

# BME

BROADCAST MANAGEMENT/ENGINEERING

## CATV

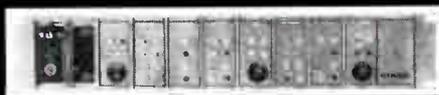
*Where The  
Action Is*

pages 16 and 47



KTWDDE0548324MXAH2 5661 4  
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# *How to simplify continuous quality control of television signals*



Here's how every TV broadcast station can be assured of constant high quality picture transmission. Through use of a Riker Automatic Vertical Interval Test Set, you can keep a continuous check on transmission characteristics such as phase, gain and video level during actual program time. By transmitting the standard video test signals (multiburst, linearity, window, sin<sup>2</sup>) simultaneous with the program material even the slightest deterioration of transmission quality can be immediately detected and corrected. All the standard test signals are individually selectable and can be automatically sequenced into the composite video program.

The all solid state circuit design of the Riker VITS plug-in modules assures the utmost in long term stability and reliability.

If you're interested in building the video test and quality control capabilities of your station, write or call Riker—the one company in the TV broadcast industry offering a complete line of all solid-state instrumentation for video analysis, simulation and control.

## **RIKER**

PRODUCTS FOR VIDEO ANALYSIS, SIMULATION & CONTROL

RIKER VIDEO INDUSTRIES 100 PARKWAY DRIVE SOUTH HAUPPAUGE, L.I., NEW YORK 11787 (516) 543-5200

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World Radio History



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— on the spot field engineering assistance

from Kaiser helped to adjust the system for top operating performance!

— Kaiser Phoenician Series equipment works as well as it looks . . . is easy to install . . . easy to maintain!”

Douglas H. Dittrick, Manager—Operations  
General Electric Cablevision Corporation  
Subsidiary of General Electric Company  
Schenectady, New York

**FOR DELIVERY, SERVICE, PERFORMANCE YOU CAN DEPEND ON . . .**

**KAISER**  
**CATV**

**KAISER CATV CORPORATION/ P.O. Box 9728, Phoenix, Ariz., 85020, Phone (602) 944-4411**

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# BM/E

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This month's cover: A takeoff on the symbol "Spirit of Communication" used by a well-known telco for years on its directories.

That spirit of wiring the country, if not the universe, has seemingly passed to CATV operators as evidenced by the expression on our wireman, who, although less god-like than Mercury, has a divine mission. Success on your 16th annual convention, NCTA!

Props (uniform, safety, belt, cable, TV set) were obtained by calling (212) ST 6-3700: "Broadway Maintenance, at your service." Broadway was most cooperative even though they suspected we might spoof this up.



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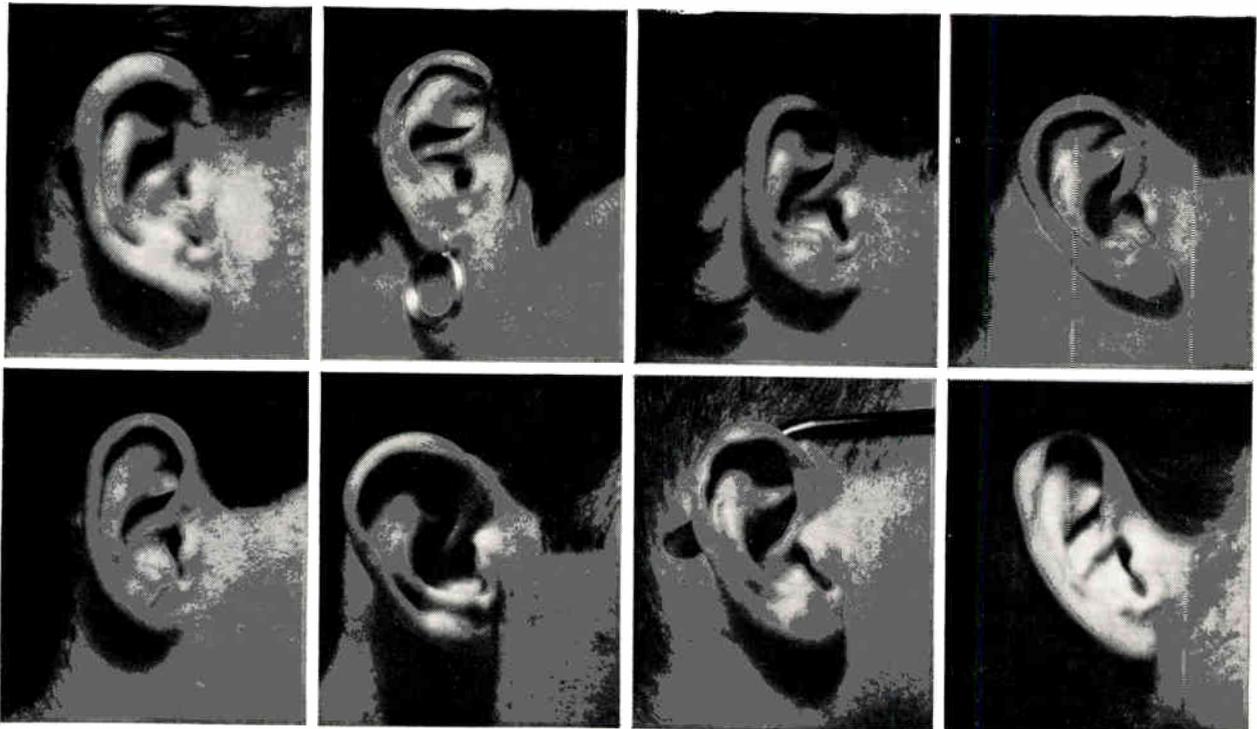
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# How do you measure loudness?

First, you listen a lot...



**And that's exactly what we did!** For the past several years, scientists at CBS Laboratories have been using the rigorous techniques of psychoacoustic testing to determine the nature of sensory loudness as it applies to broadcasting. From this research have come significant new data and methods for measuring sen-

sory loudness with respect to frequency content, combinations of complex signals, the "ballistic" response (including impulse and duty-cycle considerations), the signal peak factor, and other related phenomena.

A sensory loudness indicator and a new automatic control for limiting excessive loudness

are now undergoing field tests.

Write to us for further information on CBS Laboratories' loudness indicator and automatic loudness control.

PROFESSIONAL PRODUCTS

**CBS LABORATORIES**  
Stamford, Connecticut. A Division of  
Columbia Broadcasting System, Inc.

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# BROADCAST INDUSTRY NEWS

## NAB Backs FCC On TV Coverage Area

The National Association of Broadcasters recently told the FCC that it favors a proposed rule revision that would permit more accurate measurement of the coverage areas of television stations.

The Commission proposed the change after WKBN Broadcasting Corp. brought to its attention the deficiencies associated with calculating a station's grade A and B contours by measuring only the energy radiated horizontally.

WKBN Broadcasting Corp. told the Commission that uhf stations normally use narrower beams and more effective radiated power and better close-in coverage.

NAB, in comments filed with the Commission by General Counsel Anello, said it is in complete

accord with the utilization of techniques and methods of calculation which afford all stations the greatest degree of coverage.

In most instances, Anello said, "the differences between the vertical and horizontal angles of radiation are less in the vhf portion of the band and it is inappropriate for the proposal to be applicable to vhf stations."

Anello said, therefore, that it may be "advisable" to limit the proposal to "uhf-TV stations or to all television stations utilizing antenna systems in which horizontal plane measurements would not truly reflect the station's calculated grade A and B contours."

## Land Mobile Tests Begin

Tests to determine whether land mobile radio stations can utilize vhf channels without interference

to television broadcasts have begun on channel 6 in the Washington area.

Conducted under the direction of the FCC, the tests are being carried out by a government-industry group including the Department of Commerce, RCA, General Electric, Motorola, the National Association of Broadcasters and others.

## Electronic Process: Color Tape To Film Transfer

An electronic process for making high-quality color film transfers from color videotape, with delivery guaranteed in 48 hours, has been announced by Mel Sawelson, president of Acme Film and Videotape Laboratories, Inc., a subsidiary of Filmways, Inc.

The process, known as Acme-Chroma Film Transfers, has been extensively tested by stations, networks, agencies and producers throughout the United States following four years of research, experimentation and an expenditure of \$250,000. The process is one in which the three color elements are electronically synergized, Sawelson explained in his recent announcement.

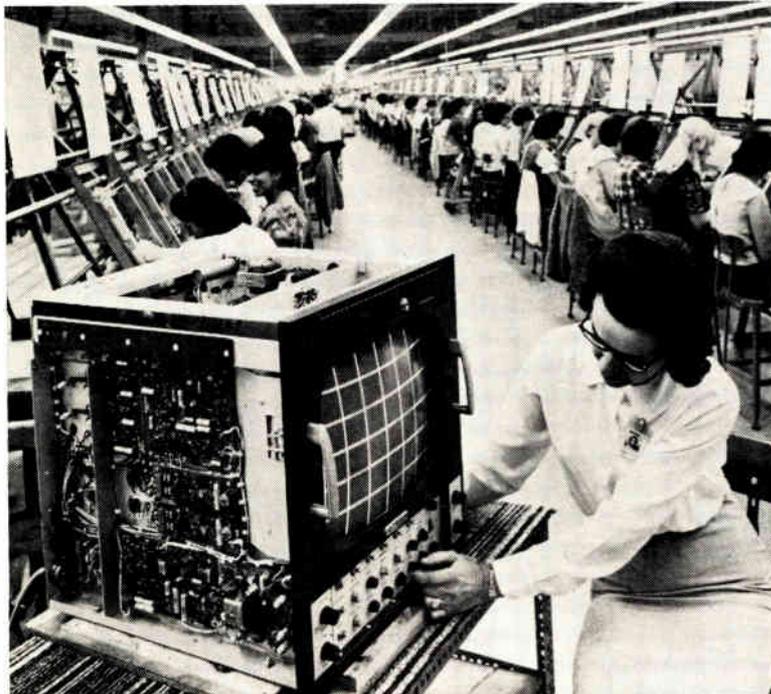
A process achieving similar results was described on p. 121, April/67 *BM/E*.

## Elegantly Simple New Mag Tape Transport

Would you believe a home-type color TV recorder which records 16 channels of color programming on a 1/4-in. tape? Or a tape speed of 1000 inches per second with a bandwidth of over 10 MHz? It's possible with the new extremely simple tape transport by Newell Associates which uses only three basic rotating parts.

In the Newell system, the central drive capstan, see illustration, couples all mechanical power into the system through the rim of the tape roll itself.

There are no loops of open filament tape in the Newell transport, and there is no tension on the tape



A new Conrac Corporation 125,000-square-ft television display production facility in Covina, California, recently was officially inaugurated at an open house for guests, and employees and their families. The building, which includes general offices, sales engineering and production facilities, is one of the largest dedicated exclusively to the manufacture of professional and industrial video monitors and data displays.

# NCTA

## **INSTANT CONVENTION GUIDE '67**

**Exhibit Floor Plans  
Exhibiting Manufacturers  
Equipment Source Guide  
Management Program  
Engineering Program  
Special Events**

Prepared to aid your convention coverage by

# BME

**BROADCAST  
MANAGEMENT/  
ENGINEERING**

## Guide to Exhibits

An alphabetical listing of exhibitors' products and services, with descriptions of equipment and names of attending personnel. Number in bold face following company name identifies booth number.

### Exhibit Locations:

Upper Exhibit Hall

Booths 1-108

Lower Exhibit Hall

Booths L1-L21

Red Lacquer Room

Booths RL 197-279

**Aberdeen Company (100).** Lashing wire, lashing machine, clamp for RG/59 U.  George M. Acker.

**Advance Industries (71).** Towers, aluminum buildings for head end equipment, microwave passive reflectors, tower lights, CATV antenna booms, installation services.  G.S. Chesen.

**Anaconda Astrodata (65-67, 75-77).** Features live "action" exhibits of the XDR amplifiers, Sealmatic cable and test equipment. Products on display: distribution amplifiers, trunk amplifiers, Model 912 CATV signal level meter; Model 990 CATV systems analyzer, coaxial cable: Complete line of connectors, amplifiers, directional taps, power supply, matching transformer, new sealmatic termination tool.  Astrodata Div: George Borrell, Larry Dolan, Pete Doyle, Lee Felts, Stan Forrest, A.L. Ginty, Paul Kjos, Pete Lazanich, Lou Marvin, Charles Moody, Ed Regan, Wm. Rhinefelder. Wire & Cable Div: John Albee, Richard Bender, Joe Couto, Joe Dalton, Hal Doig, Bud Haldeman, George Henkel, Norm Lorimer, H.A. Kelly.

**Ameco, Inc. (68-70) (72-74).** Channeleer solid-state CATV head-end heterodyne signal processor, the Pacesetters solid-state CATV line amplifier, modular solid-state CATV directional tap, Courier solid-state CCTV system, Delta MATV equipment, miscellaneous products — color — coded directional taps, Amecoax CATV cable, etc.  Bruce Merrill, Arlo Woolery, Sherrill Dunn, Ray Wood, Helmut Dieter.

**American Electronic Laboratories, Inc. (RL 219-220).** AEL will display a complete line of Colorvue, solid-state, modularized, CATV equipment including repeater amplifier, trunk amplifier, bridging amplifier, line extension amplifier. Complete line of entrance receptacles, mounting brackets and line splitters will be shown.  Leon Riebman, Conrad Fowler, Raymond Markowitz, Samuel Merion, Irving Faye, Walter Wydro, Anthony Katona, William Black, Frank Pennypacker, Don Gardner.

line of solderless coaxial connectors for CATV.  E. Seero, A. Johns, J. Bluerock, G. Richards, D. Sedberry.

**American Telephone & Telegraph (RL 198-199)** Graphic presentation of Bell System activities in CATV, ETV, CCTV, and broadcasting.

**Ampex Corporation, (L 20, 21).** VR7500C color video recorder, 7500 and 7000 black and white video recorders. Electronic viewfinder cameras, CC 326 series.  C. Pipher, R. Rielly.

**Amphenol Cable Division (84).** Aluminum cable, drop line cable, Coro-Flex cable and BC/59 cable.  Charles Camillo, Ron Arquilla, Dan Jarosz, Jack Aylward, Don Ripberger, Art Strassenberg.

**Benco Television Corp. (28-29).** CATV head-end equipment trunk line and distribution line amplifiers; complete line of new passive devices.  C.J. Evans, Harry D. Gray, Maurice W. Townsend, John Cappon, Heinz Peters, Steve Hunter.

**Blonder-Tongue Laboratories, Inc. (21).** A complete line of CATV equipment, test gear and MATV items of interest to the CATV operator.  Isaac S. Blonder, Leon J. Knize, Fred J. Schulz, Les Farey, Wiley Steakley.

**Burnup and Sims (L 24).** CATV construction facilities.

**Cal-Tel Construction Company, Inc. (RL 217).** CATV construction slides and brochures.  R.G. Owens, E.E. Cooper, Jerry Burge, Jerry Haisman.

**Cable Promotional Services, Inc. (30-31).** Cable Promotional Services is a complete marketing service, operating exclusively for cable systems in the U.S. and Canada. Methods of subscriber solicitation includes many exclusive copyrighted features which combat the problems of many systems and make them profitable operations.  Ken Knight, Jim House, Fred Massey, Bill Williams, David Simmons.

**CAS Manufacturing Company (98-99).** All transistorized, all-band amplifiers; fittings and accessories; TV and FM head-end systems, power supplies  John Campbell, Preston Spradlin, Herb Jackson, Ben Campbell, Bob Carter, Jerry Conn.

**Cascade Electronics Ltd. (101).** Solid-state amplifiers, solid state equipment common to the CATV plant.  Donn Nelson, R.P. Brown, R. Yearick, Phil Colone, M. Hamilton, J. Derocher, T. Akins, S. Richey, J. Westfield.

**C-COR Electronics. (24-25).** A complete line of systems tested CATV amplifiers including bridgers, trunks, line extenders, taps, splitters and power supplies. The new Novacor amplifier concept features high output levels.  James R. Palmer, Robert K. Arbogast, George P. Dixon, Robert E. Tudek.

## PROGRAM AGENDA

A complete chronological agenda of Management and Technical programs. Concurrent meetings are scheduled Monday, Tuesday and Wednesday.

- 3:30 P.M. **Adams Room**  
The Spectrum Analyzer—Alan Ross, Nelson-Ross Electronics, Inc.
- 4 P.M. **Adams Room**  
Summation Sweeping Analyzer—I. (Sruklic) Switzer, Engineering Consultant, Famous Players
- 4:30 P.M. **Adams Room**  
Equipment Measurement Techniques — Anaconda Astrodata
- 5 P.M. **Adams Room**  
How to Evaluate Coaxial Cable for Maximum Utilization and Longevity—A. M. Kushner, Times Wire and Cable

## SUNDAY, JUNE 25

- 12 Noon **Registration**  
5 P.M. **Exhibit Halls (3rd and 4th floors)**  
Opening of exhibit hall and reception, hosted by NCTA and Associate Members

## MONDAY, JUNE 26

### General Session

- 9 A.M. **Main Ballroom**  
Official Welcome: Robert M. Regan, convention chairman  
Panel: Future of Communications  
Panelists: James D. O'Connell, telecommunications advisor to the President; John R. Pierce, executive research director of Bell Laboratories; and Allen E. Puckett, executive vice president, Hughes Aircraft Company  
Annual Report of the National Chairman—Alfred R. Stern

- 12:30 P.M. **Main Ballroom**  
Luncheon, featured speaker, Hon. Torbert H. Macdonald, chairman, Subcommittee on Communications and Power, House Committee Interstate and Foreign Commerce.

- 2 P.M. **Monroe Room**  
Panel: The Legal Outlook  
Introduction by Sol Schildhouse  
Moderator: Gary Christiansen  
Panelists: Stanley Kaufman, Harry Plotkin, Arthur Scheiner, Jay Ricks, Arthur Stambler  
Panel: Telephone Industry and PUC relations  
Introduction by Albert Ricci  
Moderator: Bruce Lovett  
Panelists: Morton Berfield, Thomas Shac, John D. Matthews, Walter Kaitz, John P. Cole

- 2 P.M. **Lower Exhibit Hall**  
Cablecasting Workshop  
Techniques of interviewing, programming, etc. Sessions 9 to 5 daily.

### Technical Session

- 2 P.M. **Adams Room**  
Noise Figure—Its Meaning and Measurement—Carmine D'Elio, Viko
- 2:30 P.M. **Adams Room**  
Distortion in CATV Amplifiers — Ken Simons, Jerrold Electronics Corporation

### General Session

- 7:30 P.M. **Main Ballroom**  
Jerrold Night  
Reception, dinner, gala entertainment

## TUESDAY, JUNE 27

### Management Session

- 9 A.M. **Main Ballroom**  
PR/Advertising/Promotion Report  
Participants: Bill Pitney, Findlay, Ohio; Gene Goeller, National Trans Video; Tom Johnson, Daniels Associates; Glenn Scalorn, GenCoE; Mimi Barash Advertising; Lew Davenport, Cox Cablevision; Sandy Freeman, TelePtopmter Corp.; Phil Franklin, Entron; Xenny Mitchell, Jerrold.

### Technical Sessions

- 9 A.M. **Adams Room**  
Short-haul Microwave — Harold Osaki, Hughes Aircraft Company
- 9:30 A.M. **Adams Room**  
TV Signal Propagation—Tom D. Smith, Scientific-Atlanta, Inc.
- 10 A.M. **Adams Room**  
Space Diversity Reception—Ken J. Easton, Communications Operations
- 10:30 A.M. **Adams Room**  
CATV and The National Electrical Code and National Electrical Safety Code—James Stilwell, William Karnes, Telesystems Corporation; Ike Blonder, Blonger-Tongue
- 11 A.M. **Adams Room**  
The NCTA Standard on CATV Amplifier Distortion—Archer S. Taylor, chairman  
Panelists: Ken Simons, Jacob Shekel, Mike Rodriguez, Heinz Blum, Earl Hickman, Ike Blonder
- 11:30 A.M. **Adams Room**  
Comparison of Demodulation-Modulation vs Heterodyne Signal Processing for fm CATV Head Ends—Gay Rogeness, Ameco Engineering Corporation
- Standardization of CATV Cables—Sidney Mills, Ameco Engineering Corporation

- 12:30 P.M. **Main Ballroom**  
Luncheon, featured speaker, Lee Lovenger, FCC Commissioner.  
PR & Advertising Awards

- 2 P.M.  
Open for visits to exhibit hall, Cablecasting Workshop, PR Workshop sessions. PR/Promotion sessions will be held on the Club Floor, Room 14, 17 & 18.

### Management Session

- 9 A.M. Main Ballroom  
**Panel: Money and The CATV System**  
 Moderator: Harry Butcher.  
 Panelists: George Leibowitz, Dick Gamble,  
 Monroe Rifkin.  
**Panel: Copyright Law**  
 Introduction by Alfred R. Stern  
 Panelists: E. Stratford Smith, George D.  
 Cary, Robert Barnard, Thomas Wilson

### Technical Session

- 9 A.M. Adams Room  
**MATV Techniques for CATV Operators—**  
 Fred Schultz, Blonder-Tongue
- 9:30 A.M. Adams Room  
**Short-Range Trends in Feeder Line Technol-**  
**ogy—**S. W. Pai, Craftsman Electronics  
 Products, Inc.
- 10 A.M. Adams Room  
**Automatic Equalization as a factor in Sys-**

- 11 A.M. Adams Room  
**Temperature, Temperature Design, and**  
**Automatic Level Control for CATV—**  
 James R. Palmer, C-Cor Electronics
- 12 P.M. Adams Room  
**Underground Construction**  
 Panelists: to be announced
- 12:30 P.M. Main Ballroom  
**Luncheon, featured speaker, Frederick Ford**

### Annual Membership Meeting

- 2 P.M. Main Ballroom  
**Election of officers, reports**
- 6:30 P.M. Main Ballroom  
**Chairman's Reception, in honor of new**  
**chariman**
- 7:30 P.M. Main Ballroom  
**Annual Banquet, presentation of awards**  
 Entertainment by Marguerite Piazza and  
 Mory Amsterdam

### Convention Adjournment

### Cablecasting Workshop

Cablecasting workshop will be held daily at 9 A.M. to 5 P.M. in the Lower Exhibit Hall. Techniques of interviewing, programming, use of equipment will be demonstrated.

### Videotape of Management Sessions

Playbacks of videotape of various management sessions can be seen daily on the Palmer House MATV channel 4.

**Collins Radio (17-19).** A high performance 5-W i-f heterodyne microwave radio system and a high performance 1-W microwave radio system. □ K.R. Fox, R.R. Maxwell, Don Mehl, John Morrissey, R.G. Jones, John Beddall, Tom Hewlett.

**Craftsman Electronics, Inc. (91-93).** Various drop line devices. □ Dan Mezzalingua, S.W. Pai, K. Seigel, M. Lysek, R. Munroe, R. Spencer, J. Jerose, R. Greiner.

**Daniels & Associates, (L 4).** Negotiator, consultant, appraiser, and broker for the cable television industry, offering a wide range of interested buyers for cable television properties. Appraises cable television properties for banks, other lending institutions, estates and owners. □ Bill Daniels, Monroe Rifkin, Alan Harmon, Bill Ross, John Saeman, Tom Johnson, Dick Zell, Jerry Buford, Joe Berry.

**Dynair Electronics, Inc. (86-87).** Will feature new precision solid-state modular head-end equipment, including an off-the-air receiver, heterodyne channel converter and an audio/video modulator. Also featured will be Dynair's Equa-Dyn video cable transmission equipment. Other equipment, head-end equipment, solid-state audio-video modulator, solid-state side-band analyzer. Local origination equipment includes audio-video switchers and video distribution amplifiers (2 in, 8 out), pulse distribution amplifier (1 in, 4 out), miniature accessory equipment, video switcher-fader, monitor switchers. □ E.G. Gramman, R.N. Vendeland, G.W. Bates, D.A. Keller, R. A. Jacobs, W.D. Killion, M.D. Bingham, W.P. Kruse, J.A. Hansen.

**Entron, Inc. (78-83).** Entron will introduce a complete line of sulfate amplifier equipment including Model R repeaters; repeater plus bridge; bridge distribution amplifier and line extenders. Also, the Model E-3C in-a-line extender amplifier, 12-A 30-V power supply, and the Model MTU-8 series Mul Tees for pedestal mounting. Entron will feature the Model P-1 solid-state preamplifier, the Model M-225 signal generator converter, the Model G-1 pilot carrier generator series, and other CATV equipment from their complete line. □ Ed Whitney, John G. Russell, Bill Relyea, Heinz Blum, Hugh Buchanan, Paul McInnish, Glen Littlejohn, Ray LaRue, Bob Taylor, Don Wyckoff, Phil Franklin.

**Fort Worth Tower (95-96).** CATV and microwave towers, passive reflectors, equipment buildings. □ T.W. Moore, John Mankin.

**Gilbert Engineering Co. (102).** Diamond "G" connectors and accessories cabinet display, TDR (test unit). □ Earl Gilbert, Ralph O'Brien, Paul Rhodes.

**Hewlett-Packard, (RL 216).** H-P will display the cable testing TDR unit that can be used to determine the distance to a fault in cables up to 4000 ft long, as well as identifying the type of fault that is there. Also, the 191A TV Waveform Oscilloscope/Analyzer which is a commercial version of the oscilloscope that was designed specifically for the Interstate Telco signal relayers. Features 1 percent accuracy in VITS measurement, a high impedance probe for trouble-shooting and the stability

and reliability necessary for general viewing of video waveforms. □ Dick Cochran.

**International Telemeter Corp. (L 11).** Three types of a shielded CATV converter for receiving and converting up to 25 CATV channels on cable without interference from strong local stations and other transmitters. □ George Brownstein, Bill Lasky, Jim Sullivan, Patrick Court, Abe Reiter, Dick Cardin.

**ITT Wire and Cable Div. (RL 229).** Coaxial cable for CATV.

**Jerrold Electronics Corp. (35-37).** New solid-state head-end and distribution equipment for CATV systems. □ Robert Beisswenger, Paul Garrison, Si Pomerantz, Lee Zernick, Jerry Hastings, Joel Smith, Sel Kremer, Art Hall, Ken Simmons, Sam Blakeman, and other regional managers.

**Kaiser CATV Corporation (103-108).** Community antenna television systems, surveys and estimates, turnkey systems construction, expansions and rebuilds, field engineering assistance, CATV equipment □ Robert W. Behringer, W.F. Freistat, Carl K. Perkins, R.L. Freistat, Gay Kleykamp, Richard MacMillan, Don Gregory, Walter Baxter, George Barry, James Taglia, John Bryant, Jean Welch.

**Lenkurt Electric (L 9-10).** 76A serves the transmission needs of CATV, ETV, studio-to-transmitter links and intercity TV relay. 75A solid-state long haul broadband system CCIR and NTSC requirements for both monochrome and color television. □ J.B. Naugle, Bill Green, J. Teslik, J. Coverick, B. Clampitt, K. Higgins, B. Volante, R. Scott, B. Bockhacker, L. E. Savage, L. Menta.

**Modern Talking Picture Service (L 18).** Free 16mm films; travel, sports, documentary, homemaking, religious and public service subjects from business and industry. □ Gene Dodge, Bill Gallagher, Dave Brown, Jim McPoland.

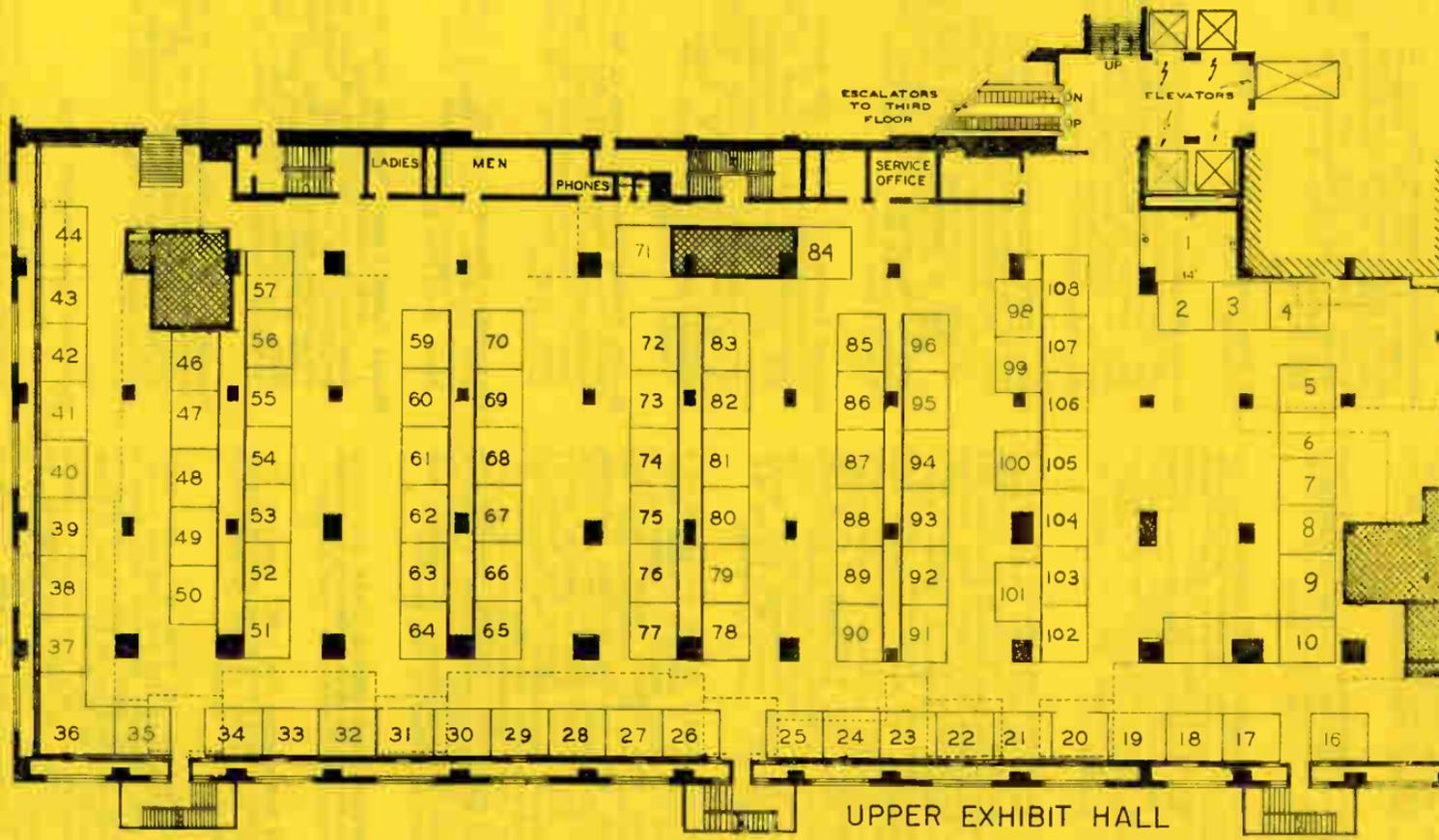
**Packard-Bell Electronics (L 5).** 920 Camera, 9200 Viewfinder Camera, DX920 Camera, POS-1 Program Origination Studio. □ Frank May, Bob Weir.

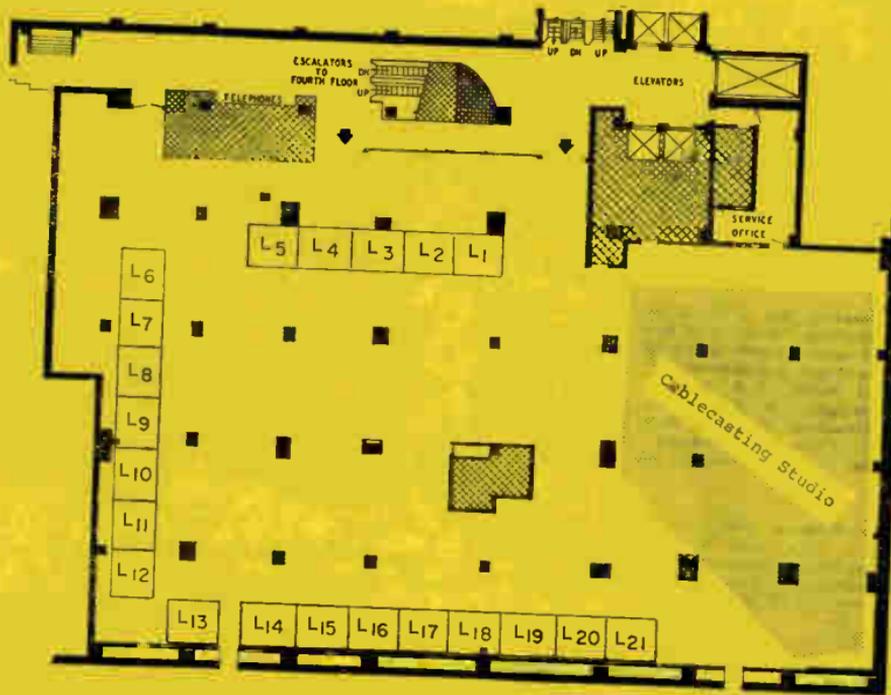
**Phelps Dodge Copper Products (90).** Spirafil II — new coaxial cable design offering lower attenuation, 32-dB return loss, fewer amplifiers, less maintenance. Foamflex — all purpose jacketed aluminum sheathed cable. □ Frederick W. DeTurk, John F. McGuire, Jr., Edward M. Triggs, John J. Nevin, Richard J. Vailliquet, S. L. Smith, Jr.

**Plastoid Corporation (59).** Aluminum sheathed cables (unjacketed, jacketed and jacketed with integrated messenger) — 590 drop cables (with and without messenger). □ Wilbur Grant, Dean Haggerty, Milton Weinschel.

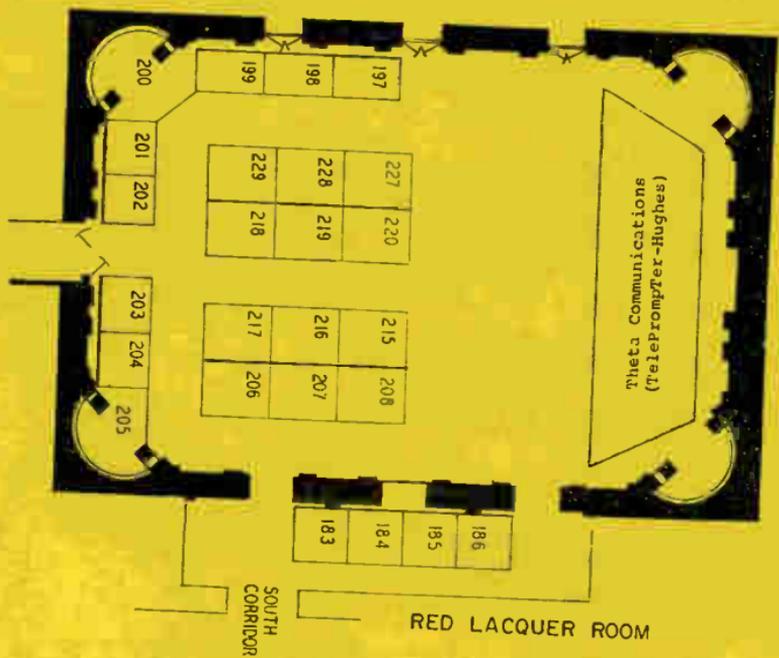
**Preformed Line Products (215).**

**Pruzan Company (60).** CATV line construction materials and specialties, tools and safety equipment, underground supplies. □ Jack





LOWER EXHIBIT HALL



**Raytheon Company (26-27).** Equipment on display will be Raytheon's KTR-3A long-haul heterodyne microwave radio equipment for transmitting up to 1800 FDM channels, or NTSC color TV with up to four 15kHz program audio channels, or 30 megabit wideband data. (10 W, 5.9-7.6 GHz and 10.7-13.25 GHz frequency band). □ Hugh Bannon, Jack Banister, George A. Hinckley, P.R. Cass, R.F. Kanney, R. Keller, D.M. Hatfield, Don Smith, Leonard G. Walker, J.M. Cheval.

**Rohn Systems, Inc. (22-23).** Rohn Systems will be featuring their usual line of CATV microwave towers, lighting equipment, reflectors and related equipment. □ Dwight Rohn, Donald Rohn, R.A. Kleine, Grady Rooker, C.A. Wright, Al Repsumer, Gene Francis, Paul Bradley, William Hall, J.M. Fleissner, James Duncan, Robert Kennedy, H.E. Blaksley, W.L. Lindsay, David S. Fehr.

**Scientific-Atlanta (94).** Antennas for vhf reception, antennas for uhf reception, vhf preamplifiers featuring FETs for low cross modulation. □ Tom D. Smith, J.B. Weston, A.B. Best, S.M. King.

**Shibaden Corp. of America (L 3).** CCTV Equipment, cameras, monitors, studio switching equipment and videotape recorders. □ A. Reinberg, Arthur Percival, J. Tosaka, S. Keneco, M. Grant.

**Sony Corp. (L 12)**

**Spencer-Kennedy Labs, Inc. (L 14-17).** Transistorized cable TV trunk and distribution equipment, instant radio alarm equipment for public safety. □ Charles Wright, Bob Brooks, Denis Sparks, Jake Shekel, Lloyd Tate, Bruce Frazier, Mark Russell, George H. Ray, Don Lemire, Robert J. Barlow, and other field representatives.

**Superior Cable Corp. (L 206-208).** Coaxial Cable and connectors, TV equipment housings, cable clamps, TV system and communication system accessories. □ J.L. Robb, J.H. Bowman, W.T. Smith, D.C. Stewart, D.W. Hoffman, V.L. Coolidge, B.W. Hughes.

**Sylvania Electric, Inc. (L 6-8).** New low cost viewfinder TV camera, videotape recorder, film chain and 3-bay studio console. □ A. Feigenson, H. Gillogly, P. Sanborn, M. Gross, R. Priske, R. Pilcher, T. Leonard, T. Henry, J. Dhimos.

**Tape-Athon Corp. (L 13).** Programmer combines 2, 3 or 4 reliable tape playback transports with a simple, but highly versatile, indexing and sequencing mechanism. Also details on largest lease music library of its kind in the United States. □ George M. Anthony, Lucille Anthony, David S. Anthony.

**TeleMation, Inc. (61-64).** TMV-6000 Cable-caster-Video Control Center, a synchronous

smooth, roll-free switching of CATV local origination video sources. Weather Channels seven or five time and weather instruments with and without 35mm slide projector with programmer, live pan and tilt feature. News Channels for continuous 24-hr AP news service. Chroma-Channel permitting color presentation of news channel and weather channel. Channel which automatically intersperses news channel and weather channel for single channel operation. Nonduplication Switcher, 6-12 channels. Up to 840 events may be switched weekly. □ Lyle O. Keys, Robert C. Bacon, Ray M. Unrath, Kenneth D. Lawson, Benny T. Morinaga.

**Telesis Corporation (20).** Telesis Corporation is introducing its new Telemark 1 line of CATV system equipment. Featuring solid-state construction, the display will show the Model 1619 Automatic Program Switcher, amplifiers and passive devices utilized in system construction and operation. □ Joseph Murphy, Charles C. Bevis, Albert Miegli, Harvey Kees, Ken Everett, Robert Palz, Clem Weber, William McVay, Tom Knievel.

**Teleprompter Hughes (RL Room)**

**Times Wire & Cable (32-34).** Seamless aluminum tube sheath coaxial cable for trunk and feeder lines, broad line of house drop cables, and Timatch connectors for semi-flexible cable. L.J. DeGeorge, R.W. Burton, A.M. Kushner, R.V. Schneider, W.L. McNair, M.D. Atchison, D.M. Ganley.

**Trans-Lux Distributing Corp. (L 19).** Stock ticker program service. □ Lyle Paris, Bob Weisberg.

**R. H. Tyler (L 1-2).**

**TV Presentation (L 22-23).**

**Vikoa (formerly Viking) (2-12).** Futura solid state modular amplifiers, coaxial cable, underground equipment, test equipment, turnkey services. □ A. Baum, R. Baum, T. Baum, B. Cowart, L. Cantor, J. Hale, K. McMahon, J. Mattison, H. Rodgers, C. Auer, M. Rodriguez, D. Kleinstein, D. Dworkin, J. Burgess, A. Lipp, G. Balsam, J. Hubbell, B. Ewing, J. Monte, C. Beyersdoerfer, W. Bodenstein, M. Joyce.

**Exhibiting Press**

**BM/E (RL 182)**

**TV Communications (RL 203)**

**Television Digest (RL 183)**

**TV Guide (RL 184)**

**Telephony (RL 202)**

**View Magazine (RL 185)**

# 3 ALL NEW AUDIO CONSOLES from GATES

**Plug-in silicon amplifiers • 20-20,000 cycle response**

Solid state, all new – inside and out. Featuring 100% silicon transistors. All amplifiers and DC power supplies plug in. All three consoles feature 20-20,000 cycle frequency response, with less than 1 db variation. At all frequencies, distortion is less than 0.5% at rated output. Write for complete details. You'll wonder how we could build so much into such compact, handsome packages.

## Stereo Statesman

The Gates Stereo Statesman features 5 full stereo mixing channels from 11 inputs. Full logic audio switching; automatic SCA control for the FM transmitter in non-stereo periods.



## Dualux II

The Dualux II provides monophonic and stereophonic mixing facilities separately or together. Designed to control AM and FM, FM Stereo and SCA from one control point. Features 8 mixing channels, 13 mono sources and 6 stereo sources... a total of 22 audio inputs, plus inputs for automatic programming equipment and an SCA audio signal.



## Gatesway II

The Gatesway II with 8 monaural mixing channels from 18 inputs features in-built cue/intercom system; provision for remote announcer operation of studio microphone channels, and a novel variable equalizer for special effects or line correction.

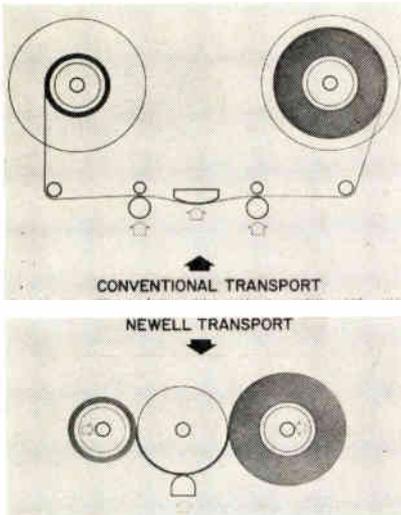


**GATES**

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

Circle 4 on Reader Service Card

July, 1967 — BM/E

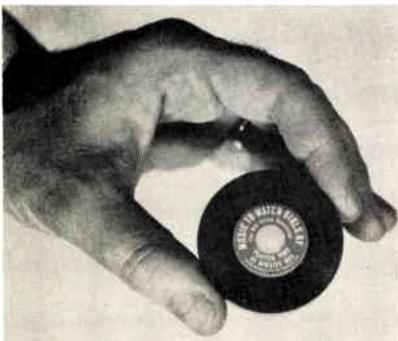


Comparison of transports.

from reel take-up mechanisms, etc. The tape rolls become literally solid discs of plastic since the normal lubrication effect of air fill entrapment between layers is eliminated by the "squeeze" action as the tape is rolled under compression upon the tape roll.

Since no mechanical power is transmitted through the tape, and the tape exists nowhere in an unsupported condition in the system, rapid acceleration and deceleration can be accomplished without any tension effects on the tape. Acceleration rates of several thousand ips are readily achieved, completely free of stretch. In addition the cinching effect on conventional transports (due to relative motion permitted by air entrapped between layers of the tape) is eliminated.

Tape guiding, normally a serious problem, is accomplished — again because the tape never exists as an open filament — without sliding contact, and with unusually close control (typically within 200 microinches). Close head/type contact, with the tape in solid relationship rather than air supported, results in many advantages. Wavelengths as short as 75 microinches, for example, can be re-



Forty-four minutes of play time.

solved with no difficulty at 1000 ips speeds without any sign of air flotation. Head clogging is virtually nonexistent; head wear is significantly reduced with no sign of wear after approximately 100 million feet of tape having passed the head at 240 ips.

The velocity and acceleration achievable with the Newell transport pose severe problems with conventional transports.

Since the Newell principle enables extremely high information packing density (as many as 100 tracks per inch), in many instances tape costs are only a fraction of that associated with conventional recorders. A full-length color movie can be taped on less than \$20 worth of tape, (and can be erased and retaped hundreds of times) compared with typically 2 to 3 times that cost for today's TV recorders.

Among the products, in addition to the color TV recorder, using the new transport are an instrumentation recorder capable of putting 40 tracks of dots on 1/2-in. tape with over 1000 kHz bandwidth, and an automatic tape changer for reproducing pre-recorded music on tiny flangless "reelettes" of tape less than 2 inches in diameter, each of which plays 44 minutes.

Borg Warner Controls has been licensed to produce an instrumentation type recorder for the military. General Recorded Tape Inc. will make automatic audio tape players, as well as to reproduce tapes, using the new system. Newell Associates reports the home color video recorder has been licensed to a large corporation for mass production.

C. W. Newell, founder of the company, and other senior members are all ex-Ampex engineers.

## RCA Shows PAL Color TV Studio System

A complete system of American color television studio equipment operating on the broadcast standards adopted by most leading European countries was demonstrated for the first time recently by RCA at an international television conference at Montreux, Switzerland.

Its appearance at the Montreux meeting represents a further major RCA entry into the color television market that is expected to develop rapidly in Europe following the start of scheduled color broadcast-

ing in several countries this year.

The RCA equipment shown at Montreux operates on the PAL (phase alternation line) standards developed in West Germany and chosen for regular broadcast service by West Germany, Great Britain, the Netherlands, Austria and the Scandinavian countries.

## GE and Fernseh Join Forces

Fernseh G.m.b.H. of Germany and General Electric Co. have entered into a license agreement under which Fernseh will manufacture a live color television camera system using the basic design of the PC-19-A camera head of the General Electric PE-250, it was recently announced by the two firms.

The General Electric announcement in this country was made by James M. McDonald, general manager of the company's Visual Communications Products Department.

Fernseh is one of the world's largest manufacturers of broadcast studio equipment for the television markets of Europe, Asia and Africa.

## Viking Becomes Vikoa Inc

Viking Industries Inc. of Hoboken, N.J., a leading manufacturer of cable and electronic equipment for the CATV industry, changed its name recently to Vikoa Inc.

The new name was recommended by the corporation's board of directors and approved at the annual stockholders meeting.

## SBE Elects Officers

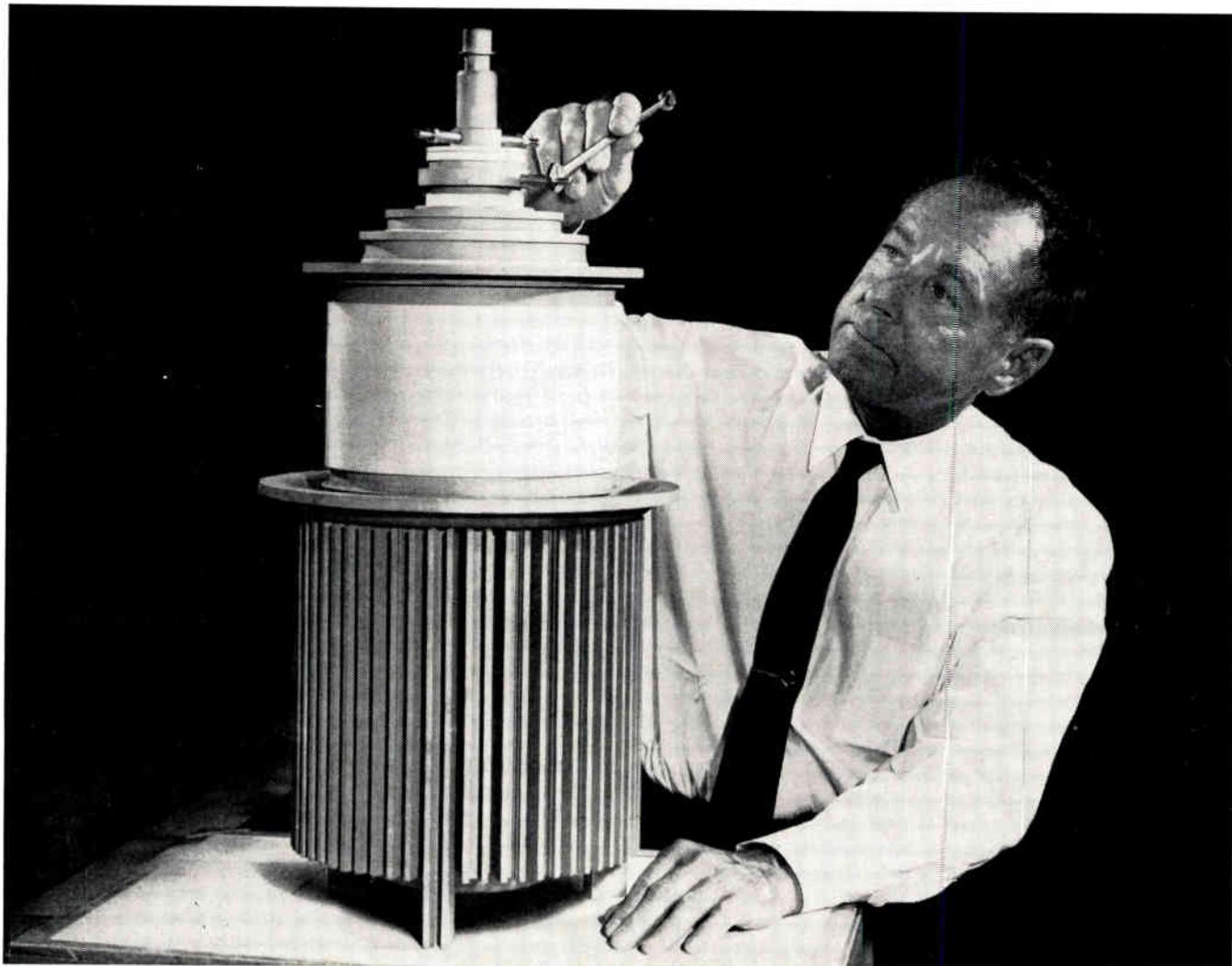
The Society of Broadcast Engineers elected Charles Hallinan Chief Engineer, WKOP-AM-FM, Binghamton Broadcasters, Inc., as president for the coming year. Executive vice president is Joseph A. Risse, curriculum specialist, International Correspondence Schools. Elections were announced March 25, 1967. Directors of SBE include: Fred Bartlett, Chief Engineer, KGHL; Ken Benner (formerly Chief Engineer KVSC), affiliated with KSTP Minneapolis; Al Chismark, Director of Engineering, WHEN-TV, Meredith Syracuse Television Corp.; Albin Hilstrom, Chief Engineer KOOL; William Kelly, Director of Engi-

# EIMAC 250 kW tetrode now ready for tomorrow's super-power transmitters

The EIMAC 4CV250,000C is the world's highest power tetrode. It is designed for service in super-power broadcast transmitters, and was developed on the foundation of technology which produced its "little brother," the hundred-kilowatt 4CV100,000C, now used by the USIA. The giant new vapor-cooled tube combines high power gain with long life. Vapor cooling is accepted as an efficient and economical method of cooling in advanced broadcast systems. As EIMAC's latest addition to its line of power tetrodes, the 4CV250,000C is ideally suited for service as an audio modulator, a pulse modulator, or a regulator, and as an rf amplifier in linear accelerators. Ready now for the super-power transmitters of the future, this 250 kW tetrode is another example of how EIMAC's experience in power tube technology paves the way for the developments of tomorrow. For a power tube to fit your needs—big or small—write Product Manager, Power Grid Tubes, or contact your nearest EIMAC distributor

TYPICAL OPERATION	
(as a Plate-Modulated Power Amplifier at Frequencies below 30 MHz)	
DC Plate Voltage	14 kV
DC Screen Voltage	800 V
Peak AF Screen Voltage (for 100% Modulation)	800 V
DC Grid Voltage	-800 V
DC Plate Current	.29 Amps
DC Screen Current	3.6 Amps
DC Grid Current	1.8 Amps
Peak RF Grid Voltage	1200 V
Grid Driving Power	2.5 kW
Plate Output Power	292 kW

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TBM-3005

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neering, WNEW-TV, Leslie Learned, Director of Engineering, Mutual Broadcasting System; Leo W. Reetz, R.F. Engineer, American Broadcasting System; John T. Wilner, Vice-President, Radio-TV Engineering Div., Hearst Corp.; Benjamin Wolfe, Vice President, Engineering, Westinghouse Broadcasting Co.

By electing well-known professionals to the board of directors, SBE hopes to attract a wider membership. Address of SBE is Box 1124, Binghamton, N.Y.

## New York Gets On-Air Comparison Shopper

Patricia Lahrmer recently took to the air on WINS as New York's only radio comparison shopper. Miss Lahrmer passes tips to New

### V, U Correction

WCEE-TV, Rockford-Freeport, Ill. is in competition with another V and a U — not two V's as the last sentence in the article, Profile of a Top-Rated 'U,' May 1967, *BM/E* stated. Apologies to author Hickerson and the competition.

York shoppers twice each hour — at 15 minutes past and 15 minutes before the hour — on new uses for products, comparison prices and best buys of the season at New York supermarkets.

## Weatherman Alerts

Radio station WOOD (Grand Rapids, Mich.) recently received a tornado watch alert from the U.S.W.B. The station weatherman, Buck Matthews interrupted regularly scheduled programs with information of tornado sitings in the area. Numerous "touch-downs" of tornadoes were reported over a vast area as Matthews urged radio and television audiences to take cover. Damage to homes, churches, schools and commercial buildings was considerable.

## NAB Program Clinic

Radio executives attending the first of six radio program clinics sponsored by the National Association of Broadcasters in Palo Alto, California recently heard some of the sounds of modern radio, a variety of programming ideas and success stories from fellow broadcasters.

Topics discussed at the first of six sessions included "Finding the FM Niche," "How to be a Hero in Your Own Hometown," "How to Get (and Hold) Listeners," and "Sounds From Modern Radio."

Other areas of discussion were editorials, interviews from Vietnam, all-news programming, traffic reports from helicopters, sports shows, and an all classified-ad format.

## Radio News Source

Seven to 17 percent of radio programming is news for 90 percent of all commercial radio stations. More than one third of the 80,000 employees in the nation's broadcasting industry have duties associated with the gathering and reporting of news.

These are among a number of facts and figures compiled by FCC Commissioner Lee Loevinger in a memorandum to Congressman Clarence J. Brown, Jr. It was prepared in response to a question put forward at a hearing of the House Committee on Interstate and Foreign Commerce on March 14, 1967.

Entitled, "Diversity of Broad-

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FM MONAURAL and SCA:

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FM STEREO and SCA:

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TBM-2000A, TBM-3005

Ask for our brochure on Broadcast Monitors. It gives detailed specifications for all models and highlights such outstanding features as elimination of troublesome tuned circuits, plug-in modular design, dually regulated power supplies and advanced solid-state design.

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cast News Sources," the report indicates that approximately 50 percent of the news broadcast on stations affiliated with ABC, NBC and CBS is of network origin. These networks supply more than 15 hours of news a week to their affiliates. The Mutual network, according to the report, supplies 20 hours of news programs per week. For the 2700 a-m stations with no network affiliation, news originates via AP or UPI wire services or locally. Between them, the two news services serve virtually all commercial radio and TV stations in the United States.

## Airmobile TV Modules

Worldwide location videotaping is now possible on 24-hour notice as a result of a new service by Reeves Sound Studios, division of Reeves Broadcasting Corporation.

Reeves developed a "packaged" system of color television cameras, videotape recorders and control equipment that fits in standardized shipping containers for jet air-freight. These self-contained packages, called the Airmobile-Video System, can reach any jet port in the world within a 24-hour shipping time.

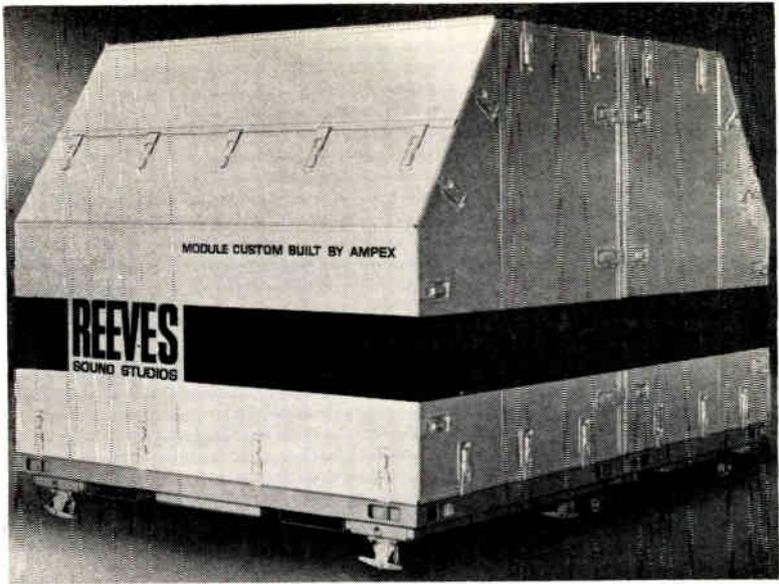


On arrival at the jet port, the Airmobile-Video module system will fit into a standard van-type rental truck, available worldwide.

The A-V system is equipped with: Norelco Plumbicon color cameras; Ampex VR-2000 high-band color videotape recorders;

Riker 540F effects such as dissolve and Chroma key; 5-input audio console with two auxiliary 4-position mixers; 1/4-in. tape recorder and six microphones; up to ten input, preview and program monitors in black and white and color; full heating and air conditioning; full control and testing equipment; and power generation if local power is unavailable.

Using a modular "building block" concept of packages designed for specific functions, the A-V system is extremely flexible, allowing an equipment mix in any combination of 2, 4 or 6 cameras and 0, 1 or 2 recorders.



# ARROW'S HOWARD WINCH HAS A BIG MOUTH

WHEN HE'S TALKING ABOUT

## BROADCAST EQUIPMENT

GIVE HIM A BUZZ... HE'S A REAL  
BUNDLE OF INFORMATION ABOUT

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## Most ETV On CATV

An NCTA study has disclosed that 719 CATV systems located in 45 states are distributing the signals of 94 ETVs — 74 percent of the country's educational television stations. One system carries four educational channels. Comparison of the study with a similar one made in 1964 reveals a 673-percent increase in ETV carriage by CATVs. Over the period, the number of ETV stations increased by 54 percent.

"The CATV industry has become a major factor in the distribution of educational programming," NCTA President Frederick Ford said, but "perhaps even more significant, there are clear signs that it is becoming an important source of educational material." Ford reported that of 416 respondents to an NCTA postcard query, 44 indicated they are now serving their communities with educational programs originated over their facilities by a local educational institution, and 18 more have announced their intention to do so in the near future.

## BUSINESS OF ETV

**California Expansion.** \$1,726,502 ETV network urged by Kern County, California Board of Education. \$1 million in federal funds available. County's share \$650,000. \$61,000 state funds; \$21,000 to be raised locally. Proposed system would reach all of Kern County, parts of Kings, San Luis Obispo, Los Angeles, San Bernardino, Inyo and Fresno. ETV system in Humboldt County, California moves closer. Study recommends \$10.5 million of federal

funds be used. Philco-Ford Corp. proposes ETV system utilizing single 5-channel satellite and 20 rebroadcast stations throughout California. Would work closely with Comsat. Initial cost \$24.4 million plus \$4.6 million a year. If adopted, state could boast of first use of satellite for ETV in world. **Los Angeles** Board of Education seeks FCC license to operate channel 58 as second ETV station. If granted, school district to ask for federal funds for \$650,000 cost of erecting transmitter and other equipment.

**Georgia Expansion.** — \$704,000 grant from U. S. Dept. of HEW to state of **Georgia**. Already a national leader in ETV with five stations, Georgia will use grant to add four more stations.

**\$5 Million for Nebraska.** \$5,182,151 biennial budget asked by Nebraska Educational Television Commission: \$1.5 million for construction; \$1,243,000 for equipment for new telecommunications building at University of Nebraska; and \$948,100 for medium power channels at **Hastings** and **Merriam**.

**Vermont Gets OK.** \$450,000 approved by **Vermont** Senate for completion of state ETV network. Portion of funds go for mobile unit and equipment.

## BUSINESS OF CATV

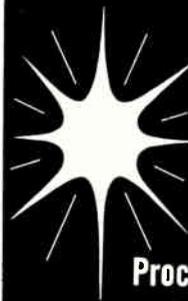
**Shapp Back.** Citizens Cable Corp., whose major stockholders are Milton J. Shapp and Joseph L. Lecce, has purchased the Williamsport Television Cable Company from National General Corporation of California. Mr. Lecce of Williamsport will serve as president and operating executive and Mr. Shapp as chairman of the board and treasurer. This transaction is the first CATV venture for Shapp since he and his wife sold their interest in the Jerrold Corporation.

**Rebuilding Program.** Centre Video Corporation of State College, an affiliate of C-Cor Electronics, has been given a \$3,470,000 loan by The Fidelity Bank of Philadelphia, Pa., according to James R. Palmer, president. Among other things, the loan will be used for construction of cable television systems in the **Pittsburgh** area, and conversion of the **State College** and **Bellefonte, Pennsylvania** systems from

five-channel to 12-channel operation.

**Franchises Granted: Belvedere, California** gives 20-year franchise to Cable Television of Marin . . . **Mt. Laurel, New Jersey** grants General CATV, Inc. 25-year franchise . . . **Healdsburg, California** gives 20-year franchise to Mel's TV, Inc. Melvin Williams, founder and manager. Firm currently serves Guerneville and Cloverdale by microwave facilities on Mt. Jackson. Blonder-Tongue Corp. of New Jersey buying 80 percent of Mel's. Plans to replace present equipment with new solid-state equipment. Cabling to city

to start within 30 days of contract signing . . . **Desert Hot Springs, California** gives nonexclusive 20-year franchise to Video Communications, Inc. Contract stipulates construction and installation of equipment within six months . . . **South New Castle, Pennsylvania** to Lawrence Cablevision, Inc. . . . **Daytona Beach, Florida** to Halifax Cable TV Inc., President Harry W. Bennett, Jr. Installation to be completed within 12 months. Through vote Halifax also wins franchise for neighboring **South Daytona**. Halifax already holds franchises in **Ormond Beach** and **Daytona Beach Shores**.

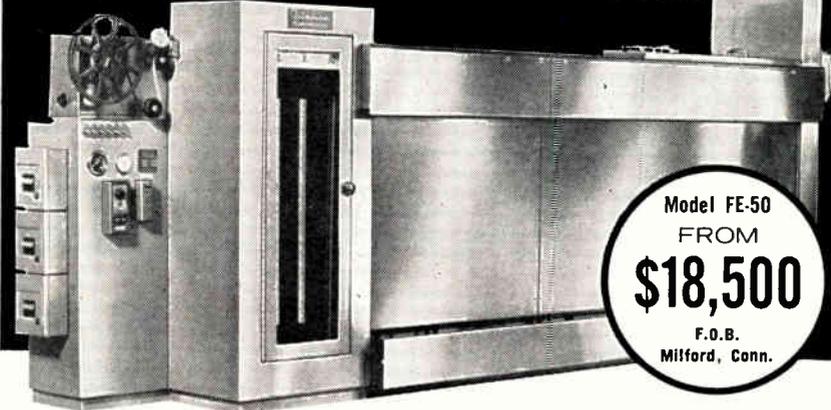


# A STAR IS BORN

## FILMLINE'S MODEL FE-50

### A Processor for Ektachrome Film

Processes 16mm Color Emulsions at 50 FPM.



Model FE-50  
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**\$18,500**  
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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 manually 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.

**ADDITIONAL FILMLINE FEATURES:**

- Stainless steel air squeegee
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Recent FE-50 Installations: WEAT-TV, WCNT-TV, WMAL-TV, NBC, CBS, WTOP-TV, A-1 Labs, Precision Labs, Film Service Lab.

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

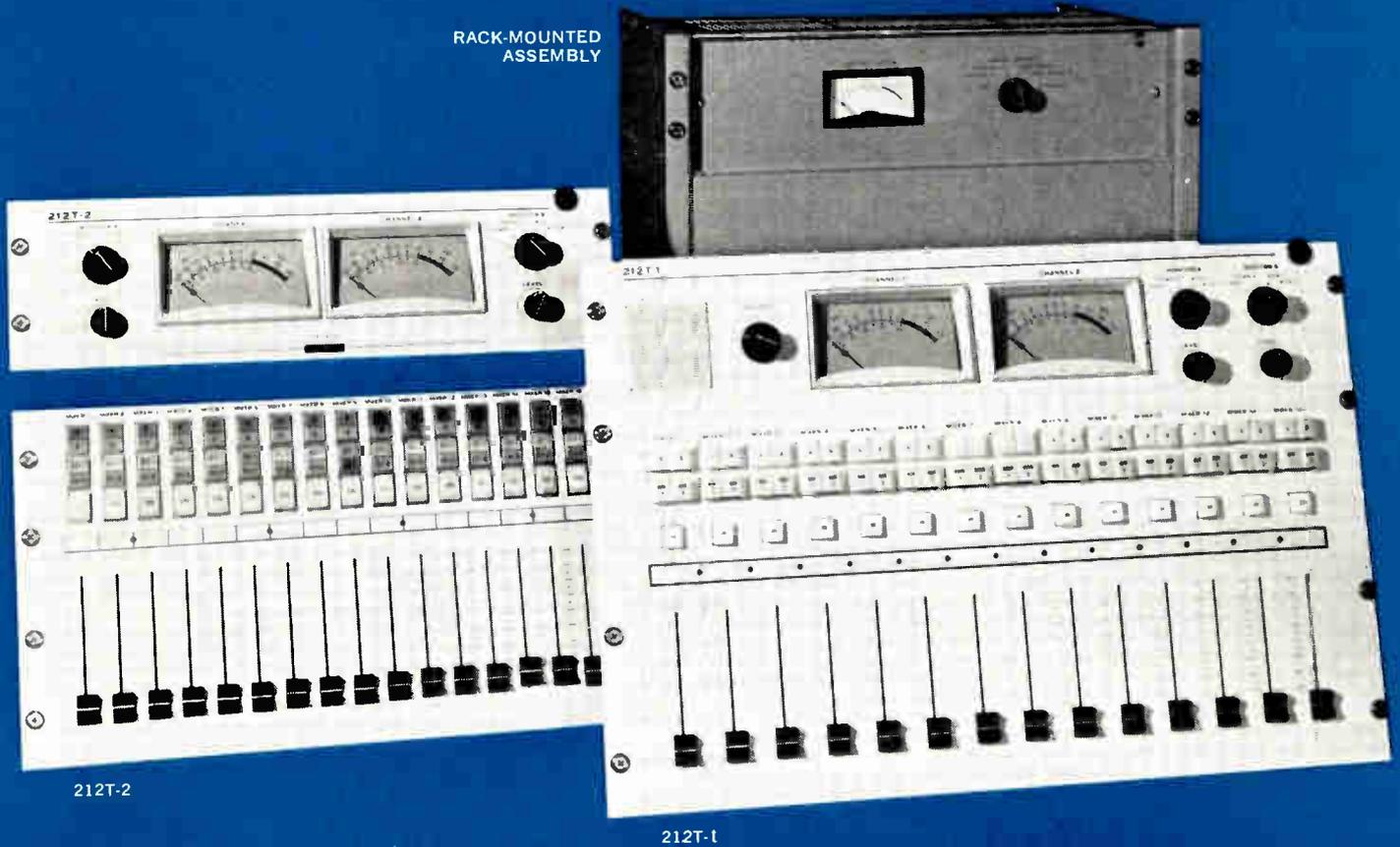
For more details write: Dept. BMJU-67



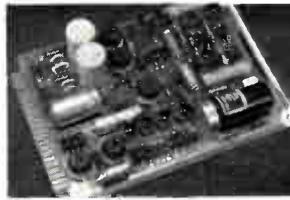
**FILMLINE**  
CORPORATION  
MILFORD, CONNECTICUT

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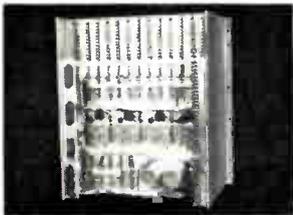
**RACK-MOUNTED ASSEMBLY**



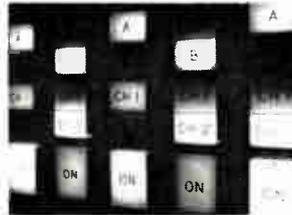
**Photocell Operation.** The photocell lamp completely isolates control voltage from the audio circuits for audio switching and level control. Small physical size enables the photocell to be located in active audio circuitry, thus keeping audio leads to a minimum. Switching time constant eliminates transients such as pops and clicks.



**Solid-State Amplifiers.** Solid-state amplifiers using silicon transistors are built on high quality, etched epoxy boards. Photocell operation provides switching and level control functions on the amplifier cards, not on the control panel. A selection of amplifier cards is available to meet all common input levels and impedances.



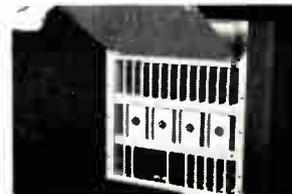
**Remote Capability.** Remote photocell location allows all audio and power supply components to be contained in a rack-mounted assembly. Because a photocell can be remotely controlled, it is suitable for distant audio switching and level control functions. Remoting active audio and power supply components in an area adjacent to the control room frees audio leads from video and sync signals present in the TV control room.



**Illuminated Pushbutton Switching.** Status is indicated either by two levels of illumination or by color changes in push buttons. Variable overall illumination is controllable to suit control room lighting conditions. Each panel has engraved push buttons with A or B input selection and Channel 1 or Channel 2 selection. Push-on, push-off buttons turn each fader on or off as required.



**New Fader Design.** New fader design eliminates problems associated with slide contact arrangements. The design provides smooth drive, free of backlash. Repair, if ever required, is very simple.



**Easy Access.** Access for maintenance is no problem. There are no hidden components. Straight forward wiring and remote control capability allow routine maintenance to be performed in an equipment room, rather than a control room area.

# You don't have to order (and pay extra for) a Custom Control Console.

## Check the features in Collins' new Audio Control System and see why.

Collins' new series of audio control systems is designed especially for television, large AM facilities and recording studios. The two systems making up the 212T Series are designated the 212T-1 and 212T-2 Audio Control Consoles. Both consist of three basic units: a control panel, a rack-mounted assembly containing the amplifiers and I/O terminals, and rack-mounted power supplies. The latter two units are common to both the 212T-1 and 212T-2.

Both systems have many features in common. The primary difference between the two systems is control panel configuration. Two different panel designs provide for a variation in the number of controls available and for flexibility in panel mounting.

*The 212T-1* provides 28 inputs to 14 faders, two program output channels, two auxiliary program outputs, two 10-watt monitor outputs, and a built-in cueing speaker. The overall panel dimensions of the 212T-1 are 15 $\frac{3}{4}$ " high x 24" wide.

*The 212T-2* provides 32 inputs to 16 faders. The control panel is divided into two separate functional sections. A 5 $\frac{1}{4}$ "

high x 19" wide section contains the VU meters and monitoring controls. The other section containing faders and cue switches is 10 $\frac{1}{2}$ " high x 19" wide. Both sections may be rack-mounted. The two panels are interconnected by plug-in cable assembly. When desired, the VU meter panel may be mounted at a different angle or location than that of the fader panel.

*Rack-mounted Assembly* is common to both the 212T-1 and 212T-2. The assembly can be located in an equipment room and linked by cable to the audio control panel in the studio. Sensitive audio wiring is concentrated in a card cage away from interference. All rack-mounted assembly wiring is readily accessible. Audio input and outputs are connected to terminal strips. Rugged connectors are used to couple cables to the front panel. Cable lengths can be supplied as required for any installation.

For a new descriptive brochure on the 212T Series, contact Broadcast Marketing, Collins Radio Company, Dallas, Texas 75207. Phone: (214) AD 5-9511.

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Circle 14 on Reader Service Card

World Radio History

Where The Action Is:

# CATV-Land

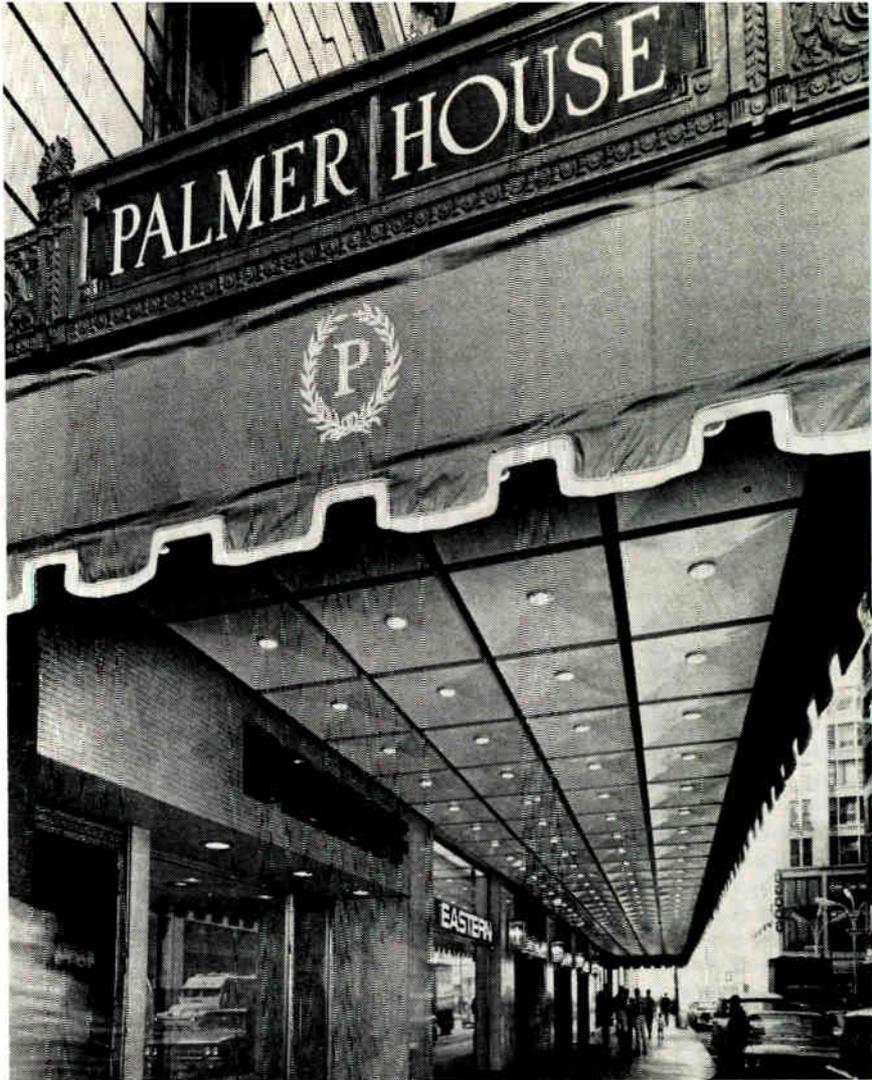
Ninth Circuit Court, Second Circuit Court, Congress, FCC hearing rooms, state legislatures, town halls, broadcasters' meetings, CATV operators meetings, you name it — CATV is the action. CATV may go to the Supreme Court as a result of the Second Circuit Court of Appeals upholding, late in May, the Herlands decision that CATV operators are liable for copyright (*United Artists vs Fortnightly* case).

The last week in June the action, most of it convivial, though hectic, takes place at the Palmer House in Chicago. That's the location of the 1967 NCTA convention.

What's the mood or temper of the times just a little over a year since the Second Order and Report regulating CATV became effective? *BM/E* talked with Alfred R. Stern, outgoing NCTA chairman, Frederick Ford, NCTA president and sources within and close to the FCC Task Force on CATV. There's stoic acknowledgment that the pro-broadcast Commission and general counsel at FCC has CATV in a deep freeze. There's disdain for the vhf broadcasters in the top-100 market and their association, NAB, for the attitude that signal distribution is the inalienable right of broadcasters. There's disgust over the monopolistic attitude of monopolistic telephone company managers. But there is a calm confidence that cable can't be stopped. In the not too distant future every home will be wired — that's almost an article of faith. The freeze will be halted when the Senate comes up with a satisfactory copyright bill.

Their confidence comes from the feeling that the American viewing public will want full access to all of the programming there is. If the FCC prevents them from getting it, Congress sooner or later will instruct the FCC to "cease and desist."

Their confidence of being on the right side — and right will win stems, also, from the feeling that technology spawned wideband cable and that the American public should enjoy the fruits of technology. Why should a viewer



## Recent CATV Action

**CATV Copyright Deleted.** U.S. House of Representatives deleted all references to copyright in floor squabble. Senate Judiciary Committee to study matter later this year.

**Copyright Liability Upheld.** Second Circuit Court of Appeals, May 22, upheld unanimously the Herlands decision that two West Virginia CATV systems owned by Fortnightly Corp. infringed United Artists rights in films licensed to TV stations by UA. Case to be appealed to Supreme Court. Ruling intimated that CATV not liable if same program could be received by roof-top antenna (not applicable in *Fortnightly* case).

**CATV a Public Utility.** Court of Common Appeals in Ashtabula, Ohio rules CATVs are public utilities (permitting telco to build system and lease back without franchise). Decision based on assumption that CATV would be available to an entire community. In Connecticut, PUC controls CATV franchises. Some nine states are considering legislation declaring CATV a PU.

**Grandfathering Extended.** Ninth Circuit Court of Appeals rules that the FCC had no right to order CATV systems (in San Diego) to freeze service pending a commission hearing. San Diego systems had been piping Los Angeles signals to new subscribers against FCC rules.

**Court Case Pending.** Nineteen different court cases involving FCC CATV rules were summarized in the May 19, NCTA legal letter.

**Dear Fellow Members —**

Critical year — year of decision — period of crisis, these are terms that we have come to accept as aptly descriptive of the atmosphere in which CATV pushes forward. CATV has grown from the small handful of operators at the first convention, sixteen years ago, to an industry serving almost 9,000,000 Americans. This growth has continued, in spite of the most imposing opposition, for one reason — the public wants more and better pictures on their television screens.

The public will get what it wants and we will give it to them. CATV is now and will continue to be a part of our communications complex because the public will insist on it.

Other forces covet the offspring of your labors — the owners of copyrighted material, the telephone industry, and some broadcasters who are not committed to the CATV industry.

We have many problems — life and death problems that will take all of our considerable energy to solve. They must be solved and we will solve them, if we all work together.

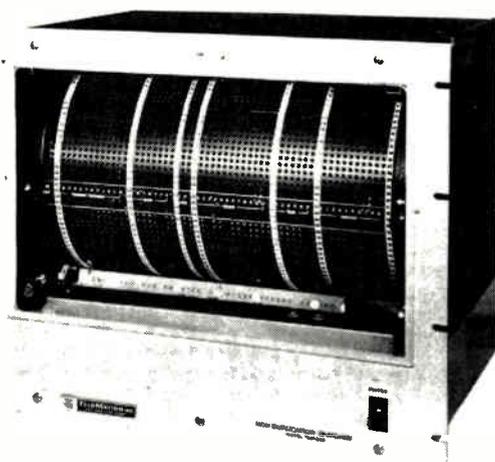
With your wholehearted support through your state, regional and national associations, we will make every effort to preserve what we have built. Now is the time to make your personal commitment to support the battles in which we are involved. NCTA cannot do it alone. We need the financial and personal support of everyone at this convention as well as those who are not here.

Your commitment to CATV is great in money and in years. You have fought your way uphill for 16 years. You can do no less than increase your efforts now that our goals are in sight. This is your industry. Together we can keep it that way.

Sincerely,  
Frederick W. Ford  
President

be forced to catch a program only when the broadcaster schedules it? The program is on videotape in the first place; it could be played several times on open cable channels for the viewers' convenience. Does the source's copyright protection give him the right to dictate *when* viewing will take place? Is this part of the license that the FCC grants to broadcasters? Technology today says, no, and to exploit technology to the fullest extent is why NCTA Chairman Alfred Stern, (and president of Television Communications Corp., a multiple group owner) left broadcasting to work in cable distribution.

Confidence also comes from the feeling that the current FCC and NAB position is based on a sham. If the intent is to encourage U's by reducing distant program competition, the rules should apply to all urban areas and not just the top-100 markets. CATV people, including the FCC CATV Task Force, believe that cable helps U's; that U's want to be on cable and they disbelieve that competition of distant signals was the reason for the downfall of U's that have failed. (Why did the recently formed All-Channel Television Society, ACTS, composed of uhf



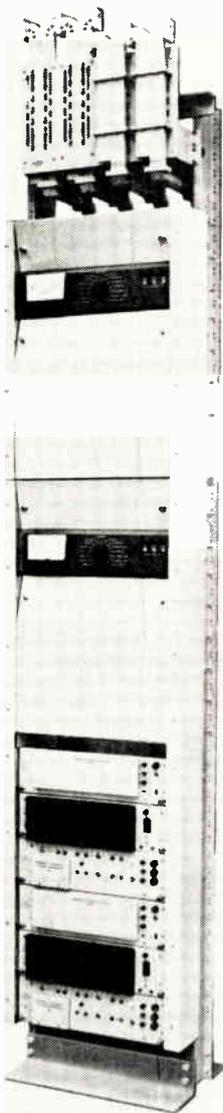
If you're plagued with duplication problems, check this new nonduplication switcher which simplifies CATV programming. TeleMation, booth 61-64.



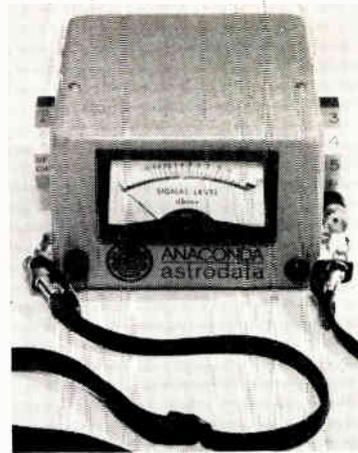
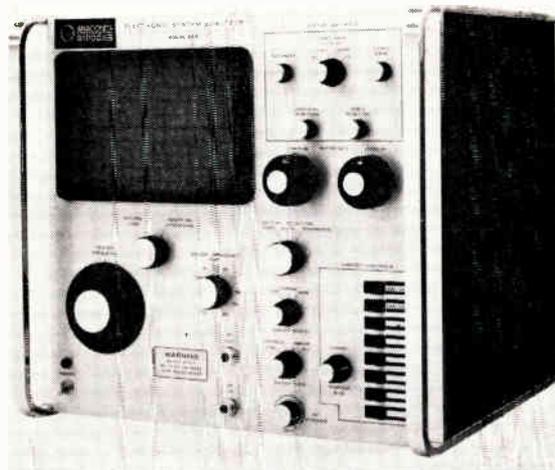
Look twice—Blonder-Tongue's new model 4132 sub-channel converter is shown mounted on company's FSM-2 field strength meter, booth 21.



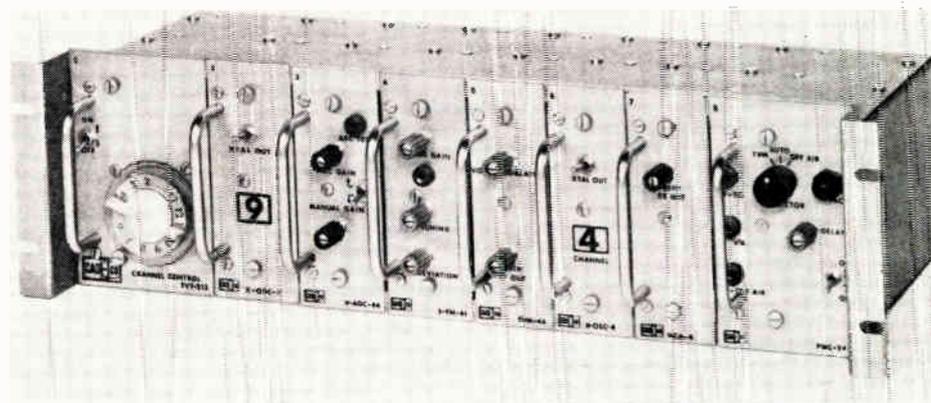
NCTA Convention planners: (l to r) Sam Street, NCTA director of convention and field services; Ralph Demgen, Willmark, Minn.; Wally Briscoe, NCTA managing director; Robert Regan, convention chairman, Mankato, Minn.; and Philip Franklin, Entron Inc., Silver Spring, Md.



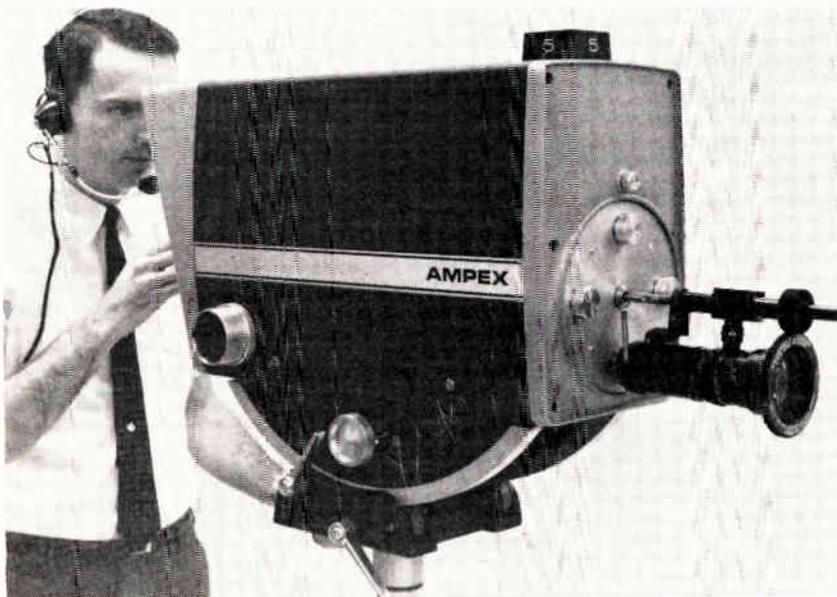
Interested in microwave re-  
lays? Several microwave sys-  
tems will be on display. This  
one is by Lenkurt, booth  
L9-10.



You-test-it at Anaconda Astrodata's Exhibit booths 65-67 and 75-77, which features both amplifiers and test equipment. Pictured are the sweep comparison analyzer (to measure insertion loss and gain and return loss and impedance) and the signal level meter (to measure TV signal levels in the system).



See an actual demonstration of this all-transistorized 12-channel head-end equipment at CAS Mfg to booth 98.



Going into local programming? Be sure to check the new Ampex camera.

broadcasters, as a first act, endorse the Second Order and Report? Either they don't understand or they are paying homage to NAB, CATVers reply.)

Add to these confidence builders, the conviction by Stern, Ford and others (including broadcasters such as J. Leonard Reinsch of Cox Broadcasting) that local origination by cable operators is the only real chance for local TV expression, and you begin to understand how CATV partisans keep their cool despite adverse judicial judgments and FCC rulings.

Thus the elimination of CATV provisions from the House copyright bill was not a disappointment since the House version was unduly restrictive to CATV. Thus the calm that greeted the Second Court of Appeals upholding of the Herlands decision (finding two CATV systems guilty of copyright infringement). CATV operators accept the principle of copyright payments (outside the courtroom, that is) and expect a reasonable bill will result from the Senate deliberations.

#### Convention Topics

To be sure, CATV leaders realize they can't coast in and are devoting sessions to the legal look-out on Monday and copyright law on Wednesday.

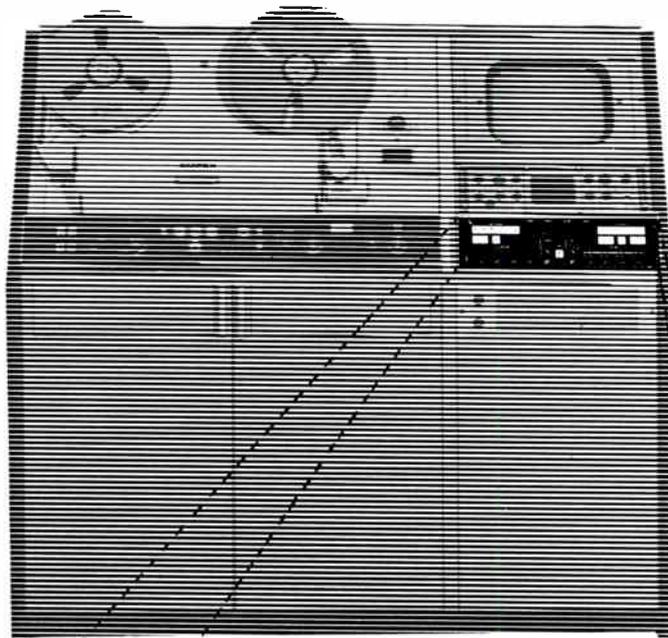
As evidence that the future is bright, a kick-off panel Monday morning will discuss "Communication Explosion." Panelists include: James McCormack, Comsat chairman; James D. O'Connell, telecommunications advisor to the President; John R. Pierce, executive research director of Bell Laboratories, and Allen E. Puckett, executive vice president Hughes Aircraft Company.

NCTA will promote cablecasting to its members by demonstrating program origination throughout the convention period. Various manufacturers have been invited to show how their equipment can be used in local origination.

Videotaping capabilities will be demonstrated to the fullest as the convention committee expects to make videotapes of new products at the convention, the management sessions, and interviews with the 1967-68 candidates for office. A tape on how to build a CATV studio (by Ampex) and another showing samples of local origination will be shown. The local programming demonstration will take place every evening. •

July, 1967 — BM/E

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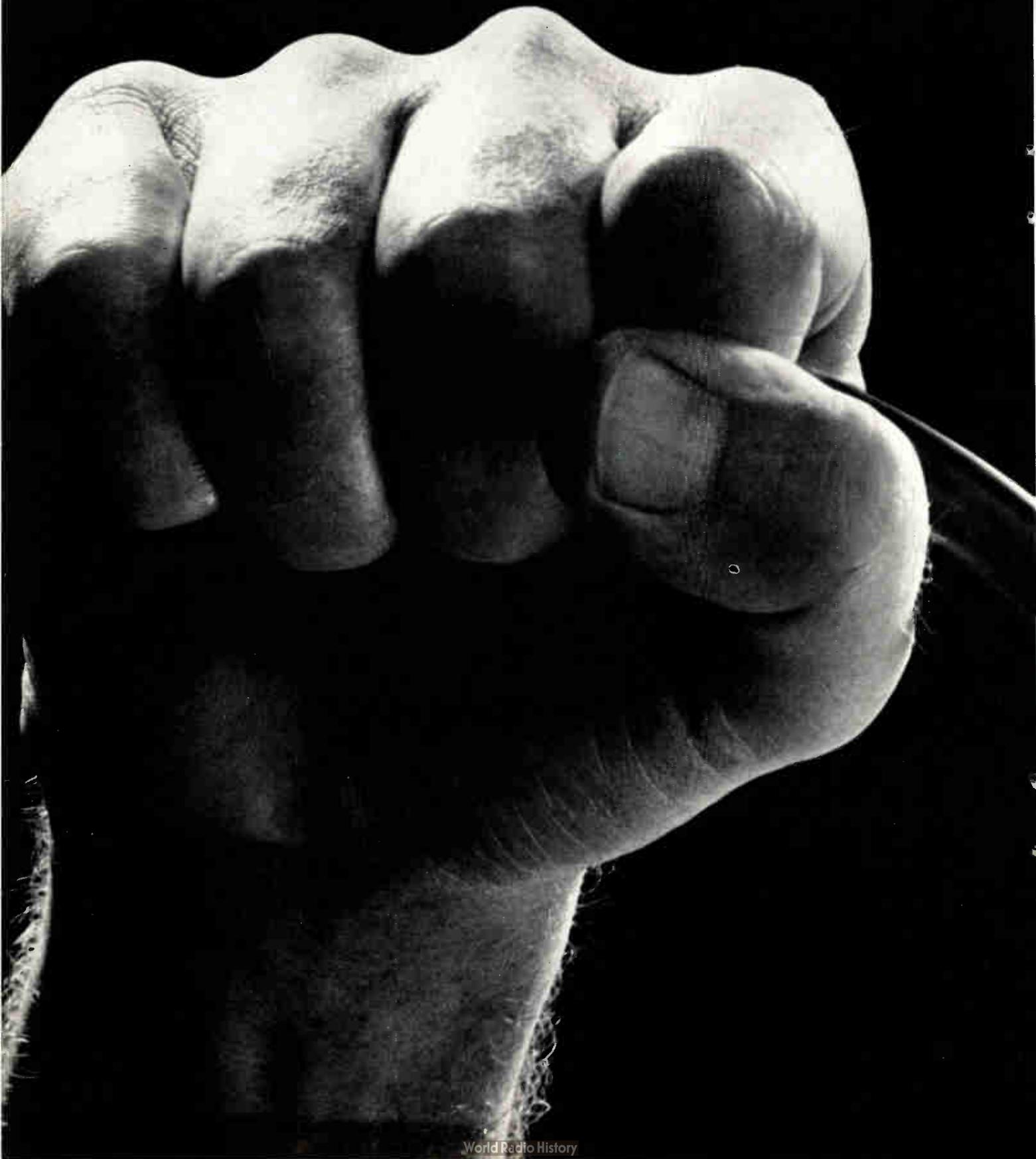
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Somebody had to make a coax so flexible and easy to install, it's practically foolproof.

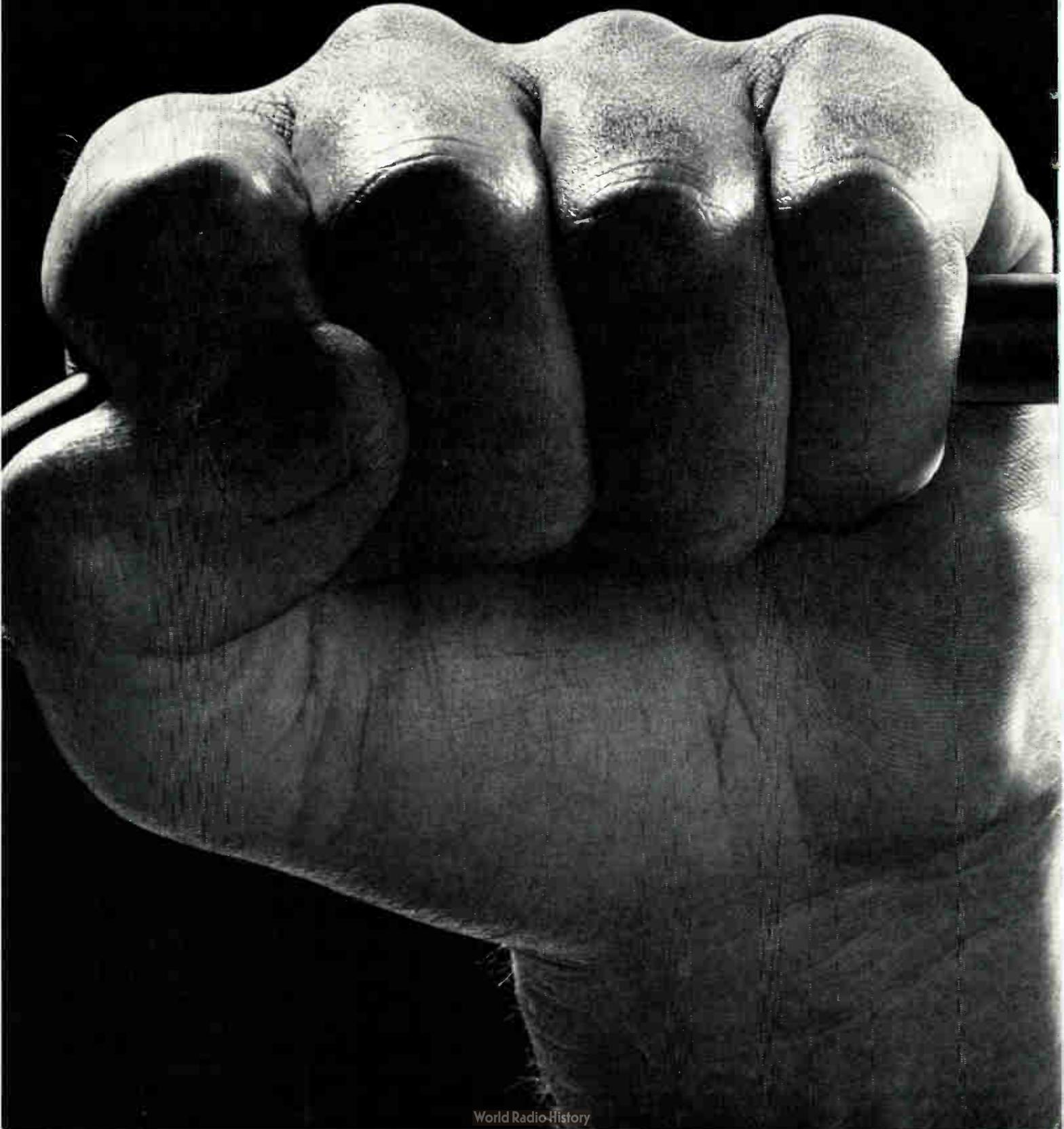
But a coaxial cable that was also moistureproof. Absolutely. And Anaconda did it, with a special sealing and bonding design called



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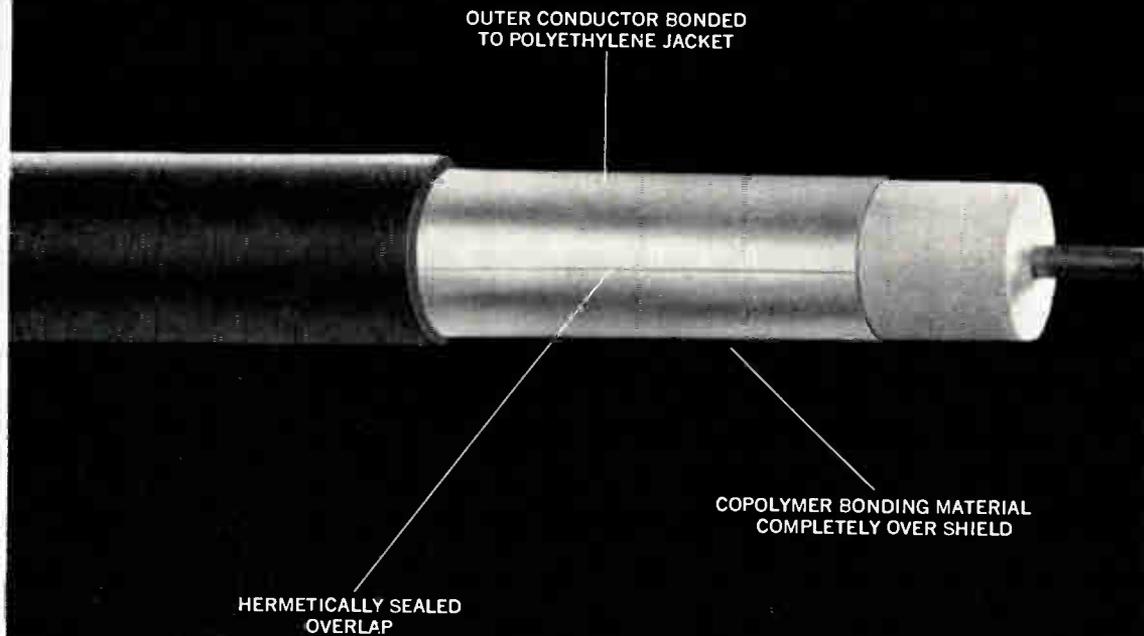
lence: signal integrity, low attenuation. And a structural return loss of 26 dB or better.

Somebody had to make a coaxial cable like this: exceptionally flexible, electrically excellent.

Anaconda did: Sealmetic Coaxial Cable.

Anaconda Wire & Cable Co., 605 Third Ave., N.Y., N.Y. 10016.

ASK THE  MAN FROM  
**ANACONDA**<sup>®</sup>  
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# INTERPRETING THE **FCC** RULES & REGULATIONS

## Sponsorship Id Rules to be Revised to Accommodate "Want Ad" Programs

SINCE THE EARLIEST DAYS of broadcasting, the Commission has consistently adhered to the basic tenets of Section 317, as reflected in the "Sponsorship Identification Rules" (Sections 73.119, 73.289 and 73.654). In brief, they provide that all matter broadcast by any station for valuable consideration must be (a) *announced as sponsored, paid for, or furnished, and (b) by whom*. In the *BM/E* issue of September 1965, the article entitled, "Section 317—The Advertising Section," stressed the fact that the Commission has *consistently* applied the strictures imposed by 317 and the sponsorship id rules.

In the past few years, in accordance with the provisions of Section 317(d)<sup>1</sup> the Commission has granted a number of requests substantially similar in nature for waiver of the sponsorship identification requirements of Section 317(a)<sup>2</sup>. *These requests involved the broadcast of "want ad" or classified advertisement programs, wherein individuals sponsor brief advertisements. Since the waivers constitute a departure from established precedent, a brief review of the sponsorship id rules and the recent waiver proposal is appropriate.*

### The Rigidity of the Basic Rule

One of the best examples of the Commission's attempts to stem violations of the sponsorship id rules is best evidenced by a warning contained in a Public Notice released October 10, 1950. In pertinent part the release maintains that:

1. "317(d) The Commission may waive the requirement of an announcement as provided in this section in any case or class of cases with respect to which it determines that the public interest, convenience, or necessity does not require the broadcasting of such announcement."
2. "317(a) All matter broadcast by any radio station for which any money, service or other valuable consideration is directly or indirectly paid, or promised to or charged or accepted by, the station so broadcasting, from any person, shall, at the time the same is so broadcast, be announced as paid for or furnished, as the case may be, by such person: **Provided**, That service or other valuable consideration shall not include any service or property furnished without charge or at a nominal charge for

"Although the statute does not specify the exact language of the required announcement, *its plain intent is to prevent a fraud being perpetrated on the listening public* by letting the public know the people with whom they are dealing. *Therefore, reference must be made to the sponsor of his product in such manner as to indicate clearly not only that the program is paid for, but also the identity of the sponsor.*

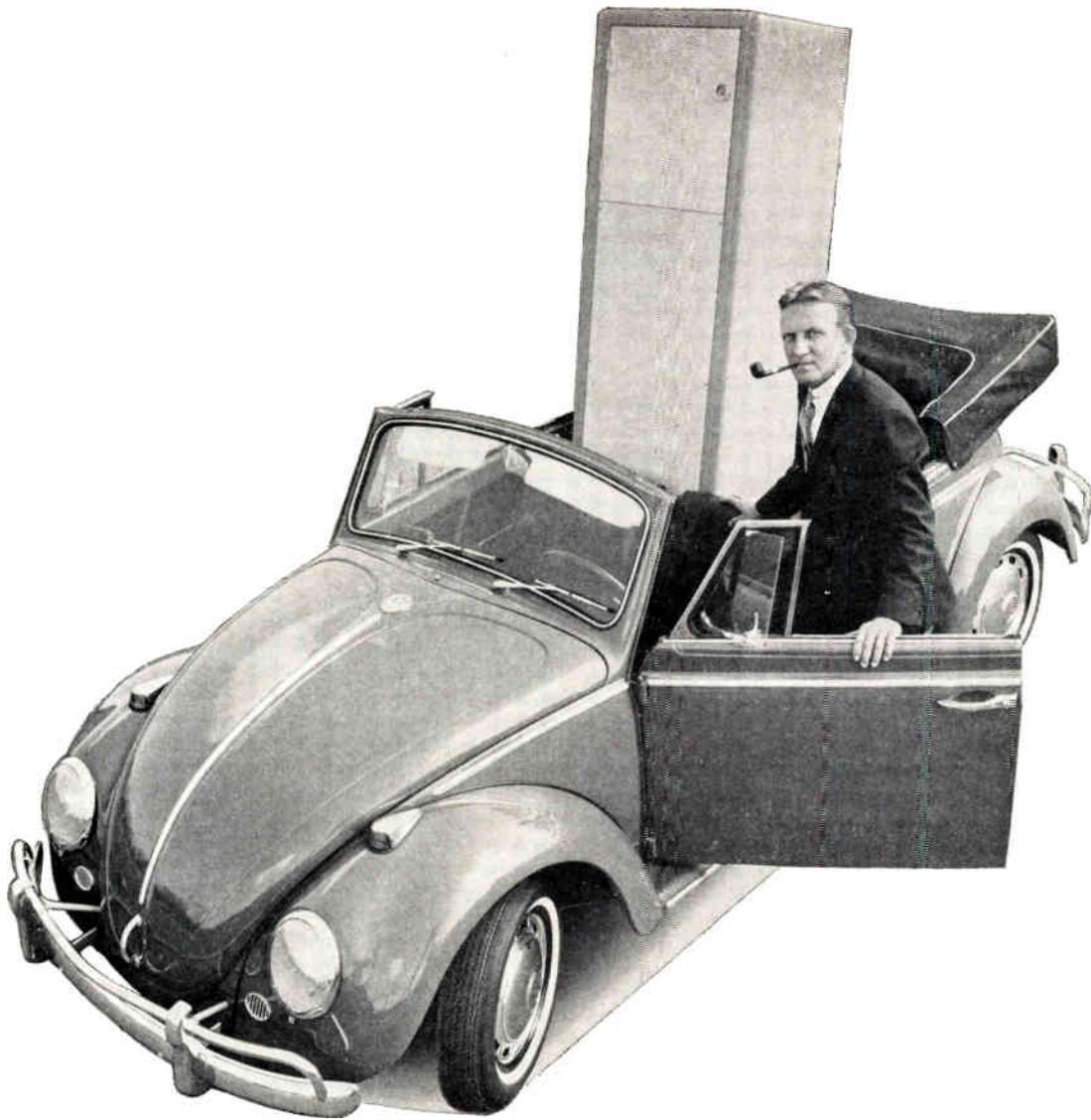
"It is apparent that under the Act and the Commission's Rules . . . the sponsor or his product must be identified by a distinctive name and not by one merely descriptive of the type of business or product. Thus, Henry Smith offers you, or Smith Stove Company offers you, or Ajax Pens brings you . . ." would be sufficient as would reference to a registered brand name (Renzo, Lucky Strike, Duz). However, "Write to the Comb Man." Send your money to Nylons, Box 000. This program is sponsored by the Sink Man or words of similar import which are merely descriptive of the product sold and which do not constitute the name of the manufacturer or seller of goods, or the trade or brand of the goods sold, would not comply with S 317 . . . This is true even where such descriptive terms have been adopted by the selling agency as a convenient method for direct radio merchandising of the products of any company. In all cases the public is entitled to know the name of the company it is being asked to deal with, or at least, the recognized brand name of his product.

"It is also pertinent to point out that the mandate of S 317 of the Act applies with equal force to political broadcast." (Emphasis supplied.)

The Commission has emphasized that (1) with regard to ordinary broadcast matter, reasonable diligence must be exercised by a licensee to ascertain and identify the true sponsor and source

use on, or in connection with, a broadcast unless it is so furnished in consideration for an identification in a broadcast of any person, product, service, trademark, or brand name beyond an identification which is reasonably related to the use of such service or property on the broadcast.

"317a (2) Nothing in this section shall preclude the Commission from requiring that an appropriate announcement shall be made at the time of the broadcast in the case of any political program or any program involving the discussion of any controversial issue for which any films, records, transcriptions, talents, scripts, or other material or service of any kind have been furnished, without charge or at a nominal charge, directly or indirectly, as an inducement to the broadcast of such program."



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And certainly, EMCOR I and the VW have much in common. They're

*EMCOR/distinguished cabinetry*

both pioneers. They're both highly versatile. They both perform like the leaders they are. And of course, they both offer lots of value for little dollars.

As vital as your instrumentation is, you should find the best cabinets for it. When you need a cabinet, or a system of cabinets, call your local EMCOR Sales and Service Engineer. Or write for our EMCOR I catalog.

Albany: 436-9649; Albuquerque: 265-7766; Alexandria: 836-1800; Atlanta: 939-1674; Baltimore: 727-1999; Binghamton: 723-9661; Bridgeport: 368-4582; Buffalo: 632-2727; Chicago: 676-1100; Cleveland: 442-8080; Dallas: 631-7450; Dayton: 298-7573; Del Mar: 454-2191; Denver: 934-5505; Detroit: 357-3700; Fort Lauderdale: 564-8000; Ft. Lee (No. N.J.): 944-1600; Ft. Walton Beach: 243-6424; Houston: 526-2959; Huntsville: 539-6884; Indianapolis: 356-4249; Kansas City: 444-9494; Los Angeles: 938-2073; Minneapolis: 545-4481; Newport News: 245-8272; N.Y.C. area: 695-0082; Orlando: 425-5505; Palo Alto: 968-8304; Philadelphia: 242-0150; Pittsburgh: 884-5515; Phoenix: 273-1673; St. Louis: 647-4350; Seattle (Bellevue): 454-5224; Syracuse: 471-7274; Tulsa: 742-4657; Utica: 732-3775; Valley Forge (So. N. J.): 265-5800; Wilmington, Mass.: 944-3930; Winston-Salem: 725-5384. EMCOR Reg. U.S. Pat. Off.

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of all the material presented over his station, and (2) with regard to discussions of public controversial issues or political discussions, *the highest degree of diligence* must be exercised by a licensee to ascertain the actual source responsible for furnishing the material.

In summary, the present sponsorship id rules, like those in the past, require:

(1) Any broadcast matter—for which money, service, or other valuable consideration is directly or indirectly paid or promised to any station—must be announced as sponsored, paid for, or furnished either in whole or in part, and by whom or for on whose behalf such consideration was supplied.

(2) "Service or other valuable consideration" does not include any service or property furnished without charge, unless it is furnished in consideration for an identification beyond that reasonably related to the use of such service or property on the broadcast.

(3) Licensees must use "reasonable diligence" to obtain information from its employees and agents of any data which might require sponsorship identification.

(4) In political or controversial issue programs, if records, tapes, scripts, services, etc., are provided, an announcement stating such things were given and identifying the true supplier, must be made at the beginning and end of the program.

(5) Sponsor announcements must fully, fairly, and clearly identify the *true* identity of the person(s) by whom or on whose behalf the payment is made or promised.

(6) In the case of advertising commercial products or services, an announcement of the sponsor's corporate or trade name of his product is sufficient, provided, however, that the mention of the name clearly identifies the sponsor without confusing, misleading, or teasing the audience.

### New Rules Proposed

On March 3, 1967, the Commission adopted a Notice of Proposed Rule Making looking towards amendment of Part 73 of the Commission's Sponsorship Identification Rules (Docket Number 17252), to accommodate "want ads" or classified advertisements by individuals sponsoring brief advertisements. The proposed rule would afford such "want-ad" advertisers the same kind of anonymity which is available to users of classified want-ads in the newspapers. This would prevent abuse of advertisers such as harassment of women advertisers by crank telephone calls.

To date, licensees seeking waiver made substantially similar representations regarding safeguards and precautionary measures to be estab-

lished if the Commission granted the request for waiver, namely it would attach to the program log for each day's classified want ads a list showing the name, the address, and, where available, the telephone number of each person purchasing such ads. Of course, this information would be made available to any member of the public having a legitimate interest therein.

In view of the numerous similarly worded requests for waiver, the Commission proposed an additional subsection to the sponsorship id rules (73.119, 73.289, and 73.654) to read as follows:

"The announcements required by Section 317(A) of the Communications Act of 1934, as amended, are waived with respect to the broadcast of want ads or classified advertisements sponsored by individuals. The waiver granted in this paragraph shall not extend to classified advertisements or want ads sponsored by any form of business enterprise, corporate or otherwise. Whenever sponsorship announcements are omitted pursuant to this paragraph the following conditions shall be observed:

"(1) *The licensee shall maintain a list showing the name, address, and (where available) the telephone number of each advertiser and shall attach this list to the program log for each day's operation; and*

"(2) *Shall make this list available to members of the public who have a legitimate interest in obtaining the information contained in a list.*

"Commission interpretations in connection with the provisions of this Section may be found in the Commission's Public Notice entitled *Applicability of Sponsorship Identification Rules* (FCC 63-409; 28 FR 4732, May 10, 1963) and such supplements thereto as are issued from time to time" (Emphasis supplied.)

### Conclusion

In effect, the proposed amendments provide a blanket waiver of the announcements required by Section 317(a) for classified advertising sponsored by private individuals, *but not for advertisements sponsored by any business enterprise, corporate or otherwise.*

The proposed rule requires each licensee who wishes to take advantage of the waiver to comply with certain minimum safeguards as set forth in the proposed rule. These safeguards are merely a modification of the safeguards required by the Commission as a condition to its grant of waiver in the past years under similar circumstances. There seems to be little doubt that the proposed rule will be adopted in the very near future. It will (1) assist the Commission, (2) relieve licensees of the burden of filing applications for waiver, and (3) provide additional protection for the public.

The proposed rules do not herald a radical departure from the Commission's past strict enforcement of the sponsorship identification rules. Basically, they recognize a valid waiver requirement in a specialized area; consequently, all licensees can expect continued rigid enforcement of the sponsorship id rules. ●

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.



ABC Studio 1313 converted to color by F & M Systems Co.

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**Even if you're not converting to color now . . .** if you're planning a UHF station . . . or an educational TV system . . . or a mobile unit . . . or if you just want to modernize some obsolete facilities, we can help you, too. Write for literature describing our services, or call us today!

**F&M SYSTEMS CO.**

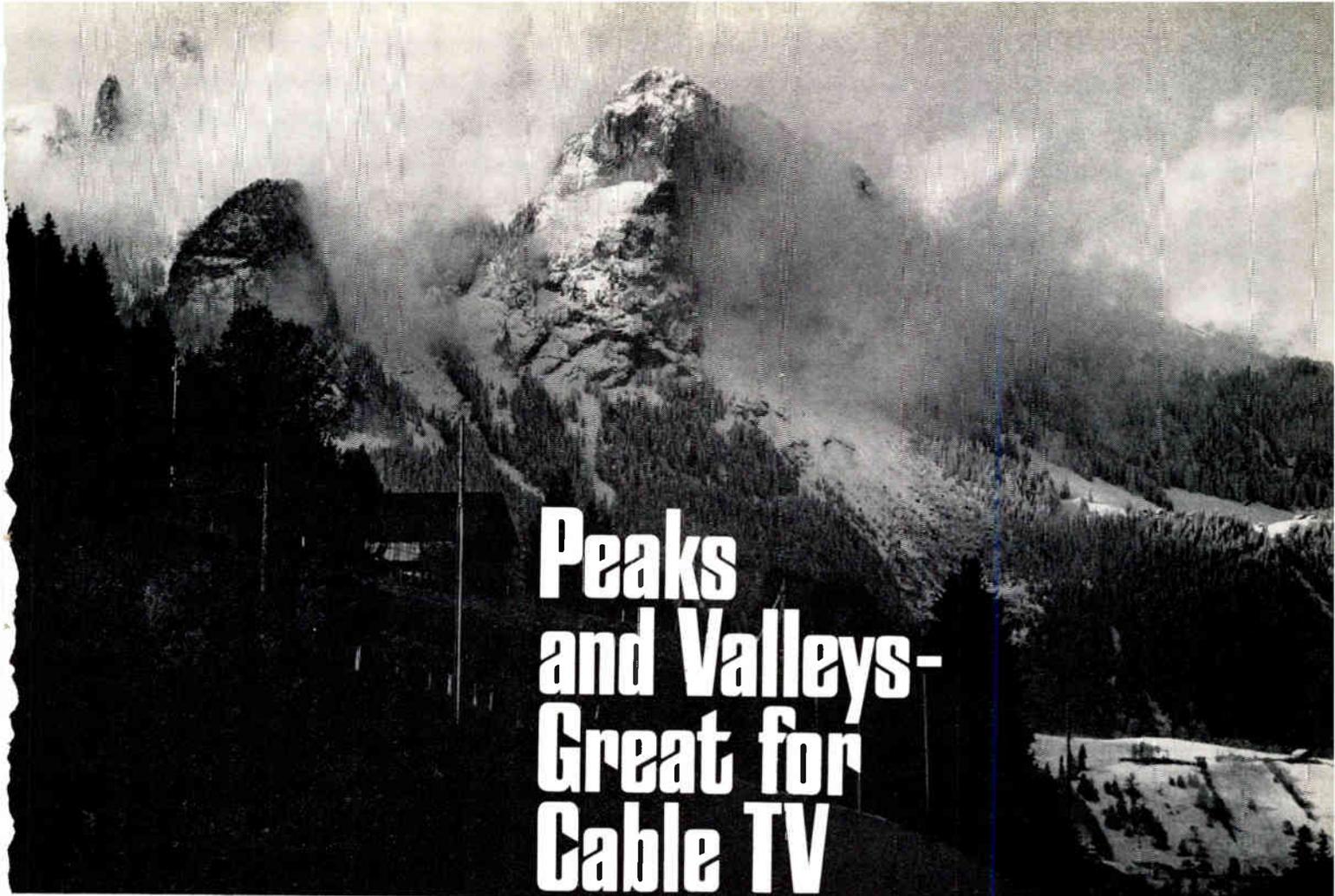
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**TIMES**



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# Terrible in a CATV Cable

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**TIMES**  
**WIRE & CABLE**  
DIVISION OF THE INTERNATIONAL SILVER CO

Circle 26 on Reader Service Card

World Radio History

# Design Considerations for a Local Color Mobile Van

By Charles S. Blair, Jr.

**Not as elaborate as network vans, this unit may give you ideas for your own local needs.**

NETWORK REQUIREMENTS FOR COLOR mobile units are quite different from those of the local stations. Although the design techniques of the larger network units are worthy of study, a unit for local use should be designed with local problems in mind. It should, however, be capable of being integrated into network pools. The design used by WJZ-TV and the station's approach to the problem should prove of interest to other local stations.

Preliminary investigation showed a number of design prerequisites:

1. Economy
2. Mobility of vehicle
3. Separation of production and technical areas
4. Design for six cameras
5. Space for future VTR
6. Environmental control
7. Human factors
8. Maximum storage
9. Maximum use of unit's capabilities.

Reviewing each of the above separately, perhaps the most important consideration was economy. Most of us at a local station operate on a limited budget. For this reason, and in the interest of time, it was decided that the unit would be engineered at the station level and constructed as close by as possible. In searching for a body shop, we were indeed fortunate to find in Baltimore Pritchard-King, who not only had the facilities to build a custom unit to our specifications, but also who had built color mobile units for both ABC and Lewron. It was then a matter of coordinating WJZ's engineering staff with that of Pritchard-King's. Our target date was April 1st for completion. This gave us a lead time of a little over three months. The month of January

**Mr. Blair** is chief engineer, WJZ-TV, Baltimore, Md.

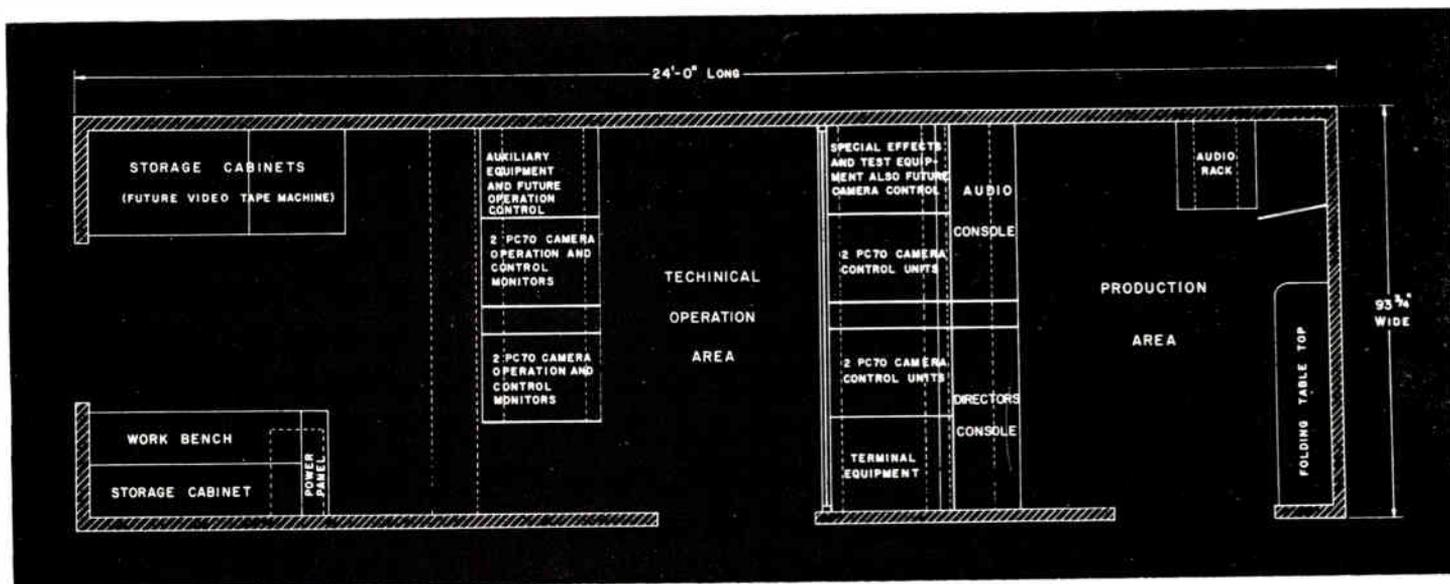


Fig. 1. General layout of mobile van.

was devoted to the negotiations of cost, reviewing specifications and prints, outlining the schedule and ordering additional equipment. Actual work started on the body February 1st. By March 1st the body was completed and married to the International Harvester chassis. Installation of technical equipment continued during March and the unit was ready for overall checked by March 27th.

### General Layout

The working area is 24 ft in length (Fig. 1). The technical and production areas are separated by a glass partition. All of the equipment in the technical operating area is within easy access of the video technician. All of the rack equipment can be reached for adjustments in a seated position whether he is facing forward toward the operating position or to his rear to the camera control units. Isolation transformers, Variacs and cable access external to the unit, all come into the side of the vehicle and are housed beneath the work bench. At the present time, storage cabinets at the rear are occupying a space that could be used for a future videotape machine.

The production area can easily handle required control room personnel such as audio technicians, TD, assistant director, director, and producer. Programming people operating in the production area not only have five-in. repeat monitors, but by looking through the glass partition, have eye-level view of match and line color monitors (Fig. 2). Space is provided for additional repeat monitors for future expansions of facilities. The production area is elevated nine in.

In addition to general lighting, the vehicle is equipped with spots at all critical operating positions. An air conditioning unit located over the truck cab channels air into a six-in. ceiling

plenum over the entire vehicle. Feed and return louvers are located at strategic points.

The technical area operating equipment racks are mounted floor to ceiling (Fig. 3). The top left-hand monitor is the color line monitor, the right-hand unit is the match monitor. Below it is a line oscilloscope. The four right-hand monitors are: air, spare, line, clean feed. Empty spaces are for future cameras.

Fig. 3 shows the camera control units directly below the camera oscilloscopes. Note that it is possible to house two cameras in the standard 19-in. rack space. This was made possible by the rewiring of the camera control panels to the new configuration. During setup operation, a slide-out desk top is pushed in for registration of cameras. During normal operation, the desk front is pulled out. A match monitor switcher is located in the vacant space between Camera Control 2 and 3.

Fig. 4 shows the rack layout directly behind the video technician housed in the director's console. Right-hand rack shows video patch, video distribution amplifier, test signal generator, two sync generators, pulse distribution

### A Color Mobile Van For Local Stations

For just under \$35,000 and a little hard work on the part of station personnel, WJZ-TV Baltimore got a color mobile van ready for installation of equipment. One month later, with very little overtime necessary, equipment was installed ready for checkout. From start to finish, the whole job took but three months. It helped that the body fabricator was nearby, but there is no reason why other local stations can't repeat the WJZ-TV story.

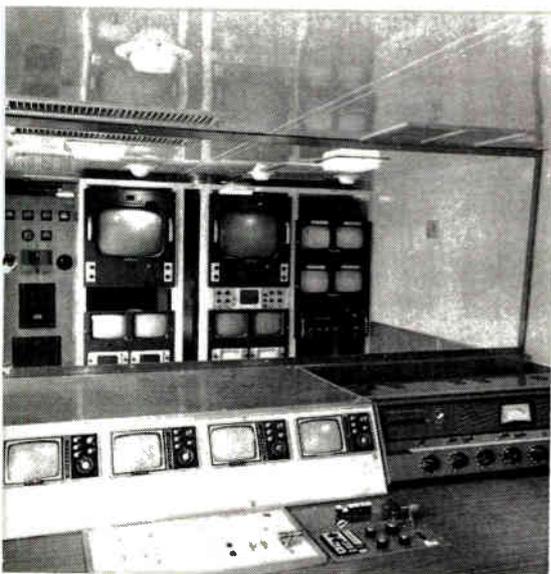


Fig. 2. View from production area showing 5-in. repeat monitors on the console and view of match and line color monitors in the technical area through the glass partition.



Fig. 3. Operating panel for video technician shows two cameras per 19-in. rack.

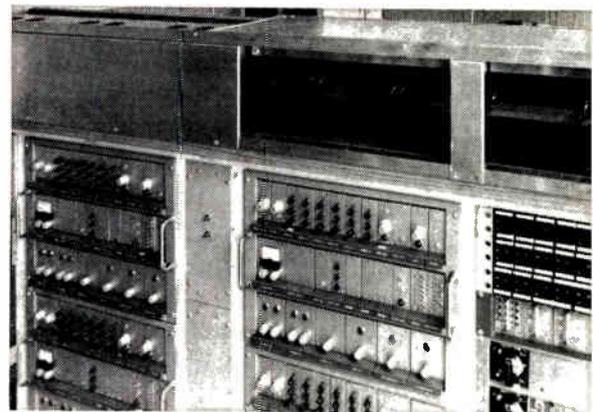


Fig. 4. Rack layout behind video technician housed in director's console.

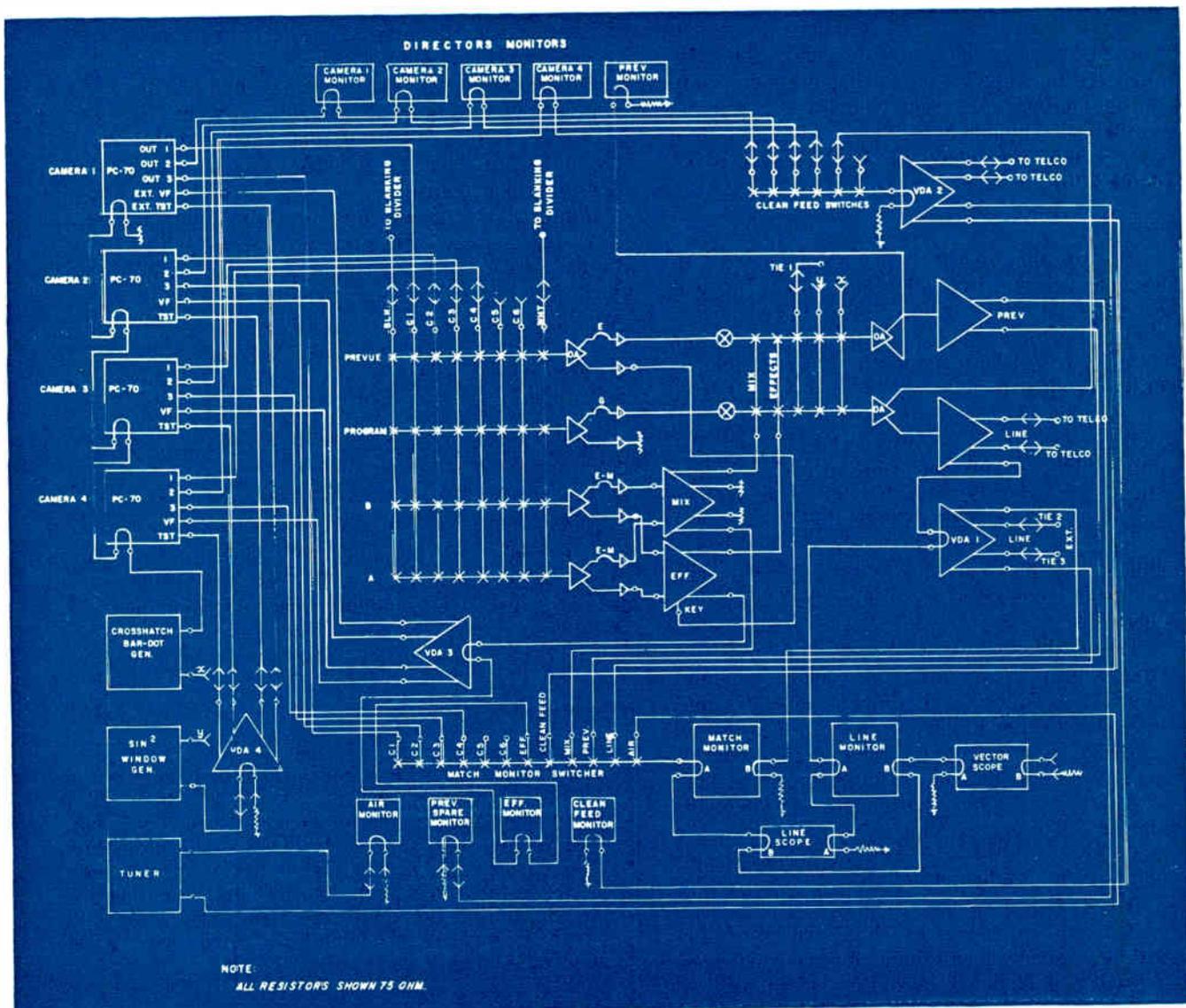


Fig. 5. Video diagram of van's equipment.

### Is a Color Mobile Unit Worthwhile?

Is it justifiable for a local station to make such a large investment? Reasons for making such a purchase are easy to come by. A chief one is the need to keep up with the technology of our time. Or perhaps there is a critical need in terms of station capability. However, before incurring the high depreciation costs associated with a color mobile unit, the station might well consider the source of income from the operation and to what degree it offsets the depreciation costs. For the local operation in Baltimore, this more or less resolved itself, since WJZ-TV is heavily involved in baseball. The question then was "Rent or buy?" After carefully weighing all costs involved regarding rental of equipment, versus purchase of equipment, WJZ resolved that it would buy.

amplifier and switcher. The two center racks contain the four camera control chassis. The extreme left rack, not visible, includes a Vector-scope, special effects generator and space for future camera controls.

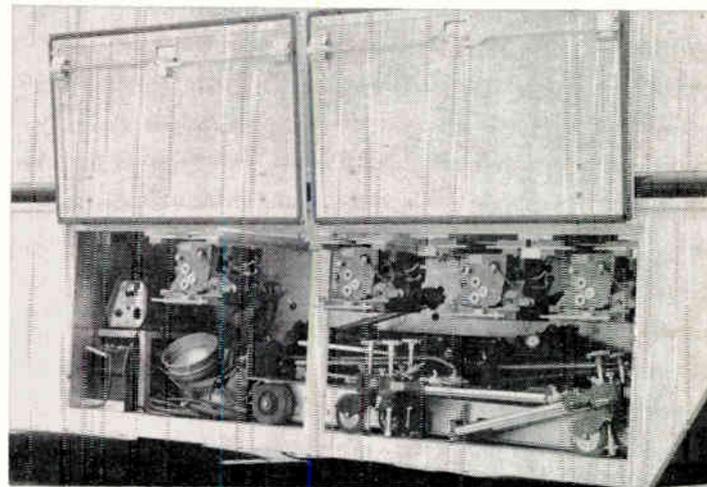
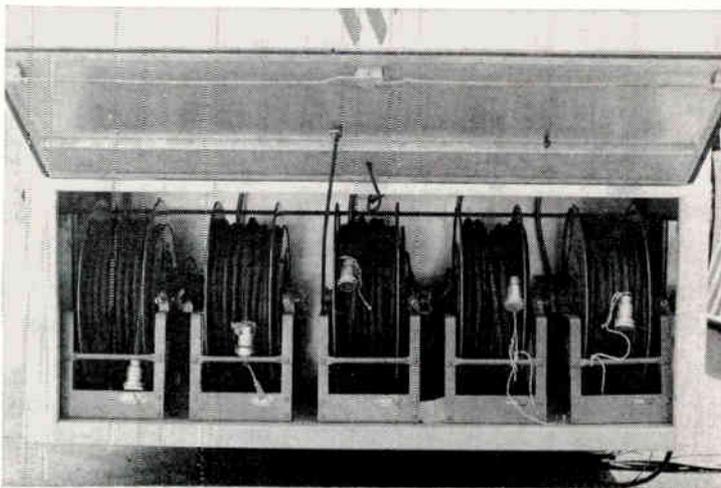
Single line video diagram, Fig. 5, indicates the interconnection of four PC 70 Norelco color cameras with provisions on the switcher for two additional cameras. The main video switcher is a Ward solid-state unit with seven noncomp inputs and five composites. Busses consist of: preview, program, AB mix, and AB effects. Two additional switchers are used for clean feed and match monitor. In the event of failure of the main switcher, the clean feed switcher could be used as a bail-out.

Two separate communications systems are provided in the vehicle, one for production and one for engineering. Selective switches allow any location to be switched to either source.

The telephone company completely wired the telephone circuits. Three phones are provided



Fig. 6. Storage area of van shows camera storage, camera accessory storage and cable reels.



in the technical area, three in the production area and two at the audio position. In addition, six other pairs are provided in both the production area and the technical area (on jacks) for other communications such as PL should the unit be called upon for large scale jobs, such as network pools. All telco circuit terminate at the van-side on Amphenol Blue Ribbon connectors.

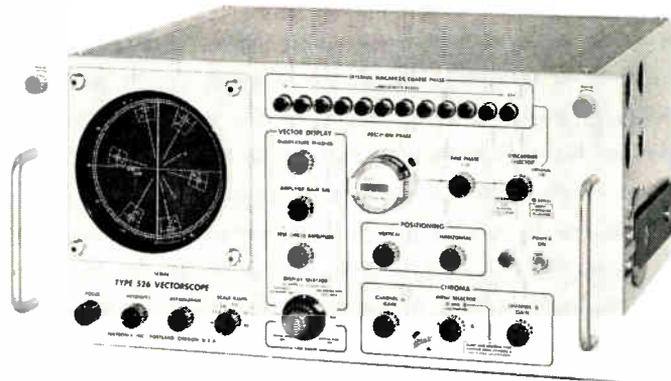
Audio facilities consist of a standard audio console (McCurdy) capable of eight low-level and seven high-level inputs. The unit can easily be expanded to eight additional low-level inputs. Multiple outputs have been provided for additional feeds when necessary.

Considerable attention was given to storage area and methods of transporting cameras and accessories. Two camera slide-out trays for two cameras each were provided in curb-side compartments (right side of van). Units are shock mounted and designed to support 500 lb. in the pulled-out position. Zoom lenses mount on

shelves in traveling cases in adjacent compartments. On the left side of the van, the cam pan heads are stored in the upper sections of compartments on slide-out units with self-latching keepers. The lower sections are used for tripods, etc. A cable reel compartment extends across the full rear of the van. The rear also has an access ladder to the roof and an electric hoist for lifting equipment to the van's roof. The color mobile unit is completely self-contained and no auxiliary vehicles are needed for additional equipment.

All in all we feel we have satisfied the original minimum design considerations. In a rush program of this sort, there are always unfinished items and perhaps a different way to obtain the end results. We have, however, a unit which is highly maneuverable and should satisfy the demands of all our production and technical people. For those of you who are contemplating the design or construction of such a vehicle, we at WJZ-TV would be glad to share our experience.

# measuring differential gain and differential phase



...with a Tektronix Type 526 Vectorscope

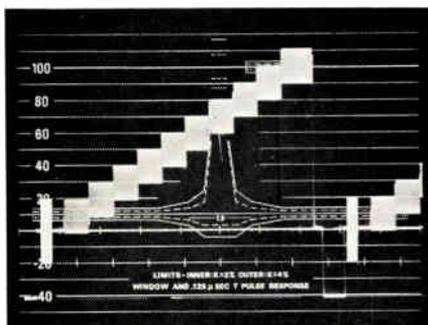


Fig. 1. Display of the modulated staircase showing 10 steps with 3.58 MHz modulation on each step and color burst, viewed on a Tektronix Type 529 waveform monitor.

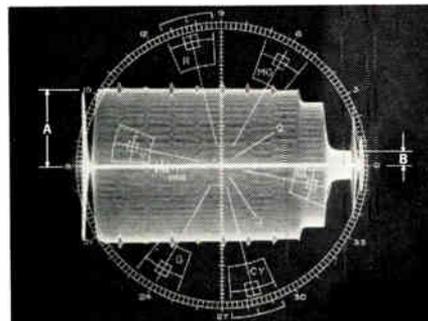


Fig. 3. Display of the 3.58 MHz staircase with the internal oscillator free-running. Differential phase information does not affect differential gain measurements.

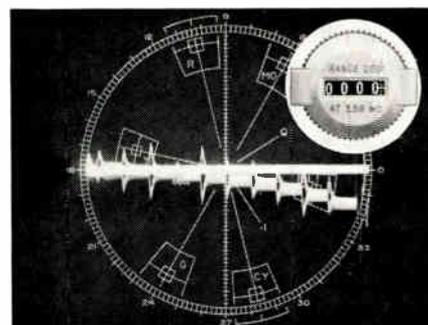


Fig. 5. Display of the modulated staircase (magnified) with the step at extreme left (black level) nulled to the center line.

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 stairstep signal during color-program transmission. The interfield signal key permits VIT MONITORING.

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

Type 526 Vectorscope . . . . . \$1665  
Size is 8 $\frac{3}{4}$ " high, 19" wide, and 18" deep.  
Weight is ~ 45 pounds. Designed for rack mounting. U.S. Sales Price f.o.b. Beaverton, Oregon

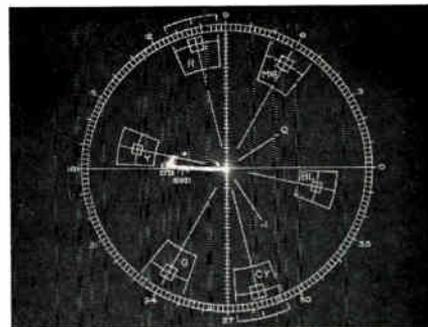


Fig. 2. Display of a distorted modulated staircase, viewed on the Vectorscope. Phase is displayed on the graticule in a circular direction and amplitude in 1-rms of distance from the center.

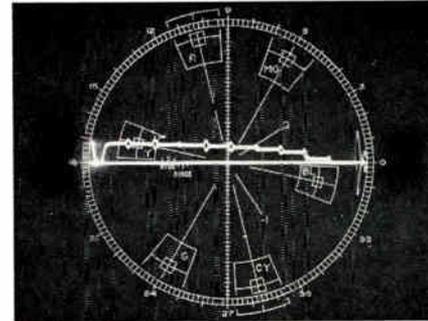


Fig. 4. Display of the modulated staircase with the oscillator locked to color burst, with subcarrier phasing adjusted nearly to null at the white level

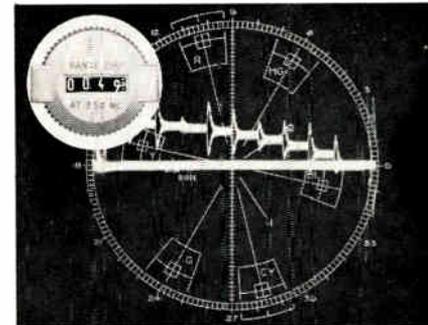


Fig. 6. Display of the modulated staircase (magnified) with the step at extreme right (white level) nulled to the center line.

**Tektronix, Inc.**



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

Circle 22 on Reader Service Card

# The Basics of Radio News

By David Dary

**In this excerpt from an upcoming book are the basic requirements of a well-organized news department**

HOW CAN *news* BE DEFINED? Actually, there is no easy definition of news; in fact every journalism textbook has its own definition. Therefore, rather than waste time trying to define it, let's attempt to establish what serves as *radio news* and what doesn't.

## Evaluating News

Radio news is a constantly changing property; therefore, it is a highly perishable commodity. A story that is timely and important on one newscast may not be news by the next one. The value of a news story changes with time—it can increase or decrease in an instant. For a radio newsman to place value on a story, he must consider the following:

1. Does the story affect the lives, welfare, or future of my listeners? If so, the story is news and should be included in the newscast.
2. Did the story occur within the station's coverage area? Usually, the closer geographically the listener is to an event, the more interest he will have. There are exceptions, of course, even to this rule; if the story affects listeners' lives, welfare, or future, it is news regardless of where the event occurs.
3. When did the story occur? Generally, the fresher the story the better. As a matter of fact, a radio newscast is not history until tomorrow, but yesterday's news *is* history, unless new developments have occurred or there are still repercussions as a result of yesterday's event.
4. Does the story concern a prominent person, place, or event? If so, the story probably will be of interest to many listeners.
5. Is the story of human interest? If the story concerns the lives and welfare of others, the well-being and progress of mankind, or the tragedy of others, then there should be listener interest.

After determining whether or not an event is news, the facts must be gathered and assembled in written form so that a story may be broadcast. To accomplish this task with speed and accuracy requires a competent staff capable of converting the raw facts into a news story which relates in easily understood terms.

## The News Director

The boss of the radio newsroom is the news director (or similar title) who is charged with

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Mr. Dary is Manager, NBC News, Washington, D.C., and Author of *Radio News Handbook*, TAB Books, Thurmont, Md.

the responsibility of seeing that his station meets its moral obligation of gathering, writing and presenting the news with truth, objectivity and honesty. He must maintain integrity in his newsroom while at the same time making certain the news is covered in a fast, consistent manner. Most news directors are former working newsmen; in fact, they may still gather, write, and broadcast news. Like any good newsman, the news director should be interested in people, in what they say, think, do, and feel.

The news director should report directly to the station manager, and should have access to him at any hour of the day or night. The news director must have the respect and trust of his manager, and the authority to exercise independent judgment based only on his evaluation of the news. But, by the same token, the news director must have the judgment, experience, integrity, and respect for his own responsibility to justify the authority he needs.

## Staff Newsmen

A staff newsman must be versatile. He must not only be a good reporter and writer, but he must be able to broadcast news in an acceptable manner. Like any newsman he must have integrity, and he must have the respect of those persons with whom he works. In smaller station newsrooms, the staff newsman does not specialize, since manpower typically is scarce. He usually covers anything and everything, and he not only gathers material for a story, but he writes the copy and broadcasts it.

## Newsroom Scheduling

Careful work scheduling is a must, particularly in a small radio newsroom, if manpower is to be fully utilized. A typical on-air news program assignment schedule for a small independent station with a 3-man staff is shown in Fig. 1. The station operates from 6 A.M. to 6 P.M. seven days a week. The newsman's duty schedule for the same station is shown in Fig. 2.

## Newsroom Facilities

Every newsroom must be large enough in size to accommodate its news staff and necessary equipment. It must be carefully arranged for efficiency, particularly in small stations where space often is at a premium. Many small-station newsrooms double as broadcast studios. While not ideal, the close proximity of the microphone means the newsman can work on newscast preparation almost until airtime. A combination newsroom/studio layout is shown in Fig. 3.

## Gathering News

Face-to-face contact often is the most productive way of getting news because it produces

an atmosphere in which a news source is more likely to discuss problems and issues. To develop this atmosphere, news directors assign newsmen to cover regular beats. While such beats turn up routine news stories, they also provide the imaginative newsmen with the opportunity to develop feature stories and to investigate rumors. At the same time, the beat enables a newsmen to build up news contacts who may call him when news occurs.

### The Telephone

The telephone is an important news-gathering tool. It can save time, and quite often a news source can be held longer on the phone than if he were interviewed in person. Regular telephone checks should be made to all major news sources. To be sure none is overlooked, telephone check lists containing the names and telephone numbers of regular news sources can be posted near each newsroom phone.

### Interviewing Technique

A newsmen cannot be a good reporter without being a good interviewer. Whether talking face-to-face with a news source or talking to him on the phone, the newsmen must know the art of interviewing. The interview technique is used many times each day, in gathering the smallest

bits of news, or when interviewing the governor. Naturally, interviews are not all related to major events, but little interviews often lead to big stories.

In conducting an interview, a newsmen must remember to put himself in the place of the listener. Ask questions for which the listener would want answers. Avoid talking about things on which you know he is not informed. If the newsmen knows nothing of the subject, he should do a little research in advance, but not be afraid to ask for some background information. Too often, newsmen—particularly beginners—do not call the individual who really can give them the facts. Often, that individual is an important figure and the newsmen is timid, perhaps fearing he will be brushed off. On the contrary, important people, as a rule, are easy to interview; they expect it, and most are ready and sometimes disappointed if not asked for an interview. However, if during an interview, a person takes a newsmen into his confidence, the trust should never be broken. If it is, another story may never again come from that individual.

### Public Service Monitors

Every radio newsroom should monitor local police, fire department, and highway patrol (or state police) radio calls. A large percentage of

### Radio News Writing

Unlike newspaper copy, which must **read** well, radio news copy must **listen** well. Facts must be stated so clearly that they leave no confusion in the mind of the listener. Radio news must please the ear, and it must be phrased so that the person reading it will not be caused to stumble by difficult wording.

Unlike newspaper writing style, radio news writing does not follow the newspaper 5w plus h formula which requires that all important elements be included in the first sentence or paragraph. In radio news copy, the facts should unfold in a logical sequence and in an uncluttered way. Dean Miller, former UPI national radio news manager, defines the ability to write for the ear as the "selection and placement of story detail on paper in such a way to create the listener illusion that the newsmen is back-fence talking the facts in an authoritative yet entertaining way." John Aspinwall, AP broadcast wire chief, says "Broadcast news writing requires special skills because it demands greater compression. It must be terse, but at the same time clear and precise. You cannot expect the listener to understand what you have written unless you yourself understand all the essential facts before starting to write." Here is an example of a news story written for the ear:

*"Senator Fullbright's Foreign Relations Committee had an open hearing on foreign policy today . . . and the witness was George Kennan. He's a former ambassador to Moscow and a scholar in the field of foreign affairs. He said the Communist block, as a single, unified force . . . as a monolith . . . has been smashed beyond repair . . . and by taking this into account, the United States may be lucky enough to avoid nuclear war. He further said the current changes in the Communist world give the United States its best chance since*

*1917 . . . since the Russian Revolution . . . to come to peaceful terms with the Communist world."*

The following example of good, clear, simple broadcast style was written by NBC's David Brinkley. To help his audience comprehend a story better, Brinkley often begins with a line or two of background information before getting to the main element. He says, "This gets away from the machine-gun or newspaper headline style of reporting." The following story begins in such a way:

*"About 15 years ago, it appeared that American student groups attending summer conferences, seminars and so on, around the world were outnumbered, outspent, and outshouted by student groups from Communist countries. And student meetings often turned into propaganda forums, to the detriment of the United States.*

*"At that point, the Central Intelligence Agency moved in and began giving money, secretly, to the American National Student Association . . . to finance its work abroad. All this remained secret until Ramparts magazine charged today the CIA had infiltrated and subverted the student organization. Today the CIA arrangement was confirmed by the student association itself . . . and by the State Department . . . which said it was approved at high levels of government, presumably including the White House . . . in years past."*

Most good writers like Brinkley are self-taught. They learn to write by studying examples of good writing; they read, they observe, and try to learn what techniques to use, and they learn to appreciate what a good writer sets out to do and how he does it. An excellent example is CBS News Correspondent Eric Sevareid's book "Not So Wild A Dream."

Newsman	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>News director</b>	On—9 A.M. .... Covers on-air news between 9 A.M. and 1 P.M. Then lunch. Back at 2 P.M. to assist in news gathering and administration Off—6 P.M. ....		Directs newsroom operation, news gathering. May do reporting outside newsroom. Prepares and broadcasts the noon news programs. Handles administration		Handles news gathering and some administration		Off
<b>Newsman A</b>	On—5:30 A.M. .... Covers on-air news programs between 6 A.M. and 9 A.M. Then moves outside to cover news beat at police and fire departments, city hall, county court house, chamber of commerce office, etc. Has early lunch, returns to newsroom by 12:45 P.M. to prepare early afternoon newscasts which he delivers. Off—2:30 P.M. ....						Off
<b>Newsman B</b>	Off	Off	On—9:00 A.M. .... Covers on-air news from 9 A.M. to noon, has lunch then returns to cover telephone beat. Covers remainder of news programs. Off 6 P.M. ....		On—9 A.M. .... Covers 9 A.M. to noon on-air news, lunches, covers P.M. news Off 6:30 P.M.	On 5:30 A.M. .... Covers all on-air news programs. Gathers news by phone. Off 6 P.M.	

Fig. 1. Typical news program assignment schedule for a 3-man news staff.

News Broadcast	Mon.	Tues.	Wed.	Thur.	Fri.	Sat.	Sun.
6:00 A.M. —Headlines	A	A	A	A	A	A	A
6:30 A.M. 5-min summary	A	A	A	A	A	A	B
7:00 A.M. 10-min summary	A	A	A	A	A	A	B
7:30 A.M. Headlines	A	A	A	A	A	A	B
8:00 A.M. 10-min summary	A	A	A	A	A	A	B
8:30 A.M. Headlines	A	A	A	A	A	A	B
9:00 A.M. 5-min summary	A	A	A	A	A	A	none*
9:30 A.M. Headlines	ND	ND	B	B	B	B	none*
10:00 A.M. 5-min summary	ND	ND	B	B	B	B	B
10:30 A.M. Headlines	ND	ND	B	B	B	B	B
11:00 A.M. 5-min summary	ND	ND	B	B	B	B	none*
11:30 A.M. Headlines	ND	ND	B	B	B	B	none*
12:00 N 15-min summary	ND	ND	ND	ND	ND	ND	B
12:30 P.M. Headlines	ND	ND	ND	ND	ND	ND	B
1:00 P.M. 5-min summary	ND	ND	ND	ND	ND	ND	B
1:30 P.M. Headlines	A	A	A	A	A	A	B
2:00 P.M. 5-min summary	A	A	A	A	A	A	B
2:30 P.M. Headlines	A	A	A	A	A	A	B
3:00 P.M. 5-min summary	ND	ND	B	B	B	B	B
3:30 P.M. Headlines	ND	ND	B	B	B	B	B
4:00 P.M. 5-min summary	ND	ND	B	B	B	B	B
4:30 P.M. Headlines	ND	ND	B	B	B	B	B
5:00 P.M. 5-min summary	ND	ND	B	B	B	B	B
5:30 P.M. Headlines	ND	ND	B	B	B	B	B
5:56 P.M. Headlines	ND	ND	B	B	B	B	B

Fig. 2. Staff duty schedule for the 3-man staff in Fig. 1.

Key: ND — News director  
 A — Newsman 1  
 B — Newsman 2

\*Because of religious programs no news programs are scheduled at these times.

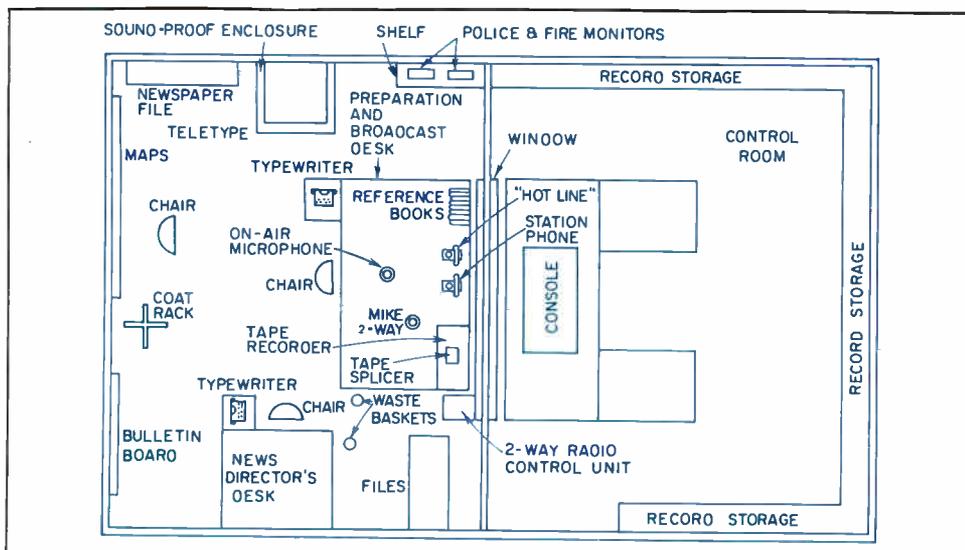


Fig. 3. News is not only gathered and prepared but is broadcast from this small-station news room.

routine news—and often major news stories—originate through these agencies. With specially-tuned receivers, newsmen can keep abreast of minute-by-minute police and fire department activity, and quickly follow-up on interesting radio calls.

On major news stories, police and fire monitors will alert a news staff, enabling a newsman to get to the scene of the story while it is still breaking, or a newsman can try to reach someone by telephone at the scene of the story. Cross-reference directories may be used to locate a telephone at or near the scene of a story. Additional details on such stories as fires or accidents often can be obtained in this manner.

#### Other News Sources

An up-to-date file of local newspapers should be maintained in every newsroom; also helpful is a subscription to the best paper in the state capitol. An alert radio newsman often can find a local or regional story which a newspaper has

underplayed or not fully developed. Taking the raw facts, he can develop a new angle or improve on the story.

Another news source, but usually of less importance, is the mail handout. Large stations are plagued daily with stacks of so-called news releases. Some contain legitimate news stories, but most come from public relations people seeking publicity for their clients. Normally, small stations receive few such handouts, but they do get notices of meetings and events from local churches, civic associations, lodges, etc., and more often than not the majority of these are legitimate news items. The only way to determine if a mail handout is legitimate news is to evaluate the contents and try to put it in perspective with other items of a similar nature.

#### Stringers

A stringer, sometimes called a correspondent, is a part-time newsman. He may be a school teacher, businessman, mechanic—anyone living outside the community where the station is located who provides news to the station. When an important story occurs in his area, he calls the station newsroom where a newsman may record a telephone report for use on the air, or just write the story and include it in a later newscast.

Stringers must be able to recognize news and be accurate in their reporting. Being a stringer is a 24-hr proposition, since news can happen at any hour, and the stringer must be willing to get the story whether it is 3 A.M. or 11 A.M. Many stations provide printed guidelines outlining the types of stories they want, details needed, and how to report the stories (see box).

To locate stringers, a news director must determine first where he needs them, then visit those locations and find someone who not only qualifies as a stringer but who is interested in the job. Most stringers receive remuneration only when a story they provide is used on the air. Some stations, like newspapers, pay by the word for stories used. The amount of remuneration varies from station to station. Some stations offer a flat rate of one dollar per story while others, using the per-word payment, offer anything from 2 to 10¢ a word or more. Many stations make payment to stringers within a couple of days. Others, to cut down on accounting, make payments once or twice a month.

#### Tipsters

Unlike the stringer, a tipster may not provide full details on a story or a telephone report. He simply alerts the newsroom when a story develops or appears to be developing, then a newsman assumes the responsibility of following up. Stations often recruit as tipsters police and fire department radio dispatchers, newspaper reporters, and others in knowledgeable positions. Their relationship with the radio newsroom must, for obvious reasons, be kept confidential. Tipsters are usually paid a weekly or monthly retaining fee.

Many stations also find that listeners are a fairly good news source, although not always reliable. Some stations give a prize or cash reward for listener tips on news stories which are used on the air. Listener tips must be double-checked and confirmed by station newsmen be-

#### Typical Guidelines for News Stringers

##### Desired stories may include:

- Accidents, if fatal, if one or more persons is critically injured, or if someone of prominence is involved
- Major burglaries or a series of burglaries which might be plaguing a town
- Major robberies
- Larcenies involving large amounts of money or valuables
- Murders
- Gambling raids
- Jail breaks
- Missing persons in cases where authorities are investigating
- Major fires involving heavy damage, persons being burned out of their homes, landmarks destroyed, deaths or related injuries. Follow-up stories are included if clothing and fund drives or rebuilding is involved
- Suicides, but only if prominent persons are involved
- City council or county board meetings if the story is of general interest over a wide area
- Law suits, if prominent persons are involved, or if large sums of money are mentioned
- Political news such as announcements of candidacy for major offices, changes in local political leadership, or squabbles within or between parties
- Resignations and retirements, if out of the ordinary
- Speeches, if something hitherto unknown is disclosed, or if it involves controversy
- Weather, if something unusual occurs, or if violent weather and flooding occurs
- Strikes of any type
- Farm news in rural areas, stories involving country-wide meetings, harvest information and farm or ranch accidents of a serious nature
- Feature stories with human interest

### Typical Newsmen Salaries

#### News Director

Small market: \$90 to 125  
 Medium market: \$125 to 160  
 Metropolitan market: \$180 up

#### Staff Newsmen

Small market: \$90 to 110  
 Medium market: \$110 to 135  
 Metropolitan market: \$150 up

fore airing. Broadcasting false reports can lead to law suits.

### The Local Angle

Local listener interest can be built around an otherwise uninteresting story, one that originates outside your area, if a local angle can be developed. This cannot, of course, be done on every story, but if a newsmen carefully examines statewide, regional, national, and international stories, he should be able to develop local angles quite often. For example, if a wire service story reports a serious flu outbreak in several eastern cities, the local newsmen could call local health department officials and find out if the local community is affected, or if it is likely to be affected.

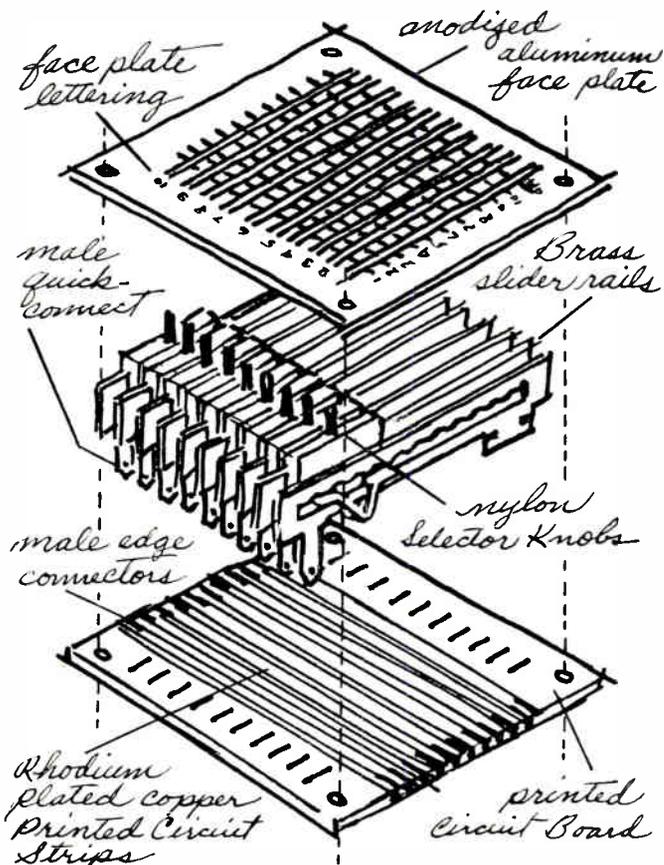
Stories which seemingly have only national significance can be oriented to the local or regional area. If the FBI issues a report which shows that crime has increased nationally by 15 percent, a local newsmen could try to get details on the local crime rate from the police chief.

### Future File

Every newsroom should maintain a future file. It centralizes all information on upcoming locally scheduled events, and in a matter of seconds anyone can determine what events are scheduled on any given day. The file can be started easily by obtaining forty-three 12- X 9-in. manila folders and a stand. Thirty-one are numbered consecutively, and the 12 remaining folders are labeled for each month of the year. When information (news release, etc.) on upcoming events is received, it is placed in the proper file. For example, if an event is scheduled for the 20th day of the current month, it goes in file number 20. If an affair is scheduled for next month or several months away, it is placed in the file for that month. At the start of each new month, the previous month's material is thrown out and material from the proper monthly folder is placed in the daily folders.

Many stations shy away from establishing a strong local news department simply because they do not fully understand what it can mean to both the station and the community. In many cases the reluctance to get involved with an active news department is based on apprehension rather than the economic aspects. While it is certainly true that a small-market station can't maintain an elaborate news department, it can and should have at least a rudimentary news staff of one or two full-time newsmen backed up by other staff members who double in brass. In every case where it is operated properly, a news department is an asset to the station from both a public image and an economic standpoint. ●

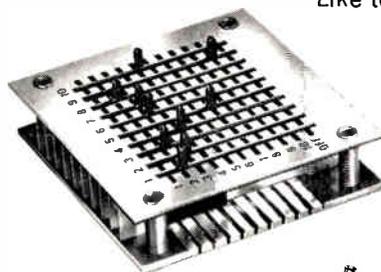
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Circle 23 on Reader Service Card

# Making A-m/Fm Proof-of-Performance

By Harry A. Etkin

**Here are the requirements for fm proof measurements. (See May's issue for a-m proof measurement procedures.)**

FM STATION LICENSEES are required to make periodic proof-of-performance measurements, just as is required of a-m stations. While the same basic techniques are used in both cases, fm performance requirements are more stringent; therefore, greater care must be exercised and a different philosophy must be adopted when making measurements. Fm broadcast station licenses are issued and renewed for the same periods as a-m licenses; the only exception is that additional proof measurements are required and must be filed with the application to cover the construction and installation of fm broadcast stations.

## Required Transmitter Performance

The construction, installation, operation and performance of the fm transmitting system shall be in accordance with Paragraph 73.317. Fm licensees shall make the following equipment performance measurements at least at yearly intervals, and one such set of measurements shall be made during the 4-month period preceding the date of filing application for license renewal.

1. Audio frequency response must be essentially flat from 50 to 15,000 Hz at approximately 25-, 50- and 100-percent modulation. Measurements shall be made on at least the following audio frequencies: 50, 100, 400, 1000, 5000, 10,000 and 15,000 Hz. Frequency response measurements normally should be made without de-emphasis; however, standard 75- $\mu$ s de-emphasis may be employed in the measuring equipment or system, provided the accuracy of the de-emphasis circuit is sufficient to insure that the measured response is within the prescribed limits.

2. On the fundamental frequencies of 50, 100, 400, 1000 and 5000 Hz, the combined audio

frequency harmonic distortion of the entire system must be measured at 25, 50 and 100-percent modulation. Audio frequency harmonics, at 100-percent modulation, normally shall include harmonics to 30,000 Hz on the 10,000- and 15,000-Hz measurements. The distortion measurements shall be made employing 75- $\mu$ s de-emphasis in the test equipment or system.

3. The output noise level (frequency modulation) in the band of 50 to 15000 Hz must be measured in dB below the audio frequency level representing a frequency swing of 75 kHz. The noise measurements shall be made employing 75- $\mu$ s de-emphasis in the measuring equipment or system.

4. The output noise level (amplitude modulation) in the band of 50 to 15,000 Hz must be measured in dB below the level representing 100-percent amplitude modulation. The noise measurements shall be made employing 75- $\mu$ s de-emphasis in the measuring equipment or system. All measurements shall be made with the equipment adjusted for normal program operation and shall include all circuits between the main studio microphone terminals and the antenna output, including telephone lines, pre-emphasis circuits, and any equalizers employed (except microphones), and without compression if a compression amplifier exists in the installation.

The above data, with a description of instruments and procedure signed by the engineer making the measurements, shall be kept on file at the transmitter and retained for a period of two years, and it shall be made available during the time upon request to any duly authorized representative of the FCC.

Additional requirements specify that some automatic means shall be provided in the trans-

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Fig. 1. **Form No. AFP-5** used to record fm frequency response data.

Fig. 2. **Form No. AFP-6** used to plot frequency response curves.

Fig. 3. **Form No. AFP-7** used to record fm audio frequency harmonic distortion data.

Fig. 4. **Form No. AFP-8** used to record fm and a-m output noise level data.

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**Mr. Etkin** is an Engineering Consultant based at Levittown, Pa.

# Measurements—Part II

25% MODULATION

CPS	50	100	400	1000	5000	10000	15000
(1)							
(2)							
(3)							

50% MODULATION

CPS	50	100	400	1000	5000	10000	15000
(1)							
(2)							
(3)							

100% MODULATION

CPS	50	100	400	1000	5000	10000	15000
(1)							
(2)							
(3)							

\_\_\_\_% MODULATION

CPS	50	100	400	1000	5000	10000	15000
(1)							
(2)							
(3)							

- RECORD THE ATTENUATOR READING FOR THE 1000 CPS REFERENCE SIGNAL IN EACH SPACE IN THIS ROW.
- RECORD THE ATTENUATOR READINGS FOR THE SPECIFIED FREQUENCIES IN THIS ROW.
- RECORD THE AUDIO FREQUENCY RESPONSE VARIATION IN THIS ROW WHICH IS OBTAINED BY SUBTRACTING ROW (2) FROM ROW (1). THESE FINAL FIGURES ARE TO BE USED IN PLOTTING THE GRAPHS.

Fig. 1.

OUTPUT NOISE LEVEL (Amplitude modulation)

VM READING AT 100% MODULATION	NOISE VOLTAGE	% NOISE	COLUMN 2 COLUMN 1	DB DOWN

OUTPUT NOISE LEVEL (Frequency modulation)

VM READING AT 100% MODULATION	NOISE VOLTAGE	% NOISE	COLUMN 2 COLUMN 1	DB DOWN

Fig. 4.

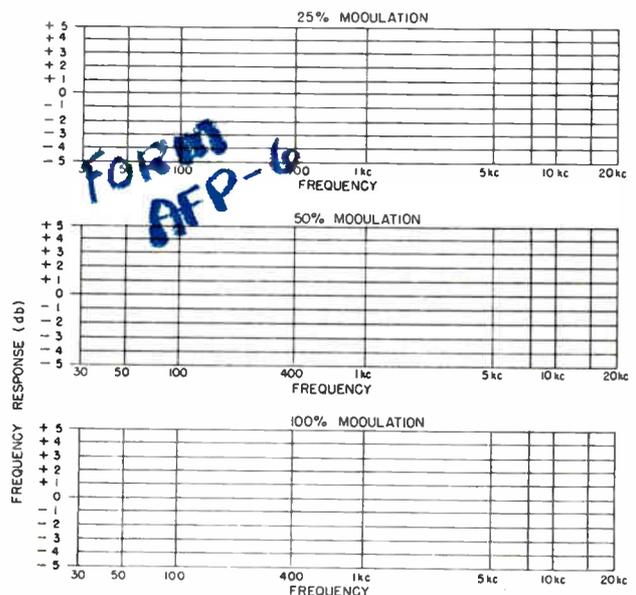


Fig. 2.

HARMONIC DISTORTION

CPS	50	100	400	1000	5000	10000	15+00
25							
50							
100							

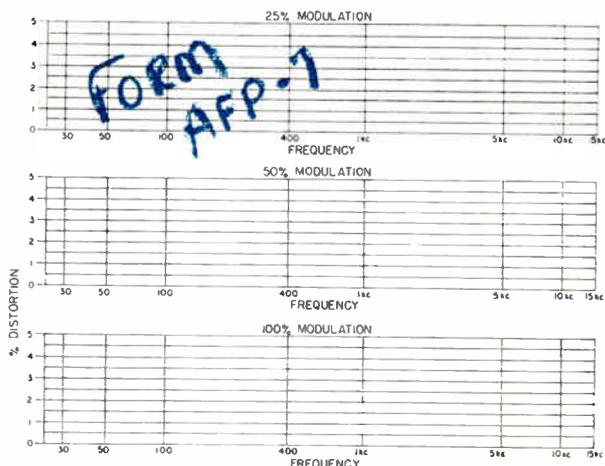


Fig. 3.

# DECIBELS ABOVE AND BELOW REFERENCE LEVEL 1 mW INTO 600 OHMS

Voltage applies to 600-ohm circuits only. Power applies to any impedance.

## USE OF TABLE

Table is tabulated in one-dB steps from 0 dBm to  $\pm 20$  dBm; thereafter in five-dB steps to  $\pm 80$  dBm. However, the table may be used in one-dB steps to  $\pm 80$  dBm by noting that, except for decimal locations, the power levels repeat themselves every  $\pm 10$  dB and the voltage levels repeat every  $\pm 20$  dB.

**Example 1.** What is the voltage produced by a level of  $-56$  dBm on 600 ohms? Subtract 40 from 56, giving 16. Enter table at 16 dBm, read volts column on left as 0.1228 V. Now enter table at 55 and 60 dBm;  $-56$  dBm is between these two levels, so table shows correct answer as 0.001228 V.

**Example 2.** What is the voltage produced by a level of  $-68$  dBm on 600 ohms? Subtract 60 from 68, giving 8. Enter table at 8 dBm, read V column on left as 0.3084 V. Now enter table at 65 and 70 dBm;  $-68$  dBm is between these two levels, so the table shows correct answer as 0.0003084 V.

**Example 3.** What is the voltage produced by a level of  $+33$  dBm on 600 ohms? Subtract 20 from 33, giving 13. Enter the table at 13 dBm, read volts column at right as 3.460 V. Now enter table at 30 and 35 dBm;  $+33$  dBm is between these two levels, so the table shows the correct answer as 34.6 V.

Volts	dB down	mW	Level dBm	Volts	dB up	mW
<b>0.774 6</b>		<b>1.000</b>	<b>-0+</b>	<b>0.774 6</b>		<b>1.000</b>
0.690 5		0.794 3	1	0.869 1		1.259
0.616 7		0.631 0	2	0.975 2		1.585
0.548 4		0.501 2	3	1.094		1.995
0.488 7		0.398 1	4	1.228		2.512
0.435 6		0.316 2	5	1.377		3.162
0.388 2		0.251 2	6	1.546		3.981
0.346 0		0.199 5	7	1.734		5.012
0.308 4		0.158 5	8	1.946		6.310
0.274 8		0.125 9	9	2.183		7.943
0.244 9		<b>0.100 0</b>	<b>10</b>	<b>2.449</b>		<b>10.000</b>
0.218 3		0.079 43	11	2.748		12.59
0.194 6		0.063 10	12	3.084		15.85
0.173 4		0.050 12	13	3.460		19.95
0.154 6		0.039 81	14	3.882		25.12
0.137 7		0.031 62	15	4.356		31.62
0.122 8		0.025 12	16	4.887		39.81
0.109 4		0.019 95	17	5.484		50.12
0.097 52		0.015 85	18	6.153		63.10
0.086 91		0.012 59	19	6.905		79.43
<b>0.077 46</b>		<b>0.010 00</b>	<b>20</b>	<b>7.746</b>		<b>100.00</b>
0.043 56		0.003 16	25	13.77		316.2
0.024 49		<b>0.001 00</b>	<b>30</b>	<b>24.49</b>		<b>1.000 W</b>
0.013 77		0.000 316	35	43.56		3.162 W
<b>0.007 746</b>		<b>0.000 100</b>	<b>40</b>	<b>77.46</b>		<b>10.00 W</b>
0.004 356		$3.16 \times 10^{-6}$	45	137.7		31.62 W
0.002 449		$1.00 \times 10^{-5}$	50	244.9		<b>100 W</b>
0.001 377		$3.16 \times 10^{-6}$	55	435.6		316.2 W
<b>0.000 774 6</b>		$1.00 \times 10^{-6}$	<b>60</b>	<b>774.6</b>		<b>1 000 W</b>
0.000 435 6		$3.16 \times 10^{-7}$	65	1 377		3 162 W
0.000 244 9		$1.00 \times 10^{-7}$	70	2 449		<b>10 000 W</b>
0.000 137 7		$3.16 \times 10^{-8}$	75	4 356		31 620 W
<b>0.111 077 46</b>		$1.00 \times 10^{-8}$	<b>-80+</b>	<b>7 746</b>		<b>100 000 W</b>

## ATTENUATOR NETWORKS

Impedance	600 Ohms		600 Ohms		600 Ohms		600 Ohms	
	$R_1$ Ohms	$R_2$ Ohms						
0	0	Inf.	0	Inf.	0	Inf.	0	Inf.
0.1	3.58	50204	1.79	50204	7.20	100500	7.2	50000
0.2	6.82	26280	3.41	26280	13.70	57380	13.8	26086
0.3	10.32	17460	5.16	17460	20.55	34900	21.0	17143
0.4	13.79	13068	6.90	13068	27.50	26100	28.2	12766
0.5	17.20	10464	8.60	10464	34.40	20920	35.4	10169
0.6	20.9	8640	10.45	8640	41.7	17230	43.2	8333
0.7	24.2	7428	12.1	7428	48.5	14880	50.4	7143
0.8	27.5	6540	13.75	6540	55.05	13100	57.6	6250
0.9	31.02	5787	15.51	5787	62.3	11600	65.4	5504
1.0	34.5	5208	17.25	5208	68.6	10440	73.2	4918
1.5	51.8	3452	25.9	3452	104.3	6950	113.4	3174
2.0	68.8	2582	34.4	2582	139.4	5232	155.4	2316
2.5	85.9	2053	42.9	2053	175.4	4195	200.4	1796
3.0	102.7	1703	51.3	1703	212.5	3505	247.8	1452
3.5	119.2	1448	59.6	1448	258.0	3021	297.6	1209
4.0	135.8	1249	67.9	1249	287.5	2651	351.0	1025
4.5	152.2	1109	76.1	1109	324.6	2365	407.4	883.7
5.0	168.1	987.6	84.1	987.6	364.5	2141	466.8	771.2
5.5	184.0	886.8	92.0	886.8	405.9	1956	530.4	678.7
6.0	199.3	803.4	99.7	803.4	447.5	1807	597.0	603.0
6.5	214.6	730.8	107.3	730.8	492.6	1679	667.8	539.8
7.0	229.7	685.2	114.8	685.2	537.0	1569	743.4	484.3
7.5	244.2	615.6	122.1	615.6	584.7	1475	822.6	437.6
8.0	258.4	567.6	129.2	567.6	634.2	1393	907.2	396.8
8.5	272.3	525.0	136.1	525.0	685.5	1322	996.6	361.2
9.0	285.8	487.2	142.9	487.2	738.9	1260	1091	329.9
9.5	289.9	453.0	149.5	453.0	794.4	1204	1191	302.2
10.0	312.0	421.6	156.0	421.6	854.1	1154	1297	277.5
11.0	336.1	367.4	168.1	367.4	979.8	1071	1529	235.5
12.0	359.1	321.7	179.5	321.7	1119	1002	1788	201.3
13.0	380.5	282.8	190.3	282.8	1273	946.1	2080	173.1
14.0	400.4	249.4	200.2	249.4	1443	899.1	2407	149.6
15.0	418.8	220.4	209.4	220.4	1632	859.6	2773	129.8
16.0	435.8	195.1	217.9	195.1	1847	826.0	3186	113.0
17.0	451.5	172.9	225.7	172.9	2083	797.3	3648	98.68
18.0	465.8	152.5	232.9	152.5	2344	772.8	4166	86.4
19.0	479.0	136.4	239.5	136.4	2670	751.7	4748	75.8
20.0	490.4	121.2	245.2	121.2	2970	733.3	5400	66.66
22.0	511.7	95.9	255.9	95.9	3753	703.6	6954	51.72
24.0	528.8	76.0	264.4	76.0	4737	680.8	8910	40.4
26.0	542.7	60.3	271.4	60.3	5985	663.4	11370	31.66
28.0	554.1	47.8	277.0	47.8	7550	649.7	14472	24.87
30.0	563.0	37.99	281.6	37.99	9500	639.2	18372	19.58
32.0	570.6	30.16	285.3	30.16	11930	630.9	23286	15.46
34.0	576.5	23.95	288.3	23.95	15000	624.4	29472	12.21
36.0	581.1	18.98	290.6	18.98	18960	619.3	37260	9.66
38.0	585.1	15.11	292.5	15.11	23820	615.3	47058	7.65
40.0	588.1	12.00	294.1	12.00	30000	612.1	59400	6.06

mitter to maintain the assigned center frequency with the allowable tolerance ( $\pm 2000$  Hz). The transmitter shall be equipped with suitable indicating instruments to determine operating power, as well as other necessary instruments to facilitate proper adjustment, operation and maintenance of the equipment. Adequate provision shall be made for varying the transmitter output power to compensate for excessive variations in line voltage or for other factors affecting output power. The ratings and specifications of all component parts must be adequate to avoid overheating at the rated maximum power output.

Means should be provided to operate approved frequency and modulation monitors continuously, and if a limiting or compression amplifier is employed, precaution should be maintained in its connection in the circuit due to the use of pre-emphasis in the transmitting system. Any emission appearing on a frequency removed from the carrier frequency by between 120 and 240 kHz inclusive shall be attenuated at least 25 dB below the level of the unmodulated carrier. Compliance with this specification will be deemed to show that the occupied bandwidth is 240 kHz or less. On a frequency removed from the carrier by more than 240 kHz, and up to and including 600 kHz, any emission shall be attenuated at least 35 dB below the level of the unmodulated carrier. Any emission appearing on a frequency removed from the carrier by more than 600 kHz shall be attenuated at least  $43 + 10 \log_{10} (\text{power in W})$  dB below the level of the unmodulated carrier, or 80 dB, whichever is the lesser attenuation.

#### **Making Proof Measurements**

Since basic techniques are essentially the same, the typical measuring system shown in Fig. 1, Part I of this series is used for fm tests. Also, see the block diagram in Fig. 2, Part I (May 1967 issue).

#### **Frequency Response Runs:**

1. Use the same techniques and procedures outlined in Part I for a-m stations. Tabulate the results using audio frequencies of 50, 100, 400, 1000, 5000,

### **FCC Rules Governing Fm Proof-of-Performance Measurements (Paragraph 73.317)**

- The transmitter must operate satisfactorily within its designed power range with a frequency swing of 75 kHz, defined as 100 percent modulation.
- Studio audio system and transmitter frequency response must be reasonably flat from 50 to 15,000 Hz. 75- $\mu$ s de-emphasis must be used. Deviation of the system response from the standard pre-emphasis curve must lie between the limits shown in Fig. 5. Upper limits must be uniform (no deviation) from 50 to 15,000 Hz; the lower limit must be uniform from 100 to 7500 Hz, and 3 dB below the upper limit. From 100 to 50 Hz, the lower limit must fall from the 3 dB limit at a uniform rate of 1 dB per octave (4 dB at 50 Hz); from 75,500 to 15,000 the lower limit must fall from the 3 dB limit at a uniform rate of 2 dB per octave (5 dB at 15,000 Hz).
- Combined harmonics shall not exceed 3.5 percent from 50 to 100 Hz, 2.5 percent from 100 to 7500 Hz, and 3 percent from 7500 to 15,000 Hz at 25, 50, and 100 percent modulation. Measurements must include harmonics up to 30 kHz. 75- $\mu$ s de-emphasis is used in the measuring equipment and 75- $\mu$ s pre-emphasis is used in transmitting equipment. If a compression amplifier is used, its action must be eliminated.
- System output noise level (f-m) must be 60 dB below 100 percent modulation (with 400-Hz tone) from 50 to 15,000 Hz (frequency swing 75 kHz). 75- $\mu$ s de-emphasis is used in the measuring equipment. Instrument ballistics must be similar to a standard vu meter.
- System output noise level (a-m) from 50 to 15,000 Hz must be 50 dB below the level representing 100 percent amplitude modulation. 75- $\mu$ s de-emphasis must be used. Instrument ballistics must be similar to a standard vu meter.

10,000 and 15,000 Hz at modulation percentages of 25, 50 and 100. The frequency response measurements should be made without de-emphasis, but standard 75- $\mu$ s de-emphasis may be used in the measuring equipment.

2. Record the data in the proper rows on Form No. AFP-5, shown in Fig. 1.

3. Plot data curve on Form No. AFP-6. (See Fig. 2.)

4. The figures from Form No. AFP-6 are then plotted on the standard 75- $\mu$ s pre-emphasis curve. Notice limits for this curve, indicated in Paragraph A2 of fm Electrical Performance Standards. (See Fig. 5.)

#### Audio Frequency Harmonic Distortion:

1. Audio frequency harmonic distortion is measured in the same manner as described for a-m, except distortion must be measured on the fundamental frequencies of 50, 100, 400, 1000 and 5000 Hz at 25-, 50- and 100-percent modulation. In addition, at 100-percent modulation, distortion on frequencies of 10,000 and 15,000 Hz must also be measured. The measurements must include harmonics to 30,000 Hz. Standard 75- $\mu$ s de-emphasis may be used in the measuring equipment.

2. Record the data in the proper rows on Form No. AFP-7 shown in Fig. 3.

3. Plot curves on Form No. AFP-7.

4. The maximum allowable distortion is as follows: 3.5 percent from 50-100 Hz, 2.5 percent from 100-7500 Hz and 3.0 percent from 7500-15,000 Hz. If distortion exceeds any of these limits the system is operating in violation of FCC standards; therefore, corrective action should be taken and the measurements should be repeated.

#### Output Noise Level (fm):

1. The output noise level on the frequency-modulated carrier is measured the same way as described for a-m. This includes any noise in the entire system that would result in frequency modulation of the carrier. Fm noise is measured in db below the level corresponding to 100-percent modulation, which is a frequency swing of  $\pm 75$  kHz. The measurement must be made using a 75- $\mu$ s de-emphasis and the indicating instrument must have ballistic characteristics similar to those of a standard vu meter.

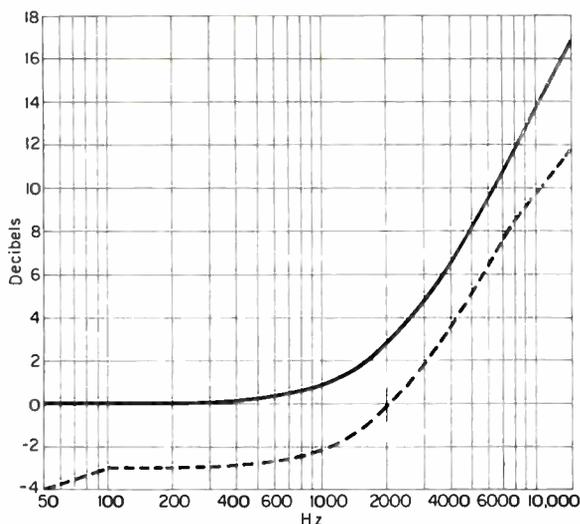


Fig. 5. Standard pre-emphasis curves.

2. Record the data in proper spaces on Form No. AFP-8. (See Fig. 4.)

3. If the output noise level is less than 60 dB below the audio level representing a frequency swing of  $\pm 75$  kHz the system is in violation of the FCC standards. Corrective action should be taken and the measurements repeated.

#### Output Noise Level (A-m):

1. Connect a 600-ohm wirewound resistor across the microphone preamplifier input terminals.

2. In measuring the noise level which is amplitude modulating the carrier, determine the audio voltage corresponding to 100-percent modulation. This value is equal to the dc voltage across the meter determining the power level in the monitor.

3. Determine the audio voltage at the identical point for the same carrier level by using the noise and distortion meter with standard 75- $\mu$ s de-emphasis and vu meter.

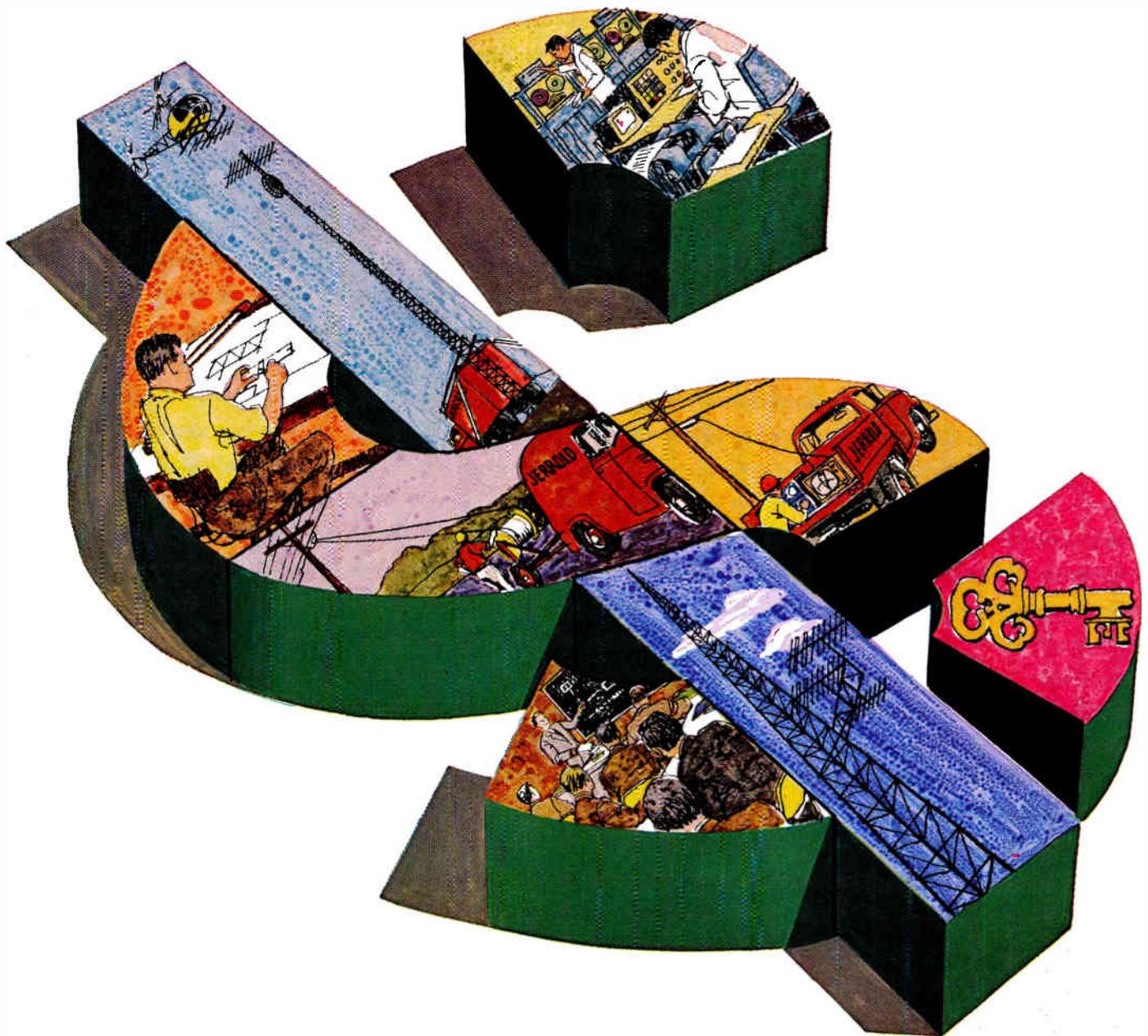
4. To calculate the percentage of amplitude modulation, divide the audio voltage by the carrier level voltage, then multiply by 100. Convert this figure into dB down from 100-percent modulation and record this data in the proper spaces on Form. No. AFP-8.

5. If the output noise level exceeds 50 dB below the audio level representing 100-percent modulation, the system violates FCC standards. Corrective action should be taken and the measurements repeated.

#### Fm Stereo and SCA Applications

As proof-of-performance measurements for fm stereo and SCA applications are beyond the scope of this article, only the FCC operation standards will be identified Paragraph 73.322 of the FCC Rules and Regulations is the significant paragraph related to stereophonic operations. Paragraph 73.319 of the FCC Rules and Regulations lists requirements of subsidiary communication authority operations. After proper adjustment of the subcarrier and the SCA and the stereophonic subcarrier in accordance with Section 73.319 and 73.322 of the FCC Rules and Regulations, proof procedures are substantially the same as for main carrier fm tests.

Since 1950 it has been required that all standard a-m as well as fm broadcast stations make a complete proof-of-performance check at least once annually, preferably during the last four months of each calendar year or coincidental with the time that any license renewal is requested. The intent of the FCC requirement is to assure that the equipment be maintained in top condition to live up to the intention; past experience proves that complete measurements must be made more than once a year, the expense of which dictates the economic purchase of quality performance measuring equipment. The FCC does not specifically approve or disapprove any particular test and measuring equipment as long as there is every evidence that the equipment being used is satisfactory and is functioning properly. If the personnel making the measurements become thoroughly acquainted with the functions and operation of the instruments, proof-of-performance measurements will be very simple. ●



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# Where Are CATV Operators Headed?

**Table 1. Miles of Plant Operated by Cable Operators**

Miles of Plant	Cable Operators (No.) (%)
1 - 5	3 4.2
6 - 10	4 5.6
11 - 10	11 15.3
21 - 30	14 19.5
31 - 40	8 11.0
41 - 50	7 9.7
51 - 75	10 13.9
76 - 100	7 9.7
101 - 125	4 5.6
126 - 200	1 1.3
201 - 600	3 4.2
Answered By 72 100.0	

**Table 3. Subscribers Served by Cable Operators**

Subscribers	Cable Operators
0 - 50	2
51 - 100	2
101 - 200	5
201 - 300	1
301 - 400	3
401 - 500	2
501 - 600	4
601 - 700	3
701 - 800	4
801 - 900	6
901 - 1000	6
1001 - 1500	7
1501 - 2000	3
2001 - 3000	6
3001 - 4000	8
4001 - 5000	7
5001, or over	5
Answered By 74	

**Table 2. Additional Miles Of Plant Proposed by Cable Operators**

Additional Miles of Plant Proposed	Cable Operators (No.) (%)
0	17 26.6
1 - 5	20 31.3
6 - 10	5 7.8
11 - 20	6 9.3
21 - 30	5 7.8
31 - 40	—
41 - 50	2 3.1
51 - 75	1 1.6
76 - 100	5 7.8
101 - 125	—
126 - 200	1 1.6
201 - 600	2 3.1
Answered By 64 100.0	

**Table 4. Potential Subscribers of Cable Operators**

Potential Subscribers	Cable Operations
51 - 100	4
101 - 200	1
201 - 300	—
301 - 400	2
401 - 500	2
501 - 600	5
601 - 700	2
701 - 800	2
801 - 900	—
901 - 1000	4
1001 - 1500	10
1501 - 2000	6
2001 - 3000	9
3001 - 4000	5
4001 - 5000	6
5001 - 6000	2
6001 - 7000	—
7001 - 8000	5
8001 - 9000	2
9001 - 10,000	2
10,001 - 25,000	5
25,001, or over	3
Answered By 77	

By no means a monolithic industry, plans and problems of various operators vary widely. But as a whole, plants will expand 30 percent in the next 12 months. Over half will be doing some form of local origination.

HAD THE QUESTION BEEN, "Where is CATV headed?," any answer would be highly speculative. But cable operators are headed in certain unmistakable directions. Just about every operator will spend sizable sums in the next 12 months for plant expansion or modernization efforts. While the spread runs from \$200 to \$551,000, the average is \$56,000 per system. In terms of plant miles to be added, the average increase is 30 percent. And if operators carry through with their resolve, over half — 56 percent — will have some form of local origination equipment. Currently, less than 25 percent do some sort of local origination.

These patterns and trends are evident from the result of survey of cable operators made by *BM/E* in mid-March 1967. The survey includes the opinion and intentions of some eighty-one operators — which represents a 20-percent return on four-hundred-and-six questionnaires mailed on a ran-

dom basis to CATV facilities throughout the country. The questionnaire asked what operators' anticipated purchases were going to be in the next 12 months and represent the only public market survey available.

#### Cable Operators Heterogenous Group

With the top 100 markets so much in the news as a result of the FCC denials for carriage in these markets, we tend to forget that the bulk of the systems serve small towns and communities. To analyze patterns and trends, three classifications of systems are helpful. The *smaller one-third* serve 749 subscribers or less; the average being 360; the *middle one-third* serve from 750 to 2499 subscribers with the average 1170; the *larger one-third* serve from 2500 to nearly 50,000 subscribers, with the average being 5800. Less than five percent of the plants serve 10,000 or over. The number of operators in each of these three categories are about equal. We do not include in this breakdown large group owners who exceed this total number of subscribers if their several plants are combined.

Plants in the smaller one-third category more frequently than others do not plan any plant expansion. Quite a few currently have nearly saturated their potential. Nevertheless, the median expenditure per plant for the group is about \$8,000 with the average being \$14,000 and the top \$62,000. This expenditure may be either for adding customers or for modernization. Most plants in the middle one-third category expect some growth although potential is limited since most plants already have about half of the potential subscribers in their area. The median expenditure will be about \$12,000 per plant with the average being \$21,700; and the top \$49,600.

Those in the larger one-third group see the greatest expansions (36 percent) since some are in suburban areas. Expenditures will run as high as \$551,000 for one plant, with the median being \$23,000 and the average \$82,000. One operator included in this analysis

is running four systems in the same geographical area — his total expenditure is expected to run close to \$300,000. (Tables 1-4 indicate miles of plant and subscribers, current and proposed.)

Not included in the above statistics are two operators who are in a heavy expansion phase moving out of smaller one-third group. These operators will spend \$295,000 and \$300,000 respectively.

Ten percent of those responding to the questionnaire (and not included in the above statistics) are companies having franchises, but not yet operating. Half are under construction. These fairly large systems, ranging from 50 to 200 miles of plant. The proposed 200-mile plant expects to spend \$2 million, but is awaiting an FCC waiver. One expects to put in a microwave system costing \$250,000. Several operators indicated substantial sums would be spent on microwave relays. Altogether 7 percent of respondents planned to add microwave facilities. (Some 17.3 percent who do not now do so, expect to get microwave signals from others.)

#### Local Origination Plans Great

"Do you now originate your own local program?," *BM/E* asked. Over twenty-four percent (24.4) said "yes." Of the three-fourths who do not now provide local origination, almost half (42.5 percent) said they plan to add local origination equipment in the next twelve months. If all of these operators go through with their plans, it would mean an *additional* 32 percent originating, bringing the total of those doing origination to over 56 percent, Table 5.

Another question asked about all forms of diversification. This question elicited that 24.7 percent plan adding background music and 28.4 percent said they would be adding closed circuit TV. Of those now doing local origination, 9.9 percent are considering establishing uhf stations.

As something of a third check on local origination intentions (in addition to the direct question of plans to do local origination and the question regarding diversifi-

**Table 5. Local Program Origination by Cable Operators**

Originate Local Programs	Cable Opreators (No.)	(%)
Now (and Hrs) .....	19	24.4
1 - 10 Hours .....	1	
11 - 20 Hours .....	5	
21 - 30 Hours .....	2	
31 - 40 Hours .....	2	
41 - 50 Hours .....	5	
Varies .....	4	
Plan to Originate .....	25	32
Do Not Plan to Originate .....	24	43.6
<b>Answered by</b> .....	<b>78</b>	<b>100.00</b>

\*Includes Weather

**Table 6. Anticipated Product Purchases in 1967**

Products to be Purchased (71 respondents)	Total (No)	(%)
Amplifiers .....	44	62
Antenna System(s) .....	13	18.2
Background Music Equipment .....	10	14
Cable .....	46	65
Cameras & Accessories .....	17	24
Construction Equipment .....	25	35
Film Projection Equipment .....	2	2.8
Head-end Equipment .....	21	30
Microwave Equipment .....	5	7
Replacement Parts .....	36	51
Tape Equipment .....	6	8.5
Test & Maintenance Equipment .....	24	34
Towers .....	10	14

Note: Forty-eight operators indicated dollar figures for anticipated expenditures. Since some gave only totals, rather than a breakdown by product, it was impossible to tabulate product category expenditures. The 48 respondents expected to spend a total of \$2,695,880, or an average of about \$56,000 per system. The range was from \$200 for a small operator serving 155 customers to \$551,000 for an operator serving 38,000 customers and who expected to add 250 additional miles of cable to his plant. Amplifiers and cable accounted for the largest expenditures. Three companies, in addition to the 48, intended to add microwave facilities totaling \$150,000.

**Table 7. Facilities of Cable Operators**

Source of Signal	Cable Operators
Off-the-Air .....	67
Microwave Relay .....	21
Local Origination .....	20
<b>Type of Distribution</b>	
Own Poles .....	21
Lease Telco Poles .....	41
Lease Power Utility Poles ..	51
Underground System .....	14
Lease-back Telco .....	8

Answered By 81\*

\*Adds to more than base because of multiple mentions

**Table 8. Channels Relayed by Cable Operators**

Channels Relayed	Cable Operators
0 .....	9*
1 .....	2
2 .....	4
3 .....	5
4 .....	9
5 .....	14
6 .....	1
7 .....	3
8 .....	9
9 .....	7
10 .....	4
11 .....	6
12 .....	6

Answered By 79

\*Plants under construction

**Table 9. Monthly Subscription Rates of Cable Operators**

Monthly Subscription Rate	Cable Operators
\$3.00-3.99 .....	19
4.00-4.99 .....	26
5.00-5.99 .....	23
6.00-6.99 .....	6
7.00, or over .....	3

Answered By 77

**Table 10. Installation Charge of Cable Operators**

Installation Charge	Cable Operators
No Charge .....	13
\$ 1.00- 5.99 .....	6
6.00- 10.99 .....	15
11.00- 15.99 .....	12
16.00- 20.99 .....	9
21.00- 25.99 .....	8
26.00- 30.99 .....	1
31.00- 40.99 .....	1
41.00- 50.99 .....	2
51.00- 60.99 .....	—
61.00- 70.99 .....	—
71.00- 80.99 .....	1
81.00- 90.99 .....	—
91.00-100.99 .....	1
101.00-125.99 .....	4
126.00, or over .....	1

Answered By 74

cation plans), 24 percent checked or wrote in amounts they intended to spend on cameras under a question on anticipated expenditures. (See Table 6.) Thus, it appears safe to conclude that from 24 to 32 percent of CATV operators will add local origination facilities. However, only 8.5 percent checked or filled in amounts expected to be spent on "tape equipment." This suggests that VTRs won't be bought to the same degree that cameras are and that local origination may only be time and weather. Much of the programming done now is fairly light as Table 5 shows.

Although we have not broken the data received on dollars to be spent down to specific products, cable, followed by amplifiers, led, in anticipated expenditures. Percentages of operators who will buy various products are given in Table 6.

Tables on Facilities, Channels Relayed, Monthly Subscription Rate and Installation Charges show

pertinent categorical statistics.

#### Problems Vary

Chief problems facing cable operators vary depending on whether the respondent was operating management or technical management, large plant or small, top 100 market or small.

One president of a cable operation (middle-sized plant) stated his problems to be in this order:

1. FCC rulings for top 100 markets
2. Customer relations
3. Equipment maintenance
4. Personnel coordination
5. Franchise problems
6. Telephone company problems

Two major factors concerning management are increasing sales and replacing equipment. Next in order of mention were maintenance concerns, telco relations (includes pole rental,) overseeing program origination and general management. Franchise problems were next.

Technical personnel were concerned about equally with equipment replacement and equipment upkeep.

The sales problem was put succinctly by one manager who said the problem was "to develop a sustained sales program that is not like a circus."

*BM/E*, as a publication, scored tops in reaching CATV operators and in readership achieved. Respondents were asked to indicate how often they read seven publications in the field: read every issue; read some issues; don't read. Every issue of *BM/E* was read by 80.3 percent of the respondents. The next nearest magazine achieved a "read every issue" score of 69.1 percent. Only 1.2 percent said they did not read *BM/E*. Other "don't read" scores for other publications varied from 13.6 percent to 96 percent. This gave *BM/E* a 99.8-percent read score. Nearest second publication got a 86.4 rating for "read every issue" or "read some issues." ●

# An Announcer's Control/Talk Table

By L. Spencer, Technical Director, CKAC Montreal, Que.

## A "talk" studio unit with built-in production equipment

TO SIMPLIFY AND IMPROVE operation of our "talk" studio, we designed and built a specially shaped announcer's control table. With the self-contained unit, an announcer may conduct a discussion with up to 3 program participants, as well as reproduce material recorded on tape or transcription. The inverted cloverleaf design (see photograph and Fig. 1) places each participant equidistant from an omnidirectional microphone, thereby eliminating the necessity for the several microphones normally required when a rectangular-shaped table is used. The curved sides permit the use of a single microphone located in the center of the table, yet provide adequate surface area for a participant's reference material.

The reproduction equipment includes two turntables, located on either side of the announcer, and two cartridge tape machines. Control of turntable, tape machine and microphone audio is provided by slider-type potentiometers mounted on two separate panels sloped 35° from the table surface.

See Figs. 2 and 3. The panel on the announcer's left controls the left turntable, the left cartridge tape machine and the microphone. Controls for the right-hand turntable and tape machine are located on the panel on the announcer's right, along with an input control for another microphone or external program source. Illuminated pushbuttons above each potentiometer indicate which unit is in operation.

As shown in Fig. 3, the cartridge tape machines are set down in the table with just the operating face exposed above the surface. The sloped front, 30° from the vertical, is within easy reach of the announcer. A sliding-track mounting allows each machine to be easily removed for servicing.

The table top is made of 1½-in. pine stock and covered with simulated oak Arborite. Overall finish dimensions are 5 ft 11 in. × 6 ft 8 in. The section marked "A" in Fig. 1 houses amplifiers and power supplies. Air vents are provided for cooling purposes, even though solid-state equipment is used throughout. A 2-ft radius is used to layout the curved sections; the sections marked "A" are rectangular in shape, not a continua-

tion of the adjoining arc. Fig. 4 is a detailed sketch of the equipment housing sections. The potentiometer panels are made of black bakelite and covered with oak Arborite. They are attached to the table top with screws and become an integral part of the table.

Fig. 5 shows an equipment block diagram. A means is provided to disconnect the monitor loudspeaker when the microphone is open. Not shown, however, are the ON AIR sign relays or the signal light in the master control room which indicates that the unit is operative. Two standard turntable cabinets are placed on each side of the announcer's position and are connected to the potentiometers through individual preamplifiers. Power is connected to a floor feed and distributed in Armorflex, secured to the underside of the table, to each component. A wall switch with ruby warning light shows when the table is energized.

The unit shown in the photograph has since been modified. When this photograph was made the slider potentiometers had not been installed. The circular potentiometers could be used at an overall reduced cost.

One microphone serves easily at the inverted cloverleaf table. Announcer can handle discussion as well as equipment. The circular potentiometers have been replaced with slider types.



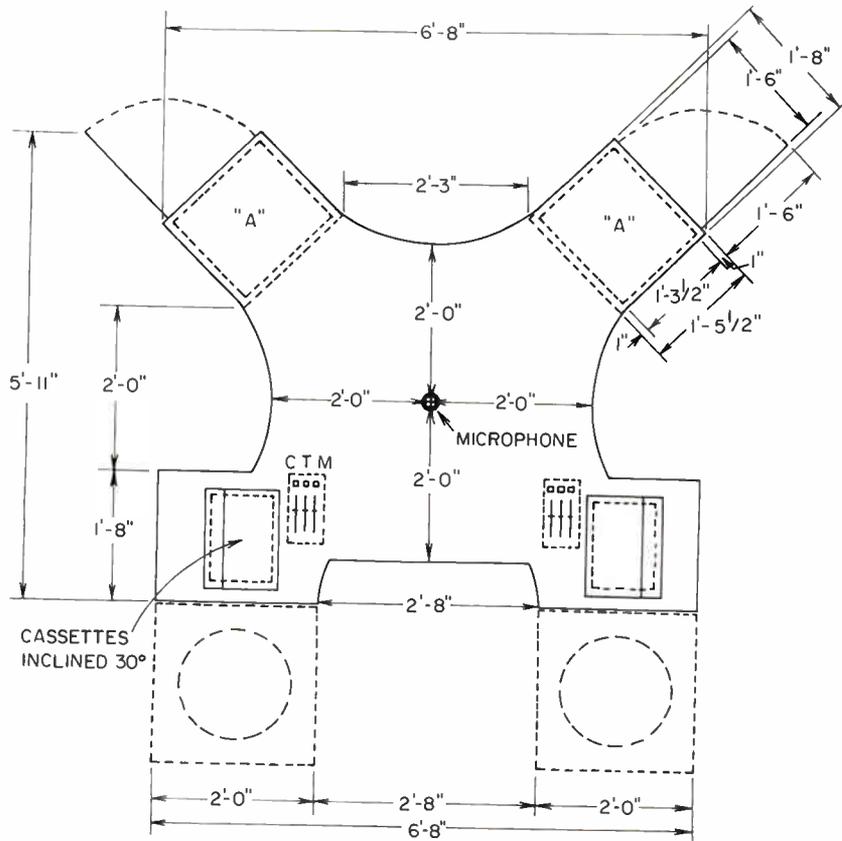


Fig. 1. Top view of the table, showing equipment locations and dimensions. The table rests on the pedestals in which the cartridge-tape machines are located and on the equipment housings.

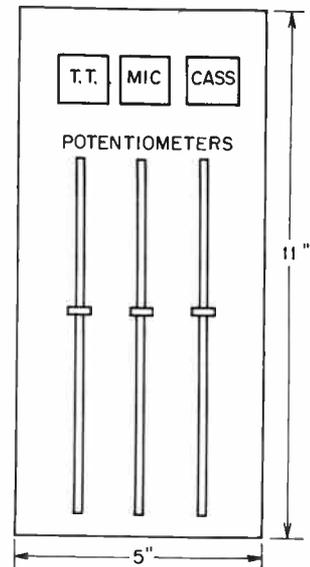


Fig. 2. Top view of the slider potentiometer panels.

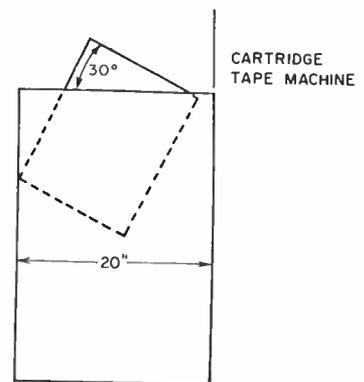


Fig. 3. Cartridge tape machine mounting pedestal.

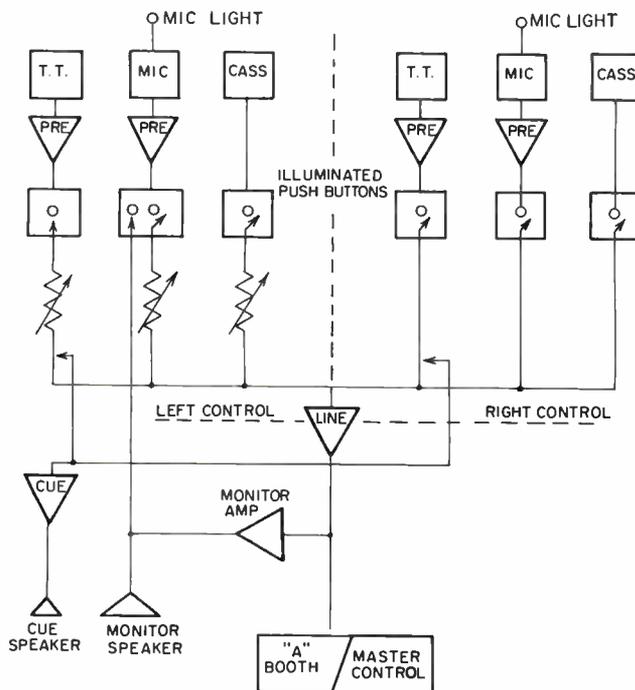


Fig. 5. Equipment block diagram.

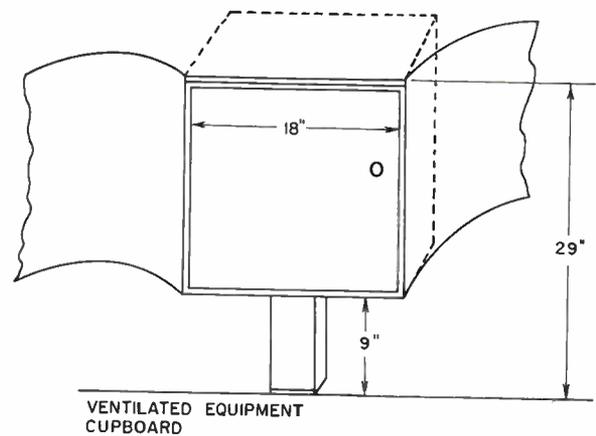
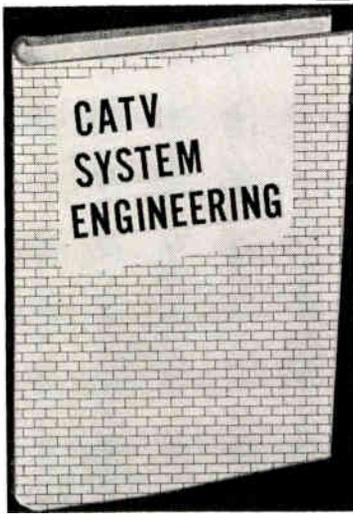


Fig. 4. End view of the equipment housings located farthest from the announcer's position.

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systems composed of uncorrelated components as well as fully integrated systems with solid-state equipment. The new Edition includes three new chapters on disadvantageous amplifier design concepts, high level distribution, and principles of cable powering, and shows how to modernize older systems using the new equipment available. Of invaluable aid to practicing engineers and serious technicians are two new Appendices on math and charts including additional information on such subjects as system derating accuracy of symmetrical attenuators, system levels for integrated systems, return loss vs db variation, and voltage drop in cable powering. All previous chapters have been revised and expanded to cover amplifier and system dynamic range, cascaded figure of merit, system operating levels, jumper cables, equalization and alignment and a host of other vital subjects.

Containing only tested and proved information, "CATV System Engineering" is a must for every individual with an interest in day-to-day cable TV operation, as well as a handy reference volume of straightforward answers to the problems encountered almost daily in any system.

"CATV System Engineering" will be available on June 30th, 1967, and is published to sell at \$12.95. Through August 31st, however, the special Prepublication price of only \$9.95 prevails. Order at our risk for 10-day FREE examination. Send no money! Simply fill in and mail NO-RISK coupon below for this helpful volume.

**PARTIAL LIST OF CONTENTS**

**THE CATV SYSTEM:** Functions and Purpose of CATV; System Performance Standards Systems

**HEAD-END CONCEPTS:** Functions and Requirements of the Head End; Frequency Conversion; Remodulation; Strip Head-End and Antenna Preamplifiers

**CATV AMPLIFIER CHARACTERISTICS:** Amplifier Requirements; Equalization; Noise and Noise Figure; Distortion and Overload; Amplifier Dynamic Range; Cascaded Figure of Merit

**CASCADED AMPLIFIER SYSTEMS:** System Dynamic Range; Maximum Amplifier and System Gain; Optimum Spacing and Gain; Limitations of Spacing Theory; Determination of Optimum Spacing From Amplifier Measurements

**PRACTICAL ASPECTS OF SPACING:** Cost and Reliability; Transistors vs Tubes; Practical Limitations To System Length; Jumper Cables

**SYSTEM LEVEL, LEVEL DIAGRAMS, AND TILT:** System Operating Level; Distribution Level Diagrams; Main Trunk Level Diagram and Tilt Modes

**DISADVANTAGEOUS AMPLIFIER DESIGN CONCEPTS:** The High-Gain Amplifier; Passive Equalizers and Attenuators

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**HIGH-LEVEL DISTRIBUTION:** Distribution Efficiency and Operating Level; Optimum Distribution Level and Level Diagram; Dual-Output Amplifiers and Cascading; Main-Trunk Derating With High Level Distribution

**AMPLIFIER CONTROLS:** The Need for Controls; Accuracy of Field Adjustments; Type and Action of Controls

**AUTOMATIC CATV SYSTEMS:** Reason for AGC in CATV Systems; AGC Concepts for CATV; Temperature Compensation; Automatic Spacing; CATV System Integration

**PRINCIPLES OF CABLE POWERING:** Methods of Powering CATV Systems; Loop Resistance and Drop Curves; Location and Spacing of Power Stations; Lighting and Surge Projection

**TESTING CATV AMPLIFIERS:** Equalization and Alignment; Gain Control and Tilt Compensation; Tests of Match and VSWR; Measurement of Noise Figure; Testing Distortion and Overload; Tests of AGC Performance; Temperature Correction and Automatic Spacing.

**APPENDICES:** Calculation of Cumulative Noise and Overload; Mathematical Derivation of Optimum Spacing; Taps in 75-ohm Systems; CATV Mathematics; Typical Equipment Specifications; Miscellaneous CATV Data & Charts; Literature and References. Index.

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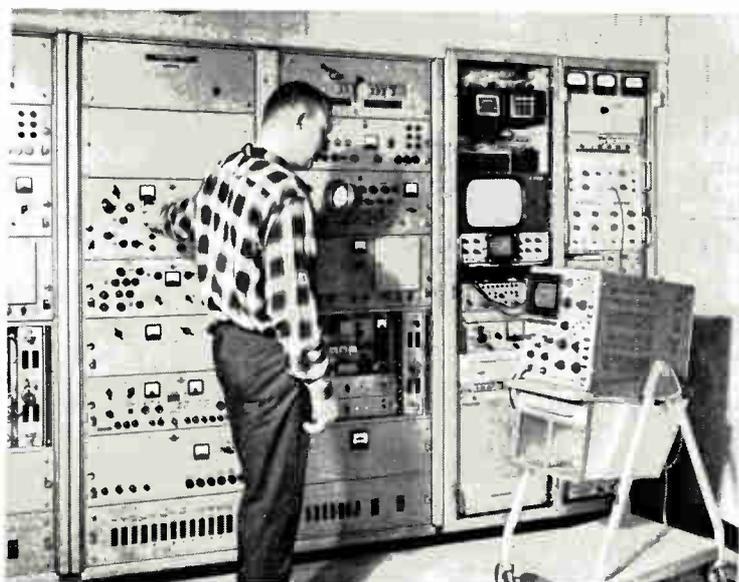
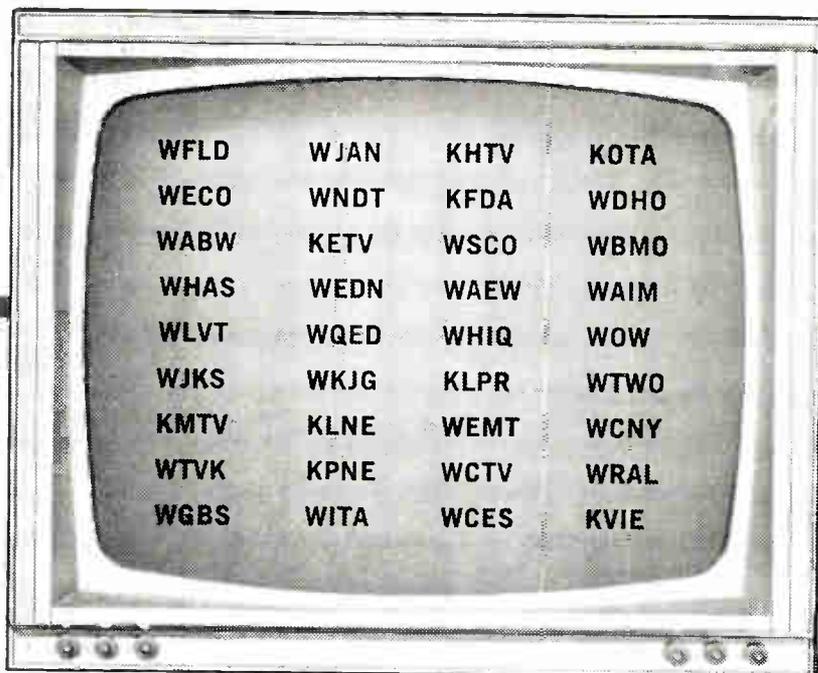
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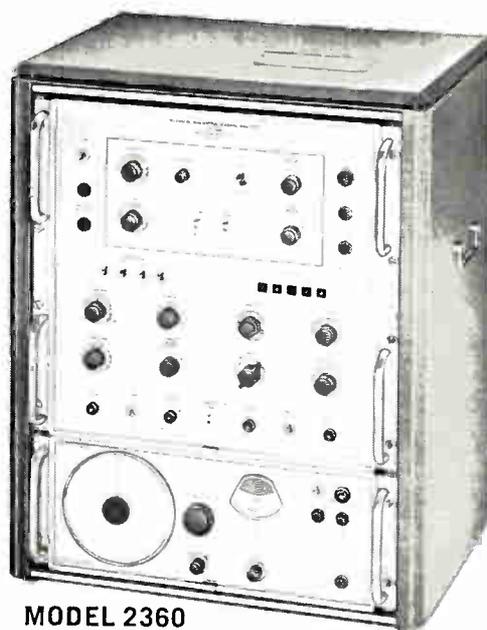
(Photo courtesy WFLD Chicago, Marconi 50KW UHF Tx)

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# BROADCAST EQUIPMENT

## Integrated Circuit Audio Control Console

Electrodyne Corp. of North Hollywood, Calif. recently introduced model ACC-1204 audio control console using integrated circuit amplifier modules. Console is a completely self-contained walnut table top audio control center priced at \$11,200. Features include 12 mic or line inputs using straight line attenuators, four main output channels



with illuminated vu meters, illuminated pushbutton channel and cue switching, complete six-position equalization with echo send and cue on each input channel, four echo return controls, four straight line sub masters, a four-ganged straight line master attenuator, a four-ganged monitor control, talkback mic, mode switch for direct or tape output monitor and engraved panels.

Circle 100 on Reader Service Card

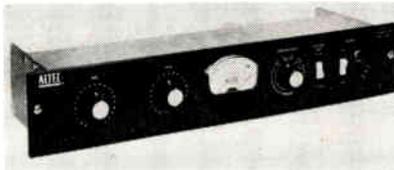
## Recorder/Reproducer Operates 34 Hr on Single Reel

Model AL-500 solid-state long play audio recorder/reproducer plays for up to 34 hr on a single 7-in. reel of tape. The unit, marketed by Ampex Corp. of Redwood City, Calif., features individual vu meters and playback/record speeds of 15/16 and 1 7/8 in./s. The AL-500 is available in two-channel four track version which records simultaneously signals from two sources, and a four channel, four track model that is capable of recording signals simultaneously from four sources. Two-channel unmounted model is priced at \$1432; four-channel unmounted model, \$2295.

Circle 101 on Reader Service Card

## Compressor Amplifier

Model 1591A compressor amplifier, made by Altec Lansing of Anaheim,

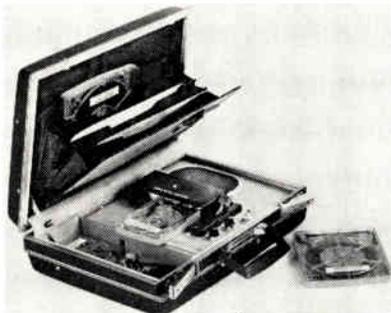


Calif., is designed to increase average audio levels without overmodulating. Gain reduction is up to 35 dB, compression ratio is selectable at 5 or 10 to 1. Compression thresholds of zero and 8 dBm also are selectable. Unit is designed to operate from mic and line level sources and provides outputs of up to 10 dBm into 150- and 600-ohm loads.

Circle 102 on Reader Service Card

## Attache Case Tape Cartridge Audition Unit

Model BP-22 portable cartridge playback unit, made by Sparta Electronic Corp. of Sacramento, Calif., encased in an attache case weighing just 14 lb. Unit features a newly designed high torque capstan drive motor, and a large built-in speaker. Nickel-cadmium battery provides



2 1/2 hr of operation per charge.

Circle 103 on Reader Service Card

## Van Has Traveling Basket With 22-ft Reach

Series S van was designed for use in telephone and CATV applications



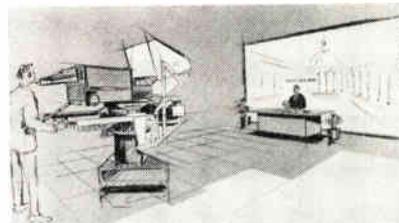
and is priced within the range of power ladder trucks. 125-in.-wheelbase model has basket that reaches a working height of 34 ft, and a

horizontal reach of 22 ft from the center of the truck. Longer wheelbase models have correspondingly longer reaches and heights. Vans are available from Telsta Corp., San Carlos, Calif.

Circle 104 on Reader Service Card

## Front Projection System Provides Color Backgrounds

Front Projection Corp. of New York, N.Y. recently introduced a front



projection system that provides instant color backgrounds measuring 20 ft in width, even in studios measuring as small as 30 ft. System works under high intensity lighting, providing saturated color backgrounds under intensities of 400 ft candles. Key to operation of system is a patented screen and projection system. Screen permits light to be reflected back to source with no noticeable falloff. No restriction is placed on camera's ability to pan, tilt or zoom when system is in use and 35mm slides also may be used for background montages.

Circle 105 on Reader Service Card

## Hex-Head Tool Accommodate 15 Sizes of Nuts and Screws

Model Hex-a-Matic, made by Stanley Works of New Britain, Conn., accommodates 15 standard sizes of nuts and screws: five sizes

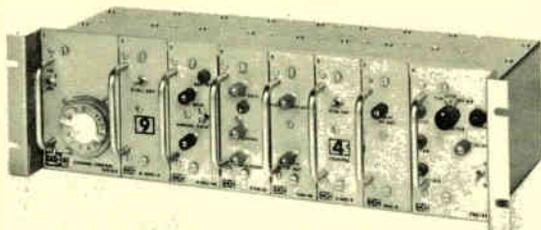


Circle 27 on Reader Service Card ➤

# All transistorized CATV head-end gives you 12-channel processing without demodulation

New CAS Channel Control has full head-end capabilities plus **duplication switching, local origination, remote emergency alert and "flash" announcements**... all from one versatile unit.

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EXCLUSIVE Remote Capabilities

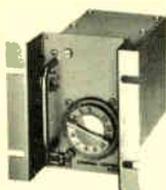


**At last!** Here's a head-end system with solid state reliability, a wide range of origination and remote capabilities and priced competitively with older conventional systems.

The CAS Channel Control receives any VHF TV channel (UHF if specified), eliminates adjacent channel interferences and *automatically* adjusts both picture and sound levels. A special external tuner (*inset photo*) provides for duplication switching of local channels.

### Check these features!

- fully transistorized modular construction
- simple 19" rack mounting
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- passes full color
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- front panel controls and test points



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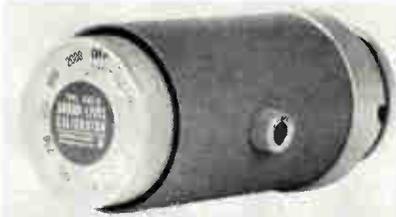
Dallas, Texas 75207

of hex nuts from 1/4 to 7/16 in., five sizes of hex-head screws from number 6 to 1/4 in., and five sizes of socket head cap screws from number 8 to 5/16 in. Tool also fits all metric-size fasteners to 11mm. Six fingered collet chuck adjusts to correct size when driver is pushed down over nut or screw. Hex-a-Matic will chuck on socket head cap screws and fits and holds damaged or burred heads.

Circle 106 on Reader Service Card

### Sound-Level Calibrator

Type 1562-A sound-level calibrator, introduced by General Radio of West Concord, Mass., is a compact self-contained unit for making field

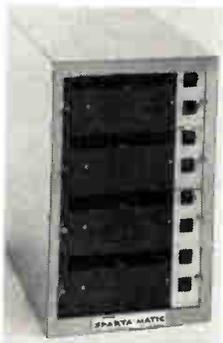


calibrations on mics and other sound-measuring instruments with an accuracy of  $\pm 0.3$  dB at 500 Hz and  $\pm 0.5$  dB at other frequencies. Unit generates five USASI-preferred frequencies (125, 250, 500, 1000 and 2000 Hz,  $\pm 3$  percent) at an accurately-known sound pressure of 114 dB (re 20  $\mu$ Nepers/m<sup>2</sup>). An electrical output of 1 V is provided for tests on instruments without microphones. Price of the 1562-A with carrying case and mic adaptors is \$195.

Circle 107 on Reader Service Card

### Multicartridge Playback Unit

Sparta Electronic Corp. of Sacramento, Calif. recently introduced model MC-104 4-deck playback unit. Each of unit's 4 capstan cartridge transports is independent of the other including separate motor/capstan drive systems and solid-state



electronics. Two dc power supplies are standard. Unit is available in horizontal rack mount or vertical cabinet configurations. Available options include stereo, remote control and automatic sequencing, and



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SPECTAGULAR!**



**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 mismating. 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.

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BRAND NEW & NEEDED!

# Radio News Handbook

by David Dary, Director of News, Studio Broadcasting System and KTSB-TV; formerly News Manager, WRC, WRC-TV

"The thousands of broadcasters now engaged in professional news broadcasting will find it (the book) to be a treasure chest of ideas to improve and enhance their present newscasts. The book will become dog-eared and yellow with age before its equal will find its way to the desk and offices of student and professional alike." — Dr. John Rider, Syracuse University.

Here is a handbook for both aspiring and experienced broadcast journalists. Written by seasoned broadcast newsman David Dary, **Radio News Handbook** serves not only as a day-to-day guide, but also as a source of vital information for those practicing newsmen who are endeavoring to improve their professional status.

For the beginning newsman, there is a solid grounding in radio news basics, mechanics, and style, plus necessary details on the workings of a radio newsroom. Students will find the book of great value as a source of information covering every phase of broadcast journalism. Announcers, salesmen, and even managers will find **Radio News Handbook** a helpful guide in understanding and working with their news department.

**Based On Actual Experience**  
While writing the book, the author was radio news director at NBC-owned WRC, Washington, D.C., and he has drawn heavily on his experience with NBC as well as from other network reportorial work, plus his many years as a staff newsman. Here, in a single volume, you will find a wealth of theoretical and practical knowledge condensed into an easy-to-read work, illustrated by dozens of photos (some from network archives) and illustrations.

Beginning with a Chapter on the history of radio news, the volume describes the trials and tribulations of those early broadcast journalists: H. V. Kattenborn, Bill Sycum, Graham McNamee, John Daniel, Phillips Carlin, Paul White, Joe Schechter, Floyd Gibbons, Robert Trout, Gabriel Heatter, Lowell Thomas, Homer Davis, Clay Morgan, Leif Eid, Quincy Howe, and others. With proper appreciation for professional tradition, you'll be taken into the radio newsroom where personnel, facilities, and news gathering methods are introduced.

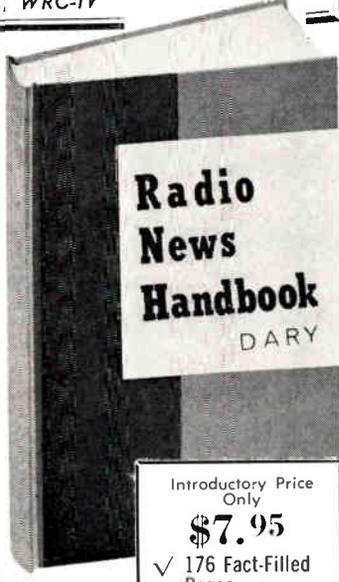
**Covers Vital Subjects**  
An entire Chapter is devoted to the extremely vital subject of news sources, both local and regional, as well as national and world-wide. You'll learn practical methods of covering a news beat, interviewing, and dealing with tipsters and stringers, plus how to develop the local angle and maintain a future file. From there, the author delves into radio news basics and on-air presentation, including in-depth sections on evaluating news, writing, style, and the fine points of newscast mechanics. To help develop a professional on-air delivery, the basics of voice and diction, microphone technique, and reading are fully treated. Then, so that a newsman may acquire a familiarity with on-the-scene reporting, there is a Chapter on mobile news units and their operation. **Exclusive Data on Editorials.** Since the popularity of

broadcast editorials is steadily increasing, the Chapter on editorializing fills a virtual void with what is perhaps the only existing set of basic guidelines on the subject. Described are editorial forms, how to editorialize, when to broadcast editorials, handling reaction and rebuttals, political editorials, editorial subjects, plus 18 sample editorials. Of particular value to newsmen who will cover court news — who most will at some time during their career is a Chapter dealing with law, courts, and radio news. Explained are privacy rights, privileged information, and an in-depth description of civil and criminal court procedure.

Included for ready reference are glossaries of legal and news terms, the code of ethics of the Radio Television News Directors Assoc. news program standards of the National Association of Broadcasters. Truly, a newsman, regardless of professional status, or a newsroom should not be without a copy of this volume.

**Free 10-day Examination**  
**Radio News Handbook** will be available on August 1, 1967. Order now at the Introductory Price of only \$7.95 at our risk... for 10-day FREE examination. SEND NO MONEY! Simply fill in and mail NO-RISK coupon below for this indispensable volume! (Note — 3 or more copies ordered at one time are subject to a 10% discount.)

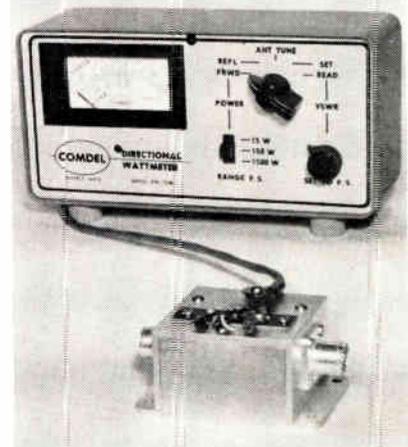
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**History of Radio News:** The Newspaper Battle; Col. News Svce; Est of Press-Radio; Fgn Bcsting; War Yrs; TV Arrives; News Concept.  
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**Editorializing:** Effects of Mayflower Decision; What's An Editorial?; Forms; How to Editorialize; On-Air Format; Handling Reaction & Rebuttal; Political Issues & Candidates; Subjects; Practices; Samples.  
**Law, Courts & Radio News:** Privacy; Privileged Info; State Laws; Understanding Court Procedures; Types of Court Actions; Civil Action; Criminal Cases.  
**Glossary of Legal Terms; Glossary of News Terms; News Operation Check List; Radio & TV News Directors Assoc. Code of Broadcast News Ethics; NAB News Prog. Stds Index.**



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4-channel audio switching.  
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**Directional Wattmeter**  
**Sensitive From 1.5 to 30MHz**  
Model DW 1550 directional wattmeter and vswr indicator provides continuous power or vswr monitoring with a five position switch that selects FORWARD POWER, REFLECTED

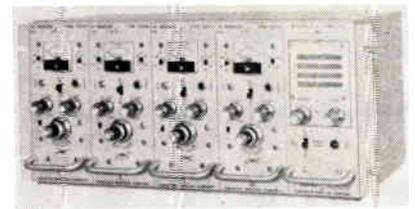


POWER, ANTENNA TUNE, SET VSWR and READ VSWR. Meter's power range is 0.2 to 1500 W, switch selectable in three steps. Power accuracy is  $\pm 1$  dB above quarter power scale. Directional coupler may be operated remotely or as integral with wattmeter. DW 1550 is priced at \$94.

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## Broadcast Time Signal Receivers

The XH13A line of fixed-tuned radio receivers, made by Kaar Electronics Corp. of Linden, N.J., pick up second ticks and exact time signals from wvv, the National Bureau of Standards station, on 2.5, 5, 10,



or 15 MHz. Four of the receivers fit into a mounting frame equipped with built-in monitor speaker. Output of each receiver is available at 600 ohms balanced suitable for direct feed into the line of an audio control console.

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## Solid-State Plug-In Line Amplifier

Designed to feed a line or distribution system, or usable as a mic pre-amplifier or booster amplifier, model 102-SS, made by Aerovox Corp. of Burbank, Calif., has source impedances of 50, 250 and 600

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 Please send me \_\_\_\_\_ copies of "RADIO NEWS HANDBOOK" at the introductory price of only \$7.95 for one copy (10% Discount on 3 or more copies.)  
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## Need quality tubes with greater stability, longer life? Call your Sylvania Distributor.

He'll advise you on which tube types can best meet the critical requirements of broadcast equipment. And supply you with the finest—Sylvania tubes tailored to your need for greater stability, longer life, less down time.

Case in point: hum and noise were objectionable in the 12AX7 prototype used in audio frequency amplifiers as the high gain input. So Sylvania developed an improved retrofit. Result: the Type 7025 with hum and noise level cut to only a few micro-volts.

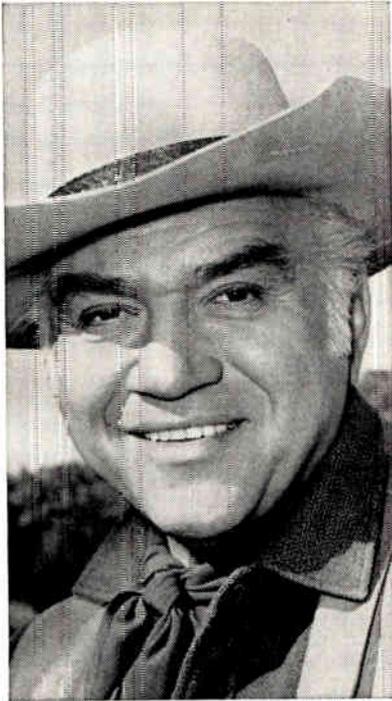
Or take the 6U8, when used as a pulse amplifier in sync generator equipment. Stability was a problem. Sylvania did a thorough field analysis, imposed its famous Gold Brand specifications, tightened tolerances for plate current and transconductance, and added a special emission test. Result: Sylvania's GB-1252/6U8A, with assured stability in pulse service.

Your Sylvania Distributor has the high-quality products you want. Call him for fast delivery and technical service.

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# SYLVANIA

SUBSIDIARY OF  
GENERAL TELEPHONE & ELECTRONICS GTE



*The outdoor life. Any indoor man will tell you how great it is. But only an outdoor man can tell you what it does to human skin.*

*Constant sun dries skin out. Leathers it. Burns it over and over again. And that can be dangerous.*

*If you are out in the sun a lot (or even if you're not), check into any sore that does not heal. Promptly. It could be a warning signal of cancer. And cancer is easier to cure when it's detected early.*

*Lorne Greene knows the seven warning signals of cancer. So should you:*

- 1. Unusual bleeding or discharge.*
- 2. A lump or thickening in the breast or elsewhere.*
- 3. A sore that does not heal.*
- 4. Change in bowel or bladder habits.*
- 5. Hoarseness or cough.*
- 6. Indigestion or difficulty in swallowing.*
- 7. Change in a wart or mole.*

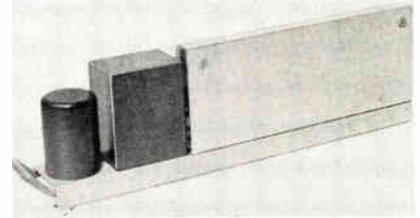
*If a signal lasts longer than two weeks, see your doctor without delay.*

*It makes sense to know the seven warning signals of cancer.*

*It makes sense to give to the American Cancer Society.*



ohms and load impedances of 150 and 600 ohms balanced. Maximum levels are  $-24$  dBm at the input and  $+30$  dBm at the output. Gain is  $53$  dB  $\pm 1$  dB with the input terminated and  $58$  dB  $\pm 1$  dB with the input unterminated. Noise level is  $-6$  dBm at output, input and output terminated. Frequency range is  $\pm 0.5$  dB from 30 to 15,000 Hz with

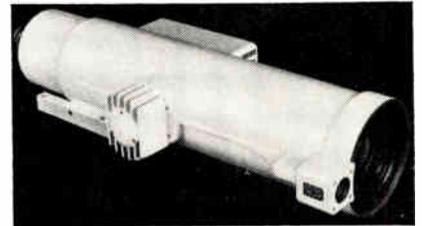


harmonic distortion less than 0.25 percent rms at 24 dBm output and less than 1 percent rms at 30 dBm output over the entire range.

Circle 111 on Reader Service Card

### Tracking Telescope Has Stable Image Through Zoom

Zoomar Tracking Telescope, made by Zoomar, Inc. of Glen Cove, N.Y., has 5 to 40 $\times$  continuous zoom magnification and illuminated reticle. Reticle image does not move in relation to target, remaining locked on

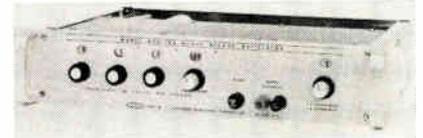


over zoom range. Scope has automatically operated neutral density filter for sun protection and four interchangeable eyepieces ranging from 0 to 45°. Foot and hand switches operate motorized zoom — slip clutch prevents mechanism damage at ends of zoom range. Overall dimensions are 31  $\times$  6 in. and approximate weight is 35 lb.

Circle 112 on Reader Service Card

### Digital Oscillator Has Frequency Stability of 0.5%

Model ADO-102 digital oscillator, made by the Elin Div. of San Diego, Calif., operates over a range of 10 to 100,000 Hz with an output voltage of up to 50 V at 2 VA. A front-panel control provides voltage ranges of 0 to 50, 0 to 500 mV and 0 to 5 and 0 to 50 V. Unit's sine wave frequency, available at front or back panels, is accurate to 1 percent and



# We've got it made.



# You put it together.



It's a new idea in custom consoles. We furnish just about everything: the basic cabinet and hardware (drilled, punched, and beautifully finished), plus your choice of solid-state pre/line/booster/program and monitor/cueing amplifiers; attenuators in any configuration; high and low pass filters; rotary or straight line controls; mixer networks; VU meter range extenders; matching networks; stereo pan pots; program equalizers; motion picture and turntable faders; slating and talkback keys; jack fields for any function; matching transformers; and any keys and switches you may need.

The big idea is this: This new Altec

9200A control console is completely modular. You select and install Altec amplifiers, controls, and accessories to meet your specific needs. The result is a custom console at a fraction of former costs, both in time and money.

Modification to meet changing needs is easy too. The basic cabinet accommodates up to 27

swing-out strip modules of 1½" and 3½" widths. Each module accepts a variety of pots, equalizers, keys, mixers. Up to 23 solid-state Altec plug-in amplifiers fit inside the cabinet.

Instrument panel holds up to four VU meters for program, four in a "stack" for echo send channels, plus graphic equalizer and jack panel. And, you may assemble the consoles in multiples if you have the need.

We've made it so you could put it together, simply, inexpensively and just as you like it. And that's always a good idea. You'll get more ideas by calling your Altec Distributor, or for a very complete technical kit on the console, write Dept. BM/E-7.



A Division of *ESPVO* Ling Altec, Inc., Anaheim, Calif.  
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# You get more than just an antenna from General Electric.

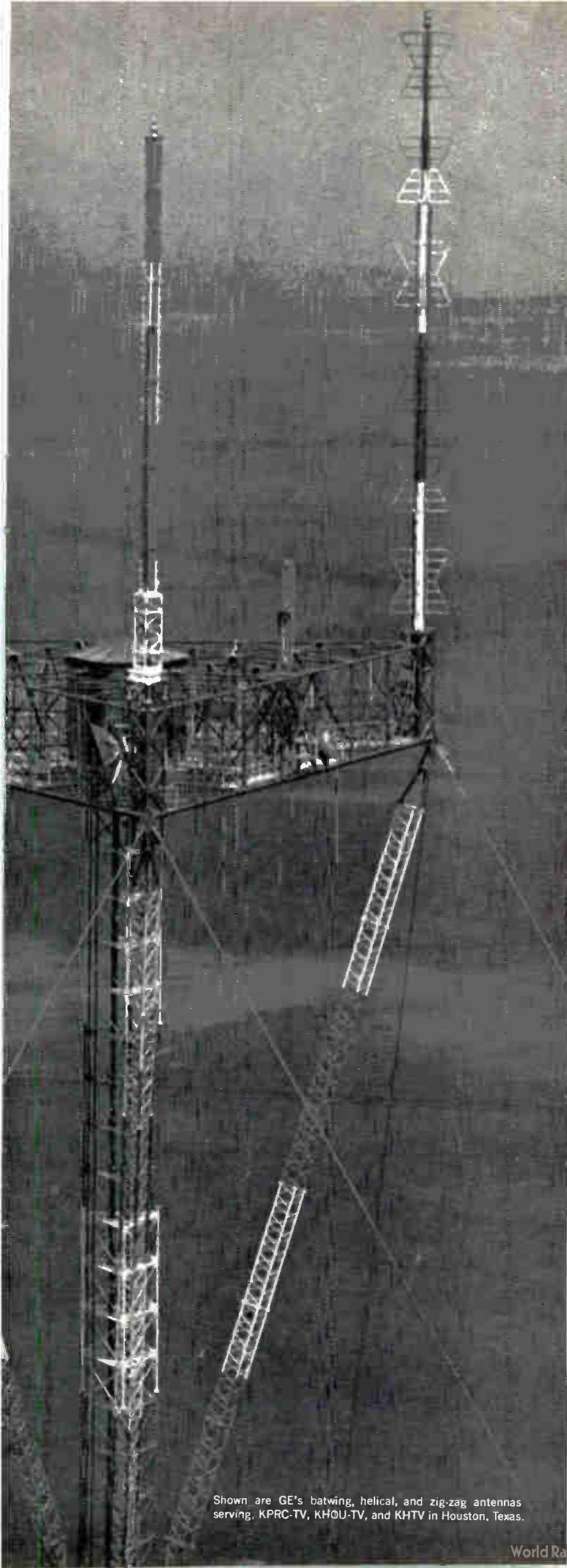
**You get GE's 20 years of experience** delivering top-rated antenna systems to TV stations throughout the United States.

**You get pioneering innovations** such as the G-E helical and zig-zag antennas.

**You get our proven ability** to meet even the tightest specifications. We were the only manufacturer, for example, to meet the specs for the UHF zig-zag at KERO-TV in Bakersfield, California. Our helicals are virtually maintenance free. And our batwings offer the most up-to-date improvements of any in the industry.

**You get planning.** Our antenna engineering section works with you and your consultant to determine requirements, specifications and feasibility. The combined experience of this team of professionals assures you optimum predictable performance.





**You get proving.** Once your antenna requirements are determined, vertical and horizontal signal patterns are plotted with a computer. Our engineering section feeds specifications into an inquiry unit. A remote-site G-E computer instantly returns precise, error-free pattern plots.



**You get pre-testing.** GE's antenna site at Cazenovia, N.Y., is one of the finest test facilities in the United States. Here your antenna is tested against planned requirements. Test results are fed into the computer for checking against the original pattern.



**You get performance.** General Electric antennas have set new standards of performance. Our zig-zag at WPIX-TV, New York, notably improved transmission. G-E gave KERO-TV the country's first installed zig-zag—plus maximum effective radiated power. And at 7,600 feet altitude. Not hard to understand why General Electric has installed more zig-zag antennas than all other manufacturers combined. To further insure top performance: installation supervision, complete checkout after installation including transmission line, and periodic preventive maintenance services are also available.

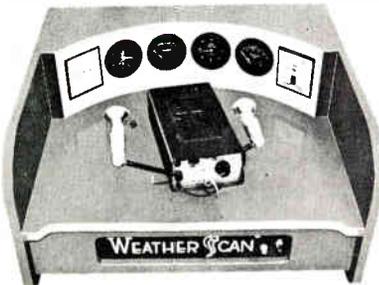
Wherever conditions are a little more rugged and problems a little tougher—that's when we consider it a G-E job. You should, too. You'll get the best designed, the best built and the best performing antenna available today. And what's more, you'll get the planning, proving and pre-testing that make you confident you're getting the best. From General Electric. Visual Communication Products Department, Electronics Park, Syracuse, New York 13201. GE-47

Shown are GE's batwing, helical, and zig-zag antennas serving, KPRC-TV, KHOU-TV, and KHTV in Houston, Texas.

**GENERAL  ELECTRIC**

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**CUSTOM ORDER**  
**Your Time/Weather**  
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Now from the manufacturer of the famous WEATHER-SCAN time/weather system . . . a new unit designed specifically for CATV systems desiring an economy package.

Instruments and special features may be custom-ordered to fulfill your exact needs, including all the Texas Electronics instruments contained in the standard WEATHER-SCAN, or any combination thereof. Basic unit comes with a premium quality AFCCO camera for flawless, undistorted instrument scanning.

Compact size — 32 inches wide x 30 inches deep x 16 inches high — takes up minimum space, permits easy moving. Easily adaptable for live programming.

**CUSTOM ORDER THESE OPTIONS:**

- Any combination of time/weather instruments you desire.
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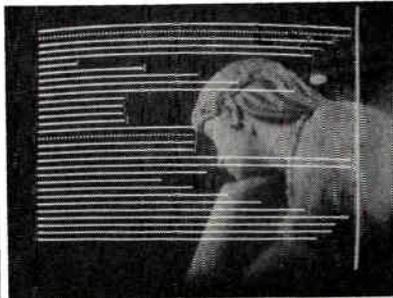
Circle 34 on Reader Service Card

stable to within 0.5 percent. Other specifications include: total harmonic distortion, less than 0.1 percent at mid band and hum, noise and jitter, less than -66 dB of full output voltage after warmup. Oscillator is standard rack width and 3½ in. high.

Circle 114 on Reader Service Card

**CCTV Bar Graph Generator**

Model 120 bar graph generator, made by Colorado Video, Inc., Boulder, Colo., provides up to 30 horizontal bar graphs on a standard monitor. Generator provides for

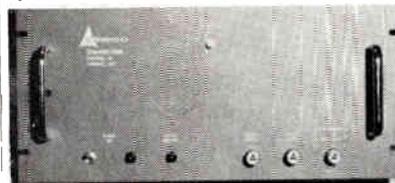


selection of black or white bars, individual bar identification, expansion of individual decades, zero suppression and individual level controls. Price of model 120 is \$4200.

Circle 113 on Reader Service Card

**Head-End Amplifier Operates on 12 Channels**

Model Channeleer, made by Ameco of Phoenix, Arizona, is a solid-state heterodyning signal processor offering 12-channel operation, adjacent channel rejection of 50 dB and spurious output suppression of 60



dB. Full color reproduction is achieved with i-f bandwidth flat within ±0.25 dB from 41.57 to 46.5 MHz. Operating output level is +54 dBmV with a low noise figure of 7 dB maximum. Minimum dynamic range is 50 dB.

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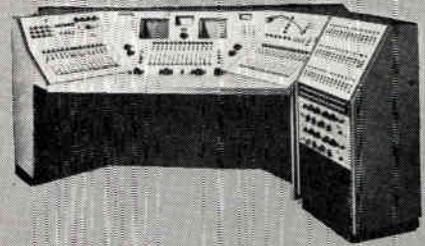
**Vhf Selective μV/Ammeter**

Type USVV vhf selective μV/ammeter, introduced by Rohde & Schwarz of Passaic, N.J., is continuously tunable over range of 30

**SUPER SOUNDS**

start with

**FAIRCHILD**



**FAIRCHILD COMPACT COMPRESSOR MODEL 663**

Allows creation of those up tight levels that contribute materially to presence and loudness combined with overload protection. The FAIRCHILD Model 663 Compact Compressor produces no distortion despite the amount of compression used . . . no thumps, no noise. The 663 provides adjustable release time and up to 20 db of compression. Model 663 NL comes with unity gain and additional gain if needed with +18 dbm output.



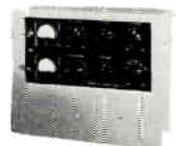
**FAIRCHILD PROGRAM EQUALIZER MODEL 664NL**



An ideal no loss equalizer for broadcast and recording. The FAIRCHILD Model 664NL allows the production of the "hot, solid commercial" sound standard with major recording studios; transforms any conventional console into "Big Board sound". 1½" x 5¼" high unit provides equalization up to 10 db at 4, 6, 8, 10, or 15 KHZ and low end equalization up to 10 db. Rolloffs also provided. The Model 664NLB has equalization at 2, 3, 4, 5, and 7.5 KHZ for motion picture demands. The FAIRCHILD Program Equalizer contains equalization plus 18 dbm amplifier output. Put life into your sound with the FAIRCHILD Equalizer.

**FAIRCHILD LIMITER MODEL 670**

Fast attack Stereo Limiter (50 microseconds) with low distortion and absence of thumps. Sum and difference limiting position eliminates floating stereo image. Includes regular channel A and B limiting. Dual controls, dual meters provided. Used throughout the world. Flexible release times make it indispensable in stereo recording and broadcasting.

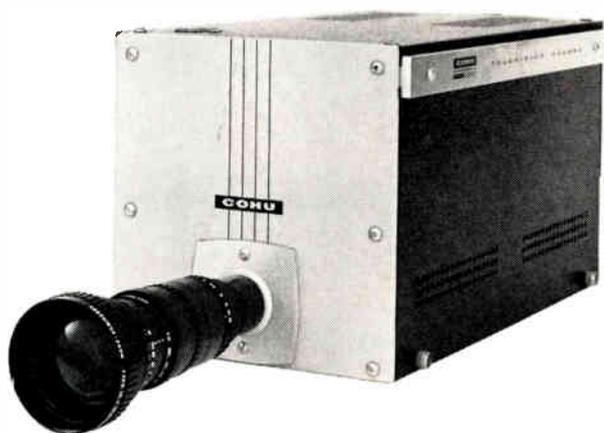


Write to FAIRCHILD — the pacemaker in professional audio products — for complete details.

**FAIRCHILD**  
 RECORDING EQUIPMENT CORPORATION  
 10-40 45th Ave., Long Island City 1, N.Y.

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# Introducing the most versatile vidicon camera ever built – Cohu's new 3200 series!



**IT'S A CCTV CAMERA** – completely self-contained. Just add a single coaxial cable to any video monitor and it's ready to operate. Want high resolution? Plug in one of four optional integrated-circuit sync generator boards for 525-, 729-, 873-, or 945-line scan patterns.



**IT'S A BROADCAST CAMERA, TOO!** Add a "mounts-in-minutes" 5-inch viewfinder and the Cohu 3200 is ideal for studio, education, or remote applications. An optional film chain adapter further enhances its versatility and provides all necessary remote controls.

For prices, delivery and full details, contact Cohu engineering representatives in major cities throughout the United States and Canada.



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San Diego, California 92112  
Phone: 714-277-6700

Circle 36 on Reader Service Card

## Multiple choice— every one a right answer!

### Bauer's line of audio consoles

There's a compact Bauer console that's right for any audio operation, simple or complex. Each console is self-contained and highly versatile, for speed and accuracy in cueing, monitoring, mixing and programming. Each is of typical Bauer high quality and reasonably priced.

**Model 915**—for the remote TV truck; 8-microphone versatility with multiple inputs for turntables, tape units, projectors.

**Model 912S**—for 5-channel stereo in studio production and control rooms. Handles tape prerecording, remote interviews, panel shows, commercial ETs, ID spots, etc. As on-the-air console, gives fast, precise control over 13 inputs.

**Model 912**—a 5-mixer model for production preprogramming in studio or on remote location; excellent primary, on-the-air unit for smaller stations.

**Model 910S**—8-mixer stereo console with all the inputs and controls needed by any station, AM or FM, large or small.

**Model 910D**—dual unit, easily handles two programs simultaneously; 8 mixing channels and more useful features than most consoles twice its size.



Let a Bauer add new dimensions to your audio capabilities: modern, high-speed control, versatility, simplicity, and convenience. Write to us for full technical information.

## **Bauer**

ELECTRONICS CORPORATION

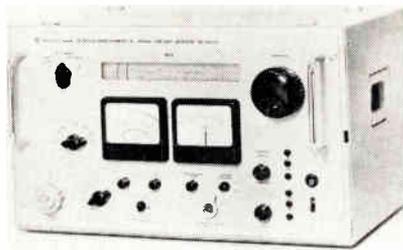
1601 California Ave.

Palo Alto, California 94304

A **Granger Associates** COMPANY

Circle 37 on Reader Service Card

to 480 MHz. Afc provides a lock-in range of  $\pm 100$  kHz and voltage measurement range is  $10 \mu\text{V}$  to 1 V, full-scale deflection, with an accuracy of  $\pm 3$  percent. Unit features



two selectable i-f bandwidths of 20 kHz for a-m and 300 kHz for a-m/fm. Among five key application areas for meter is determination of directional patterns and power gain of antennas. Price is \$4325.

Circle 115 on Reader Service Card

### Projector Conversion Service

A service for conversion of standard 500 series Bell and Howell 16mm projectors for use with TV systems has been developed by AVT Engineering Specialties of Seattle, Washington. Conversion consists of changes in drive system components and shutter and changing the motor for elimination of flutter. Service offers opportunity to obtain dependable high quality projectors below usual prices. Conversion price is \$495.

Circle 117 on Reader Service Card

### Programmable Coaxial Switches

Designed for use on channels 2 through 83, dry-reed relay type switches are available in single-, double-, four- and eight-way configurations. Double through eight-way types show insertion losses ranging 0.9 to 1.7 dB at 1000 MHz. Vswr is maintained at better than 1.25:1 at 1000 MHz. Peak power is 10 W; reliability,  $10^7$  closures. Prices range from \$120 for two-way to \$245 for eight-way.

Circle 118 on Reader Service Card

### Solid-State Kit Rf Signal Generator

Knight-Kit KG-686 solid-state rf signal generator, made by Allied Electronics Corp. of Chicago, Ill.,



# 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.

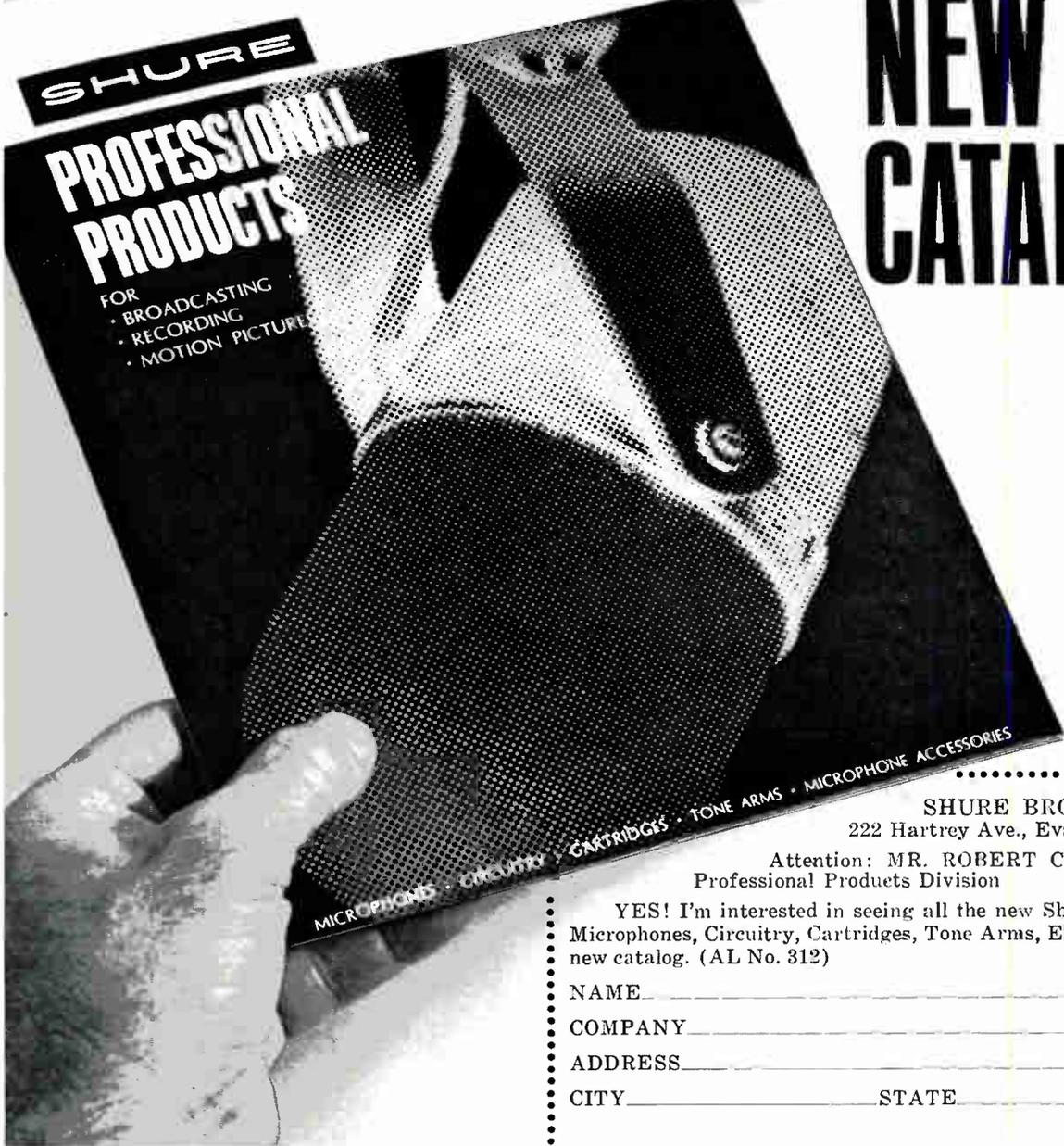
Write, phone,  
or TWX for  
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**DAVEN** **McGraw Edison**

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Circle 38 on Reader Service Card

July, 1967 — BM/E



# NEW CATALOG!

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Professional Products Division

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Microphones, Circuitry, Cartridges, Tone Arms, Etc. Send me your  
new catalog. (AL No. 312)

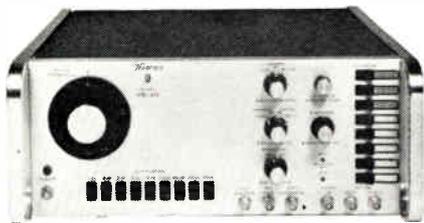
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COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_  
.....

Circle 39 on Reader Service Card

# The Spoiler.

## Sweep Generator Spoils Engineers

The lightweight, reliable VS-40 sweep signal generator covers the range of 1 MHz to 300 MHz with sweep width variable from 200 KHZ to 300 MHZ. Its versatility provides for eight solid state single frequency or harmonic plug-in markers, supplies a 0 to 102 db attenuator and optional calibrated variable marker which covers the complete frequency range of the unit. A 0 to 6 db vernier control is included. The RF output is 0.5v rms into 50 ohms, flatness is  $\pm 0.25$  db at maximum sweep width. Four sweep rate modes are provided: variable from 5 HZ to 60 HZ, 50/60 HZ line rate, manual sweep and external. Price: \$895.00.



Specialists In Electronic Instrumentation

**Texscan**  
CORPORATION  
*tc*

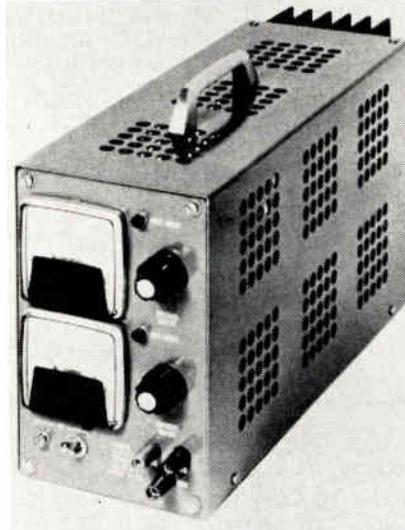
51 Koweba Lane  
Indianapolis, Indiana 46207  
Ph. (317) 632-7351

Circle 40 on Reader Service Card

Covers frequency range of 100 kHz to 54 MHz with an accuracy of  $\pm 1.5$  percent, usable to  $\pm 0.1$  percent with built-in 100 kHz/1 MHz crystal calibrator. Switchable D'Arsonval meter shows rf carrier or modulation level. Individually shielded 6-switch attenuator provides 21 levels to  $-96$  dB. A detector-amplifier-speaker gives zero beats from crystal calibrator. Tunable I and C on each band provides for accurate tracking ability. Vernier dial with antibacklash has 6:1 ratio. Unit is designed for 110-130 V as operation and is kit priced at \$95.  
Circle 119 on Reader Service Card

## Solid-State Voltage-/Current-Regulated Power Supply

Model SVC-20-7.5 all silicon dc power supply has an output of 0 to 20 V and 0 to 7.5 A. Supply, made by NJE Corp. of Kenilworth, N.J., has voltage regulation for load



and line changes of 0.01 percent or 1 mV, respectively. Current regulation is 1 mA/V in output and 2 mA in constant current mode. Unit weighs 25 lb. and is priced at \$300.  
Circle 120 on Reader Service Card

## CCTV Camera Has Electronic Viewfinder/Monitor

Model TCM-20 solid-state CCTV camera, made by Concord Electronics Corp. of Los Angeles, Calif., in-



# PROTECT

your broadcast equipment  
against lightning surges  
with **WILKINSON**  
**AC LINE SURGE**  
**PROTECTORS** ⚡

Excessive voltage surges caused by lightning, transformer arcing and induced transients are everyday occurrences that cause heavy damage to valuable broadcast equipment.

Now through the use of WILKINSON voltage sensitive Line Surge Protectors you can protect your equipment from line surges that may exceed even twenty times the normal line voltage.

A WILKINSON pulse compensated Line Surge Varistor, is placed across a line of its rated voltage. Should a surge or increase of voltage occur, the resistance of the varistor decreases at log scale as the voltage increases, thus acting as a momentary load or short circuit to the surge. WILKINSON Line Surge Protectors draw little or no current and are capacitor compensated for microsecond surges, thus damping all line disturbances as well as excessive voltage increase.

A small investment in WILKINSON Line Surge Protectors is your assurance that your valuable broadcast equipment will not be damaged due to line surges.

### AVAILABLE IN 3 MODELS!

Model S1A-1	120 V. single phase	\$ 89.50
Model S1A-2	220 V. single phase	\$169.50
Model S1A-3	220/240 V. three phase	\$259.50

For complete details write to:

**WILKINSON**  
ELECTRONICS, INC.

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• TELEPHONE (215) 874-5236 874-5237 •

Circle 41 on Reader Service Card

July, 1967 — BM/E

# REPLACEMENT FINDER

## for widely used **RCA** Image Orthicons



RCA 8674

TUBE TYPE NO.	TARGET MATERIAL	PHOTO CATHODE TYPE	REMARKS
5820A	glass	S-10	All-purpose tube for studio or remote use
8673	electronic conducting glass	RCA Bi-Alkali	Close-spaced target-mesh, long-life tube for studio use
8673/S	electronic conducting glass	RCA Bi-Alkali	Same as 8673, except 8673/S designates one of a matched trio of tubes for use in color cameras
8674	electronic conducting glass	RCA Bi-Alkali	Wide-spaced target-mesh, long-life tube for remote service
8674/S	electronic conducting glass	RCA Bi-Alkali	Same as 8674, except 8674/S designates one of a matched trio of tubes for use in color cameras



RCA 8748

4492	glass	S-10	Wide-spaced target-mesh for use in RCA TK-42 and TK-43 cameras at a target potential of 2.3 volts above cut-off	} For TK-42 and TK-43 cameras
4536	electronic conducting glass	S-10	Close-spaced target-mesh for use in RCA TK-42 and TK-43 cameras at a target potential of 3 volts above cut-off	
7389C	electronic conducting glass	S-10	Close-spaced target-mesh, for monochrome cameras	
8748	electronic conducting glass	RCA Bi-Alkali	Close-spaced target-mesh, for long life in monochrome cameras	
8749	electronic conducting glass	RCA Bi-Alkali	Wide-spaced target-mesh, for long life and high sensitivity in monochrome cameras	

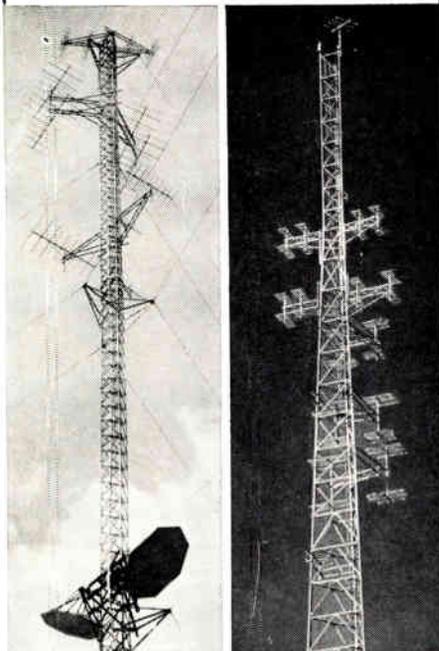
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G4 500' symbol of Rigidity

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- Guyed or Self Supporting Types
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- Minimum Maintenance

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IN CANADA Walcan, Limited, Toronto Ontario

Circle 43 on Reader Service Card

corporates an electronic viewfinder/monitor with a six-in. screen which allows the operator to use monitor for viewing a scene as it's recorded, as combination camera/monitor, or solely as a monitor. Camera is equipped with an f 1.8 lens and a vidicon pickup tube. Scanning system is random interlace; line resolution, 500 lines. Camera is priced under \$900 and weighs 20 lb.

Circle 122 on Reader Service Card

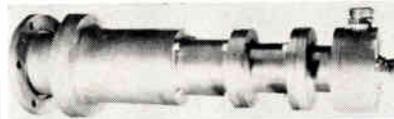
## CATV Cable Operates to 300 MHz

Superior Cable Corp. of Hickory N.C. recently announced the availability of coaxial cable of operating at frequencies to 300 MHz. Available in Alumagard aluminum-sheathed or Coppergard copper-sheathed types, the cables show a 26-dB return loss at 300 MHz. The new cables now make it possible to transmit up to 24 TV channels on an individual cable.

Circle 121 on Reader Service Card

## Water-Cooled Dummy Load

Model 5750 water-cooled 50-ohm rf coaxial load resistor has a frequency range extending to 2000 MHz and a power handling capacity of 50 kW. Unit uses a film-type cylindrical resistor which can be replaced in minutes and cooled with ordinary tap water flowing through 3/4-in. con-



nectors at a maximum rate of 9 gal/min. Maximum input vswr ranges from 1.10 at 1000 MHz to 1.20 at 2000 MHz. Unit weighs 16 1/2 lb and measures 17 5/8 in. length x 5 1/8 in. dia. Surface finish is nickel plate.

Circle 123 on Reader Service Card

## Miniature, Semirigid Coaxial Cable

Type UT-325 miniature semirigid coaxial cable, recently developed by MicroDelay Div. of Uniform Tubes, measures 0.002 in. dia. ±0.325 in. and has close tolerance equivalent to RG87 A/U. Typical attenuation is a loss of 14.3 dB/100 ft at 5 GHz. Minimum bend radius is 1/2 in.; capacitance, 29.3 pF/ft.

Circle 124 on Reader Service Card

## Versatile Audio Playback System

Model MCM-3000, made by Metrotech, Inc., of Mountain View, Calif., is a versatile yet well integrated com-

## Newest from Electrodyne

## INTEGRATED CIRCUIT AUDIO EQUALIZER AMPLIFIER MODULE

Microphone preamplifier.  
Low noise level  
(-127 DBM equivalent input)  
Booster and echo amplifier  
Four high frequency, two low frequency equalization points.  
Isolated echo output  
71DB gain overall  
Simplifies console design.  
Designer color panels for coding and color co-ordination



For complete literature write or phone:

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CORPORATION**

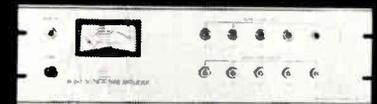
10747 Chandler Blvd., North Hollywood, Calif. 91601  
Telephone: area code 213/766-5602 or 213/877-3141  
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## SPOTMASTER

The all solid state AD1A

## AUDIO DISTRIBUTION AMPLIFIER



Meet the AD1A, a solid state audio distribution amplifier specifically designed for AM, FM and TV broadcast stations and recording studios. The AD1A distributes audio signals via five separate output channels (up to 25 with the addition of AD1A-X extenders), and incorporates a front-panel VU meter and monitor jack to permit visual and aural monitoring of the incoming signal at the output of the line amplifier. Response is essentially flat from 40 to 20,000 Hz, with low distortion and noise, 60 db channel isolation and 12 db peak factor. For further information, write or call today:

*Spotmaster*

**BROADCAST ELECTRONICS, INC.**

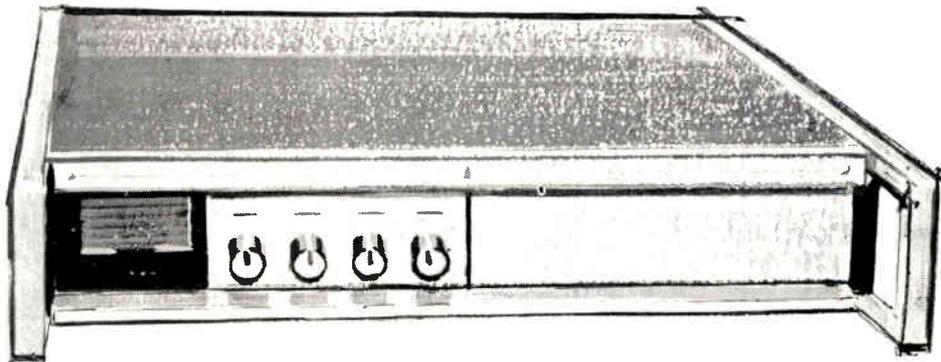
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Circle 45 on Reader Service Card

# SOUND SENSE...



## ...WITH THE NEW PYE COMPRESSOR LIMITER



**Gain** 0dB  $\pm$  0.5dB (with no compression)  
**Frequency Response** +0.5dB to -1dB, 30 c/s to 15 kc/s.  
 +0.2dB to -0.5dB, 60 c/s to 8 kc/s.  
 (in all compression and limiting conditions)

**Output level** +24dBm maximum.  
**Input Level** +24dBm maximum  
**Signal to Noise** Greater than 60dB.  
**Compression Ratio** 1:1, 2:1, 3:1, 5:1, switched  
 The setting up of associated equipment is catered for by a linear position.

**Limit Range** For an increase of input level of 20dB above the threshold, output level increase: less than 1dB.  
**Attack Time** Compression: Less than 0.5 ms. Limiting: 1 ms  $\pm$  0.5 ms.  
**Decay Time** Switchable: 100ms, 200 ms., 400 ms., 800 ms., 1600 ms., 3200 ms.

**Threshold Level** Control calibrated in 2dB steps.  
 Compression -24dBm to +16dBm.  
 Limiting -16dBm to +24dBm (+3dBm relative to indicated threshold level).

**Distortion** With 600 ohm load, less than 1% measured at 30 c/s, 1 kc/s and 8 kc/s.

**Input Impedance** 10 k ohms  $\pm$  10% -j 3 k ohms at 30 c/s, 1 kc/s, 8 kc/s.  
**Output Impedance** Less than 50  $\pm$  j 7.5 ohms at 30 c/s, 1 kc/s, 8 kc/s.  
**Isolation Input** Greater than 50 dB.  
**Isolation Output** Greater than 50 dB.  
**Temperature Range** -10°C to +55°C (Ambient Operating)  
**Supply requirements** 110/220V 50/60 Hz.  
 Rack or case mounting.



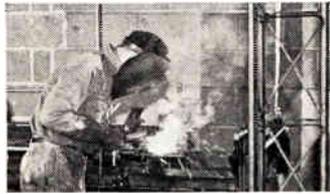
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Circle 47 on Reader Service Card



Now—eye-level viewing with built-in 60° tilt

## IDEAL FOR CATV PROGRAM ORIGINATION

**NEW SOLID-STATE PACKARD BELL TELECASTER 9200 VIEWFINDER CAMERA** offers educational studios network versatility at less than half the cost. Self-contained "floating" vidicon housing permits 60° tilting action without movement of the camera, which also operates through 360° pan range. Wide-range motor-driven zoom lens has fingertip control of both zoom and iris functions. Large 8-in. kinescope has low-glare, bonded faceplate. Write today for illustrated brochure.

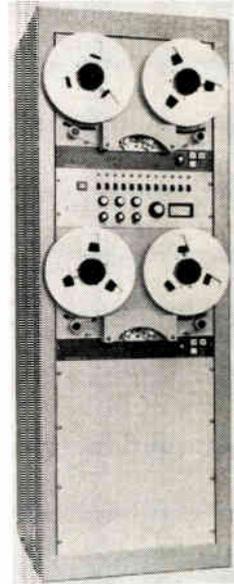
**Packard Bell**

NEWBURY PARK, CALIFORNIA 91320  
TELEPHONE (805) 498-6601



Circle 48 on Reader Service Card

combination of building blocks which can be adjusted to suit the needs of growth, station format or degree of automation. Heart of the system is an intersperser control unit, which precisely switches the integral trans-

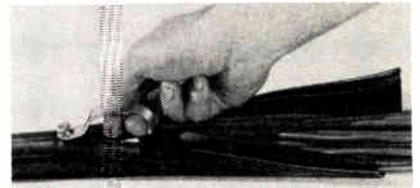


ports in a manner predetermined by the program director. Repeating sequence is established with 12 selector switches; and the transport commands are accurately based on adjustable delays following the end of a selection, or standard 25-Hz cue tones. A light above each switch indicates the active selector, thereby also showing which event will follow in the sequence. A full complement of controls is standard: line output level and selector, bass, treble, agc, and monitor level and selector controls, as well as vu meters for each channel. Basic system includes two transports (mono or stereo) and is priced at \$2865.

Circle 125 on Reader Service Card

## Zipper Closure Cable Covering

Zippertubing, made by Zippertubing Co., 13000 South Broadway, Los Angeles, Calif., provides an easy, low cost method for bundling new or recovering reclaimed cables. Covering is available in rf interference- and electrostatic-shielding materials



with grounding leads. Closure track lies flat for assembly and closes with hand tool provided. Track may be reopened or sealed permanently. Sizes range from 1/4-in. dia, color selection is available.

Circle 126 on Reader Service Card

Circle 49 on Reader Service Card →



Livelier and truer colors...

plus copies you can't  
tell from the original

and  
how!

**Livelier, truer colors:** Colors appear brighter, clearer, lifelike. Up to 5db better signal-to-noise ratio for multiple generation copies. New oxide, new binder, new coating technique make this possible.

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

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

**Improved sound:** Tape background noise is significantly reduced. New No. 399 gives you living sound to match the picture!

**Total versatility:** Can be used for both high-band and low-band re-

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

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Find out how Color Tape Plus can add an exciting new dimension to your programming. Write: Magnetic Products Division, 3M Co., St. Paul, Minnesota 55119.

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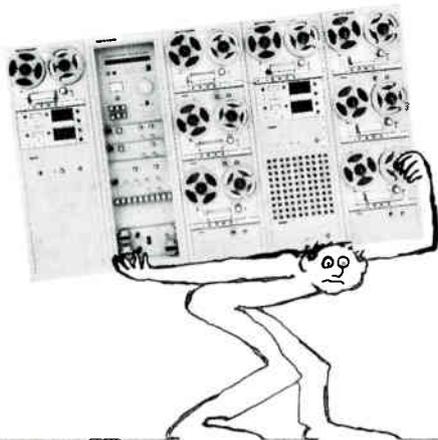


“Scotch” Brand  
Video Tape No.399

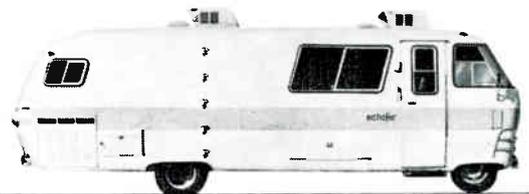
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the HARD WAY!



the EASY WAY!



**Now! 3 Schafer mobile demonstration units. That's our demomobility. We'll come to you...to prove our automation system, its operation, reliability, leaseability, and personality. To save you time and money, Schafer has 3 mobile units that are available now and they are manned by capable personnel...namely Paul Schafer, Dallas Barnard, John Price, Jerry Bassett and Milt Kray. They are all waiting, with bated breath, to zip out to your operation and show you why Schafer's Broadcast Automation Systems are your best buy or lease. This is just one more sample of Schafer's ability to respond to the requirements of the broadcast industry. Call or write us for an appointment and we'll show you our demomobility.**

## schafer

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Circle 50 on Reader Service Card

# ANNIES

IN THE NEWS

**Norman E. Hall** has been named engineering manager of KERO-TV, Bakersfield, California. The announcement of the appointment was made by Kenneth R. Cross, vice president, Time-Life Broadcast and general manager of KERO-TV.

Kaiser Broadcasting announces the appointments of **Cecil Webb** as assistant to the vice president and general manager, **Clarke S. Davis** as sales representative for WCAS-AM, **Jack Curtiss** as public service director for KFOG, and the promotion of **Tom Edwards** to music director at KFOG.

Vincent T. Wasilewski, president of the National Association of Broadcasters, has announced the appointment of eight broadcasters to serve on NAB's newly-created Secondary Market Television Committee. Chairman of the committee is **Hamilton Shea**, executive vice president, WVA-TV. Serving with him as members are: **Raymond E. Carow**, vice president and general manager, WALB-TV; **James W. Higgins**, general manager, WWNY-TV; **Ray Johnson**, executive vice president and general manager, KMED-TV; **Allen Land**, group manager WHIZ-TV; **Dale G. Moore**, president, KGVO; **Marshall H. Pengra**, general manager, KLTU-TV; and **Thomas E. Young**, vice president and general manager, KWVL-TV.

**Bonnie McNabb** recently was appointed program director for WRIO, Cape May, N.J. General Manager R. Allan Campbell made the announcement.



Arlo Woolery



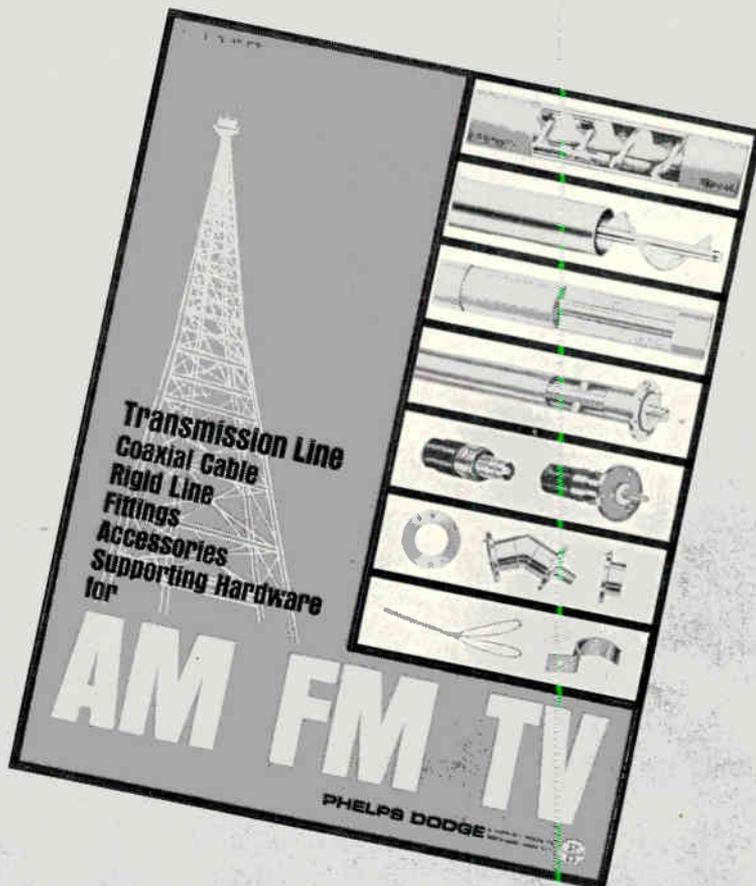
Harry F. Bowmaster

**Arlo D. Woolery** has been named president of American Cable Television, Inc.

Craig Panorama has announced the appointment of **Harry F. Bowmaster** as a full-time consultant in the videotape recorder and closed circuit TV field, according to James W. Russell, director of marketing.

Micro State Electronics, a Raytheon Co. subsidiary, announces the appointments of **Wesley G. Matei** as manager of research and develop-

The complete story on our broadcast communications components and capability...no charge!



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**Coaxial Cable** Air dielectric and foam dielectric types offer reliability and lower loss characteristics.

**Connectors** Type N, HN, UHF, TNC, LC, EIA, splices and end seals. From stock delivery.

**Coaxial Cable Accessories** Off-the-shelf delivery of cable grips, grounding kits, tubing cutters, two-stage regulators, automatic dehydrators.

**Rigid Line** Available in four diameters. Meets or exceeds EIA RS225 specifications.

**Rigid Line Accessories** Miter elbows, gas barriers, reducers, tee assemblies, adapters, flanges are available.

**Supporting Hardware** Anchor fittings, hangers, braces, supports, clamps, bulkhead fittings.

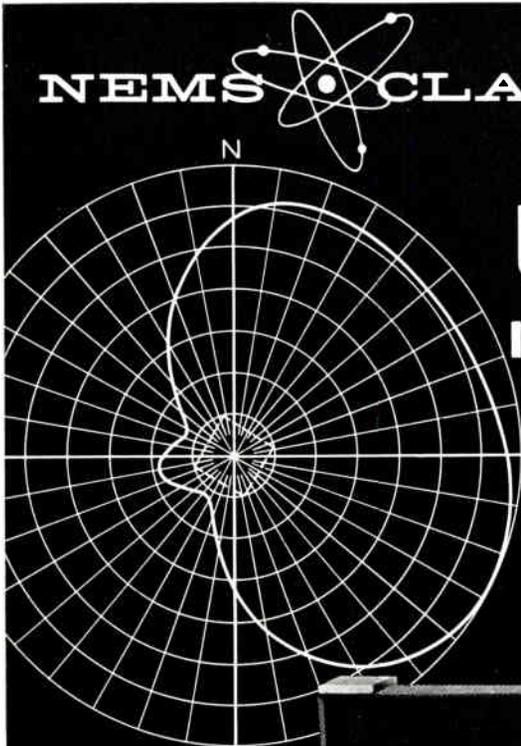
**PHELPS DODGE** ELECTRONIC PRODUCTS  
NORTH HAVEN, CONNECTICUT



Circle 51 on Reader Service Card

NEMS • CLARKE

offers a  
**UHR\*—AM**  
 measurement  
 capability  
 with the  
**FIM-135**  
 FIELD INTENSITY  
 METER



(\*ultra high reliability)

- All Solid State
- 175-Hour Mercury Battery
- Taut-Band Meter Movement
- Lightweight
- Crystal or VFO Operation
- Tuning from 540 to 1600 KC
- Front Panel Speaker
- Use as Null Detector



The new Model FIM-135 Field Intensity Meter provides exceptional reliability in the field due to its extremely ruggedized construction, solid-state design, and long life Mercury battery. Its lightweight (9 lbs.), compact (6½" x 10" x 6½"), and simplified design provides ease of handling and operation in the field.

Dial locks provide a fixed setting at any point across the entire broadcast range. A taut-band meter movement accurately displays from 10 microvolts per meter to 10 volts per meter, making it equally effective for interference studies at low signal strength and for close-in measurements on high-power directional arrays. A special input jack permits receiver use as a null detector for RF Bridge measurements.

V-27

For complete information, call or write:

**Vitro ELECTRONICS**

Producers of NEMS-CLARKE Equipment  
 A Division of Vitro Corporation of America  
 919 Jesup-Blair Drive • Silver Spring, Maryland (301) 585-1000  
 Circle 52 on Reader Service Card

ment and **Herbert A. Finke** a vice president of the components div. **Beverly A. Shaw**, an engineer in Raytheon Company's Microwave and Power Tube Div., has been awarded a patent for an improved cathode heating structure for power tubes and traveling wave tubes. Raytheon also announces the appointments of



LeRoy Klein

Williar R. Staats

**LeRoy D. Klein** as director of commercial marketing, **John D. Clare** as general manager of Raytheon Europe and **Dr. David R. Whitehouse** as technical manager of Raytheon's Laser Advanced Development Center.

**Willard R. Staats** has been promoted from sales engineer to sales manager of the Danex Corp., a subsidiary of Metex Corp.

Sylvania's Entertainment Products Div. announces the appointments of **Bruce H. McCausland** as manager of sales promotion and **J. Lee Lockard** as manager of procurement and materials. Sylvania's Electronic Tube Div. has named **Allen T. Wang** operations controller.

**Raymond J. Kroner** has been appointed product manager of commercial sound at Altec Lansing's Anaheim, Calif. office.

**Edward H. Gilbert** has been appointed product specialist for power grid tubes by Eimac Div. of Varian.

**Edgar E. Stevenson** has been appointed sales engineer for Memorex Corp., according to M. George Kuller, northwest regional manager.

**Jerrold Sandler**, executive director of the National Educational Radio Div. of the National Association of Educational Broadcasters, was one of 64 recipients of the San Francisco State College's Broadcast Awards, 1967.

**Dr. William E. Glenn** has joined CBS Laboratories as a staff scientist, it was announced recently by Dr. Peter C. Goldmark, president and director of research.

**W. "Buzz" Sawyer**, director of operations, film and programming of WWLP and satellite WRLP, was elected vice president of Springfield Television Broadcasting Corp., at a recent meeting of the Board of Directors.

# BROADCASTERS SPEAK

Sirs:

I have been receiving *BM/E* since August, 1965, and I have found it to be useful and informative.

In February, 1967, my satisfaction with your magazine was diminished. In the issue of that month, you "came out of your neutral corner" to enter the already over crowded field of opinion molding. I find your action, and your editorials, disappointing.

Certainly, you may do as you like with your magazine, except that, you may no longer send it to me.

John L. Nelson  
San Angelo, Texas

*Sorry you won't be reading us, J. N. We just happen to be convinced that people in broadcasting and people in CATV one day will not merely coexist, but actually will be good friends. We look forward, therefore, to a resubscription from you in the future.*

Sirs:

Your magazine is giving *Broadcasting* "top-notch" competition here at WRIO. We have just been introduced to your magazine after reading the other publication for the past few years.

To the ponderance of we executives here at the station, came the solution to many questions. We have been going over the procedures for setting 'Program' and 'Maintenance' logs with other station managers in the area, and I have found many different interpretations.

Fortunately we came upon your May article "Log Keeping Made Painless." I gave the issue to our program director, Bonnie McNabb, and she reports that all of our questions have been answered.

WRIO Chief Engineer Ray Lloyd was particularly interested in the proof-of-performance article. He is about to start ours and fortunately found some short-cuts in his reading.

As I said, we look forward to each issue.

R. Alan Campbell  
General Manager  
WRIO, Broadcasters, Inc.  
Rio Grande, N.J.

*Glad you got so much use out of the May issue, R.C. Tell your friends.*

Sirs:

I enjoy your publication no end. Sometimes it arrives with the cover torn which tears me a little too.

R. B. Austin  
Alberton Cable TV  
Alberton, Montana

*Sorry to hear about the condition in which *BM/E* arrives at your address, R.A. Have you checked your mailbox for rodents?*

## Magnetic Tape has been waiting for a recorder like the **TAPE-ATHON 900!**



*The new Tape-Athon 900 Recorder/Reproducer has been developed for professional audio applications—it is as precise, dependable and convenient as only Tape-Athon could design it—after building over 10,000 of its predecessors.*

1. The 900 has a unique double capstan transport system that permits precise start and stop of the tape motion. No lost recordings, easier editing, excellent overall timing.
2. All solid-state electronics are naturally more reliable, develop less heat, and permit compact packaging of the electronics section. The 900 is available in cabinet or rack mounting versions.
3. 10½ or 7" reels, speeds from 15 ips to 15/16 ips, automatic reversing, two or 4 track recording, fit the 900 for virtually any recording or playback purpose.
4. Unique "tape-drop" design eliminates cumbersome tape threading forever. It saves time, tape, and tempers. The tape simply falls into place beneath the recording heads.
5. Find all the wonderful new features and specifications on this new Recorder in the Model 900 brochure—yours immediately upon request.

# Tape-Athon, Corp.

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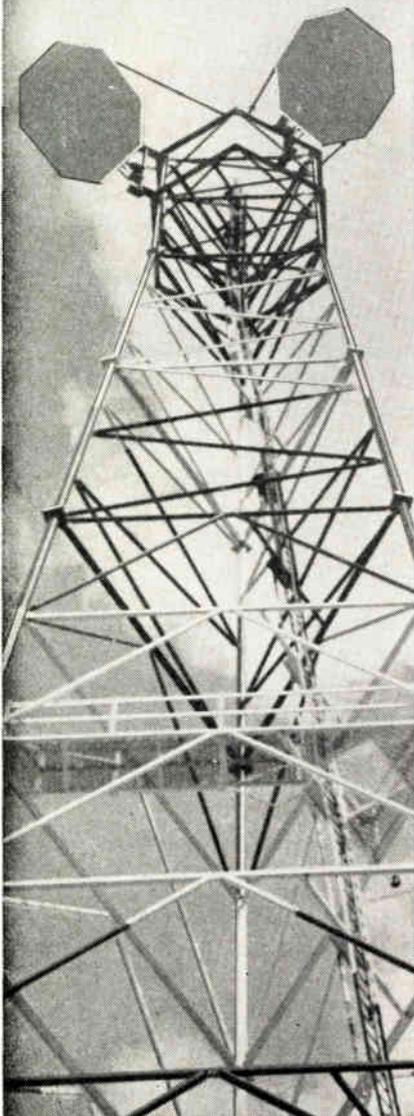
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705 Douglas St. Sioux City, Iowa  
712-252-4475  
TWX 712-991-1893



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Sirs:

We wonder if you could be so kind to send us the address for "The Electronic Industries Association," so we can make an order to them. . . .

Ing. Jose Marquez  
Gral. Manager, XEWT-TV

Sirs:

Referring to the article on analyzing video system performance in the March issue of *BM/E*, we should like to receive the address where to order the EIA Test Pattern (RETMA Resolution Chart) with instructions.

Thanking you for your cooperation we remain yours sincerely.

Ir. V. J. de Grijp  
Director Engineering Services  
Radio Nederland

*Electronic Industries Association is located at 2001 Eye Street N.W., Washington, D.C. 20006.*

Sirs:

I have just received the May issue of *BM/E* and want to congratulate Mactier Publishing on the colorful, imaginative and highly outstanding cover. Question: Who was the model for the "Go-Go" dancer — or is that a trade secret?

Enjoyed your recap of the NAB convention very much. While I was there myself, it was nice to be able to sit back and read about it in peace and quiet.

All in all, an excellent issue!  
Justin Bradshaw  
Broadcast Music, Inc.  
New York, N.Y.

*Thanks for your remarks on May BM/E, J.B., but we just can't reveal the name of our cover girl.*

Sirs:

Thank you so much for the excellent article, "The Formula For Sales Success," April *BM/E*, p 144. I am most pleased and grateful. The placement was just great! Thought you would like to know I have received several letters and 'phone calls . . .

In the make-up two articles appear to have been combined into one without proper identification of the second. (We do not own *KVEN*, Ventura, California.) You may want to make a note of this in a subsequent issue.

I certainly can assure you our publication has excellent coverage, and certainly on a nation-wide basis, since I've had calls from Massachusetts, letters from Pennsylvania and Michigan among other locations. Thank you again.

E. J. Patrick  
General Manager, KAVI

*Nice to know you're pleased with the treatment we gave your piece, E. P. We wish the same were true for I. L. BM/E apologizes to KVEN and Ira Laufer, general manager, for losing the headline and byline of the second half of the article—thereby appearing to wed his article with yours.*

Sirs:

Unfortunately, we have not as yet received our January copy of your excellent publication. And this, in our book, is something of a disaster. It would appear that it has been lost in transit as the writer has briefly sighted the Australian Control Board's copy, which they received some time ago . . .

Now that we are in written contact with you we feel it desirable to express our great appreciation of *BM/E*. Although we are only relative newcomers to the family, we have obtained immense benefit from this publication [for] nine months.

It may interest you to know that through *BM/E* we have been in contact with no less than twelve companies which advertise their products in your columns. Of even greater all round importance is the fact that we have, as a result, been able to secure Australian sales rights to several product groups, and we are currently looking for more.

Should any other advertisers with whom we have not been in contact be desirous of acquiring representation in Australia, we would be most happy to hear from them.

Because we are closely related to MATV and CATV equipment, we have a natural tendency to look for closely related products, but that should in no way deter interested parties with other products from contacting us.

We wish *BM/E* further success in the future and look forward to receiving your publication in the near future at our new address.

Bob Thomson  
Technical Director

*Thanks for your letter, B.T. Your January BM/E's on the way.*

Sirs:

I have read with interest your articles on directional antennas, finding a frequency, building a station, etc. Have you ever published anything relating to increasing power? If so, may I have reprints?

We would like to increase our daytime power from 250 watts to 1000 watts . . . We plan to drop to 250 watts at sunset each day so not to need a directional antenna.

We would like to prepare the F.C.C. applications ourselves without calling in a consultant, as a matter of economics. Any suggestions or guide lines you can offer will be greatly appreciated.

Gordon E. Atteberry  
Chief Engineer, KLA V

*Sorry, G.A., this seems to be an area we've overlooked. We'll keep it in mind for future planning. If you're contemplating any equipment changes, maybe manufacturers involved will have someone who can offer free advice. As for working with Form 301 for obtaining permission for station modifications, we refer you to May 1965 *BM/E*. If you need a copy, let us know.*

# WHY DOES USE **AMPEX** TRANSISTORIZED MODULATORS IN THEIR UHF KLYSTRON TRANSMITTERS?



The common complaint that we have heard about television transmitters over the years is that visual modulators are poorly designed, do not include all of the necessary functions or just do not perform well. Since TA has built and installed amplifiers which have been used with other manufacturers' drivers and modulators, we have become very much aware of the shortcomings of existing designs.

Consequently, when we began design work on our transistorized driver a year ago, we studied the problem of modulator design in great detail. The first step was to review the state of the art of similar equipment. Our conclusion was that much sophistication already existed in transistorized equipment similar to visual modulators. Specifically, we studied several stab amp and processing amplifier units available commercially.

Our comprehensive tests showed that the Ampex processing amplifier normally used in VTR machines and which is recognized by industry engineers as the ultimate in processing amplifier design, contained the essential qualities for a high performance modulator.

Ampex engineers then repackaged the processing amplifier for use as a modulator for TA. The result is truly a breakthrough inasmuch as the modulator is entirely transistorized and contains all of the functions of the processing amplifier such as control of burst gain, sync height, pedestal level, video gain and reconstructed sync. In addition, the unit includes all of the transmission corrective circuitry required of a good modulator. All of these features are remote controlled in TA transmitters when required.

The inclusion of Ampex modulators in TA transmission systems has resulted in the finest television transmitter available today.

We are proud that we lead the field with the first transistorized driver and doubly proud that we use the ultimate in modulator design—the Ampex transistorized modulator.

***For more information  
write today to:***

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LOS ANGELES OFFICE  
8846 Delco Avenue  
Canoga Park, California 91306  
(213) 882-0732

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# LITERATURE of INTEREST

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

**CATV head-end equipment** for channel control is described in bulletin and catalog from CAS Mfg. Co. 150

**Recommended standards** RS-332, RS-250-A and RS-192-A from the Electronic Industries Association present, in that order, dimensional standards for types I through III endless loop magnetic tape cartridges (151), electrical performance standards for TV relay facilities (152) and holder outlines and pin connections for quartz crystal units (153). Prices in order of appearance are \$1.60, \$3.40 and \$5. Circle as indicated above.

**Audio tape performance characteristics** of Ampex 600 series tape are presented in Bulletin T 133. 154

**Vidicon camera chain** — automatic series 321 — features and specifications are presented in Bulletin V 111 from Ampex. 155

**Time element compensator** — model Amtec by Ampex is described in Bulletin V 121. 156

**Video and pulse distribution amplifiers** for broadcast and closed circuit

applications are featured in Bulletin V 118 from Ampex. 157

**Audio broadcast recorder** — series CX700 — is topic of brochure from Crown International. 158

**Zig zag uhf antennas** for fm and TV broadcast applications are thoroughly described with illustrations, graphs, tables and radiation patterns in 60-page catalog from Jampro. Page 59 has family of 12 curves representing antenna heights ranging from 200 to 1200 ft showing tilt angle vs radiation distance. Last page has computer readout of five categories of data including relative and actual gain, and a plot of relative field for a typical six-bay vertical antenna positioned at 69 angles ranging from 5 to  $-12^\circ$ . 159

**Drying problems** frequently encountered in the processing of photographic film are discussed in a technical bulletin from the Photographic Products Division of 3M Co. 160

**Test equipment**, including color bar generators and video scanners, is discussed in 8-page Brochure 67D from Hickok Electrical Instrument Co. 161

**Switches**, relays, readout indicators, terminal strips, knobs and pilot lights are subject of 12-page catalog from Alcoswitch Division of Alco Electronic Products. 162

**"RF Coaxial Cable Connectors, Receptacles and Adapters"** is the title and topic of 12-page illustrated catalog from Kings Electronics Co. 163

**Solid-state VOM** (model TVO) with FET amplifier and 11-megohm input impedance is described and illustrated in data bulletin from Triplet. 164

**Preparation of slides** for color TV using overlays is discussed with the aid of illustrations in folder from 3M Co. Communications Department. 165

**Solid-state SCA/multiplex receiver** is presented in bulletin from Browning Laboratories. 166

**Vidicon tubes** — 23 types — are tabulated with characteristic relative sensitivity and resolution curves in leaflet from English Electric Valve. 167

**Absorption and directional wattmeters** and coaxial load resistors made by Bird Electronic Corp. are described in Short Form Catalog SF-67. 168

**Frequency- and phase-modulation measurements** are discussed in detail in 17-page Application Note 87 from Hewlett Packard. 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

**Transmission line** for a-m, fm, and TV and a line of cable fittings are described in 8-page catalog from Phelps Dodge. 171

**Uhf TV transmitter brochure** (four pages) from GE's Visual Communications Department includes technical description, performance specifications, block diagram and suggested uhf layout. 172

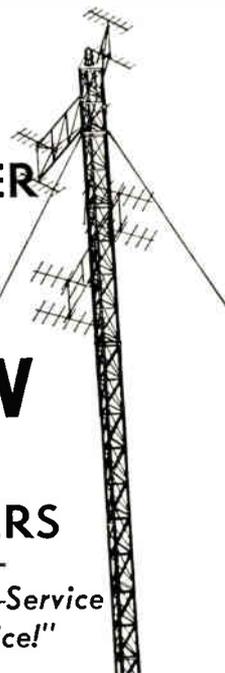
**Color TV van** equipped by Visual Communications Department of GE is presented in brochure GEA-8522. Included are outstanding features, floor plans, descriptions and specifications. 173

**Microphones**—condenser, dynamic and wireless, are presented in three informative and well-illustrated brochures from Sennheiser. 174

**Shielding systems**—18 types for exclusion of rf, electromagnetic, audio,

## THE LEADER IN CATV TOWERS

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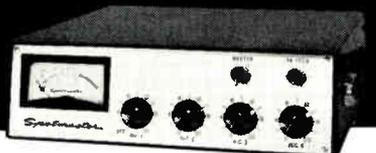
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The RA-4CA is a lightweight, four-channel portable mixer amplifier specifically designed for remote broadcast or auxiliary studio use. It is completely self-contained and operates from either AC or batteries (switching automatically to battery operation if AC power fails); runs as long as 200 hours on low-cost "D" cells. It offers four microphone channels with master gain and P.A. feed, all controlled from the front panel. Lightweight construction (just 11 pounds with batteries), a convenient carrying handle and a snap-on front cover mean the RA-4CA can be easily set up to operate anywhere. For further information, please write or call today:

**Spotmaster**  
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Circle 58 on Reader Service Card

gamma and X-ray radiation is the topic of eight-page brochure from Ray Proof Corp. 175

**Industrial laminates**—70 grades, including copper-clad, are described in 16-page brochure from GE's Lamination Products Dept. Application to electronic communication is emphasized. 176

**Portable camera chain** broadside from TeleMation illustrates and outlines description and electrical specification of TMC-214 ETV and CATV camera chain. 177

**"Measurement of Complex Impedance 1-1000 MHz"** is the title and topic of an 11-page application note from Hewlett-Packard. Procedure explained references impedance to

50 ohms and makes use of vector voltmeter. 178

**"Swept SWR Measurement in Coax"** from Hewlett-Packard describes technique for making quick and accurate swept-frequency measurements of swr in coaxial systems to 18 GHz. 179

**Teflon terminals** of semi-assembled type are tabulated and illustrated in dimensional drawing in three-page catalog from Sealectro Corp. 180

**Wire/Cable harnessing** and marking is the topic of 12-page brochure from Electrovert, Inc. Booklet includes dimensional drawings and tabulations of applications and physical and electrical properties. 181

**Videotape**—series 142 from Ampex is presented with tabulated prices and specifications in Bulletin T-107. Among accessories listed in bulletin are empty reels and mailing boxes. 182

**Quotable quotations** of leaders in professions ranging from government to education on the issue of self-regulation in general and the NAB Radio and Television Codes in particular are presented in "Something of Value"—a booklet published by the NAB Code Authority. 183

**Polyurethane foam's** applications as packing and its advantages are presented in brochure from American Excelsior Corp. 184

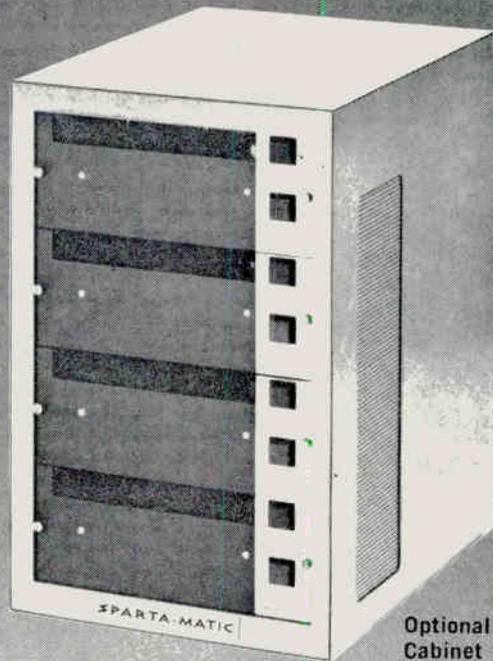
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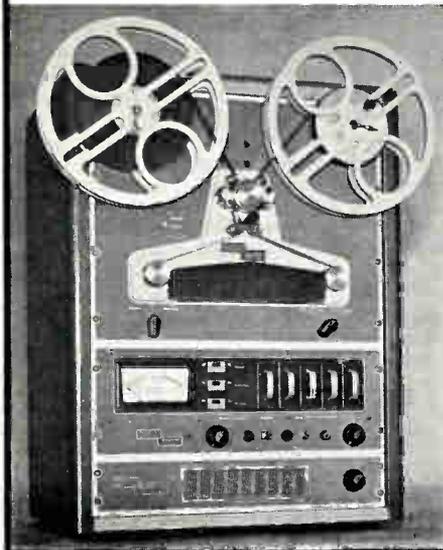
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# SINGLE-SYSTEM EDITING NOW AVAILABLE!

## NEW!

Model DR-1 Displacement Recorder



The Magnasync Model DR-1 Displacement Recorder automatically re-positions the sound track of a processed 16mm single-system release print film to "editor's sync" . . . sound and corresponding picture "in line" . . . for rapid, accurate editing, and then automatically re-positions sound track to "printer's sync" or "projection sync" for immediate projection, most often required by TV and Documentary producers.

The DR-1 eliminates equipment associated with conventional, cumbersome, inaccurate double-system transfer of 100 mil original magnetic sound track to a second 16mm magnetic sound track. One Displacement Recorder, and viewer equipped with magnetic head are the only equipments required. "In line" editing eliminates "flip-flap" . . . unwanted, unassociated picture sound.

Unit may be interlocked with other magnetic film recording equipment and projectors including conventional TV chain projectors. An audio input permits addition of sound to unrecorded release print film, and playback audio output is provided for projection tracks.

Circuitry is modular plug-in solid state. Monitor speaker, headphone output and automatic switching provided. Available for 115 V, 50-60 cycle.

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*Dealer inquiries invited.*

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## CLASSIFIED ADVERTISING RATES

SITUATIONS WANTED: 15¢ per word; \$2.00 minimum  
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### Want Radio Station

1,000-5,000 watts Daytime located in major market area in South, Southwest, or Midwest in an area not presently having a station with Religious format. Financially qualified-Experienced. Broker inquiries invited-or will deal with principals.

Box 767-1, c/o BM/E, Thurmont, Md.

## POSITIONS WANTED

ATTENTION: WEST COAST — young top 40 DJ — 3rd Phone — experienced — Broadcast School Grad — Draft exempt — will relocate. Looking for station desiring hard working, career-minded announcer. Tight board and strong commercial delivery, lively sound. Will consider all locations, prefer West Coast. Charlie Raye, 5510 S. Cleveland, Hinsdale, Illinois. 312 323-5270.

DJ tight board—Presently nightman—Available in two weeks—Will relocate in Ohio, Indiana, Michigan or Illinois—Happy sound—7 years experience in all phases—Strong commercials—3rd endorsed—References draft exempt—permanent position desired. Box 767-2, c/o BM/E, Thurmont, Md.

Ready by August first—Greatest top-40 personality—Third class endorsed—Single—Draft exempt—College degree—Experienced all phases—Good salary—Locate any state—Jeff Starr, 116 West Avenue, Seekonk, Mass. 02771, Phone (617) 336-9247.

Currently employed, looking to move up. 2 years college. 2 years radio sales experience. Great track record including major market. A-1 references. Will go anywhere there's opportunity. Box 767-3, c/o BM/E, Thurmont, Md.

Top rated "telephone talk show" personality available. Audience builder. Degree in social science—Journalism—Mature broadcaster radio and TV. Interested in the west coast only. Write Box 767-4, c/o BM/E, Thurmont, Md.

Top 40 DJ — Great Production, young swinging sound. Draft Exempt, 19, 2 yrs College Radio experience. Prefer Northeast. Available Immediately. Box 767-5, c/o BM/E, Thurmont, Md.

Top ten market operations manager/pd. 15 years experience in all phases—former general manager. 1st phone. Ready to relocate for more opportunity. Box 767-6, c/o BM/E, Thurmont, Md.

Director, 32, first phone, experienced on full hour news, sports, remotes. VTR spots, switching. TD background. Now on west coast, will relocate. Box 767-7, c/o BM/E, Thurmont, Md.

Negro air personality broadcast grad DJ announcer. lite experience, dependable, 3rd endorsement. Will relocate, married. Box 767-8, c/o BM/E, Thurmont, Md.

Producer-Director. Live, VTR, film. Creative directing, can do own switching, 24 married mature, stable. A good team man. Vet, college. Box 767-9 c/o BM/E, Thurmont, Md.

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.

Zany personality rocker graduating from #1 rated college station. Two years pro experience 3rd endorsed, strong board and production. Box 767-10, c/o BM/E, Thurmont, Md.

Beginner, 3rd endorsed, military complete, like all types of music, single, news and sports also. Hard worker. Box 767-11, c/o BM/E, Thurmont, Md.

31, single, degree. Experienced, air, copy. Mature, tranquil station, plains, West. Must have week vacation this summer, unpaid okay. Box 767-12, c/o BM/E, Thurmont, Md.

## POSITIONS WANTED (continued)

Experienced first class engineer desires working or chief job. Fully qualified for any job in broadcasting. West coast preferable. Box 767-13, c/o BM/E, Thurmont, Md.

Negro announcer DJ. Recent graduate in all phases of radio now available. Dependable. 3rd phone. New England preferred. Box 767-14, c/o BM/E, Thurmont, Md.

Bright personality, DJ Announcer, authoritative newscaster, non-floater. Professional attitude. Box 767-19, c/o BM/E, Thurmont, Md.

One of the finest on-camera news directors in the nation seeks change. Associated Press award winner. Box 767-16 c/o BM/E, Thurmont, Md.

DJ-newscaster, authoritative, artistic, 3rd ticket, military complete. Will relocate. Box 767-17, c/o BM/E, Thurmont, Md.

Negro dj, 3rd phone, tight board operator. Some experience, will relocate. Box 767-18, c/o BM/E, Thurmont, Md.

DJ, announcer, newscaster, experienced unmarried, willing to relocate. Box 767-15, c/o BM/E Thurmont, Md.

Experienced sports play by play and newsmen seeks medium-large market. Box 767-20, c/o BM/E, Thurmont, Md.

## HELP WANTED

### SYSTEMS ENGINEERS

#### VIDEO

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Our rapidly expanding volume of business has created openings for systems engineers familiar with vertical interval switching equipment. Responsibilities include provision of wiring information on rack and control panel equipment for custom switchers. Some station experience and familiarity with audio preferred. Please send resume of experience or call Mr. R. J. Rainey, 201-382-3700.

### Ward Electronic Industries

142 Central Ave. Clark, N.J. 07066

Wanted—1st class engineer-announcer, Radio Station WNKY, Box 248, Neon, Ky.

## HELP WANTED (continued)

### TELEVISION ENGINEERS

We are interested in contacting 10 Station Engineers capable of design or field engineering. Excellent opportunities in TV Development Engineering and Systems Engineering with Sarkes Tarzian, Inc., Broadcast Equipment Division.

TV station engineering experience required, BSEE or equivalent desirable. Send resume of experience, or call, Mr. Biagio Presti, Broadcast Equipment Division, Sarkes Tarzian, Inc., Bloomington, Indiana, Area Code 812, 332-7251.



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HELP WANTED: Announcers, Newsmen, engineers, combomen, Salesmen, etc. There is a shortage of qualified help throughout most of Kentucky. Anyone interested in locating in Kentucky need only mail their full qualifications, address and phone number to J. T. Whitlock, Box 680, Lebanon, Ky. 40033 for a free listing in our Ky. Broadcasters Newsletter issued the 15th of each month. No tapes or phone calls please.

TELEVISION ENGINEER — ETV closed circuit campus network. Marconi Mark IV cameras. Ampex VR1100 and VR660 VTR's. Electronic Editor and Intersync. Requires 1st phone, two years broadcast or CCTV experience. Contact: Mel Chastain, Educational Television Program, Bagley Hall, Texas A&M University, College Station, Texas. Phone: 846-8831.

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# FROM THE EDITOR

## Confusion in Controlling Cable

The pleasant notion prevalent in both broadcasting and cable distribution circles is that a fair copyright bill will moderate CATV's use of distant signals — since they will have to pay — and the FCC can then relax its regulatory control.

Whether or not this happy event happens depends on how fairly fair is judged.

On one aspect, CATV operators and broadcasters appear to agree: There should be no copyright liability within the normal reception range of a station. Where weak signals are concerned, the CATV interests favor compulsory license with statutory fees established. To bring in a distant signal, CATV operators agree a license must be obtained. Broadcasters would permit a station the right to refuse to be carried and would keep distant signals (beyond Grade B) out of the top 100 markets. (See *BM/E* May, p 29)

CATV's see no reason to limit local origination and also ask grandfather clause exemption if the system was cablecasting before January 1, 1967. Broadcasters would ask full royalty for every station carried if the CATV does *any* origination beyond local time and weather announcements.

From an impartial position, the grandfather clause is extreme and so is the broadcasters' attempt to eliminate local origination (or if concessions to local news are made, the restrictions on editorial comment seem absurd).

The nut of the problem is the attempt to include in a copyright bill regulatory control. There are copyright issues and there are regulatory issues and both should be clarified by law as separate problems.

On this score, broadcasters appear to be confusing the issue by their stand against local origination, opposition to competition into the top 100, and the clauses in Section 111 which bring in pay-TV and editorial comment issues. No wonder the House got so confused it gave up.

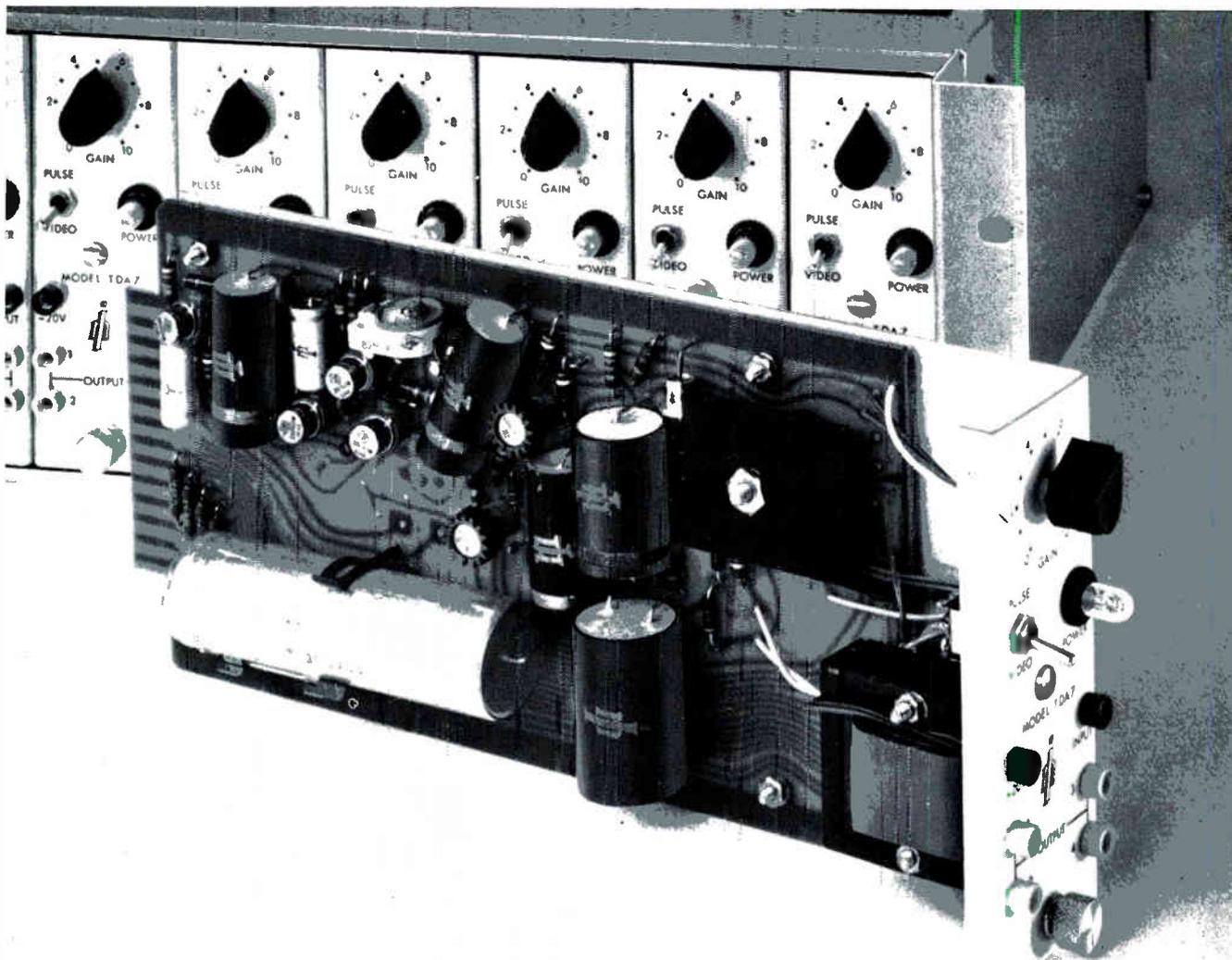
The argument against local origination is that it is unfair for a CATV system to collect money for carrying a station and then turn around and use that money to underwrite competing programs.

In principle, yes, but as a practical matter, the local programming would have to exceed, say, 15 hours a week to be serious competition. As a practical matter, the under-designed sees as a better test of unfairness direct economic competition. There is a parallel in the publishing industries' use of protecting its copyright.

A magazine generally freely permits reproduction without fee unless the media using the material begins to compete for advertising revenue. This would suggest the broadcasters need not become concerned about local origination unless the system started stealing away clients. Thus, any restriction on program origination could be based on a test of direct competition over advertising income.

We see serious problems ahead if any copyright bill attempts also to solve regulatory problems. Let's get CATV copyright principles on the books, but let's not demand too much.

**James A. Lippke**



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What do you think?