five-Spot Model 605B

### **...bringing a new dimension to pushbutton broadcasting**

Spotmaster Ten-Spot (holding 10 cartridges) and Five-Spot (holding five) will reproduce any NAB Type A or B cartridge instantly at the push of a button...at random or in sequence. They may be operated manually or incorporated into programmed automation systems, using one, two or three NAB standard electronic cueing tones.

The Ten-Spot is designed for 19" rack mounting while the Five-Spot is available either in an attractive walnut-finished case or with a 19" front panel containing a cartridge storage cubicle. Both are backed by Spotmaster's iron-clad full-year guarantee.

For further information about these and other Spotmaster cartridge tape units, call or write today. Remember, Broadcast Electronics is the No. 1 designer/producer of broadcast quality cartridge tape equipment...worldwide!

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## BUSINESS OF **ETV**

**Pittsburgh Orders Visual Switchers.** WQED channel 13 and WQEX, channel 16, Pittsburgh's twin educational TV stations, have placed an order for \$180,000 worth of switching equipment with Visual Electronics Corp. The Visual switchers and related systems will go into three studios in the new building under construction by Metropolitan Pittsburgh ETV. Metropolitan's new building will provide over 60,000 square feet of space for their ETV operations. WQED presents school curriculum

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October, 1967 — BM/E

**NEW!**

SIMULTANEOUSLY MEASURES  
DIFFERENTIAL PHASE/GAIN



TYPE PVF

## DIFFERENTIAL PHASE/GAIN METER

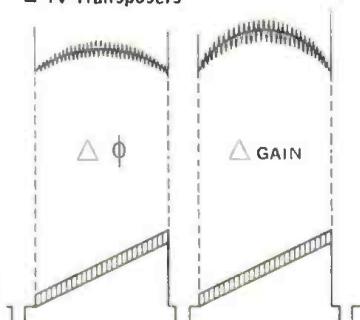
### FEATURES

- Measure:
  - △ Phase: 0.1° — 60°
  - △ Gain: 0.5% — 50%
- Calibrating Signals: 1°, 10°, 1%, 10% f.s.d.
- Electronic Switch permits simultaneous display of △ Phase/Gain
- Takes Low Frequency Oscilloscope (250 KHz) as readout device
- AFC provides 500 Hz locking range to ext. color subcarrier

### APPLICATIONS

Measure and monitor non-linear distortions of chrominance subcarrier on:

- TV Transmission Systems
- Studio Equipment
- TV Transmitters
- Microwave Links
- TV Transposers



Simultaneous Display of Differential Phase/Gain

Type PVF employs an intermodulation method to measure  $\triangle$  Phase/Gain. Item under test is driven by a line frequency test signal (sawtooth or staircase) of 100% amplitude on which the chrominance subcarrier of 10% is superimposed. Two demodulators in Type PVF provide for the measurement of  $\triangle$  Phase/Gain. Internal crystal provides the reference for the phase demodulator. A control circuit (500Hz dynamic range) keeps the incoming color subcarrier phase locked to the crystal.

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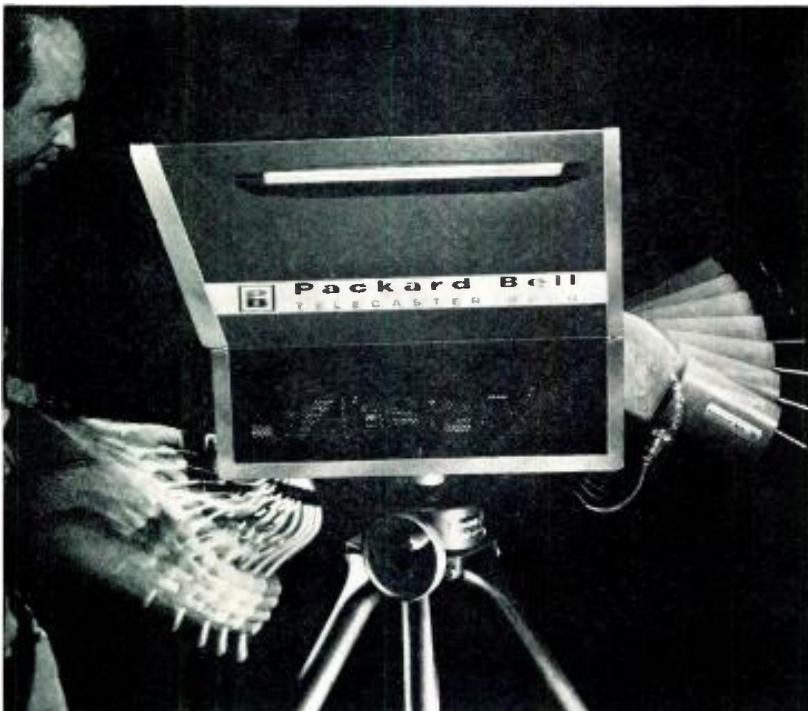
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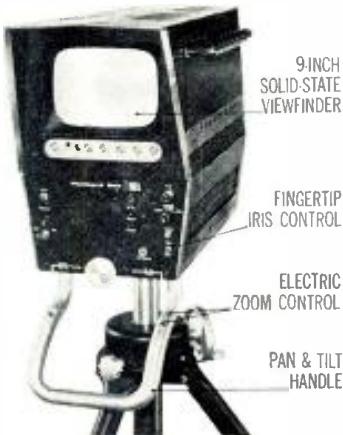
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programming during the day, and public service and general interest programs at night. WQEX features special programs such as management and hospital training courses.

**Philadelphia ETV Installs Blonder-Tongue Equipment.** Equipment for distribution systems in 130 Philadelphia public schools has been supplied by Blonder-Tongue Laboratories, Inc., Newark, N.J. The equipment will be used to upgrade systems already in existence and in new systems in the schools that don't have MATV.

## BUSINESS OF **BC**

**Color Van Making Rounds.** A color television van currently touring the country is giving broadcasters a first-hand look at the latest Ampex video and audio equipment.

The 24-foot van contains a VR-3000 Back-pack videotape recorder and monochrome camera combination, a VR-1200 high band color videotape recorder equipped with electronic editing, a Marconi Mark VII color camera and AG-440 and AG-500 broadcast audio recorders.

The van will visit 23 states and Washington, D.C. during nearly three months on the road. It left Ampex company headquarters in Redwood City, Calif. on August 1 and will return on October 21.

**LTV and Allied Revise Merger Agreement.** Agreement in principle on revised terms for the acquisition of Allied Radio Corp., Chicago, by LTV Ling Altec, Inc., Anaheim, Calif., was announced recently by both companies.

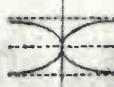
Alvis A. Ward, president of LTV Ling Altec, a subsidiary of Ling-Temco-Vought, Inc., Dallas, and A.D. Davis, Allied board chairman, said that the new agreement does not basically change the value of the transaction as announced July 26.

The revised acquisition agreement is subject to approval by the directors of the two companies and of Ling-Temco-Vought and by the shareholders of LTV Ling Altec and Allied Radio, as well as to legal requirements. Details of the transactions will be presented in proxy statements which will be sent to shareholders of both LTV Ling Altec and Allied Radio in October.

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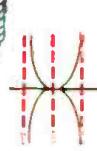
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10A100	100	8"	157	1.0	\$69.50
10A150	150	11"	235	1.5	\$86.25
10A200	200	14"	314	2.0	\$103.00
10A250	250	16"	392	2.5	\$119.75

\*±2 ft. or 2%, whichever is greater. \*\*Additional discounts available for quantity orders.

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# INTERPRETING THE **FCC** RULES & REGULATIONS

## Background of Pre-Sunrise Problems and New Pre-Sunrise Rules For Class III (Regional) Unlimited Time Stations

ON JUNE 28, 1967, the Commission adopted an "Amendment of the Rules with Respect to Hours of Operation of Standard Broadcast Stations" (Docket Number 14419, RM-268). The Report and Order was released July 13, 1967 (FCC-67-767), whereby the Commission amended Sections 73.87, 73.190 and added Section 73.99 to the Rules. Some licensees may have received a copy of the Report and Order; however, it seems that a great many licensees are completely devoid of any knowledge whatsoever concerning the new rules.

Although the reports in the trade press may have created the impression that a simple solution to the long pending and extremely complicated pre-sunrise operation problem has been found, we regret to report that, for many stations—at least for most stations operating on regional (Class III) channels—the reports are not well founded.<sup>1</sup>

All standard (a-m) broadcast station assignments in the United States are subject to the Communications Act of 1934, as amended, and two treaties with other North American countries, the United States-Mexican Agreement and the North American Regional Broadcast Agreement (NARBA), the latter encompassing Canada, Cuba, the Bahamas, Jamaica, and the Dominican Republic.

Although the United States no longer main-

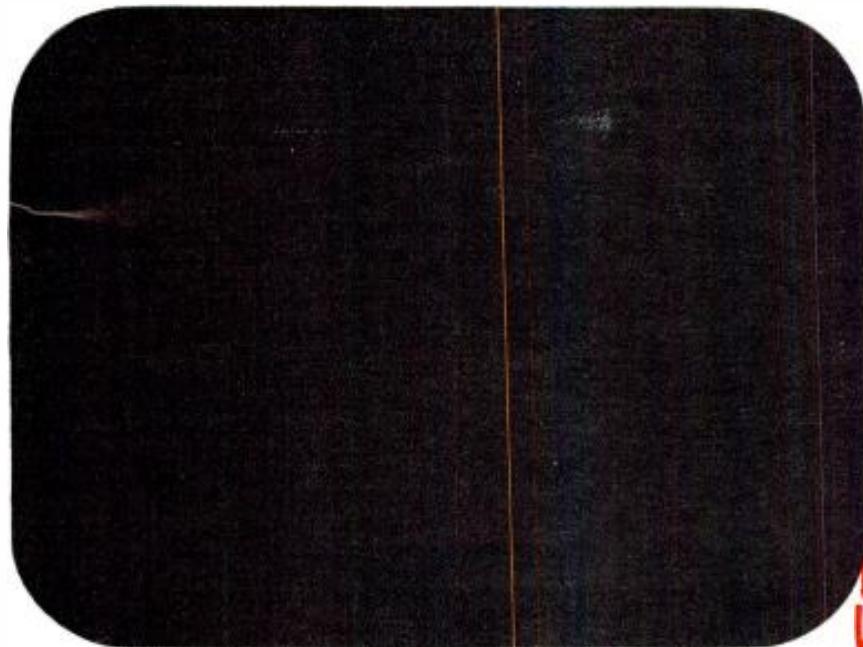
tains diplomatic relations with Cuba, the United States scrupulously adheres to the Agreement. Unfortunately, Cuba has not done so in recent years. The treaties have been supplemented by a series of notes covering specific engineering (technical) matters exchanged between the governments directly involved. All rules, regulations, and policies of the Federal Communications Commission must be compatible with the Communications Act, the treaties, and the supplemental notes. The new pre-sunrise rules must be interpreted and applied accordingly.

For many years, the Commission's rules and policies have permitted Class III stations, whether unlimited time or daytime only, to operate with their daytime facilities (power and antenna system) between the hours of 4 A.M. and sunrise (local *standard* time), even though the license of unlimited time stations specified operation with daytime facilities only between sunrise and sunset and the licenses of daytime only stations specified operation only between sunrise and sunset; provided that no unlimited time station operating with its nighttime facilities complained of objectionable interference.

Until 1954 the Commission received virtually no complaints of pre-sunrise interference from unlimited time stations. That year, unlimited time WING Dayton, Ohio, complained to the Commission of extremely severe pre-sunrise interference

1. Class III stations operate on the following regional channels: 550, 560, 570, 580, 590, 600, 610, 620, 630, 790, 910, 920, 930, 950, 960, 970, 980, 1150, 1250, 1260, 1270, 1280, 1290, 1300, 1310, 1320, 1330, 1350, 1360, 1370, 1380, 1390, 1410, 1420, 1430, 1440, 1460, 1470, 1480, 1590 and 1600.

This section, providing broad interpretation 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.



## Cold camera



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Camera is aligned and locked in fixed position in a small announce booth studio. Few lights are used due to the excellent

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WBAL-TV engineers claim camera needs little maintenance, has good depth of focus and needs trimming only once per week. Low light levels do not affect picture quality.

You might have other uses for a camera of this size and quality. If so, give us a call. We'll have a sales engineer to see you quickly—but not as quickly as the MTI Image Orth warm-up period.

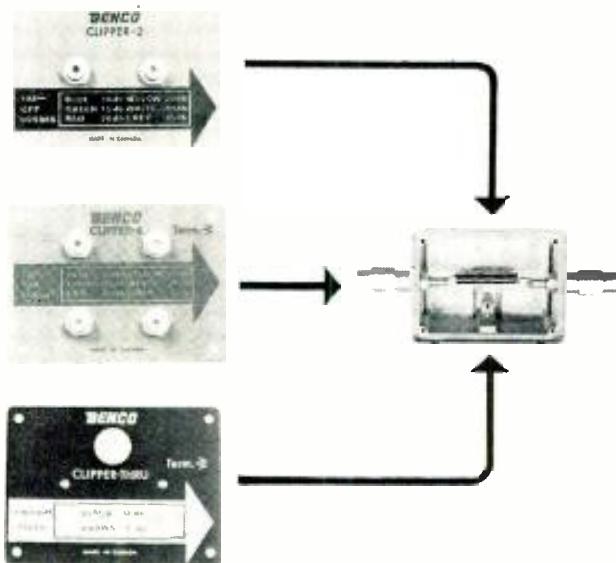


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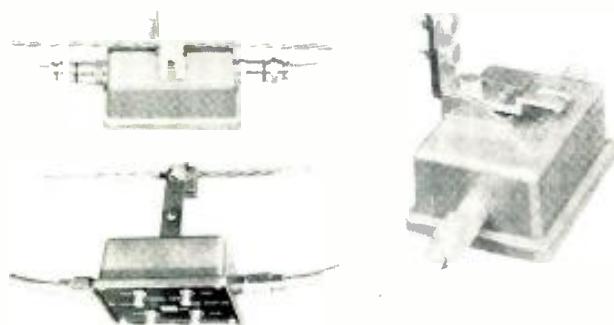
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from daytime only WGRD, Grand Rapids, Michigan (both on 1410 kHz). After the Commission refused to order WGRD to cease pre-sunrise operation, the United States Court of Appeals (D.C. Circuit) reversed the Commission, held that WGRD was not entitled to a hearing on the complaint, and ordered WGRD to cease pre-sunrise operations. *Music Broadcasting Company v. FCC*, 217 F. 2d 339. In 1961, the same Court held that unlimited time Class III stations could prosecute objections against applications which would cause pre-sunrise interference. The effect of the two decisions was to make it virtually impossible for any Class III station to operate pre-sunrise with its daytime facilities if any unlimited time station operating with its nighttime facilities objected. These decisions threatened to interrupt the long established pre-sunrise operation of all but a handful of the 2000 Class III stations.<sup>2</sup>

The history of the Commission's attempts to find a reasonable and practical solution to the pre-sunrise problem is set forth in the accompanying *Report and Order* and will not be repeated here. It suffices to say, only a very few of the Class III stations will be completely happy with the solution. However, it appears to be the best compromise possible of a most difficult problem.

Before the Commission could amend its rules, it was absolutely necessary to reach an agreement with Canada because the seasonal fluctuations of sunrise and sunset are greatest in northern areas of the United States. Even with the recently completed agreement with Canada, the possibility of interference with Mexican and Cuban Class III stations also must be considered under the United States-Mexican Agreement and NARBA. Although discussions have been held between the United States and Mexican Governments, the date of final agreement revising the present agreement cannot be estimated with certainty. For obvious reasons, there is no possibility of any agreement concerning pre-sunrise operations with Cuba in the foreseeable future.

### The New Rules:

The new and amended rules will bring about the following changes in the operation of every unlimited time Class III station now using its daytime facilities (power and antenna system) before sunrise:<sup>3</sup>

1. Every unlimited time station now operating before sunrise with a power of 1 kW or 5 kW and its daytime antenna system must discontinue such pre-sunrise operation on and after October 28, 1967;

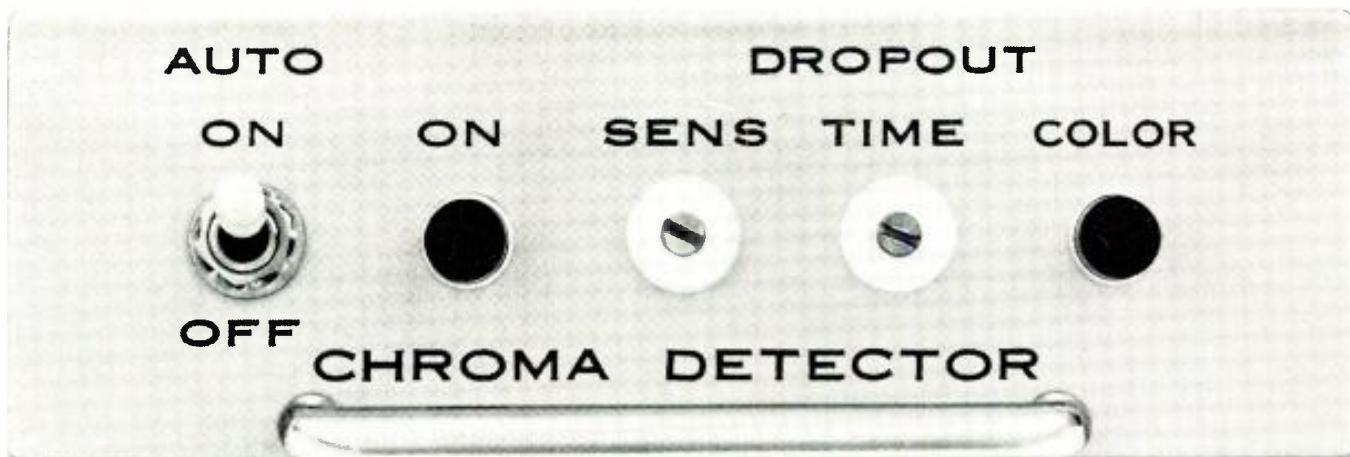
2. When pre-sunrise occurs prior to 6 A.M. local standard time every station must use its nighttime facilities before sunrise; and

3. When sunrise occurs after 6 A.M. local standard time, each station may request a Pre-sunrise Service Authorization (PSA) to operate between 6 A.M. local standard time and sunrise with a power of not more than 500 W and its daytime antenna system.

Similar restrictions have been imposed upon all daytime only Class III stations. No daytime

2. *Broadcasting Yearbook*, 1967 Issue, lists 2063 Class III stations on regional channels.

3. The only possible exception is for unlimited time Class III stations now operating with a daytime power of 500 W.



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only station will be permitted to operate before sunrise unless sunrise occurs after 6 A.M. local standard time and a Pre-sunrise Service Authorization for operation with not more than 500 W has been granted by the Commission.

### Procedures to be followed to obtain a PSA:

1. The request for a Pre-Sunrise Service Authorization may be submitted in letter form, signed by the same persons authorized to sign formal applications;

2. The letter request must be accompanied by a study of a consulting or other qualified engineer showing that cochannel stations in foreign countries will not receive interference from the requested pre-sunrise operation. The engineer must first determine the nighttime interference free limit (or contour) of any foreign station which might possibly be affected by the proposed operation. Then he must show that additional interference will not be caused to any foreign station by use of the following methods of computation:

(a) With respect to all foreign stations under consideration, except those in Mexico but including those in Canada and Cuba, the propagation curves and procedures of NARBA must be used to determine the existing nighttime interference free limits (or contours); for stations in Mexico, the propagation curves and procedures of the United States-Mexican agreement must be used;

(b) Computations to determine if pre-sunrise operation with 500 W power will cause additional interference to any Canadian station must use the new propagation curve (Figure 12) adopted by the amendment of Section 73.190 of the rules; such computations to foreign stations in countries other than Canada must use the appropriate curves and procedures of NARBA or the United States-Mexican Agreement; and

(c) If the computations show that pre-sunrise operation with 500 W power would cause additional interference to any foreign station, the maximum power which could be used without causing such additional interference must be determined.

### Significant Dates:

1. August 31, 1967; Deadline for submission of letter requests for Pre-Sunrise Service Authorization (PSA) to obtain prompt consideration; and

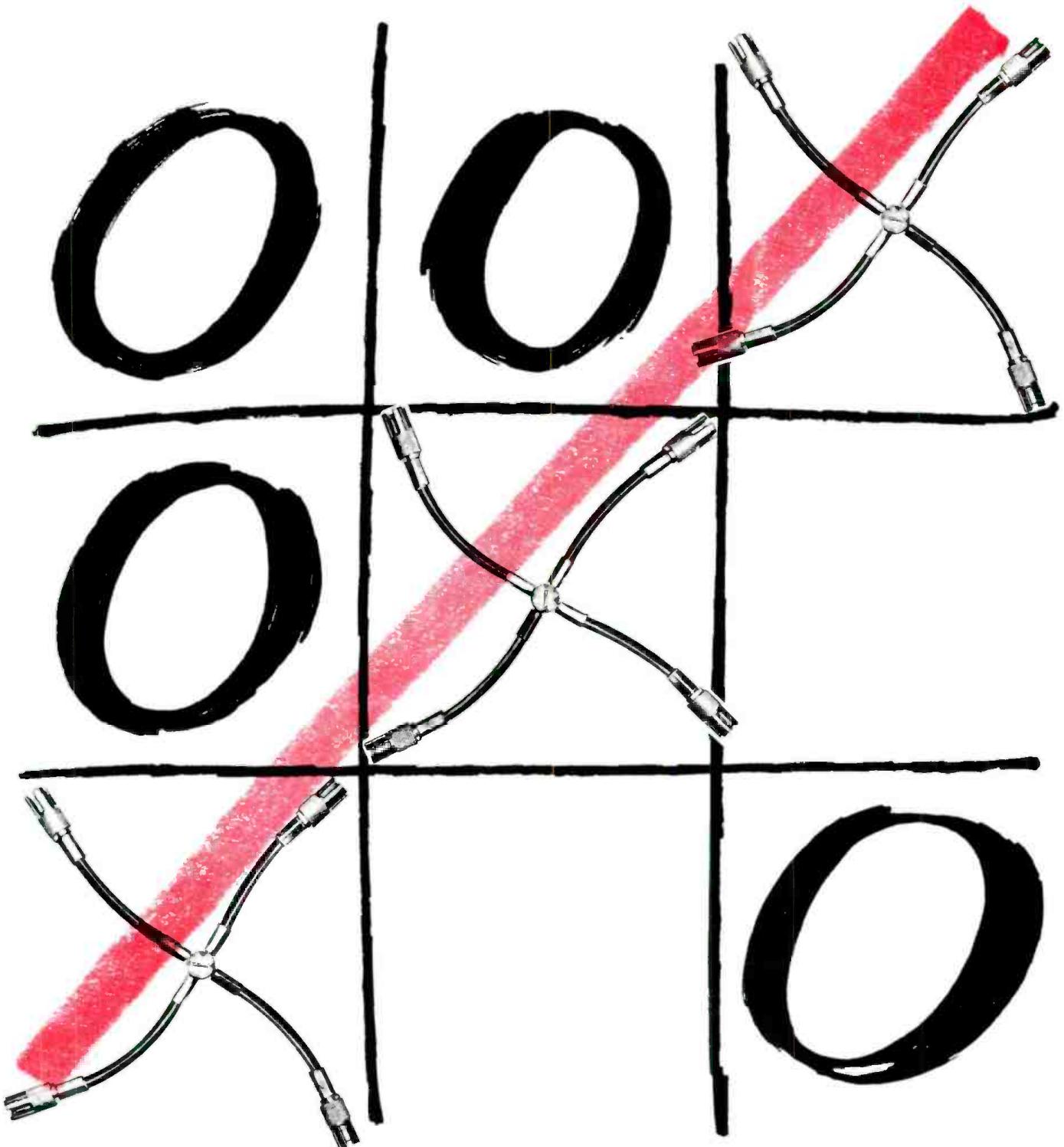
2. October 28, 1967; Discontinuance of all pre-sunrise operations by Class III stations except those using their nighttime facilities or those having been issued PSA's.

### Additional Comments

Pre-sunrise operation by unlimited time stations with either their nighttime facilities or under a PSA will cause a loss of existing pre-sunrise service in most cases because of the weak signals in the nulls of the nighttime directional antenna arrays. The new pre-sunrise service will not be as good as evening service when all cochannel stations are operating with their nighttime facilities because interference will be received from daytime only stations operating pre-sunrise under PSA's.

However, there will be improvements in some cases. In many cases, daytime only stations now operating pre-sunrise with 5 kW cause most severe interference to the present pre-sun-

4. It is understood the Canadian Department of Transport soon will supply to the Federal Communications Commission computations of the nighttime interference free limits (or contours) of Canadian Class III stations.



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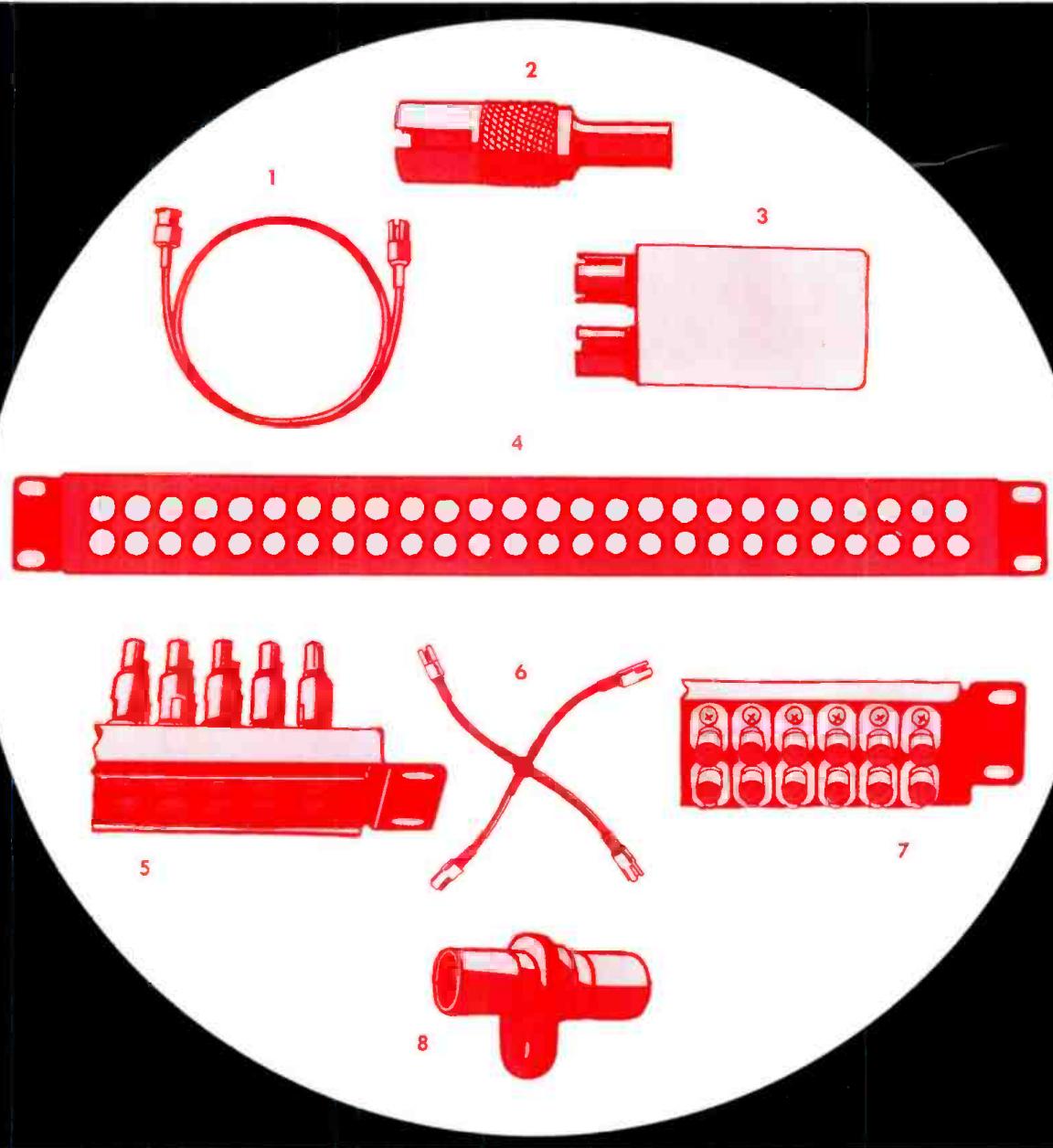
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SHOWN ON COVER: COOKE MODEL 105-8 FOUR-WAY BRIDGING NETWORK, used with Model 105-24 coaxial jack in front or rear of panel to parallel 4 RF circuits or feed 3 RF circuits from a common source. 1. COOKE MODEL 105-6 TEST CORD. To be used with Model 105-24 coaxial patching jack. One end has Model 105-3C quick disconnect connector; the other, std. BNC or UHF male connector. 2. COOKE MODEL 105-3C QUICK-DISCONNECT SNAP-LOCK CONNECTOR for RG-58/U coaxial cable. Push-on/pull-off, snap lock, quick-disconnect action for use in high density situations. Crimp sleeve included.

Mates with all jacks of Cooke's Model 105 series and may be used with Model 105-24 patching jack. 3. COOKE MODEL 105-9 QUICK-DISCONNECT NORMALING PLUG for use with Model 105-24 coaxial jacks mounted on  $\frac{5}{8}$ " centers. Also used when patching adjacent circuits. 4. COOKE MODEL 105-52A

JACK PANEL accepts 48 Model 105-24 coaxial patching jacks mounted in two rows of 24 on  $\frac{5}{8}$ " vertical centers. Black phenolic; top and bottom designation strips; metal mounting brackets each end. 5. COOKE MODEL 105-52A PANEL (see 4), shown with permanent cabling using 105-3 connectors. 6. COOKE MODEL 105-7 FIVE WAY BRIDGING NETWORK permits paralleling 5 RF circuits or feeding 4 RF circuits from a single source, as it has 4 Model 105-3C connectors as coaxial cable terminations plus a junction receptacle for connector or patch cord. 7. COOKE MODEL 105-52A PANEL (see 4) showing mounting of Model 105-24 jacks. 8. COOKE MODEL 105-24 COAXIAL PATCHING JACK, a shielded miniature jack used in high density RF patch fields. Will accept Cooke quick-disconnect connectors at either end. • Other jacks and hardware available. Write or call for specifics.



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rise operations of unlimited time stations. Much of this interference will be substantially reduced. In many other cases, pre-sunrise operation of unlimited time stations with their daytime facilities cause most severe interference to present pre-sunrise operations of other unlimited time stations. Most, if not all, of this interference will be cut back to the nighttime level. The end result may not be as severe as first expected.

Nevertheless, the new rules will cause substantial hardship upon many Class III stations as well as severe hardship upon the public by loss of service. However, most of the pre-sunrise operations with daytime facilities would have been shut down completely if the Commission had been required to enforce its rules (and treaty obligations) in the manner ordered by the Court whenever an unlimited time station operating pre-sunrise with its nighttime facilities objected to pre-sunrise interference.

On the other hand, some daytime only Class III stations will be able to operate pre-sunrise for the first time, thereby providing a new service to the public.

It seems reasonable to believe that petitions for reconsideration will be filed with the Commission and appeals will be filed with the United States Court of Appeals. However, unless the petitions and appeals present some new and novel questions of law and supporting arguments, we believe that the Commission's action will be affirmed. The possibility is a little greater that a stay of the effective date of the new rules pending action upon appeals will be ordered by the Court.

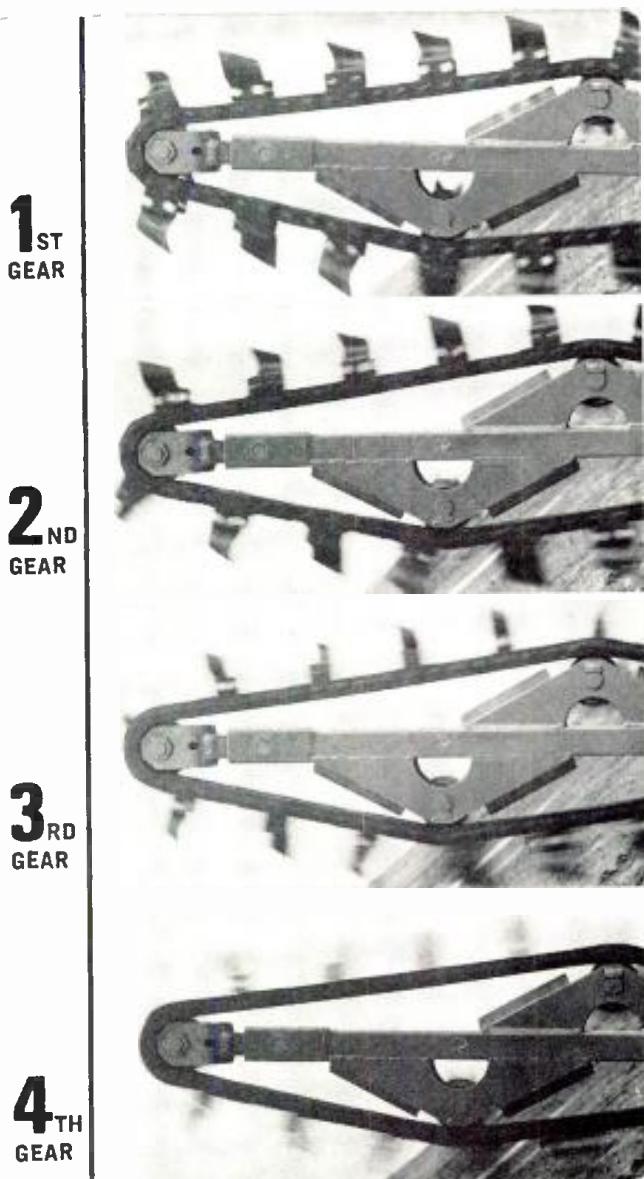
There appears to be a reasonable possibility, however, that the Commission will grant a fairly short extension of the effective date of the new rules. Some consulting engineers have already advised that they expect to be so overloaded with requests to prepare pre-sunrise studies for daytime only stations that they may not be able to meet the deadline for many clients.

The possibility of any significant changes in the new rules by the Commission appears most remote. It is unrealistic to expect that the Commission, on its own initiative, would ask Canada to modify the agreement which took so many years of negotiation to obtain.

#### Recommendations

In some instances, particularly when the present daytime power is 1 kW and/or when a deep null of the nighttime array falls over a very heavily populated area, 6 A.M. to sunrise operation with a power of not more than 500 W may provide better service than operation with the nighttime facilities. Accordingly, we recommend the following:

1. Have your consulting engineer study the pros and cons of pre-sunrise operation with a PSA;
2. Make every effort to obtain Report and Order FCC-67-767, dated July 13, 1967, amending Sections 73.87, 73.190, and adding Section 73.99;
3. If your operation will be most severely and adversely affected, you should contact your communications attorney in order to advise him of such adverse effects so that he may evaluate the desirability of further action.



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# New Directions In Farm Radio

By Erny Tannen

## WDMV Salisbury, Md.: Programming tailored to Delmarva Farmers.

THE DELMARVA PENINSULA is an area that personifies change in farming. Delmarva, a contraction of Delaware, Maryland, and Virginia, is a lovely agricultural region 200 miles long and 60 miles wide, bounded on the west by the Chesapeake Bay and on the east by the Atlantic Ocean. It is surrounded by a ring of dense population, starting with Philadelphia on the North, extending south through Wilmington, Baltimore, Washington, Richmond, and Norfolk, Virginia—a ring of nearly 10-million people—all within easy commuting distance. Delmarva is contiguous to the Washington-Boston megropolis containing over 32-million people. In Delmarva, the integrated system of producing broilers was first introduced to agriculture in the United States less than 3 decades ago, a broiler production whose annual value now exceeds 215-million dollars. All of the corn (40,335,000 bushels) and all of the soybeans (10,732,000 bushels) produced on Delmarva go into the manufacture of feed for broilers.

### The Birth Of Farm Radio

I bought WDMV, which stands for Wonderful Delmarva, nearly 8 years ago. Upon taking over the station in January 1960, I had the opportunity to apply some marketing principles which I wholeheartedly believe in. In 1960 the radio industry was beginning to settle down from its post TV jitters. Those of us in radio who didn't switch to TV bought, fought, and learned some things. We learned that in the metropolitan areas the magazine concept of programming worked. Prior to World War II, radio stations were programmed pretty much as TV stations are today—half-hour situation comedies, variety shows, soap operas, etc. Then came four developments at the end of the War: the radio station explosion, the advent of TV, the battery-operated transistor radio explosion, and the introduction of portable tape recorders.

Before World War II, with only one quarter the number of radio stations, each station had to, and did, serve many audiences. The farmer before 6 A.M. and at noon, the awakening cities between 6 and 9 A.M., the housewife and the family in the evening. Between World War II and now, those of us in radio who lived through these fantastic changes learned some things. In the cities, survival depended on the discovery that the public is not my audience—the public contains my audience. So in the '50's we began to apply the magazine concept, to specialize the programming of an en-

tire station and aim it toward an important segment of the community. We developed classical music stations, popular music stations, Negro stations, middle-of-the-road stations, all-talk stations, etc. Behind the magazine concept of radio programming lies one motivating thought—to have available the kind of program anyone with a radio is interested in, whenever he feels like tuning in.

With this in mind, back in 1960, after checking the market figures for Delmarva and finding that almost 90 percent of the economy was dependent on agriculture, I asked, "Why not an all-farm station?" Especially since my personal survey of farmers indicated that many of them listen to radio throughout the day, not just before 6 and at noon. Early in 1960, I had the opportunity to attend a meeting of the Ruritan Club of Accomac, Virginia. There were approximately 120 members present, nearly all involved in farming. I asked the president if I could do a little survey, and he agreed. I stood up and asked those who get up before 7 A.M. to please raise their hands: 38 did. All the others arose after 7 A.M., one hour or more after the traditional farm programs on the big city stations sign off!

### Program Development

We asked a lot of questions of a lot of people. We talked to farmers, county agents, leaders in the Delmarva poultry industry, representatives of major farm suppliers, feed producers, broiler growers, dealers, and farm advertising people. We found that our farmers preferred nice popular music, lots of local news, and lots and lots of weather reports. We arranged for each county agent in a 6-county area to tape a telephoned report on "what to do on the farm today." These reports are 60 seconds long and are repeated every hour for the entire day, so that whenever a farmer feels like tuning in any time of the day, he'll hear it. We were told that broiler growers were not interested in listening to the entire broadcast of the poultry auction carried live daily by other stations. They are interested in the daily high, low, and average prices. So we broadcast these every hour. We also learned that weather is important. WDMV is the only station on Delmarva functioning as a substation of the U.S. Weather Bureau. We broadcast general weather reports at least every 15 minutes, plus special hourly reports for broiler growers. (We have a poultry weather dial-a-phone sponsored by Charles Pfizer and Co.) And because we are bordered by the Chesapeake Bay and the Atlantic Ocean, we even broadcast marine weather every hour for the fish farmers. And constantly, all day long, every hour, every day, we identify WDMV as the "Delmarva Farmer's Station."

**Mr. Tannen** is president and owner, WDMV Salisbury, WYRE Annapolis, and WEEZ Chester, all Md.

We began to program in this way in March of 1960. Three months later, I dropped in on Bob Miller, the Wicomico County agent in Salisbury, Md. Bob is considered by many to be the dean of the county agents on Delmarva. Frankly, I wasn't prepared for the reaction I got. "Mr. Tannen," he said, "this is the best thing that ever happened to farm communications here on the shore. For 7 years I have been doing a 10-minute program every Saturday morning at 6:15 on another station. I've been on WDMV just 3 days. I've had more reaction from those 3 appearances than from the entire 7 years put together on the other station!"

At that moment, I knew that my concept was right, that the basic format of WDMV programming was right. But it's the special elements that really make it important. Whenever there is a meeting of farmers, WDMV has its microphone at the head table, taping away. And always WDMV is the only radio station there. Excerpts from the tape make the lead story on WDMV news the next day—every hour. Whenever there is an important community farm event, WDMV always promotes it free with announcements taped by the farm leaders involved. These are broadcast every hour for a week or two prior to the event.

#### Listener Classification

The concept of directly involving local farm leaders in our programming was influenced by 2 factors—the development of the portable tape recorder, and the Bohlen and Beal study called "The Diffusion Process," published in March 1957 by the Agricultural Extension Service of Iowa State College. Drs. George M. Beal and Joe M. Bohlen of the Department of Economics and Sociology were asked to do a study on how farm people accept new ideas. They found that mass media—radio, TV, newspapers, magazines—made the farmer aware of a new idea or product. But, "Farmers seem to suspect mass media, salesmen, and dealers of pushing an idea mainly for the purpose of selling a product." However, "... they apparently rely on sources which they consider to be objective—neighbors, friends, and government agencies." Then Drs. Bohlen and Beal classified farm people. They broke them down into 5 categories: the innovators, the early adopters, the early majority, the majority, and the nonadopters.

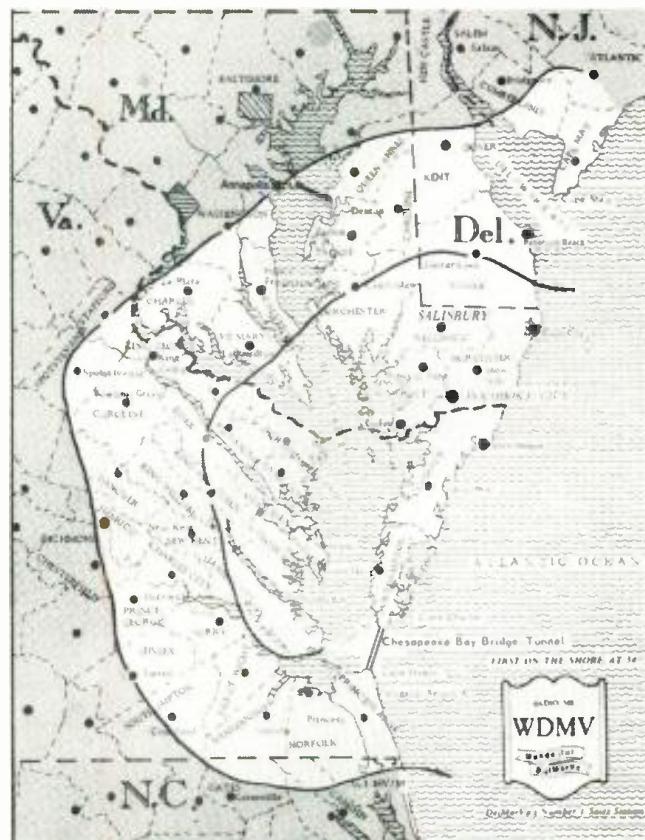
At WDMV, we decided that the most effective way we had of influencing our farmers was through the voices of the innovators and early adopters. And so, hardly a week passes without the voices of Delmarva Farm Leaders being broadcast via tape on WDMV to promote important farm events, and to endorse products which they have found to be useful and effective. It is this kind of total station involvement that has gotten WDMV appointed the official station of the annual farm and home show held every September in Salisbury, Md. We are the official station of the Delmarva Poultry Industry. WDMV's general manager and operations manager are the

only people in the United States not employed by the company who have been appointed to American Cyanamid's "Golden A Club." And when the annual corn clinic was held for the first time on Delmarva last year, WDMV was appointed its official radio station. A fantastic thing happened: Our first corn clinic was the largest ever held in the United States! Don Duncan, DeKalb Corn advertising manager, wrote me a letter in which he said: "Our corn clinic was the largest by far—even in comparison with some 55 held in the concentrated corn production area of the central corn belt. The attendance of 1800 outranked the top 2 clinics in Illinois and Iowa with their attendance of 1000. I am sure that our choice of WDMV as the only station to promote the clinic in the Delmarva Peninsula had much to do with this success. Other previous promotional campaigns with WDMV had been convincing evidence that nearly all farmers in the area listen to your programs." (And this year, our second annual corn clinic exceeded the turnout of our first by nearly 200 farmers!)

Do we have a Radio Farm Director to coordinate this activity? Not in the traditional sense. Here, too, the winds of change have left their mark. WDMV is the only radio station in the United States where the general manager is the radio farm director! Charlie Stewart is personally on the scene at every agricultural event on Delmarva. He personally knows every leader in all areas of Delmarva agriculture.

#### Listening Habits

The success of a radio message is determined not just by how many different people it reaches,





WDMV listeners are provided with consistent coverage of all area agricultural activities. Here, the WDMV mic records the proceedings of the Delmarva Broiler Growers as they honor outstanding members for their achievements.

## Metropolitan 'Hillbilly' Station Scores

By Joe Shapiro

Immediately after WJRZ, Newark, N.J., was bought by its present owners in 1962, the new management came up against the problem that had stymied the previous operators of the station: with over fifty receivable radio signals in the New York metropolitan area, how do you make your voice heard?

In the period between 1962 and 1965, the station tried various features and program concepts in an attempt to give WJRZ a distinctive personality that would appeal to listeners. Tapes of old radio dramas were aired, as were comedy and folk music shows. The station had a hard-hitting News Department, and it editorialized. The basic music format was middle of the road. None of this, however, succeeded in raising the station to a level of profitability. The problem in this case, as in so many others, was one of ratings. During this period, WJRZ found itself continually listed in the rating reports in the miscellaneous category, comprised of stations whose scores were below minimum reporting standards. Apparently, New Yorkers simply didn't see any reason to desert their long-time radio choices to listen to a Newark station. The sales staff at WJRZ recognized this and attempted to sell the station as one which covered the New Jersey market. The rating services, however, did not measure the "New Jersey" market separately—it was included in the New York metropolitan area. As a result, the station could not substantiate via ratings its claim to cover this market.

It became evident that the station would have to change its format if it was to change the red ink on the balance sheet. The format would have to fill a void but to score the needed impact it would also have to be recognizable instantly so that the station would stand out as the listener tuned the crowded a-m dial. Further, any new format would have to prove popular with enough listeners in the metropolitan area to increase ratings and revenue.

In smaller, and even in most large markets, these criteria might not be extremely difficult to meet. New York, however, was something else. The area already had all news, all talk, all rock, all foreign language, all classical stations—in fact almost every format.

It was in the summer of 1965 that General Manager Lazar Emanuel and the staff of WJRZ first considered country music. This was

but rather by how many times the same people hear it. We have found that this requires a change in the thinking of some of the people who buy radio advertising. During the summer of 1966, the Radio-TV Department of the School of Agriculture at the University of Maryland decided to find out for themselves where, and what time, and to what stations farmers in Maryland listened.

Here is the methodology that was followed: To each county agent in the 23 Maryland counties the University mailed 100 self-addressed questionnaire post cards. The county agent, in turn, sent the card with a cover letter to 100 farmers in his county. Twenty-one of the 23 counties participated; 2100 cards were mailed. Within 30 days, completed cards were returned by 864 farmers, nearly 42 percent. The survey showed

totally uncharted territory in New York City—no one really knew how supposedly sophisticated New Yorkers would react to country music. There were those who doubted that "hillbilly" music could ever make it in the big city. On the other hand, WJRZ management took note of the successes country music had racked up in other cities such as Chicago, which were thought to be too sophisticated for this format.

Based on this evidence, the station decided to take the plunge. Although WJRZ could have hedged its bet by programming country for a limited portion of the broadcast day, it was felt that this would not be a fair test of the potential of country music in the metropolitan area. The commitment, therefore, was total. The switchover date was set for September 15, 1965.

In the weeks before the change, the specific format was planned and the new sound of WJRZ began to take shape. One of the objections to the country music format was that C&W stations sounded too cornball, too unsophisticated. This was indeed the image projected by many country stations. But why couldn't country music be presented in a modern radio setting? No answer was forthcoming, and the new WJRZ sound was designed to present country music in a contemporary format with a numbered playlist and a specific music formula. The existing air personalities were retained. This proved to be an advantage, because they already enjoyed listener acceptance, making the transition easier. In addition, they were experienced in big city radio and helped the station retain a sophisticated sound, even with the change in music. Also, to this end, it was decided to stress the modern sounds in country music and to soft-pedal the older bluegrass material.

And so, on September 15, 1965, the New York metropolitan area for the first time had a full-time country music station. WJRZ girded for the initial drop in audience and revenue that usually accompanies a format change and they were prepared to stick it out. But, to their surprise and delight, this drop never happened. Country music at WJRZ was an immediate and unqualified success. In the first rating period after the switchover the station soared from obscurity in the miscellaneous column to a position of equality with such longtime giants as WCBS and WNBC.

that the overwhelming number of farmers in each county listened to his local radio stations. While there were scattered mentions of the high-powered metropolitan stations, they showed up strongest only in the counties immediately adjacent to Baltimore. In the top three Maryland farm counties, the vast majority of those farmers responding listened most to their local stations. The count was 164 to the local stations, 13 to the metropolitan stations. What time do farmers listen to the radio? Of the 864 responding, 195 said they listen at different times throughout the day; 170 before 7 A.M. and between 12 and 1 P.M.; 83 listen between 7 and 10 A.M. and between 12 and 1; 79 listen only before 7 A.M.; 57 only between 12 and 1; 47 only between 7 and 10 A.M.; 45 before 7 and between 4 and 7 P.M.; 36 before 7 A.M., be-

Coupled with this general improvement in ratings was an especially prominent rise in the station's cumulative rating. This is the number of different persons who listened to the station in the course of a week. Along with this dramatic increase in audience was an increase in revenue. Within a short time, the station was operating profitably.

In the past two years the station has seen additional evidence of the strength of country music in the metropolitan area. In-person shows by country artists, promoted by WJRZ, have been consistent successes. In fact, they have even filled staid houses such as New York's Carnegie Hall with the twang of country sounds. A weekly live country music remote from Palisades Amusement park this summer has drawn crowds which overflow the show area.

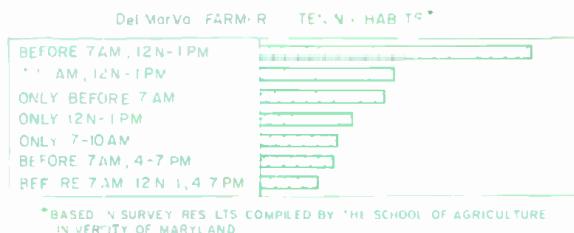
This year WJRZ has become the radio voice of the New York Mets. 1967 was the first year of a five-year contract. Undoubtedly, the large audience that country music has brought to the station was a factor in the Mets' decision to sign with WJRZ. Conversely, the Mets have brought new listeners to WJRZ and new converts to country music.

With the success of country music and WJRZ in Metropolitan New York an accomplished fact, the station recently moved from Newark to new and modern facilities in Hackensack, N.J. Eleven miles from Newark, Hackensack is now the city of license but the station covers all of New York City and most of the suburbs.

In the months since the big switch, audience and revenue have continued to grow. There is still some reluctance on the part of certain potential sponsors—airlines and makers of luxury cars. Happily, however, they are in the minority. It is increasingly difficult for advertisers to ignore WJRZ which today has the largest measured audience of any country music station in the United States, and probably the world.

Station Manager Harry Reith explains that at WJRZ, the feeling is that country music is emerging as the music of tomorrow. Nashville is one of the largest recording centers, with artists, both country and noncountry, going to "Music City" from all over the world to capture that country Nashville sound. As long as country music continues to grow, WJRZ radio has it made.

tween 12 and 1, and between 4 and 7 P.M. That accounts for the largest number of responses—712. The remaining 152 cards had every combination of listening imaginable. There wasn't one time period when some farm family wasn't listening!



Of the total of 864 responses, here's where these Maryland farmers were when they had the radio on:

- 264 listen only in the kitchen;
- 137 listen in the kitchen and in the car;
- 58 listen in the kitchen and barn;
- 49 listen in the kitchen and truck;
- 32 listen in the kitchen, bedroom, and car;
- 31 listen in the kitchen, car, and barn;
- 30 listen only in the barn.

That takes care of 601 responses. The remaining Maryland farmers listen in several combination of places that include the living room, dining room, office, store, chicken house, milk house, and school bus. Eight of the respondents said they didn't listen to the radio.

What do we conclude from all this? First, on the farm, as in the city, radio is truly everywhere. Secondly, while early morning and noon continue to be important listening times, they are by no means the only times the farm community is listening. Third, like the rest of the populace, farmers listen to the radio while they do something else—eat breakfast, drive their cars, trucks, or tractors, work in the barn, chickenhouse, milkhouse, etc. And, at least in Maryland, we know now that they listen to their local stations—the stations that are closest to them where they have continuous personal contact with station personnel who know what their needs are and how to fill them. If this Maryland pattern can be applied to other communities in agricultural areas, and I believe it can be, this provides a great new flexibility for the farm radio timebuyer. Because every important farm county in the United States now has its own station, or stations, the farm media buyer can pinpoint his area—and buy saturation. Saturation is the only effective way to use the radio medium, and at much, much lower cost per unit than he pays now on the metropolitan powerhouse.

Our next move is to establish the National Agradio Group. We will try to promote our method of farm programming to stations in America's top 400 farm counties. Before 1967 is out, we hope to be able to offer, through a central sales office, the farm advertiser's pick of 400 WDMV-programmed stations, sold as a network, available to be purchased in its entirety or any part. This also is what we believe to be the new direction in farm radio.

# Profile of Mini-Market Radio

By Charlie Buffington

## What special considerations are necessary to successfully operate a small market radio station?

ON THE FRINGE of Maryland's Catoctin Mountains, and just to the south of Catoctin State Park, is a small community named Thurmont, population 2800 (1960 census). In many respects, Thurmont appears to resemble many similar, small communities. But since June of this year, with the advent of a commercial radio station, things have changed considerably. Statistics show Thurmont to be one of fastest growing communities in one of the state's richest agricultural counties (Frederick). In broadcast market ranks, Thurmont might be considered a "mini" market, though situated within a 15- to 20-mile radius is Gettysburg, Pa. (pop. 8000), and Frederick, Md. (pop. 22,000). Thurmont is some 50-odd miles north of Washington, D.C., and about the same distance northwest of Baltimore.

### Why A Station In Thurmont?

Obviously, Thurmont is covered by a rather large number of broadcast signals, at least during daytime hours. Within a 20- to 25-mile radius there are more than a half-dozen stations including two in Frederick and one in Gettysburg, but in spite of the number of surrounding stations, topography and location prevented quality nighttime reception. It was this absence of a complete radio service that encouraged Vic Leisner to consider building a station in Thurmont.

Studies revealed that the vacant 1450-kHz local channel would work with a full-time power of 100 W. However, shortly after Leisner's application was filed with the FCC, the Commission ruled that applications for 100-W stations would no longer be accepted, but that those on file would be immune from the ruling. So, even during the embryo stage, WTHU almost became extinct since an elaborate directional array, which almost certainly would have been required on any other frequency, was virtually out of the question from an economic standpoint. In WTHU's daylight 0.5 mV contour, there is a population of 21,341. Leisner and his advisors felt, in view of existing circumstances, that the proposed station was needed, and that it could be successful.

### An Instant Success

Since its inaugural broadcast on June 12, 1967, WTHU has become the hub of nearly all activity in the community. Understandably proud

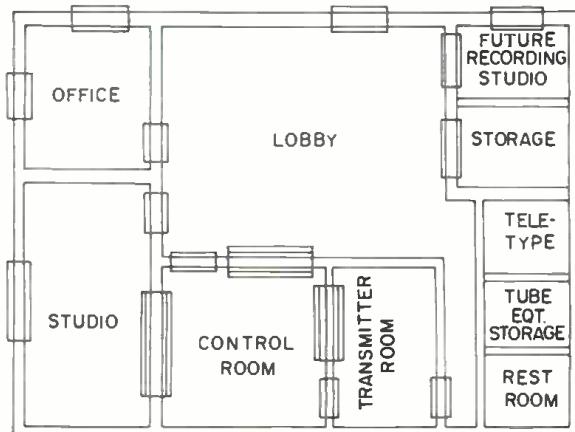
of having their own station, Thurmonters have rallied behind WTHU. Literally hundreds of letters began pouring in during the early weeks of operation, and listeners have generously offered and provided food for weary personnel and chipped in with the house-cleaning chores.

WTHU is a family affair; it is family-owned and operated, with additional full-time and several part-time employees, including several local high school students. President Vic Leisner and son Bill both pull daily air shifts. Bill is vice president, general manager and morning man; Vic does an 11 to 12 P.M. call-in talk show, and is presently resisting listener pressure to extend to program's length. Mrs. Leisner, secretary-treasurer, handles traffic and gal-Friday chores. Therefore, operating costs are held to the bone—about \$1700 a month.

In any business, the first several months are crucial, and if the first several months are any indication, WTHU's future seems quite secure. During the period June 12-30, after initial sign-on, billing was \$1600. July's gross was \$2,500, and business is growing steadily. WTHU's rate card is ample evidence that they are not selling themselves short. It may be a mini-market station, but the rate card is based on the expected number of persons reached, and it is comparable to effective rates at most area stations, although there are more powerful stations in the area with lower rates. Several advertisers, familiar with the rates of several other stations, have expressed some surprise at WTHU's rates, to which Vic or Bill simply state that everybody knows what his product is worth. Those advertisers who have used WTHU—including several in Gettysburg and Frederick—have been pleased with results.

The sales staff consists of Vic and Bill, who manage to integrate sales with a multitude of

WTHU's 30 x 40-ft floor plan. The future recording studio was originally intended to be a kitchen, but in view of the station's proximity to community, a production studio was deemed to be more important.



other tasks. Much of the existing business, though, has been written on call-in orders, a fact that has surprised the Leisners who have had considerable broadcast experience.

### Programming

Programming is simple, basically a pop-country format, except 11 to 12 P.M. and Sunday morning. Current hits, and occasional recent hits from both pop and C&W charts are alternated to suit the variety of tastes in the rural community. Good, tight production is achieved by a combination of devoted operators and adequate equipment—two turntables and two tape cartridge machines, plus a portable reel-to-reel recorder. Seasoning is added with production and promotional material supplied by Pepper Sound Studios, which gives the station quite a professional sound.

Contests are used regularly to maintain listener interest. During the first week of operation, an "Oldie But A Goodie" (a Pepper Sound Production) contest drew over 300 entries. Listeners were asked to estimate, or count, the number of times the station's call letters were painted on a '57 Chevrolet; and the contestant guessing closest to the correct number was awarded the automobile.

### Promotion

Most new stations are launched in an aura of fanfare, but not so with WTHU. In addition to several news stories in the local weekly paper, a single ad was purchased as construction neared completion to advise potential listeners of the expected air date. As it turned out, the actual air date was two days later than the announced date, and apparently many receivers had been tuned in, in anticipation, for the opening broadcast was greeted by a continual flow of congratulatory phone calls. Immediately listeners were urged to spread the word, and apparently they did.

### Community Involvement

WTHU jumped into community involvement with both feet. While nothing spectacular was at-

A WTHU "family portrait," Vic Leisner, (l), Mrs. Leisner, and Bill.



tempted, the station seized every opportunity to be of service. During the first week, a listener found a \$20 bill on a Thurmont street and called the station; a subsequent announcement turned up an individual who somehow convinced the finder that she was the bill's owner. Also during the first week, a youngster strayed from his home and became lost in the mountains. A farmer, standing guard over his chickens in the hope of catching an animal that had been molesting them, heard about the missing boy on WTHU. Shortly afterward, the farmer noticed a disturbance in the farm yard, and upon his investigation—with

### Success In Another Mini Market

WOGA is located in Sylvester, Ga., population 3162, last census (1960). About half of its population is Negro, generally considered to be a low-income group. Farmers in the area are, fortunately, better off since the annual gross agricultural income for WOGA's prime coverage area is \$60 million.

The challenges in small market radio, as seen by Cal Zethmayer, for five years a manager in small market radio (three at WOGA from its beginning until this summer when he moved to WLBA), are, to use his words, "programming, money, personnel, money, government control, money, public relations, and last but not least, money."

Zethmayer doesn't think much of government control, but, since he hasn't successfully solved that problem, we'll give only his views on the other facets. With the Sylvester population being what it is, programming calls for 1. lots of agricultural weather and news and 2. lots of "Negro" music. Ag weather goes on seven minutes every hour on the hour. In addition, there are other regular ag broadcasts of county agents, extension agents and the like. Music is a real challenge, Zethmayer says, because your potential audience can listen to other stations for music. Based on sales of records sold through the station's retail record shop, WOGA music should be 75-80 percent Negro music. WOGA settled on a compromise figure, but a lot does appeal to the Negro under-25 age group. News figures heavily in programming—two local news programs each day, plus a community calendar ten times daily.

At WOGA, the order of importance of personnel has been, 1. an all-round manager (announcer, salesman, copywriter, bookkeeper, janitor), 2. one top flight announcer (to be used in conjunction with tape cartridges to spread his on-air time), 3. a budding high school trainee, 4. engineering help.

Good public relations requires, according to Zethmayer, acquaintanceship, on a first name basis, with every businessman and community leader. Such exposure, however, gets you elected to the chairmanship of fund drives, Jaycees or Chambers of Commerce, which, if you do the job well, is the best of all public relations.

Money is no problem, Zethmayer says, if your rates are high enough. If you need x amount of dollars per hour to stay in business, and if you have 18 minutes maximum commercial time per hour to sell, it's quite easy to determine what you've got to sell it for.



The control room is adequately equipped and sufficiently spacious to promote good production.

WTHU 100 WATTS		RATE CARD NO. 1 Effective May 1, 1967																																																																																																																														
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<b>"CLASS A"</b> Monday thru Saturday: 6:30 A.M. to 9:00 A.M. 12:00 Noon to 1:00 P.M. 3:30 P.M. to 7:00 P.M. Sunday: 8:00 A.M. to 7:00 P.M.		<b>"CLASS B"</b> ALL OTHER TIMES																																																																																																																														
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<b>GENERAL INFORMATION</b> <ul style="list-style-type: none"> <li>1. Member of National Association of Broadcasters</li> <li>2. Member of the Associated Press</li> <li>3. General Rate Policy: Programs and announcements may not be combined to earn frequency. *Rate protection for six months.</li> <li>4. Rates as shown are net. No cash discounts. All accounts due 10th of month broadcast.</li> <li>5. Continuous discount given when advertisers have completed one year of uninterrupted program or announcement schedules.</li> </ul>																																																																																																																																

This '57 Chevrolet was used as both a contest medium and as a prize in WTHU's initial contest.



his shotgun at the ready—found the youngster wandering around his property, and notified the station.

Church services from one of Thurmont's three churches is carried each Sunday morning, and as remote gear was being set up for the very first broadcast, a fire broke out in a nearby bank; thus, the church service was preceded with an on-the-scene news broadcast. WTHU is a member of the Associated Press, and strives to provide adequate local news coverage with the aid of its listeners; however, it is station policy to refrain from broadcasting a story solely for sensationalism. For example, they will not consider using a story if it has only an exposé nature or if it will unnecessarily alarm listeners, unless it is vital to the listeners' welfare.

Commercial remotes have been successful for both the advertiser and the station. Recently, a well-drilling firm in a small nearby community (in fact, a community next door to the area's oldest station) called WTHU and asked to buy several hours remote time during a 2-day period to publicize a special promotion. The firm offered to test visitors' water supply samples free and conducted well-drilling demonstrations. The affair drew over 500 visitors, which very much elated the advertiser, and booked him solid for two months.

Community service broadcasts, include live coverage of town council meetings, promotion of service club activities (a Lions Community Sale netted the largest return in the club's history), and due to little league baseball broadcasts, it is felt that the Thurmont team drew larger crowds of spectators and achieved greater success in play-off competition. A spontaneously-conceived idea on a recent Sunday evening resulted in a five-hour marathon (7 to 12 P.M.) that raised \$2000 in pledges for the local volunteer fire company's engine fund. Fire officials were flabbergasted with the results, for with the best previous efforts the fire company had been successful in raising only \$1200, and firemen were busy into the next day collecting pledges.

Vic Leisner's late night talk show has created no small amount of community interest. Each night he has as a guest a local individual with a story to tell. The guest's identity remains a secret until correctly identified by a listener, which is usually accomplished within 15 minutes. If the guest's business permits, the listener who first identifies the mystery guest is awarded some sort of prizes. Vic's guests have included the mayor, fire chief, police chief, a producer of goldfish (who does a worldwide business), the postmaster, a local supermarket operator, to name several. During the course of the program, listeners may call and talk either to Vic or his guest, on the air.

Can a mini-market station be successful in terms of community support? No doubt. In terms of investment amortization? Yes. Original estimates for WTHU predicted an annual income of \$36,000, and from all indications that seems quite realistic.

## A Mini U Headed For Success

Canton, Ohio, isn't small. In fact, the Stark County population is 367,000. But, three Cleveland vhf signals "come in like gang-busters" and, by U standards it's a marginal area. Nevertheless, WJAN, channel 17, was launched late in 1966. The station is still operating in the red, but it may be black by the end of this year. If it turns profitable in such a short time, it will be a true success story.

Minimum personnel will be one key to early profitability; the other maximum local programming.

To cut down on technical operating personnel, WJAN designed the master control unit to be run by one man. All controls are in a series of seven consoles, arranged in a single line, designed and instrumented so that one operator has within easy reach all of the controls normally used during the course of a program. "We are aiming," Chief Engineer Harold Gorsuch says, "for the capability to press one button and start the whole sequence. It not only means a saving in manpower, it's a cleaner break, electronically."

Two solid-state Dage 520 vidicon studio cameras are easy to maintain (economical) and can be positioned on one subject for an entire show with no danger of sticking on the image. They can be equipped with remote, pan-and-tilt heads for control entirely from the board, with no one on the floor at all.

Immediately behind the operator's position on the console is the film island. Equipment here includes a GE 240 color film-chain, two Eastman 285 film projectors, an RCA TP-7 slide projector and an Eastman pneumatic multiplexer. The film projector integrates Eastman's Automation Cueing Kit, Model 1, which allows the operator to start and stop the projector on cue by merely attaching a piece of magnetic tape to the film beforehand.

The transmitter is Townsend Associates' new Model TA 15AT containing a solid-state exciter. There is a single tube in the exciter; each amplifier has one klystron tube plus one protective tube. The rest is solid-state, and the owners anticipate a minimum amount of maintenance. It's designed for 15 kW maximum output but will be run at 7½ kW initially.

The tower and transmission line were erected by the Andrew Tower Company of Fort Worth, Texas. The self-supporting tower is 400-ft high, topped by an additional 55½-ft General Electric, helical-type antenna which radiates in an omnidirectional pattern. The antenna has a gain of nearly 20. Owner Richard Janson notes that the tower was designed to be an income-producer, having a platform to accommodate privately-owned two-way radio and microwave systems. The site is one of the highest in Stark County, 1165 ft above sea level.

Tower, transmitter, and studio are all on the same site, five miles northeast of Canton

on US 62. The building is dual-purpose, since it is designed as a showcase for the product line of The Janson Industries as well as for broadcasting.

Janson Industries, owned by Richard and Raymond Janson, manufactures theatre curtains and stage equipment including curtains, rigging, lighting and controls. They sell television equipment for both commercial and educational markets including total-package television stations—everything from camera to tower. They are distributors for Raytheon, Townsend, Riker, Conrac, Andrews, and others.

The Janson brothers hope WJAN will become a prototype of a successful U so that they can get others interested in becoming U operators—and, therefore, prospects for total equipment packages.

### Contrast Programming

Success will never come by imitative programming, thus WJAN goes in for counter programming or, as producer Bob Parkinson calls it, "calculated contrast" programming. This is during prime network time. During news time, the emphasis is on local news. From 6 to 6:15, it is strictly local news followed by a 15-minute interview on some special topical subject. There's a news review at 7:35 and news again at 11. John Baker, an experienced radio news director, runs the news department which contains five people.

The calculated contrast includes a five-night-a-week lively local talkback show, conducted by Bob Parkinson. Viewers can phone in or drop into the studio to get into the act.

WJAN finds remote videotape programming highly successful (using Raytheon DV 300 or Ampex 660B VTRs). Remotes include daily man-on-the-street interviews and a 5-minute daily broadcast from the professional football Hall of Fame which is in Canton. (This feature is about to be offered for syndication.) Live coverage of local high sports is also popular. Other remotes include interviews with actors at local playhouses, etc. The trend in programming is definitely toward more news and local affairs as opposed to reruns of old movies or network series.

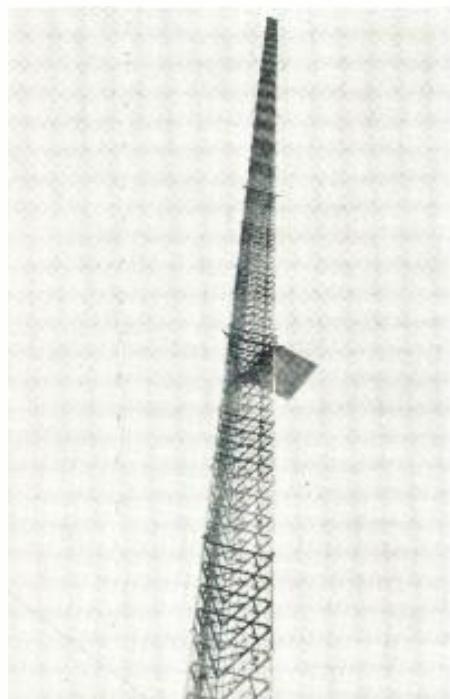
Such programming is winning at least local and regional sponsors. One idea that didn't succeed was an effort to place spots on a rotation basis with one rate regardless of time since a spot would be repeated at various times. Advertisers simply couldn't be convinced—they wanted to be identified with particular programs that they liked. As we mentioned, there's still plenty of room for more sponsors, but progress has been good.

WJAN puts out a Grade A signal in a 25-mile radius from the tower, erp 105 kW. Earlier this year they were on the air for 5½ hours each day, Mondays through Friday. Current hours are from 3 P.M. to 11:30 P.M.

# Georgia's Secret In Becoming An ETV Leader?

## Planning, Standardization, Quality

**Lou Peneguy, director of information of the Georgia Educational Television Network, immodestly claims the Georgia ETV network is No. 1 in the nation. No. 1, 2, or even 10, it's certainly a leader, as this material on engineering aspects, requested by BM/E, indicates.**



Ten one-thousand-foot antennas blanket state of Georgia.

THE QUESTION frequently posed to Georgia ETV officials lately is, "Since ETV in the U.S. is over ten years old, how has Georgia become a national leader in statewide ETV operation in two years?"

Within the past 24 months the Georgia Department of Education has dedicated five ETV stations. These were added to the service of its Warm Springs and Savannah stations. Another, WDCO, channel 15, Macon-Cochran should be broadcasting by the time this issue is circulated. In September, 1965, its Educational Television Services Executive Director, Lee Franks, contracted to have the stations interconnected.

Through a cooperative effort, WGTV, the University of Georgia station, and WETV, the Atlanta City Schools station, are affiliates of the 10-station network. This means Georgia has a rare combination of a state department of education, a university and a public school system harmoniously working together to originate daily programs on all educational levels.

A survey this spring reveals there were 920,215 student viewers of educational telecourses within the state of Georgia. Of Georgia's four-million population, 92 percent are within an ETV signal (98 percent with the addition of WDCO).

Behind the technical development of the Georgia ETV Network is Harvey J. Aderhold. Holder of U.S. Department of Commerce (pre-FCC) Radio Operator's License #414 since December 27, 1929, he began contract work for the Georgia Department of Education in 1958. He joined the Department as its Broadcast Engineer in May, 1962. Now the Network Director of Engineering, Aderhold regulates the daily activities of fifty-six members of his technical staff, who operate the Department's licensed stations.

With the assistance of national broadcast consultant, Earl Cullum, Aderhold created "a paper network" for the State Board of Education. It demonstrated how 18 TV stations would give a quality picture in every Georgia public school classroom. Instead of a plunge into the construction of the proposed paper network, the Board authorized the establishment of one station as an experiment. This was done by creating WXGA-TV. Its first transmission was in December, 1961.

Through numerous tests in schools, within the WXGA-TV coverage, Aderhold decided by mounting all future Georgia ETV antennas on 1000 foot or higher towers, the entire state could be covered by ten stations.

The State Superintendent of Schools endorsed Aderhold's recommendation that all equipment installed for Georgia ETV programming would be first quality, new equipment. In agreement with the proposal, the State Superintendent said "Today's children have TV as commonplace at home. They enjoy it; they believe what it presents. In the same manner they learn to sing commercial jingles, they can be educated if the TV presentation is aired as good as, or better than commercial programming."

The second money-saving idea advanced by Aderhold was to have the interior of all Georgia TV transmitter buildings identically designed. With the same 2,230-square-foot interior floor plan, the architect's fees were less. Purposefully, the exteriors would be different.

Another practical advantage of identical floor plans is that new transmitter engineers can be trained in one station, and be transferred to another one without any on-the-job confusion. (A particular tool in the station repair shop where he is trained can be located in the same position on the bench as is a similar tool in the other transmitters.)

In each case, the transmitter room is located in the center of the building, with no outside windows. This is to keep the heart of the operation clean, easier to air condition, and to prevent outside distraction.

Included in the transmitter control room is a film and slide chain, and facilities to run audio tape or to make local announcements via microphone. Each station has a-m/fm radio receiving facilities to enable it to function on behalf of Civil Defense, if necessary.

Each station has all of the test equipment needed for normal, routine checks, and has an adequate electrical workshop to handle its own maintenance or repairs.

Each transmitter building is air conditioned by a central unit with motorized louvers. The louvers aid to retain the same year around operating temperature.

The transmitters, themselves, are fed air through roll-a-matic filters to eliminate dust.

A thermostat in the line between the transmitter and the heat exchanger is set to hold a continuous 130-degree water flow to the klystron. This has extended the life of the klystrons, and has stabilized the transmission.

For the comfort of the staff, each transmitter building is equipped with a completely furnished kitchen, lounge, large bedroom, and bathroom with shower.

For economy, too, all but one of the towers have elevators. (One station atop a high mountain, has its antenna on a short, self-supporting tower.) This makes it possible for the station personnel to maintain its tower . . . (i.e., changing the lights, re-touching rust spots, checking the line).

Again, to be thrifty, Aderhold has built most of the Department's stations on one acre of land. He obtained easements for the guy wires.

Each transmitter is staffed with three assistant engineers and a full-time utility man. The latter is necessary to keep the lawns trimmed, shrubs clipped, and flower gardens weeded.

Director Aderhold keeps in contact with his crew from his office adjoining the Georgia Educational Television Network Control Center on Atlanta's Peachtree Street. He telephones each station's chief engineer twice daily to keep a constant flow of intrastaff communications.

The network interconnection by common car-

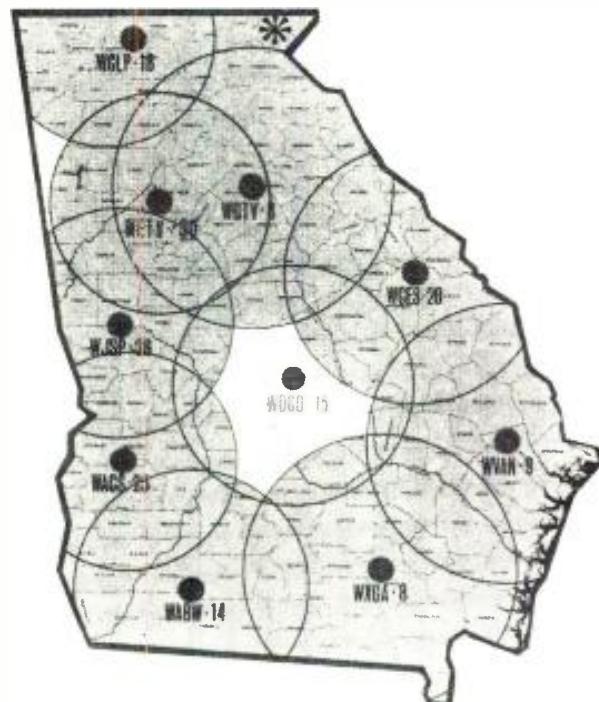
rier rather than by State owned microwave network was Aderhold's recommendation after he had investigated other statewide ETV interconnected systems. It is his attitude that commercial firms are specialized to service the 844 miles of microwave needed to tie together the Georgia ETV stations. His records prove his original theory was correct. From June, 1966 to June, 1967, on the overall network operation, there has been 99.7 percent of microwave efficiency. To check this efficiency, a Tektronixscope with a Polaroid camera affixed is housed in each station. Three test patterns (multiburst, stairstep, and widow window) are regularly sent down the line from Network Control to be photographed. At the same second the transmitters are photographing the test signals, so is Network Control. The photographs are mailed to the Control Center where they are compared to determine if there is any network line deterioration. If there is, the common carrier firm serving the transmitter where trouble appeared, is immediately notified.

As a double check, a multiburst test is superimposed over network programming at all times. This impulse interlacing is done by a vertical internal keyer, and is seen at the stations on the scope. It is not observed by the average viewer.

Because the current Georgia Department of Education theory is that all in-school and teacher-refresher telecourses should be flawless, the 35-people at the Department's studio produce all of the programs on videotape.

Network Control, 6 miles from the studio, is equipped with dual equipment: two switchers, two audio boards, and four standard broadcast videotape playback machines. Two are available as a backup.

(Continued)

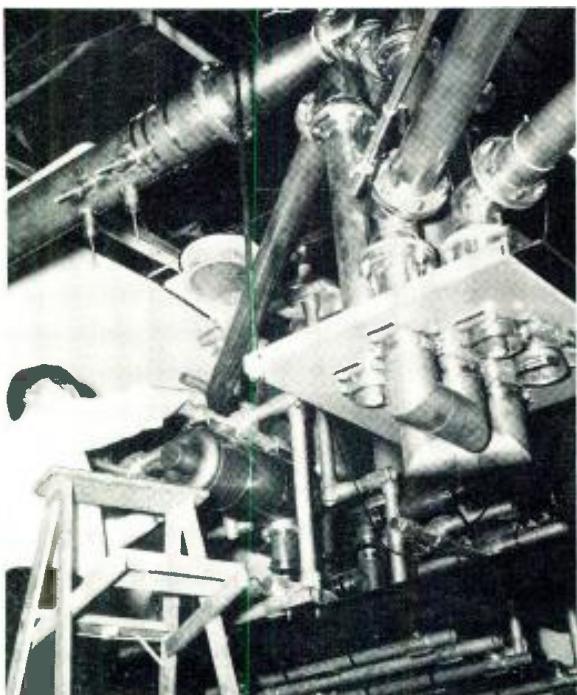


Georgia ETV network coverage

1



2



**Forward Thinking In All Areas**

This spring with William Smith, director, Mississippi ETV Authority, Mr. Franks co-planned the organization of a southeastern ETV network. Fourteen states are assisting in its development. It is scheduled to have its regional headquarters in Atlanta.

Within the past two years, Georgia ETV Network Utilization Administrator, O. Max Wilson, has built the nation's largest ETV Utilization division. A former teacher, he believes in extensive personal contact with school administrators and classroom teachers. His group held 142 meetings with over 10,000 adults across the state between June, 1966 and May, 1967; 68 of the meetings were expressly for 6674 Georgia classroom teachers. A vast number of the sessions relied on a videotape van, which will be described later in this article.

Georgia's recent fireballing into ETV by its Department of Education caused the U.S. Department of Education to request that Georgia Superintendent of Schools, Jack P. Nix, host the first National Conference for State Department of Education Personnel on Educational Television. One-hundred-twenty-five top state officials from 41 states attended the Atlanta meeting.

3

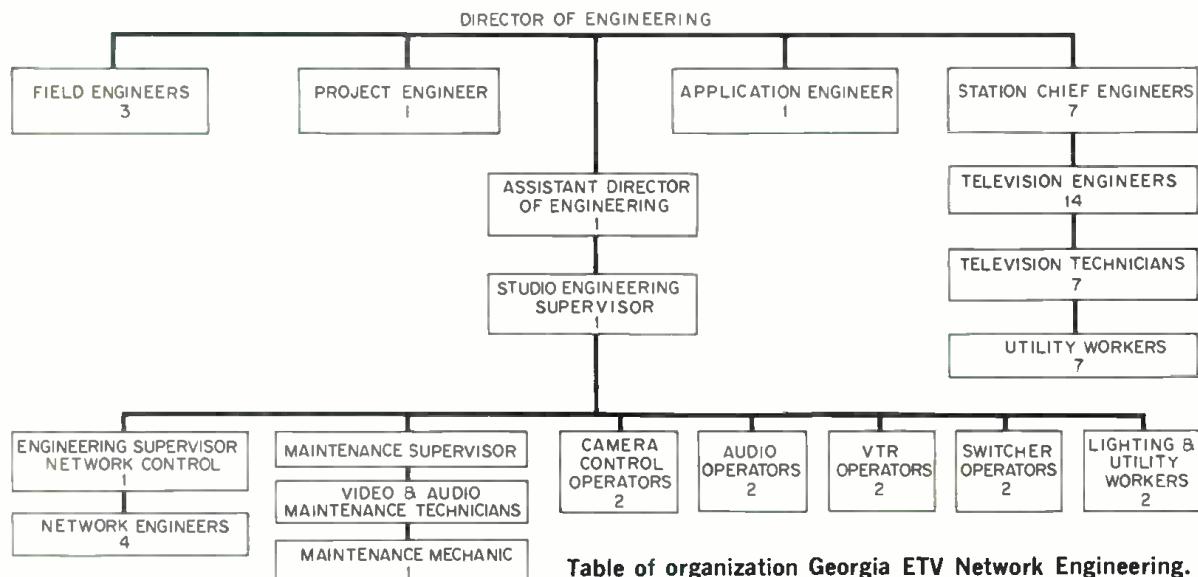


Table of organization Georgia ETV Network Engineering.



1. As WCES-TV Chief Engineer Bobo Rabun checks the incoming Network line, Bennett Wynn, Southern Bell Telephone representative watches. The ten-station Georgia Network is linked by commercial telephone microwave relays.

2. The heat exchanger at one of the Georgia Network's 10 stations is tested during routine maintenance made by Project Engineer Frank Coile.



3. To insure perfection, all telecourses aired over the Georgia Network are produced on videotape. Television Engineer Morris Brown checks one of the 17 standard broadcast videotape playback machines to which the Network has access.

4. George Kirkley, Georgia ETV Network Control Headquarters chief, inspects a camera used to daily check the microwave signal between the Network stations as Network Chief Engineer Harvey J. Aderhold looks on.

5. Control Headquarters control board is manned by Engineer Ronald Dean at one of the two positions. (The board is wired for dual maintainance—monitoring at all times, but the other engineer was moved by the photographer.)

The Control Center can originate film or videotape color; it passes color, fed into the system by National Educational Television, or from the University of Georgia studio in Athens. All of the facilities are adapted to pass color.

Although all of the Network Control equipment has been wired so a single operator can handle all film, slides, remote feeds, and videotape playbacks without leaving the control panel, Aderhold insists that two men be on duty at it whenever the network is broadcasting. The effectiveness of his staff schedule has been rewarding. Network Control made only one error during its past year of performance.

Besides Network Engineering Director, Aderhold, the Network Control staff includes a Network Supervisor who coordinates the Center personnel. The staff does its own maintenance, its own testing, does videotape recording for other ETV stations (i.e., for N.E.T. stations yet to be interconnected in the southeast). Occasionally it feeds a program to one of the Georgia Network affiliate stations when the latter operates on a different schedule than the rest of the network. Each of the network stations can break away to air a telecast of local interest.

At Control there is an Assistant Network Engineering Director who coordinates the engineering of the Control Center and the studio; a Project Engineer who handles the FCC licensing and regulations on the Georgia Department of Education stations and its three translators.

Under Aderhold's jurisdiction, too, is the technical operation of the remote bus. This is "old hat" to him, as he used to handle remotes regularly when employed by a commercial TV network.

When the Utilization wing inquired how it could show telecourse excerpts during its teacher and PTA meetings, Engineer Aderhold bought a

small delivery van, and equipped it with a standard videotape playback unit which feeds TV receiver monitors placed in a school library, auditorium, etc., and assigned an engineer to it. The van has become such a practical asset that he has added a second one.

To survey the signal strength of any of the transmitters at any school, Aderhold established a Field Service staff. He maintains this staff has been an excellent public relations benefit between the Georgia Network and schools. It has saved some schools as much as \$1000 by its advice to administrators.

An example of the results of the Field Services is reflected in a June memo from Aderhold to Mr. Franks which reads, "Our Department made the following reception check in 120 counties and 1129 schools:

Excellent reception in 879 schools

Good reception in 142 schools

Fair reception in 59 schools

Poor reception in 49 schools

With adaptation of suggestions previously made, we should have excellent reception in 99 percent of all schools in the state."

In nearly every situation, the school administrators listen to what is suggested by the Field Service engineer in regard to ETV reception as the network staffer is recognized as a qualified professional who is on their state level.

Network Engineering Head, Aderhold, reports that  $\frac{3}{4}$  of his personnel has been selected from applications from commercial TV broadcast engineers; the other  $\frac{1}{4}$  are enlisted from electronics trade schools.

Besides overseeing the station construction and day-to-day network technical operation, Aderhold is very involved in the Department's erection of a multimillion dollar TV studio, 4 miles South of the Capitol.

# Cablecasting Success Relies on One Man Operation



The camera is on General Manager Barry Stigers, but concealed from the lens is the script and controls and equipment being operated by Stigers.

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## One technical man plus part-time talent gives Pittsfield outstanding programs at minimum budget.

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ONLY ONE FULL-TIME MAN is the program director and programming staff. Only one full-time man operates the studio and does the remotes. And both these men are one man, Jon W. Lash. One man cablecasting operation is the concept applied by Barry D. Stigers, general manager of Pittsfield-Dalton TV Cable Co. (Mass.). The system is part of the TeleVision Communication Corp. group.

Since cablecasting is an expense item, and not an income producing function, costs have to be kept reasonable. Stigers, therefore, designed the studio for one-man operation. Indeed, the cameras can be aimed at the operator so that he can operate and be on the cable at the same time. In practice, however, the Stigers philosophy is one man plus talent; talent in front of the camera and engineering at the control console.

Lash runs the cablecasting operation, but he has a variety of top part-time talent to help him. His newscaster comes from the local radio station (who rips and reads news supplied by the *Berkshire Eagle*); his sports program is conducted by an articulate local high school athletic direc-

tor; his art and culture program is written and produced by an English and drama teacher at a local private girls' finishing school; a kiddies program, the Pop Korn Klub, is a daily feature written and produced and performed by a local amateur actor who videotapes once a week a week's supply of programs. Pittsfield reports of a political and civic nature are done by Stigers himself who interviews the mayor twice a month, as well as other civic leaders. When *BM/E* visited the system in June, Stigers was planning to initiate a women's program, again using local talent who do the program "not for money alone." Recently the system added a controversial news maker program in which viewers can call in and ask questions. Hot-seat guest and moderator have telephone handsets which also feed audio into cable.

The budget for programming permits something like \$5 to \$20 per program—\$5 for doing a newscast and the highest for doing a program requiring writing, interviewing, producing, etc. Fortunately, Pittsfield is a community which has talent around.

Channel 2 has been set aside for local origination and the daily programming runs from 5:30 to 7:00 (sometimes 7:30). Each program is "aired" two additional times, at 9:30 that same evening, and again at 9:30 the next morning.

Remote tape pickup has figured heavily at Pittsfield-Dalton TV Cable from the day of cablecasting inauguration, March 28 (1967). The afternoon *BM/E* arrived, Jon Lash and Jurgen A Thomas, producer of the arts program, were at the Berkshire Theater Festival at Stockbridge, Mass., doing a videotape interview of Broadway stars John McGiver and Lois Markle. These stars were about to appear in BTF's first play of the season, "The Magistrate." Thomas was a pro at the interview. Early that morning Lash had driven the opposite direction out of town to North Adams to interview a local Civil Air Patrol chief who was conducting a search for a local pilot downed and lost somewhere in the Berkshire Mountains. (Lash did the interviewing himself and that evening it went on the cable as part of the newscast—after a quick edit by Lash between 5 and 5:30 before the second VTR had to be released for showing the kiddie program.)

Remotes have been done of the *Berkshire Home Show*, urban renewal demolition, a city-wide "beautification" cleanup and sports events.

The studio, 15 × 20 ft, has soundproof tile and paneling, with insulation behind the paneling to give the studio a total soundproofing.

A large console holds all the equipment with

most of it built into special installations to keep it from showing on camera, yet let the operator see equipment while cablecasting. (As mentioned before, though, the camera is generally on talent and not the console.)

The equipment includes two videotape recorders; a sound system with three microphones and an audio tape recorder; two cameras with zoom lenses; a weather scanner; a slide carousel, and an overhead projector for rear projection.

The screen for rear projection was purchased locally from a light fixture manufacturing firm that makes special plastic sheeting that will reflect and pass light for special requirements. The screen, 5 × 4 ft, has a much higher luminous value than most screens, and will take a front or back projection under bright lights.

Each camera (of Italian manufacture) was mounted with a 6-in. Sony television set to be used as a monitor. The video switcher was wired so that cameras have pilot lights to show the performer which camera is "on the air," and signal warning lights are on microphone switches to show the operator which microphones are "live." By switching on the second camera before cutting out the first, smooth transitions, without flops, are the norm.

(Continued)

**Left:** VTR is on dolly in truck. It can be loaded or unloaded easily by using ramp consisting of u-channels.

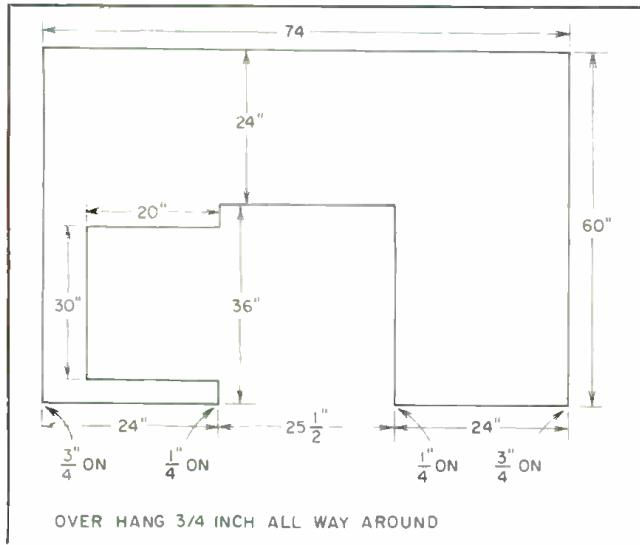
**Left below:** Videotape is made by Lash and producer/English teacher Thomas (center) who is interviewing Broadway stars McGiver and Markle appearing at local summer theatre.

**Below:** Jon Lash edits videotapes by using one VTR in console and a second machine on dolly that was used for remote pickup.

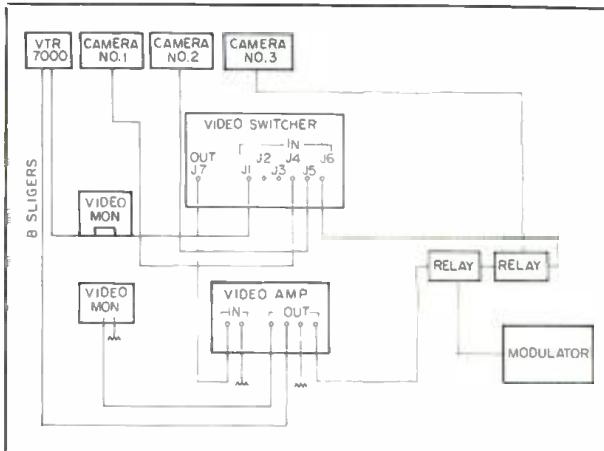


**Above:** Newscaster is talent moonlighting from local radio station.

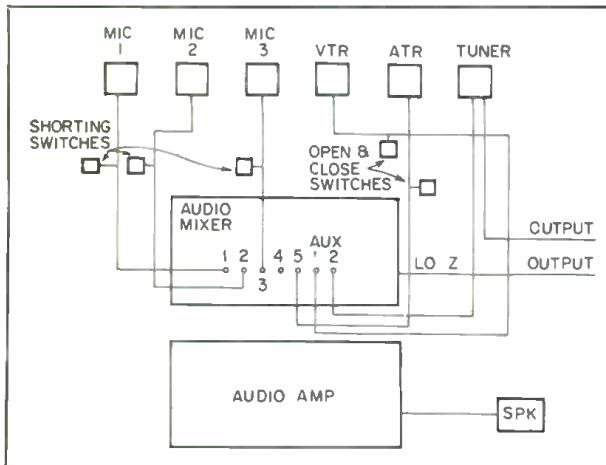




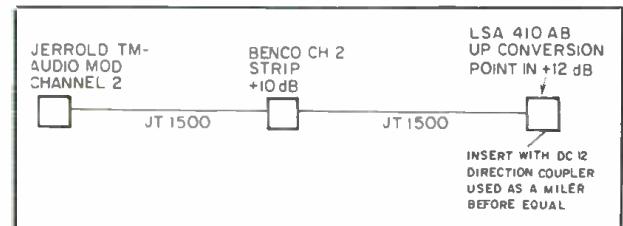
1. General dimensions of one-man console.  
2. Video switching arrangement.



2



3



4

3. Audio switching arrangement.  
4. System for getting from the console to the head end.

The system also has a relay circuit that allows the operator to make videotapes and special productions without disturbing the weather scanner output on the system, yet bring in the third camera from the weather scanner when he is ready to cablecast.

The weather scanner has special cards for use on openings and closings for news and sports broadcasts, plus a revolving rack for holding 8 X 10 glossy pictures and a 4 X 6 card drum for credits.

A Polariod camera is also a handy piece of equipment. In taping the Berkshire Theater Festival interview, a long shot of the theater was desired. The power cord wasn't long enough or safe enough to string across the roadway. Solution: shoot the shot with a Polariod and then zoom in on the print!

Although the system was designed for one-man technical operation, Lash does need some sleep. One part-time student fills in to turn switches at odd hours and helps on camera or remote work.

#### Just How Successful?

Since cablecasting was inaugurated as recently as March, it's too early for absolute P&L statement proof. It appears though that added new subscribers are paying for the service (673 new customers were added in four months of 1967

compared to a loss of 63 for a like period last year).

Cablecasting is not the only service that Pittsfield-Dalton TV Cable relies on for its success. In January the system installed a Hoskens tropo-scatter antenna system to help bring in distant signals from New York City's independent stations: WNEW (channel 5), WOR (channel 9) and WPIX (channel 11), as well as WNBC (channel 4). A separate new antenna to bring in Boston's WHDH (channel 5) was also installed. (The system predicated the Second Order and Report, and was grandfathered in with no objections.)

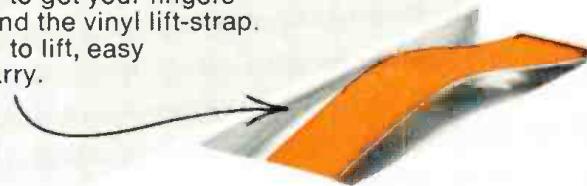
Eleven channels plus the local origination channel are cabled, and the system has been undergoing plant modernization since 1962 when TeleVision Communications Corp. became the owners. The charge for subscriber installation is \$9.95 and the monthly fee is \$4.95.

Pittsfield, incidentally, doesn't have a local uhf station. (A U that tried failed in 1953.)

The channels on the cable are Boston 1, Hartford 1, New York 4, Schenectady 2, New Haven 1, Albany 2 and local but this is being protested on the basis of an inadequate incoming signal. •

**Ed Note:** Another success story is that of Barry Stiglers who between the preparation and publication of the article has moved to the Philadelphia CATV Company (owned by the Philadelphia Bulletin) as Sales and Marketing Coordinator.

Easy to get your fingers around the vinyl lift-strap. Easy to lift, easy to carry.



Plenty of room to write important data. Easy to put on a new program label.



Fits your existing shelf space. Pulls off shelves easily with this pull-strap.



MEMOREX  
PRECISION  
VIDEOTAPE



Open, lock, ship: three fool-proof positions. Just a twist of the dial and it's ready to mail anywhere in the world. No wrapping needed. Can't jam, can't fall open.



There's another pull-strap on the back, and another lift-strap on the bottom.



Toughest case in the business. Handy and lightweight. Won't crack, scratch, or break. (For more data, write us at 810 Memorex Park, Santa Clara, California 95050.)

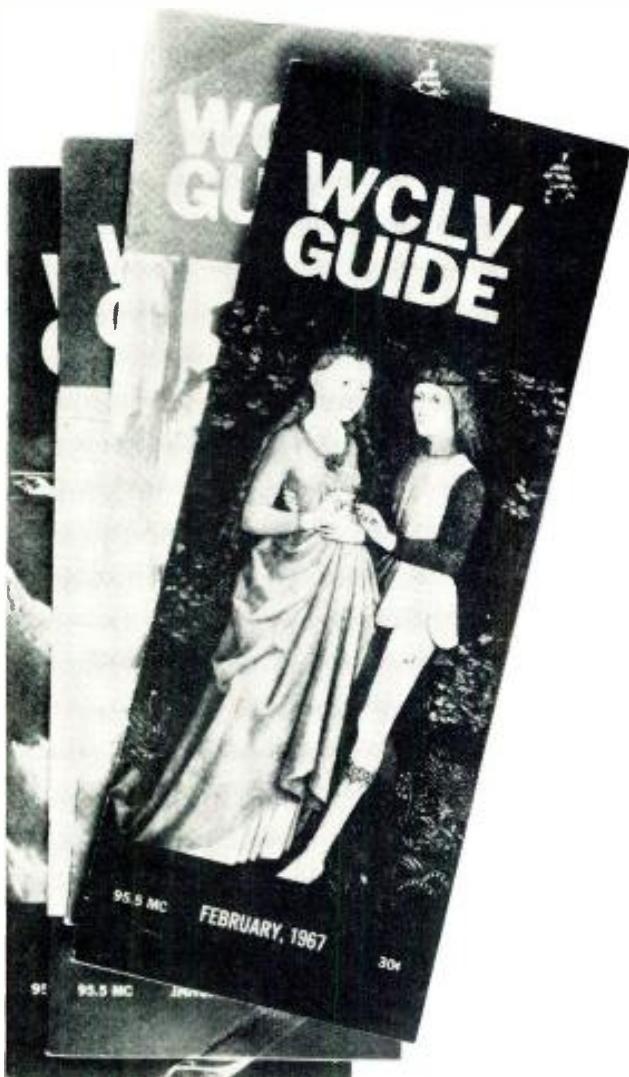
**The case for a better tape.**  
(A new, tough, shippable case  
containing our new high-chroma video tape, 78V.  
Have you tried it yet?)

**MEMOREX**

# Cleveland's 'Long-Haired' Success Story

By Bob Jones

**Classical music oriented WCLV has come a long way during the past 5 years. Here's how they did it.**



The monthly WCLV Guide provides listeners with program listings and other information regarding programming and station activities. The Guide subscription order form advises correct methods to set up stereo loudspeakers.

WCLV holds a unique position in northern Ohio. The Cleveland-area station's listeners are among the best educated, most affluent and influential claimed by any a-m or fm radio station in the 17-county area. Its programming is sophisticated. Its staff is erudite, and this erudition is readily recognized by all radio people in the area. An example is found in the words of an a-m announcer stumbling about with the title of an opera. Defeated, he gave up his struggle with the words: "Oh well, those guys out at WCLV could probably pronounce it!"

## A New Approach

How did WCLV arrive at this enviable position? It was mainly through the efforts of former advertising agency man, C.K. "Pat" Patrick and former Detroit radio man, Bob Conrad. Mr. Patrick, pres., and Conrad, vp-programming, brought together their talents and money to buy the station from its second group of owners in October 1962. The FCC granted permission for a change of call letters from WDGO to WCLV to more closely tie in with Cleveland. WCLV began making tapes of Cleveland Orchestra performances, the Cleveland Chamber Music Society, and other groups. They talked on tape with visiting celebrities and blended all of these tapes with classical music recordings, dramatic readings, and excerpts from European radio programs.

A new era of cultural broadcasting had hit Cleveland! That was in 1962. Now, five years later, and for the second year in a row, WCLV has received the nod of recognition from *Billboard*, the international music-record newsweekly, as Cleveland's No. 1 classical-music outlet. According to *Billboard*'s latest Radio Response Rating market survey, WCLV is the major influence on classical record sales and is far ahead of its nearest competitor with an impressive 62-percent rating. In 1965, the survey indicated the station was ahead by 37 percent and ranked in second place by 1964.

## Program Philosophy

The Cleveland Orchestra broadcasts, hosted and produced by Conrad, have had a large part in gaining WCLV its enviable position. The Greater Cleveland Radio and Television Council's certificate of merit for creative programming in the field of radio was awarded four consecutive times to the station, and for the Cleveland Orchestra broadcasts in 1966.

Each week, the station presents full-length concerts by the internationally-famed Cleveland Orchestra from Severance Hall. These popular concerts, heard each Sunday from 4 P.M. to 6 P.M. are sponsored by the Shaker Savings Association who are midway through their second year of sponsorship. The broadcasts have been recorded by the station since October 1965 and are syndicated to more than 60 radio stations in this country and Canada. The Cleveland Orchestra Syndication Service is a joint venture of the Orchestra and WCLV. It began shortly after

the Orchestra returned from its triumphant European tour in the Spring of 1965. Net proceeds from the project go to a pension fund for the Orchestra.

Shortly after entering the radio-syndication field with the Cleveland Orchestra broadcasts, WCLV added a second music program to its syndication service: *Music from Oberlin*, released by the Oberlin College Conservatory of Music, Oberlin, Ohio. The establishment of this series of 52 hr-long programs marked the 100th anniversary of the school. *Music from Oberlin*, now heard on 45 radio stations throughout the nation, is produced by Conrad who also serves as commentator for the series.

WCLV also does regular remote broadcasts on tape from performances at the Baldwin-Wallace Conservatory, Western Reserve University, Case Institute of Technology and the Cleveland Institute of Music.

Although about 9 percent of its air time is devoted to classical music, there is a consistent pattern in WCLV's programming. The station has developed what it calls a cycle concept wherein works related to each other are played on consecutive days. This cycle concept has enabled the station to schedule all the symphonies, concerti, quartets, piano sonatas, and trios of Beethoven, and all of the symphonies of Carl Nielsen and Gustav Mahler, as well as virtually all of the music of Dvorak and Tchaikovsky that has been recorded. In addition to its extensive schedule of recorded music, the station also offers its listeners exclusive live or delayed-live concerts from outside Cleveland. These include weekly concerts of the Philadelphia Orchestra, the Boston Symphony and the Boston Pops. The New York Philharmonic Concerts, Library of Congress Concerts, Pan American Union Concerts, and World Music Festivals are also heard throughout the week. The station also presents complete concerts from such world music festivals as the Bergen, Spoleto, Edinburgh, Liszt-Bartok, Tanglewood, Sibelius, Bayreuth, Salzburg, Berlin and Hitzacker.

Although WCLV has been called "the longest haired" radio station in Cleveland 10 percent of its programming is devoted to broadway shows, comedy and folk music. Full-length plays, critiques, discussions, interviews and news round out this portion of the programming. Cuts from comedy LP's and Folk Music are featured on such programs as Martin Perlich's *Project*, and all-night show, and on *WCLV Saturday Night*, hosted by Bob Conrad. Perlich also features some jazz during his all-night stint. A survey taken last year by the station (WCLV is very survey-minded) brought out the fact that most listeners felt Conrad's causal, fun-filled program, *WCLV Saturday Night*, was way up in the listener popularity! The program is repeated later in the week on tape with the rather unwieldy title of *WCLV Saturday Night on Wednesday Afternoon*. *WCLV Saturday Night* is a potpourri of folk music, satire, comedy bits, show tunes, and a general "madness."

Sometimes Conrad's subtle, tongue-in-cheek

humor filters out through this program to trap unsuspecting listeners. Once, he jokingly moaned the free publicity an a-m rock-n-roll station was getting through its "trash box" promotion. The a-m station was offering prizes to all who would display the boxes on the shelf in the back of their cars. Conrad countered this offer by offering a free subscription to "some learned journal" to those turning in the most boxes to WCLV in its "Stamp Out the Trash Box" campaign. Many listeners took him seriously. Within a few days, the station was flooded with the boxes! At another time, he was instrumental in forming a teenage underground movement with the unique name of STRETCH "Systematic Transformation of Radio Entertainment Through Coordinated Harassment). The group's first assignment was to call a local rock-and-roll disc jockey to request Stravinsky's "The Rites of Spring." The dj was flooded with calls! Finally, he had to announce that the station's library didn't contain this particular record. Shortly after making the announcement, he received a copy in the mail from a WCLV listener.

Patrick and Conrad have developed a business policy which gives each a freehand in developing aspects in their own areas. Programming has the priority, but each is autonomous in the activities of his field. The two feel that they sell time to present programs, not present programming to sell time. In fact, sponsors have been turned away when the product or copy was thought to be detrimental to the programming. Patrick believes, "When our listeners turn on WCLV, we are invited into their home as guests, although many listeners refer to us as members of their family. Our announcers present commercials in the same style as if they were present in the listener's living room. We have found, because of this policy, that our commercials can be more factual regardless the products and thus can be free of gimmicks.

Because of the feeling that listeners and WCLV are like one big family, every bit of mail is answered by someone on the staff. Some of the regular correspondents even send Christmas presents or flowers on birthdays or new-baby arrivals.

#### A Different News Approach

WCLV's approach to news reporting is in keeping with station philosophy. The 3-man news staff, directed by Tony Bianchi, is as discriminating in its selection of news as is the station in its selection of music. Gone is the usual police-beat type of news common to many a-m stations. Gone, too, are the violent sounds, the ticker sounds under the announcer's words, and the rapid delivery. The news is delivered calmly and unhurriedly. Concentration is on the significant news of international, national, local and cultural nature. Because it refers to itself as a fine arts station, WCLV makes it a point of giving complete and special coverage of all fine arts news activities in the area.

(Continued)

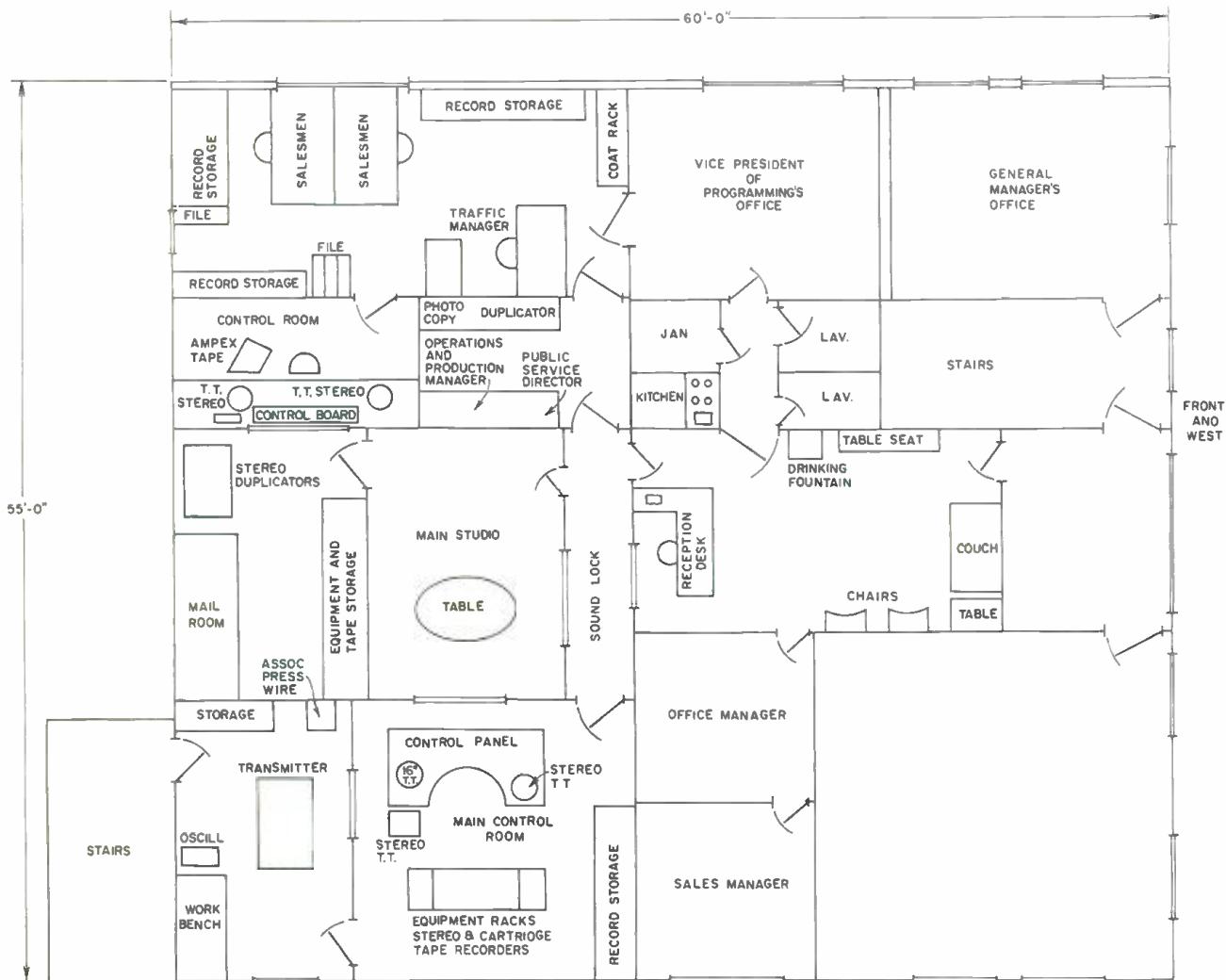
## WCLV Equipment

- The main control room has two belt-driven Empire turntables and arm assemblies with 880e cartridges, and a Gates CB-510 turntable for monaural transcriptions.
- Four Ampex (350 U and 351 mono and 351-2 and AG-350-2 stereo) tape machines feed into a Gates Duralux two-channel control board, specially modified for stereo.
- Audio processing equipment consists of a Fairchild 602 Conax and a Fairchild stereo 670 peak limiter. The latter is located after pre-emphasis to minimize limiting and preserve the dynamic range of classical recordings. A Fairchild 660 peak limiter is also used on the SCA to prevent crosstalk into the stereo programming.
- Two Gates Carritape machines are employed for themes and some commercials. Since the station allows no singing commercials, most spots are read live.
- The station also has a subcontrol room equipped with a Gates Studioette board and two Empire turntable assemblies.
- A 5-kW Gates FM5-B transmitter and an 8-bay Collins ring antenna provide the station's 40-kW ERP.
- A magnecord 1022 and an Ampex 1260 are used to record local stereo musical per-

formances. Pairs of Electro-Voice 666, 655, and Syncron Au-7 microphones are among those used both for remote and local broadcasts.

- Monaural remote equipment includes an Ampex 601 and Gates Dynamote. Six small battery tape machines are used by the sales staff for presentations, and by the announcing staff for occasional on-the-spot interviews.
- Other facilities include the ability to record or playback tapes on up to three regular phone lines simultaneously for news bulletins and stock market reports, and shortwave equipment to record BBC world news, presented daily as part of the station's news coverage.
- Test equipment includes a Tektronix 561 oscilloscope equipped with a 3A1 dual-trace plug-in vertical amplifier and a 3B4 time base, Fisher FMR-1 stereo broadcast monitor, Hewlett-Packard 330C distortion analyzer; B&W Audio Oscillator. Gates gain set, as well as the usual VOM and VTVM. The former modulation monitor was a H-P 335B—the station installed new type-approved stereo and SCA monitors by the June deadline. A Computer Measurements Corp. 201B frequency counter is used to check the 19

Floor plan for new WCLV studio facilities. While far from perfect because of limited space, it offers best possible use of available space.



kHz and 67 kHz frequencies several times daily.

- A \$10,000 solid-state control console, custom designed by Daniel Flickinger for the Cleveland Orchestra, is used to produce both live and taped concerts. Output is 4 dB at 0.1 percent total distortion and -76 dB noise level. Future modifications to the console will include individual variable equalization on each mic channel and echo feed and send. Twelve microphone inputs are specially bussed to feed pure monaural and left-right stereo outputs, as well as a third combined L+R output. Two announce-mic channels are similarly bussed and can be specially switched allowing for separate announcements on simultaneous tape and live broadcast feeds of the performance.
- Six Neuman RM-64 and two KM-56 microphones are in present use, with the tape outputs from the board feeding a pair of model 280 Skully stereo recorders.
- Audio processing equipment includes Pultec NEQ-5 and EQP-1A high and midrange equalizers and Flickinger custom designed compressor-limiters operating in a 2:1 ratio.
- Monitoring consists of a McIntosh 240 power amplifier and KLH-6 speakers.

**Below left:**

Main studios, transmitter, and executive offices are on the 3500-sq.-ft. second floor of the WCLV office building, located in a shopping center in Cleveland's eastern suburbs.

**Below right:**

The WCLV lobby area is watched over by Mrs. Nancy Cridland (l), office manager, and Mrs. Janet Weenink, traffic manager.

**Far below:**

Operations Manager Tony Bianchi also holds down a regular air shift in the main control room.



### Public Relations Efforts

WCLV likes to touch the pulse of its listeners, and it does so quite often. WCLV likes to know who is out there, so it finds out through surveys. Who is this listener whose face is seldom seen? What is he like, what does he like, and how does he listen? One survey revealed that the age of the head of the household was most often between 30 and 34. The greatest percent—44 percent—were in the professions. There were no unskilled or manual laborers among the listeners. Fifty-one percent owned two or more automobiles, and most of them owned Fords.

The loyal listener is always kept completely informed as to what to expect on the station through the pages of the long narrow, monthly publication known as the "WCLV Guide." Edited by Bob Conrad, the Guide costs the listener \$3.00 a year.

### Sales Effects

Cuyahoga county is the hub of a 17-county area served by WCLV in the Northern Ohio area. According to a recent Hooper report (May 1966) the study revealed an in-home fm penetration of 63.6 percent. This represents over 775,000 homes. Rate of growth in the area has been projected at 13 percent for 1966. At the time of the May 1966 study, Los Angeles was No. 1 in the nation for fm in-home penetration. Philadelphia ranked second in the survey with 66.7 percent. Cleveland tied with Detroit for third place with the 63.6 percent penetration figure.

An unusual aspect of the WCLV sales staff is that all of the salesmen, with the exception of one, are former advertising agency men. None

### Who Listens to WCLV-FM

Age:	
Under 20	0.4
20-29	15.8
30-39	25.7
40-49	23.5
50-59	18.4
Over 60	16.2
	100.0

Education:	
Attended College	81.7
Graduated College	62.6
Post Graduate Degree	32.0

Income:	
15,000 and over	24.3
10,000-15,000	24.0
7,500-10,000	18.8

Median Income ..... \$9,774

Occupation:	
Head of Household	
Business Executive, Professional	70.0
Clerical/Sales	8.0
Craftsmen, Foremen, Laborers	6.0
All Other	16.0
	100.0

Source: Media Programmers Inc. 3/63 and reaffirmed to date

was ever radio time salesmen! President C.K. "Pat" Patrick believes there is no better training ground for time salesmen than that received in agency business. Time sales and guide advertising sales have shown a steady growth. One year after the purchase of the station, business increased 41 percent. The next year, 1964, business increased 13 percent. In 1965, sales jumped to a figure of 26.7 percent over that of 1964. Last year's sales climbed to 46 percent over 1965. These figures do not include income from the Cleveland Orchestra or Oberlin syndications.

**WCLV** advertisers are getting results. The sales department reports that advertisers now come and stay with the station year after year. Today, **WCLV** has 21 advertisers signed to 52-week contracts. Among them are The Cleveland Trust Company, the largest bank in Ohio, the Shaker Savings Association, one of the larger savings and loan organizations, a leading property management firm, audio equipment companies, a quality food store chain, and a multitude of record companies.

The effectiveness of the **WCLV** listener approach via commercials has been amply demonstrated more than once. Japan Air Lines conducted a test of **WCLV** by offering a booklet to listeners. The same booklet was offered on a leading 50,000-W a-m station. The result? Robert M. Cann, district sales manager of the airline, wrote later in part: "... Therefore, we concluded that if the budget and potential audience had been equalized, JAL would have 300 percent



Saturday morning sales meetings: C.K. Patrick (r), pres. and gen. mgr., and facing him (l to r) James Smith, account representative, William Giese, sales manager, and James Oehlenschlager, account representative.

greater results through its advertising on **WCLV**. So, it appears that the obvious means of reaching the travel market in Northeast Ohio is through **WCLV**." Columbia records, a long-standing **WCLV** client, asked for the station's help in distributing a new Sound of Genius record. In three weeks, 850 albums were moved and the promotion stopped because the supply of albums ran out.

Currently, there are seventeen staff members. The sales department is comprised of a general sales manager and two account executives. The office manager doubles as bookkeeper and secretary. Four announcers man the mics. The traffic manager doubles as assistant editor of the Guide. Other members of the staff are a public service director and an operations manager, both of whom announce, a music director, programming assistant, three engineers and two critics-at-large.

About 85 percent of **WCLV** programming is in stereo; the next step will be adding a dual antenna.

## Instant Success with Stereo Only.

Is it possible for an fm stereo station, less than a year old, operating in a small market and competing against an established full-time a-m plus a daylight a-m and full-time fm, to establish in the first year a gross billing in six figures? It is being done. The station is **WJVM-FM**, Sterling, Illinois, which began operation in October 1966 in the black, with more than 100 local sponsors who had signed long term program and spot contracts. The sponsor list has grown to more than 150 during the first few months of operation. It now includes several excellent regional accounts such as Coke, Michelob, Nesbitt Orange Drink, Pepsi and others.

Voigt Smith, secretary-treasurer and a former news director, claims that **WJVM** has become, in less than a year, a dominant voice in the community and has attracted a wide audience of those who want stimulating local telephone talk programs, bright local and world news, good quality stereo music and farm information programming. (In a survey taken by a local church organization less than six months after starting date, it was revealed that the station enjoyed an audience of 81 percent of fm listeners and 45 percent of total audience.) Fm set penetration is now in excess of 60 percent of city homes and 40 percent of rural homes in the Sterling-Rock Falls market.

**WJVM**, licensed to Communitron, Inc., is

owned by two men who planned, built and operate the station, John Rohwer and Voigt Smith. The something going for them was that they were well known in the tri-city community of Sterling, Rock Falls and nearby Dixon. Each city has a population of some 15,000, surrounded by a rich agricultural area. The two attribute the rest of the success to the fact that **WJVM** is simply a good radio station—filling a gap in local service by providing a quality sound. Announcers were selected for voice quality, UPI audio and local audio tapes are used to dress the news, IGM music and equipment are used to provide a controlled sound. The station's format is a combination of traditional fm quality and a-m liveliness. There is now a full-time staff of seven and five part time employees. With automation handling much of the routine, the accent in programming and sales is on creativity.

From six to nine in the morning, there is a live announcer and an a-m type format. It includes a telephone talk show. At 10:15 P.M. another local-national news summary. In between, it's all good music, slightly higher than middle of the road, with an hour of classics at night.

The sales staff has concentrated on the sale of quarter hour programming, with spots limited to one every ten minutes during periods of music.

# CHECK THESE ADVANCED FEATURES!

ON THE GREAT  
NEW  
**Scully** 280

**NEW "ADD-ON" MODULAR DESIGN CONSOLE . . .** accommodates one, two or four amplifiers. Handsome cast metal covers on operations panel and head assembly give the 280 an entirely new look.

**NEW BRAKING SYSTEM WITH EXCLUSIVE MOTION SENSING!** Available previously only on the Scully one-inch tape transport, this unique system permits tape handling in any operation sequence without breaking worries. Optional on the Model 280.

**NEW AUTOMATIC TAPE LIFTERS!** This is an added bonus with the new motion sensing braking system. The automatic tape lifter keeps the tape off heads until tape transport has come to full stop.

**SCULLY'S NEW SYNC/MASTER!** Remote control your sync-sessions with Scully's exclusive Sync/Master control panel. Ask your Scully distributor about this new optional accessory for our 8-track units.

**Scully** engineering pioneered the plug-in head assemblies, plug-in amplifier cards, plug-in relays and solid-state electronics.



RECORDING INSTRUMENTS COMPANY  
A Division of DICTAPHONE CORPORATION

Circle 21 on Reader Service Card

Now, once again, Scully sets the pace in great new features for the all-new 1968 model 280!

480 Bunnell Street  
Bridgeport, Conn. 06607  
(203) 335-5146

Makers of the renowned Scully lathe, since 1919  
Symbol of Precision in the Recording Industry.

# MANAGEMENT ROUNDTABLE

## Successful Operation in Small Markets

What are the most essential factors for successful station operation in small to medium markets? How can these factors be evolved into operating practices which will improve the station profit picture? BM/E went to several successful broadcasters for the answers to these often perplexing questions.

### By Sol Robinson

EVERY BROADCAST FACILITY is licensed to operate "in the public interest." This does not mean, though, that a broadcaster is forbidden to earn a profit on his investment. Actually, the amount of profit he can earn is unlimited—except for those areas that cannot support several or even one broadcast facility.

### Know the Market

To be financially successful an operator must know his market. He must know the dollar retail sales of his service area, not only in total dollars but by categories and outlets. He must know the dollars being spent for advertising in all media in the area. Is it too high? Is it too low? He must know how to get his fair share of these advertising dollars.

A successful operator must realize that the only thing he has to sell his potential advertisers is audience. Here, again, he must know his market. He must know the listening habits of the population he serves. He must know why people listen to his station, and why people are not listening to his station. He must always program with the listener in mind. Programming should have a dual purpose: first, to keep his present listeners, and secondly, to acquire new listeners. I cannot emphasize too strongly that neither of these two objectives can be reached unless the station operator thoroughly knows his audience, both present and potential.

### Staff

Inasmuch as we are talking of

**Sol Robinson**, gen. mgr. WLAD-AM-FM Danbury, Conn. 06810.

dollar profits, knowledge of all of the above is but a first step in creating a successful operation. Time must be devoted to adequately staff the station. First and foremost is the acquisition of an excellent, loyal, and trustworthy engineer. Few station managers are FCC-licensed engineers or understand the station's engineering and its problems. This phase of operation, unless properly controlled and supervised, can be a tremendous financial drain.

Too often, station managers take the easy road of hiring only experienced, tried, and tested announcers, instead of devoting part of their time to training newcomers. A well balanced staff of announcers with some newcomers being trained by management not only is sound fiscal policy but takes care of the constant staff turnover experienced by most stations in small markets. A complete knowledge of business economics and systems is important so as to keep clerical help at a minimum, both as to personnel and cost.

### Sales

Whenever my sales staff passes me by I tip my hat. No station can ever show a profit unless it has a better than adequate sales force. The manager, above all, must know how to sell, and he must know how to train and assist his sales force. Most of the revenue in a small or medium market, will come from local sales.

A good national representative is worth his weight in gold, too. Small markets never get much *National* business, medium markets only on rare occasions. National business, however, can be devel-

*continued on page 52*

### By Bill Bengts

SINCE OUR BUSINESS is fast moving, it should not be cluttered with rigid sets of rules; instead, factors which help or hinder our success are intelligently analyzed and then common sense and experience dictates the right approach. I believe *people* are the key. Get the best possible people; pay them as well as you possibly can; give them as much responsibility and authority as they can handle. Don't be afraid to delegate; but remember, as manager or owner, you are ultimately responsible for your people and your station.

### Programming

At KOAM Radio we try to entertain with the right music and program at the right time, depending on the available audience, within a framework of station personality and professionalism. KOAM Radio constantly strives to serve the public interest not ponderously, and not dully but with excitement, deftness and imagination. Everything we do at KOAM Radio, what we say, what we program, what we sell and how we sell it, should reflect good taste.

### News

News is of upmost importance to KOAM Radio. Our newsmen are professionals, and they are charged with gathering, writing, and reporting the news as quickly and reliably as possible. All of their time and effort is spent in the area of news and public affairs. KOAM Radio is fortunate to be an NBC

*continued on page 50*

**Bill Bengts**, vp and gen. mgr. KOAM, Pittsburg, Kan.



## Local color: it will make the grass greener on your side of the street.

Big things are happening in color. Shoot them that way and watch what it does to your image—and your profit picture. Both viewers and advertisers appreciate the added dimension of interest you show in the community by filming the news in color. And Kodak makes your switch to color smooth and easy with a versatile new film system: Kodak Ektachrome EF Films and the ME-4 Process. The films are fast, sharp, fine-grained, and have wide exposure latitude with excellent color saturation. Your cameraman will love them, so will your audience. Fast processing service is available in many areas; but if not in yours, consider processing the film yourself. The ME-4 Process, with its packaged chemistry, is fast, dependable, and virtually foolproof. Naturally, we'll help you set up your process and provide information and continued service. For full details, call your nearest Eastman Kodak motion picture engineer.

**Eastman Kodak Company**

Atlanta: 404/GL 7-5211 Chicago: 312/654-0200

Dallas: 214/FL 1-3221 Hollywood: 213/464-6131

New York: 212/MU 7-7080 San Francisco: 415/PR 6-6055

**Kodak**  
TRADEMARK

*continued from page 48*

Affiliate. By utilizing NBC news sources we are able to provide actualities, etc., that would not otherwise be available. It is most important that your News Department be set up as a separate department from programming, and that your news director report to top management.

#### Sales

Get creative salesmen. Give them tools to sell with—audience surveys, portable tape machines, sales promotions, sales incentive, a good production department, and

sales management. Your sales department must have the solid backing and support of your entire staff. Remember, you should have a solid product to sell; however without an adequate, well informed, well equipped Sales Department, that last figure on your profit-and-loss statement will not be as good as it should.

#### Rates

This is an age old problem and I wish I had the answer. I think the only thing we can do is establish a rate that will allow us to be profitable and competitive, then

stand by it. If we all sold as hard against TV, print, outdoors, etc., as we do against each other, I honestly believe we could increase our gross substantially.

#### Editorials

KOAM Radio editorializes when there is an issue that warrants our editorial attention. I don't feel a station should editorialize just for the sake of running an editorial; however when the need arises it is the responsibility of the station to investigate fully the situation and voice a strong editorial opinion. I believe we must be strong in this area and not weaken due to sponsor influence, outside pressures, etc.

#### Community and Area Involvement

This is simple—just get involved. Get your people involved, and stay involved. You'll have no problem in this area, and as a result of your station's involvement you'll be on top of the situation. In addition to what we all normally do, KOAM Radio has added what we call a Public Pulse and Telephone Pulse. The Public Pulse is a post-card mailing to a random sample, and the results are announced on the air. The Telephone Pulse is done by having listeners call the station to vote Yes or No on an important issue. These calls are counted by means of a counter attached to one of our phones. Both of these methods have proved extremely valuable.

#### Promotions

This is a must, not only on your own facility but also outside promotion. We all must continuously sell radio and our own station, and while using our own facilities goes a long way toward reaching our goals, nevertheless we feel outside promotions such as print, billboard, free movies, dances, give-a-ways, particularly of transistor radios, screen trailers, etc., are valuable to our overall promotional effort.

#### To sum up

I feel for KOAM Radio to remain successful we must have good people who know their job and do it. We stay well equipped from a technical standpoint. We try to keep our programming varied and as professional sounding as possible. We stay completely involved in community and area activities. We promote constantly; we live by the NAB Codes, and then we sell the hell out of it.



## AT ARROW TIME & SERVICE ARE SYNONYMOUS

And for that matter so is dependability. These three words have been key factors to Arrow's success for more than three decades. Where you are concerned all our people are clockwatchers, ready to provide the prompt service the Broadcast Industry depends upon. And to fill your requirements, Arrow stocks well over 267 lines of Broadcast Equipment . . . Isn't it TIME you called us?



# ARROW

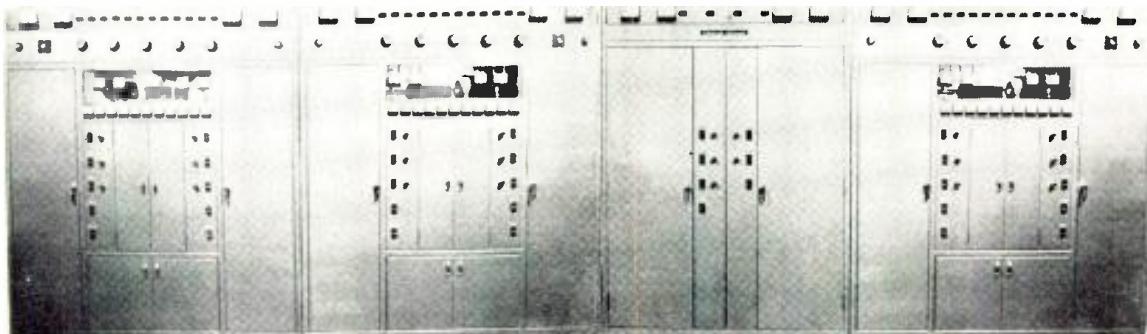
ELECTRONICS INC.

900 RT. 110, FARMINGDALE, N.Y. 11735

516-694-6800  
212-526-0300

Circle 23 on Reader Service Card

# NOW A 100 K.W. UHF TRANSMITTER WITH ONLY 4 TUBES



We have read with some amusement the recent advertisement by UHF transmitter manufacturers for their 100 kilowatt transmitters. The advertisements seem to imply that parallel operation for 100 kilowatts is a major technical breakthrough.

In reality, there is nothing mysterious about generating 100 kilowatts of UHF klystron power. A 100 kilowatt operation simply requires parallel operation of klystrons, the output of which is combined by a wave guide combiner and diplexer. The basic technology involved for such a parallel operation was developed well over a decade ago.

It was thus a simple matter for us to develop a 100 kilowatt transmitter. Parallel operation of two of our type accepted TA-55-BT visual amplifiers has resulted in the development of our 100 kilowatt transmitter type number TA-100-BT.

While the ability to operate a UHF television transmitter at up to 100 kilowatts output power is important, it does not evolve as the result of a recent technical breakthrough. The real breakthrough in UHF television transmitter technology is our transistorization of the driver which is used with all models of our klystron transmitters, including the 100 kilowatt model.

When we can produce 100 kilowatts with only 4 tubes as opposed to 4 or 5 dozen tubes necessary in our competitors' transmitters, we obviously have the technology on our side. More and more UHF broadcasters are also joining our side—why don't you?

Townsend Associates' transmitters are F.C.C. type accepted at all common power levels.

**For more information  
write today to:**

## TOWNSEND ASSOCIATES INC.

### HOME OFFICE

P. O. Box 215  
Feeding Hills, Massachusetts 01030  
(413) 733-2284

### LOS ANGELES OFFICE

8846 Delco Avenue  
Canoga Park, California 91306  
(213) 822-0732

Circle 24 on Reader Service Card

OF APPROXIMATELY 1800 CATV SYSTEMS IN THE U.S. . .

**60%** have one or more  
SITCO ANTENNAS IN USE!

(... and more going in every day!)

HEAVY DUTY QUADS-YAGIS      LO & HIGH BAND      FM ANTENNAS

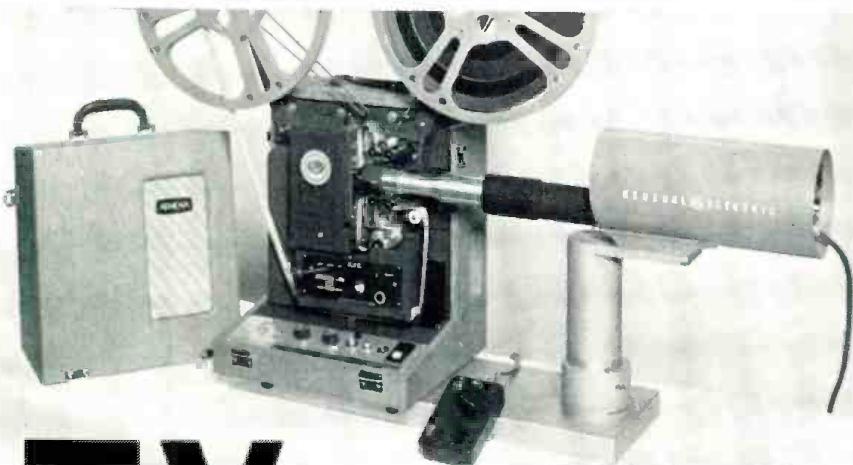
Write for free SITCO Catalogue



**SITCO** *Antennas*

10330 N. E. MARX ST. • P. O. BOX 7691  
PORTLAND, OREGON 97220 Telephone 253-2000

Circle 25 on Reader Service Card



# T-Versatile!

- SLOW MOTION at 1, 2, 4, 6, 8, 12 fps without flicker
- INSTANT SOUND STABILIZATION from stop to 24 fps—no troublesome audio "roll-in"
- STOP-ACTION—instant stop from 24 fps
- FULL COMPATIBILITY WITH TV 60-scan rate—no shutter bar
- SYNCHRONOUS MOTOR—precise frame rates
- UNLIMITED HOLD TIME on stills—no light loss or film damage
- FORWARD AND REVERSE, all speeds
- OPTICAL OR MAGNETIC/OPTICAL SOUND
- REMOTE CONTROL
- SIMPLE THREADING

Also available in a complete system,  
including TV camera and all optics

Sold by authorized Eastman Kodak A-V dealers

New Athena Model 1900  
16mm stop-motion projector  
—unprecedented versatility  
for broadcast TV,  
CCTV, ETV, ITV

WRITE FOR COMPLETE  
INFORMATION AND DEMONSTRATION



**L-W PHOTO, INC.**

15451 Cabrito Road  
Van Nuys, California 91406  
Phone: (213) 781-0457

Circle 26 on Reader Service Card

*Continued from page 48*

oped by cultivating local distributors to bring pressure on the advertising department of the account, and with the cooperation of a national representative bringing pressure on the advertising agency of the account good results can be obtained. A good national representative will work closely with you in developing the story of your market and station.

## Rates

By limiting the amount of commercial program content, the FCC has made it easier to plan rate cards. By using statistical formulas it should be easy to arrive at costs, percentages of time sold, and the rate needed to make a profit. A single rate card for both local and national business is the best method of operation. It insures equal service and equal opportunities for all advertisers. In planning a rate card don't belittle your station by creating AAA, AA, A, B, C, D, etc., times. If you have programmed well all your time is valuable and should bring the same rate. If personalities are involved add a talent fee, but don't advertise by time classifications the fact that your station doesn't have listeners.

## DRAMATIZE HURRICANE COVERAGE

Capture the viewing audience with actual pictures of this meteorological phenomenon. Let them see a hurricane develop and plot its movement. Tie in hurricane plotting chart promotion with your new APT recordings. Even offer these recordings to your viewers.

Orbiting weather satellites such as ESSA II will transmit these pictures and you can receive them on your Alden APT facsimile recording equipment. This same type equipment is being used by the U.S. W.B., U.S.N., U.S.A.F., and others.

Be the first TV station in your market to capture the weather audience with APT (Automatic Picture Transmission) pictures recorded on your own Alden Facsimile Recorder. Same equipment can receive standard U.S. Weather Charts or any type of graphic information, such as TV scripts of commercials sent via an Alden Facsimile Scanner over any existing communication link.

Systems from \$10,819. Basic recorder only \$5,171. Component units also available for use with existing electronics and antennas. Sale and lease plans. Write today for full details.

**IRVING R. TATRO**, Manager, Meteorological TV Systems, ALDEN ELECTRONIC & IMPULSE RECORDING EQUIPMENT CO., INC., Dept. BB-10, Westboro, Massachusetts 01581. Telephone 617-366-4467.

Circle 61 on Reader Service Card

October 1967 — BM/E

*More than ever before . . .  
the soundest sound in FM  
is the new sound of Gates*

FM-250H  
250 watts

FM-1H  
1KW

FM-3H  
3 KW

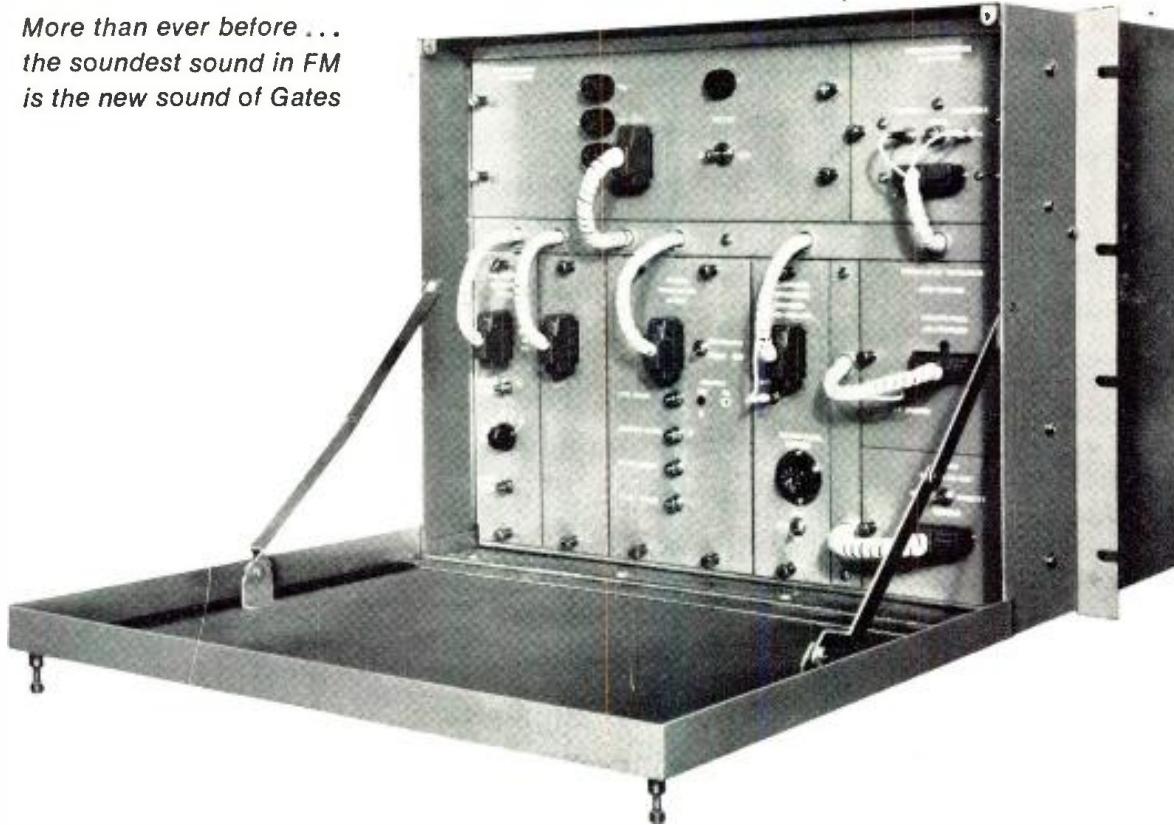
FM-5H  
5 KW

FM-7.5H  
7.5 KW

FM-10H  
10 KW

FM-20H  
20 KW

FM-40H  
40 KW



## **FM BROADCASTING BREAKTHROUGH:**

**"DCFM" (direct carrier frequency modulation)  
in a new 100% solid-state 10-watt exciter**

One-tube, 1KW; two-tube, 3KW; two-tube 5KW; two-tube, 10KW and three-tube, 20KW transmitters! Eight brand-new FM transmitters, all made possible through a Gates engineering breakthrough — a solid-state exciter employing "DCFM" (direct carrier frequency modulation) where modulation occurs at carrier frequency.

The new Gates exciter is self-contained, of modular construction. It is the heart of all new Gates "H" Series FM transmitters.

All "H" models are FCC-type accepted, and available for prompt delivery.

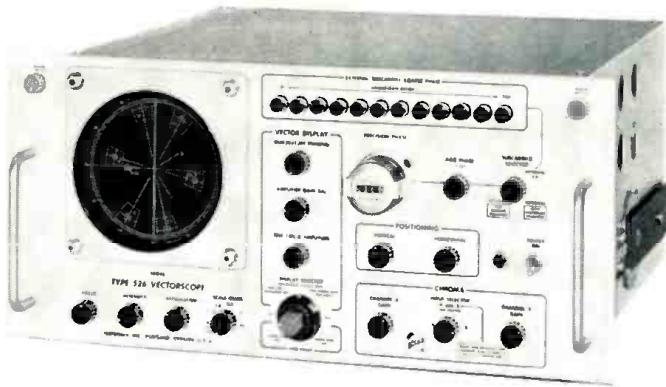
For complete descriptive brochure, write today.

**GATES**  
HARRIS  
INTERTYPE  
CORPORATION

**GATES RADIO COMPANY**  
QUINCY, ILLINOIS 62301, U.S.A.  
A subsidiary of Harris-Intertype Corporation

Circle 27 on Reader Service Card

# measuring differential gain and differential phase



*...with a Tektronix Type 526 Vectorscope*

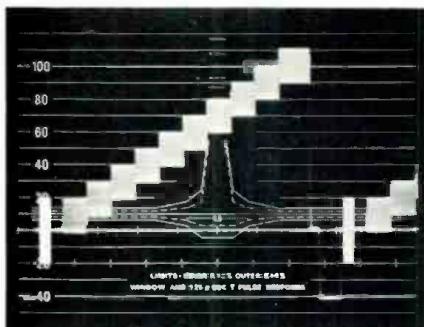


Fig. 1. Display of the modulated staircase showing 10 steps with 3.58 MHz modulation on each step and color burst, viewed on a Tektronix Type 529 waveform monitor.

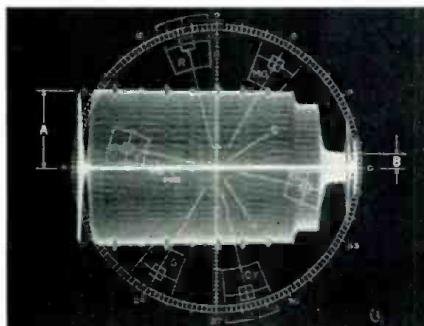


Fig. 3. Display of the 3.58 MHz staircase with the internal oscillator free-running. Differential phase information does not affect differential gain measurements.

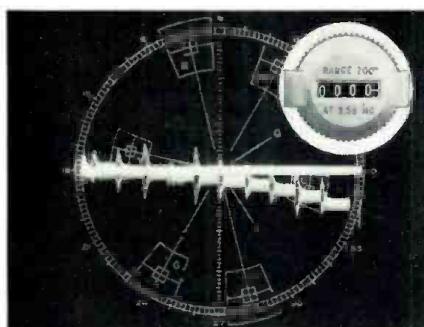


Fig. 5. Display of the modulated staircase (magnified) with the step at extreme left (black level) nulled to the center line.

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 staircase 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 . . . . \$1725  
Size is 8 3/4" high, 19" wide, and 18" deep.  
Weight is ~ 45 pounds. Designed for rack  
mounting. U.S. Sales Price f.o.b. Beaverton, Oregon



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.

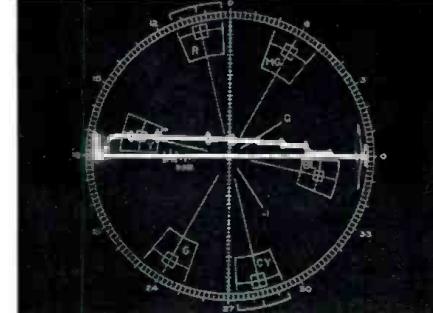


Fig. 4. Display of the modulated staircase with the oscillator locked to color burst, with subcarrier phasing adjusted nearly to null at the white level.

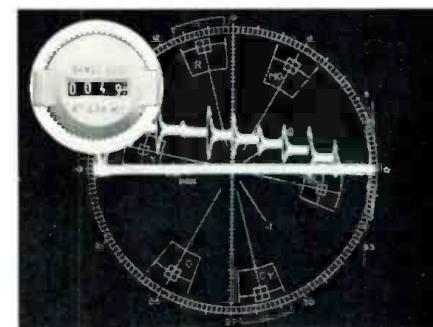
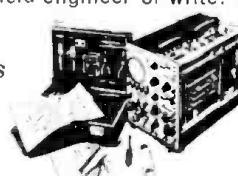


Fig. 6. Display of the modulated staircase (magnified) with the step at extreme right (white level) nulled to the center line.

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



Supporting field services



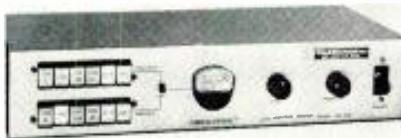
...part of the Tektronix commitment  
to satisfy customer requirements

Circle 28 on Reader Service Card

# BROADCAST EQUIPMENT

## CATV Video Control Center

Model TMW-600 Cablecaster control center handling video input and output for up to six live or automated CATV cablecasting video sources has been introduced by Tele-Mation of Salt Lake City, Utah. Cablecaster meets video switching requirements for local origination and contains a video processor, video level meter, and a solid-state vertical-interval program switching buss, with separate preview buss. Drive pulses



generated at one GE TE-14, 15, 20 series camera are carried to all other cameras for synchronous 2:1 interlace operation. For EIA synchronization and drive, an external EIA sync generator may be used or a Tele-Mation TSG-600 EIA sync generator may be installed in cabinet. Simultaneous televising and recording are possible with the Cablecaster, since VTR and line output jacks can be connected to either the preview or program busses. TMW-600 less sync generator is priced at \$1595. *Circle 102 on Reader Service Card*

## Vidicon Camera Has Video and Rf Outputs

Model ST 1000 vidicon camera, designed primarily for CATV local origination by Vikoa of Hoboken, N.J., is completely self-contained and capable of providing at least 500-line resolution. A 4000:1 automatic light compensator maintains picture quality even when camera suddenly pans from a very light scene to a very dark one. ST 1000 provides both video and rf outputs, allowing



video to be combined with audio and use of rf output on standard TV receiver. Rf level is 30 dBmV at 54 to 88 MHz. Standard lens is f1.9 25mm C mount. Camera is priced at \$295.

*Circle 106 on Reader Service Card*

## Weathercast Originator

Vikoa, Inc. of Hoboken, N.J. has produced a time-weather channel originator called Weathercaster. Unit displays up-to-the-second time and weather information 24 hr/day. System components consist of a fixed GE Vidicon camera focused on rotation



ting mirror which picks up eight viewing positions: a clock, a barometer, a thermometer, a wind direction indicator, a rainfall indicator, a wind velocity indicator, a relative humidity indicator, and a rotating sign holder. Rotating sign holder has six sides. Each of the viewing positions appears on TV screen for 5 s, with 1.8 s between positions. Weathercaster is shipped complete with attachable outdoor sensors and is priced at \$4200. Unit is also available with Vikoa Model ST1000 solid-state camera for \$3550. *Circle 104 on Reader Service Card*

## Cardioid Dynamic

Model D-200E cardioid dynamic mic, recently introduced by the AKG Microphone-Headphone Division of North American Philips Co., Inc., of New York, N.Y., uses two coaxially mounted elements with a 500-Hz crossover network. Each element is



designed for independent reproduction of low and high frequencies. Compensating windings are included to cancel stray magnetic fields. 200-E mic system is isolated mechanically within the outer housing against shocks by a floating suspension system. Frequency range is 30-15,000 Hz ±3 dB with sensitivity of -55dB (re 1 mW/10 dynes/cm²) 0.16 mV/μbar. Model D-200E weighs 8 oz. and is priced at \$69.00. *Circle 101 on Reader Service Card*

## Timing System For VTRs

A timing system for rapid editing of TV videotapes and for controlling the starting and stopping times of TV recorders and other equipment now is available from EECO of Santa Ana, Calif. Called On Time, the system records a time code on the cue track of a 2-in. videotape. Control panel for the On Time system mounts in the console of a VR-



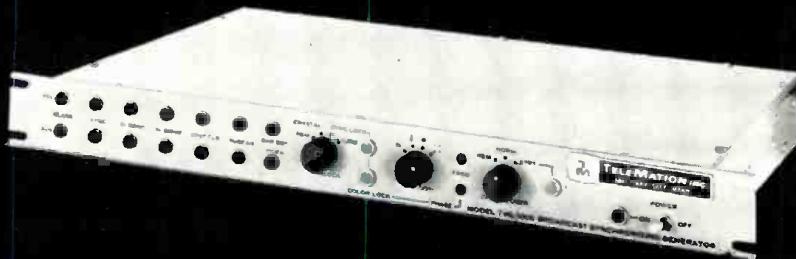
2000 videotape recorder (can also be used with other recorders), allowing the operator to read from tapes at any speed in playback or rewind and in either direction. Basic time code generator is priced at \$3000; control electronics, \$7500. Additional options available. *Circle 103 on Reader Service Card*

## Work Bench Cabinets

Deluxe Block-Line work bench cabinets, made by Deluxe Systems, Inc., Newton Highlands, Mass., feature welded construction. Each drawer is capable of carrying loads up to 220 lb and steel ball-bearing suspensions provide rolling action under full load. Steel drawer bottoms are perforated for positioning of tool or fixture holders. A variety of accessories includes drawer partitions, dividers,



## All Digital Color Sync Generator



### Exclusive Features —

- All pulses and transitions clock derived
- No monostables — no delay lines
- Integrated circuit reliability
- Dual outputs — permit pulse assignment with full standby
- Subcarrier vs. horizontal jitter better than 0.25 nsec.
- Pulse jitter better than 4 nsec throughout frame
- 1 1/4" rack space — including all "Add-In" modules

### Add-In Modules —

- Monochrome Genlock
- Bar Dot Generator
- Color Genlock
- Sync Changeover Switch

#### Monochrome

Model TSG-2000M

**\$1,000**

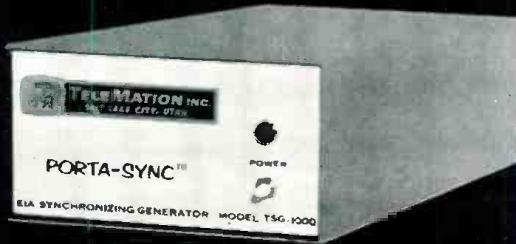
#### Color

Model TSG-2000C

**\$1,500**

## NEW PORTA-SYNC™

**Identical  
Performance  
at a Great  
Savings!**



Ideal for . . . REMOTE FIELD APPLICATIONS . . .  
PORTABLE TEST GENERATOR . . . SYSTEM SPARE . . .  
FULL TIME DUTY. Economical, yet absolutely no sacrifice of waveform performance.

Specifications are the same as Models TSG-2000M/C, but Add-In modules are not available because of ultra-compact dimensions of 3 1/4" h x 5 1/4" w x 10" d.

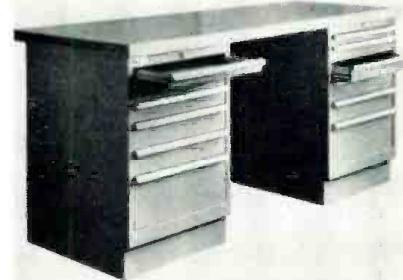
.... from TeleMation — where experience powers pacesetting products!



**TELEMATION, INC.**

2275 So. West Temple / Salt Lake City, Utah 84115  
Telephone (801) 486-7564

Circle 29 on Reader Service Card



marking pins, grooved trays, slotted tool holders, corrugated inserts, liners and others. Each cabinet has a cylinder lock and two keys. Standard measurement is 22 1/8 in. wide X 26 1/2 in. deep. Heights range from 8 3/4 in. to 39 1/2 in. Each model comes in standard drawer arrangement, but other combinations are available.

Circle 113 on Reader Service Card

## Automation Cueing System

Autocue solid-state cueing system, made by Broadcast Products Co. of Derwood, Md., inserts 25-Hz cue tones with accuracy of  $\pm 2$  percent and distortion of less than 0.5 percent. Tone pulse is adjustable from 0.5 to 4 s in length and from 0 to 2 V in level. Autocue's sensing amplifier has input sensitivity of -30 dBm to 0 dBm and input impedances of 10 k ohms (unbalanced bridging or optional 600 ohms balanced).



Frequency rejection is 40 dB. Program line filter has input impedance of 10 k ohms (unbalanced or optional 600 ohms balanced) and 25-Hz rejection of 50 dB; distortion, under 0.5 percent. Autocue is designed for mounting in 19-in. rack and occupies 3 1/2 in. of vertical space. Unit weighs 12 lb and operates on 120 V ac. Price is \$300.

Circle 100 on Reader Service Card

## Low-Cost CCTV Viewfinder Camera

The VF-301, first CCTV viewfinder camera to sell for less than \$1000, was designed to meet the needs of



rapidly growing numbers of users of videotape recorders. Camera can be integrated into other systems that use an external sync generator or other camera systems. VF-301 supplies video with 550-line horizontal resolution, is fully voltage regulated, and permits sharp line focusing from the rear through the use of a movable vidicon in addition to electronic focus. Changes in scene brightness are handled automatically through an internal 4000:1 light compensation circuit. RF output is tunable to any one of the channels 2 through 6. Weighing 19 lb, VF-301 measures 6.1 X 8.26 X 13.4 in. and comes complete from GBC America Corp., New York, N.Y., with 1.4 25 mm lens.

*Circle 107 on Reader Service Card*

### Solid-State Field Strength Meter

Model 481 portable field strength meter, made by Vikoa of Hoboken, N.J., operates from built-in rechargeable batteries or 110 V ac with frequency coverage from channel 2



through fm and channels 7 through 13 with accuracy of 1.5 dB maximum error. Model 481 has four nearly linear dB scales with range of -30 dBmV to 60 dBmV and adjacent channel rejection of 55 dB (32 MHz i-f). Illuminated meter and portability make unit suitable for nighttime use. Unit measures 4 1/4 X 6 1/2 X 7 and weighs 5 1/8 lb. Price is \$330.

*Circle 115 on Reader Service Card*

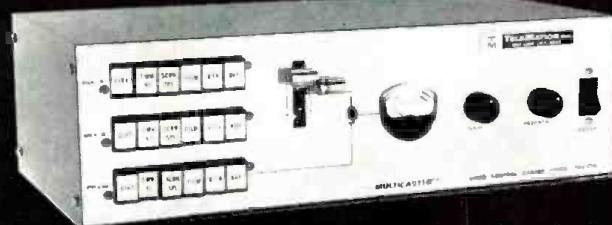
### Microwave Link

Raytheon Co. of Lexington, Mass., has introduced a solid-state fm program audio channel which allows broadcast quality audio or data signals to be transmitted over its KTR 2A and KTR 3A microwave radio systems with monochrome or color TV signals. With this equipment, up to four 15-kHz audio channels can



## MULTICASTER™

### Video Control Center / Model TMV-650 A SIGNIFICANT NEW CONCEPT FOR TV PROGRAMMING



An entirely new approach in the design of TV synchronizing, control and switching, the MULTICASTER® system concept will operate in three different modes: 1) Synchronous Industrial, 2) External EIA, 3) Internal EIA.

- The Synchronous Industrial mode offers the extra economy of 2:1 interlace with smooth, no-roll switching for multiple camera CCTV applications not requiring EIA sync.
- The TMV-650 will accept external EIA sync and blanking — or optionally may include a plug-in EIA sync generator to fully comply with FCC broadcast requirements.
- In all modes, vertical interval solid-state switching is utilized on both program buses while

- the preview bus is mechanical.
- A split-arm fader controls the video output from both program buses.
- Camera tally lights follow the fader arm position while switch buttons are lighted as selected.
- Provisions are made for remote control switching of one program bus.
- All video and inputs are "looping" for convenient system redistribution.
- A unique Video Level Meter enables cameras to be set up without a waveform monitor.
- Pedestal and video gain for all cameras can be controlled at the Control Center.
- Low cost, industrial-type, local control cameras are utilized for all operational modes, thus adding greatly to the cost savings.

**WRITE for complete details — request Form TPB-140**

## TELECTERN™

### 3 in 1 Versatility!

- Self-Contained Production Center
- Compact Briefing Console
- Overhead Camera System

The handsomely styled, mobile TELECTERN® is available in several video system configurations, including a custom EIA switcher, 2" x 2" slide projector, 10:1 zoom lens... and it is MULTICASTER® compatible.

Ideal for all instructional applications in Education / Industry / Military / Medicine.

**For complete details, request Form TPB-110**



....from Telemation — where experience powers pacesetting products!

## TELEMATION, INC.

2275 So. West Temple / Salt Lake City, Utah 84115  
Telephone (801) 486-7564

*Circle 30 on Reader Service Card*



## Behind the name...



...is the quality

The Tape-Athon 900 Recorder is one of the newest professional recorders on the market—yet it has a pedigree as long as your arm. Tape-Athon has built over 15,000 tape transports used in tough 'round the clock applications with a service record that's unmatched in the industry. This quality construction is inherent in the 900 and evident in the materials, the components, the assembly.

Combine this operating assurance with 900 features such as dual capstans for precision tape travel, solid state electronics, advanced control capabilities, and better-than-NAB specifications—or better yet get the whole story in the 900 catalog—yours for the asking.

# Tape-Athon, Corp.

523 S. Hindry, Inglewood, California 90307

Tape-Athon Corp. 523 S. Hindry, Inglewood, California 90307

Yes, send me a copy of the 900 Recorder catalog.

Name \_\_\_\_\_

Firm \_\_\_\_\_

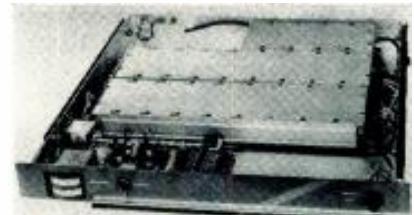
Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

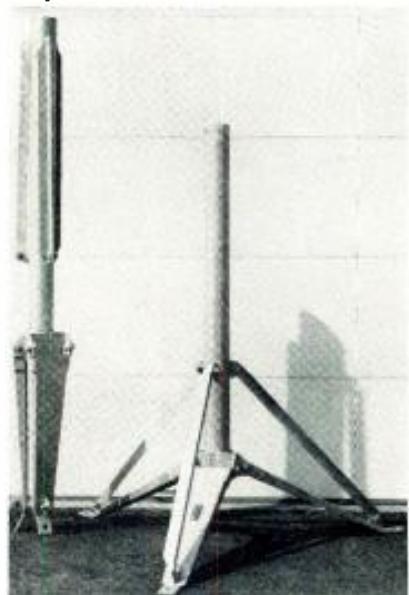
Circle 31 on Reader Service Card



be multiplexed on a radio carrier. Standard subcarrier frequency is 7.5 MHz, but optional frequencies are available at 6.17, 6.80, and 8.27 MHz. Program audio channel consists of two slideout drawers: the Model 10331 transmit program audio shelf and the Model 10384 receive program audio channel shelf. A front panel meter and switch have been provided for monitoring relative subcarrier frequency and relative carrier level.

Circle 114 on Reader Service Card

### Tripod Roof Mount



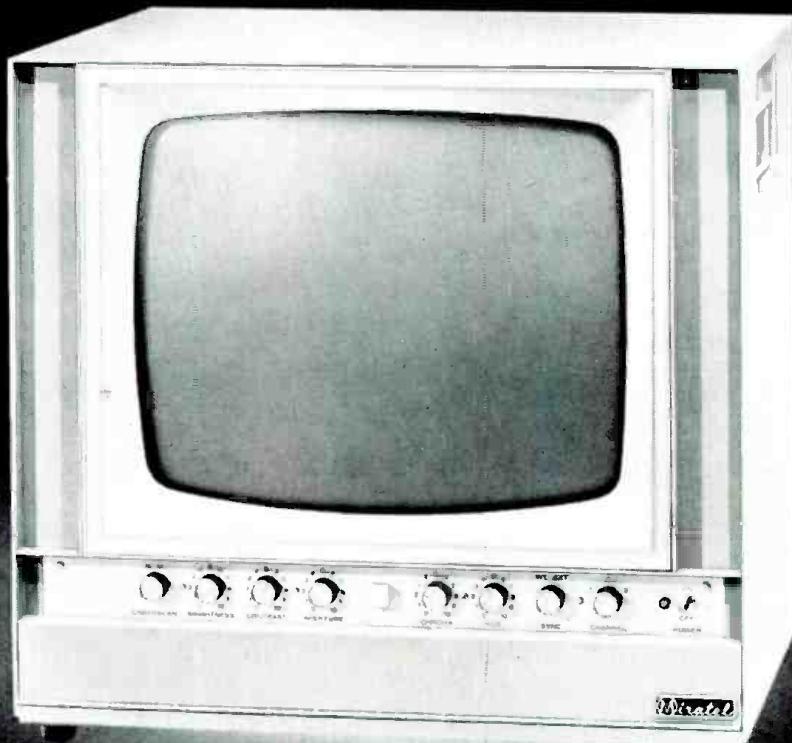
Microflect of Salem, Oregon, has introduced a tripod antenna support which features folding legs. Designated the "S" Tripod, the roof mount will accommodate either a pipe mounted 4 ft or 6 ft parabolic antenna. Pipe dia is 4½ in. and is available in 6- or 8-ft models. Prices are: S-6, \$115; S-8, \$135.

Circle 112 on Reader Service Card

### Cable Grip Reduces Materials Costs

"Reducing Teletap Connector," made by Preformed Line Products Co. of Cleveland, Ohio, is an L-shaped, helically formed length of double strand wire. Larger helical leg of cable grip wraps around feeder messenger strand near tap unit, while smaller leg winds around stripped messenger strand supporting cable.

# BBRC/Miratel Brings You...



*The Phantom* - This is probably the newest and least-known broadcast television color monitor available to the industry today. It's reliable. It has exceptional color fidelity. It's priced from \$775 to \$1275. And it's available off the shelf right now. We think it's the answer to your color monitor needs. You probably would, too. If you knew more about it. A look at our color monitor data sheet, followed by an evaluation of the MC19 in your operation, will settle that matter.



MIRATEL DIVISION • BALL BROTHERS RESEARCH CORPORATION • 3600 RICHARDSON STREET • NEW BRIGHTON • ST. PAUL, MINNESOTA 55112

Circle 32 on Reader Service Card

October 1967 — BM/E

Circle 33 on Reader Service Card ➤

# Confidence builders.



In reality, General Electric color TV cameras. The color-film PE-240...the live-color PE-250.

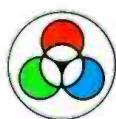
In our customers' minds, confidence builders. That's what General Managers and Chief Engineers of successful TV stations repeatedly tell us.

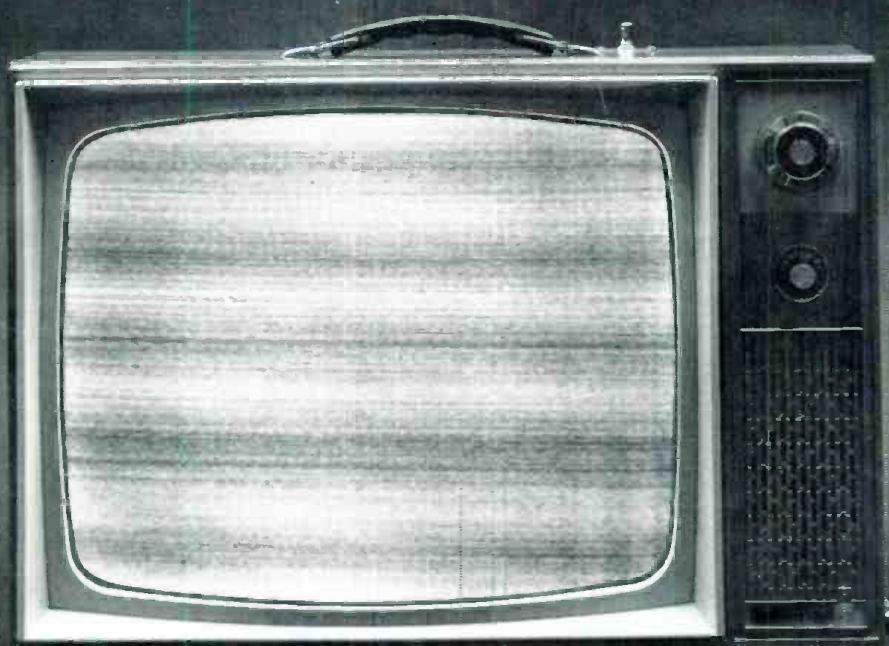
"Broadcaster confidence. That's why we bought your cameras. We looked at all the others and bought General Electric because it showed us the best pictures, the most stable and reliable performance, the most economical operation."

You get the best when you buy General Electric color TV cameras. Color you can have confidence in, cameras you can rely on.

Read about our PE-250 and PE-240 in the brochures we'll be glad to send you. And if you need more than that to build your confidence in these cameras, visit us in Syracuse where we build them. Visual Communication Products Department, Electronics Park, Syracuse, New York 13201. GE 46

GENERAL  ELECTRIC





## This kind of programming costs you money

You're in business for one reason: to make a profit.

Anything that takes away from your profit-making is your enemy. That's why you're way ahead when you choose Lenkurt microwave transmission equipment for your CATV or ETV system.

For instance, there's our 76 TV microwave relay system that has become the standard of the industry, due to its outstanding performance, ease-of-maintenance, and economical operation. 76 TV is designed to handle monochrome or color transmission and lets you insert and drop programs with ease at intermediate locations.

There is also Lenkurt's 75A, the ideal backbone microwave relay system. Because of its non-demodulating heterodyne repeaters, 75A delivers clear, sharp monochrome and color TV pictures regardless of distance, terrain, or weather.

Lenkurt microwave systems have proved themselves in virtually every situation. From high on Freel Peak in Nevada where 76 TV brings in a sharp high-resolution picture (even

when snow levels reach 20 feet), to an ETV closed-circuit system at the University of Kansas Medical Center. And our 75A has been transmitting high quality pictures for a number of CATV networks in New York and Pennsylvania.

And remember, when you buy Lenkurt equipment, you are buying more than hardware; you are purchasing Lenkurt's heritage and reputation for quality and continuity.

It all comes down to this: when you're thinking about microwave transmission equipment, for any application, think of Lenkurt. We'll show you how to improve your picture — both TV and profit. Write or call Lenkurt Electric Co., Inc., San Carlos, California. Other offices in Atlanta, Chicago, Dallas, and New York City.

**LENKURT ELECTRIC**  
SUBSIDIARY OF  
GENERAL TELEPHONE & ELECTRONICS **GTE**

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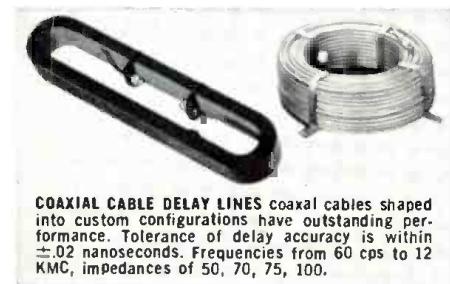
# BROADCAST COMMUNICATIONS COMPONENTS AND CAPABILITY

**STYROFLEX® COAXIAL CABLE** Leads the line of PDE semiflexible air dielectric cables. Available in 50, 70, 75, 100 ohm impedances;  $\frac{1}{2}$ ",  $\frac{3}{8}$ ",  $\frac{1}{4}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ " diameters.

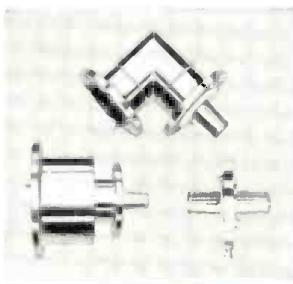
**SPIRAFIL® II COAXIAL CABLE** A significant design breakthrough! Solid polyethylene helix completely covers copper center conductor. Write for complete data.

**FOAMFLEX COAXIAL CABLE** Lightweight, low-loss cable created for all general applications including Broadcast, CATV, Military and Aerospace Requirements and RF transmission applications. 50, 70, 75, 100 ohms;  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ ".

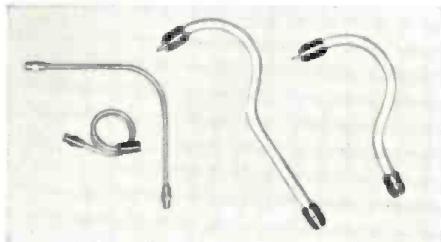
**RIGID LINE** Latest development provides extremely low loss, high power capability and excellent VSWR. 50 and 75 ohms;  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ ".



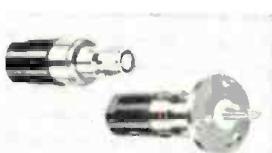
**COAXIAL CABLE DELAY LINES** coaxial cables shaped into custom configurations have outstanding performance. Tolerance of delay accuracy is within  $\pm .02$  nanoseconds. Frequencies from 60 cps to 12 KMC, impedances of 50, 70, 75, 100.



**RIGID LINE COMPONENTS** Produced to the highest standards of precision by Communication Products Company, Division of Phelps Dodge Electronics. A wide variety is available off-the-shelf.



**CABLE ASSEMBLIES** In addition to furnishing coaxial cables in 1000-foot lengths or cut to length, bending cables into sophisticated configurations to allow termination-to-termination use is an exclusive capability. Radii as tight as 3 diameters, no minimum straight length between bends, and certified electrical performance offers a custom assembly to fit the tightest specifications.



**CONNECTORS** Splices, adapters (UHF, N, HN, TNC, BNC, C, LC, LT, GR, EIA), transitions, short circuit terminations, end seals, waveguide transitions and panel mounts are off-the-shelf PDE connectors.

**ACCESSORIES** Pressure gages, valves, locating caps, plugs, tees, hangers and tools are performance-matched to PDE coaxial cables.

**TOTAL CAPABILITY** The entire broadcasting frequency spectrum is serviced by PDE with cables, connectors, rigid lines, and all necessary accessories for installation and maintenance of coaxial cable installations. Request new Bulletin BR-1.



**PHELPS DODGE** ELECTRONIC PRODUCTS  
NORTH HAVEN, CONNECTICUT

Circle 43 on Reader Service Card

## BROADCASTERS SPEAK

Sirs:

I am in receipt of the Broadcast Management/Engineering magazine dated August, 1967, and we greatly appreciate your article on ITV/ETV. We are right in the middle of putting together our own CCTV/ITV, and this article will be tremendous help to us.

In view of the article, may I request that you send me two additional copies of Broadcast Management/Engineering, so that I may place them in the hands of other people on this campus who are directly associated with the construction of our own CCTV facility.

Thank you very much for your time and cooperation on this matter.

Donald W. Phillips,  
Director, Educational Broadcasting  
West Virginia Wesleyan College  
Buckhannon, W.Va.

August BM/E on the way. D.P.

Sirs:

**KHOS** Radio is interested in some model floor plans for radio stations. If you have run any features in the not too distant past, would you please send us a copy? Thanks for your cooperation.

Jim Slone  
**KHOS** Radio  
Tucson, Ariz.

Nov/66 BM/E on the way. J.S.

Sirs:

In your August 1967 issue an article signed by Mr. Harold G. Wagner, Chief Engineer of WMVS in Milwaukee, appears. Mr. Wagner makes the statement that "WMVS was the first ETV station color broadcasting on a regular basis starting in January 1965 . . . ." The statement is completely erroneous.

KTCI-TV first broadcast color film and slides in September 1957 shortly after it began broadcasting. It has done regular colorcasting ever since. Starting in April 1960 it telecast 79 consecutive color programs.

It should also be noted that on April 11 of this year KTCI-TV commenced live color programming from its own studios.

WMVS is an excellent station, but its . . . claim . . . for priority in [color broadcasting] miss[es] the . . . mark by more than seven years.

John C. Schwarzwaldner  
Executive Vice President  
**KTCI-TV**  
St. Paul, Minn.

Thanks for calling this to our attention. J.S. Apparently in his enthusiasm, H.W. omitted the word "live" from his statement.

## A PROMISE IS A PROMISE

Broadcasters in all parts of the country purchased Collins 900C-1 Stereo Modulation Monitors before type-approval rules and regulations for stereo monitors were established by the FCC.

Collins promised these customers that their 900C-1 units would be modified to meet any forthcoming type-approval requirements.

Rules and regulations concerning stereo monitors were announced by the FCC earlier this year, and Collins has written to all 900C-1 customers, reminding them of the modification to which they are entitled.

If your station has received one of these letters, don't delay returning the modification request form.

We want you to have a type-approved monitor.

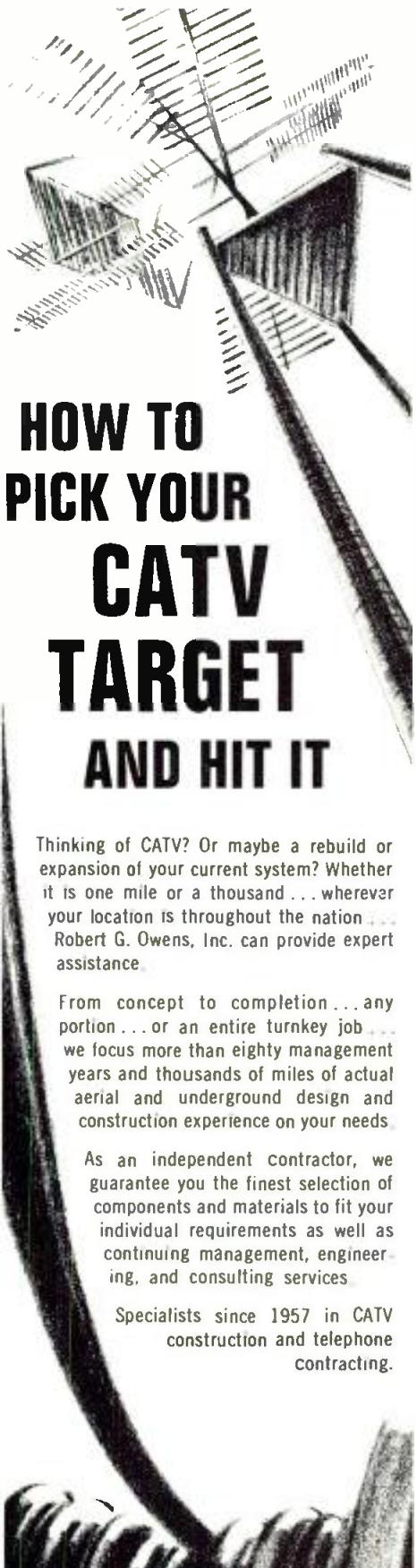
And we want to keep our record of always keeping our promises.

COMMUNICATION COMPUTATION CONTROL



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

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## HOW TO PICK YOUR CATV TARGET AND HIT IT

Thinking of CATV? Or maybe a rebuild or expansion of your current system? Whether it is one mile or a thousand...wherever your location is throughout the nation...

Robert G. Owens, Inc. can provide expert assistance.

From concept to completion...any portion...or an entire turnkey job...we focus more than eighty management years and thousands of miles of actual aerial and underground design and construction experience on your needs.

As an independent contractor, we guarantee you the finest selection of components and materials to fit your individual requirements as well as continuing management, engineering, and consulting services.

Specialists since 1957 in CATV construction and telephone contracting.

**ROBERT G. OWENS, INC.**  
150 Washington Boulevard, Laurel, Maryland  
(301) 776-6011  
1698 East 25th Street, Signal Hill, California  
(213) 426-7041  
in California contact:  
**CAL-TEL CONSTRUCTION CO., INC.**

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Abe Jacobowitz

K. James Yager

The appointment of **Abe Jacobowitz** as sales mgr. of Television Broadcast Equipment has been announced by Robert L. Diamond, marketing manager, Philips Broadcast Equipment Corp., Paramus, N.J.

The appointment of **K. James Yager** to the position of general manager of Cosmos Cablevision Corp. recently was announced by G. Richard Shafro, president of Cosmos Broadcasting Corp., Columbia, S.C.

The National Community Television Association has announced the appointment of **John Druckenbrod** to the new position of director of public relations.

**Ralph E. Hembree** has been named general manager of United Transmission, Inc., CATV Division. C.W. Stanley, vice president, recently made the announcement.

**Hy Triller** has been named manager of the Eau Claire, Wis., Abel-Cable system by Monroe Riskin, president of Daniels Management Co.

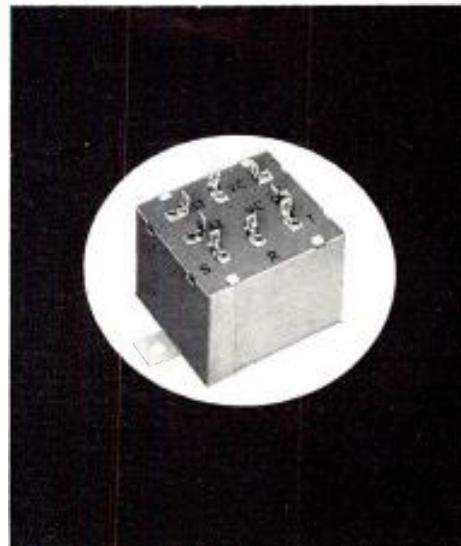
**Ronald H. Mendler** has been named station manager of WPEP, Taunton, Mass.

**J. Harry Abbott**, general manager of WSVA-TV-AM-FM, has been elected vice president of the Harrisburg, Va. stations.

**Jesse T. "Buddy" Ragan**, has joined KMEC-TV, Dallas, Tex., as program director, according to Carroll Maxwell, general manager.

**Fred Walker**, general manager of KPIX announces that **John Turpin** has joined the station as research director and that **Tom Piskura** has been appointed KPIX program manager.

The Board of Directors of Riker Video Industries, Inc., recently appointed **Mario Alves** as president and chief executive of the corporation. H. Charles Riker, a founder and former president of the corporation, has relinquished his administrative duties in order to devote more time to long range policy planning as a member of the Board of Directors.



# NEW Interphone Amplifier

The new Daven 90C Transistorized Interphone Amplifier allows for an independently fixed or manually adjusted peak gain of 25 db, and fixed or adjustable sidetone ratio. With a maximum of 32 conference connected units, the 90C replaces the old 6-station induction coil. Operation is independent of the 24-volt "talk" bus polarity to protect against burnout. It's designed for use with a Western Electric 52 or 52A Telephone Headset.

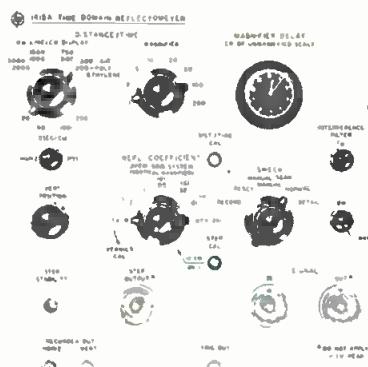
Write, phone, or TWX for Bulletin No. AL-35.

**DAVEN**   
DIVISION OF THOMAS A. EDISON INDUSTRIES  
GRENIER FIELD, MANCHESTER, N.H. 03103  
(603) 669-0940 • TWX 603-623-4938

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*hp  
TDR  
shows...*



## CABLE FAULT GUESSWORK ENDS HERE

*Improve Picture Quality,  
Quickly Identify and Locate  
Cable Faults with hp TDR*

Spend your time on the air . . . not up in the air! With hp's E75-140A CATV Fault Locator Package, you save time and money because you can (1) quickly locate and identify cable faults, (2) detect faults before they can cause downtime, (3) get your system back on the air much sooner in the event of a sudden crippling fault, and (4) consistently maintain high picture quality.

Use the hp E75-140A package to get a graphic picture of cable quality—and such faults as shorts, opens, loose connectors, defective tapoffs, splices and mismatched terminations. High sensitivity and resolution of the package detects faults to within 5 percent of the actual distance from the test point.

The E75-140A, factory calibrated for your 75Ω system, makes it easy for you to locate faults in up to 3000 feet of cable, and read the distance in feet. With a flick of the front panel slide switch, you can choose the calibrated scale for either polyfoam or polyethylene cable. The vertical scale is calibrated in percent of reflection for easy use. A slide rule is supplied to convert the proper value for dielectrics other than polyfoam or polyethylene.

Long persistence P7 phosphor CRT eliminates annoying flicker when you view the slow sweep speed in DETAIL mode. Special 75Ω overlays allow you to read impedance levels directly off the CRT face. Use the recorder outputs to make permanent records of your system.

The hp E75-140A CATV Fault Locator Package includes an hp 140A Oscilloscope mainframe with P7 phosphor CRT, hp H08-1415A Fault Locator Plug-in, hp 10458A 75Ω adapter with CRT overlay, and hp Application Note 67 with TDR slide rule.

For complete specifications on the special CATV Fault Locator Package, contact your local hp field engineer. Or, write to Hewlett-Packard, Palo Alto, California 94304. Europe: 54 Route des Acacias. Price: hp E75-140A CATV Fault Locator Package, \$1900.

### hp140A—The Scope System that gives you



20 MHz Wideband • High-Sensitivity, no drift • 150 ps TDR  
12.4 GHz Sampling • Variable Persistence and Storage

087/35  
**HEWLETT**  **PACKARD**  
*An extra measure of performance*

Circle 39 on Reader Service Card

# Solid State Circuit Boards

## Featuring Professional Performance at Low-Budget Prices

Model AA-100  
\$6.95



Model AA-300  
\$14.95

### AUDIO AMPLIFIERS

Transistorized audio pre-amplifiers and amplifiers capable of delivering 200 MW of audio power, sufficient to drive a small speaker or a number of earphones. The AA-100, which includes a mounted volume control, is designed for general purpose audio applications and can also be used to modulate the TR-100 Transmitter (see below). The AA-300, a 200 MW amplifier, has excellent frequency response and low distortion characteristics which make it ideally suited for broadcast, recording, and TV applications. Either amplifier may be powered from a 9 volt source such as a battery or the PS-300 Power Supply. In applications where greater audio power is required, the AA-100 or the AA-300 may be used to drive the Model AA-400 Power Amplifier (see below).

	Model AA-100	Model AA-300
Frequency Response	±3 db, 100 to 12K cps	-1 db, 20 to 20K cps @ 200 MW -2 db, 20 to 35K cps @ 100 MW
Harmonic Distortion	Less than 3%, 100 to 12K cps	Less than 1%, 20 to 20K cps @ 100 MW Less than 2%, 20 to 20K cps @ 200 MW
Input Impedance	150, 600, and 100K ohms (shielded transformer)	50 to 150 ohms, or 600 ohms, balanced (mu-metal shielded permalloy core transformer) 2K or 100K ohms unbalanced
Gain	70 db	80 db, 50 ohm input, 8 ohm load
Output Impedance	500 ohms and 8 ohms (grain oriented transformer) 200 MW	
Circuit	5 transistors, 1 thermistor	7 transistors, 1 thermistor
Power Supply	9 volts DC, 50 MA	9 volts DC, 100 MA
Size	5½" L x 1¾" W x 1" H	8" L x 2¼" W x 1½" H
Weight	3½ ounces	12 ounces

### 1-WATT AUDIO POWER AMPLIFIER



Model AA-400  
\$9.95

A transistorized audio power amplifier that can be driven to a full 1-watt output by a 1.5 volt signal. When the AA-400 is used with the Round Hill AA-100 or AA-300 Amplifier, a complete high gain, 1-watt audio system is obtained. Power can be furnished by any stable DC source delivering 14 volts at 150 MA, such as the PS-300.

Frequency Response ..... ±1 db, 20 to 20K cps @ 1 watt  
Harmonic Distortion ..... Less than 1.5%, 20 to 20K cps @ 1 watt  
Input Impedance ..... 500 ohms and 2,000 ohms

Output Impedance ..... 4 to 16 ohms  
Circuit ..... 4 transistors  
Power Supply ..... 14 volts DC, 150 MA  
Size ..... 3½" L x 2" W x 2" H  
Weight ..... 3 ounces

### REGULATED POWER SUPPLY

The PS-300 is a Zener-referenced, voltage regulated power supply which delivers a highly stable, extremely low ripple DC output of 9 volts with loads up to 200 MA and an unregulated output of 14 volts DC. The PS-300 is ideally suited for transistor circuit applications requiring a well-filtered regulated DC source, and may be used to furnish power to all Round Hill circuit boards.

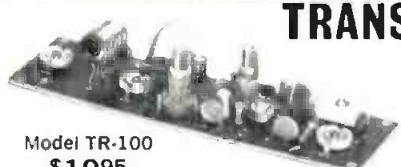
Input Voltage ..... 105-120 volts AC, 60 cps, 5 watts  
Regulation ..... Line -1- load 5 MV  
Ripple ..... Under full load 10 MV, peak-to-peak  
Maximum Load Current ..... 200 MA



Model PS-300  
\$18.95

Output Voltage ..... 9 volts DC fully regulated;  
14 volts DC unregulated  
Size ..... 4½" L x 2" W x 1½" H  
Weight ..... 23 ounces (with transformer)

### TRANSMITTER



Model TR-100  
\$10.95

Circuit ..... Crystal controlled, 3 transistors  
Frequency Range ..... Any CB channel (channel 10 crystal supplied)  
Modulation ..... CW or AM with external modulator such as Round Hill AA-100

The TR-100 is a complete crystal controlled Transmitter for the Citizens' Band. It is factory pre-tuned and supplied with a channel 10 crystal. The Transmitter is capable of an RF output in excess of 100 MW and may be modulated with the Round Hill AA-100 Amplifier. Transmitter power supply requirements are 9 volts DC which can be obtained from the PS-300 Power Supply.

RF Output ..... 100 MW, 50 ohm load  
Power Supply ..... 9 volts DC, 50 MA  
Size ..... 5½" L x 1¾" W x 2" H  
Weight ..... 3½ ounces  
Additional CB Crystals ..... \$3.00 each

**ROUND HILL ASSOCIATES INC.** A SUBSIDIARY OF MILO ELECTRONICS  
434 Avenue of the Americas, New York, N.Y. 10011

PLEASE SEND ME THE FOLLOWING CIRCUIT BOARDS:

MODEL	QTY.	PRICE ea.	AMOUNT
AA-100 AUDIO AMPLIFIER	1	\$ 6.95	\$
AA-300 AUDIO AMPLIFIER	1	\$14.95	\$
AA-400 AUDIO POWER AMPLIFIER	1	\$ 9.95	\$
PS-300 POWER SUPPLY	1	\$18.95	\$
TR-100 TRANSMITTER	1	\$10.95	\$
CB CRYSTAL (channel 10)	1	\$ 3.00	\$
TOTAL:			

Send postpaid—enclosed is full payment.  
 Send C.O.D.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

ZIP \_\_\_\_\_

# NAMES IN THE NEWS

In recognition of his devoted and eminent service in the advancement of engineering in motion pictures, television and in allied arts and sciences, the Society of Motion Picture and Television Engineers has elected Dr. John G. Frayne an honorary member of SMPTE. The Society also announces the award of the David Sarnoff Gold Medal Award to Alsa V. Bedford and the award of the Samuel L. Werner Memorial Award to Stefan Kudelski.



Barton Kreutzer



Robert L. Kleinfeld

Appointment of **Barton Kreutzer** as division vice president and general manager, RCA Broadcast and Communications Products Division, with headquarters in Camden, N.J., was announced recently by W.W. Watts, RCA group executive vice president.

The appointment of **Robert L. Kleinfeld** as vice president-marketing for the Lighting Products Division of Sylvania Electric Products Inc. was announced recently by Garlan Morse, senior vice president of the division.



Sanford N. Levine

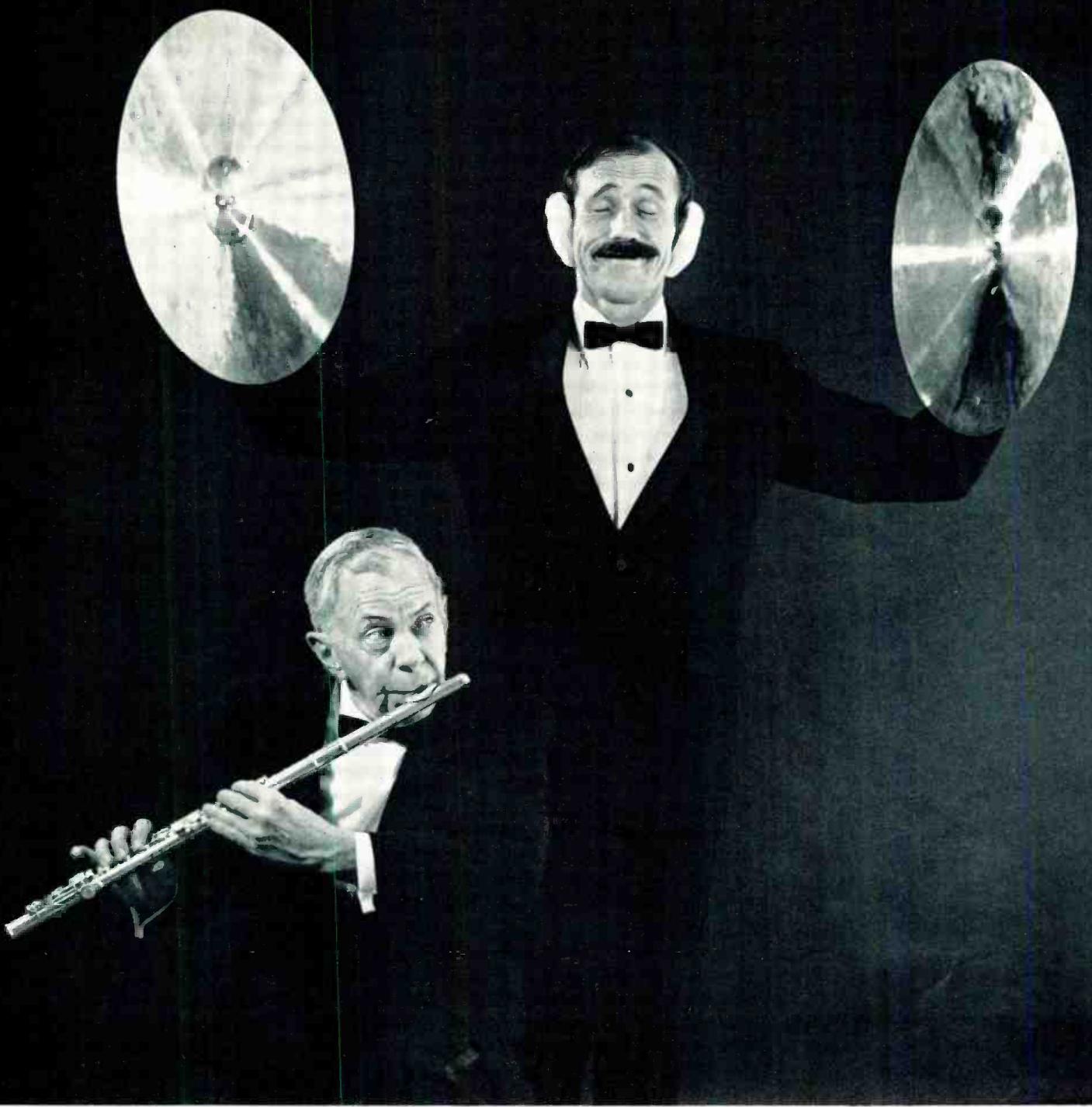


Allen T. Powley

**Sanford N. Levine**, president of Nation Wide Cablevision, Inc., has been elected a corporate vice president of Kaufman and Broad Building Co., parent company of the CATV firm.

Ward Electronic Industries, of Clark, N.J., announces the appointment of **Allen T. Powley** as regional sales manager.

Willard Schroeder, vice president and general manager of WOOD-AM-FM-TV, Time-Life Broadcast, Inc., has announced the appointment of **John H. Cooper** as assistant promotion director for the WOOD stations.



## Our new low-noise tape...is all surprises!

From surprisingly soft to surprisingly loud—new Ampex 404 Series low-noise tape can capture more audio reality than low-noise tapes of the past.

Its new small-particle oxide meets or surpasses the most demanding low-noise specifications. Holds inherent tape noise ("hiss") far below the level of your most delicate musical passage. Yet from this same quiet tape comes greater high frequency response and broader undistorted dynamic range—qualities previously sacrificed in

low-noise tapes. So the silence has more silence. The flute sounds sweeter. And the cymbals crash louder, without distortion — on Ampex 404 Series low-noise tape.

Buy the full range of Ampex professional tapes for extra quality: New Ampex 404 Series low-noise tapes for mastering and duplicating; 600 Series for general purpose professional recording; 681 Series lubricated tapes for endless loop cartridges; 291 Series tapes for a/v. Plus others. Send the coupon for up-to-date information.

To: Ampex Corporation, Room 7-14A,  
Redwood City, California 94063

Send me literature on the full line of  
Ampex professional tapes, including  
new 404 Series low-noise tape, for  
 Professional  
 Master  
 Duplicating  
 Other: \_\_\_\_\_



NAME \_\_\_\_\_

ORGANIZATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY/STATE/ZIP \_\_\_\_\_

Career opportunities? Write Box D, Redwood City, Calif. 94064.

**AMPEX**



*Leadership presents*  
**the NEW**  
**Computer Logic Control**  
**Pro 800 Transport**



MODEL SX 824

In the league of nimble-fingered tape-handlers there exists a recurrent problem. It has been demonstrated time and again that anyone can ruin a valuable tape by absentmindedly outsmarting the interlock system of an otherwise safe tape recorder.

In answer to this problem and similar problems arising in automated and remote control applications, the CROWN Pro 800 was designed. This recorder has a computer logic system using IC's which prohibit all such destructive operations.

The CROWN computer stores the last command given it in its memory (forgetting all previous commands) and by a continuous knowledge of the operating state of the machine (motion and direction), it takes all the necessary measures and executes the command. This is all done without time-wasting delay mechanisms.

Computer Logic Control brings to you rapid error-free tape handling. It is actually impossible to accidentally break a tape. Call your CROWN dealer NOW!

**MOST PERFECT REPRODUCTION**

- ☛ Performance as yet unequalled
- ☛ Four years proven Solid State circuitry
- ☛ Extremely low noise electronics

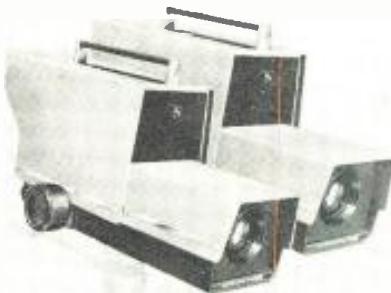
**FINEST TAPE HANDLING**

- ☛ Computer smooth operation
- ☛ True straight line threading
- ☛ Patented Electro-Magnetic brakes never need adjusting

*Write to* **Crown International**  
 Box 1000, Dept. BME-10  
 Elkhart, Indiana 46514

**MADE ONLY IN AMERICA**

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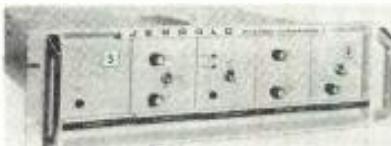


fers a choice of four types of sync including externally driven EIA RS-170. This model has remote control of beam, target, focus and pedestal and is priced at \$1995. Both cameras weigh under 23 lb.

Circle 108 on Reader Service Card

**20-Channel CATV  
Signal Processor**

Channel Commander II, made by Jerrold Electronics Corp. of Philadelphia, Pa., receives vhf signals on channels 2 through 13 and processes



and controls each channel at i-f strip frequencies and puts them out on any one of the same channels (including the input channel). Features include suppression of spurious beats to the extent of 60 dB, modular construction, 100-percent crystal controlled oscillators, separate i-f and vhf age circuitry, standard TV i-f video and sound carriers, etc.

Circle 117 on Reader Service Card

**Blank Tape Cassette  
Has 120-Min Capacity**

Cetron Corp. of Los Angeles, Calif., recently announced the availability of the C-120, 120-min blank tape cassettes. Manufactured according to specifications of the North American



Philips Standardization agreement, the cassettes are available in two packaging configurations carrying all of Cetron's proprietary and private label brands. Cassettes are packaged in individual plastic, shatterproof containers or in cardstock mailing cartons.

Circle 119 on Reader Service Card

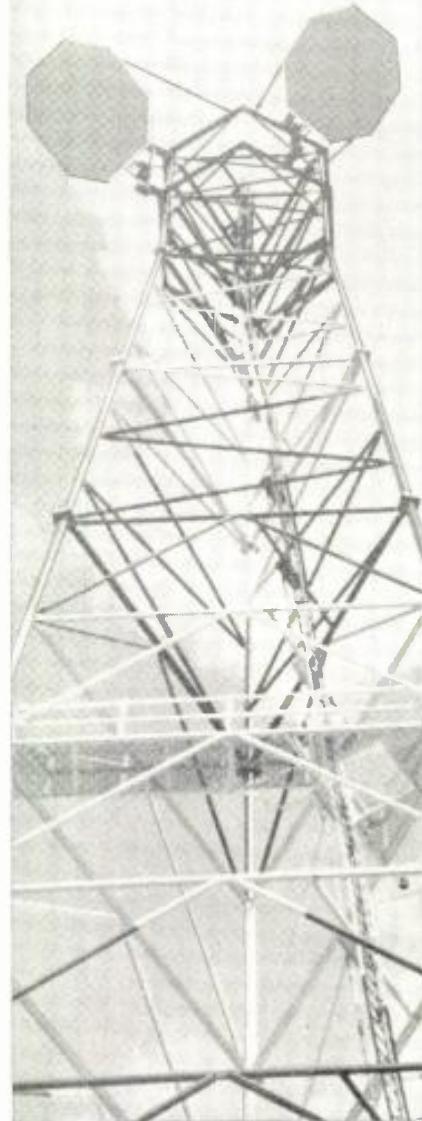
**Towers  
designed to  
meet your  
needs**

Advanced tower designs meet or exceed all standards and specifications of the industry, but most important, they are specifically designed to serve the purpose for which you intend to use them . . . AM-FM-MICROWAVE-CATV-UHF-VHF. All superior in quality and design, competitive in price. What's more, Advance offers the unique service of providing a "turn-key" package . . . Towers, Antennas, and pre-assembled aluminum buildings . . . completely installed by our own crews on your site.

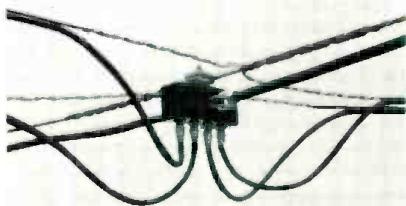
For complete information, contact:

**Advance Industries**

Dept. BM  
 705 Douglas St., Sioux City, Iowa  
 712-252-4475  
 TWX 712-991-1893



Circle 37 on Reader Service Card

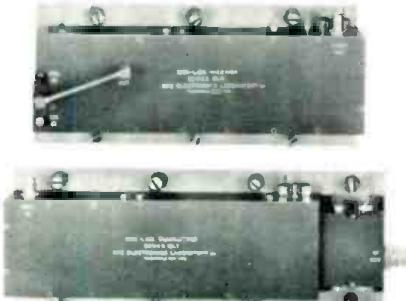


drop to house. This method of making service taps does away with need for C span clamps and dead ends at messenger support point, resulting in materials cost savings of up to 20 percent. Cable grip is applicable to integrated messenger strands with diameters of 0.063 to 0.072 in. and 0.083 in., and will accommodate feeder messenger strand diameters of  $\frac{1}{4}$  and  $\frac{5}{16}$  in.

Circle 111 on Reader Service Card

#### Fm Transmitter & Receiver

Mini-Link Series of transmitters and receivers provide a relay link capability for 525-line monochrome fm-TV. The transmitter, by RHG Electronics



Laboratory, Inc. of Farmingdale, N.Y., consists of a varactor-tuned oscillator feeding a power amplifier-multiplier chain. The receiver consists of a mixer and a local oscillator feeding a low noise i-f amplifier chain with built-in agc. Transmitter-receiver units are available from 1.4 to 2.3 GHz and offer baseband response to 4.5 MHz. System performance is fully compatible with EIA and CCIR standards for monochrome TV. Units are priced at \$2950 each.

Circle 110 on Reader Service Card

#### CCTV Viewfinder Cameras

Two TV viewfinder cameras are available from Television Utilities Corp., Long Island City, N.Y. Both cameras feature built-in zoom lenses with operator controls remote to the rear of the camera, 5-in. viewfinders, 600-line resolution and modular construction. Model VF1000 is self-contained with internally generated random interlace sync and is priced at \$1795. Model VF1500 of-



**COLOR  
SPECTACULAR!**



#### **BIW'S NEW TV-85C COLOR TV CONNECTOR ALIGNS PINS, PROTECTS MATED PARTS... AUTOMATICALLY**

This new concept in outer sleeve design guarantees positive pin alignment; pins cannot be bent or damaged by mismatching. The double-sleeve design also prevents injury to mating threads and protects against knocks, drops and abuse from studio rolling stock.

Heavy-duty rubber compression gland provides an effective seal at rear of connector. All pins and sockets on the new TV-85C insert are front release, rear removal, and crimp to cable conductors. Woven cable grip and rugged molded boot provides both bend relief and pull-out protection.

Completely compatible with existing 85 pin connectors used for TV, BIW's new TV-85C connectors are machined from 7075-T6 aluminum, and are precision built for trouble-free performance.

Go BIW all the way — connectors, camera cables (American or European), broadcast panels. Write for details.

**Cable concepts grow at...  
Boston Insulated Wire & Cable Co.**

**BIW**

45 Bay St., Boston, Mass. 02125/141 Nevada St., El Segundo, Calif. 90245  
118 Shaw St., Hamilton, Ont./International, 1 Place Ville Marie, Montreal, Que.

Circle 35 on Reader Service Card

# KINGS solderless UHF connectors... now fully crimped!



**ELIMINATE TIME CONSUMING SOLDERING AND CABLE ADAPTERS** with K-Grip Jr.<sup>®</sup> UHF connectors from Kings. Get stronger, longer-lasting connections with better performance...at no extra cost!

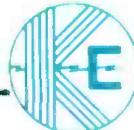
Forget about badly soldered joints. We supply everything...K-Grip Jr.<sup>®</sup> connectors...simple cable trimming jigs...easy-to-use crimping tool. Automatic crimping machine is also available.

Assembly requires only a fraction of the time used for conventional soldered types...use the jigs to trim the cable...crimp the center contact...

and crimp the connector to the cable...finished! Deliveries from stock.

Cable Type	K-Grip Jr.* Part No.	Jacket Trim Jig Part No.	Dielectric Trim Jig Part No.	Crimp Tool Part No.	Replaces Old Type
RG-58, 58A, 58C/U	KU-59-46	KTJ-12	KTD-34	KTH-1	PL-259 + UC-175
RG-59, 59A, 59B, 62, 62A/U	KU-59-44	KTJ-12	KTD-33	KTH-2	PL-259 + UG-176
RG-11, 11A/U	KU-59-43	KTJ-11	KTD-35	KTH-3	PL-259
RG-8, 8A, 213/U	KU-59-42	KTJ-11	KTD-35	KTH-3	PL-259

Available for other cable types upon request.



*Send for further information to:*  
**KINGS ELECTRONICS CO., INC.**

40 Marbledale Road, Tuckahoe, N.Y. 10707 • Tel.: 914-793-5000 • TWX: 914-793-5849

PRECISION RF COAXIAL CONNECTORS • TELEPHONE JACKS & PLUGS • TERMINATIONS • CRYSTAL HOLDERS • WAVE GUIDE COMPONENTS • CABLE ASSEMBLIES

Circle 44 on Reader Service Card

# ROHN®

## Mighty big in towers

CATV • Microwave • Communications • Broadcast • Home TV • Amateur • Specialty Towers

The dominant position ROHN enjoys in the tower industry has its foundations established on a concept of providing the customer with more than he expects to get. The built-in extra quality factor begins with:

ENGINEERING AND DESIGN — computer-assisted for exactness

MANUFACTURING — vast, modern, custom-designed facilities and methods

FINISHING — hot-dipped galvanizing after fabrication and continues with . . .

ROHN SERVICE — strategically located warehousing, world-wide representatives, turnkey tower erection service and complete lines of towers, lighting, microwave reflectors, accessories and equipment.

Representation and Distribution Worldwide

For further information contact

### ROHN® Home Office

P.O. Box 2000,  
Peoria, Illinois 61601  
Ph. 309/637-8416  
TWX 309/697-1488



Circle 45 on Reader Service Card

## 24 HOURS CONTINUOUS RECORDINGS

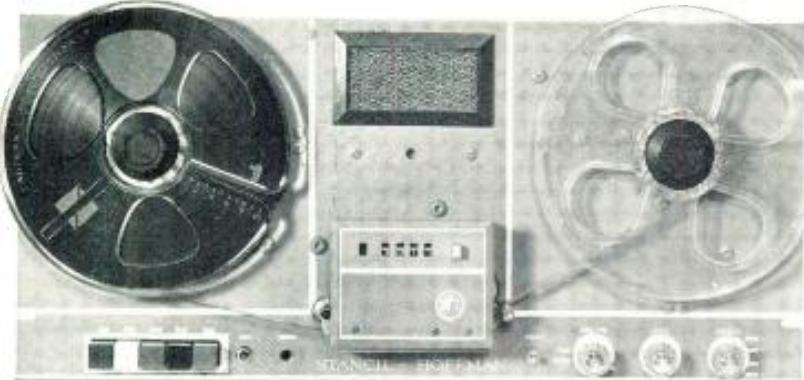
Up to 4 separate channels recorded simultaneously, without interruption, on one 7" reel of standard 1/4" tape!

UNDER \$800.\*

First heavy duty professional communications logger priced under \$800.00! The R-70 utilizes most advanced solid state circuitry, all silicon transistor plug-in amplifiers, achieving remarkable fidelity at very low tape speeds. Full line of accessories: AGC on each channel, recall facilities, full remote or automatic control, stereo, fail-safe, synchronous time injection, cabinet or carrying case.

FOR LOGGING ALL COMMUNICATIONS, INCLUDING 2-WAY RADIO, BROADCASTING, TELEPHONE AND SECURITY SURVEILLANCE

Now used by police, fire, airlines, armed forces, network radio and TV, security, telephone industry.



\*Prices from \$775.00 (32 lbs., 8 1/4" x 19" x 11 1/2" deep)

WRITE FOR SPECIFICATIONS AND PRICE LIST

**STANCL-HOFFMAN CORP.**

921 NORTH HIGHLAND, HOLLYWOOD, CALIFORNIA 90038

Circle 46 on Reader Service Card

Sirs:

I recently attended the Summer NAB Course at Harvard, and in just five days the crimson of Harvard showed seventy of us broadcasters how green we really were . . . Professors Livingston, Fuller and Litwin soon made us realize that there is always a better idea.

The cases were replete with problems you can identify with. A TV station needs a sales manager. This station has four good salesmen. Should they hire an outside man or promote from the ranks? Ownership is divided in their opinions about this decision. Those in favor of promoting from within the ranks claim that salesman number one is a terrific producer; he knows the market, he knows the men and he understands station policy so he should get the job. Those opposed say that a good salesman seldom makes a good sales manager because he participates in selling; he can't keep his fingers out of the pie, so to speak. A good coach shouldn't play in the game; he should motivate his players; he should lead them.

I won't tell you the end of this story because it won't be fair to us fellows who paid to find out. But believe me when I tell you it's worth the price of admission to attend the NAB Harvard Summer Course to get with these thought-provoking questions. The professors at Harvard also know things about you that you never knew! Only after the course is in session do you find out that you have been profiled and analyzed. I understand that this technique is something new and so you oldtimers, please don't say "this guy is nuts because that's not the way it was when I took the NAB Harvard Course." If you still insist that's the way it wasn't, I suggest that you take the course again because this new dimension is absolutely necessary to give insight on why you evaluated the case histories the way you did . . .

There is space for only seventy students, so register early because some of us have already applied for next year's course.

Si Willing  
President and  
General Manager  
KMAR, Winnsboro, La.

Sirs:

Could you please tell me the date and location of the next National Association of Educational Broadcasters Convention. I understand that this will be held before the end of 1967.

Thank you very much.

George Harwood  
AV/TV Instruction Engineer  
University of Saskatchewan  
Regina, Sask.

Thanks for writing, G.H. The 1967 NAEB convention will be held in Denver, Colorado, November 5-8.

Circle 47 on Reader Service Card →

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565

Your Sylvania distributor can analyze your electronic replacement needs. To save you time and money.

He can do an inventory analysis for you—at no cost. You'll learn which tubes to stock in quantity—and which ones not to. You'll prevent emergencies when tubes and semiconductors need replacing.

Your Sylvania man is a tube and semiconductor expert. Because he's always in touch with Sylvania product and applications engineering staffs, so he's always kept up to date.

And we furnish him with detailed technical information about tube and semiconductor applications—industry by industry. So he knows *your* problems—and has the answers.

Help yourself to a free analysis of your replacement needs. Call your nearby Sylvania distributor now. You'll save yourself some trouble. And money, too.

Sylvania Electronic Tube Division, Electronic Components Group, Seneca Falls, New York 13148.

# SYLVANIA

SUBSIDIARY OF  
GENERAL TELEPHONE & ELECTRONICS GTE

# The new one – the right one – for 3000-watters!

## Bauer Model 603 FM Transmitter

It's the first new FM transmitter since the forties that's designed especially for 3000-watt operation...not just a scaled-down version of high-powered equipment.

Model 603 is economical and compact—made for the Class A station that wants to transmit full power, horizontal *and* vertical.

Compact? Just 30" wide, 25½" deep, 75" high.

Features direct FM exciter, easy tunability, and a very simple control system. Accessibility and maintenance are easy, too.

Low tube complement and investment, with power to spare, and straightforward, uncomplicated circuitry—no gimmicks.

Ready for stereo and SCA additions at any time, Model 603 is basically designed for 3-phase power supply but can be readily furnished with optional single-phase when 3-phase is not available or is too costly to bring in.

Model 603 is just one more advanced product in the fine line of radio transmitting and audio devices from Bauer. Write to us for full technical information on this exceptional 3000-watt transmitter.

**Bauer**  
ELECTRONICS CORPORATION  
1601 California Ave.  
Palo Alto, California 94304

A *Granger  
Associates* COMPANY

Circle 48 on Reader Service Card

74

Sirs:

A quick note of congratulations on the concise, factual presentation of the status of ETV/ITV in your August, 1967 issue of Broadcast Management/Engineering.

I have been with this field for twelve years, and it is proving interesting to see the manner in which it now is being proclaimed as starting to mature.

Let me give credit to your magazine as one of the few over the years that has recognized this field. Several others have ignored it as if it were a passing fancy of a few educators and an income source for major electronics manufacturers.

Lou Peneguy  
Director, Information  
Georgia ETV Network  
Atlanta, Ga.

Sirs:

I am interested in obtaining a copy, if one is available, of the cover of your May, 1967 issue of BM/E.

I feel that this cover is very decorative and a reprint might be very suitable for framing.

Thank you very much.

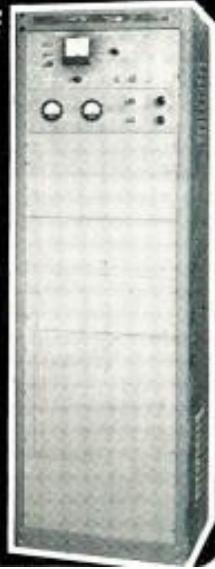
Neil A. McIntyre  
Program Manager  
wovo Radio  
Ft. Wayne, Ind.

*We're sending an additional copy of the issue, N.M. The May cover was a big hit.*

**RODELCO**

**Rodelco offers a complete line of VHF and UHF translators with power output levels of one watt to one kilowatt.**

**100 WATT UHF TRANSLATOR (F.C.C. TYPE ACCEPTED)**



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**RODELCO**

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## Replace Mercury Vapor Tubes Directly with

## WILKINSON

## Silicon Rectifier

## Stacks!

## Because...

- Only non-encapsulated WILKINSON Silicon Rectifiers can be repaired in seconds with low-cost replacement diodes!
- Exclusive "GO, NO GO" indicator automatically warns when the reverse leakage of any diode is in excess of 50 microamps.
- Only WILKINSON Silicon Rectifiers are available in a complete tube replacement range of from 866 to 857B.
- WILKINSON Silicon Rectifiers function in ambient temperatures of from -85 F to +158 F.
- No more filament heat and consequent filament burnout...lower power cost and reduced hum, too.
- No warm up time is necessary...instantaneous operation!
- Just plug in WILKINSON Silicon Rectifiers...no re-wiring is necessary.
- Only WILKINSON Silicon Rectifiers are fully guaranteed and have a safety margin well in excess of tube rating.

For complete details write today to:

**WILKINSON**  
ELECTRONICS, INC.

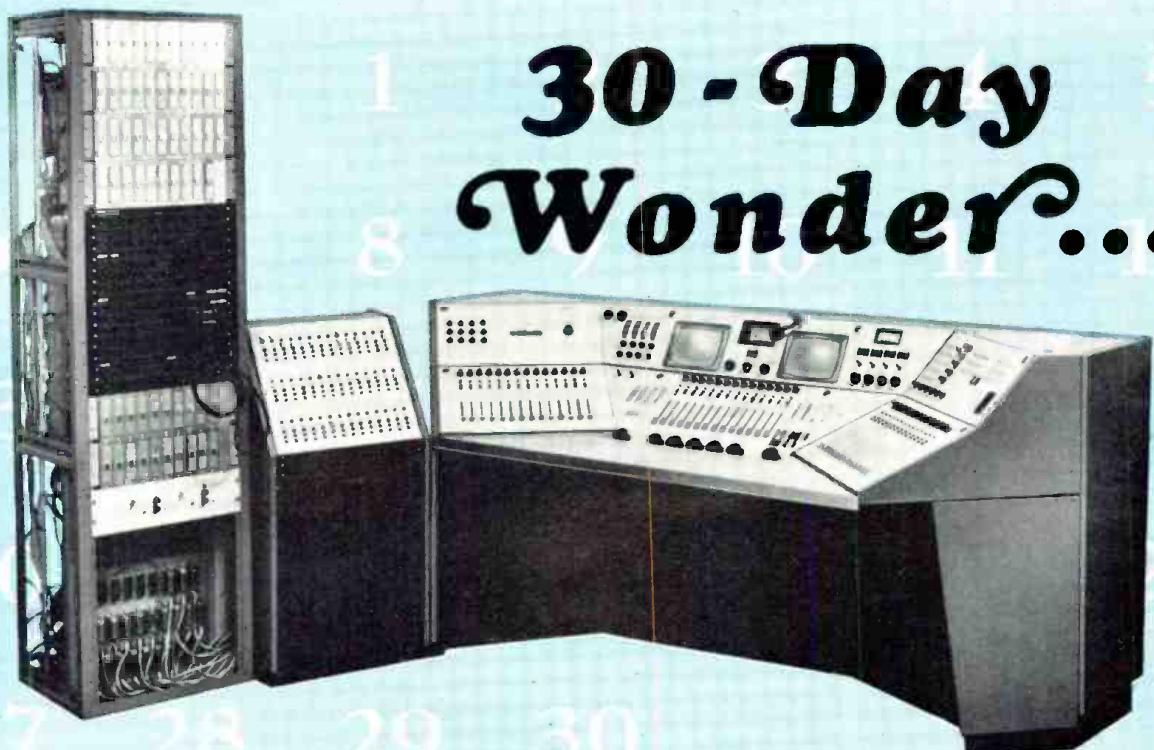
1937 MACDADE BLVD. WOODLYN, PA. 19094  
TELEPHONE (215) 874-5236 874-5237

Circle 50 on Reader Service Card

October 1967 — BM/E



# 30 - Day Wonder...



## New Fairchild Integra II Remote Control Custom Audio Console!

A major TV network selected FAIRCHILD RECORDING EQUIPMENT CORPORATION, from among several of the largest broadcast equipment manufacturers in this country, to design and construct a 42-input audio mixer console. Not only did FAIRCHILD deliver a remote control mixing console in substantially less than the required time, but the network's audio engineers were so deeply impressed with the INTEGRA II console's performance and compactness that additional consoles were ordered . . . the next INTEGRA II console was constructed and delivered in thirty days. These consoles were installed and in operation within a matter of days after delivery.

### NO AUDIO IN THE CONSOLE

There is actually no audio in the INTEGRA II console, with the exception of the audio lines assigned to peripheral effects equipment such as effects equalizers, VU meters etc. The INTEGRA II

audio system, by removing the audio from the console area, eliminates the need for audio equipment to be located adjacent to the control area, thereby providing far greater design latitude.

### THE SECRET OF FAIRCHILD'S INTEGRA II CONCEPT

The secret of the speed in which FAIRCHILD INTEGRA II consoles are constructed is inherent in the advanced modularized solid state design. By combining several audio functions — amplification, attenuation and switching — in a complete system of plug-in cards, the construction of simple or complex consoles is implemented in short periods of time. In addition, a considerable savings in space and cost is also achieved.

The FAIRCHILD INTEGRA II remote control audio consoles and components are more compact, easier to install and maintain; are far superior in performance and reliability.

*IF YOU ARE A PROGRESSIVE BROADCAST OR RECORDING STUDIO, with an eye to the future, look to FAIRCHILD for INTEGRA II consoles or components today. Write for complete details and brochure.*

**FAIRCHILD** RECORDING EQUIPMENT CORP.  
10-40 45TH AVENUE • LONG ISLAND CITY, NEW YORK 11101

Circle 52 on Reader Service Card

# LITERATURE of INTEREST

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

**Use of CCTV** for students interested in small animal surgery and teacher interning is described in Application Bulletin (8-81) from Cohu Electronics, Inc. **150**

**New-product supplement** to Catalog 26 from Tektronix contains revised price list and application tips. **151**

Rf equipment, including attenuators.

phase shifters, power dividers, etc., are described verbally, and with photographs, schematics, performance curves and drawings in 72-page catalog from Merrimac Research and Development, Inc. **152**

**Videotape recorder**, color corrector, and receive/monitor (Models VR-7500C, AC-924 and TRC-921) descriptions and specifications are presented in Bulletin No. V67-2 from Ampex Corp. **153**

**Industrial Electronics Catalog** No. 680 from Allied Radio contains 600 pages, listing over 50,000 separate stock items from 500 manufacturers for fields including communications, entertainment, and education. **154**

"**Systematic Storage**" is the title of a 21-page catalog from Deluxe Systems, Inc. Modular cabinets, drawers, partitions, dividers and marking devices are among items described. **155**

**Microphones**, mic accessories and public address equipment are fully described and illustrated in 12-page Catalog 167 from Electro-Voice. **156**

"**Thyratron Application Report**," containing a thorough discussion of thyratron characteristics and circuit considerations are contained in Application Report No. P111 from Amperex Electronics Corp. **157**

"**Lighting Accessories Supplement No. 1**" (8 pages) to Catalog K from Mole-Richardson pictures 2 new pedestals, aluminum reflector boards, heat absorbing glass and Macbeth filters, etc. **158**

**Program origination** equipment from TeleMation, called News Channel (Model TMV-201) presents continuous Associated Press News. Equipment is described in 3-page brochure. **159**

**Standby TV microwave** (Model Dual Link 2A) is described in data sheet from Raytheon. **160**

**Aluminum scaffold towers** (Series X-2) are described in a bulletin from Astro Structures, Inc. **161**

**CCTV videotape recorder** (Model VR-7500) is described in Brochure No. V67-1 Ampex Corp. **162**

**Transformer lamination catalog** (144 pages) from Magnetic Materials Co. includes dimensional diagrams of available shapes, magnetic designs, formulas and magnetic path dimensions. **163**

"**The Encyclopedia of Connectors**" from Spacecraft Components Corp. includes drawings and dimensions of connectors to assist in selection. **164**

"**To Buy or to Build Logic Cards?**" is the theme of 15-page Application Note AN4-67 from Cambridge Thermionic Corp. **165**

**Equipment cases** in 52 basic length and width combinations are described and dimensionally illustrated in 35-page catalog from Zero Manufacturing Co. **166**

**Microwave Components and Equipment** descriptions are presented in 32-page Bulletin 89 from Lectoric Research Labs, Inc. **168**

"**FM Microwave Relay Equipment**" is the title of Catalog 67b from RHG Electronics Laboratory. Eight-page catalog lists fm-TV relay links, fm transmitters and receivers, transmitter components and microwave fm receivers. **169**

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**

## A STAR IS BORN FILMLINE'S MODEL FE-50 A Processor for Ektachrome Film

Processes 16mm Color Emulsions at 50 FPM.



Who knows more about building film processors than Filmline? Nobody. And everything we've learned has gone into our newest Ektachrome processor, the FE-50. It is top quality equipment at a sensible price . . . the result of Filmline's productive know-how. Designed and engineered to fulfill the requirements of both large and small TV stations the FE-50 is the most versatile, fully automated Ektachrome processor ever built.

■ **EXCLUSIVE OVERDRIVE SYSTEM** — guarantees against breaking or scratching film. The system is so sensitive that film can be held man-

ually while machine is in operation, without breaking film or causing lower film assemblies to rise.

Provisions for extended development to increase ASA indexes to 250 and higher are incorporated. Machine threadup allows use of standard ASA indexes or accelerated indexes because of Filmline's Film transport system features.

- **EASY-TO-OPERATE**—automated controls make this an ideal machine for unskilled personnel.
- **VARIABLE SPEED DRIVE**—speed range of 5 FPM to 60 FPM for Ektachrome emulsions.

Now available: Filmline FE-30 Ektachrome Processor. Speed — 30 FPM. Complete with Replenishment System . . . \$15,750. F.O.B. Milford, Conn.

For more details write: Dept. BMEO-67



### ADDITIONAL FILMLINE FEATURES:

- Stainless steel air squeegee ■ Impingement dry box ■ Torque motor for takeup ■ Leak-proof pumps for chemical solutions ■ Temperature controlled by precision thermistor controllers ■ Construction — all metal ■ Tanks and component parts are type 316 stainless steel.

Recent FE-50 installations: WEAT-TV, WCKT-TV, WMAL-TV, NBC, CBS, WTOP-TV, A-1 Labs, Precision Labs, Film Service Lab.

# BM/E CLASSIFIED MARKETPLACE

## CLASSIFIED ADVERTISING RATES

SITUATIONS WANTED: 15¢ per word; \$2.00 minimum.

HELP WANTED: 20¢ per word; \$2.00 minimum.

ALL OTHER ADVERTISING: 25¢ per word; \$3.00 minimum.

BLIND BOX NUMBERS: No extra charge. Send replies to address below.

DISPLAY CLASSIFIED ADVERTISING: \$21.50 per inch 1x; \$20.00 per inch 6x; \$18.50 per inch 12x. Professional Cards \$15.00 12x.

CASH DISCOUNT: 2% cash discount if remittance accompanies order.

CLOSING DATE: 5th of the second month preceding issue date.

**BM/E, Monterey and Pinola Avenues, Blue Ridge Summit, Pa. 17214 Phone 717/794-2191**

## BUSINESS OPPORTUNITIES

### FRANCHISE DISTRIBUTORSHIPS FOR SEEBURG BACKGROUND MUSIC

We are expanding our distributor territories, and offer to those who qualify franchises for background music, with phone lines, FM Multiplex, or on-premise systems.

Complete details forwarded on request:  
Address:

Joseph F. Hards, Vice Pres.  
SEEBURG MUSIC LIBRARY, INC.  
1500 North Dayton Street  
Chicago, Illinois 60622

### OWNER WISHES TO RETIRE

Will accept offers to purchase two AM and one FM stations from responsible parties!

Box 1067-1, c/o BM/E, Blue Ridge Summit, Pa. 17214.

### CALIFORNIA DAYTIMER

billing over \$80,000 annually, available at realistic price and terms to qualified buyer. Principals only.

Box 1067-2, c/o BM/E, Blue Ridge Summit, Pa. 17214.

### POSITIONS WANTED

Need a tough manager? Small to medium market. Full timer. Texas, Oklahoma, Colorado, Kansas, Missouri. No dogs, but can help troubled station. Family man degree, 31, 13 yrs. experience. Top sales, low expenses. Must have full responsibility. Automation, Foreign Language Experience. Box 1067-28, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Twenty-three years ownership, management news, production, programming, personnel selection, supervision, sales. Mature direction, delivery, thoughtful editorials, inquisitive news. Third. Endorsed. Organize or supervise station departments. Community-active, sober, reliable, dependable. Personal interview at my expense. Box 1067-3, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Read this! Objective: Assistant Program Director/DJ. Profitable audience building ideas & promos—Unique DJ "Sellability" "Fantabulous" musical knowledge—Mature—College grad.—Korean vet—Professional & Progressive. Quality pop music, personality station only. Prefer Northeast. Box 1067-4, c/o BM/E, Blue Ridge Summit, Pa. 17214.

"Let's Talk" Have profitable idea for talk show. Need station with eye for talent ideas, profit to air show. Have talent, know how, ambition, ideas to put show over for a mutual profit. 1-302-475-4825 or Box 1067-29, c/o BM/E, Blue Ridge Summit, Pa. 17214.

### POSITIONS WANTED (cont'd.)

Florida! Looking for an announcing position on Florida's west coast—14 months announcing experience—willing to learn any format! Reason for leaving: relocate in healthful climate—For audition tape and complete details, write Fred Boorman, 1320 Hawthaway, Owensboro, Kentucky. Phone 1-502-683-5406.

Program Director who developed one of New York State's most successful operations with music and news, would like to relocate as program director or manager. Stable, reliable. Box 1067-30, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Broadcast engineer with control room, Special events, remotes and motion picture projection, recording total of 20 years experience. What have you got to offer me? Box 1067-31, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Aggressive assistant manager (AM-TV) ready for new challenges as General Manager. Age 37, Master's Degree, family man, sober, active in community, experienced in all phases of Broadcast management. Box 1067-5, c/o BM/E, Blue Ridge Summit, Pa. 17214.

1st Class Ticket, 21, married, military obligation completed, announcing ability. Desire on the job training any electronics field. Relocate Western states. Mark Worley, 1428 Riverside, Mt. Vernon, Wash. 98273.

Newswoman — announcer — DJ — experienced. Public relations, writing, advertising. Currently employed. Available ninety days. Will relocate. Tape available. Box 1067-6, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Country DJ and announcer country music only 3rd endorsed. Family man. Also plays several string instruments. Joe Reeves, 923 Lindell Avenue, Hannibal, Mo. AC 1-3908 or AC 1-0752. One of the finest on-camera news directors in the nation seeks change. Associated Press award winner. Box 1067-32, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Young, sincere, and experienced newscaster-announcer with third phone seeks work New York-New Jersey area. Tape and resume available. Box 1067-7, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Sportscaster, DJ reliable, will relocate, family, experienced, 3rd phone, play-by-play. Tight board, military obligation fulfilled. Immediate availability. Box 1067-8, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Disc jockey, announcer, experienced, authoritative, newscaster, tight board, personable. Family man. Desires sales. Box 1067-10, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Art Director-Photographer, a real pro. Major eastern markets only. Fifteen years television experience. Box 1067-11, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Producer director with five years experience in commercial television desires position in ETV or CCTV facility. Box 1067-13, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Disc jockey. Announcer, newscaster, control board operator, FCC permit, creative, versatile, authoritative, aggressive, salesman, tight board. Box 1067-14, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Negro beginner trained by New York professionals more accepted at discotheques than NYC djs. Will relocate. Box 1067-15, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Negro Announcer D.J. wants a start none floater sports comm. news music good voice tight board 3rd class permit will relocate anywhere U.S.A. Box 1067-16, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Colored DJ Announcer. Grad of N.Y.S.A.S. Single. Will relocate, can also do combo. 3rd endorsed. Tape resume photo on request. Box 1067-18, c/o BM/E, Blue Ridge Summit, Pa. 17214.

R&B DJ Sports play-by-play. 2 yrs. coll. & 2 yrs. Tech Sch. Recent broadcast grad 3rd endorsement. 1 Randolph, 195 Willoughby Ave., Brooklyn, N.Y. 11205.

Negro DJ, rock or Gospel. One year experience. Box 1067-23, c/o BM/E, Blue Ridge Summit, Pa. 17214.

### POSITIONS WANTED (cont'd.)

Real groovy energetic R&B or Top 40, disc jockey, desires California East, (or) West, third endorsed. Box 1067-9, c/o BM/E, Blue Ridge Summit, Pa. 17214.

DJ-newscaster, authoritative, artistic, 3rd ticket, military complete. Will relocate. Box 1067-33, c/o BM/E, Blue Ridge Summit, Pa. 17214.

DJ, announcer, newscaster, experienced unmarried, willing to relocate. Box 1067-34, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Mature Negro Disc jockey seeking California, East or West Coast. Third endorsed. Box 1067-12, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Top production, 5 years. Radio-TV. Medium market. 200 wk. References. Box 1067-17, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Experienced girl announcer-news, music, interested advertising also. Box 1067-19, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Changing Format? Need anchor man? Ideas? Winning sound. Best production. References. Box 1067-20, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Children's Emcee-Producer, announcer, salesman, copy. Available now. Box 1067-21, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Authoritative newscaster, announcer, DJ. Will relocate. Personable, married. Box 1067-22, c/o BM/E, Blue Ridge Summit, Pa. 17214.

### HELP WANTED

**VTR TECHNICIAN**—Rapidly expanding CCTV campus network needs technician to design, install, and maintain campus wide television installation. Applicants must be experienced in maintenance of RCA and GE vidicon camera chains, and RCA and Ampex VTRs. Excellent pay and benefits. Work with a major state university located near the Great Smoky Mountains and TVA lakes. Contact Mr. Frank Lester, Department of Television Services, The University of Tennessee, Knoxville, Tennessee 37916. An equal opportunity employer.

**REGIONAL SALES MANAGER—EAST**—Nation's leading supplier of time-weather, news, and local origination equipment for CATV seeks top-notch sales engineer type. CATV background not necessary, but good understanding of video systems equipment desired. Excellent opportunity for willing-to-travel go-getter. Contact: Mr. K. D. Lawson, Sales Mgr., Tele-Mation, Inc., 2275 South West Temple, Salt Lake City, Utah 84115, (801) 486-7564.

**PROFESSIONAL** staff members now being hired for Texas based Radio-TV-Outdoor Poster chain for new TV and radio properties. Announcers, News Editors, Engineers, Comedians, Film editor, Salesmen, Traffic girls, Camera operators, etc. All replies in confidence. Send full details first letter for either Radio, Television openings. Box 1067-25, c/o BM/E, Blue Ridge Summit, Pa. 17214.

**ENGINEERS—TV**—Sunny California. Discover job security, and a new way of life in California. Have top openings for qualified Maintenance Engineers, especially Video Tape and Live Color Video. Send resume or letter to The AMPS Agency—3924 Wilshire Boulevard, Los Angeles, California 90005. 388-3116  
By Broadcasters — for Broadcasters

"Immediate opening for morning personality. NO ROCK! Mature approach to copy, friendly approach to listeners, involve yourself in friendly community. Congenial working conditions, fringe benefits. Forward tape, pix, resume, salary to Ralph Allinger, Production Manager, P.O. Box 950, Utica, New York 13503."

**IMMEDIATE OPENINGS**—Qualify for any of the following positions: Technicians for RCA closed Circuit Television equipment—Camera men—Maintenance men—Video Tape men—Video Engineers. RCA Rep., 143-08 94th Ave., Jamaica, New York, or (212) 297-3344.

## HELP WANTED (continued)

Chief engineer for unusual television originating and translator complex in rural area in northern New York. Great opportunity for the right man. Contact Dr. Frank W. Cyr, Rural Supplementary Educational Center, Stamford, New York 12167.

Bright-sounding morning man, midwest market! Number one station for eight years. Growth and opportunity with an expanding chain. Good starting pay. Send tape and short resume to Box 1067-35, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Opportunity in south Texas for qualified chief engineer. Must be qualified in VTR, studio maintenance, microwave and full power, tall tower operation. Send resume and salary requirements to Personnel, P.O. Box 1359, Ft. Smith, Arkansas.

First Class engineers, maintenance background, no board work. Immediate openings. Excellent growth opportunity with independent group. Rush reply by letter to C. Dingmen, WCTC, 385 George St., New Brunswick, N.J.

Assistant Engineer Needed for unusual television originating and translator complex in rural area in Northern New York. Contact Dr. Frank W. Cyr, Rural Supplementary Educational Center, Stamford, New York 12167.

If you have a First Class license, experience and ability, and are worth \$150 per week to start, a well-run east coast station would like to from you. Box 1067-36, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Needed-Experienced combination salesman & announcer. Good future, security, living conditions, hours & pay. Excellent recreation. Southeastern location. Box 1067-37, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Engineer in charge of maintenance. Top 10 market, 1st class license, experienced in all solid state color UHF operation. Good pay. Career with opportunity to advance. Send reply to Box 1067-24, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Chief engineer with ability to conduct MOR board shift AM-FM operation in single station market of 25,000. Equipment in good shape. Salary negotiable. W. H. Olson, Gen'l Mgr. WLOI, P. O. Box 385, La Porte, Indiana.

Looking for experience. Live color, color VTR, and color film with new modern equipment. WREX-TV, Rockford, Ill. has an opening for a first class engineer. TV experience desirable but not necessary. Contact Chief Engineer WREX-TV.

Rapid advancement for top quality announcer-salesman with management potential. Rocky Mountain, 50,000 population. Growing company, great potential. Lou Erick, P.O. Box 189, Cheyenne, Wyo., phone 307-614-5723.

COACHING, analysis, consultation. Announcing newscasting. Confidential. Via personalized tape only. Services limited to professionals. Write: HAL FISHER, Broadcast Consultant, 2237 Elsinore Avenue, Winter Park, Florida, 32789.

Immediate opening for engineer-first phone Television Station, operation—no announcing. Location—Northern Lower Michigan, Box 1067-38 c/o BM/E, Blue Ridge Summit, Pa. 17214.

Rapid advancement for management potential announcer-salesman with growing company. Send tape and resume to Boyce Hanna, Box 199, Shelby, N.C. 28150.

1st class engineer—Music-news station. AM-FM, Southeastern Massachusetts. No board work. Excellent salary. Send details, experience, Box 1067-39, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Wanted! Broadcast technicians to enter aircraft electronics. Numerous jobs everywhere. Write: Avionics, Reno/Stead Airport, Reno, Nevada 89506.

Immediate opening for Chief Engineer. Experienced only. Salary open. Many fringe benefits. Call or write: Manager, WITY, Danville, Illinois.

Opening for experienced television studio operations and maintenance technician. Reply to Harry Matthews, State University, College, Oswego, New York 13126.

Experienced fulltime announcer needed immediately. Pay commensurate with ability. Radio Station WKSC, Kershaw, S.C. 475-8585

## SALES REPS WANTED

Sales Representatives wanted for CATV Products—Log Periodic antennas, components. John Thomas, Lindsay Electronics, Lindsay Ontario, Canada. Phone 705-324-2196.

## MISCELLANEOUS FOR SALE

SALE ON ELECTRONICS BOOKS! 5 for \$3.98! Guaranteed retail value of \$16.50! Grab Bag of 5 electronics books on testing, test equipment, TV, radio, hi-fi, stereo, etc. Clearance of books which sell for as high as \$4.50 each. Send check or money order to: Grab Bag, Dept. BO7, Box 304, Emmitsburg, Md. 21787.

1000 EMBOSSED BUSINESS CARDS \$3.99. FREE SAMPLES. WAGNER COMPANY 6200B WHITEWOOD, LIBRARY, PA. 15129.

Japanese electronics catalog, \$1.00. Dec. 10639A Riverside Drive, North Hollywood, California 91602.

SIGNS, NAMEPLATES, LABELS, Decals, Badges, Trophies, Plaques, Seton Corp., Dept. BME, New Haven, Conn. 06505.

Professional Electronics Projects — \$1 up. Catalog 25c. PARKS, Box 15265, Seattle, Wash. 98115.

## EQUIPMENT WANTED

we pay  
CASH for TUBES

Lewis Paul Electronics, Inc.  
303 West Crescent Avenue  
Allendale, New Jersey 07401

Wanted: Used self-supporting tower, 350' or greater, with wind loading 40±. To carry 8 bay BIC or equal antenna on top pole with 31/8 coax, 2.5 GHz omnidirectional equal to TACO EO-A-H13 with 15% flexible line. 2 4' parabolics at 200' with 15% flexible line. Contact John Krom, Education Center, 120 E. Walnut, Indianapolis.

Radar for TV meteorologist and on-air use. Between 3.2 and 5 centimeter wave length. Minimum range 150 miles. Please send description, condition of equipment if used, specifications and price to Box 1067-26, c/o BM/E, Blue Ridge Summit, Pa. 17214.

Equipment for commercial/religious/educational small market UHF. Outright gifts or very low payments. Box 1067-27, c/o BM/E, Blue Ridge Summit, Pa. 17214.

## EQUIPMENT FOR SALE



AMPEX authorized Sales and Service. New and used equipment for sale. 48 hour service on most repair including head rebuilding. Other professional equipment also available. ACCURATE SOUND COMPANY, 15 N. Tyler, San Angelo, Texas AC 915 949-1904.

## EQUIPMENT FOR SALE (cont'd.)

### FREE ARCTURUS CATALOG

A Trusted Name in Electronics Since 1925  
Electronic parts, tubes. Wholesale.  
Thousands of items. Unbeatable prices.

ARCTURUS ELECTRONICS CO.  
502 - 22nd St., Dept. BM/E,  
Union City, N.J. 07087

RCA Equipment—2 TM21 color monitors @ \$1,000 each. 2 TG2 sync generators @ \$1,000 each. 2 frequency standards @ \$350 each. 1 TA9 stab amp @ \$450, 4 aperture equalizers @ \$75 each, 3 BK5B microphones @ \$100 each. Also 3-500' Marconi Mark IV camera cables @ \$700 each. All equipment is in perfect working condition. Write John Blades, LOGOS Teleproductions, 3620 South 27th Street, Arlington, Virginia 22206. Phone: 703/671-1300.

Largest supply of G.E. & Motorola radio and mobile telephone equip. in the U.S. (30-50), (150-174), (450-470). Base, repeater, and dial equip. Dealers invited. Western Mobile Telephone Company, 200 South Anaheim Blvd., Anaheim, Calif. (714) 774-0520.

NEW TURNTABLES, TONEARMS, PRE-AMPLIFIERS, CARTRIDGE MACHINES, EQUALIZERS, TAPE RECORDERS, STUDIO EQUIPMENT, PROFESSIONAL BRANDS. WRITE FOR SPECIAL OFFERS, WE BUY, SELL, TRADE, LEASE. AUDIOVOX, P.O. BOX 7067, LUDLAM BRANCH, MIAMI-FLORIDA. 33155.

We have up-dated our studio equipment and have a large quantity of good used recording and photo equipment for sale. Write for complete list. Northwestern Inc., 011 S. W. Hooker St., Portland, Ore. 97201.

For Sale . . . TR-22 tape recorder. Fully colorized. Three years old, excellent condition all modifications. Highest offer above \$400. Available, July. Call 717 823-3614. Or Box 1067-40, c/o BM/E, Blue Ridge Summit, Pa. 17214.

TUBES—Complete Stock From #10 to #89, TABS to 38022, OC3 to 11726, and most of the rest. List free. Harold Goldman, 43 Clinton Ave., Rockville Centre, N.Y. 11570—Phone 516-536-6697.

Schafer automation 1-CU-9 control unit, 1-PBR rack with 3 Ampex-350 playback, 1-MU-3-R preparation unit, all accessories. Like new, cost \$12,800.00, sell \$7,500.00. KXA, Inc., 320-2nd W, Seattle 98119. Phone 206-284-8600.

RECEIVE PICTURES FROM APT WEATHER SATELLITES. Limited quantity of high quality FACSIMILE MACHINES at the lowest price anywhere. Newsome Electronics, Dept. BC, 2670 Pinetree, Trenton, Michigan 48183.

5820A I.O.'s for sale. First quality 5820A at \$475.00 with 750 hour warranty. For further information, call or write Baker, Miller, Taylor Co., 7 Bala Ave., Bala Cynwyd (Phila.), Pa. 19004. (215) 664-6672.

FOR SALE: 140' Self-supporting broadcast tower complete with insulators and lights. Extra heavy duty construction, all galvanized steel. Kelley's Electric, Snow Shoe, Pa. 16874.

CARTS, CARTS, CARTS, CARTS. LIK-NU Cart Corp. re-builds your cart tapes lik-nu. New pads, tape for as low as 90¢ for 70 sec. 5-day service. Box 2608, Fort Wayne, Ind. EQUIPMENT, Audio, Broadcast, Video, Bought-Sold-Traded through our national listing. Contact: The Maze Corporation, Box 6636, Birmingham, Alabama 35210.

POLICE — fire — aircraft — amateur calls on your broadcast radio! Tune the band with TUNAVENTER. Free catalog. Salch Company, BM/E, Woodsboro, Texas 78393.

Astronomical, Optical, CCTV Cameras, Test Equipment-160 Page Bargain Catalog — 50¢ coin or stamps. DENSON ELECTRONICS CORP., Rockville, Conn. 06066.

For Sale: 1-Hewlett-Packard type 81547A-335 B FM monitor, now in service presently on 98.3 M.C. \$750.00. WPRS Radio, Paris, Illinois, PH 5-5153.

G-E BA 5 A limiting amplifier, good condition. Ike Lee, Chief Engineer, WAPE, Jacksonville, Fla.

Protect your records. Send for our free LP supply lists. Record Supplies, Hillburn, N.Y. 10531. Towers, broadcast, microwave, CATV, TV, new and used, phone 224-9922 Tower Maintenance, Inc., 2408 Old St. Rd., Tallahassee, Fla.

Approx: 800 ft. each of 3/8 and 15% rigid line. KFJZ, Ft. Worth, Texas, Area 817 PE 7-6631.

GOVERNMENT Surplus Electronic catalog — 25¢. Meshna, Nahant, Mass. 01908.

New & Used tower ground wire available. Bill Angle, Box 55, Greenville, N.C. Tel. 752-3040.

## TECHNICAL SERVICES

**AMPEX HEAD ASSEMBLY** relapping and replacement head service for all AMPEX professional studio model recorders. Our precision relapping extends head life for maximum use. Brand new shelf stock replacement heads of our manufacture available when relapping not advisable. Prices include thorough assembly cleaning, optical and electrical inspection and complete testing on Ampex equipment. Monaural assembly relapping \$35.00 complete. Monaural assembly replacements \$119.50 complete. "Loaner" assemblies available. For more data, contact LIPPS, Inc., 1630 Euclid St., Santa Monica, Calif. 90404 (213) EX 3-0449.

**Background Music Service**  
For  
FM Multiplex-Wire Line-  
CATV Systems  
**Magne-Tronics, Inc.**

21 East 40th Street, New York, N.Y. 10016

## ROSNER TELEVISION SYSTEMS

**ENGINEERS** CONTRACTORS  
120 E. 56 St. 230 Newtown Rd.  
New York Plainview  
N.Y. 10022 N.Y. 11803

### VIDEO TAPE RECORDER AUDIO HEAD ASSEMBLY SERVICE

Precision relapping of all heads and supporting posts, includes cleaning and testing. AMPEX VTR audio assembly . . . \$75.00 complete. Brand new shelf stock replacement heads of our manufacture available when relapping not advisable. RCA units also serviced. LIPPS, Inc., 1630 Euclid St., Santa Monica, Calif. 90404 (213) EX 3-0449.

**CAMBRIDGE CRYSTALS**  
PRECISION FREQUENCY  
MEASURING SERVICE  
SPECIALISTS FOR AM-FM-TV  
445 Concord Ave. Phone 876-2810  
Cambridge, Mass. 02138

Swift, professional service on all your tape cartridge rebuilding needs! All work fully guaranteed — virtually no audio dropout with our splicing technique. Write Broadcast Equipment Rebuilders, Route 2, Box 723, Connell's Springs, N. Carolina 28612.

**TALL TOWERS**, Guyed, Self-supporting, Inspections—Registered Engineer, Antenna, Tower repairs and painting. Globe Industrial Contractors, Inc., Henderson, Ky. AC 502-827-1831.

Broadcast maintenance — five inspections \$30.00 week plus hourly. Mailtronics, 109 Pine-tree Drive, Woodbridge, Va.

## PROGRAM SERVICES

### CONSISTENTLY THE BEST . . .

Now, for the first time in ten years a show that can, and is, and will produce morning . . . noon . . . or night! On T.V. and Radio! We come complete . . . just switch on the studio lights and camera! Put it on the wind and watch the ratings climb!

"Our Nielsen and A.R.B. ratings are the top against ANY show on ANY station per-cent population wise . . . can and have been making "C" time, "A" time audience rating. Can send copies of Nielsen and A.R.B. rating sheets . . . mail-pull rating info . . . vtr etc. or come in person . . . would like to work for and with TV station or combination of Radio and TV stations that will work with us . . .

Will go anywhere

Write or call Slim Mims—Brookgreen Park—Florence, S.C. Phone: 662-9541.  
"March—April—1967"

## PROGRAM SERVICES (cont'd.)

### PROGRAMS FOR CATV!!!

Contact the CATV program specialists for features—westerns—cartoons—sports—half-hours—variety  
**American Diversified Services**  
Box 975, Kingsport, Tennessee  
Phone area 615—239-9301

If your newscasts sound like your competition . . . You need "Twenty original news Sound effects" Recorded . . . Exclusive per market . . . \$10.00 Command Productions Suite 301, 2146 N.W. Johnson, Portland, Oregon. Deejays! 6000 classified gag lines, \$5.00! Comedy catalog free. E. Orrin, Box 679 Boyer Road, Mar'posa, Calif. 95338.

## INSTRUCTION

First phone in six to twelve weeks through tape recorded lectures at home plus one week personal instruction in Washington, Memphis, Seattle, Minneapolis or Hollywood. Fifteen years FCC license teaching experience. Proven results. 95% passing. Bob Johnson Broadcast License Training, 1060D Duncan, Manhattan Beach, Calif. 90266.

FCC License in six weeks from the nation's largest license school. Compare reputations and success rates before you invest. Professional announcing training on the nation's only fully school-operated commercial station used solely for training. School locations in Dallas, Atlanta, Chicago, New Orleans and Minneapolis. Write Elkins Institute, 2603 Inwood Road, Dallas, Texas 75235.

FCC License preparation by correspondence. Also, associate degree in electronics by three semesters in correspondence and two semesters in resident classes. Free details on either course. Write: Grantham Desk 7-B, 1505 N. Western Avenue, Hollywood, Calif. 90027.

REI First Class Radio Telephone License in (5) weeks Guaranteed. Tuition \$295.00. Rooms & Apts. \$10-\$15 per week. Job placement free. Two Schools—Sarasota, Florida & Kansas City, Mo. For information contact R.E.I., 1336 Main Street, Sarasota, Florida.

## CONSULTANTS

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Consulting Telecommunications Engineers  
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**DENVER, COLORADO 80206**  
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## USE BM/E'S CLASSIFIED MARKETPLACE TO REACH OVER 21,000 BROADCASTERS!

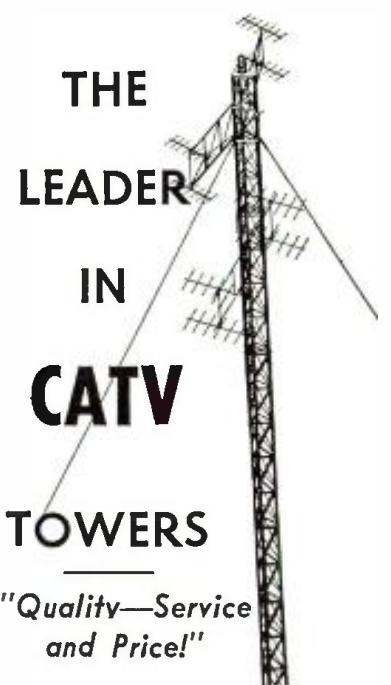
Please run the ad attached in BM/E's CLASSIFIED MARKETPLACE in your next:

- 12 issues       6 issues  
 3 issues       1 issues

**BM/E, Classified Advertising Department, Blue Ridge Summit, Pa. 17214.**

## Double Threat Only

Engineer/news writer talents wanted (sorry, voice skill of no value) in an experienced broadcaster to join BM/E's editorial staff to write and develop articles. Salary open but we'll favor the applicant whose current demands are in the area of \$8.5-9. Send resume and letter indicating knowledge of equipment and writing experience and interest. Editor, BM/E, 820 Second Avenue, New York, N.Y. 10017



Yes, quality, service and price on CATV systems are the reasons for Fort Worth Tower's position as the industry's leading supplier. Experience gained as a pioneer supplier of CATV enables Fort Worth Tower to provide you with a quality product at a price that is reasonable and attractive.

Take advantage of our experience. For assistance in systems planning, engineering and complete systems quotations . . .

CALL OR WRITE TODAY

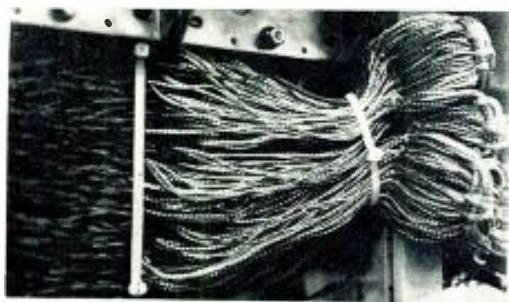
**Fort Worth Tower**

COMPANY, INCORPORATED

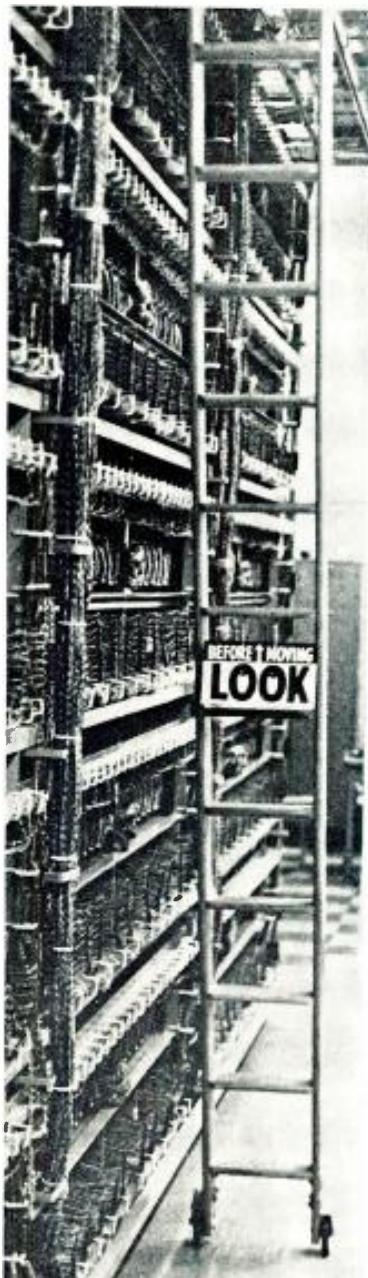
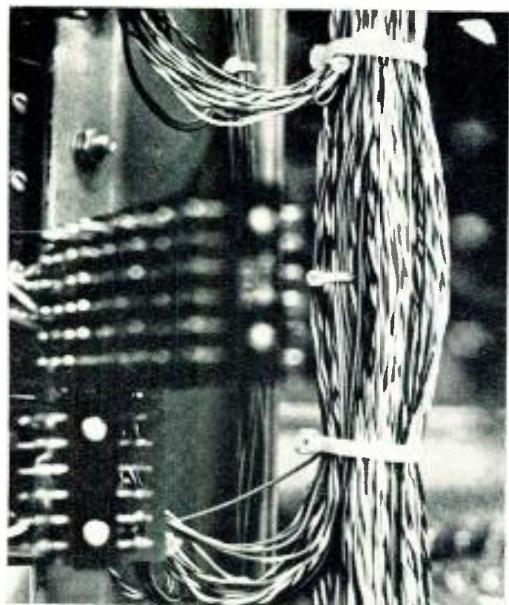
P. O. Box 8597, Fort Worth, Texas  
(817) JE 6-5676

— Associated Companies —  
Tommy Moore, Inc.  
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Circle 56 on Reader Service Card



## Reduce Costs of Communications Wiring with TY-RAP® Cable Ties



Over the past 6 years, thousands of installers have adopted the modern way to reduce costs and improve appearance in wire bundling. A quick inspection of your facilities will point up the many places where you can save money and gain tying convenience with TY-RAP ties and clamps.

The self-locking TY-RAP ties help reduce the costs of installation — they almost tie themselves. The art of making a neat, reliable tie is built into the product. The tough, nylon gives you a new degree of reliability. The uniformity of the ties enhances the over-all wiring appearance.

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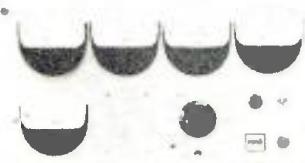
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# FROM THE EDITOR

## Ideas For Success

One ingredient common to all of the success stories in this issue is specialized programming for a specialized audience. In the case of extremely small markets, the audience is special in that it is strictly local. The clue, then, is local programming.

Unfortunately, there are *financially* successful local radio stations and TV stations that are doing an abominable job of programming—bad by any standards. They survive only because of the lack of competition. While traveling the Pennsylvania Turnpike recently, I deliberately spun the dial to monitor local radio stations. One was incredible: the format was records alternating with commercials, but the music selection formula was one of everything . . . a march, a Glen Miller tune, then ads, a hymn, Broadway hit, more ads and more one-of-a-kind record selection. All ads were structured the same, with the same announcer's voice. In fact, the message of each was really identical because the time was late August and everyone was promoting back-to-school needs. My family pressured "change the station." I stayed tuned waiting to see how long this station could be really bad. I lost when the kids broke out their transistor portable and found rock 'n' roll. The compromise was to turn everything off.

Such compromises are hard on broadcasters and one idea for a less disastrous ending occurs. There should be several radios per car with convenient headsets for each listener—a logical extension of private personal radio.

Speaking of car radio, a case can be made for specialized programming for autobound audiences traveling the autobahns. The objective is safer driving. The method to achieve this is stimulating talk radio to keep drivers from drowsing or becoming hypnotized by the endless unwinding pavement. Although the spectrum is surfeited with talk stations, there is a nighttime problem when drowsiness comes on strongest. Because of sky-hop and interference, a driver is lucky to get any, except for several exceptionally strong signals, for five minutes running. (What ever happened to clear-channel stations?)

It is unlikely that interference problems can be remedied to the point that travelers can always find one stimulating talk program to keep their adrenal glands working. (If I'm wrong, what is needed are highway billboards indicating what's on the air or maybe automatic vending machines issuing program tickets.)

An assured way of getting adequate programs available to the traveler would be for a broadcasters' co-op or the highway department to employ translators, relays, converters, or whatever is necessary to assure a few clean choices along all thruways.

In short, we'd like to see some specialization aimed primarily at the traveler. It would be public service with profit. Better ideas, anyone?

**James A. Lippke**

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Of course reliability by itself is not enough. So our field testing of E-V lavaliers is also devoted to sound quality. We must satisfy major network and independent stations on every score. As a result, E-V lavaliers can be mixed in the same program with stand microphones with no change in voice quality.

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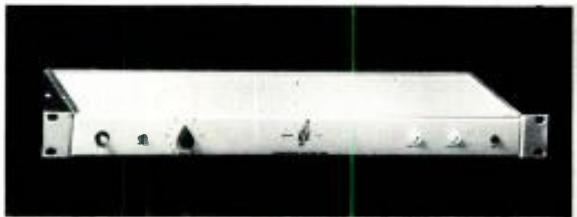
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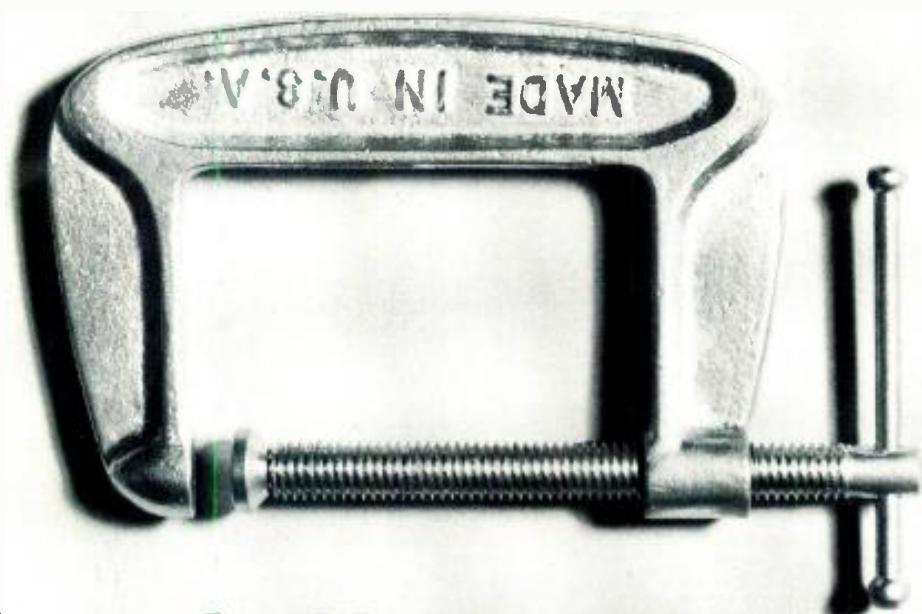
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