

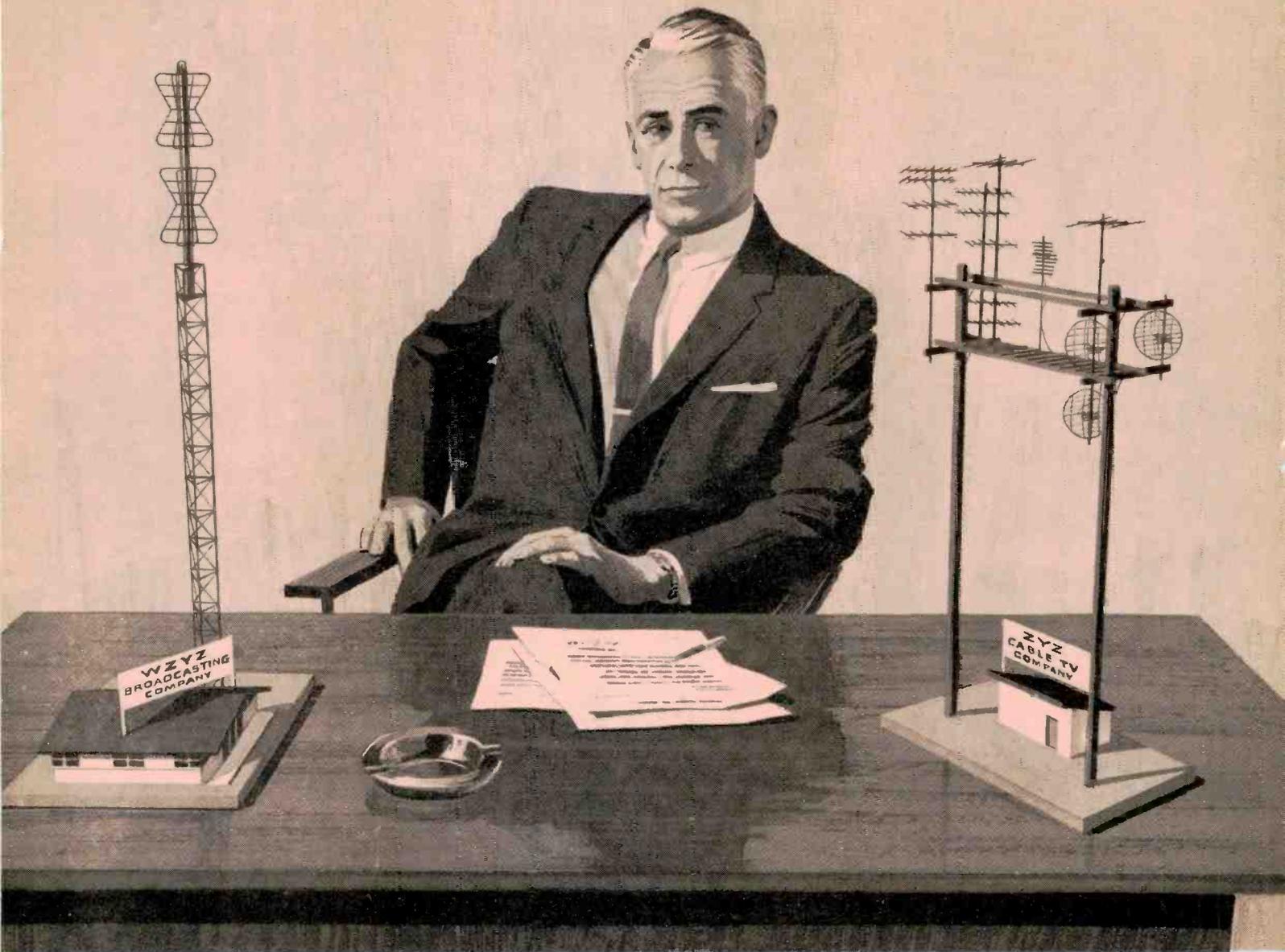
BMED

Journal of BROADCAST MANAGEMENT ENGINEERING

NAB Convention Issue

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MR. BROADCASTER: You belong at both ends of the signal

More and more broadcasters are finding that the operation of community-antenna systems is a natural business for them.

Like broadcasting, CATV is a public service, demanding a management familiar with and sensitive to the needs and desires of the public for high-quality television pictures regardless of the distance from the transmitter.

And so, to assure studio-quality reception and a rich variety of programs to homes in your broadcast area, you should investigate the advantages of entering community-antenna television (CATV).

Consult the leader • To make your entrance into CATV uncomplicated and economical, Jerrold—pioneer and

leader in this field—offers you a range and depth of technical and management services unmatched anywhere. Jerrold's tremendous experience and nationwide organization can help in any or every stage of setting up a new community system—in conducting signal surveys; engineering the system; supplying all electronic equipment, including microwave; constructing the entire plant, from antenna site to house-drop; training your personnel; arranging financing to meet your needs; and, finally, turning over the key to an operating system to your system manager.

Make the first move into a profitable extension of your own business—contact the Jerrold Community Systems Division today.



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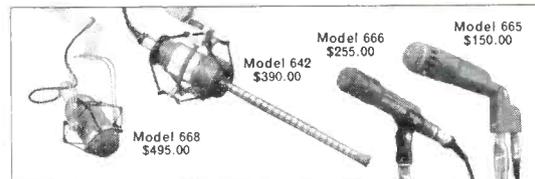
How does this 7 FOOT MONSTER help solve your sound problems?

 The giant microphone shown here is the biggest microphone in captivity! The Model 643 is also the most directional microphone sold today. It helped E-V win the first Academy Award for microphone design in 22 years.

But beyond this, the 643 has been one of our most effective field research tools, offering a far-reaching insight into the nature of directional microphones, and their applications.

An obvious result of 643 research is our unique Model 642. Same E-V Cardiline™ principle*, but only 18 inches long. It reaches up to twice as far as any other broadcast unidirectional microphone to give you better long distance pickups than were dreamed possible a few years ago.

And this same basic research stimulated the development of our new Model 668 cardioid microphone. It uses the Continuously Variable-D® cardioid principle (a creative development from our exclusive Variable-D patent*) to provide smoother cardioid action—plus more versatility—than any other boom microphone you can use.



But let's not ignore the most popular professional cardioid microphone of all, the Model 666. Here's where the Variable-D principle got its start. And since the introduction of our seven foot laboratory, the 666—and its companion, the 665—has been further refined to offer better performance and value than ever before.

From such startling microphones as the 643, come continuing basic improvements—and the tools you need to solve your most difficult sound problems. Only E-V provides this kind of design leadership. E-V microphones in your studio will give you a big head start toward better sound. After all, we're at least seven feet ahead of everybody!

Model 643. \$1,560.00. Normal trade discounts apply on list prices shown.

*Cardiline Patent No. 3095084. Variable-D Patent No. 3115207

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BM/E

THE MAGAZINE OF BROADCAST MANAGEMENT/ ENGINEERING

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The cover pattern illustrates artist Ed Countey's representation in abstract of a technical meeting such as this month's NAB Convention. The array of open booths, the colorful exhibits competing for attention, the visitors' open need for new information, the confidential discussions—they're all there, firmly grounded on a plane of common interest: broadcasting management and engineering.

- 6 **Broadcast Industry News**
Timely reports on events, people, and companies.
 - 14 **Interpreting the FCC Rules & Regulations**
The volatile question of economic injury.
 - 18 **Can Independent FM Make It?**
If WTFM is any example, FM may outpace AM!
-
- 23 **NAB Exhibit Previews**
A complete run-down on what manufacturers will be showing.
 - 29 **NAB CONVENTION GUIDE**
Handy 16-page pocket-size guide listing:
 - Maps of exhibit areas.
 - List of exhibiting manufacturers.
 - Complete program schedules.
 - Summaries of engineering papers and management sessions.
 - A welcoming note from the new NAB president.
 - Non-official Convention events.
 - 53 **NAB—Service to Broadcaster and Public**
Facts about the trade association responsible for the biggest event in broadcasting.
-
- 54 **Putting the "Community" in CATV**
Greater Lafayette TV Cable turned on their signals March 1st—backed by all factions of the city.
 - 57 **High-Band Video Tape Recording**
An in-depth report on significant improvements in VTR performance.
 - 60 **Broadcast Equipment**
Reports on newly introduced products.
 - 64 **Literature of Interest**
Valuable data you can obtain by using the Reader's Service card on page 67.
 - 64 **Broadcasters Speak**
Comments from BM/E readers.
 - 65 **Advertisers' Index**
 - 66 **Management Roundtable**
5 successful radio broadcasters describe their methods for controlling costs.
 - 67 **Reader's Service Card**
Use this FREE postage-paid card to receive more information about the advertising and editorial in this issue.

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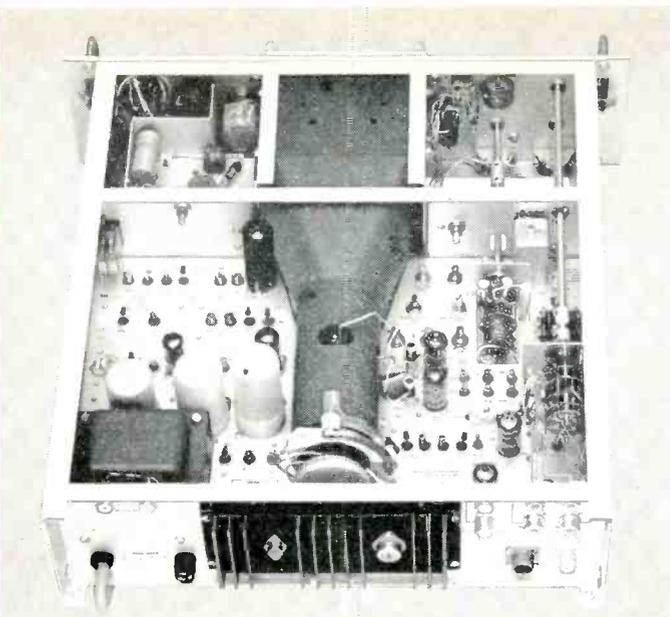
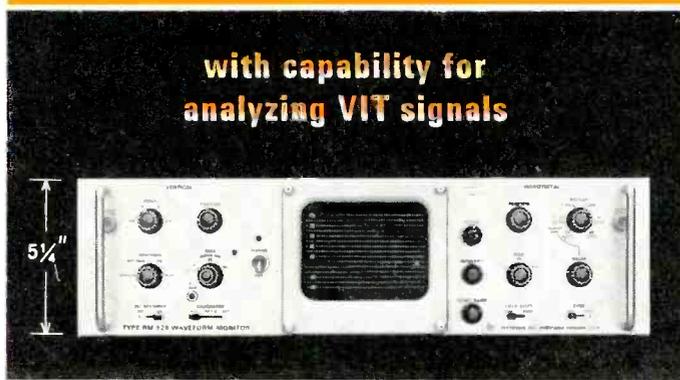
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new
Tektronix
transistorized
video-waveform
monitor

with capability for
analyzing VIT signals



You're looking at the back and top of a new video-waveform monitor, Type RM529. There are 45 transistors, 7 tubes, and 2 high-voltage rectifiers. All but 2 tubes and 2 transistors are socketed for easy servicing. There's no fan—it is not needed with the low power consumption of 80 watts to assure clean, quiet, long-life operation. Extremely compact, the Type RM529 uses an extremely bright crt with a full 6-centimeter by 10-centimeter viewing area—yet the instrument occupies only 5 1/4 inches of standard rack height.

you can do more with the  **RM529**
than you can with any other video-waveform monitor.

Here's why:

frequency responses—Four different frequency-response characteristics necessary to monitor all Video Test signals are provided:

1. CHROMA Response centered at 3.58 Mc bandwidth ± 400 kc to measure differential gain.
2. LOW PASS -6 db at 500 kc to see axis shift on Multi-Burst.
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line selector—Provides stable displays of the Vertical Interval Test signals. Adequate brightness is provided even at the fastest sweep speed. Can display any line desired. Brightening pulse automatically intensifies the displayed line as viewed on the associated picture monitor. No modification to the picture monitor is required.

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dc restorer—A feedback-type restorer acts during the backporch time. Not affected by presence of color burst. Does not distort the burst. Front-panel switch can disable the restorer—when other than video waveforms are viewed.

Type RM529 Video-Waveform Monitor \$1100
 For waveform photography, a Tektronix Type C-27 Camera is recommended. Bezels are available to adapt other cameras to the Type RM529.

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NEWS



SYRACUSE, N. Y.—Volume I of General Electric's new Television Equipment Manual is now being sent to all key U.S. TV station managers and chief engineers. H. E. Smith, standing, marketing manager of Visual Communications Products, presents the first copy to J. Milton Lang, general manager of WRGB, Schenectady, N. Y. The manual, containing over 450 pages, describes and illustrates G.E.'s complete line of broadcast products, including transmitters, cameras, audio equipment, and antennas.

U.S. vs. U.S.S.R. Stereo Standard

Transoceanic stereo broadcasting via satellite may not be far off. A recent test proved that a stereo signal transmitted to a satellite orbiting over 5,000 miles above earth and re-transmitted back maintains its quality. Actually, the purpose of the test was to gather further proof that the American "Pilot-Tone" method of stereo broadcasting should be adopted as the world standard.

Coordinating the satellite project was Harold L. Kassens of the FCC. During the test, a stereo recording of voice, music, and tones were fed into a Collins 786M-1 Stereo Generator. This unit provided a single, composite signal for modulating a NASA transmitter that beamed the signal to the orbiting Relay II satellite. The returning signal was received by NASA equipment and fed into a Collins 900C-1 FM Stereo Modulation Monitor, which

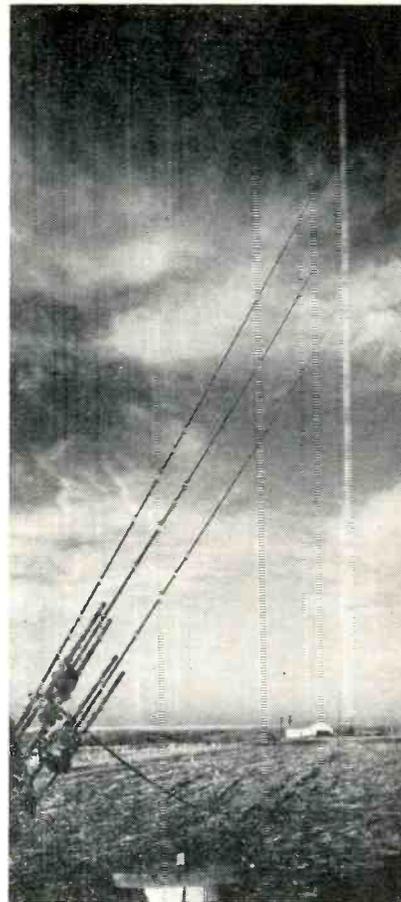
unscrambled the composite signal into Left and Right channel stereo outputs. The unscrambled signal was recorded by Ampex 351-2 tape recording and playback equipment. Carl R. Rollert of Collins Radio will present a paper on the test at the NAB Convention.

Machtronics Now MVR

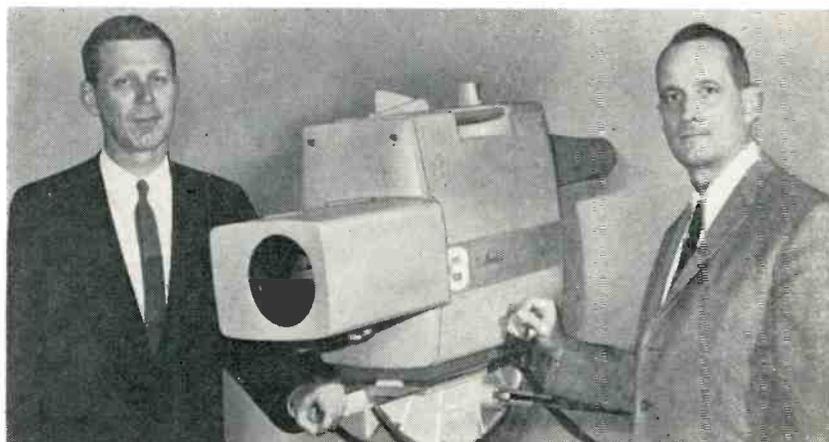
Machtronics, Inc., Palo Alto, Calif., has changed its name to MVR Corp. According to Kurt R. Machein, President, the change was made to identify the company more closely with its product line of MVR television tape recorders and to eliminate possible confusion with companies having similar names.

Belden Adds to Plant

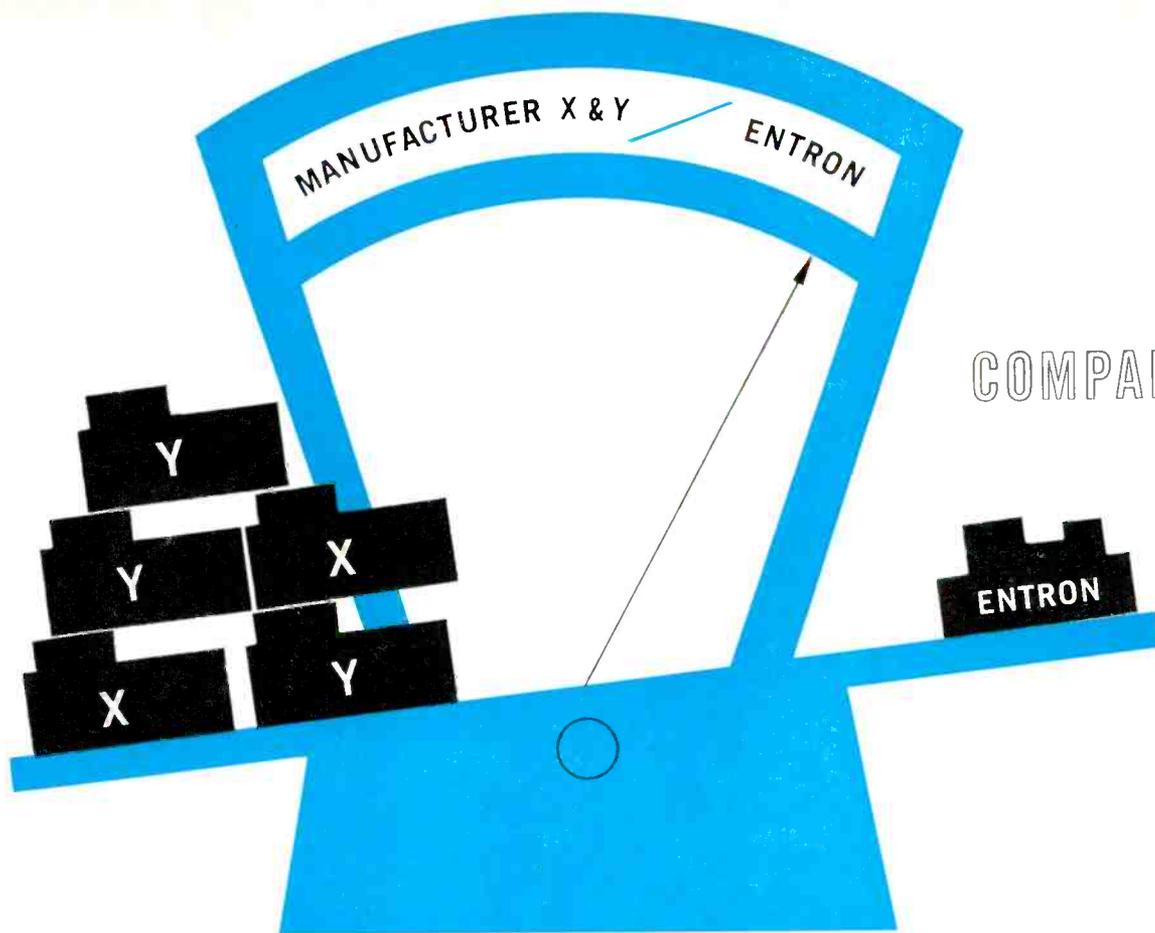
Belden Mfg. Co., Chicago, has announced a two-building addition to its plant in Richmond, Ind. Construction will begin shortly, and is scheduled for completion by September, 1965. The two buildings will encompass some 90,000 sq. ft., and will increase capacity of the firm's wire mill and expand the insulating department.



TULSA, OKLA.—Shown above is a 1908-ft. tower topped out last month for KTUL-TV. here. The structure was erected by Dresser-Ideco Co., Columbus, Ohio, which has several other new tall towers in various stages of design, installation or erection. A 1529-ft. tower for KHMA-TV, Houma, La., is one of the 20 tallest towers ever erected. It will be designed to survive winds of hurricane strength. KODE-TV, Joplin, Mo. will get a 999-ft. guyed tower, which will incorporate a 200-ft. AM radiator.



NEW YORK, N. Y.—A new Norelco color TV camera is shown being inspected by Robert T. Cavanagh, left, general manager, Studio Equipment, North American Philips Co., Inc., and James B. Tharpe, President, Visual Electronics Corp. Just announced by Norelco, the new camera line will be sold throughout the U.S. by Visual. Heart of the camera is the Philips Plumbicon TV pickup tube; its small size (8" long x 1" dia.) allows for reduction in both size and weight of the camera.



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TRIM initial cost--CUT maintenance costs with Entron's combination high level tube and solid state CATV systems

* (from our files of competitive bids)

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32 Trunkline/^{BRIDGING}AMPLIFIERS
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 2 ^{LEVEL}CONTROL Amplifiers

130 total cost \$22,000

ENTRON

9 Trunkline Amplifiers
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50 total cost \$14,000

CASE 2 —A 30 STRAND MILE SYSTEM (½ & 412 ALUMINUM CABLE):

MANUFACTURER Y

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ENTRON

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IN EVERY CASE the system owner **SAVED MONEY** on original equipment. **SAVED MONEY**—less equipment positions to install. **SAVED MONEY**—fewer fittings and accessories. **SAVED MONEY**—fewer units to maintain.

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March, 1965 — BM/E



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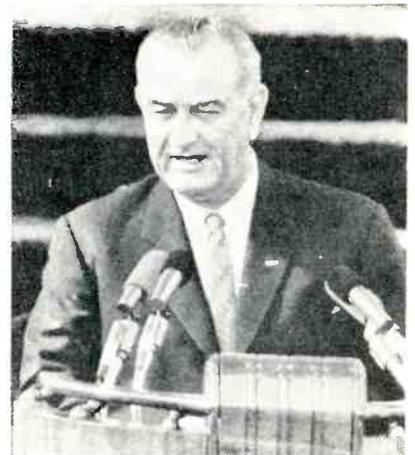
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CAMDEN, N. J.—A unique "pylon" TV broadcast antenna, shown under test at RCA's 42-acre proving site, will be mounted on the Empire State Building this spring. From the 1200' level, it will radiate the half-million watt Channel 47 signals of WNJU-TV, Newark, N. J. based UHF station. Above view shows a 52' array of four tubular panels which makes up half the complete antenna system. This half will be mounted vertically on the north side of the building tower, with an identical array on the south side. Screening shown is not part of the system, but simulates an element of another antenna (WNDT, Channel 13) now in use on the building.

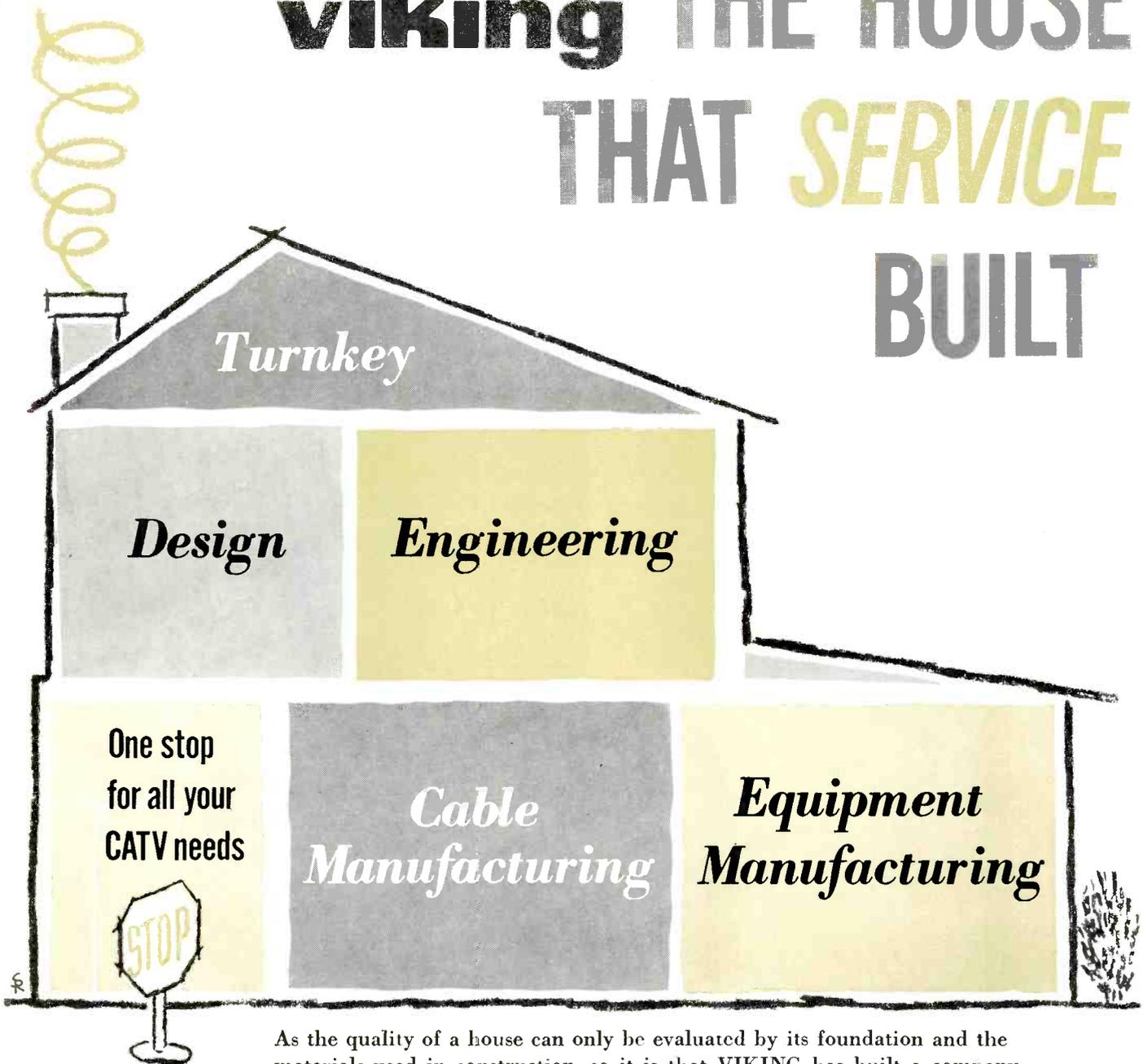
Step by Step

Chrono-log Corp., Broomall, Pa., has appointed two new sales representatives to handle sales of the STEP System for TV station break automation. S. S. Krinsky & Associates, Hollywood, Calif., will cover California, Arizona and Nevada; Webster Engineering Co., Park Ridge, Ill., will serve Indiana and Illinois. The Chrono-log STEP System, presently in use at 7 stations, automates video and audio switching, handles starts and stops of projectors and VTR's and other switching functions during TV station breaks.



CAPITOL HILL, WASHINGTON, D. C.—President Johnson shown above delivering his inaugural address on January 20th. Four Shure Brothers Unidyne III (Model SM 56) professional microphones were used exclusively for broadcast and public address coverage of the event.

viking THE HOUSE THAT *SERVICE* BUILT



As the quality of a house can only be evaluated by its foundation and the materials used in construction, so it is that VIKING has built a company dedicated to the complete services and growth of the CATV industry.

Each specialized division at VIKING has been carefully planned to meet the expanding requirements of the CATV Industry and has resulted in the unique formation of an organization "that does everything"; equipment manufacturing, coaxial cable manufacturing, systems designing and engineering as well as complete turnkey construction.

When next you are considering the construction of a new CATV system, or rebuilding an old system, why not call upon VIKING — "THE HOUSE THAT SERVICE BUILT." No job is too big or too small.

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Visit us at NAB Show, Booth 515, or the Virginia Suite, Sheraton Park Hotel

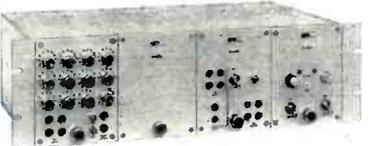
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NEW!
FROM DYN AIR
...and it all has

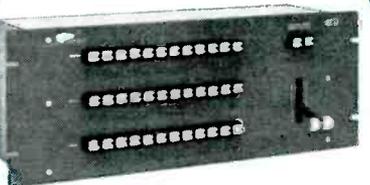
APQ*



TX-4A "DYNA-MOD"
Solid State Audio/Video Modulator



Series 6600 Solid-State Balanced-Line
Video Transmission Equipment



VS-121A Solid-State Broadcast Switcher/Fader
with Preview Buss

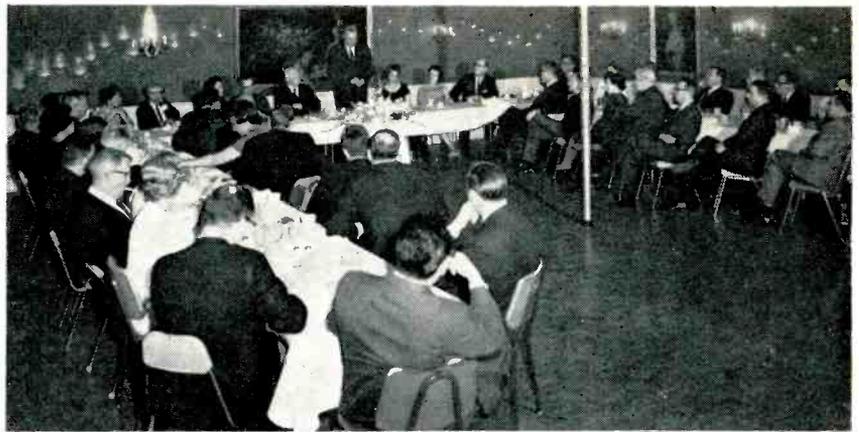
*AGC . . . AFC . . . APL — nothing new. But APQ (Automatic Picture Quality) is a DYN AIR exclusive! See APQ and the new DYN AIR equipment at the NAB Convention, booth 235.

DYN AIR

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SAN DIEGO, CALIFORNIA

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SAN DIEGO, CALIFORNIA 92114
TELEPHONE (714) 582-9211

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PHOENIX, ARIZ.—National Assn. of Microwave Common Carriers held its annual meeting here recently. Shown above speaking at the closing dinner is Frederick W. Ford, NCTA president. Newly-elected officers of the group are Clifton Collins, president and secretary, and Warren Fribley, V-P and Treas. Board members are William Lastinger, Robert Clark, William Cal-sam, James Klungness, Brown Walker, Robert Magness, Jack Crosby, and Frank Valentine.

3M Consolidates Tape Equipment Activities

The 3M Co., St. Paul, Minn., is consolidating all its activities in the magnetic tape recording equipment field into the newly-formed Revere-Mincom Div., which will include all facilities and personnel of the former Revere-Wollensak and Mincom Divisions.

Francis C. Healey, general manager of Mincom, will continue as general manager of the new division in Camarillo, Calif.

NAMES IN THE NEWS



Ray Unrath

Ray M. Unrath has joined Moseley Assoc., Inc., Santa Barbara, Calif., as Marketing Manager. He has extensive broadcast experience, according to John A. Moseley, Pres. of the firm, and was formerly

with McMartin Industries.

Walter E. Hartley, former associate of Pioneer National Advg., Salem, Oregon, appointed Advertising Director of Microflect Co., Inc. of Salem, Oregon, a major manufacturer of microwave passive repeaters. George F. James is new Southeastern sales manager for Entron, Inc., Silver Spring, Md. Mr. James has 19 years' experience in electronics sales. He will headquarter at 4008 McClain Lane, NW, Huntsville, Ala.



HOUSTON, TEX.—Gates Radio has recently moved into spacious new quarters here at 4019 Richmond Ave. The firm's transmitting and other equipment will be on continuous display in the attractive showroom area. Warehouse facilities have also been provided at the new location. In its home city of Quincy, Ill., Gates recently purchased 40 acres, and has budgeted over \$1 million to build what it claims is the largest U.S. radio broadcast equipment manufacturing plant.

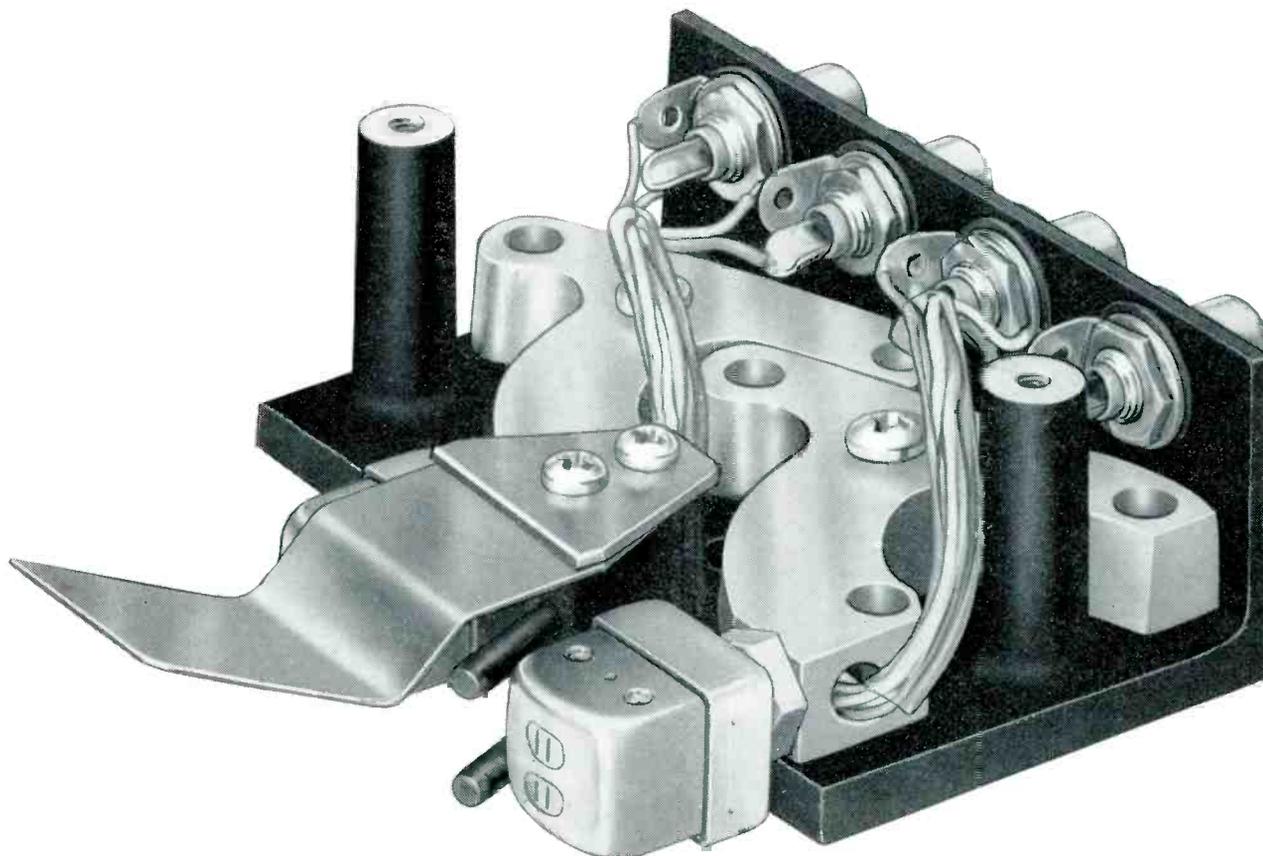


George Barry



William Jones

Two new sales personnel just added to its staff by Ameco, Inc., Phoenix, Ariz., are George Barry, who will travel the Texas, N.M., Ark., Okla., Kan., Mo. and La. territory as a contract salesman. Barry, formerly with Johnson Service Co., will work out of Dallas. William Jones will handle the West Tex., N.M., Colo., and western Kan. area as a tech-rep, traveling out of Lubbock, Tex. Prior to joining Ameco, Jones had his own electronics business in Alaska.



Pictured above is the new ATC MICRO-SET completely adjustable head assembly. Made from heavy castings on precision tooling, the MICRO-SET assembly offers easy and positive head adjustments for both height and azimuth with a locking feature capable of holding the adjustments under the most severe operating conditions. The assembly fits all PB, PC and Criterion Series Automatic Tape Control playback machines.

See the
MICRO-SET
 head assembly
 as well as the
 complete line
 of ATC
 automatic

programming
 equipment
 in operation
 at the NAB
 Convention in
 Washington, D.C.
 March 21-24.

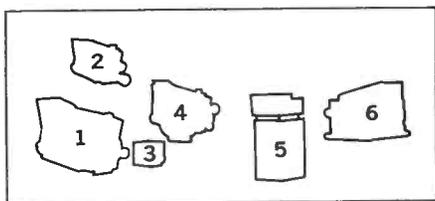
Visit Booth 309
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AUTOMATIC  TAPE CONTROL
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Improve your image the proven way



From G.E.'s complete line you will find the camera that will add just the right snap to both your station image and your viewers' reception. G-E camera

systems are the finest... the result of pioneering research in solid-state circuitry that has led to increased reliability, optimum performance and greater economy. G-E camera systems are user proven... in station after station where G-E equipment is now building better images... creating better pictures.

1. PE-23—First Professional Transistorized Studio Vidicon Camera. Proven by more than two years of network

use. Ideally suited for news, panel and quiz shows, as well as educational programming. Soon to be available with advanced lead-oxide pickup tubes.

2. PE-26—Television's Newest, Portable, All Transistorized 3" I.O. Studio System. Best 3" I.O. picture you ever saw—in a smaller, lighter package. Completely transistorized. Perfect for remote applications.



Studio location courtesy WSYR-TV, Syracuse, N. Y.

with General Electric 1965 Cameras.

3. PE-27—Advanced Transistorized Version of Television's Most Widely Accepted Film Camera. Best response, lowest noise, least lag from a 1" separate mesh vidicon tube. Transistorized. Designed for hands-off operation.

4. PE-29—The Aristocrat Of All Monochrome Cameras. Designed to give finest picture quality for exacting studio productions and video tapings. Owners agree. Side by side comparisons prove it.

5. PE-24 — First 4-Vidicon Universal Film Camera. Now programming finest quality color and monochrome film for 26 local stations and the ABC-TV Network.

6. PE-25—Television's Most Advanced 3-I. O. Studio Color Camera. Unmatched stability and excellent color registration. Extensively transistorized. Constantly sharp, true and clear pictures.

For all your camera requirements, contact your G-E Broadcast Equipment Representative, or, General Electric Company, Visual Communications Products, Building 7-315, Electronics Park, Syracuse, N. Y. 13201. GE-12

Visual Communications Products,
GENERAL  ELECTRIC
 Electronics Park, Syracuse, N. Y.

INTERPRETING THE FCC RULES & REGULATIONS

(Continued from page 14)

from the *Sanders* decision in 1957 when, in *South-eastern Enterprises, Inc.*, 22 FCC 605, 612, it stated for the first time that it had *no statutory authority* “. . . to consider the effects of legal competition upon the public service in the field of broadcasting.”

The Court of Appeals dramatically reversed this position in 1958, when it reviewed *Carroll Broadcasting Company v. FCC*, 258 F.2d 440, 443. The Court stated clearly, “. . . We hold that, when an existing licensee offers to prove that the economic effect of another station would be detrimental to the public interest, the Commission should afford an opportunity for presentation of such proof and, if the evidence is substantial (i.e., if the protestant does not fail entirely to meet his burden), should make a finding or findings . . . competitive effects may under some sets of circumstances produce detriment to the public interest. When that happens the public interest controls.”

Thus, the *Carroll* case not only restored the early edicts of the then 18-year old and almost forgotten *Sanders* case, but went a step further: (1) It again recognized that augmented competition might injure the public; and (2) it removed the Commission's option to consider or ignore such claims and afforded the complaining party an opportunity to present his proof. The effect of this case gave all licensees an almost guaranteed right to place would-be competitors in a hearing by merely filing a formal petition to deny. As a result, many protracted and frivolous hearings ensued, with existing licensees employing meritorious and/or dilatory tactics to forestall the entry of a competing station.

The Commission Tries a New Tack

Then a new twist developed. In the case of *Herbert P. Michels (WAUB)*, an existing AM-FM licensee in Auburn, New York, filed a request for reconsideration of a grant without hearing for new AM station at Auburn. The petitioner argued that Auburn already had all the broadcast service it could economically support. The Commission stated that if there was any danger that Auburn would be deprived of a *choice* of local programming, at the very least this programming service should be provided by *the best qualified licensee*. Accordingly, before designating a hearing on the application for new facilities, the Commission directed the existing licensees to submit renewal applications to be consolidated for hearing in one proceeding.

In 1963, this procedure was followed and extended to some extent in the case of *Charles County Broadcasting Co., Inc.* The owners of an FM station had applied for an AM station to be operated jointly in the same community. When a competing application for the same frequency was filed, specifying a nearby community, the

existing FM licensee complained that establishment of the competing AM operation would force the FM operation off the air. After consideration of all relevant pleadings, the Commission consolidated for hearing the renewal application of the FM station together with the two pending AM applications. As a result of the Commission findings in both the *Michels* and *Charles County* cases, a new policy was effected—an existing licensee complaining of economic injury must be willing to “put his license on the line” and risk a long and involved hearing procedure to preclude competition.

From 1958 until 1964, many so-called “economic injury” cases were heard by the Commission. However, an extremely compelling showing was required to prove that economic injury was sufficient to justify a denial of an otherwise acceptable application for construction permit, increase in power, or the like. In fact, only a few economic injury arguments were successful.

Mostly Just “Lip Service”

Until 1964, the Commission continued to pay “lip service” to the dicta of the *Carroll* case by frequently reiterating “. . . economic injury to an existing station, while not in and of itself a matter of moment, becomes important when . . . it spells diminution or destruction of service. At that point the element of injury ceases to be a matter of purely private concern.” (See 103 U. S. App. D. C. 346.) After so quoting, the Commission invariably ruled that the complainant had not met his burden in *proving* economic injury and corresponding injury to the public.

From a business standpoint, the licensee had a right to a hearing, under *Carroll*, but perhaps only one chance in a hundred of winning his case. Therefore, if the applicant for new or changed facilities were financially, legally, and technically in compliance with the Rules, it was just a matter of time until the injury claims were disposed of and the application granted.

FCC Denies One Too Many . . .

Then, once again, the Commission attempted to escape its ponderous burden of evaluating the effects of increased competition upon the quality of service available to the public. In the *Missouri-Illinois Broadcasting Co. (KZIM)* case (also known as the “Cape Girardeau” or “KGMO” case), 1 RR 2d 1, the Commission denied a petition for reconsideration of a grant without hearing. The petition alleged that additional competition would be harmful to the public under the doctrine of the *Carroll* case. The Commission stated that the facts alleged were too generally stated and not sufficiently related to the conclusions drawn by petitioner to show *prima facie* that a grant would not be in the public interest.

Much to the Commission's chagrin, its Girardeau decision was remanded by the Court of Appeals, 2 RR 2d 2057 (May 1964). The Court stated that, while the Commission's ruling should be upheld, the Commission should not have denied the economic injury petition as too general without putting the petitioner on notice of the deficiency and affording an opportunity to supply the specifics to support an economic issue.

... But Neatly Sidesteps the Issue

In reconsideration of the Girardeau case the Commission stated that the type of information necessary to support a *Carroll* issue includes: (1) Retail sales for past three years; (2) total number of businesses in the community; (3) total advertising revenue potential; (4) percentage of advertising revenue received by petitioner; (5) petitioner's P & L figures for past three years; (6) number of businesses in community currently advertising on radio; (7) specific advertisers that would shift to the proposed station and number that would split business between petitioner and proposed station; (8) details as to competing advertising media; (9) a definitive statement as to how a grant of the proposed application would cause a net loss or degradation of program service to the area; etc., etc.

From the Girardeau case, and many that have followed, the Commission has successfully obviated the necessity of a protracted hearing over so-called economic injuries issues that are rarely, if ever, established or proved. *The Commission's current policy*, which has the tacit support of the Court of Appeals, is to require an objecting competitor to assert facts that are sufficient on their face to support the heavy burden of proof that rests upon any proponent of such an issue.

What to Do?

Where does this leave the broadcaster who seeks to defend his economic position? It is clear that the Commission will spare no effort to avoid regulation of competition. In the absence of the *Sanders* and *Carroll* cases, the Commission would never have considered economic arguments.

Under existing precedents, the Commission is still required to afford an existing licensee an "opportunity" to prove economic injury. The courts have not defined *precisely* what is meant by the word "opportunity." From 1958 through 1963 the Commission obviously believed that "opportunity" meant a hearing. However, in the Girardeau case, the Commission requested the forementioned proof, tendered in writing. Thus, only if a *prima facie* case of economic injury is established will a hearing be ordered.

It appears that the courts will support the Commission's present interpretation. However, if the Commission reverts to its past position, refusing to designate hearings when grave economic questions have been raised, the Court may again remand a case for evidentiary hearing. Therefore, any licensee facing a serious economic crisis due to potential competition would be well advised to dig up the facts—as outlined in the Girardeau case—necessary to warrant a hearing. If the Commission should then refuse to designate the opposed application for hearing, an appeal to the Court might well be successful.

One thing is certain. A licensee can only oppose competition on two grounds: (1) Electrical interference and prohibitive overlap; and (2) economic injury. The burden of *proving* economic injury is no greater than it was a few years ago—only the timing has changed. Today, you must develop and assert facts to prove your case *before* you are entitled to a hearing.

Is your market coverage suffering from voltage fluctuations at the transmitter?



Protect your signal strength and equipment by specifying the Solatron line voltage regulator

- Assures signal coverage and quality right out to fringe areas; protects tubes and components from early failure.
- No moving parts, maintenance free; considerably smaller and lighter than other regulators of equal capacity.
- Fast response: 90% correction in less than 0.08 second, complete correction in 0.16 second.
- No harmful waveform distortion.
- Output voltage adjustable; can be set at optimum voltage and held constant within $\pm 1\%$.
- Available in ratings from 1 to 100 KVA and all standard input voltages.



SOLA



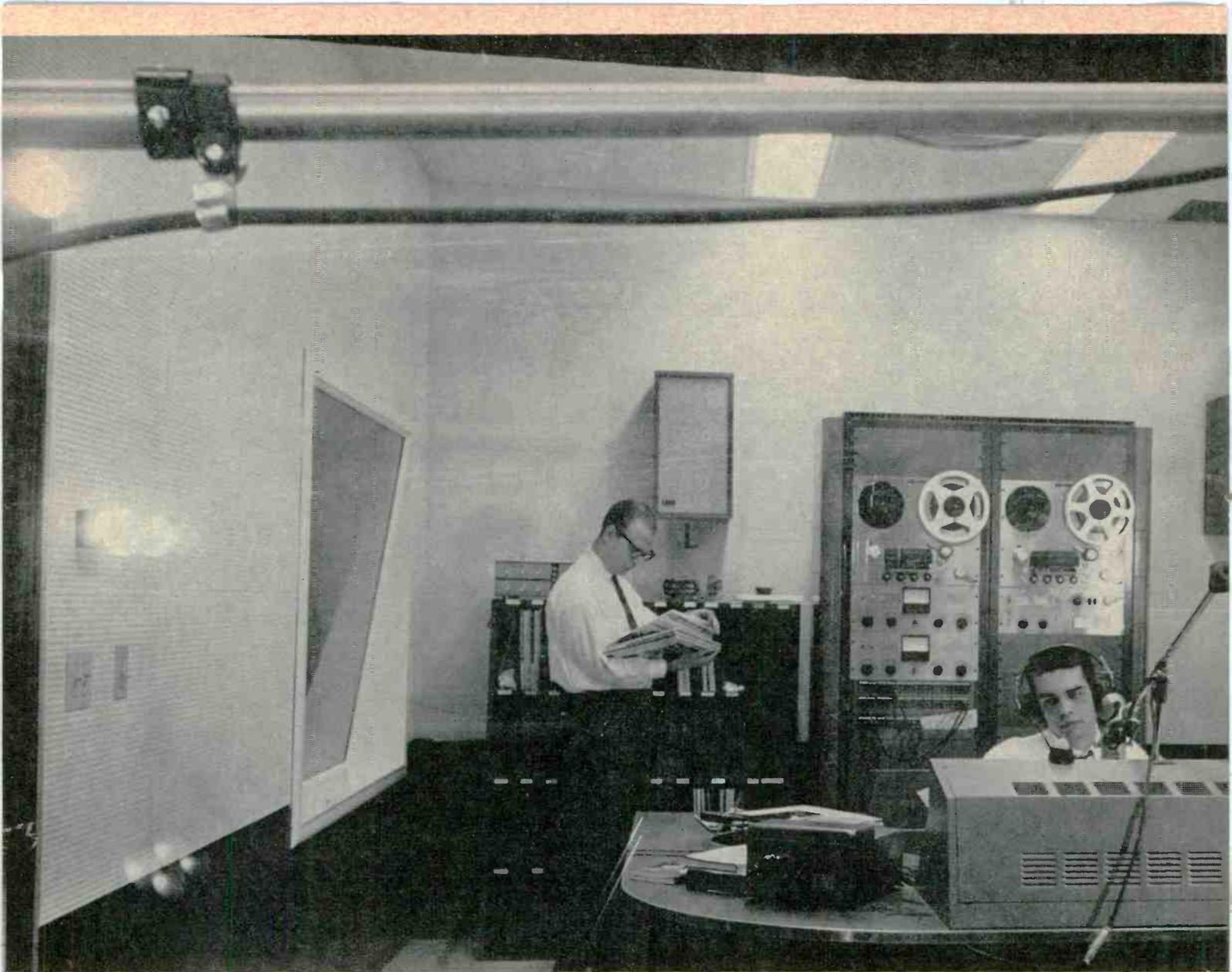
Division of Basic Products Corporation
SOLA ELECTRIC CO.,
 1717 Busse Rd., Elk Grove, Ill., HEMPstead 9-2800
IN CANADA: SOLA BASIC PRODUCTS, LTD.,
 377 Evans Avenue, Toronto 18, Ontario

Industry's voltage regulation headquarters

Here's how I'd like to use the Solatron regulator; send me the facts covering this application.

.....
 NAME
 TITLE
 COMPANY
 ADDRESS
 CITY STATE ZIP

Circle 11 on Reader Service Card



Can Independent FM Make It?

By Len Buckwalter

WTFM operates on a budget exceeding \$300 thousand, and has been making a profit from the beginning. Profits for the last 12 months are up 60%.

FM JUST CELEBRATED its 25th birthday, but it's an anniversary marked with mixed emotion. Many FM broadcasters still "cry the blues," but FCC financial reports indicate that an increasing number are switching from red ink to black. And that Harvard study, which predicted FM receiver sales eventually outpacing AM, is proving a bit conservative. (More FM receivers were sold last year than predicted by the university researchers.) But spiraling set sales alone offer little comfort to the broadcaster who has lived with FM's lean years. What's the magic formula for success?

To find out, we went to one of the nation's most prosperous and fastest-growing independent FM stations—WTFM, which serves the New York metropolitan area. Although it operates in a vast market centered in an area of

over 20 million people, there's a debit side, too; the region also contains some 45 active broadcast frequencies plus 7 major TV outlets. It's a perilous market which can offer the best—but also demands the best. WTFM's economic prowess in this area, built up over a scant 3-year period, suggests some instructive insights, even for the smaller FM operator.

WTFM personifies *independent* FM. It is not bolstered by the familiar interchange of engineering, announcing and plant facilities of the combined AM-FM station. Neither does it simulcast programming of another station. Forty staff employees (an impressive number, even for an AM station) devote their efforts solely to WTFM. The station operates on 103.5 mc with a 20-kw signal that reaches out for some 60 miles. Not only is the operation strictly



FM, but completely stereo, 24 hours a day every day.

Few would dispute the station's sign of success; it is said to bill more than all other independent FM stations in New York—combined! Moreover, it is the only FM station in the area to have appeared on Hooper ratings consistently for nearly two years. And it occasionally out-rates 8 or 9 AM stations.

We spent several hours with WTFM's Vice-President and General Manager, David H. Polinger, whose knowledge of broadcasting is encyclopedic. He is presently on the Board of Directors of the National Association of FM Broadcasters. (Many readers may remember him as guest speaker at the 1963 NAB convention.) Polinger's experience slices across nearly every major segment of broadcasting: account executive at

ABC; general manager of NTA Spot Sales, one-time free-lance producer, and president of his own advertising agency. He speaks four languages, plays LaCrosse, sparkles when he talks of FM, and has yet to reach his 40th birthday. We asked him, "What is responsible for WTFM's success?"

Before Polinger spelled out his particular brand of broadcasting, he verbally sketched in two humorous caricatures of "traditional" FM broadcasters. One is the engineer, typified by individuals who thrill at superb sound, expansive frequency response, and equipment of sky-high fi. Success is measured by a given number of cycles per second. Then there is the operator who sees FM solely as the music lover's medium. He believes success is inevitable if he bestows culture—usually a heavy diet of Mozart and Beethoven. (Even these music masters are played sparingly on WTFM since they have become "popular.") Polinger recognizes the great value of engineering and esthetic talent at an FM station. Yet, he questions whether either talent *alone* will make an FM operation profitable.

Success can't be achieved through any single technique. WTFM's success, Polinger explained, is fashioned from a web of factors operating in unison. They comprise no push-button formula, and won't apply directly

to all stations. Yet, they offer a model example of the kind of professionalism Polinger believes must prevail in broadcasting.

WTFM's on-the-air image is significantly molded by personality and atmosphere. Such professionalism is the work of veteran broadcasters like Program Director Don Russell, who has an impressive list of credits, and host Tom Mercein, a well known and authoritative radio voice. The music itself is not notably different from that of many other FM stations: light-music programming during the day leaning toward the classical format in the evening, including jazz and folk-music shows.

But listen, for example, to the daily segment from 10 in the morning to 2 in the afternoon. There's no mistaking WTFM among the welter of stations on the band. The reason, in this case, is Charles Duval, the announcer—or "host"—for the show. Duval has a french accent—not the mild Charles Boyer variety, but one you'd expect to hear, say, on the Riviera. It's no secret that male reaction to Duval's voice hovers between mild uneasiness to militant rejection. But Duval's potent air personality wows the housewives, who, of course, comprise the listening audience during these midday hours. In fact, the station even stimulates "controversy" over the issue. One pro-

One of two control rooms. Wall-mounted speakers permit monitoring of left-right stereo channels. White gloves are no joke, must be worn by everyone who handles records, which are played no more than 10 times.



motional piece frankly asks: "Why do so many men hate Charles Duval?" Listed are questions which cleverly suggest the answers, e.g., "Is it because women love the sound of his voice—his continental charm?"

As Polinger explains it, listening to WTFM helps the drudgery-ridden housewife "fantasy away her day." This continental, exotic atmosphere is infused throughout the station's programming and announcing. It identifies WTFM with a distinct, unmistakable image, an image similarly sustained for impact on the client. For example, during my conversation with Polinger his phone rang. Minutes later he told me it was an advertiser who remarked how pleased he was that even the station's telephone operator fitted the cosmopolitan WTFM image. The point, of course, is that WTFM works at preserving its individuality.



WTFM's mobile unit, equipped to broadcast or record in stereo, uses Gates yard, Ampex recorder, and two EMT turntables.



David H. Polinger, WTFM V-P & Gen. Mgr., has what it takes to make FM station operation profitable.

WTFM Personnel

40 people—count 'em—are on the payroll!

- 10—on-the-air personalities, including Peabody Award winning Program Director, Don Russell, who does special shows.
- 7—news reporters, including two who report from West Berlin and Paris.
- 2—General Manager and Chairman of the Board.
- 7—on sales force, including Sales Manager Fred Beck.
- 2—in engineering, Chief Warren Wilson and his assistant.
- 10—in secretarial, bookkeeping, traffic, public relations and advertising.
- 2—for building maintenance.

Engineering & Facilities

On the surface it would appear that technical manpower is WTFM's weak point. Not so, however—part of the secret is that the transmitter is remotely controlled from WGLI Babylon, some 40 miles away. Thus, Chief Engineer Warren Wilson and his assistant are able to spend most of their time attending to audio signal quality and preventive maintenance.

Although no standby transmitter is used at present, the RCA Type BTF5D installed new when the station went on the air has given excellent service. New facilities are planned, however, and the present equipment will be used for standby operations.

Sales & Promotion

A good part of WTFM's success can be attributed to the strong emphasis on sales and promotion. Fred Beck, a thoroughly experienced sales manager, oversees a full-time staff of six crack salesmen; in addition, the station is represented nationally by Jack Masla & Co. Armed to the teeth with hard-hitting, fact-filled promotional material, these men keep the commercial spots well filled. (Based on FCC definition, commercial time ranges from about 60% during the day to some 65% in the evening.) Fully 90% of billing is for national advertising, a point many AM's would like to boast about.

WTFM makes extensive use of NAFMB material to sell clients on the general FM audience. Also, no effort is spared in developing exclusive data about WTFM. Some of this includes:

- ... a **World's Fair** manual, citing WTFM's exclusive studio and exhibit (the only radio station to broadcast from the Fair on a regular 7-days-a-week schedule).
- ... a **Bonus Audience** manual with complete facts and figures on the extra and exclusive audience provided by Auditron sales.
- ... a **10-page report** on the "Zenith Quality" contest, with breakdowns of participants by sex, location, profession and education.
- ... a **12-page report** on a Martini & Rossi Mono-Stereo contest, containing reproduction of listener responses and tabulating the returns by geographic location. (They came in from 4 states.)

The ultimate in WTFM promo pieces, just off the press, is a beautiful 8½ × 11" manual of 34 sheets printed on only one side of expensive stock. It gives a complete profile of the station, including its 97% adult listening audience. It defines the programming used to appeal to the better educated, higher income adult listeners, and describes the backgrounds of key program personalities. It provides a complete rundown of day to day programming. And at the back is a foldout map showing the 50 uv/m contour, with the latest rate card neatly tucked into a bound-in pocket.

Thus, the sales crew has plenty of ammunition—but more than this, they are the kind of professionals who know how to get results for their clients—results that keep sponsors sold and add to an impressive file of facts and figures for use in bigger and better promotions. Nothing contributes more to success than success itself.

WTFM
STEREO NEW YORK
103.5 mc 20,000 watts esp
NEW YORK
MAJOR
METROPOLITAN AREA

WTFM 103.5 mc
general rates

PROGRAMS (minutes)						ANNOUNCEMENTS (seconds)		
TIME	SP	30'	25'	15'	5'	TIME	30'	15'
1	\$250	\$150	\$125	\$100	\$50	1	\$30	\$15
13	200	140	120	90	45	13	25	12
26	330	138	115	92	46	26	28	14
39	220	132	110	88	44	39	27	13
52	210	126	105	84	42	52	26	13
104	200	120	100	80	40	104	25	12
156	180	114	96	78	39	156	24	12
208	180	108	90	72	36	208	23	11
260	170	102	85	68	34	260	22	11

TIME	SP	30'	25'	15'	5'	TIME	30'	15'
1	\$180	\$114	\$95	\$76	\$38	1	\$22	\$11
13	180	108	90	72	36	13	22	11
26	170	102	85	68	34	26	21	10
39	160	96	80	64	32	39	20	10
52	150	90	75	60	30	52	19	10
104	140	84	70	56	28	104	18	10
156	130	78	65	52	26	156	17	10
208	120	72	60	48	24	208	16	10
260	110	66	55	44	22	260	15	9

FIVE MINUTE NEWSCASTS
Every Hour on the Hour

Less than 5	5 per week	10 per week	12 per week	18 per week	24 per week
\$75.00	\$325.00	\$500.00	\$250.00	\$400.00	\$600.00

6 x per week	12 x per week	18 x per week	24 x per week
\$27.50	\$55.00	\$82.50	\$110.00

All rates include 10% of applicable and general taxes.
 All rates include 10% of applicable and general taxes.
 All rates include 10% of applicable and general taxes.
 All rates include 10% of applicable and general taxes.

WTFM's 50 uv/m contour has a radius of 60 miles, reaches over 3 million FM homes in the Metropolitan New York area.

But the station's face to the world is just one technique. Another key factor is an unceasing campaign to educate the prospective client to WTFM's value as a selling medium. Advertising agencies have tended to regard FM as a "new thing," its pulling power still open to question, its audience numerically uncertain. Polinger calculates that he spends about as much time with a client as with the client's agency.

Consider a campaign devised for Zenith. The client wished to achieve three specific objectives: excite immediate interest, develop strong remembrance of the slogan "Zenith Quality," and motivate listener response. The station decided to run a contest in which the listener was to make up as many words as possible using the letters in "Zenith Quality." Prizes included Zenith FM receivers and a color TV. Nothing startling, until the results and their implications are examined. The responses numbered some 4,000. With this figure as a base, it was calculated that contestants spent a total of more than 81,000 hours at the word-game—and, of course, in gazing at the words "Zenith Quality." The successful campaign didn't stop there. Using the data, WTFM printed a promotional bro-

chure of convincing impact—an other selling tool to fill the void, to impress the prospective advertiser that FM is a medium of proven effectiveness. WTFM continuously explores new ways to promote its name and reputation, from use of hi-fi show booths to broadcasting live from the New York World's Fair. It has even applied for the chance to originate the first FM stereo broadcast around the world via Telstar.

Another stratagem employed by the station is a single-channel receiver, fixed-tuned to WTFM. Again, it is an approach designed to generate convincing evidence for the prospective FM advertiser. The special receiver, called the WTFM Auditor, is sold over the air at \$19.95. (Audiron franchises one FM station in each market. Polinger reports that approximately 5,000 units have been sold.) More important is the resulting sales piece which leads off with "A Gift to our Advertisers—the WTFM Bonus Audience." After explaining the Auditor, it goes on to describe a special feature—namely that more than 1,000 such units have been purchased by doctors and dentists for their waiting rooms. Since an average of 30 people spend time in a doctor's waiting room each day, there

is a captive audience estimated at 180,000 people. A final twist is the last page of the brochure; it lists, by name, the doctors who have purchased Auditors.

It would be naïve to assume that any FMer following the same route can achieve equal success. The central idea, however, is that WTFM's performance jostles the misconception that an FM station can provide good music and high-quality sound, then wait for success to materialize. In Polinger's words, "It takes guts and footwork." He believes this is especially true for the FM outlet in sparser population areas, outside the top 50 markets. Where it is impossible to cultivate a select audience, as in larger cities, competition is with local AM stations.

And here is where the most penetrating conclusion may be drawn about WTFM and David Polinger. In speaking to him, one gets the unmistakable impression that he is not a representative of the FM industry in any "traditional" role. He considers himself a professional broadcaster above all else. He seeks not an elite, narrow listenership, but the wider audience which is now rapidly developing. Polinger has proved that an FM outlet can be "run like a radio station."

NEW

SHURE SM5

UNIDIRECTIONAL DYNAMIC BOOM MICROPHONE

SOLVES THE AUDIO ENGINEER'S MOST ANNOYING BOOM PROBLEMS

THE PROBLEM	HOW THE SHURE SM5 SOLVES IT
Sound coloration—from stage reflections or off-mike performers.	True Cardioid pickup pattern—symmetrical about the axis and exceptionally uniform with frequency. Excellent background noise rejection.
Wind and Boom noise from fast boom swings.	Two-stage mechanical isolation—two-stage permanent windscreen assembly. Element and isolation completely surrounded by outer wind shell, minimizing wind and mechanical noise in any indoor or outdoor application.
Pickup of electrical hum	No transformers or inductors. May be used in extreme hum fields.
Maneuverability	Perfectly balanced, lightweight — excellent stability, minimum overswing.
Mechanical Damage	Element and isolation assembly protected by outer wind-screen and steel reinforcing rods.



50-15,000 CPS
CARDIOID PICKUP

SHURE STATION-ENGINEERED BROADCAST AUDIO EQUIPMENT

MICROPHONES

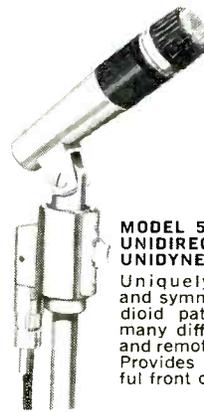
Specially designed for exacting studio applications. Extensively field-tested, many in use by leading radio and TV stations.



**MODEL 576
OMNIDIRECTIONAL
DYNAMIC**
Only 3/4" diameter! 40% smaller diam., 60% smaller area than popular dynamic omnidirectionals. Virtually flat from 40 to 20 Kc. Rugged steel case.



**MODEL 570
LAVALIER DYNAMIC**
Outstanding on the job. Specially shaped response cuts "chest boom" ... provides unequalled presence. Non-metallic "Flex-Grip" hanger ... silent, secure. Only 3/4" diam.



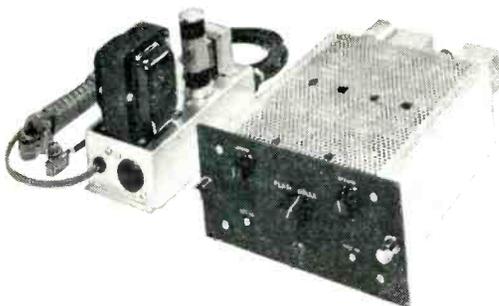
**MODEL 546
UNIDIRECTIONAL
UNIDYNE III**
Uniquely uniform and symmetrical cardioid pattern solves many difficult studio and remote problems. Provides broad useful front coverage.



**MODEL 333
UNIDIRECTIONAL
RIBBON**
Extremely rugged. Exceptionally attractive and compact. Ideal for music (stereo or mono) and general applications on stand or boom. Super cardioid, flat wide-range response.

CIRCUITRY

Shure stereo equalizer and preamplifiers are praised as MAJOR contributions to upgrading station quality by broadcasters.



**SE-1 STEREO
TRANSCRIPTION PREAMPLIFIER**
Provides precise RIAA equalization from magnetic phono reproducers at line levels. Separate high and low frequency response trimmers. Lowest distortion, noise level, susceptibility to stray RF fields.

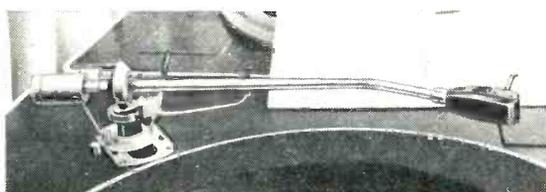
**M66 BROADCAST
STEREO EQUALIZER**

Passive equalizer compensates recorded frequency to three playback characteristics: RIAA, flat, roll-off. Provides precise equalization from magnetic pickup at microphone input level.

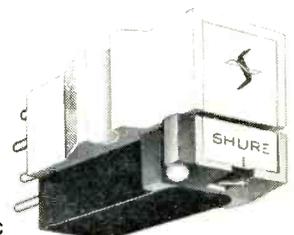


TONE ARMS & CARTRIDGES

World standard for quality sound.



**SHURE SME
"THE BEST PICK-UP
ARM IN THE WORLD"**
Utterly beyond comparison. Supremely accurate, proved reliable in quality music stations.



**STEREO DYNETIC
Phono Cartridges**

First choice on every count—standard in the quality music stations.

Write directly to Mr. Robert Carr, Manager of Professional Products Division, for personalized assistance, technical data, samples for testing: Shure Brothers, Inc., 222 Hartrey Ave., Evanston, Ill.

Adler Educational Systems (Booth 325) will exhibit their 2500-mc Instructional Television System, along with low-power UHF equipment.

Circle 71 on Reader Service Card

Albion Optical Co. (Booth 323) will be showing their new Rank Taylor Hobson Varotal VS, a servo-controlled 10-1 zoom lens. Electronics packaged with lens proper rather than in separate amplifier boxes. Also on exhibit will be the RTH 10-1 Varotal X zoom lens for Plumbicon and Vidicon cameras, plus other zoom and fixed-focus lenses.

Circle 72 on Reader Service Card

Alford Mfg. Co. (Booth 209) will exhibit a complete line of antenna system equipment, including television and FM broadcast antennas, diplexers, coaxial switches, vestigial sideband filters, and RF measuring instruments.

Circle 73 on Reader Service Card

Altec Lansing (Booth 211) will introduce several new Audio Controls Div. products. Included are 60A microphone equalizer, 61A and 63A program equalizers, 470A 20-20,000 amplifier, 550A 2-amp power supply, 844A monitor & playback speaker system, and several filters, etc.

Circle 181 on Reader Service Card

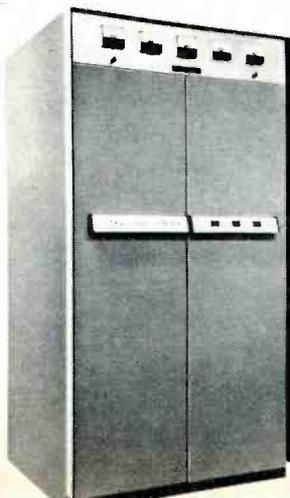
Ameco (Booths 513-11) will exhibit their complete line of solid-state CATV equipment, including ASSC-1 Video Clamper, ATSS-11 Modulator, ATM-70 Mainline Amplifier, ATB-70 Mainline Bridger, ATMB-70 Distribution Amplifier, ATB-75 Distribution Bridger, ATA-70 Mainline Amplifier, APTS-3 Power Supply, ATE-70 Line Extender, plus power protector, active taps, and directional taps.

Small items, such as change purses, etc., will be given out, and printed data on all components will be available. Ameco Bunnies will open the hospitality suite (H-320) each evening at 6 p.m.

Circle 74 on Reader Service Card

American Electronic Labs (Booth 512) will display a new 7500-watt FM transmitter (shown below) Model AEL FM-7.5KA. Requiring only 9.7 sq. feet, the unit uses only 18 tubes of 8 types. Power supplies employ solid-state rectifiers, and an air interlock switch operates in the event of loss of air pressure. Provision for remote control of filament, Plate On, and O.L. Reset functions are incorporated, and all important circuits may also be remotely metered. AEL will also display semiconductor testers for transmitter site testing.

Circle 75 on Reader Service Card

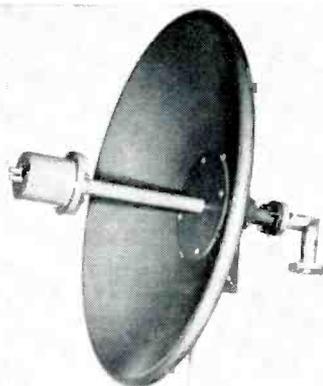


VR-303 Videotape television recorder weighs 95 lbs., is priced at \$3,950. Unit now in production records television programs or live action and sound for immediate playback through TV receivers.

Ampex Corp. (Booth 200) exhibit theme will be "The Turning Point in Television Tape Recording," with demonstrations of the High-Band VR-2000 Videotape recorder. Other video products will include the VR-660 portable broadcast recorder, VR-1100 broadcast recorder, VR-303 closed circuit recorder (pictured), and Videotrainer mobile CCTV recording system. Also on exhibit will be the Mark IV studio camera and several Vidicon cameras. Professional audio recorders and duplicator will be shown, as will several types of professional audio and video recording tapes, and a line of video switching and terminal equipment.

Circle 76 on Reader Service Card

Andrew Corp. (Booth 238) will exhibit their new automatic heatless dehydrator, capable of delivering continuous supply of dry air under any climactic condition. When transmission line is pressurized, unit automatically shuts off. 1 1/2" and 3 1/2" coaxial transfer switches and switching matrices for TV station application will be shown, along with 5"



"Heliac" flexible air-dielectric cable for high-power TV installation. Also STL antenna (pictured). New 96-page Catalog 23 will be distributed.

Circle 77 on Reader Service Card

Arriflex Corp. (Booth 324) will feature a prototype of new 16 BL professional 16mm, self-blinded motion picture camera (see photo). Designed for news and documentary work, approx. price is \$4500. Also to be shown are models 16S and 16M cameras, Siemens 2000 projector.

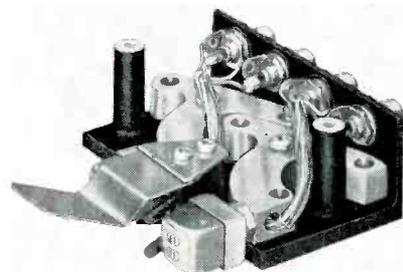
Circle 78 on Reader Service Card

Audio Devices, Inc. (Booth 408) has a new improved AUDIOPAK

continuous loop magnetic tape cartridge. A complete line of professional quality magnetic recording AUDIOTAPE will also be shown, as well as Audioidisc blank recording discs. Sample Audiopak cartridges, Audiotape and Audioidiscs will be available on a limited basis.

Circle 79 on Reader Service Card

Automatic Tape Control (Booth 309) will exhibit solid-state "Criterion" series monophonic and stereophonic tape cartridge equipment, including redesigned and improved



NAB

A Preview of Convention Exhibits

Here is a "Preview in print" of the new products, equipment, and services 90 manufacturers will be offering at the 1965 NAB Convention. A handy Reader Service Number is provided for the convenience of those unable to attend.

solid-state ATC-55 multiple cartridge handler, simple and sophisticated radio station automation systems with FCC-approved automatic program logging, new solid-state reel-to-reel tape recorder featuring "Tone Track" control with either monophonic or stereophonic options, and new "Micro-Set" adjustable head assembly (pictured) featuring positive azimuth adjustment under all operating conditions.

Circle 80 on Reader Service Card

Bauer Electronics Corp. (Booth 318) will exhibit two new products. Model 910 audio console is completely solid-state and features vertical attenuators. To be made available either factory-assembled or in kit form. Model 440 Log-Alarm system has been repackaged for TV, AM and FM use. Other products to be shown include 1-kw AM (Model 607) and FM (Model 707) transmitters, Model 720 carrier-current transmitter, and Model S-1000 "Surrounding Sound" special-effects equipment.

Circle 81 on Reader Service Card

Boston Insulated Wire (Booth 224) will exhibit television camera and microwave control cables featuring a choice of Teflon or Cellular Polyolefin coaxials, Neoprene or plastic jackets, and lightweight demountable connectors for Marconi, E.M.I., Pye, Philips, G.E., and RCA color and monochrome equipment. New

← Circle 12 on Reader Service Card for Shure Bros. ad

products to be introduced include connector accessories to upgrade the performance of U.S. TV connectors, and a line of molded Neoprene attachable connectors for studio lighting and mobile units.

Circle 82 on Reader Service Card

CBS Labs (Booth 242) will introduce the new Audimax III solid-state automatic level control and the Audimax IIIS for stereo MPX operation. The Volumax automatic peak controller, and a complete line of broadcast, industrial, and high-fidelity test records will be shown.

Circle 84 on Reader Service Card

CCA Electronics (Booth 322) will display its new AM broadcast transmitter line, featuring accessibility, modern components, and attractive prices. In addition, a new line of FM transmitters which utilizes 0 bias grounded-grid triodes will be shown. Use of these tubes eliminates the need for neutralization, RF bypass capacitors, and screen supplies.

Circle 85 on Reader Service Card

Century Lighting (Booth 221) will exhibit a comprehensive selection of TV studio lighting instruments, accessories, mounting equipment, wiring and lighting control devices.

Circle 86 on Reader Service Card

Chrono-Log (Booth 308) will have a new product, a solid-state digital clock system. Remote digital displays are operated from a central clock with an internal oscillator time base. Accuracy is 1 to 2 seconds per year. Synchronized to WWV or other source by means of front panel push-buttons, time can be readily set at the central clock.

The STEP System for TV Automation, with new control outputs to allow direct installation in most stations without the need for external interface equipment, will also be on display in Booth 220, as an integral part of a Riker solid-state switcher.

Circle 87 on Reader Service Card

Cleveland Electronics (Booth 227) will exhibit deflection components for TV cameras, vidicon and image orthicon special purpose and custom transformers for use in audio and HV transmitter power supplies.

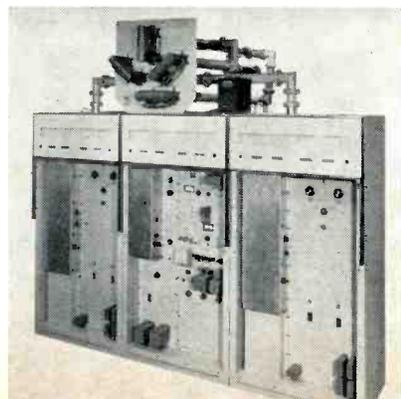
Circle 88 on Reader Service Card

Cohu, Kin Tel Div. (Booth 316) will display self-contained CCTV cameras, EIA synchronizing generators, video switchers, miniaturized TV cameras, environment-resistant TV cameras, and accessories.

Circle 89 on Reader Service Card

Collins (Booth 214) will feature their new 820 E/F 10-kw AM transmitter, 212M-1 speech input console, 830H 20-kw FM transmitter, and the 900C-1 FM stereo modulation moni-

Collins 830H 20 kw transmitter



tor. The AM transmitter uses a phase-comparator circuit to automatically control PA tuning as loading is adjusted. The unit can be remotely controlled in the conventional manner; for attended operation, all meters, controls and status indicators are grouped on a separate extended control panel, intended for installation in the customer's console or equipment rack. The speech input console allows switching and attenuation to be controlled remotely. The 212S-1, stereo version of the 212M-1, can provide monaural output simultaneously on both program channels from a single input, or handle separate monaural material from inputs through two program outputs.

Circle 90 on Reader Service Card

Colortran Industries (Booth 231) will show new Quartz King lighting system and electronic controls, and offer custom engineering services.

Circle 91 on Reader Service Card

Conrac (Booth 102) will demonstrate performance stabilized professional monitors. The units are combination solid-state and tube designs in 8", 14", and 17" sizes, for both cabinet and rack mounting. Color monitors in 17" and 21" sizes will also be shown.

Circle 92 on Reader Service Card

LTV Continental (Booth 213) has a new transmitter, Model 317C, and a new Pro-Log I system. Also to be shown is the line of AM broadcast transmitters, the Pro-Log automatic programming and logging system, and the Traffaccounting system. Literature on all items is available.

Circle 93 on Reader Service Card

Cummins Engine (Booth 304) will exhibit their NH-220-125-kw standby generator set for broadcasters.

Circle 94 on Reader Service Card

Dage TV (Booth 404) will show the Model 520 Broadcasting System, which includes the 520 vidicon camera, a transistorized control console, a new film and slide projector multiplexer, and the new DV-300 portable video tape recorder.

The 520 camera chain and controls is priced at about \$4,850, less cables and special optics and lenses. Price of the video recorder is \$12,450, plus \$2,700 for a process amplifier. The FC-11 multiplexer and cabinet are priced at \$1,600, and the film chain camera is \$1,980.

Circle 95 on Reader Service Card

Dresser-Ideco (Booth 305) will show photographs of recent tower installations and offer brochures showing research and design capabilities for TV, FM, and microwave antenna tower construction.

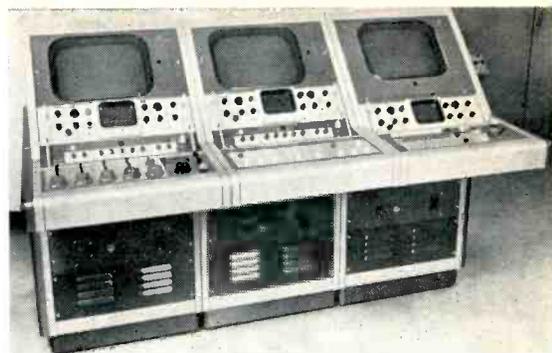
Circle 96 on Reader Service Card

Dynair (Booth 235) will exhibit balanced and unbalanced video line driving equipment, CCTV transmitters for cable networks (both tube type and solid-state), transistorized stabilizing amplifiers, clamps, and pulse and video distribution systems.

Circle 97 on Reader Service Card

EMCEE (Booth 243) will display VHF and UHF translators, UHF transmitters, 2500-mc ETV equipment, and cable distribution eqpt.

Circle 98 on Reader Service Card



Master control console for the 520 Broadcast System can accommodate any number of cameras (Dage TV).

Entron (Booth 516) will feature new solid state CATV amplifiers. Model R-1 is a strand-mounted weatherproof Repeater Amplifier. Model B-1 is a strand-mounted Bridging Amplifier with built-in directional coupler. Model B-2 Bridging Amplifier is intended for pole mounting in a weatherproof housing, and Model E-2 is a high gain Extender Amplifier. Descriptive data of the new units and prices will be available.

Other products to be exhibited will include tube-type high-gain LHD-404R and LHR-45R amplifiers, and passive units which make up a typical system. Information on proposals, signal systems, strand surveys, make-ready studies, system layouts, turn-key construction, engineering assistance, and financing is offered.

Circle 99 on Reader Service Card

Fairchild Recording (Booth 222) will display their limiters and compressor, audio control equipment including the Conax and Dynalizer. Consoles for broadcast and recording and microphones will also be shown.

Circle 151 on Reader Service Card

Filmline Corp. (Booth 306) will exhibit their line of film processing equipment, including Model ND-100 16mm neg/pos portable processor, 85 fpm; Model R-15, 16mm reversal neg/pos processor, etc.

Circle 152 on Reader Service Card

Fort Worth Tower Co. (Booth 301) will offer their services for construction and erection of AM, FM, TV, and microwave towers, passive reflectors, and buildings. Literature will be available at the booth.

Circle 153 on Reader Service Card

Gates Radio (Booth 223) will feature four brand-new transistorized remote amplifiers, including the Dynamote 70 4-channel, Attache 70 3-channel, Courier 70 2-channel, and Unimote 70 single-channel. Also on



"Dynamote 70" 4-channel remote amplifier has 9 inputs, including equalized phono, and built-in oscillator.



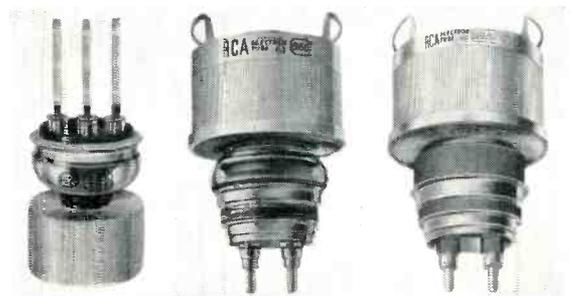
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AND NOW...THE RCA-8501 FOR 10 KW UHF-TV

Designed for operation in the 1- to 10-KW range the RCA-8501, forced-air-cooled tetrode, allows greater economies in RF amplifier design and operation. Featuring Cermolox[®] design, this new tube offers the advantages of its military prototypes—high perveance, high gain, low voltage operation, forced-air cooling... plus a rugged long-life thoriated tungsten filament. A single tube delivers 5.5 KW peak sync at 890 Mc.

To keep up-to-date on RCA innovations, keep in touch with your local RCA Broadcast Tube Distributor. He is ready to provide current information on new and improved RCA types. Ask for a copy of Product Guide for RCA Power Tubes, PWR-506A.

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Familiar names—RCA-5762/7C24, -6166, -6166A/7007,—yet today's improved RCA versions are still the best buys a broadcaster can make—kept in the forefront of broadcast technology through continual improvement by experienced RCA design and production engineering.

See you at NAB RCA Booth 100



The Most Trusted Name in Electronics

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SUPERIOR CONSTRUCTION

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These rugged B.I.W. cables follow beautifully, giving smooth, easy camera motion at all times without twists or kinks.

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Circle 14 on Reader Service Card

display will be the complete line of AM-FM transmitting equipment, including new 1-, 5-, and 10-kw transmitters, dual polarized FM antennas, Vanguard I one-tube 1-kw AM transmitter; and BC-5P-2 5-kw AM transmitter with phasing system in matching cabinet. Transistorized audio equipment, including Executive stereo console, Diplomat dual channel, President dual channel, Ambassador, Producer, new production console, and Carritape II recording equipment will also be shown.

Circle 154 on Reader Service Card

Gencom (Div. of Whittaker Corp.) (Booth 314) equipment to be exhibited will include a new 4½" solid-state image orthicon camera, solid-state Plumbicon camera, ½" vidicon camera, a new concept in solid-state production switching systems, a newly designed reed-relay distribution switching system, and two new solid-state tape recorders.

Circle 155 on Reader Service Card

General Electric (Booths 217-18) will have its largest exhibit ever with 4,225 square feet. The theme, supported by special decorations and two separate stage sets and studio camera centers, is "Quality Gardens." Special displays will feature outstanding antenna installations, and the 27 installations to date of G-E 4-V color and monochrome film camera. Eastman Kodak will demonstrate its "Viscomat" rapid film processor, shooting, processing, and showing news film in the exhibit.

New products to be shown include the PE-26 portable all-transistorized 3" I.O. camera, said to be 30% smaller and lighter, requiring 80% less power than comparable tube types.

Also new is the 35-kw VHF low and high channel transmitter with 10:1 visual-aural power ratio (35 kw visual, 3.5 kw aural), which is also available in 5:1 and 2:1 ratios. New 15-kw and 30-kw UHF klystron transmitters will also be exhibited.

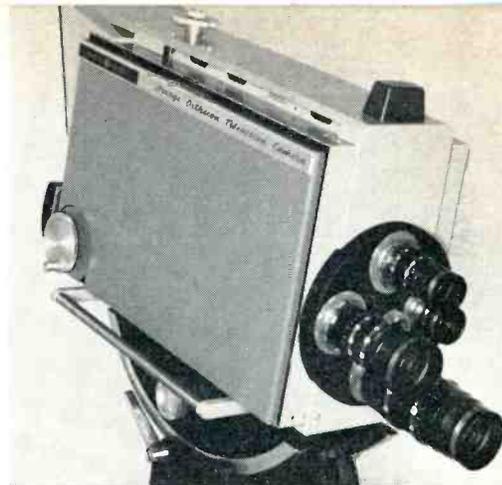
Other products to be shown are a 4½" I.O. monochrome studio camera with transistorized video processor; transistorized professional studio vidicon camera, with separate mesh 1" vidicon; transistorized remote studio vidicon camera; 4-vidicon color and monochrome film camera; transistorized monochrome film camera system with transistorized video processor; continuous motion projectors and multiplexers; and a 3-I.O. color studio camera.

Audio equipment on display includes a stereo console, transistorized uni-level amplifier, transistorized audio preamps, amplifiers, and other system components. In addition, VHF and UHF Helical and Zig-Zag antenna models will be shown.

Circle 156 on Reader Service Card

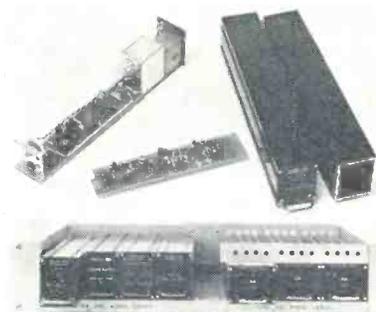
Gotham (Booth 229), exclusive U.S. representatives of Neumann and EMT, will exhibit Neumann mono and stereo condenser microphones; EMT Vid-E-Dit 62 electronic video tape editor; EMT-140 steel plate reverberation unit for AM and FM stereo; EMT-Studer C-37 master tape recorder; and EMT 930 stereo automatic studio turntables.

Circle 157 on Reader Service Card



Newest G.E. video product to be unveiled is all-transistorized PE-26 3" portable I.O. camera.

Grass Valley Group (Booth 507) will introduce two new items—Model 750 sync generator and Model 712 pulse delaying amplifier. The Model 750 provides standard 4-volt sync, blanking, drive and burst flag pulses, and 2-volt p. p. 3.58 mc. A unique feature is the wide range of front porch adjustment provided. Horizontal drive and blanking can be advanced as much as 3 μsec. (4.2 μsec ahead of sync) to compensate for cable or color modulator delays.



Examples of Grass Valley audio and video line equipment.

The 712 is a regenerative bridging-pulse amplifier incorporating a continuously variable pulse delay. It will accept any of the pulse sequences used in television, remove up to 100% hum and other low frequency disturbance and deliver a clean, uniform and identical train.

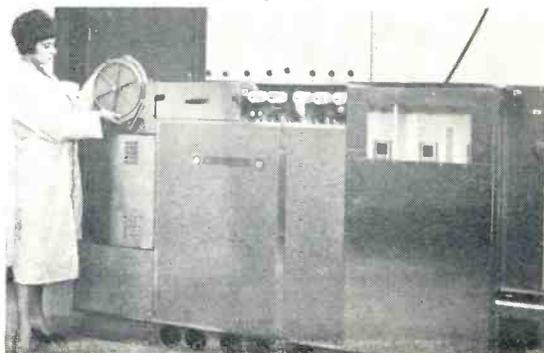
Circle 158 on Reader Service Card

Harwald (Booth 406) will feature all new Mark IX Inspect-O-Film Editor machine, new Editor film cleaner and conditioning machine, and new Mark IV-B automatic film inspection machine with electronic cleaning and graph recording. Admatic rear projection and Splice-O-Film machines will also be shown.

Circle 159 on Reader Service Card

Houston-Fearless (Booth 405)
(NAB Exhibit Preview cont'd. on page 46)

Houston Fearless film processor.



proven
in
over
500
HOPS



Jerrold Microwave Relay Systems

Hundreds of Jerrold Microwave Relay Systems are currently in operation across the continent and in foreign lands. They have an enviable reputation for highly reliable service, simplicity of set-up, and continued low-cost maintenance (stability $\pm 0.005\%$).

Extremely versatile, Jerrold's unique wide-band equipment can be used for one hop or dozens, for single- or multi-channel operation, for video or voice communication, and in any STL, CATV, ETV, telephone, common-carrier, or data-communication service. Easily equipped with automatic alarm or program switching. Can also be equipped to permit a common-carrier video user to carry wide-band data, facsimile, etc.

As a leader in video/message microwave relay systems, Jerrold has a complete line of specialized multiplex/sub-channeling equipment for data-facsimile, telemetry, and voice-multiplex requirements; auxiliary service channel, fault reporting, baseband equipment; antennas, waveguide, and reflectors—all available as equipment or as integrated turn-key systems.

Why not take advantage of Jerrold's specialized equipment and know-how for your next system? Call or write

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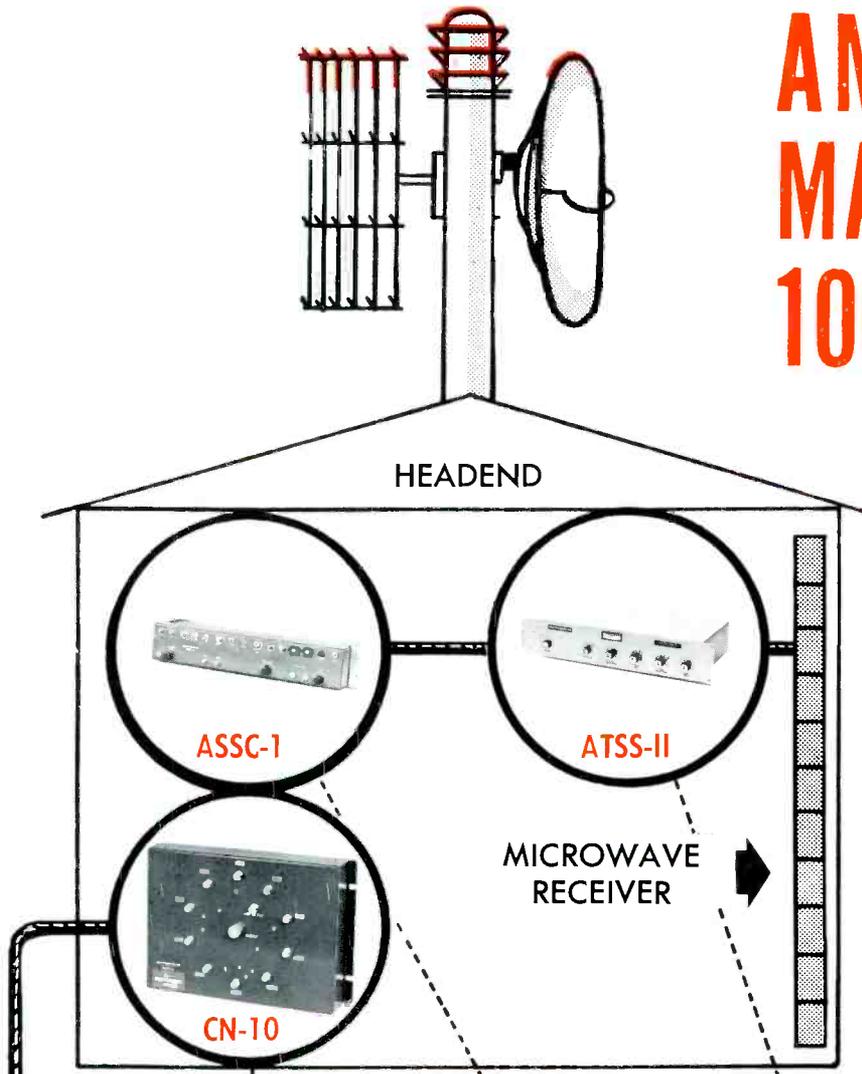
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AMECO IS STILL MANUFACTURER V 100% SOLID-STATE



Solid-state CATV equipment has many advantages over tube equipment. This advantage was firmly established when Ameco originated the solid-state CATV system. Other manufacturers are following as they strive desperately to get on the solid-state bandwagon. Ameco is the only CATV manufacturer to use solid-state cable systems. One amplifier or two such as the Ameco solid-state when you

The CN-10, Ameco's Combining Network, provides selective band pass mixing with isolation of a minimum of 20 db per combined channel. The combined output is fed down the cable to the first amplifier. This unit is capable of carrying 10 channels: 6 low band and 4 high band.

Ameco's exclusive solid-state modulator, the Ameco-Tran Solid-State II. A broad frequency modulator capable of manufacturing and modulating a new carrier on any desired channel. Very compact, the ATSS-II permits remodulation with no loss of picture quality or degradation of color signal.

Ameco's new solid-state video clamper, the model ASSC-1. For use in high quality CATV systems and microwave applications, it eliminates flutter, hum and bounce from video signals. The ASSC-1 expands amplitude of sync pulses and permits increase in the high frequency response of video information.

**SEE THE EQUIPMENT
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WASHINGTON, D.C.**

The ATM-70, Ameco's new hermetically sealed, etched circuit, all-band trunk line amplifier. This inline amplifier combines maximum output with low noise figure, and can be cascaded to the ultimate for CATV system operation. Temperature compensated to provide constant output at any ambient temperature.

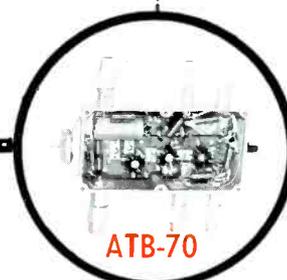
The Ameco ATB-70 is a low gain, high level bridging distribution amplifier. Featuring an excellent match and extremely low insertion loss, the ATB-70 supplies a minimum of 40 db to each of four feeder lines. This amplifier follows the "70" series cast aluminum, inline strand mount configuration.

The Ameco ATMB-70/11 is a combination of the Ameco ATM-70 trunk amplifier and distribution amplifier network. This amplifier allows the operator to provide a high output signal to four feeder lines that serve many customers. Used where a bridger feeds directly from the mainline amplifier.

The ATB-75 is the first! A 25 db output bridge that handles even the distribution directional errors. It ensures good 70% with exceptional and low in Manual gain controls permit and slope to



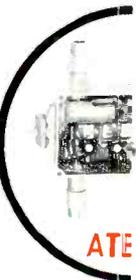
ATM-70



ATB-70



ATMB-70



ATB-75

THE ONLY CATV WHO CAN BUILD A E CABLE SYSTEM!

oment offers countless
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now acknowledge this
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**IN THIS 100%
SYSTEM ON DISPLAY
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is an Ameco
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and tilt con-
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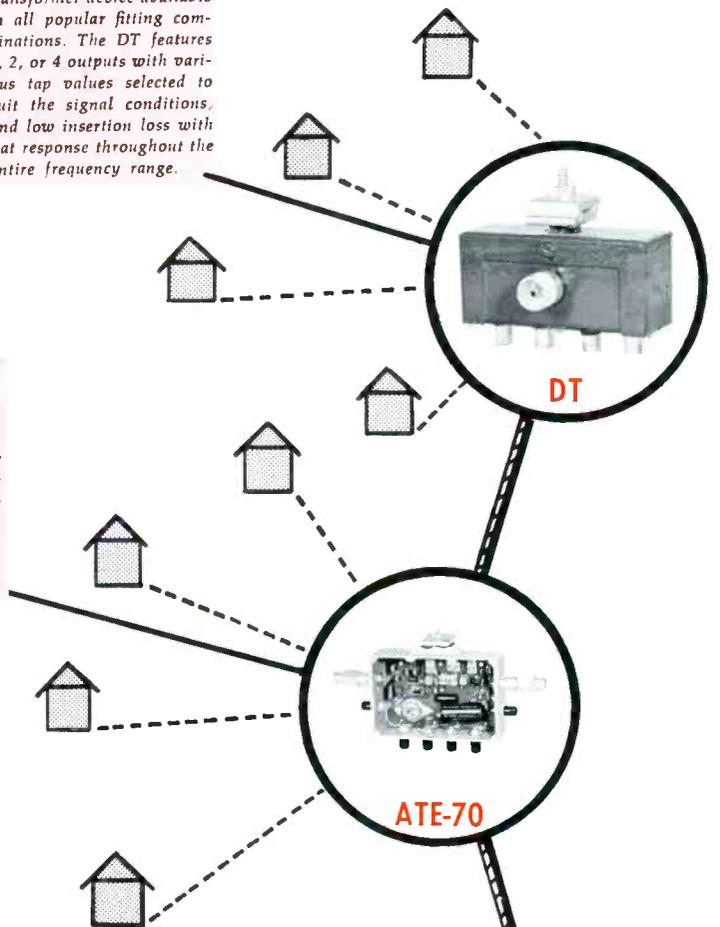
The ATA-70, a tempera-
ture compensated automatic
gain control trunkline amp-
lifier combining an unusu-
ally stable AGC amplifier
section with a high output,
low noise RF amplifier.
Temperature stability is $\pm 1/2$
db from -50° to $+150^{\circ}$ F.
Less than 1 db output
change occurs with a ± 8 db
input change.

The ATPS-3 is a saturated
core regulated type trans-
former, providing 38 volt
AC source power which can
be fed down the cable either
in the same direction as the
RF signal energy, or in op-
position to it. A self-con-
tained accurate AC ammeter
indicates total power con-
sumption by direct readiing.

Ameco's PP-3 Power Protec-
tor offers protection against
repeated lightning strikes,
high source voltage, electri-
cal interference and short
circuits. An internal ther-
matic overload relay inter-
rupts the line during high
voltage, source conditions
and automatically resets it-
self at normal power levels.

The Ameco Directional Tap.
This is an hermetically
sealed perfectly matched
transformer device available
in all popular fitting com-
binations. The DT features
1, 2, or 4 outputs with vari-
ous tap values selected to
suit the signal conditions,
and low insertion loss with
flat response throughout the
entire frequency range.

The ATE-70 is the new
Ameco higher output "70"
series cast aluminum Line
Extender. The ATE-70 pro-
vides a self contained four
output directional tap for
distribution purposes. The
combination of high output,
low noise and four outputs
make this an unique exten-
der.



ameco

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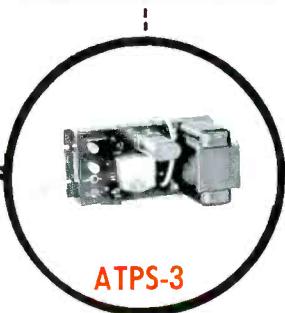
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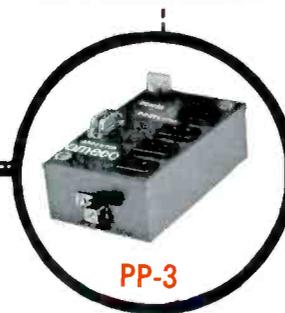
ATA-70



ATE-70



ATPS-3



PP-3

Alright... Cut it out



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Now...

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...and get **FREE** an accurate full range STROBOSCOPE test disc with our detailed illustrated brochure on QRK turntables.



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Circle 17 on Reader Service Card

NAB

Exhibit Preview

Continued from page 26

plans to exhibit the new improved Reversal Labmaster film processor, said to be the most popular for use in television stations. Literature on this equipment will be available, as well as for spray type and color film Labmasters—both new products. Circle 160 on Reader Service Card

International Good Music (Booth 300) will display two complete new lines of equipment. The first is a new Series 500 system, a repackaging of the existing Models 200 and 300 IGM insertion systems. Completely modular in approach, the Series 500 makes it possible to start with one or two channels and expand to an unlimited number.

The Series 600 system, a revolutionary new approach to traffic, logging and billing, uses a NCR IBM-type card reader which both programs the automation equipment and prepares the program log via an electric typewriter as each event goes on the air. Another new element is an automatic network switcher. A display will feature a system joining ABC Radio on a completely automatic basis. Circle 161 on Reader Service Card



Jampro (Booth 205) will introduce its Zig Zag UHF TV antenna for the first time. A complete single-bay antenna for operation on Channel 60 will be on display. The 12' antenna weighs 800 pounds. Descriptive literature and price information will be available.

Other products at the show will be VHF TV antennas, and a dual polarized FM antenna (shown left). Copies of a technical paper on the effects of adding vertically polarized power to the normal horizontally radiated power for FM stations will be available.

Circle 162 on Reader Service Card

Jerrold (Booths 400-01-02) will show new transistorized CATV all-band cascader and bridging amplifiers, said to provide stability attained only in the most elaborate systems with an economy of maintenance heretofore unknown. Microwave



Jerrold Model TLE-1 line extender has output of 33 dbj for 12-channels.



Jerrold Model TML-1 all-band cascader is a 6-transistor amplifier.

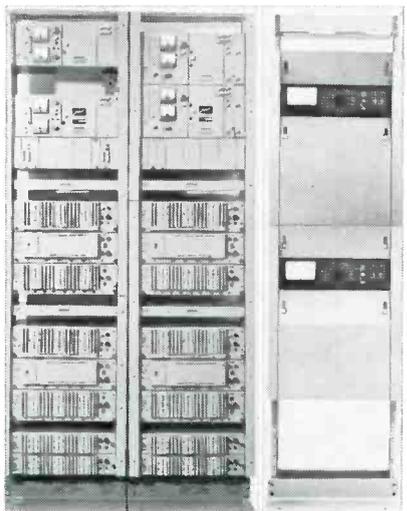
equipment for STL links in the 7 to 13 kmc range will also be exhibited. 48-page 3x5 booklets, Reference Data on Community Systems, will be given out, along with brochures on "Transistorized All-Band Distribution System."

Circle 163 on Reader Service Card

Johnson Electronics (Booth 236) will feature a silicon transistor 10-watt SCA amplifier operating in a container of boiling oil. Various other items from a line of transistorized multiplex tuners, receivers, amplifiers, and associated equipment, will be displayed. A descriptive brochure will be given out at the booth. Circle 164 on Reader Service Card

Kliegl Bros. (Booth 101) will introduce the first all-quartz TV studio lighting line with scope, fresnels, ellipsoidal and cyclorama lighting. Conventioneers are invited to judge them on camera in the exhibits of RCA, Ampex, Sarkes-Tarzian, and Whittaker, where they will be used to light areas for both monochrome and color pickup. Units to be shown for the first time include quartz scoop #3450, priced at \$46; quartz fresnels #3506 and #3518, at \$34 (500 w) and \$70 (1000 w). Circle 165 on Reader Service Card

Lenkurt (Booth 501) will display its new 76TV microwave system and



76TV linearity reduces differential phase and gain to low values. 75A is for long haul networks, accommodates 960 voice channels or color TV.

75A heterodyne repeater system. The 76TV is an all-solid state (except klystrons) microwave system designed for the transmission of color or monochrome TV. The system complies with, and, in most cases, exceeds recommendations established by NAB, EIA, FCC, and CCIR.

Circle 166 on Reader Service Card

MaCarta (Booth 315) will exhibit automatic magnetic tape-cartridge recording and playback equipment,

and automatic tape magazine reconditioning and reloading.

Circle 167 on Reader Service Card

Magnecord (Booth 502) will display their magnetic tape recording equipment line for broadcasters.

Circle 168 on Reader Service Card

Marti Electronics (Booth 234) will introduce new 450-mc remote pick-up and automatic relay equipment, including transmitter, receiver and various accessories. Adaptable for unattended automatic relay use, it



M-3/STL transmitter has maximum power output of 3 w, costs \$1295.

is claimed to retain the same features found in present 150-mc gear.

The M-20B Series remote-pickup transmitter is priced at \$695, and the MR-100 receiver at \$425. YC-450 and -455 yagi antennas are 5-element units cut specifically for 450 or 455 mc. Gain is 9 db and VSWR is 1.5.

Also new is the 950-mc studio-transmitter link and inter-city relay equipment, designed primarily for monaural program transmission, and intended to compete with phone line.

The RMC-2 radio remote control system, also to be shown, is capable of 48 control functions and 24 metering positions. Sells for \$1,795.

Circle 171 on Reader Service Card

McMartin (Booth 215) will have a live demonstration of a new TBM-4500 stereo monitor which is completely self-contained. Also on display will be a demonstration of broadcasting facsimile via SCA multiplex using a 6-kc subcarrier.

Circle 172 on Reader Service Card

Microwave Associates (Booth 203) will feature solid-state mobile microwave TV relay equipment for the 2, 7, and 13 Gc broadcast TV pick-up relay bands. Also on display will be all solid-state STL equipment, high-power TWT amplifiers for all microwave bands, 6 and 11 Gc common-carrier mobile TV pick-up microwave relay equipment.

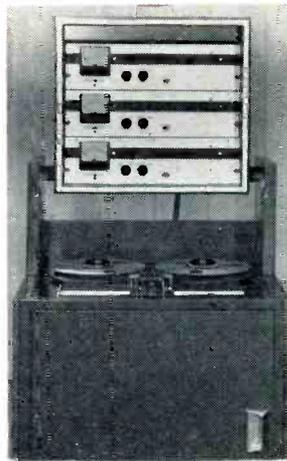
Circle 173 on Reader Service Card

Miratel (Booth 210) will show professional and general purpose transistorized monitors, transistor pulse-cross monitors, tube-type monitors.

Circle 175 on Reader Service Card

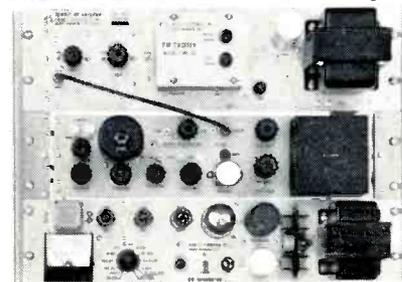
Moseley Associates (Booth 237) will be demonstrating their 950-mc STL equipment. Model PCL-2B is designed for service with AM, TV aural, FM (both monaural and stereo) and intercity relay. For monaural or stereo and simultaneous SCA multiplex operation, the Model LPE-10 FM exciter (photo), using 10-w direct modulation, will be shown.

Two new products to be shown are the Model PBR-21 remote control



system, and RPL-1 remote pickup system. The PBR-21 is designed for AM, FM, or TV, and requires only a single voice quality telephone circuit or a radio STL. 21 telemetering and 42 control channels are provided; unique pulse-counting binary-logic circuits are employed.

Circle 176 on Reader Service Card



Circle 178 on Reader Service Card

MVR Corp. (Booth 310) will be exhibiting their MVR-65 portable broadcast TV Tape Recorder, and MVR-600D video disc recorder.

Circle 179 on Reader Service Card

North American Philips (Booth 106) will be featuring Plumbicon color and monochrome TV cameras, along with numerous other Norelco studio equipment.

Circle 182 on Reader Service Card

Northern Electric (Booths 409-11) will highlight their new transportable production center. The system consists of a solid-state 22-type speech input console with dual 12" turntables. Completely portable for either remote or studio use, it features full cue, monitor and switching facilities, and 6 additional inputs.

Circle 182 on Reader Service Card

Nortronics (Booth 202) will be showing three new head bracket



Each Quick Kit contains head bracket, guide bar for proper cartridge alignment, and positioning template.

3M Company (Booth 207) is using one large exhibit to demonstrate the newest products of two divisions. A 27-minute video tape will be shown by the Magnetic Products Div. to demonstrate techniques as well as special effects of commercials produced for TV. New "Scotch" Brand Low Noise sound tapes will be on display, along with lubricated sound tapes.

The Revere-Mincom Div. will demonstrate its \$8,500 Professional Mastering Recorder (pictured) designed to produce superior master tapes to upgrade the quality of music transmitted by radio and TV stations. The system is said to improve sound recording by up to 15 db. The recorder's "Isoloop" tape transport will be demonstrated to show how wow and flutter, caused by lack of constant tape speed, is avoided.

Revere-Mincom's Dropout Compensator, an electronic accessory for studio VTR's, will be demonstrated to show elimination of visual dropout effects in TV tape playback. The compensator makes old tapes like new, according to Mincom, by replacing dropout signals with stored video signals. The system is compatible with all color and monochrome broadcast equipment now in use. Circle 174 on Reader Service Card

assemblies for cartridge players. Known as "Quick Kits," they are designed to reduce head installation and alignment problems and eliminate the need for rear-mount heads in broadcast cartridge recorders of the Fidelipac and Viking type. The complete line of magnetic tape heads and accessories will be exhibited, and literature giving specs is available. Circle 183 on Reader Service Card

Ozolid Repro Products (Booth 303) exhibit will feature complete business office paper-work systems, custom-tailored for broadcasters. The systems, said to be proven cost-cutters which speed up accurate maintenance of contract-invoicing, daily log, traffic and availabilities routines, are based on use of the Ozolid 5017 automatic copier.

Circle 184 on Reader Service Card

Q-TV (Booth 239) will exhibit complete prompting services and all related products, including multi-synchronous and non-synchronous prompter packages.

Circle 185 on Reader Service Card

Quick-Set (Booth 407) will feature their Model 6245 Gibraltar cradle head, 5645 heavy-duty dolly, and Gibraltar trolley. A complete line of tripods, panheads, dollies, and special accessories will be shown, including Model 7301 Samson tripod and elevator, 7201 Samson friction head, 7601 Samson dolly, 5302 Hercules tripod and elevator, 5261 Hercules Dualok head, and 5602 dolly.

Circle 186 on Reader Service Card

Raytheon CADPO (Booth 104) will display its new KTR-II solid-state dual-link microwave system, in addition to a broad line of mw equipment designed for use in intercity relay, remote pickup, or STL applications. TMA Program audio channel units for application to existing systems and a new solid-state Type B clamper amplifier will also be shown.

Raytheon Components Div. will exhibit the line of Machlett tetrode and triode power tubes and Designer 400 Series control knobs.

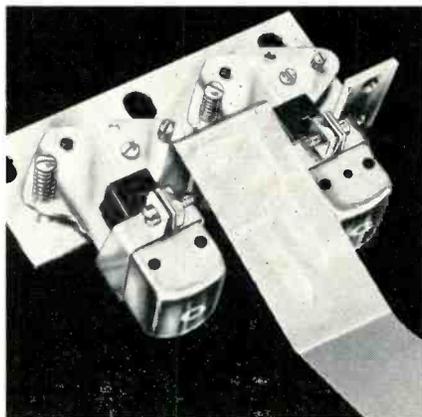
Circle 187 on Reader Service Card

Reeves Soundcraft (Booth 500) will exhibit Micro-Plate video tape and other recording products.

Circle 188 on Reader Service Card

NORTRONICS DOES IT AGAIN!

Ever since cartridge machines were first introduced into broadcasting, the process of replacing worn, rear-mount heads has been both expensive and time consuming. NO LONGER!



Nortronics, as part of their constant effort to increase quality and ease of operation through advanced research and development, have pioneered a revolutionary, new method . . . a Quik-Kit assembly which accommodates no-mount heads in your cartridge equipment. What's more, now you can replace worn heads with genuine Nortronics laminated core, hyperbolic, all-metal face no-mount heads!

These unique Quik-Kits are semi-aligned and completely assembled; micrometer adjustments for height, azimuth and face alignment as well as a special lock screw to "freeze" adjustments, are provided.

Visit with us at our special NAB Booth, No. 202, at the Sheraton Park Hotel!

Nortronics
8181 Tenth Ave. N., Minneapolis, Minn. 55427

Circle 18 on Reader Service Card



RCA (Booth 100) will feature a "television studio of tomorrow," fitted out with the most advanced broadcast equipment, showing how "New Look" equipment can be assembled as an operating system to gain maximum benefit from new technology. Visitors will be shown how a specially-built master control center handles the remote operation and switching of "live" and film cameras, TV tape recorders, and other program originating equipment. Several new TV products will be introduced, including a new I.O. camera for field use, a deluxe TV tape recorder (TR-X unit shown at left in WKBD-TV mobile unit), and new equipment designed especially for CCTV systems.

Four types of monochrome cameras, and a production model of the revolutionary new TK-42 "live" color camera, will be in operation and available for first-hand inspection. The TK-42 and companion TK-27 color film camera use the 4-channel concept, which provides a separate monochrome channel for more detailed color and sharper black-and-white pictures from color broadcasts.

The display will also highlight the TV tape equipment line, as well as new transmitting, film-sound recording, and audio equipment. Both the Broadcast & Communications Products and Electronic Components and Devices Divs. of the firm will be represented.

Circle 191 on Reader Service Card

Riker (Booth 220) exhibit will represent a new kind of TV studio, showing how full video facilities can be enclosed in a single, table height, control console without requiring any equipment mounted in tall racks. New products to be shown for the first time include an automated programming video switching system which uses a low cost "memory board" for controlling up to 25 events. Also new is a Viteac Test Set which produces signals for continuous use in the Vertical Interval. Both interim and optimum modes of operation will be demonstrated. An SMPTE Signal Generator which produces RP-10 test signals for proper alignment and setup of video tape recorders will be shown, in addition to additive/non-additive video mixers which allow more flexibility and greater accuracy of video fades and title inserts. The "View Pointer," a new program production tool that electronically inserts a movable marker in the program picture, will be demonstrated.

Circle 192 on Reader Service Card

Rohn (Booth 321) exhibit will feature broadcast and microwave towers, reflectors, lighting and associated tower equipment and services.

Circle 193 on Reader Service Card

Rust Corp (Booth 225) will exhibit a line of FM stereo transmitters, and the "Autolog" transmitter logging equipment. Remote control equipment, stereo consoles, SCA generators, and TV lighting equipment will also be shown.

Circle 194 on Reader Service Card

Sarkes Tarzian (Booth 208) will display several new items, some of which are considered precedent-setting designs. TASCOM, a digital computer for traffic availabilities scheduling, has been designed to solve one of the most serious problems facing today's TV stations. The APT-1000 solid-state digital programming computer will be shown in actual operation. Various machine controls include film and slide projectors, multiplexers, video switching, video and audio automation. The equipment will also have a card

reader attached.

Several new camera systems will be shown, including new solid-state 3" and 4½" I.O. models, and the Plumbicon studio unit. An improved solid-state switching system with non-additive mixer will also be shown.

The entire TV line is brand-new, and will be shown for the first time.

Circle 195 on Reader Service Card

Schafer (Booth 212) will feature a new Model 800-S stereo program control system, operating as though programming a stereo radio station. It will be operating six music playback decks, an S-100 spot locator, and a TM-8 audio clock.

Automatic program logging equipment, which records a whole day's programming on one 7" reel, will also be demonstrated. A new Model 500 transmitter remote control, allowing operation of 40 different functions and metering 20 different circuits, will be displayed.

Circle 196 on Reader Service Card

Shibaden Corp (Booth 226) will show transmitters, I.O. and Vidicon cameras, TV tape recorders, microwave TV relay equipment, measuring instruments, pickup tubes, and CCTV equipment.

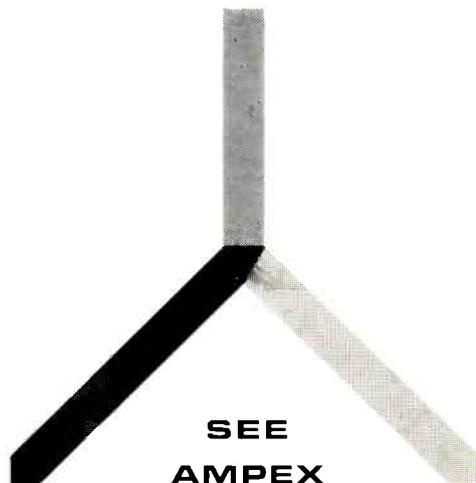
Circle 197 on Reader Service Card

Shure Bros. (Booth 232) exhibit will be devoted to microphones and disc reproducers. Microphones for all facets of broadcasting will be displayed, and a feature will be the introduction of the first several models in the new SM Series. Disc reproduction equipment will include Dynetic phono cartridges, tone arms,



Transitorized Sony EM-2N provides full-track recording at 7.5 ips on 5" reel. Weighs 11 lbs. and operates up to 5 hrs. on one set of batteries.

SEE THE TURNING POINT IN TELEVISION TAPE PRODUCTION

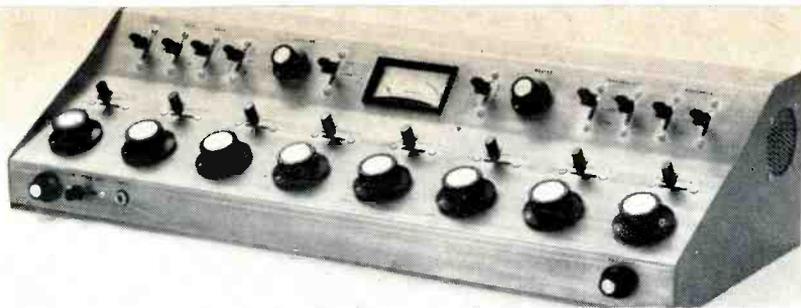


**SEE
AMPEX
AT
NAB**

NAB BOOTH #200, SHERATON PARK HOTEL, WASHINGTON, D.C. MARCH 21 THROUGH MARCH 24, 1965

AMPEX

Circle 19 on Reader Service Card



Sparta A-20, for use in AM, FM, TV control rooms, is priced under \$900.

Sparta (Booth 319) will exhibit many new products as well as their established line of professional broadcast equipment. New products will include Model A-20, a completely transistorized audio console employing 8 faders that can mix from a selection of 16 audio inputs.

Another new product to be shown is the Model MC-105 multiple tape cartridge system, employing five separate tape cartridge handlers in a 14" x 8½" unit. In addition, many new advancements to earlier equipments will be seen.

Circle 127 on Reader Service Card

equalizers, and preamplifiers. A new professional products catalog will be available.

Circle 198 on Reader Service Card

Sony (Booth 320) will feature the BV-120 Broadcast Unit and the EM-2N Portable Audio Tape Recorder. A complete line of microphones and monitors will also be exhibited.

Circle 121 on Reader Service Card

Standard Electronics (Booth 103) will show a combination solid-state 2/5-kw VHF transmitter in one cabinet, with an aural combination of 1kw/500w. For use with this unit, a solid-state one design amplifier for output combinations up to 75 kw visual and aural ratios of 10% to 50% will be available. Also, the prototype of a new air-cooled UHF 10/20 kw amplifier, for providing a range of UHF power levels from 10 to 40 kw, will be shown.

Circle 123 on Reader Service Card

Tektronix (Booth 201) will feature video waveform monitors, a vector-scope for color TV phase measurements, an oscilloscope trace-recording camera, radio broadcast and TV test equipment, Scope-Mobile oscilloscope carts, and auxiliary equipment.

Circle 124 on Reader Service Card

Telemet (Booth 105) will introduce four new transistorized Telechrome units: Models 3209-A1 Color Stabilizing Amplifier, 3203-A1 Clamper Amplifier, 3518-A1 Color Bar Generator, and 3519-A1 Sync Generator. The company will also have an operational display of its complete line of transistorized equipment.

Circle 125 on Reader Service Card

TelePro (Booth 241) will feature their Model 6000 Projector with accessory complements. Other products in the line of prompting devices and programming control equipment will also be shown.

Circle 126 on Reader Service Card

Telequip (Booth 203) will display solid-state microwave equipment and a new line of custom-built control consoles and racks. High intensity flood lights will be featured as in the past. A "Used Equipment Exchange" will be conducted. Spot purchases of obsolete equipment will be made and offered for sale.

Circle 147 on Reader Service Card

Telesync (Booth 204) is introducing two new items: a Tape Transport Projection System and a Single

& Dual Head Rear Screen Projector. The first, used for news bulletins and special effects, features speed-torque characteristics which permit unlimited stalling without overheating, and provide required tension when not driving. The second unit features both forward and backward slide change operation with positive intermittent motion free of backlash or lost motion at the stop position.

Circle 128 on Reader Service Card

Television Zoomar (Booth 216) will introduce Autocam, a servo remote control pan-tilt head and zoom lens system. Also new is a device called "Cine Vide," which consists of an auricon 16 mm sound on film motion camera, a transistorized GE broadcast vidicon camera, a view finder and an Angenieux-Zoom 10:1 lens. Also on exhibit will be the Angenieux-Zoomar and Angenieux-Evershed Zoom lenses, plus Angenieux lenses for Plumbicon and vidicon cameras.

Circle 129 on Reader Service Card

Thomson Electric (Booth 313) will exhibit a new color flying spot scanner, a 3" transistorized I.O. camera, a new UHF transmitter, new telecine equipment, and a new film-camera chain. Other products to be shown include a transistorized 4½" I.O. camera.

Circle 130 on Reader Service Card

Townsend Associates (Booth 219), a new company which recently entered the high power UHF transmitter business (founded by Springfield Television Broadcasting Corp.), will feature a new 50-kw transmitter consisting of driver, one amplifier, and unitized power supply. Price ranges from \$147,000 to \$199,500.

Circle 132 on Reader Service Card

Utility Tower (Booth 240) will show their new "Microflector" passive reflector in actual size. In addition, the standard line of broadcast microwave towers, base insulators, and hardware will be exhibited.

Circle 133 on Reader Service Card

Video Medical Electronics (Booth 508) will exhibit a line of West German TV and video tape recording

TV Zoomar Autocam system.



Visual Mark 10 Zoom camera

equipment. Included will be the VME 500 and 600 helical recorders and the new Fernseh K075D 3" I.O. camera.

Circle 134 on Reader Service Card

Viking (Booth 515) will exhibit a complete line of quality aluminum jacketed cable, conventional cable, and equipment for broadcasting and CATV applications. The latter includes high-gain, broadband amplifiers, cable couplers, taps and splitters, distribution transformers and attenuators, and other accessories.

Circle 135 on Reader Service Card

Visual (Booths 107-08) will demonstrate several "new concepts" in broadcasting equipment. AM/FM broadcast transmitters, designed for local or remote control and pre-tuned to a specified frequency are available for AM in 1, 5, 10, and 50 kw models, and for FM in 250 w, 1, 5, 7.5, 10, and 20 kw models.

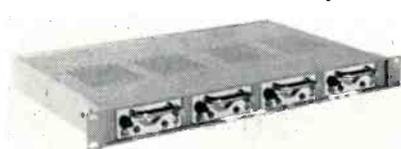
An audio automation system, designed to provide one service for both AM and FM, will be shown. Without duplication of program material, it can operate in both semi-automatic and automatic systems.

IBM Automation Systems using an IBM Card Punch-Reader for typing program logs, controlling audio playback equipment, and verification of program logs will be demonstrated.

Visual will also demonstrate the new Spotmaster Model 610 Tenspot, 10-channel, flexible playback unit of solid-state construction using individually inserted cartridges of standard NAB acceptance; also the McCurdy custom audio consoles, providing all audio control facilities necessary for TV production studio. An "Allenized" VTR system, the Elcon 3" image orthicon, and the new Visual Vidicon Film Chain, will also be shown.

A post-NAB Technical Seminar will be held in the Cotillion Room at the same hotel.

Vital Industries (Booth 403) will introduce two new products. Model VI-500 solid-state video clamper sta-



Vital VI-10 A video amplifiers

bilizer amplifier clamps, equalizes and reinserts reformed sync, maintaining constant video peak and sync levels. Model VI-1000 solid-state video processing amplifier clamps, equalizes and provides reprocessed, AFC-controlled sync and blanking with adjustable setup, with

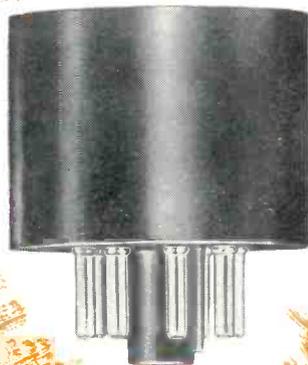


SILICON AVALANCHE ASSEMBLY

A NEW CONCEPT IN REPLACEMENT FOR RECTIFIER TUBES

Eliminate the undesirable features of mercury or vacuum tubes. Replace them with Syntron Silicon Avalanche Assemblies. PRV ratings to 500 kV, current ratings to 1.75 amperes half-wave. Ideal for radio and TV stations.

Increase efficiency and reliability, lengthen life, reduce maintenance and downtime.



Write for complete information today—add dependability and save money.

65R5

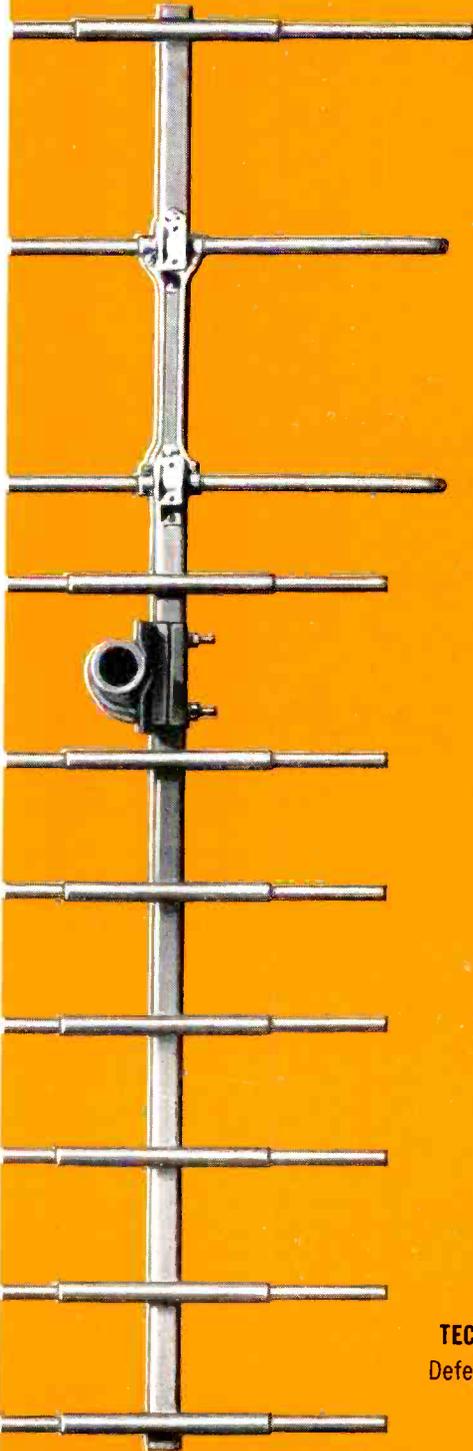


SYNTRON COMPANY
2240 LEXINGTON AVENUE • HOMER CITY, PA.

Circle 20 on Reader Service Card

THE
BUSINESS END
OF

CATV



Quality CATV must start with a high performance antenna. Literally thousands of field installations have proven that TACO Ruggedized Yagis eliminate the high expense associated with repair or replacement of less durable antennas. These significant cost-savings make TACO CATV Yagis your best dollar buy.

HERE'S WHY

- High strength aluminum alloy
- Heli-arc welded construction
- Internal baluns
- Vibration Dampeners
- Foam-filled coaxial feed terminal boxes
- Heavy duty square crossarms

These PLUS FEATURES add up to reliability you can count on under all environmental conditions.

TACO CATV Antennas feature low VSWR and unexcelled front-to-back ratios. A wide choice of performance characteristics is available through 5, 8, or 10 element models, plus the extended capabilities made possible by a broad line of screen reflectors.

Write today for complete technical data.



A subsidiary of THE JERROLD CORPORATION

TECHNICAL APPLIANCE CORPORATION
Defense & Industrial Products Division
SHERBURNE, N. Y.

Circle 21 on Reader Service Card

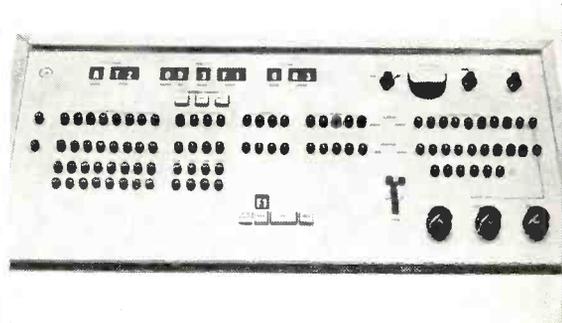
both composite and noncomposite outputs. Other items on exhibit will include VI-10A solid-state video distribution amplifier, VI-20 solid-state pulse distribution amplifier and VI-41 solid state sync and blanking adder. All equipment will be displayed in actual operation.

Circle 141 on Reader Service Card

Vitro Electronics (Booth 233) will exhibit a unique new solid-state phase monitor which can be completely remotely operated. It will be demonstrated in connection with Rust remote control equipment. Nems-Clarke equipment such as the field intensity meter, video jacks and plugs, VHF field intensity meter, and FM spectrum display monitor will also be shown again this year.

Circle 142 on Reader Service Card

Ward Electronic Industries (Booth 312) plans to exhibit a computer TV programmer. Program instructions are inserted into the memory by means of pushbuttons, and readout panels give a continuous indication of system events. Provision is made for manual override of the programmed sequence at any time. Memory information is destroyed only when new information is inserted or when the erase button is depressed. Also to be demonstrated is the new VSA-102 Master Control station-break switching package; the VS-101 Vertical Interval Switching System with machine controls for tape and film islands on the panel; a vertical



Ward VSA-102 switcher.

interval solid-state switcher for mobile unit application; a solid-state signal processing amplifier for color or monochrome; a solid-state video mixing amplifier; and a solid-state color phase equalizing system and video low-pass filter with built-in isolation amplifiers.

Circle 143 on Reader Service Card

Wilkinson Electronics (Booths 409-10-11) will have two new products—a line of direct plug-in silicon rectifiers to replace all tube types, and an AC line protector which protects solid state equipment against voltage surges and transients caused by lightning, line transformer failures or main power faults. High-voltage silicon rectifiers (types priced from \$10 to \$110) have individual indicators to warn of diode failures. Other products to be shown include an AM modulation monitor (\$425), AM Frequency monitor (\$795), stereo generator (\$1295), subcarrier generator (\$995), plus Northern Electric Products, Spotmaster equipment, and QRK turntables.

Circle 144 on Reader Service Card

NAB—Service to Broadcaster and Public

Significant facts about NAB, the organization responsible for the largest annual event in broadcasting

Throughout its 42-year history, the National Association of Broadcasters has worked continuously to strengthen the broadcasting industry. In 1923, NAB began modestly with only a handful of members. Today, it represents over 3300 radio and TV stations. Each year, more and more stations recognize the importance of belonging to this organized and powerful industry spokesman. Of the slightly more than 4,000 AM stations, over 2,100 are NAB members. In the FM field, NAB represents more than 800 of the nation's 1,418 outlets. Of the 675 TV stations, almost 450 belong to NAB. In addition, the four national radio networks and the three TV networks are NAB members. There also are 159 associate members.

While NAB stresses public service and industry support, it is obvious that the strength of its membership stems from the know-how gained by cooperative efforts. New members, immediately upon joining the Association, are supplied with a wealth of material, including voluminous packages containing factual broadcast industry data relating to the management, legal, public relations, engineering, and other aspects of broadcasting. Additional material, in the form of numerous periodic supplements, is continually developed and mailed to members. Moreover, Association staff members handle hundreds of member problems by mail and phone.

The NAB serves its members as a central structure to achieve goals which could not be reached by stations acting independently.

For example, the NAB has been instrumental in:

- Devising a voluntary code system for programming and advertising practices.
- Maintaining broadcasting's freedom from government censorship.
- Combating discriminatory legislative proposals.
- Achieving fair labor relations laws and wage-hour regulations.

How NAB Operates

Association members set policies and make decisions on industry-wide matters through their elected Board of Directors. Separate Radio and Television Boards, each with their own chairman, form a Joint Board, which has an overall chairman. Some 20 standing committees and several special committees draw upon the specialized knowledge of members in considering industry problems and making recommendations to the Board. Responsibility for carrying out their decisions rests with the full-time Washington staff.

Recognizing that those who use the air waves must be regulated to some extent by the government, the NAB works closely with the FCC on many fronts. For example:

- When the Commission decided to require the more than 20,000 holders of restricted permits to obtain third-class radio engineering licenses, NAB provided its membership with a Study Guide that received FCC praise.
- In lifting its "freeze" on new AM assignments, the FCC agreed with the NAB that future AM allocations should be based strictly on adherence to rigid engineering standards.
- With the mushrooming of CATV systems, the NAB has worked toward bringing them under Federal regulation.
- In the recording and reproducing field, NAB has been instrumental in devising standards for disc and tape cartridge and reel-to-reel systems.

The Association has helped broadcasters operate more efficiently by:

- Gaining FCC authorization for remote control operation of radio transmitters.

- Devising a cost accounting system for broadcast stations and advertisers.

- Introducing simplified program and engineering logs.

The NAB initiated the first department of radio advertising in 1941, today's Radio Advertising Bureau, and helped set up the independent Television Bureau of Advertising.

In addition, NAB has:

- Held pilot radio programming clinics to bring together new programming ideas from stations.
- Recently completed its annual eight-city Fall Conference schedule which highlighted some of the major problems facing the industry and outlined some of the possible solutions. In each city, an FCC Commissioner addressed the delegates, giving them a first-hand opportunity to question those who determine the regulations governing them.

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Audio-Visual Manager: James W. Mansfield
V-P FOR RESEARCH: Howard Mandel

What does it cost to belong to NAB? Radio dues are based on dollar volume; the minimum is \$10.50 a month; most members pay less than \$70 a month. FM stations become *associated* when combined with an AM. TV stations pay on the basis of their rate cards. Discounts are allowed for additional stations under group ownership.

Why do most members belong to NAB? Because they believe that, in supporting the industry, they also help themselves. Realizing their station license is their most valuable asset, they have learned it can best be protected by joining hands with fellow broadcasters. They have learned it is difficult to "go it alone," or as one member put it, "misery likes company." On the whole, most members belong for one general reason—broadcasting, like any other profession, requires special knowledge and effort in order to build an efficient and profitable operation. This special knowledge can only be learned from experience, and the experience of others shows the way.

With each new member, the Association is strengthened just that much more. It is through this concerted strength that the NAB can provide wider services that benefit not only the broadcaster, but the public as well.

Examples of Member Aids

BUSINESS OPERATION

Internal Control in Broadcast Stations
Accounting Manual for Radio Stations
Radio Financial Report/1964
Radio Wages, Hours and Employment Careers in Radio
The Broadcaster's Wage-Hour Guide

INDUSTRY INFORMATION

Radio and Television Bibliography
Major Issues and Projects, 1964
Dimensions of Radio, 1964
Program Material Available from Government & Civic Agencies
Awards and Citations in Radio & TV

LEGAL-GOVERNMENTAL

Broadcasting Public Proceedings
Editorializing on the Air
Lay Talk on Legal Problems

Political Broadcast Catechism
Broadcasting & the Federal Lottery Laws

ENGINEERING

Cartridge Tape Recording & Reproducing Standard
Disc Recording & Reproducing Standard
Audio Proof of Performance Measurements
The Engineer's Corner
Study Guide for 3rd-Class Broadcast Endorsement
Suggested Preventive Maintenance Procedures

PUBLIC RELATIONS

Spot Announcement Promotions
Chases' Calendar of Annual Events
Speaker's Guide for Broadcasters
Advertising Stopped at 10 o'clock
Sound Citizen Sounds disc

Putting The "Community" In CATV

How a newly installed system gained complete acceptance and support of all community factions.

The CATV operation described is indicative of the newer systems springing up all over the country. Considering the diversity of reports on the impact of CATV on broadcasting, it is particularly noteworthy to see how this system was planned to enhance program service without adverse effects on TV stations or service dealers. These results were not achieved by accident, but by careful planning backed up by years of background and experience. The rewards? Complete acceptance and support by all community factions; plus highly successful business enterprises. This report shows how it's done.

The Lafayette, Ind. CATV system just went into operation the first of this month. Astoundingly, even before the signal was turned on, more than 6,000 subscribers out of a potential 16,000 were signed up.

The system serves both Lafayette and West Lafayette, communities selected as potentially profitable because:

1. Lafayette lies in the Wabash Valley, where some 6700 homes below the average terrain get poor TV reception.
2. Roofs were bristling with complex antennas, and a large number of towers and rotors were in evidence, indicating high cost of TV reception.
3. Generally, TV reception was poor. The only local station is WFAM-TV, Channel 18. However, most sets were not equipped to receive UHF.

The franchise application for West Lafayette was filed early in 1962. The mayor and City Council were enthusiastic, and franchise negotiations were completed without a hitch. Ownership was divided among three partners: Alliance Amusement Co., Jerrold Electronics, and John F. Dooley, Jr., Publisher of Elkhart "Truth" in partnership with Thomas Wilson, a Washington lawyer.

Once the West Lafayette franchise was set, the group applied at Lafayette. Here, however, recep-

tion was less warm. The Mayor and most of the Council liked the idea of a community system, but one councilman resisted. He claimed that the people in his area were getting good reception (as a matter of fact, he was from the best TV reception area). Further, he stubbornly insisted that CATV was pay-TV. His attitude caused interminable discussion and votes. Finally, after almost a year of delay, the franchise was granted in the summer of 1963.

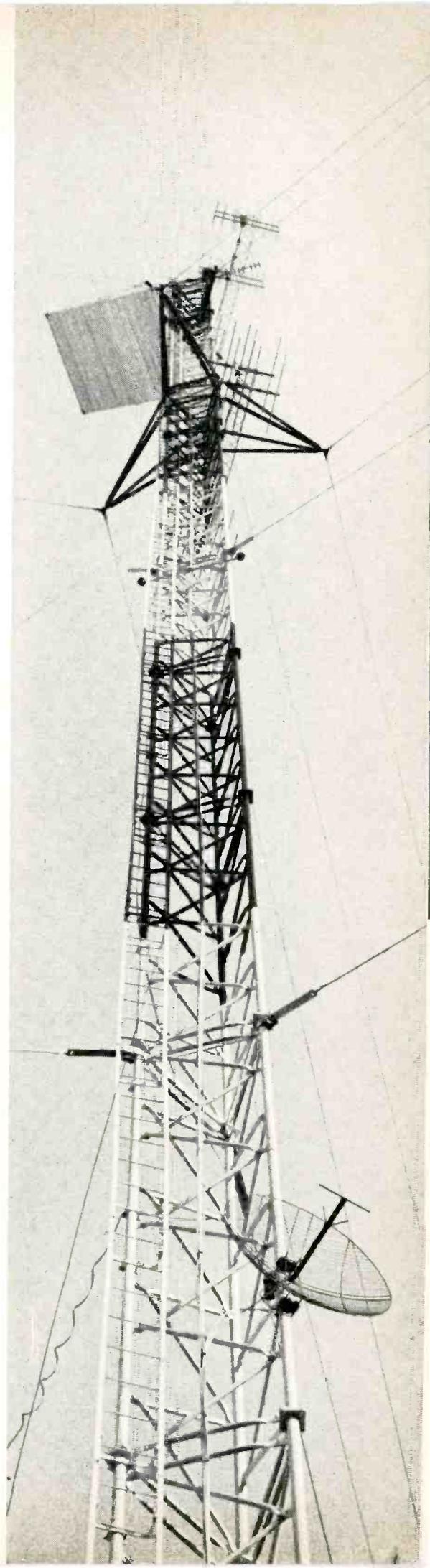
The Importance of Promotion

How did the cable company manage to sign up almost 40% of the potential subscribers even before they put their signals on the air? It was a combination of the technical and management know-how of Jerrold's Community Operations Div. (which currently manages 16 CATV systems), and the promotional experience of Alliance Amusement Co. (Alliance owns and operates a chain of theaters, plus McDonald's Hamburger stands.) With a war chest of \$18,000 they started in August, 1964 to carry out a 3-point program.

1. Advertising

The advertising campaign started the same time as construction.

250' antenna system receives Indianapolis directly, and Chicago via microwave.



From the beginning of August, ads were run every two weeks, reporting on progress and featuring photos of the construction activity. The idea was to keep the public informed of what was happening to their CATV system.

A concerted ad campaign to get new subscribers began last December. The normal \$18.50 installation charge was reduced to \$5.00 for people who subscribed before the system was turned on. Alternate full-page and 1/3-page ads were run three days a week.

An intense radio campaign kicked off with 10-second announcements on both local stations—10 every other day. Starting in December, 10 daily announcements were scheduled for a week and then every other day. Only prime radio time was used.

2. Direct Mail

Silberton Aston, Jerrold's System Manager, directed a mail campaign to 14,000 prospects within the city limits. Total cost was a little under \$1100. 672 returns were received by the end of the second week.

An interesting sidelight to this campaign is that many people didn't bother to send in the reply card, but did sign up at the offices as a direct result of the mailing.

3. Public Relations

The public relations campaign was divided into two distinct areas: consumers, and TV dealers and technicians.

The consumer campaign took the form of publicity and public appearances. Sil Aston, and later Xeny Mitchell of Alliance, wrote stories and maintained close press and radio contact throughout the pre-opening campaign. Although press coverage was only fair, radio publicity was excellent. In addition to weekly progress releases, Sil arranged to have himself interviewed on radio twice.

Sil also arranged for a number of public appearances before such groups as the Rotary, Lions, Kiwanis, Optimists, Purdue organizations, etc. He encountered a great deal of interest from the community leaders, and every public appearance culminated in a lively question and answer session.

To get the local TV dealers and technicians on their side, the cable company staged a cocktail party and dinner. This was attended by 65 people, including 25 leading dealers. They were told exactly

what the system was all about, what it would do, and especially what it meant for their businesses.

Each attendee was given a copy of the NCTA booklet, "Over the TV Horizon," questions-and-answers on CATV, and application forms. They were reassured that the cable system technicians absolutely would not service receivers. (As a matter of fact, no moonlighting by CATV system employees is tolerated.)

Finally, the dealers were offered an opportunity to participate in promoting the cable system. They were offered a commission ranging from \$2.50 to \$7.50 per subscriber, depending on how many they were able to sign up. In addition, prizes were established for those dealers who signed up the largest number of subscribers.

After the meeting, a follow-up letter was sent to each individual, reviewing exactly what had been said at the meeting. This campaign got the TV dealers and technicians behind the system 100%. In fact, they signed up more than 1500 subscribers. Many dealers throughout the town displayed the signs given to them at the meeting.

In addition, the dealer meeting resulted in two very beneficial incidents. First, Reifers, a leader in the Lafayette area for more than 30 years, decided to spend its own money to get people to come into their store to sign up for CATV subscriptions. Reifers wanted to build traffic for increased TV sales and service, and—to Sil Aston's gratification—they wanted strong identification with the cable company. Reifers' first full page ad, run the day after the cable com-

pany ad, brought enough response to encourage them to place a 3-column, 10" ad every day for eight weeks. They sold 385 subscriptions.

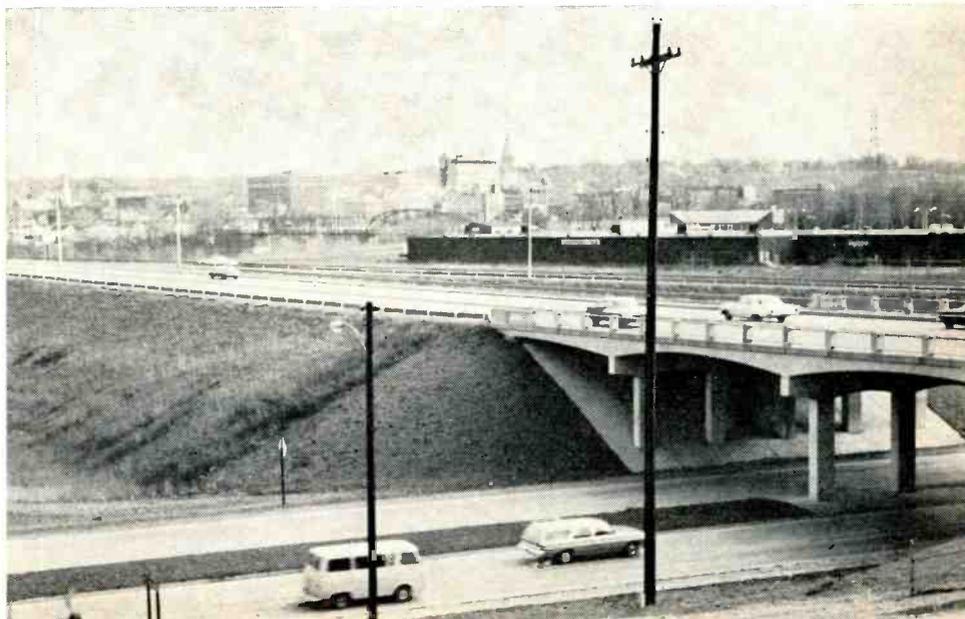
The dealer meeting also brought Sil Aston in contact with Sears Roebuck, who made a mailing to their complete list within the city limits. Sears offered subscriptions to the system, allowing the installation cost to be charged. This mailing pulled in 119 paid up subscribers and had, in addition, an excellent residual effect. Many customers who got the Sears letter decided to sign up directly with the cable company.

The Grand Opening

Kicking off a 3-day ceremony the last week-end in February, a joint proclamation was made by James R. Williamson and Donald Blue, Mayors of West Lafayette and Lafayette, respectively. A special CATV supplement was published Thursday, February 25th, telling the story of the CATV system and the men who had brought it into being. Ads were placed by the TV Cable Co., TV dealers, and local merchants.

Thursday evening was devoted to a VIP cocktail party and dinner. Influential members of the community were wined and dined and dramatically shown, for the first time, the pictures available from the cable. The high point of the evening was the unveiling of 10 TV sets, each showing one of the system channels. As each pretty young "channel girl" stepped up to a set and pulled away a card revealing a sharp, clear picture, an enthusiastic round of applause was heard. The Mayors of both

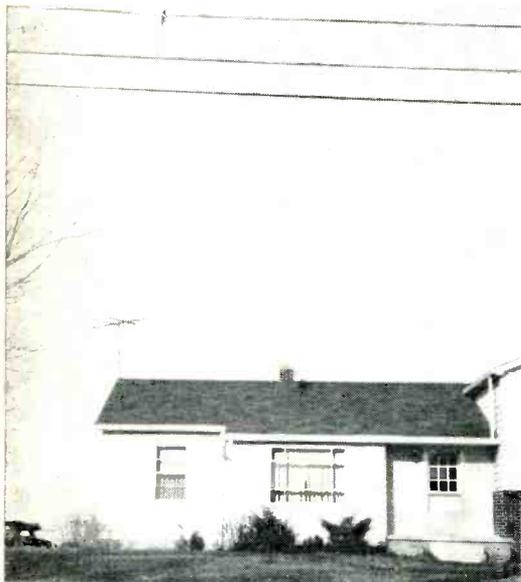
Skyline view of Lafayette; 6700 homes are below average terrain.



RESULT OF PRE-OPENING PROMOTION

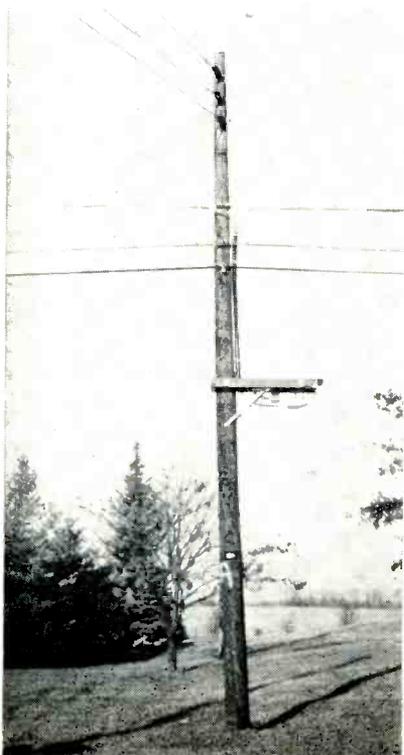
First Week - 1600 subscribers
 Third Week - 3500 subscribers
 Fourth Week - 4000 subscribers
 Grand Opening - 6050 subscribers

At this writing, final results of the 3-day Grand Opening are not available. However, in spite of the fact that Lafayette was hit by the worst snowstorm in 20 years, the National Guard Armory was crowded most of the time.



Typical house drop. Lafayette Cable offered to take down antennas no-charge.

Amplifiers mounted at 14' ease maintenance. Experienced linemen installed cable.



Lafayette and West Lafayette spoke, as did the cable company officials.

Cable system reception was revealed to the general public for the first time Friday evening. The National Guard Armory was rented and decorated for the occasion. Space was given free to TV dealers for exhibiting receivers. Because the area was hit by its worst snowstorm in 20 years, the live TV show scheduled for Friday night was cancelled. But Xeny Mitchell and Sil Aston worked feverishly to keep the Armory hopping at all times and results were excellent. Most of the dealers exhibiting at the Armory were happy with the sales and contacts they made. Color TV sets sold especially well, along with cable subscriptions.

The gala 3-day opening included a lot of "hoopla." Local TV personalities Harlow Hickenlooper, Cap'n. Star and his monkey, and Carly Myers were on hand. Prizes were given away every hour on the hour, in addition to free balloons and refreshments. Also, residents of the area had been mailed "magic keys" to a fabulous treasure chest; if their key fit the lock they received a prize.

System Design & Construction

Construction of the system, already precisely laid out and engineered, began last August. Cable stringing was handled by linemen experienced in installation and stranding of all types of cable, generally, for the telephone and power companies. Over 6200 utility poles were used, including some 150 erected specifically for the CATV system. Pole rights were obtained from the Public Service Co. and General Telephone Co. (Since these utility companies rent poles to other CATV operators in the area, the Lafayette system was given the same rate—\$3.25 per pole per year, plus \$1.50 per guy wire anchor. Some CATV systems pay as high as \$4.50 per pole per year.)

The antenna site, about a mile and a quarter east of the center of the city, is the highest terrain available. Signals were brought into Lafayette over a circular route, 2¼ miles long, and then across Brown Street Bridge to downtown West Lafayette. In order to bring in the Chicago signals, a microwave installation was required. It was well over a year before the FCC granted permission to establish a microwave relay

station at Monticello. It was engineered and installed by Jerrold, and is owned by Cox Broadcasting Co. Originally, a 350' antenna tower was planned. However, because there is a private airport about 2 miles from the antenna site, the FAA would only approve a height of 250'. Consequently, the microwave tower at Monticello had to be raised. About 6½ months were required to string the cable for the 141-mile plant. The tower was completed October 15, 1964, and the cable system, including 351 solid-state amplifiers, was up by February 15.

Cost of building the system was over \$750,000, not counting leasing of microwave service.

The Lafayette system carries a total of 10 channels: WGN-TV, (independent) and WTTW-TV (educational) Chicago; WNDU-TV (Notre Dame) South Bend; WFBS-TV (NBC), WLWI-TV (ABC), and WTTV (independent) Indianapolis; WSJV (ABC) Elkhart; local WFAM-TV (CBS); Ch. 72 and 76—MPATI (Midwest Program on Airborne Television Instruction) Lafayette; and a local music-weather channel showing time, temperature, wind velocity, wind direction, humidity, barometric pressure and cumulative rainfall. This information is automatically repeated every 15 seconds, around the clock. Background music is from a local FM station.

As soon as subscriptions started pouring in, "dead-tap" house drops were made; 25 men were able to install a hundred per day. By the time the system was turned on, over 5,000 of these dead-tap house drops were ready, and were activated at the rate of 300 to 400 per day. Normally, people have to see the excellent reception enjoyed by their neighbors before they get the full impact of what cable TV can mean. Good pictures are the best CATV subscription salesman; generally, people are ready and willing to pay \$4.90 a month once they are convinced that cable reception is far superior to that provided from their own antenna.

The people of Lafayette and West Lafayette seem to be delighted with their new cable TV system. Hardly a dissenting voice has been heard. The professional way in which the pre-opening promotion was handled resulted in excellent community relations—which have paid off in a uniquely successful system opening. ●

High Band Video Tape Recording

by Joseph Roizen

A New Standard in the Television VTR Medium?

Present-day U. S. standards for television video recording, using a rotating head with a 2" wide magnetic tape medium, were established in 1956 when the first successful recorder was introduced. The mechanical parameters of operation—tape speed, track width, guard bands, etc.—are now so firmly entrenched and have resulted in such a large investment that no changes are contemplated in the foreseeable future. It has been demonstrated, however, that enough room exists within these parameters for significant improvements. Developed primarily to serve the more stringent requirements of the BBC 625-line system, the so-called "High-Band" video recording technique has recently been introduced in this country. This article explains the principles involved, and describes how they are compatible with existing standards.

The major elements which combine to give any video recorder its figure of merit are the bandwidth of the signal system, the time-base stability of the reproduced signal, and the operational flexibility of the overall system. Recorders introduced in 1956 were limited to a bandwidth of about three megacycles, and the long-term time-base stability of early drum servos was in the order of ten microseconds. The only method of editing these tapes was by mechanical means . . . physically cutting the tape. (For present-day helical recorders, of course, no editing is yet possible.) The development of accessory devices, and improvements in time-base stability and signal systems, have made it possible to produce video recorders having much greater capabilities. In fact, signal comparison and measurements tests have proved that such recorders yield composite tape masters of adequate quality—for color as well as monochrome—to produce "work prints" which rival today's original recordings.

Since the signal system is the main contributor to these capabilities, an explanation of the new design is in order.

Signal System

The signal system of a VTR in the record mode involves an FM modulator, record amplifiers, and the video-head assembly. Modulators used in present equipment are multivibrator or hetero-

dyne types, which have a non-linear response to varying video levels. To achieve greater response linearity, the signal system on the VR-2000 employs a dual heterodyne modulator—a pair of oscillators driven in opposite directions, one increasing in frequency while the other decreases. These oscillators operate in the 100-mc region and utilize varactors as the modulated device. Since the varactor capacity varies as the cube root of the voltage across it, the frequency-to-voltage characteristic has a sixth power law. Linearity of better than 1% of a 5-mc range is achieved when the oscillators are modulated in opposite phase to cancel even-order nonlinearities. Careful design of the mixer stage has resulted in an extremely symmetrical FM output with a very small AM component.

If this dual heterodyne modulator were operated within the capabilities of a standard video-head assembly, functioning at the SMPTE recommended carrier and deviation frequencies, some improvement over standard recording quality would be evident. To achieve a higher level of performance, it was necessary to shift the carrier and deviation frequencies upward. Spurious outputs which arise in the FM system are partially caused by negative or folded frequencies. When spacing between sideband and carrier is greater than the carrier frequency, lower sidebands of the same order of the carrier's third harmonic produce the same spurious frequency and respond to moving the carrier in the same way. When the

AUTHOR: Mr. Roizen is a video consultant with Ampex Corp., Redwood City, Calif.

carrier frequency is increased, the production of spurious outputs does not occur smoothly, but rather in discrete steps. It is therefore necessary to utilize a higher "shelf" of operation at which spurious signals are minimal.

The High Band system for 525-line reproduction is designed to operate on the fourth-order shelf. The range extends from 7.06 mc for sync tip to 10 mc for peak white, with 7.9 mc representing the blanking level frequency. Pre-

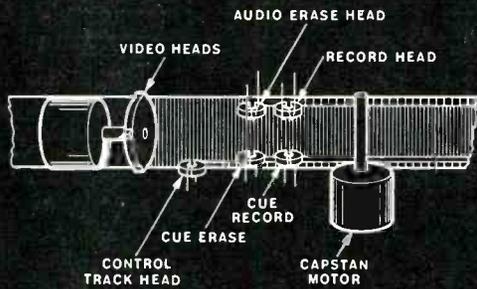
emphasis boost of the subcarrier frequency is 8 db, and the -3 db point for the bandwidth of the system is 4.5 mc. A 75% saturated color bar will produce a spurious modulation of -37½ db, and the off-tape signal-to-noise ratio, unweighted, is 46 db.

Video Head Assembly

Standard video-head assemblies cannot accept frequencies of this higher order; thus, it was necessary to raise the resonant fre-

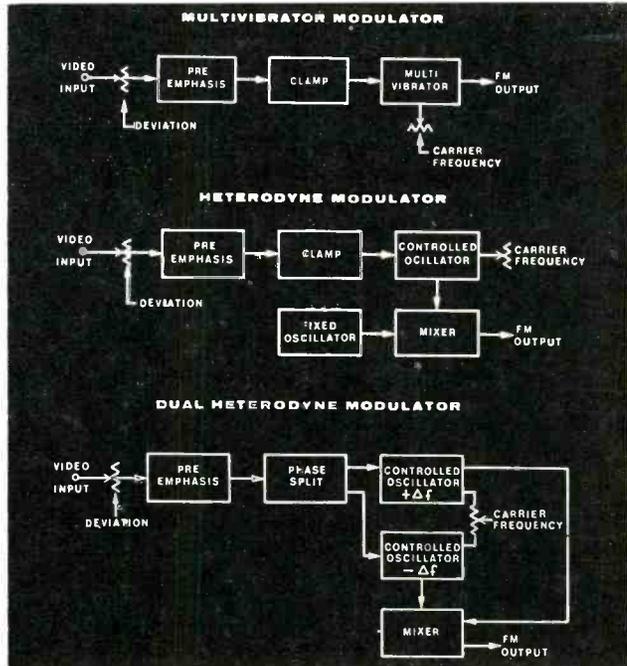
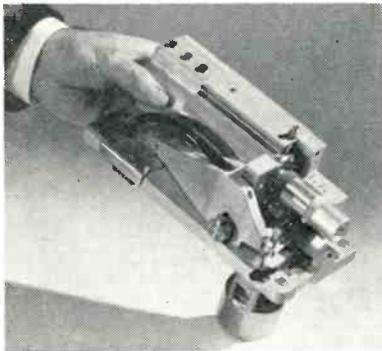
quency of the transducers so that frequencies in excess of 11 mc could be recovered from tape. Use of a nuvistor preamplifier, located adjacent to the head assembly, extends head resonance to this higher frequency region. This preamplifier is used as the first stage of a cascode low-noise circuit. Individual piston capacitors permit accurate matching of electrical characteristics to further equalize performance in each head channel. To improve the overall operation

TRANSVERSE RECORDER



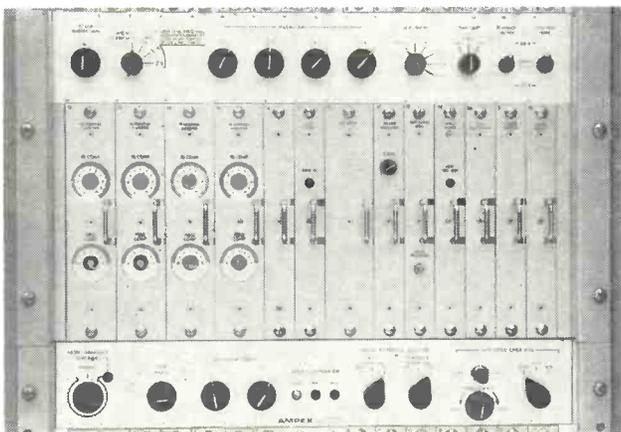
Basic principle of transverse recording. 4-head video drum, longitudinal audio cue and control tracks. Tape speed, 15 and 7½ ips; audio track width, 10 and 15 mils; guardbands, 5 and 2½ mils. Control track also contains frame pulses for editing purposes.

Mark IV assembly with nuvistor preamplifier mounted on the head. Unit includes rotary transformer coupling, vertical female guide adjustment, and Standard High Band record switching arrangement.

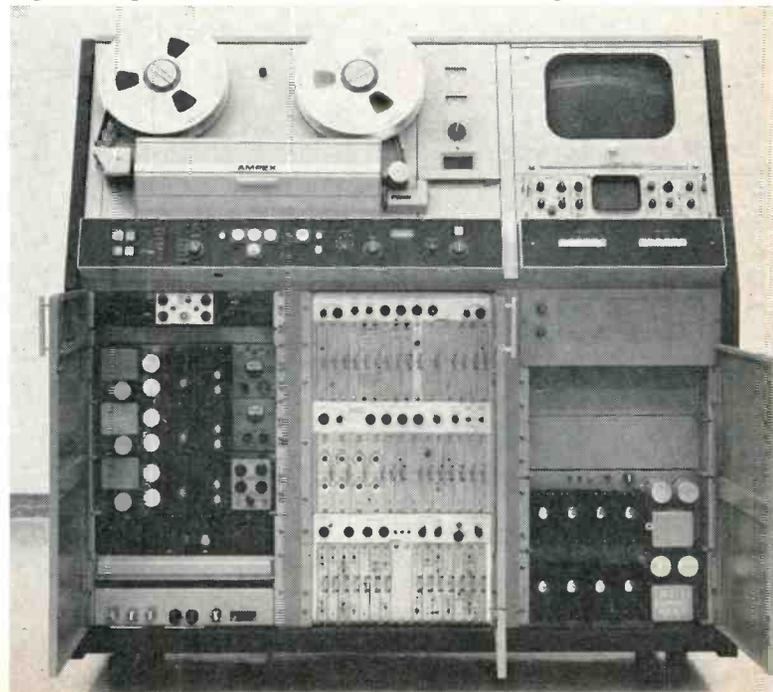


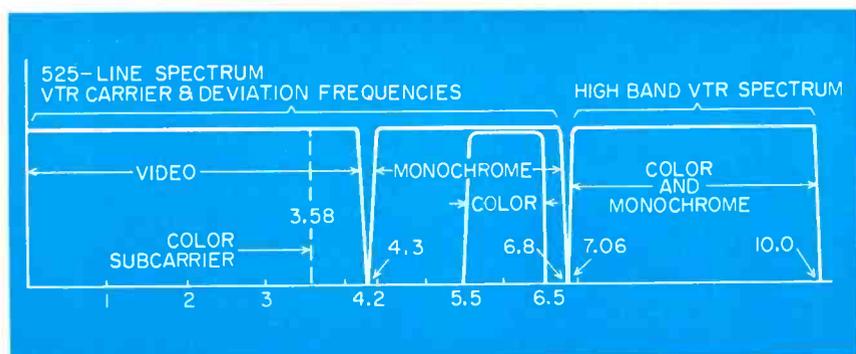
Multivibrator modulator system is presently used in machines such as the VR-1100. Recorders such as the VR-660 and VR-1000-C, use heterodyne modulator.

Overall view of VR-2000 shows audio and Q channel at left; signal and servo system is at center, with color and time base correction circuitry and processing amplifier; monitoring, switching, editing and animation facilities are on right.



Signal system of the High Band VR-2000, showing head resonance compensation controls on the left.





Spectrum graph showing frequencies for SMPTE standards and High Band operation.

PROGRESS IN VIDEO RECORDING

The broadcast industry is the scene of a slow but irreversible transition toward a new plateau of technical standards in studio equipment. The competition of magnetic video recording led to an improved kinescope system, with specially designed face plates and fast pull-down shutters. The 3" image orthicon is being rapidly replaced by 4½" camera tubes of superb quality, so that second generation pictures retain a live look.

Studio distribution and switching facilities are being converted to remotely-controlled solid-state devices with pre-programming capabilities, making eventual automation an imminent possibility. The video tape recording field has also undergone considerable change during its short nine-year life span. Most recently, new developments have resulted in a definite break with the presently established standard, termed the "High-Band" system. The avowed intention of High Band is to produce superior color and monochrome masters which will yield bicycle copies to rival originals produced according to the accepted standard. In parallel with this development, equipment redesign has brought about peripheral advantages of smaller size, lower weight, simplified operation, solid-state reliability, and adaption to automation. The possible savings in production costs, due to increased performance and flexibility, is sufficient reason for TV station executives and engineers to reassess their video recording operations.

of the system, the new Mark IV video-head assemblies also include a rotary transformer for coupling RF signals from the transducer to the preamplifier without mechanical contact. Also, a factory preset record radius control establishes the correct female guide position for all recordings. Some peripheral improvements are the external vertical female guide adjustment and a nonambiguous tachometer disc for more precise timing control of head drum velocity.

The Playback Mode

In the playback mode the standard recorder employs high gain preamplifiers, a switching system for sequencing the signals from the rotating heads, and a demodulator to reproduce the original video. A signal processing system generates new sync and blanking

pulses and permits control of video level.

The High Band signal system employs special circuitry to maintain careful control of differential gain, differential phase, and transient response. Since the head assembly has a resonant peak, it is necessary to use a signal compensating circuit to provide faithful conjugate matching. This response corrector adjusts the amplitude vs. frequency response of each of the four head channels and is equivalent to aperture correction used for TV camera compensation. Controls are provided for setting and frequency compensation.

The demodulator is of the pulse counter type and its output is fed to a linear phase filter to remove spurious signals outside the desired video bandpass. Operation is such that the absence of signal causes the output to drop below

sync level. An additional feature in the playback circuit is the drop-out gate, which detects RF input loss greater than 20 db and transfers the input to a crystal reference source; when used with a video one-line delay, it transfers to the previous horizontal line.

The entire signal system is capable of superior color performance. Differential gain is maintained at less than 5%, and the linear phase correction will hold the differential phase error to under 5°. Maximum color phase error due to differential phase on 75% saturated color bar will read -2°. The low level of intermodulation distortion, usually referred to as Moire, eliminates the visible beats in color areas that are noticeable in present color video tapes. The relatively new method of transient response measurement, utilizing a 2T sine-squared pulse and a special scope graticule, indicates that this system is capable of better than 2% K factor performance, a level that is very adequate by broadcast standards.

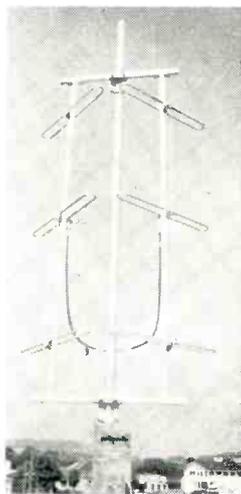
Compatibility

The High Band system brings with it one major problem—compatibility. Although the mechanical parameters remain the same, the shifting of the carrier frequency and alteration of video pre-emphasis makes tapes recorded on the High Band system incompatible with the present standards. However, with the inclusion of a switchable two-channel arrangement, a High Band VTR can also operate in accordance with today's SMPTE recommended practices for either color or monochrome. Thus, standard operation can be utilized for playback of tapes recorded on standard machines, or for recording tapes which must be played on standard VTR's. The High Band system would be utilized for making master recordings where distribution of several generations of copy is involved, and especially for the recording of master color tapes where deterioration due to dubbing on present systems is very noticeable. The composite master recording made on a High Band system can then be transferred through dubbing to a standard machine, and the resultant tape will still retain a quality equivalent to present-day masters. ●

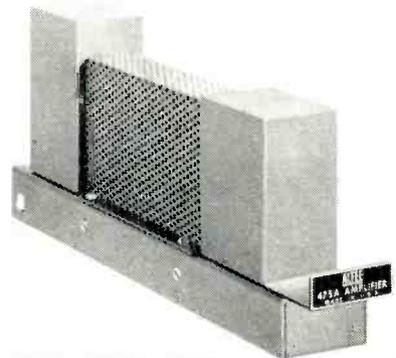
BROADCAST EQUIPMENT

Omnidirectional Antennas

A new series—Y-03—of omnidirectional antennas for VHF TV channels 2 through 13 is being offered by Technical Appliance Corp. (TACO), Sherburne, N.Y. Designed for translator and other low-power transmitting applications, the units offer a gain of 4.5 db above an isotropic source. VSWR is said to be under 1.5:1 over the operating frequency band. Each Y-03 series antenna, directly fed with 50 ohm coax, is composed of two separate 3-element broadside arrays, each consisting of folded dipoles mounted to a cross-arm. The center driven element is fed from the stacking line, with adjoining elements connected by parallel lines. The two polarization modes are combined to a single input to provide omnidirectional characteristics.



Circle 100 on Reader Service Card



85°C without derating. It has been designed to function as a preamplifier, booster amplifier or program amplifier. Also featuring astatically balanced transformers, the 475A reaches a noise figure of -127 dbm, with unterminated input. Total harmonic distortion is said not to exceed 0.25% from 50 to 20,000 cps at +27 dbm output capacity, and less than 1.0% from 20 to 20,000 cps with a +27 dbm output.

Circle 104 on Reader Service Card

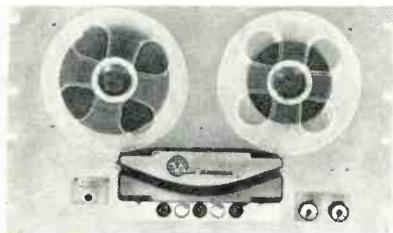
Cartridge Playback Units

PortaPak I, a new cartridge playback device, has been introduced by Broadcast Electronics, Inc., Silver Spring, Md. The unit handles all cartridge sizes from 1 second to 31 minutes; operates at a tape speed of 7½ ips; weighs 11½ lbs.; and is powered by its own rechargeable battery. It features a self-contained monitor speaker, and wide range response with low distortion. Size: 9⅝" x 10¾" x 3¾".

Circle 101 on Reader Service Card

Background Music System

Model 225, a new 16-hour reel-to-reel background music tape system, has been announced by Viking of Minneapolis, Inc., Minneapolis. The system uses prere-



corded quarter track monaural tape at 1⅞ ips, with automatic reverse play providing 16 hours of un-repeated background music on a 7" reel. It comes with playback preamplifier, and connects to any sound system. A push button permits selection of tracks during operation. Price is \$500.

Circle 102 on Reader Service Card

12" CCTV Station

A complete CCTV camera system, said to be smaller than a shoe box, has been announced by DuMont Labs., Clifton, N.J. The TC-175



employs fully transistorized circuitry, contains its own regulated power supply, and has a horizontal resolution of 700 lines. It is claimed that useful pictures can be obtained with scene illuminations as low as 1 foot-candle. The camera system can be fed directly to a regular TV receiver or, with an additional output, interconnected with any high resolution monitor. Input power required is 117 v ± 10%, 60 cps, 10 w. Price is \$899.

Circle 103 on Reader Service Card

Solid State Amplifier

A new solid state amplifier, a direct plug-in replacement for the tube type 458A preamp and 459A program amplifier, has been introduced by Altec Lansing Corp., Anaheim, Calif. Known as the 475A amplifier, the new unit employs all silicon transistors, permitting continuous operation at



thereby reducing normal ambient electrical interferences and attenuating the deflection fields from radiating into the video signal. The alignment coil axially aligns the electron beam, reducing geometric and beam distortion.

Circle 105 on Reader Service Card

Printed Circuit Attenuators

Daven Div. Livingston, N.J., has announced its new type 1020 series printed circuit attenuators for use in broadcast equipment. The units



are impedance controls which, according to the firm, feature extremely low torque with no detent. The devices have sealed construction, contain gold-plated contacts, and are available with cueing position for ladder networks. They are of compact design (1½" dia. x 2¾" high), and are suitable for portable equipment, or for use as mixer or master controls in consoles. Terminal impedance ranges from 150/150 to 100,000, and attenuation is 20 steps, at 2 db per step.

Circle 106 on Reader Service Card

Solid-State Sound-Level Meter

General Radio Co., West Concord, Mass., is marketing a transistorized sound-level meter that fits into one hand (size is about 3" x 7" x 2"; weight 1¾ lbs.), yet complies with all Standards. The 1565-A measures sound levels from 44 to 140 db (re 0.0002 microbar). The built-in mic is a measurement-grade ceramic unit; mic design and tapered cabinet configuration yield essentially nondirectional response. Vibration pickups and other transducers can be connected in place of the mic through an auxiliary adaptor, and a front-panel output jack allows connection to an analyzer or recorder. One "C" battery supplies 35 hours of power. Price is \$240.

Circle 107 on Reader Service Card



Test Signal Generator

Model 3503BI is a transistorized, portable, self-contained unit which produces video signals expressly designed to measure the transmission characteristics of monochrome and color TV facilities. It is available from Telemet Co., Amityville, N.Y. Test signals generated by the instrument are multi-burst; stairstep (3, 5 or 10 steps with or without color subcarrier)

or ramp; and sine-squared pulse and window. An external video input permits any external signal, such as a sweep generator, to be mixed with the sync and blanking of the unit.

Circle 108 on Reader Service Card

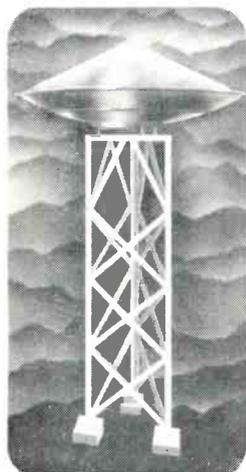
Phase Monitor

A new phase monitor, said to be more simple to operate and easier to read accurately, has been designed by Vitro Electronics, Sil-

MICROFLECT ANTENNA MOUNTS



Microflect 12, 8 and 4 ft. Swing Pipe Towers for any pipe mounted parabolic antenna up to and including 10 ft. diameter. Completely versatile and adjustable in all planes, regardless of foundation orientation. Write for engineering drawings.



Microflect Stub Towers for all parabolic antennas up to and including 10 ft. diameter. Four models; 12', 9'-2", 6'-4" and 3'-6". Write for engineering drawings. Microflect also manufactures a quality line of ground mounted, and roof mounted, self supporting towers for any antenna mounting configuration. Let us quote on your requirements.

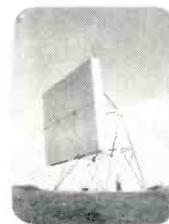


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PASSIVE REPEATERS Microflectors are the standard of the microwave industry. Advanced techniques in design, construction and erection . . . reliability and performance . . . are but a few of the reasons why communications systems designers prefer and specify Microflect.

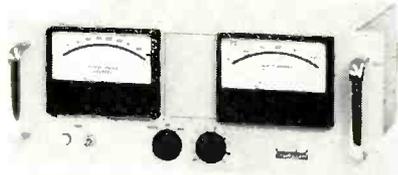
20 x 24 Microflector



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Circle 22 on Reader Service Card

ver Spring, Md. The Nems-Clarke Model 1112 phase monitor incorporates all circuitry necessary to permit future adaptation to remote control. Phase angle is read



out on a panel meter with 0 to 180° scale; readings are not affected by modulation and are presented instantly as each tower is

A Complete Background Music Studio

Special to CATV

MODEL 1001

- Master timer turns system on-off
- Height 72", width 19", depth 22"
- 115 volts, 60 cycles, 160 watt AC

Each channel has a 4-inch VU meter to indicate line level and capability for feeding 240 telephone lines. The channels have their own gain control and pre-equalization controls to afford proper levels and frequency response over the lines.

A ONE TIME expense for 240 playing locations.

It's time to change to the finest library of background music by Cine-Sonic.

Reel to Reel				
8 Hrs.	3 3/4 IPS	Acetate	14"	Reel
16 Hrs.	3 3/4 IPS	Tensolite	14"	Reel
8 Hrs.	3 3/4 IPS	Tensolite	10 1/2"	Reel
16 Hrs.	2 IPS	Tensolite	10 1/2"	Reel
32 Hrs.	2 IPS	Tensolite	14"	Reel

(To fit any make)

REGARDLESS OF THE MACHINE YOU USE we can offer you the best deal ever on tape. Widest library of background music. 14" reels available.

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WE REFILL YOUR USED CARTRIDGES FOR ANY MAKE TAPE MACHINE WITH NEW PROGRAMMED TAPES.

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STEP PREVENTS SWITCHING ERRORS AT WTVR, KNTV, WTTW, CBXT, WAGA, XETV

STEP automates video and audio switching during station breaks.

The price? Only \$8000.

If you are interested in TV automation, get further details on STEP.



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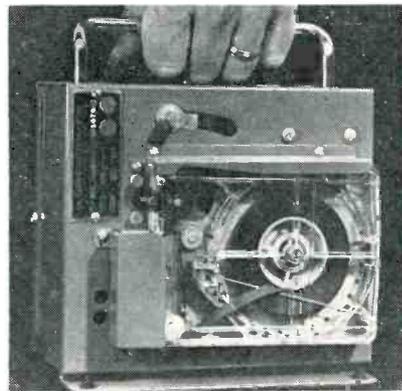
ELgin 6-6771

Circle 1 on Reader Service Card

selected, with no adjustments required. Automatic day-night switching of reference levels is incorporated in the unit. A proportional, linear DC voltage is generated for both phase angle and loop current, so these functions may be read out on a chart recorder or digital voltmeter, or fed over lines for remote metering. Accuracy is $\pm 1^\circ$; resolution is 0.5°; input impedance either 51 or 75 ohms. Size is 19" x 7" x 14". Price of the unit is \$1,735 for 2 towers; additional towers, to a total of 9, are \$50 each. Circle 109 on Reader Service Card

Portable Cartridge Playback

LaCrosse Electronics, Inc., LaCrosse, Wis., is marketing an all-



transistorized portable cartridge playback unit — "Audi-Magic" Model 200B. The unit operates at 7 1/2 ips tape speed, and contains a hi-fi amplifier with built-in speaker. Operates from 110 v AC. Distortion is said to be less than 2%. Size is 7" x 3 1/4" x 7"; price is \$49.95 for one; \$450 for ten.

Circle 110 on Reader Service Card

Two New Headsets

Roanwell Corp., New York, has recently announced No. 106120 RF cameraman's binaural headset (pictured) and No. 106066 cameraman's binaural headset. The 106120 consists of earphones



housed in two noise attenuating earcups, and a dynamic noise cancelling mic, whose frequency range is 200 to 6000 cps. The 106066 consists of earphones and a 30 ohm carbon transmitter. Earphones of both units are wired binaurally to permit cameraman to monitor programs and also receive directions. Price of the 106120 is \$143; the 106066, \$128. Circle 111 on Reader Service Card

Four Position Mixer

Model MX-2, a four position transistorized mixer, has been introduced by S.O.S. Photo-Cine-Optics, Inc., New York. A stereo monaural switch separates the mixer into two isolated amplifiers, if desired, each with 2 low impedance 50 to 250 ohm mic inputs. Included are two speed/music equalization switches with a pair of mics on each switch. Dual isolated 50 to 600 ohm outputs for



recording through two separate amplifiers permit double system recording while simultaneously recording the same signal through a single system amplifier. The unit weighs less than 2 lbs., measures 7" x 5" x 4 1/2", and costs \$149.50. Circle 112 on Reader Service Card

Audio Console

The A-10B audio console has been added to the line of Sparta Electronics Corp., Sacramento, Calif. According to Sparta, the new unit provides the features of a main studio console plus the flexibility necessary for a production studio and remote broadcasting. As a production studio console, up to 8

separate audio sources can be selected through the 4 mixing channels. Included are cueing facilities for all inputs, a headphone jack with gain control, and a PA system output which features speaker muting and a self-contained monitor speaker.

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Omnidirectional Mic



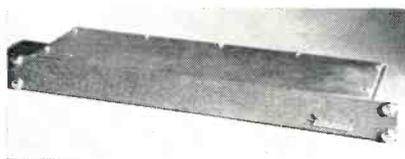
A new miniature omnidirectional dynamic mic, weighing only 2 oz., has been introduced by Gates Radio Co., Quincy, Ill. The G-500 lavalier mic, the company claims, fea-

tures studio quality response, low handling and clothing noise, and rugged design. Frequency response is essentially flat from 50 to 12,000 cps; impedance matches any low impedance input from 50 to 250 ohms. The unit employs an internal acoustic resonator to support the response to lower frequencies.

Circle 114 on Reader Service Card

Stereo-SCA Transmitter Filter

The problem of crosstalk from stereo to the SCA channel is said



to be solved by use of the new filter being offered by Dynatronics, Inc., Orlando, Fla. The filter is available in both high and low impedance models, and is designed for rack mounting in standard panels. Proper, full modulation can be maintained with crosstalk levels equivalent to monaural transmission, it is claimed. Price of either model is \$288.

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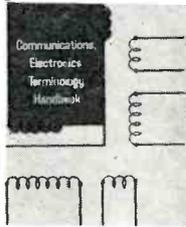
Switching Package

Ward Electronic Industries, Inc., Mountainside, N. J., is offering a solid-state master control switching package, the VSA-102. The package includes video and audio switchers; signal processing amplifier; 2 audio line amplifiers; 2 audio monitor amplifiers; a CBS "Audimax"; 18 source video memory unit; 8 source audio memory unit; 84" mounting rack; and a control panel.

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Order TAB-42only \$7.00



Planning the Local UHF-TV Station

by Patrick S. Finnegan, V.P. & Ch. Eng. WLBC & WMUN. This brand-new guide describes all requirements for planning, building and operating a small, expandable UHF station. A valuable reference for station owners, managers and engineers containing practical data on eqpt., layout and economic factors involved. Includes many do-it-yourself hints and cost-cutting tips. 12 Chapters: Selecting a Site; Estimating Coverage; The Studio; Control Room; UHF Transmitter; Transmission Lines; UHF Antenna; Film; Planning the Building and Layout; FCC Factors.

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Antenna Engr. Handbook

Henry Jasik, Ed.-in-Chief. Current state of the antenna art is fully covered in this data-packed handbook. Provides a wealth of essential principles, methods and data to help solve all kinds of antenna problems. Virtually every type of modern antenna is dealt with. Helps with such problems as finding specific data on the characteristics of a particular type of antenna, and in checking out impedance, gain, radiation patterns and other antenna properties. Here are detailed facts—tested and proved. Includes applications and performance data. 1013 pages; 993 illus.; 35 chapters.

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MICROPHONES

by A. E. Robertson. Valuable sourcebook for all users of quality microphones. Describes operating principles for the vast array of mics now available. Written for the mic user, all math discussion has been eliminated from the text. 12 Chapters plus Appendices: Microphones in a Broadcast-

ing Service; Sound Waves in Air; Operational Forces; Electroacoustics; Diffraction and Dimensional Effects; Directional and Response Characteristics; Omni-Directional Mics; Bi-Directional Mics; Uni-Directional Mics; Anti-Noise Mics; Directional Mics; Noise. 359 pps.

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A. Prose Walker, Editor-in-Chief

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ELECTRICAL INTERFERENCE

by Rocco Ficchi. Shows how interference control is introduced in the design of equipment, then goes on to develop the best practices necessary to contain interference. Chapters on Interference Reduction as a System Problem; Fundamental Equipment Problem; Shielding; Filtering; Interference Reduction in Cables; Grounding; Interference Reduction in Equipment; Grounding of Structures and Buildings; Grounding of Equipment; Grounding of Power Systems; Appendices. 256 pages.

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RADIO OPERATING Q & A

by Hornung and McKenzie. This latest Edition of a standard work that has helped men pass their exams for 40 years provides all the data needed to pass Elements 1 through 9 of the FCC exams. For ease of understanding, all material is grouped by topics, such as Laws, Power Supplies, and Theory. Covers everything in the exam, and furnishes sufficient summary material to help you brush up on your knowledge of many subjects.

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LITERATURE of INTEREST

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

Sound Systems. New booklet from Electro-Voice covers sound reinforcement and changes in the Catholic Church liturgy. It lays the groundwork for a basic sound system, as well as covering the specific needs caused by the new Church procedures. 47

How to Assemble video processing amplifiers from transistorized modules explained in literature from Riker Industries, Inc. Also description of special effects generator. 64

Spotmaster "Porta Pak" Cartridge Playback unit is portable, plays back anywhere. Made by Broadcast Electronics, Inc., and described in 2-page bulletin. 65

SSB Equipment for Standard Broadcast service is discussed in two technical papers from Kahn Research Labs., Inc. Equipment is compatible, and has been installed at WSM and KDKA. 67

CATV amplifiers and head-end equipment, both of fully transistorized construction, are completely described in handsome literature package from Ameco, Inc. 44

Solid State Computer Programmer for TV automation in 6-p. bulletin from Sarkes Tarzian Broadcast Eqpt. Div. Full description of operation, applications, specs of APT-1000 unit. 131

Voltage Variation problems can be overcome by use of 12-p. manual which includes engineering and design data on constant-voltage transformers made by Sola Electric. Presents data on how to design the transformer into a circuit, and lists specific type and rating for a particular job. 41

Background Music players, plus firm's extensive library of programmed mono and stereo background music on tape, described in literature packet from Cine-Sonic. 42

TELOP II, and Telojector, TV optical projectors, plus firm's line of professional stereo tone arms, broadcast equalizers, fully described in data from Gray Research. 38

CATV is most interestingly discussed in a 20-p. booklet, "Isn't it About Time," by Jim Davidson of Davco Electronics. Booklet includes some history of CATV plus a discussion of the current CATV controversy. 37

Magnetic Tape properties are described in 6-p. brochure from Reeves Soundcraft, which discusses both electromagnetic and physical properties of firm's recording tape. 32

Disc-Cutting equipment, professional turntables, and headset line is described in 8-p. catalog from Koss-Rek-O-Kut. 33

Headsets for broadcast production communications are described in illustrated catalog from Roanwell, which lists units for cameramen, boom-men and commentators. Special price list also included. 29

Crystals—low frequency, military-type, pressure type, and CB units described in 8-page, 2-color illus. catalog from Texas Crystals. 30

Antennas and systems, towers, and rotation and indicator systems featured in 12-p. highly illustrated catalog from Telrex Labs. 40

CATV Time & Weather Channel—TMW-2B unit, which firm claims can equal 200 new subscribers, described in folder from TeleMation. 140

Background Music catalog describes receivers, amplifiers, and components. From Dynatronics, the 58-p. booklet lists specs for over 50 different pieces of equipment. Includes pricing list. 46

AM Transmitters described in literature from Gates Radio. 6-p. catalog describes firm's Vanguard I, a transistorized 1000 w one-tube AM transmitter. 48

CATV Head-end amplifiers, which feature 10,000-hour tubes, are completely described in technical data sheets from Entron, Inc. 45

Quartz Lighting systems for studio use described in Cat. Q-8 from Kliegl Bros. 68

Passive Microwave Repeater—Engineering data on use of passive repeaters from Microfect Co., Inc. Also data on antenna mounts, stub towers. 137

High Band VTR standards described in 28-p. 4-color booklet, "The Turning Point in TV Tape Production" from Ampex Corp. 138

ETV Brochure, by Blonder-Tongue Labs., is titled, "How to set the stage for educational TV," and describes ETV requirements. 28

48-Page "Professional Products Manual" covering mics, disc reproducers and equalizers. Shure Brothers, Inc. 177

CATV Multitaps are fully pictured and described in 4-p. flyer from Spencer-Kennedy Labs. Also includes applications, engineering, and installation data. 34

CCTV camera of solid state construction, and miniature size, described in colorful 4-p. brochure from DuMont Labs. 35

Plastic Reels, film shipping cases, idler/drive spools, tape reels, film cans and cases, etc. described in 30-p. file folder of material from Plastic Reel Corp. 36

Playback, a monthly 8-p. bulletin of 3M Co.'s Magnetic Products Div. contains articles of interest to engineers and broadcasters involved in production of TV commercials and program material. "Tell Clients How Tape Production Works" is one of the features in January issue. 31

Automated animation projector, which allows addition of animation and a wide range of special unusual optical effects to programs, described in literature from Cellomatic. 50

Rental catalog listing motion picture equipment, including lenses, for rent, available from Birns & Sawyer. 64-p. booklet contains over 200 photos. 51

Automated solid state master control switching package described in literature package from Ward Electronic Industries. 52

Portable production center which can be used for remote or emergency operation in literature from Northern Electric. 53

48-p. short form catalog describing the firm's solid state line, from EICO. 54

CATV Leasing, Financing, Engineering, Contracting and Construction activities of AMECO explained in 8-p. booklet. 69

Signal Generators, Color Standards, cross filter, dual video distribution amplifiers, etc. in seven 2-page literature releases from Telemet Co. Div. of Giannini. 70

BROADCASTERS SPEAK

It's good.

Our engineer had the copy and said, "Here, Uke, look this over." I took it with me, threw it into the back seat of the car and dragged it out the other night at home when I had run out of the evening paper. I expected the worst, another dog publication. Surprise . . . I read it from cover to cover. I think I read more in that one issue than I have read in 12 years of reading the trade mags.

Don Uker
Program Director, KDSN
Denison, Iowa

I was most pleased to receive the Preview issue of BM/E. I want to tell you I think it sure fills a great need in the area of broadcast trade publications. Again, my congratulations on a fine issue. I hope there are many more to come.

Joseph D. Coons
Pres. & General Mgr.
Constrander Corp. (WOHI)
East Liverpool, Ohio

I have just had an opportunity to read the January issue of BM/E. It was one of the most impressive and informative hours I have spent in perusing a technical/management journal devoted to broadcasting.

Please, please get me on your circulation list to receive this valuable periodical every month. Congratulations and best wishes.

Philip Ross
Chief Engineer, WBNX
Fort Lee, N. J.

Have read your Preview issue and expect great things from a magazine with this approach.

E. Mitchell Shulman
Operations Manager, KRCC
Council Bluffs, Iowa

Looks like we finally have a magazine for both management and engineering. Keep up the good work.

Dean H. Wickstrom
Partner-General Mgr., KWOW
Pomona, Calif.

Several days ago I came across your first issue of BM/E. I wish to take this opportunity to compliment you on your attractive new publication. I'm sure it will set a new standard for magazines in the broadcast industry.

Gary E. Thompson, Pres.
Kachina Broadcasting Co.
Phoenix, Ariz.

Please let me take this opportunity to compliment you on the first issue of BM/E. It was both interesting and informative . . . but of even more importance to the writer . . . the response to our full page ad was overwhelming.

Robert H. Huston
Director of Pub. Rel. & Advg.
Ameco, Inc.
Phoenix, Arizona

BM/E

ADVERTISERS' INDEX

Ameco, Inc.	28, 45
Ampex Corp.	49
Automatic Tape Control	11
Bauer Electronics	8
Boston Insulated Wire & Cable Co.	26
Chrono-Log Corp.	62
Cine-Sonic Sound	62
Continental Electronics	15
Dynair Electronics, Inc.	10
Electro-Voice, Inc.	3
Entron, Inc.	7
General Electric Co., Visual Communications Products	12, 13
Jerrold Electronics	2nd Cover
Jerrold Electronics	27
Microfect, Inc.	61
Nortronics Co., Inc.	48
QRK Electronic Products	46
RCA Electronic Components and Devices	25
Riker Industries, Inc.	3rd Cover
Sarkes Tarzian, Inc.	4th Cover
Shure Bros., Inc.	22
Sola Electric Co.	17
Syntron Co.	51
Technical Appliance Corp. (TACO)	52
Tektronix, Inc.	5
TeleMation, Inc.	65
Viking Cable Co.	9

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William Healey

ROUNDTABLE

(Continued from page 66)

these cannot be held within the budgeted one-third of gross, perhaps new equipment is indicated, or the level of program service is too high for the market to support them commercially. These two problems are common in station operation today.

The remaining one-third of the gross must provide the salary for the general manager and cover costs of new equipment and facilities. Funds may either be accrued, or used to make payments when large expenditures are necessary.

Of course, many successful operations do not follow this formula. However, in my 25 years of broadcasting, the latter 15 in management, when either labor or operating costs exceed their limits, the other suffers. And if both combined are more than two-thirds of gross, then management is in trouble.

Donald A. Thurston, General Manager WMNB AM-FM, North Adams, Mass.

In our day-to-day practices, all normal channels of cost control are exercised over items such as long distance telephone, office supplies, overtime, record service contracts, etc. However, there are some points which might be considered unique:

We buy the best brand-new broadcast equipment. Moreover, we make sure it is well maintained. This costs "short-term" money, but saves tremendously in the long run. Equip-

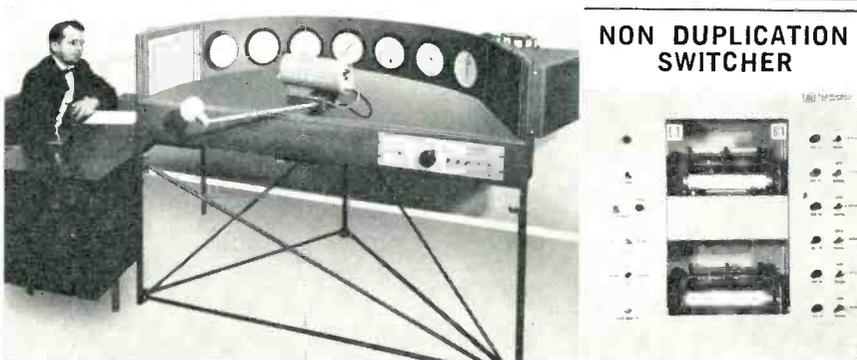
ment lasts longer; fewer breakdowns occur; there is less embarrassment; and most important of all . . . there is *more production*.

A complete package of employee benefits, coupled with above-average salaries, minimize employee turnover. The cost is greater in "short-term" dollars, but we save more in the long run. The staff knows the market better, are more content in their jobs, and most important of all . . . they *produce more*. I do not believe in cutting personnel as an economy measure. In most cases, when the staff is cut, so is production.

I lead and encourage participation in all levels of government affairs—community, state, and federal. It is the only way we can have a part in controlling "external" costs such as taxes.

I lead and encourage participation in all industry affairs—local, state, and national. By supporting trade association activities, for example, we strengthen the broadcast industry. Also, we become more knowledgeable broadcasters and can thereby improve local production.

The only proof I can offer concerning relative success of this policy is to cite our own operation. We are a Class 4 community station operating in a small market which the Federal Government has labeled "depressed." We have a staff of 18 full-time and 6 part-time broadcasters. We make a profit; the future looks rosy; and we expect to continue our methods of cost control—which I believe are better stated as "profit control." ●



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MANAGEMENT ROUNDTABLE

Controlling Radio Operating Costs

This month's Roundtable is comprised of selected comments from broadcasters who participated in 1964 NAB Fall Conference panels on Methods of Controlling Costs. Since they represent small-market stations noted for above average success, we believe their philosophies are of value to most radio broadcasters.

**Virginia F. Pate, Pres. & General Mgr.
WASA AM-FM, Havre de Grace, Md.**

In a small station like ours, where operations are not so complex, the ready availability of current figures is our handiest weapon in controlling costs. Soon after the close of each month, we have a P & L statement that gives us an overall picture of how the station is doing. It provides us with an easy way of comparing costs for the current month with previous months and with similar periods of prior years.

One of our biggest costs is payroll. Like managers of most small stations, I have my finger in every pie. All employees hired must be approved by me, which gives me control over salaries. In addition, since overtime for announcers can run into money, I go over their schedules with the program director to eliminate or minimize overtime.

In another area, all expenses for out-of-the-ordinary items must be approved by me before an order is placed. We use a regular purchase order form which enables me to make sure there is a real need for all items ordered. If it is a particularly large expenditure, we control costs by getting several bids and comparing prices. Prices of regular supplies are compared from time to time with costs from alternate sources.

Over the years, we have done a number of things to keep down clerical costs. We use a duplicating machine that quickly gives us a number of copies. We use a Verifax copier to reproduce our daily logs. The time saved in not having a girl type logs is fantastic! Even though you may not cut the payroll, existing personnel can devote their time to more productive efforts.

At periodic intervals, we make a regular review of fixed operating expenses such as insurance, telephone, electricity, etc. Just recently, we reviewed the telephone setup and as a result had another line put in. We have had the electric company analyze our setup to find out if we could take advantage of new equipment, or eliminate some which is now unnecessary.

In short, you just can't spend more than you are taking in, or there won't be any profit!

**Don C. Dailey, General Manager
KGBX, Springfield, Mo.**

We make a continual study of the physical size of our operation, and of the jobs performed by employees. Shortly after television came into this market, we reduced our staff, at the same time upgrading the quality of personnel wherever possible. Partial automation was also introduced, allowing us to operate our transmitter by remote control operation. Naturally, these changes allow us to reduce our staff.

We budget what we will spend each year for promotions, advertising, new equipment, repairs, travel, etc. Then we follow up with a detailed monthly report that tells what we have spent in each category, with comparison figures for the previous year. We have a weekly report showing all checks issued, and a daily report showing monthly billing to date, billing on the same date last year, and the difference.

Most of these ideas are not new, but when applied religiously they certainly pay off. For example:

A slip is filled out on all long distance calls, giving the necessary data, whether it was business or news, etc.

We always attempt to replace equipment before it creates trouble. (But old tubes that are still good are kept for use in emergencies.)

To provide our advertisers and listeners with the best possible service at all times, we maintain an auxiliary transmitter with the same power as our main transmitter.

Line charges for remote broadcasts are passed on to our advertisers wherever possible.

We take all discounts possible. Our salesmen are paid on cash billing each month; this alone practically eliminates bad debts.

I believe the single factor most effective in controlling costs is to continually review what we are spending and ask why. This is more necessary in the radio business than in many others because many of our costs are fixed. Our accountants have often said they could not see how we are able to keep costs so constant. Constant vigilance is the price we must pay to keep our operation solvent in a competitive atmosphere.

**Ross E. Case, General Manager
KWAT, Watertown, S. D.**

First of all, I believe that for small stations, preventive maintenance is of prime importance. To be able to keep the transmitter, recorders, turntables, and other gear running properly, without having to spend a great deal of money for repairs and new equipment, means a lot to a small-budget station. I have an excellent chief engineer whose main function is repair and maintenance. He is a great troubleshooter and can replace parts before they cause trouble. Good technical operation prevents lost air time and lost accounts. It insures good quality production and enables our crews to cover the many events a community-minded station should.

Secondly, small-station management should be responsible for all dollars spent. I believe in bird-dogging all expenditures. Too often, staff people think they can spend a few bucks here and there without costing the station anything. Even with our staff of 15, extra items of basically little value can add up to a lot each month. Often, the purchase of many of these items only satisfies a personal whim. I may sound stingy, but I have learned it is an important part of general administration.

Finally, because we do not establish a regular annual budget, I make a point of comparing year to year costs. This can be done on specific items, and month to month on an overall basis. Such comparisons help to show trends and major differences. It doesn't take much time, and it certainly helps keep costs in line.

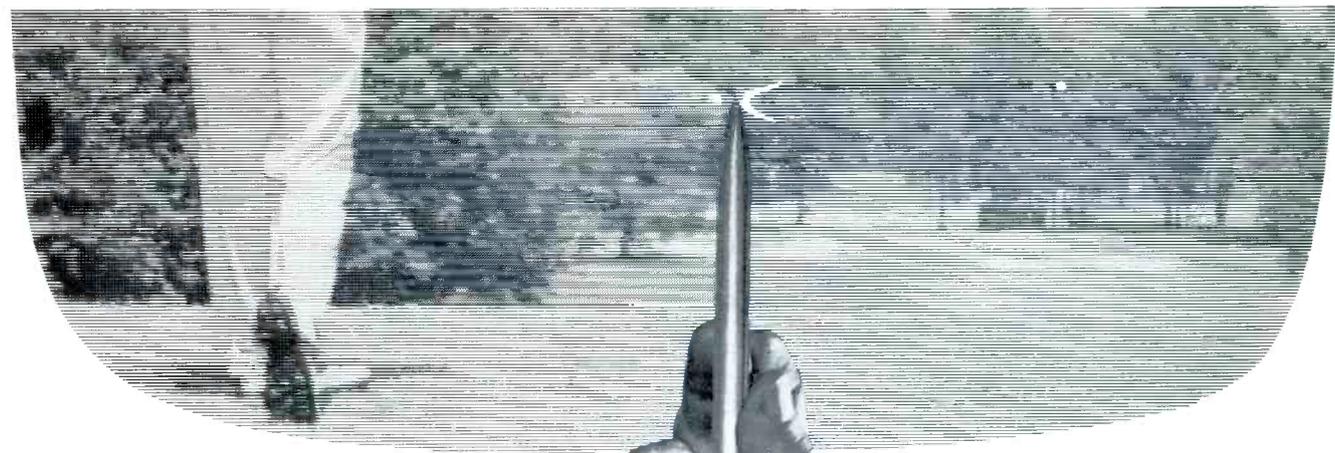
**Al Ross, Pres. & General Mgr.
KGEK, Sterling, Colo.**

We must broadcast to suit the FCC, the NAB Code, the general public, and the commercial sponsors—but somehow, somewhere along the line, we must broadcast to please owner-management. Otherwise we can't broadcast for very long.

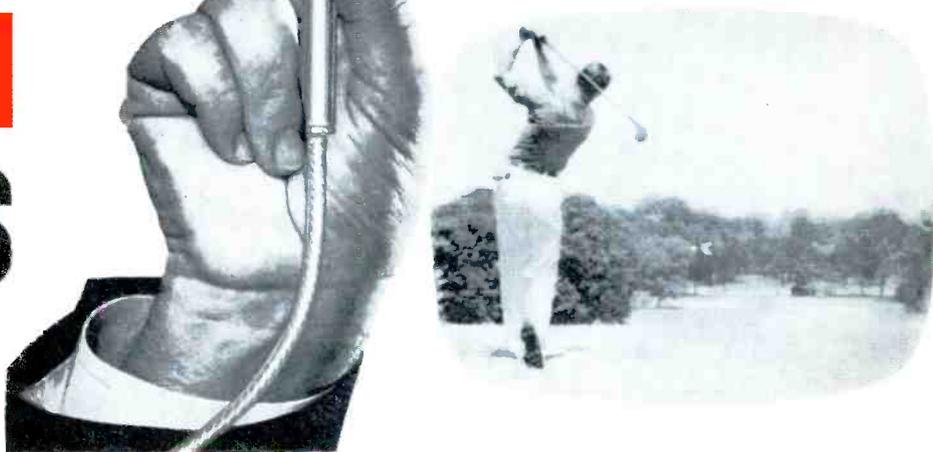
In our operation we have a very simple formula: Not more than 33⅓% of gross income may be paid out for labor costs. Labor includes all talent fees, salaries, commissions, and Social Security payments—but not owner-management income. If the labor cost figure rises above the one-third gross mark, there are too many employees, too many unsponsored services, or the sales department needs overhauling.

Operational expense cannot exceed the one-third mark, either. In this category are programming, news service, promotion, office expense, travel, equipment maintenance—in short, all physical expenses. If

(Continued on page 65)



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VIEW-POINTER

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The RIKER VIEW-POINTER is a new video production tool. The size of a pencil, it is an all-transistor instrument which electronically produces an arrowhead-shaped marker in the program picture at the spot where the VIEW-POINTER is placed. Using any video monitor, the VIEW-POINTER, held like a pencil, may be moved to any part of the raster to follow action at any speed, slow or fast. A built-in push-button allows the marker to flash on and off for increased attention of the viewer.

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 - NEWS (pinpoint a face in the crowd)
 - WEATHER (trace the movement of a front)
 - PRODUCTION OF COMMERCIALS • EDUCATIONAL INSTRUCTIONS
 - SPECIAL EVENTS • MEDICAL DEMONSTRATIONS
- and many others (could even be used as a "bouncing ball" for "sing-alongs")

TECHNICAL:

The VIEW-POINTER is completely self-contained. It is used with any standard video monitor and is installed in less than 1 minute by merely bridging the program line. The VIEW-POINTER may be operated at any convenient location even at long distances from the program insertion point—up to hundreds of feet, through standard studio lines.

Weighing only 3 ounces, the self-contained, all-transistor circuitry operates at 12 volts thereby eliminating all high-voltage hazard.

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 - additive/non-additive video mixers
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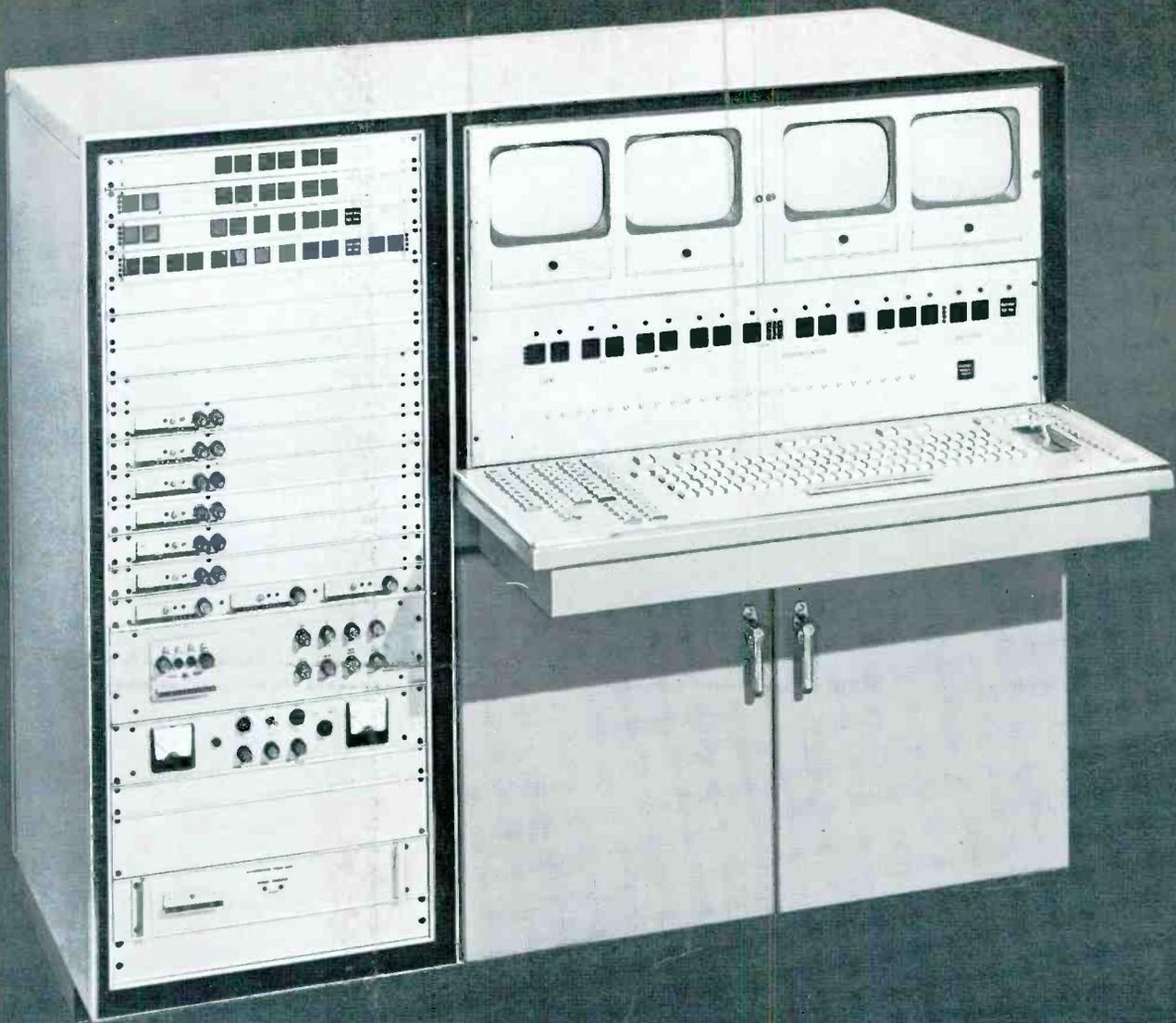
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for flawless television programming—
eliminates operator error in all program

periods. Productions run smoother . . .
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