A MACTIER PUBLICATION / SEPTEMBER 1965

BM/E

THE MAGAZINE OF BROADCAST MANAGEMENT/ENGINEERING

FOCUS ON AUTOMATION

New way to go first-class, with minimum investment . . . maximum return

NEW JERROLD Starline™

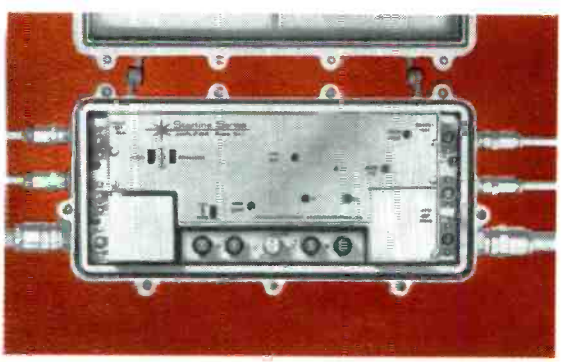
UNITIZED CATV EQUIPMENT

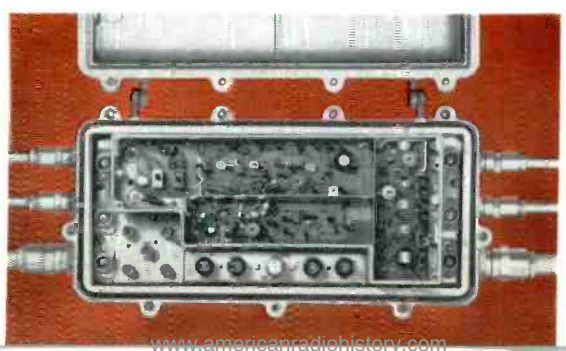
It's *installed* cost that counts. Think of your savings in installation and pole makeready when all the equipment for a complete distribution station is contained in one compact, unitized radiation-proof housing.

That's what you get with new Jerrold *Starline* solid-state equipment. Aside from its superior performance and unparalleled cascadability, there's a solid dollars-and-cents reason for going *Starline* now. Every new *Starline* unit is complete and ready to mount when it's delivered.

For example, the *Starline* SA-1 contains a super-cascadable mainline amplifier, a bridging amplifier, and an AGC unit—all sealed in a 16-inch weatherproof, dustproof, radiation-proof cast aluminum housing for mounting on messenger, pole, or crossarm. Or take the SA-5, which contains just an intermediate bridging amplifier. In the *Starline* Series there's a complete unit for each of your distribution-station requirements—no separate housings, no individual mounting problems.

Add to this simplicity and installation economy the CATV industry's most advanced electronic performance specifications—and you have, in the new *Starline* Series, CATV's finest equipment achievement. You can cascade more than fifty *Starline* main-trunk amplifiers, even in a 12-channel system! And full-wave rectification permits the *Starline* power supply to feed more amplifiers, more smoothly, than ever before.





Gear up for increasing subscriber demand in the Golden Age of CATV. Talk with the man from Jerrold *now,* or write for complete information on the new *Starline* Series.

Patent pending

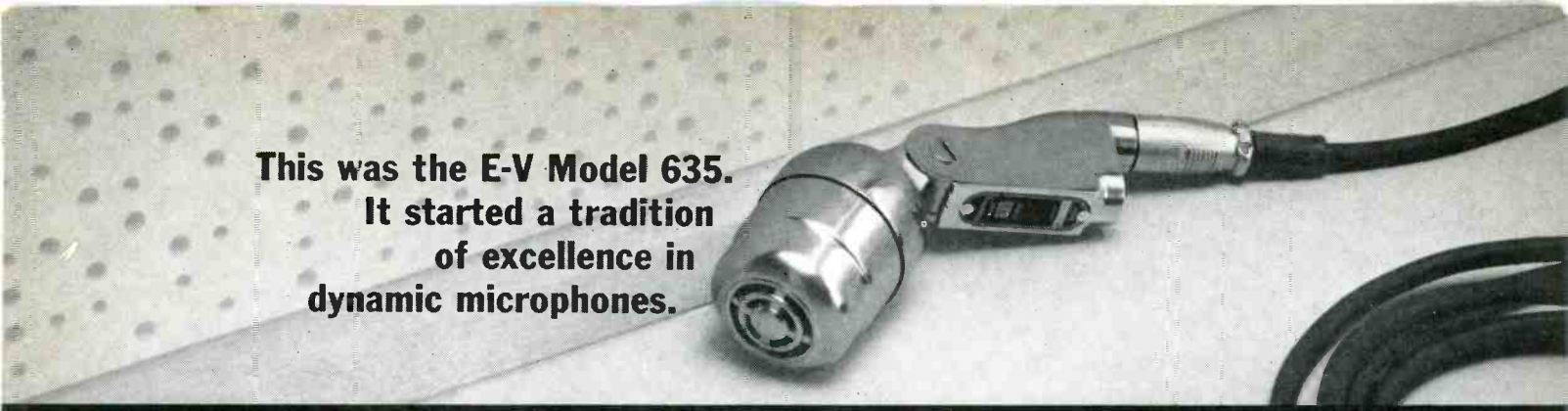
JERROLD

CATV Systems Division
JERROLD ELECTRONICS CORPORATION
15th & Lehigh Ave., Phila., Pa. 19132

FIRST IN CATV

The nation's largest, most experienced manufacturer-supplier of CATV equipment and services.

Circle 2 on Reader Service Card



This was the E-V Model 635. It started a tradition of excellence in dynamic microphones.

This is the new E-V Model 635A. It's better in every way!

Model 635A Dynamic Microphone $82.00 List. (Normal trade discounts apply.)

How can a microphone as good as the E-V Model 635 be made obsolete? By making it better! It wasn't easy. After all, professional sound engineers have depended on the 635 since 1947.

During this time, the 635 earned a reputation for toughness and dependability that was unrivalled by other omnidirectional dynamics. And internal changes through the years have kept the 635 well in the forefront of microphone design.

But now the time has come for an all new 635: the Electro-Voice Model 635A. It's slimmer, for easier hand-held use. Lighter, too. With a slip-in mount (or accessory snap-on Model 311 mount) for maximum versatility on desk or floor stands. The new, stronger steel case reduces hum pickup, and offers a matte, satin chromium finish perfect for films or TV.

The new 635A is totally new inside, too—and all for the best. A new four-stage filter keeps "pops" and wind noise out of the sound track, while guarding against dirt and moisture in the microphone, completely eliminating any need for external wind protection. Of course you still get high output (—55db) and smooth, crisp response. And you can still depend on the exclusive E-V Acoustalloy® diaphragm that is guaranteed against failure for life* (it's that tough)!

We expect to see plenty of the "old" 635's in daily use for years. But more and more, the new 635A will take over as the new standard. It's easy to find out why: just ask your E-V Professional Microphone distributor for a free demonstration in your studio. Or write us today for complete data. We'll be proud to tell you how much better the new Model 635A really is!

*The E-V Professional Microphone Guarantee: All E-V professional microphones are guaranteed UNCONDITIONALLY against malfunction for two years from date of purchase. Within this period, Electro-Voice will repair or replace, at no charge, any microphone exhibiting any malfunction, regardless of cause, including accidental abuse. In addition, all E-V microphones are GUARANTEED FOR LIFE against defects in the original workmanship and materials.

ELECTRO-VOICE, INC., Dept. 951EM
614 Cecil Street, Buchanan, Michigan 49107

Electro-Voice®
SETTING NEW STANDARDS IN SOUND

Circle 5 on Reader Service Card

SEPTEMBER 1965 / VOLUME 1 / NUMBER 9

BM/E

THE MAGAZINE OF
BROADCAST
MANAGEMENT/
ENGINEERING

Publisher:
MAL PARKS, JR.

Editor:
VERNE M. RAY

Corporate Editorial Director:
JAMES A. LIPPKE

Art Director:
GUS SAUTER

Associate Editor:
CHARLES BUFFINGTON

Production Manager:
HELEN HORAN

Editorial Production:
INEZ ATHEY

Circulation Director:
H. C. GAINER

Circulation Fulfillment:
J. EDWARDS

Reader Service:
R. R. BELL

Promotion Manager:
E. L. GRAY

Assistant Promotion Manager:
R. BATTLE

Classified Advertising Manager:
EILEEN HESSION

What can broadcast and CATV operators accomplish through automation? You won't find the answer in the provocative space-age cover design conceived by Art Director Gus Sauter. But you'll find plenty of answers in this issue, which concentrates on the theme—**Automation.** Following the traditional BM/E format of providing something for everyone, this month's features were prepared to help formulate management and engineering decisions regarding automation of AM, FM, TV, and CATV operations.

Mactier Publishing Corp., Bryce Gray, Jr., President
820 Second Ave., New York, N. Y. 10017, 212 MO 1-0450

BM/E Editorial & Production Offices: 18 Frederick Rd., Thurmont, Md. 301 271-7151

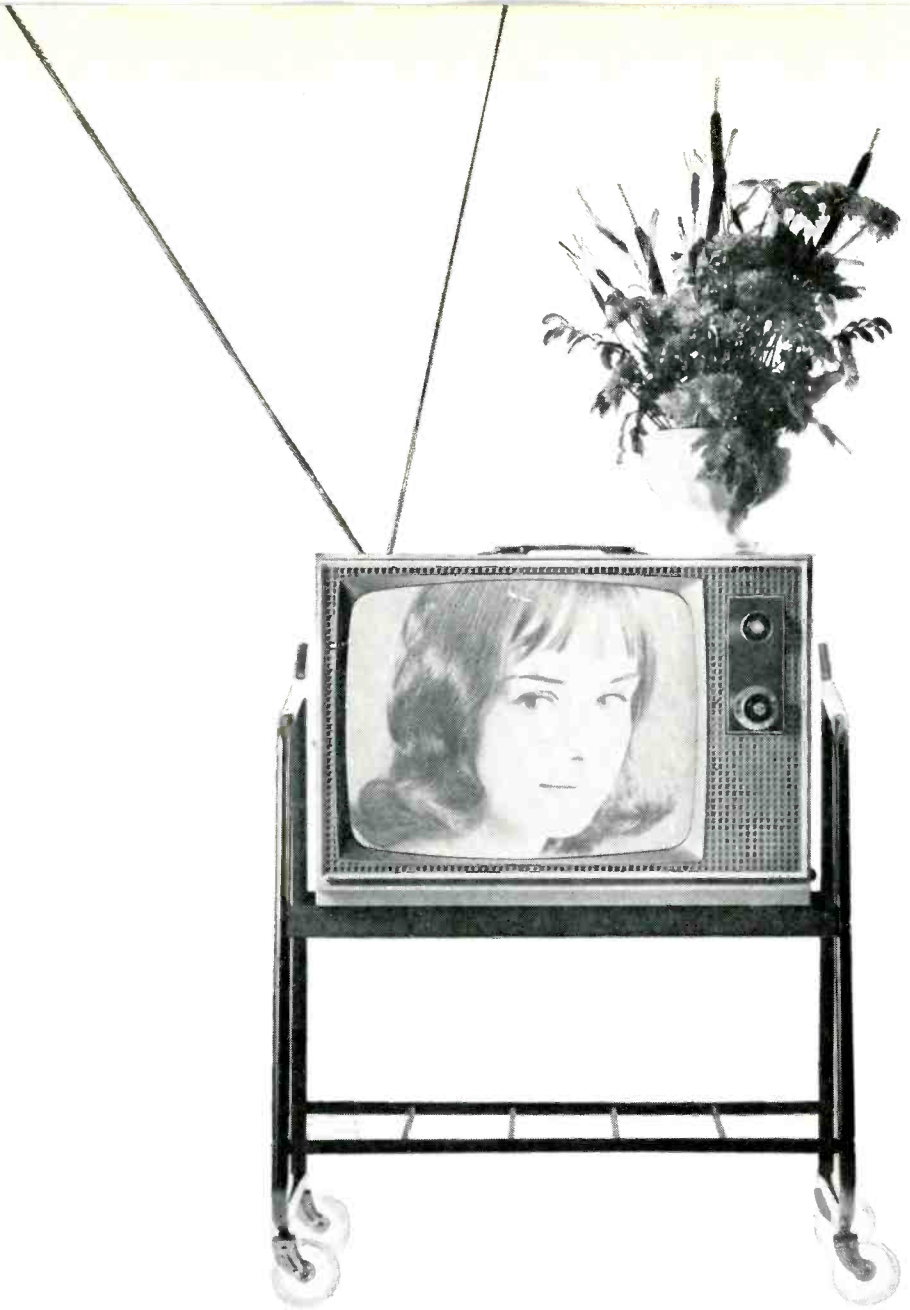
Publishers also of:
EEE—the magazine of Circuit Design Engineering
Electronic Procurement
Volt/Age—the magazine of Electrical Apparatus Maintenance

BM/E, the magazine of Broadcast Management/Engineering, is published monthly by Mactier Publishing Corp. All notices pertaining to undeliverable mail or subscriptions should be addressed to 820 Second Ave., New York, N. Y. 10017.

BM/E is circulated without charge to those responsible for station operation and for specifying and authorizing the purchase of equipment used in broadcast facilities. These facilities include AM, FM, and TV broadcast stations; CATV systems; ETV stations, networks and studios; audio and video recording studios; consultants, etc. Others please write for subscription prices.

Controlled Circulation postage paid at Philadelphia, Pa.

Will springtime's picture



fade come fall?

Not with Sealmetic®– the flexible, moisture-proof cable

Sealmetic Coaxial is the flexible CATV cable that stabilizes attenuation by eliminating moisture penetration.

The old-fashioned solution to CATV-moisture problems was a cable so stiff and unwieldy that it was a real nuisance to install.

Sealmetic Coaxial changes all that. It's as flexible as corrugated sheath copper, as moisture-proof as aluminum. It's easy to install–and it gives clear bright TV pictures for years longer than any other cable because Anaconda has licked the moisture problem with a sheath that is hermetically sealed and bonded to the jacket.

New Sealmetic Coaxial is designed for CATV, tested for CATV, manufactured for CATV service to Anaconda's uniquely rigid standards. You should know more about new Sealmetic Coaxial, and you can, very easily. Just contact your Anaconda man, or write to Anaconda Wire and Cable Company, Department EFL, 605 Third Avenue, New York, N. Y. 10016. ®Registered Trademark Design Patents Applied For

ANACONDA CABLE TELEVISION SYSTEMS

ASK THE MAN FROM

ANACONDA®

ABOUT SEALMETIC COAXIAL

Circle 7 on Reader Service Card

65219.

BROADCAST INDUSTRY NEWS

7th ETV Proposed

The Alabama Educational TV Commission has filed for a CP to build a new ETV station near Jonesboro. The application is for Channel 57, with 577-kw visual and 86.5-kw aural power. It will be AETC's seventh station. WHIQ-TV Huntsville, the sixth station, was granted a CP earlier this year and is currently under construction. Four of the stations are interconnected by a system of state-owned microwave relays, and the remaining two now approved will be added to the state-wide network in the next several weeks.

TelePrompTer Awarded TV Reception Contract

TelePrompTer will design and install TV reception facilities for the Roman Catholic Diocese of Brooklyn. Twelve channels, including the Diocese owned 4-channel educational network, will be available in the 240-school system. The contract, which involves more than $500,000, calls for a special antenna on each school, converters, and other equipment, including coax cable.

Recording Studios to Get NAB Standards

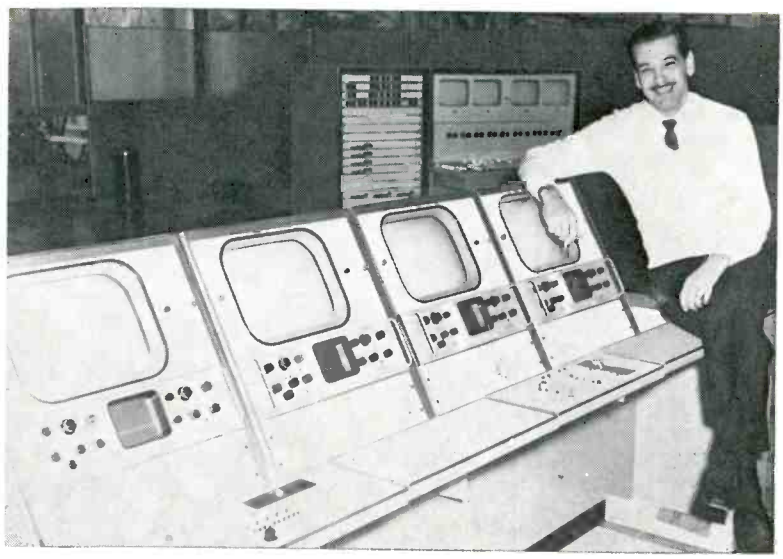
Seeking to develop better methods of measuring and controlling audio volume, NAB is mailing complimentary copies of its Recording and Reproducing Standards for discs, cartridge tapes, and reel-to-reel magnetic tapes to all commercial recording studios. The FCC, in its policy statement on "loud commercials," has cited as one cause an excessive use of compression, reverberation, filters and attenuators in prerecorded material. George W. Bartlett, NAB manager of engineering, said members of the Engineering Advisory Subcommittee, in visits to recording studios, found that some production personnel are "totally unfamiliar" with the recording and reproduction standards adopted for the broadcasting industry. NAB is conducting a series of tests which, among other things, will be used to evaluate the effect of sound compression and reverberation in prerecorded material. The tests also are aimed at developing a new meter to measure audio volume more accurately.

TV Relay Orders Up

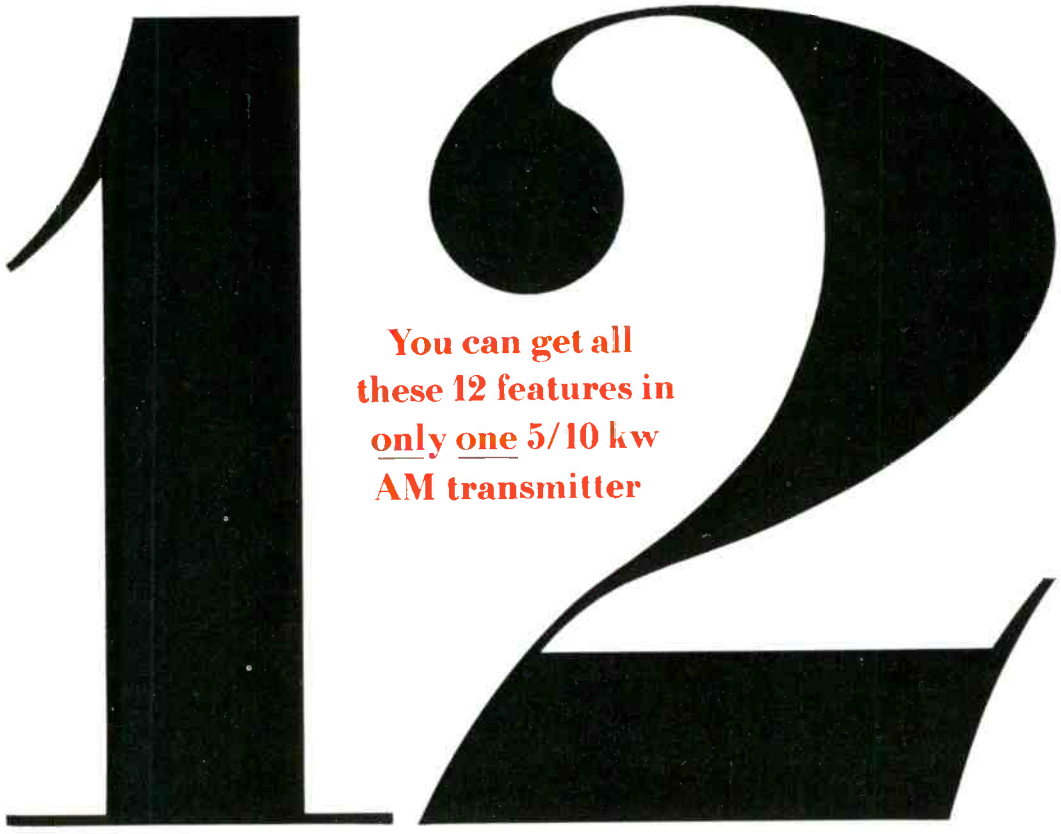
Microwave Associates, Inc., Burlington, Mass., has reported a sharp increase in broadcast TV relay equipment orders, including 2,000-mc MA-2 TWT power amplifiers, and 7,000-mc MA-7 gear. The two solid-state systems feature triple use on STL, intercity, multi-hop, and remote TV pickup. Equipment reportedly has been ordered by KHFI-TV Austin, Tex.; KTVH Hutchinson, Kas.; KVOS Bellingham, Wash.; KIMA Yakima, Wash.; KMVT Twin Falls, Idaho; as well as by Telesistima Mexicano (4 stations); CFRN-TV Edmonton, Alberta, Can.; and ABC and CBS network headquarters.

New Ghana TV

Ghana Television Service, the most modern TV broadcasting system on the African Continent, was officially opened by President Kwame Nkrumah on July 31st. Designed, built and installed by The Marconi Co., in collaboration with the Ghana Broadcasting Corp., the service has three transmitting stations at Accra, Kumasi, and Sekondi-Takoradi. The system serves approximately one quarter of the country, including the heavily-populated Atlantic seaboard. Each of the three stations is served by a central studio in Accra. System was handled as



Senor Nelson Purper Lisboa, Dir. of Eng., Ministry of Brazil, recently completed negotiations with Sarkes Tarzian, Inc., Bloomington, Ind., for a complete TV broadcast facility at the University of Sao Paulo, Brazil, S. A. Biagio Presti, manager, Tarzian Broadcast Equipment Div., said the equipment, first to be installed in a Brazilian university, is completely solid-state and includes live and film camera systems, switching, and control equipment. Ford Foundation provided funds for the system, which will be utilized in classroom teaching as well as for instruction in TV broadcasting.



1. Solid state r-f exciter (±5 cps guaranteed.)
2. Solid state audio driver.
3. Solid state rectifiers.
4. Extended operating console for metering and control.
5. Unequaled compactness — only 69″ high, 67-7/16″ wide, 32″ deep.
6. No external power components.
7. Remote control circuits incorporated.
8. Designed for automatic operation.
9. Loading control of power output.
10. Automatic tuning of PA.
11. Variable vacuum capacitors in tuning and loading.
12. All components accessible; easy maintenance.

It's Collins' new 820 E/F-1 5/10kw AM transmitter. Contact your Collins Sales Engineer or write Broadcast Communication Division, Collins Radio Company, Dallas, Texas for descriptive brochure.

COLLINS

COMMUNICATION / COMPUTATION / CONTROL · COLLINS RADIO COMPANY / WORLD HEADQUARTERS / DALLAS, TEXAS

Circle 8 on Reader Service Card

a turn-key project, turned over by Marconi as a fully operational network. Ghana engineers and technicians were trained in TV broadcast techniques at the company's headquarters in Chelmsford. The order, the largest single broadcasting contract ever awarded to Marconi, also included major extensions to the existing sound broadcasting service.

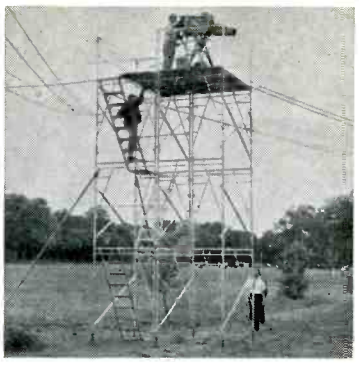
5-Year Cable Guarantee

Superior Cable Corp., Hickory, N. C., now provides a 5-year guarantee on "Cell-O-Air" aerial and "Solid-D" burial cables. The guarantee assures 100% sweep-testing prior to shipment, and no attenuation greater than 1% up to 220 mc. High-frequency impedance is guaranteed to be 75 ±3 ohms, without excessive attenuation increase, provided jacket and/or outer cover are not damaged. In the event of failure during normal service conditions, due to faulty material or workmanship, Superior will replace the cable if failure occurs within five years. Additionally, if failure occurs during the first year, the company will also pay installation labor cost.

NAB Fall Conferences

Recruiting of radio personnel, a new radio license form, color TV, and the impact of CATV are among items on the agenda of the eight fall conferences sponsored by NAB. Reports by Vincent T. Wasilewski, pres., and John F. Dille, board chairman, are also scheduled.

An FCC Commissioner will participate in each of the conferences, speaking informally and answering questions during the second morning session. Chairman William Henry will appear at the final conference in Phoenix, Ariz., Nov. 22-23. Commissioners Cox and Lee will appear at two: Mr. Cox will attend the Oct. 25-26 meeting in Boston and the Nov. 18-19 session in Spokane, Wash. Mr. Lee is scheduled for the Oct. 21-22 meeting in Baltimore, Md., and the Nov. 11-12 session in Chicago, Ill. Commissioner Bartley will be at the Oct. 18-19 meeting in Atlanta, Ga., Commissioner Loevinger at the Nov. 15-16 meeting in Denver, Colo. Newly appointed Commissioner Wadsworth will speak at the opening meeting Oct. 18-19 in Louisville, Ky. Commissioner Hyde will be out of the country during the conferences.



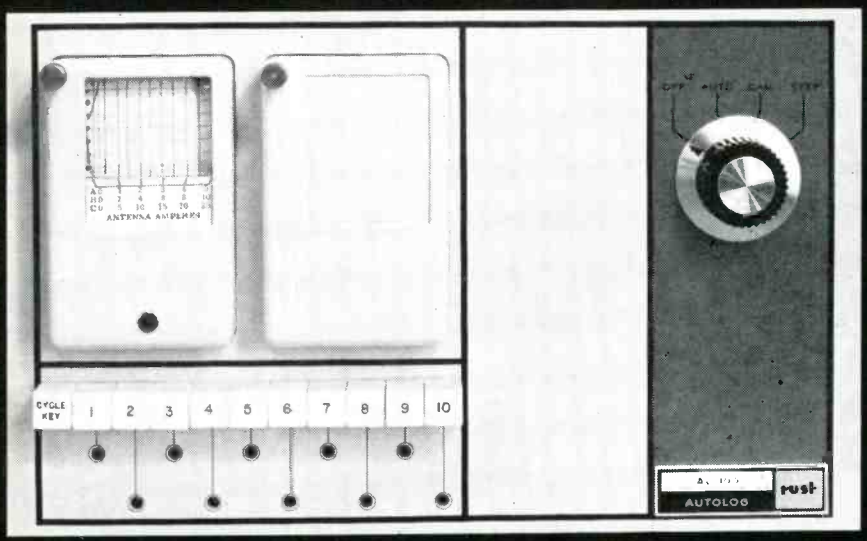
Raised camera platforms constructed for televising the Colonial Open Golf Tournament, Colonial Country Club, Ft. Worth, Tex. Patent Scaffolding Co., Div. of Harsco Corp., Long Island City, N. Y., has built a number of such TV camera platforms for outdoor events.

Engineers Hold Convention

The Society of Broadcast Engineers will hold its first convention Oct. 3-4 in Lewiston, Mont. All engineers, whether members of the Society or not, are invited to attend. Registration fee of $10 is payable to Kenneth Benner, KBOW, Butte, and covers the two-day meeting and a banquet. Delegates are urged to get registrations in as soon as possible.

Entron, Inc., Silver Spring, Md., signed a contract with Amphenol Cable Div. of Amphenol-Borg Electronics Corp., for the purchase of over 5 million feet of seamless aluminum shielded cable. Entron has investments in numerous CATV systems throughout the country. Seated: Charles C. Camillo, Amphenol Cable pres. (l.); Robert J. McGeehan, pres. of Entron, Inc. Standing: Wayne H. Scheppele, Amphenol Cable marketing manager (l.); Edward P. Whitney, Entron v-p.

THIS IS THE NEW AL-100



The Automatic Transmitter Log System that obsoletes every other system in the country . .

YOU are looking at the new AL-100 — the AUTOLOG — Automatic Logging System by Rust . . . The AL-100 will cut down your overhead as never before possible. It will free station personnel . . . Allow announcers to concentrate on error-free production and commercials with sell . . . It will free engineers for more important functions. The AL-100 eliminates chicken tracks . . . It offers easy to read straight line recordings on 10 parameters. It uses only 6 chart rolls per year . . . Each roll lasts 62 days . . . Compare this with other units It's so far advanced.

The AL-100 has a front adjustable point with front view and front lighting.
The AL-100 will save you more time and money than you ever thought possible.
The AL-100 will obsolete every transmitter log chart in the country.
Incidentally, you will be amazed at the comfortable price.

Send today for information on the new AL-100 to:

rust

corporation of america

Eastern Division
168 Tremont
Everett, Mass.

Washington, D.C.
13205 May Court
Silver Spring, Md.

Western Division
2921 South 104th St.
Omaha, Nebraska

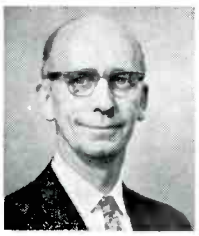
RUST FM STEREO TRANSMITTERS • AUTOLOG • RUST REMOTE CONTROL

Circle 9 on Reader Service Card

NAMES IN THE NEWS

Maurice Gross has been named education and commercial field sales manager, Commercial Electronics Div., Sylvania Products, Inc. Mr. Gross had been marketing director for General Telephone of Michigan.

Maurice Gross



Wilson P. Boothroyd

Wilson P. Boothroyd has been appointed chief engineer of the div. Prior to his Sylvania association, Mr. Boothroyd was director of engineering development with Philco.

James M. Leahy has been named v-p Administration, CBS Labs. Previously, Mr. Leahy was controller, and before joining CBS Labs, he was budget director of CBS.

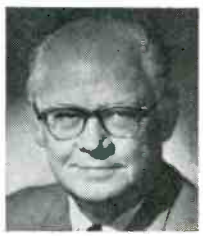
Milford Richey has been named V-P of engineering, Ameco, Inc. Richey, with Ameco since 1957, has been chief engineer since 1958. Prior to his Ameco association, he was with KOOL-AM-TV in Phoenix. **R. Bruce Walters** is now Ameco's V-P of production. Walters started with Ameco in 1956 as a technician.

Ernest Sisson and **Charles L. Hermann** have been appointed closed-circuit TV sales engineers with Blonder-Tongue Labs., Newark, N. J. Mr. Sisson had been operating his own firm.

Robert P. Crisara has been named administrative assistant and **James L. McNulty** appointed manager of employee relations for Anaconda Wire and Cable Co., New York.

Charles L. Alden has been promoted to Manager, Advertising and Sales Promotion, Magnetic Products Div., 3M Co. Mr. Alden joined 3M in 1951 and has held various positions with the sales and advertising groups.

Charles L. Alden



Morgan Harris

Morgan Harris has been appointed sales manager of the Cinema plant of the Hi-Q/Aerovox Div., Burbank, Cal. Mr. Harris was marketing manager for Scionics Corp.

BROADCASTERS SPEAK

Before another minute passes, I must tell you that BM/E could well stand for:

*B*est *M*agazine *E*ver!

How did we ever get along without BM/E?

Si Willing
owner, Radio KMAR
Winnsboro, La.

Our firm has applied in 13 communities in New Jersey for CATV franchises. We have plans to apply in other communities in the near future.

Our affiliate company, Radio Station WBUD Trenton, is now on your subscription list. I find that the principals in our new company are constantly debating about who will receive your publication first. Therefore, may I ask you to add Bill Hardin, Pres.; Robert J. Greer, V-P; and myself. If possible, we should like to have the last two back copies (May and June), which have helped us immeasurably in our efforts.

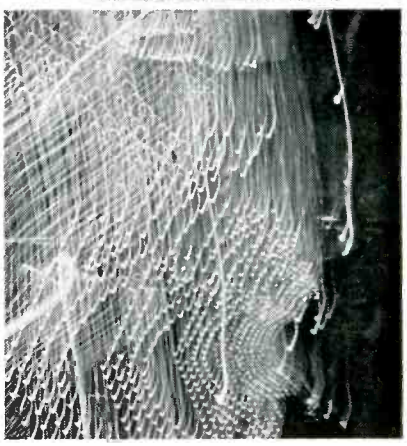
Philip H. Roberts
Secretary, CSAS, Inc.
Trenton, N. J.

In going over my files of BM/E, I find two copies missing—January and March, 1965. Would it be possible to obtain copies, please?

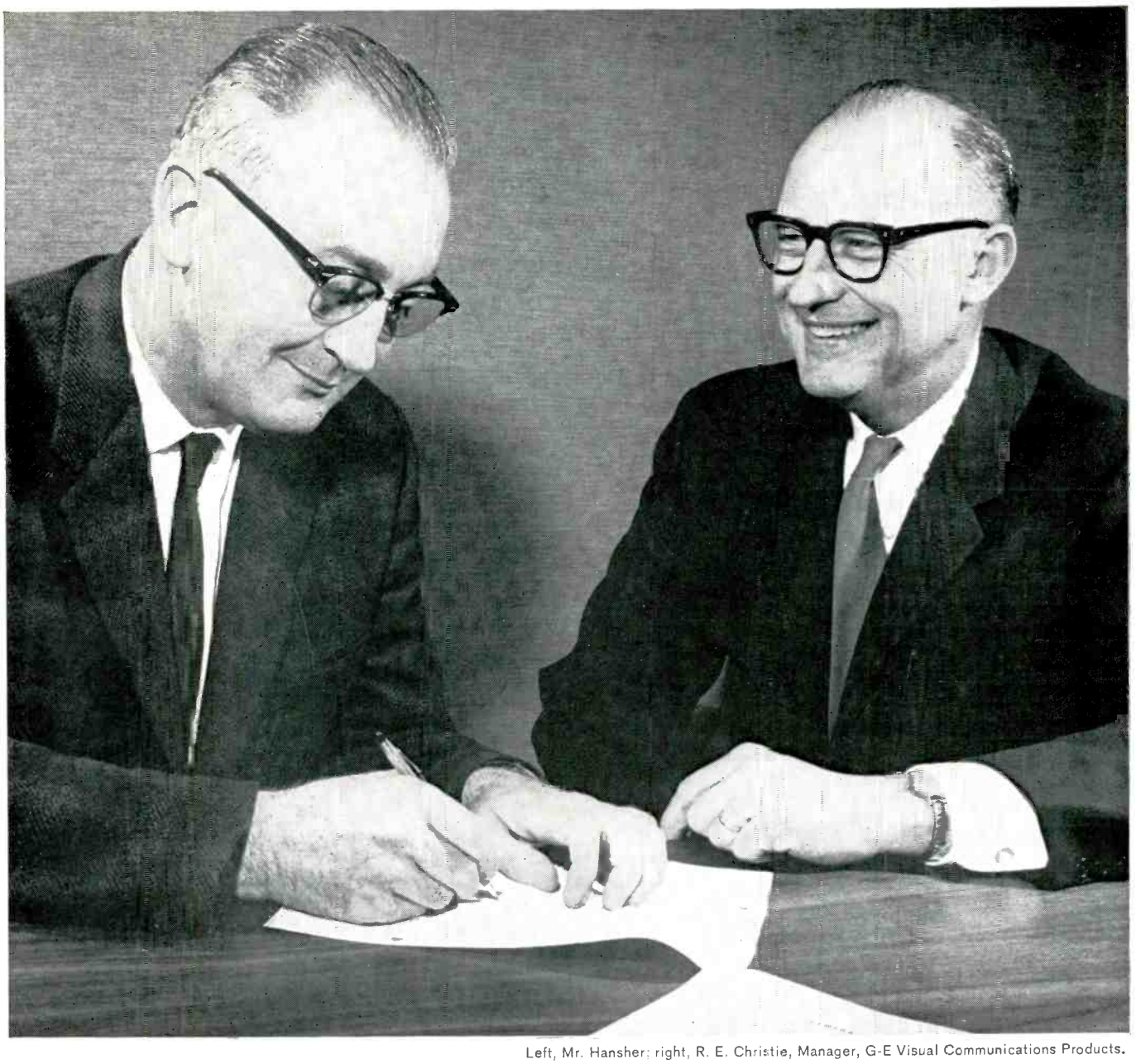
I consider BM/E a most valuable asset to this or any radio station, and salute you on your continued progress. I am, personally, an applicant for an FM station at Dundee, Ill., and would appreciate a subscription sent to my home address. Please keep up the good work!

James C. French
Chief Engineer, WXFM
Elmwood Park, Ill.

BM/E



To the many who have asked about our July cover, it is a time exposure of a Greenwich Village (N. Y.) street festival. Photographer Burt Shavitz captured the "moving lights" with a Pentax camera.



Left, Mr. Hansher: right, R. E. Christie, Manager, G-E Visual Communications Products.

G-E UHF Klystron Transmitters Win–Again.

The event pictured above is noteworthy.

William S. Hansher (left), Vice President in Charge of Engineering, Taft Broadcasting Company, is signing a contract with the General Electric Company for a new 50 KW second-generation UHF Klystron Transmitter.

The transmitter will provide WNEP-TV, Scranton-Wilkes Barre, Pa., with an effective radiated power in excess of one megawatt.

Almost a decade ago, WNEP-TV went on the air with a first-generation G-E UHF Klystron Transmitter whose 45 KW output provided the country's first ERP of over one megawatt.

The noteworthy point in this contract signing is that WNEP-TV's success with the first-generation transmitter, and the advanced design of the new unit, won the Taft order for General Electric.

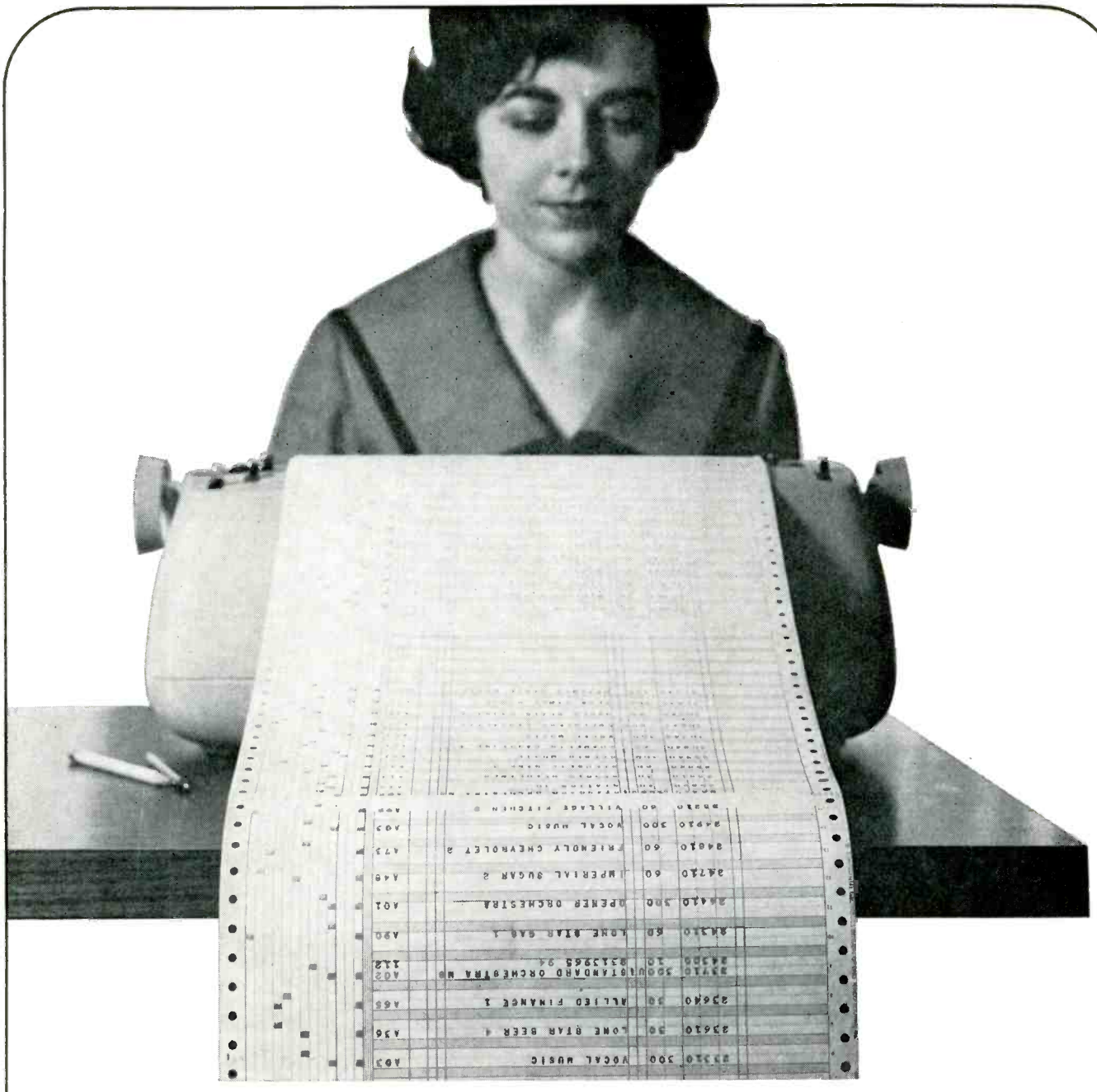
This is the kind of customer acceptance which also won both first and second-generation G-E UHF Klystron Transmitter orders from WEEK-TV, Peoria, Ill., and WETA-TV, Washington, D.C. No other manufacturer can claim such a record of customer acceptance for high-power UHF klystron transmitters. For details on television's most-accepted UHF klystron transmitters, contact your G-E Broadcast Equipment Representative, or: General Electric Company, Visual Communications Products, #7-315 Electronics Park, Syracuse, N.Y., 13201. GE-19

Visual Communications Products

GENERAL ELECTRIC

Electronics Park, Syracuse, New York

Circle 11 on Reader Service Card



add 3 ■ s to your Log

and get automatic programming, logging and authenticating (only PROLOG can do it)

PROLOG uses your station log to give you any degree or combination of unattended, automatic, or manual-live operation you desire. PROLOG simply adds 3 squares (■) to the information you normally enter on the log. The entire log can be prepared on any standard typewriter, or you can use any of the auto-typing, Traffaccounting, IBM punch-card, and similar equipment in use today. PROLOG uses your established programming format; nothing changes unless you want to change it. That's PROLOG: simple and flexible!

For a 12-page brochure on PROLOG Systems, write to Commercial Sales Dept./Continental Electronics Mfg. Co./box 17040/Dallas, Texas 75217.

LTV *Continental Electronics*
A DIVISION OF LING-TEMCO-VOUGHT, INC.

Circle 14 on Reader Service Card

INTERPRETING THE

FCC RULES & REGULATIONS

Section 317—"The Advertising Section"

SECTION 317 of the Federal Communications Act of 1934, as amended, and its predecessor, Section 19 of The Radio Act of 1927, as currently implemented in the *"Sponsorship Identification Rules"* (Sections 73.119, 73.289, and 73.654) provide, in brief, that all matter broadcast by any station for valuable consideration must be (a) announced as sponsored, paid for, or furnished, and (b) by whom. From 1927 to date, literally hundreds of cases have arisen dealing with the knotty problems of interpretation and compliance with this seemingly lucid rule. The cases have ranged from "teaser" announcements, and "payola" and "plugola," to the question of the licensee's obligation to seek out the *true* identity of the sponsor. Historically, the Commission's position has been the same since 1927; yet, questions, problems, fines and revocation cases for failure to comply go on unabated.

Some 11 years after its original enactment, it was maintained that Section 317 of the Communications Act had been rarely interpreted or enforced. One of the initial observations of the "advertising section" occurred in 1929 when the Federal Radio Commission criticized sponsored programs which advertised securities without announcing or divulging the name of the sponsor.

In the case of *United States Broadcasting Corp.*, the Commission was concerned with an application for license renewal of station WARD. The Commission refused to renew the license since the station had operated in a "negligent, slipshod and unbusinesslike manner." In this vein, the station licensee was criticized for broadcasting a religious program by a clergyman who patently advertised his availability for marriages. The Commission stipulated that ". . . when the matters presented over the station were commercial, for the financial gain of the business of the organization, they should be presented as commercial and not cloaked under the guise of religious talks."

In both the instances cited, the Commission used language calculated to follow the legislative history of the "advertising section." *The language in both cases purports to be in accord with the basic premise that advertising is to be presented as such and not disguised.*

True Identity Of Sponsor

Albuquerque Broadcasting Co. requested that the Commission indicate the nature of the burden of investigation imposed upon a licensee by Section 317, with respect to determining the true identity of the person or persons directly or indirectly supplying funds for the use of broadcast time. In addition, the letter requested that the Commission answer whether a violation of the "equal opportunity" provisions of Section 315 was committed if the licensee imposed different requirements of proof of source-of-funds upon competing candidates. In response to these queries, *the Commission maintained that "Section 317 of the Act makes mandatory an announcement of the identity of a sponsor in all cases where a broadcast station receives or will receive compensation."* The Commission then went on to reply in the following language:

☐ The observance of these provisions is considered to be the duty and responsibility of each station licensee, and it is incumbent upon it to take all reasonable measures in this connection. As to what may be reasonable depends, of course, upon the circumstances in each case. For example, if a speaker desires to purchase time at a cost apparently disproportionate to his personal ability to pay, a licensee should make an investigation of the source of the funds to be used for payment. This is particularly true in a case where the speaker has previously appeared on similar broadcasts sponsored by others, and announces the fact that he is resuming his broadcasts.

☐ The fact that in particular cases a station may be required to make a different type of investigation to determine the facts relating to identity of sponsorship is not considered to violate the "equal opportunity" provision of Section 315 of the Act. The Commission appreciates the fact that a broadcast station may experience some problems in fulfilling its responsibility under Section 317 of the Act. However, the possibility of the occurrence of such difficulties does not justify a station licensee in adopting a general rule that it will not make time available for the discussion of controversial subjects or for broadcasts by duly qualified candidates for public office. Nor would the fact that an independent investigation is necessary in a particular case, automatically relieve a station from its responsibilities to make its facilities available to the person in question. Such refusal is inconsistent with the concepts of public interest established by the Communications Act as the criterion of radio regulation.

In more recent years, a significant attempt by the Commission to stem violations of the "advertisement" rule is best evidenced by a warning contained in a Public Notice released October 10, 1950. In pertinent part the release maintains that:

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

paid for, but also the identity of the sponsor. This is particularly true in the case of direct radio sales messages where it is obviously important that the prospective purchaser be informed of the name of the company from which it is buying the merchandise or the manufacturer of the goods.

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

☐ It is also pertinent to point out that the mandate of S 317 of the Act applies with equal force to political broadcasts.

In July 1958 the Commission once again made itself emphatically heard to the broadcast industry. The admonishment took the form of Public Letters issued to three licensees who had failed to reveal the identity of the National Association of Manufacturers (NAM) when those stations had televised kinescope summaries of Congressional hearings on a strike issue. NAM had supplied the films free of charge and the stations received no material consideration except the film itself. However, NAM had gone to some cost in having the prints made and mailed to one of these stations. Although primarily concerned with programs on public controversial issues, the Commission maintained that Section 317 and Section 3.654(a) had been contravened. The Letters made clear the requirement "that a station disclose to its audience exactly who is paying for or furnishing the broadcast material presented over the station." The Commission went on to say, ". . . of particular significance is *the requirement of accurate and complete identification of the person or group paying for or furnishing material in connection with the discussion of political matters or controversial issues of public importance . . .*"

The Letters then set out two distinct criteria in order to judge licensee responsibility in this area. First, with regard to ordinary broadcast matter, *reasonable diligence* must be exercised by a licensee to ascertain and identify the true sponsor and source of all the material presented over his station. Second, with regard to discussions of public controversial issues or political discussions, the *highest degree of diligence* must be exercised by a licensee to ascertain the actual source responsible for furnishing the material. In these same letters, the mere supplying of films by NAM was said to clearly constitute "valuable consideration."

Other Commission determinations have indicated that compliance with Section 317 and the accompanying Rules would not be accomplished where a sponsor of parts of a 5½-hour sports show was identified only at the beginning and end of the show, and announcements for other sponsors were broadcast during the course of the elongated program. On another occasion the Commission has held that an applicant violated Section 317 when the "sponsorship of football games broadcast was not indicated."

Moreover, it has been indicated that subscribers to a planned music format are sponsors within the letter of the Act and must be identified as such. Although in the Commission's *First Report on Subscription Television*, it was held that the Rules do not require the names of subscribers to subscription television to be announced. But the disclosure of the identities of persons providing consideration directly or indirectly for transmission of programs by a subscription television station must be made.

By a Memorandum, Opinion, and Order released September 14, 1959, the Commission denied a petition seeking to amend the rules so as to permit "teaser announcements" to be made without the necessity of sponsor or product identification. The Commission looked to the explicit language of Section 317 rather than to the underlying policy of the Section as a basis for its conclusion. The Order maintained that ". . . the Act by its terms applies without distinction to commercial or program material." The Commission went on to say that "its *broad language*, 'all matter,' encompasses 'teaser' announcements and that the relief petitioner seeks cannot be accomplished by a change in the Rules but would require amendment of the basic Statute."

On July 8, 1964, the Commission released its renowned Opinion and Order in the *WHAS, Inc.*, case. In brief, the Commission held that it was a violation of the Communications Act and the "sponsorship identification rules" for a broadcast station to identify the sponsor of a political broadcast as "The Committee for Good Government," where the station was aware that the committee was actually an agent for the State Campaign Headquarters of a candidate for Governor. In such a situation, the licensee was required to disclose the *true identity* of the principal sponsor. (See 2 RR 2d 869.)

Court Language

In the early case of *Yankee Network, Inc.* v. *FCC* (107 F.2d 212), we find one of the initial examples of a court alluding to the "advertising section." In that case, the District of Columbia Court of Appeals pointed out that the Commission was empowered to adopt implementing rules and regulations with respect to the prohibition "against broadcasting any matter for which service, money, or any other valuable consideration is paid without announcing that it is so paid for or furnished and by whom. . . ." In 1954, the same court once again referred to Section 317 in the case of *Communist Party of the United States* v. *Subversive Activities Control Board* (223 F.2d 531, 96 U.S. App. D.C. 66 (1954), rev'd on other grounds, 351 U.S. 115 (1956)). In discussing the need for the Communist Party to identify itself as such over the air, the court instructed the following:

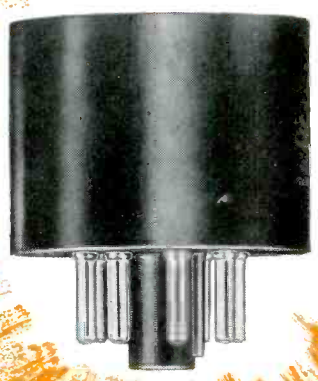
SYNTRON

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.

65R1

SYNTRON

SYNTRON COMPANY
2240 LEXINGTON AVENUE • HOMER CITY, PA.

Circle 13 on Reader Service Card

☐ Congress has frequently imposed limitations . . . on broadcasting. All paid matter must be identified by the name of the person paying for it . . . Broadcasting is permeated with a public interest, and surely the people are entitled to know when an organization . . . is addressing them over the air. All political parties identify themselves on the air; otherwise their appeals are useless. The only conceivable reason for anonymity of political broadcasting is a purpose of deception, and that purpose is enough to validate the requirement of identification.

In the case of *Noerr Motor Freight* v. *Eastern Railroad Presidents Conference* (155 F. Supp. 768 (E.D.PA 1957)), a district court in Pennsylvania cited with favor the language of Judge Prettyman in the *Communist Party* case, discussed above. The *Noerr Motor* case pointed out that it was a violation of Section 317 for one to utilize the airwaves under the sponsorship of a "front" without mention of the actual sponsor. Thus, the courts have consistently upheld the Commission's position on sponsorship identification.

New Rules Clarify Old Position

The Commission's most recent significant pronouncement on the "sponsorship identification rules" is embodied in its Report and Order adopted May 1, 1963. That Order set forth the new sponsorship rules 73.119(AM), 73.289(FM) and 73.654(TV), which were the outgrowth of Bill S.1898 signed into law on September 13, 1960. This bill: (1) redefined the situations in which licensees must make sponsorship identifications; (2) added a new Section 508 to the Communications Act requiring disclosure by persons *other* than broadcast licensees who provide or receive valuable consideration for the inclusion of any matter in a program intended for broadcast; (3) revised Section 317(e) of the Act directing the FCC to prescribe appropriate rules to implement Congressional intent; and (4) was the outgrowth of the infamous "payola" and 'plugola" scandals.

In effect, the amendments to the Communications Act, and the new "sponsorship identification rules," do not change the law or the rules. They simply provide more definitive guidelines for the licensees.

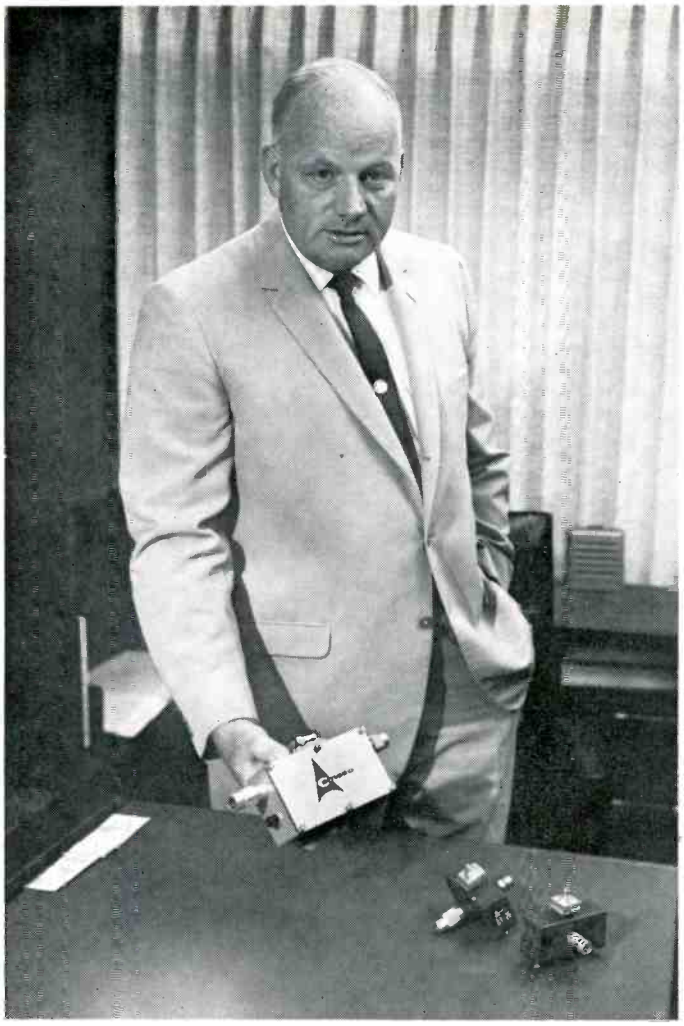
In summary, the present "sponsorship identification rules," like those in the past, require:

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

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

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

(4) In political or controversial issue programs, if records, tapes, scripts, services, etc., are provided, an announcement stating such things were given and identifying the true sup-



MR. CATV OPERATOR:

Let Duane Crist, Ameco, Inc. Customer Finance Officer, show you how to save approximately 20% on CATV equipment financing through

AMECO'S COMPONENT FINANCING PLAN

"Ameco's plan is made to order for the CATV system owner or operator. It is the fastest and easiest way to finance the purchase of new equipment for a system. It is convenient. And it lets the operator put the equipment he buys into use much faster than any other financing plan so far offered in the industry."

The cost is reasonable . . . $5.00 per $100.00 per year. No longer is there any reason to delay new equipment purchases because you must wait for financing agreements to be completed. With Ameco's Component Financing Plan, your system can go ahead with rebuilds, improvements or extensions using Ameco Solid-State equipment.

Here is how the Ameco Component Financing Plan works:

1. Choose the Ameco CATV equipment you need in your system.
2. Contact your nearest Ameco Technical Representative or Ameco Regional Warehouse.
3. Fill out the simple one page application form and determine the payment period most convenient for you (1 to 5 years).
4. Credit decisions are made within 24 hours.
5. Your new Ameco CATV equipment will be delivered within a very short time . . . you can put it to use immediately.

For full details, contact your Ameco Technical Representative, the nearest Ameco Regional Warehouse, or return the attached coupon.

6111 Harry Hines Blvd.
Dallas, Texas 75235
Phone: 214-351-1567

P.O. Box 3543
Harrisburg, Pa. 17101
Phone: 717-737-0487

349 Peachtree Hills Ave. N.E.
Atlanta, Georgia 30305
Phone: 404-261-1951

3443 S.E. 31st Street
Portland, Oregon 97215
Phone: 503-232-7051

ameco

Mr. Duane Crist
Ameco, Inc.
P.O. Box 11326
Phoenix, Arizona 85017

Please send full details on Ameco's Component Financing Plan to:

Name _____

System Name _____

Address _____

City _____ State _____

Circle 15 on Reader Service Card

plier, must be made at the beginning and end of the program.

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

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

From The Radio Act of 1927 to the Communications Act of 1934, as amended, through hundreds of precedents and rulings to date, the Commission has adhered to the same basic position. The courts have upheld the numerous rulings under the so-called "sponsorship identification rules." Despite the Commission's unusual consistency, violations occur with regularity. All licensees are invited to review again the rules on point and consult their legal counsel whenever in doubt. ●

Program Section Added to Form 301

By Report and Order, the Commission has adopted the new program section for Form 301, requiring AM and FM applicants to furnish information on efforts undertaken to discover and fulfill public need and interest (Docket 13961). The new Section IV-A contains questions to be answered by applicants for new commercial aural stations, license renewals, and assignments and transfers.

The new Section IV-A will be used beginning November 1, 1965 for new AM and FM stations, major changes in same, and by assignees and transferees. Beginning December 1, 1966, it will apply to assignors and transferors; it will be used for license renewal applications due to be filed on or after November 1, 1966. By a separate Report and Order, Sections 73.112 and 73.282 were amended to require commercial aural stations to log the information they will need to complete the new form (Docket 14187) effective December 1, 1965.

Part I of the new section asks for the methods used to determine local programming needs, the needs proposed to be served, and example programs proposed to meet these needs. Part II requires past statistical data for some program categories on the basis of a composite week, and seeks specific information on typical programs broadcast during the preceding year (excluding entertainment and news) which have served public needs and interest. Part III requests similar data for proposed programming. Information on past commercial practices is covered in Part IV, and proposed commercial practices in Part V. Part VI deals with general station policies and procedures, including programming and advertising standards.

The Commission emphasizes that "broadcasters, mindful of the public interest, must assume and discharge responsibilities for planning, selection, and supervising all matter broadcast by their stations, whether such matter is produced by them or provided by networks or others."

McMartin TBM-4000 FM Modulation/SCA Multiplex Monitor

Every FM station with an SCA Multiplex permit needs one.

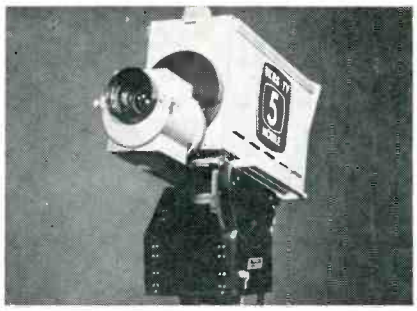
Oh, you could get along without one, but engineers know the difficulties of measuring crosstalk and injection without a monitor like this. (Incidentally, there is no other monitor like this.) ■ The TBM-4000 provides a continuous check of sub-channel frequency and modulation and also main channel modulation . . . Type-Approved (Type No. 3-116) under the new FCC regulations. ■ McMartin is the leading producer of FM Monitors. The units are so reliable that most transmitter manufacturers use McMartin monitors as their reference standard. FM stations in all 50 states and overseas in places like Tel Aviv and Uganda use our TBM-4000. The workmanship is guaranteed *forever*. We make this bold warranty because 20% of our people are in final testing. ■ Please contact us for complete specifications and prices.

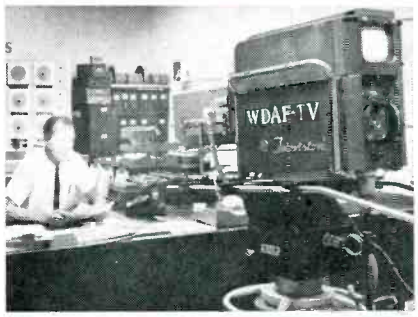
McMartin®

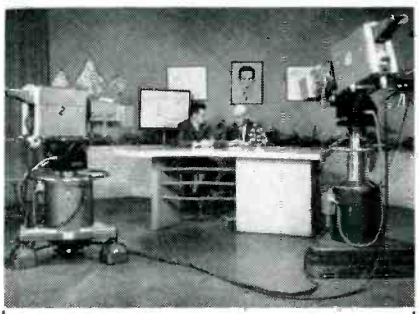
McMARTIN INDUSTRIES, INC.
605 North 13th Street
Omaha, Nebraska 68102

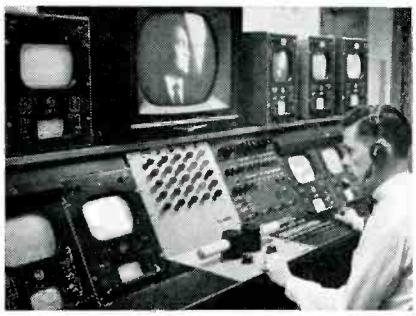
Circle 18 on Reader Service Card

TV CAMERA AUTOMATION IS HERE!









FIELD ENTERPRISE
CHICAGO

AUTOCAM REMOTE CONTROL CAMERAS

- **Applicable for all TV cameras including color**
- **May be conventionally operated by cameramen**
- **Double studio productivity**
- **Investment recovery possible in 12-18 months**

JACK PEGLER • BILL PEGLER

TELEVISION ZOOMAR COMPANY

500 Fifth Ave., Rm. 5520 • New York, N.Y. 10036 • Area Code 212, BRyant 9-5835

serving the television industry since 1947

Circle 19 on Reader Service Card

Part—1

by Leo G. Sands

Planning to Go Remote? Here's Help!

The extent to which remote control and telemetering automation can be justified depends upon economics. The state of the art is far ahead of that actually practiced to any significant extent in the broadcasting industry.

SHOULD YOU lease wire circuits or install your own radio link? Or, is it wise to even consider going remote at all. Much depends upon economics, and the quality and reliability of available leased circuits. Where circuits of adequate quality are available or can be made available without paying excessive construction costs, leased circuits are usually less costly.

A radio link installation, on the other hand, requires a substantial initial investment, but recurring costs are generally lower. It provides considerable flexibility; it can reach into areas where link services are not available; and it enables expansion of remote control facilities without increasing the cost of the transmission medium.

Circuit Requirements

Four or five circuits are usually required from the transmitter site to the remote control point. As shown in Fig. 1, these include (1) a *control* channel, (2) a *telemetering* channel, (3) an order wire, (4) a program circuit, and, if stereo facilities are required, (5) a second program circuit.

The program circuits already exist if the studio and transmitter are at different locations. Don't forget to include the present cost of leasing one or more program circuits when you consider the total cost of a radio link against the total cost of leasing all of the required circuits.

Control Channel

The control channel may be a so-called 0-15 cycle circuit which may be a true metallic hookup capable of passing DC, or a derived circuit which does not pass DC but provides a relay at the transmitter site with control contacts at the remote point. These two types of circuits are illustrated in Fig. 2.

Or, a *voice grade* telephone circuit may be used to provide the equivalent of up to 32 circuits of the type shown in Fig. 3, by employing *tone multiplexing*.

Telemetering Channel

The true metallic circuit in Fig. 2 can be used for direct analog measurement. A derived 0-15 cycle circuit, which does not provide a DC path, can be used for remote measurements of transmitter currents and voltages by converting them into coded pulses. A single circuit of either type can be used for both control and telemetering. The cost of leasing such a line is usually around $1.50 per mile per month. A voice grade telephone circuit, costing around $3 to $5 per mile per month, can be used to provide up to 32 telemetering channels by employing tone multiplexing.

Order Wire

The order wire may simply be a common carrier telephone hookup between the transmitter site and studio. Or, a separate voice grade telephone circuit may be leased, terminated at each end in a local battery, magneto telephone, or intercom unit of the type ordinarily used for remote control of mobile radio system base stations, as illustrated in Fig. 4. On the other hand, the order wire may consist of a single-channel, reversible two-way radio link, as illustrated in Fig. 5, preferably equipped with tone squelch to mute the receivers except for desired signals.

Broadcasters are eligible for station licenses in the Business Radio Service and Citizens Radio Service for other than program transmission. Thus, the radio transmitter-receiver at each location may be a Class-D Citizens radio unit, or a 5-30 watt AM unit operated on one of the 27-mc business channels. A 3-watt (or lower power) unit may be operated on one of the low-power business channels in the 5-50 mc, 150-173 mc, or 450-470 mc mobile radio bands, on which fixed communications are permitted. Or, a UHF/FM unit may be operated on any one of the 48 Class-A Citizens channels in the 450-470 mc band with input power up to 60 watts.

Program Channel

The program channel (two for stereo) must meet the frequency range requirements stipulated by the FCC for the type of broadcast station. A leased program circuit generally consists of an *equalized* telephone circuit. Rates are higher than for voice grade circuits, even if it's simply an ordinary telephone circuit with one or more equalizers.

An 890-960 mc band radio link, licensed under Part 4 of the Rules, may be used to provide one or more program channels.

Combined Circuits

A single broadband circuit, if available, can be used to provide one or two program channels plus the control, telemeter, and order

---

Mr. Sands is an independent consultant in New York City.

wire circuits by employing frequency division multiplexing. The broadband circuit must have adequate frequency bandwidth to accommodate all of the channels, as provided under telpak tariffs.

When the broadcaster has a right of way where he can install a suspended or buried coaxial cable, all of the channels can be accommodated by a single cable, as shown in Fig. 6.

If such a transmission medium is not available, the program channel(s) may be independent and one voice grade telephone circuit may be employed for control, telemetering, and order wire purposes.

DC or 15-Cycle Circuits

When a DC or 0-15 cycle circuit is used, remote control is achieved by dialing specific numbers to perform various control functions, such as turning on transmitter filaments and transmitter plate voltages, reducing power, increasing or decreasing plate and filament voltages in discrete steps, switching over from the main transmitter to standby, etc.

The same circuit can also be used to observe power line, filament, and plate voltages, plate and antenna current, frequency and modulation monitor readings, and for determining if the tower lights and flashers are functioning properly. Each circuit to be monitored is dialed. Selectors at the transmitter site connect the remote metering circuit to the various circuits in response to dialed commands. Fig. 7 is a functional block diagram of a remote control and telemetering system using a metallic circuit.

Voice Grade Circuits

A single voice grade telephone circuit may be employed for simultaneous remote control and telemetering of several circuits by tone multiplexing. By using tones and sequential control and telemetering circuits, the same line can also be used as an order wire.

Tone Multiplex

An on-off (AM) tone channel consists of a tone transmitter operating at a frequency in the audio range and a tone receiver tuned to the same frequency. As shown in Fig. 8A, closing switch S causes a tone to be transmitted. When rectified by the distant tone receiver, output relay (K) pulls in. In the absence of tone, the relay is de-energized.

A two-state FSK (frequency shift keyed) or FM tone channel is illustrated in Fig. 8B. When S is closed, the frequency of the transmitted tone is shifted, causing relay K to pull in. The relay drops out again when the tone shifts back to its normal frequency. One tone or the other is always present.

In a three-state FSK tone chan-

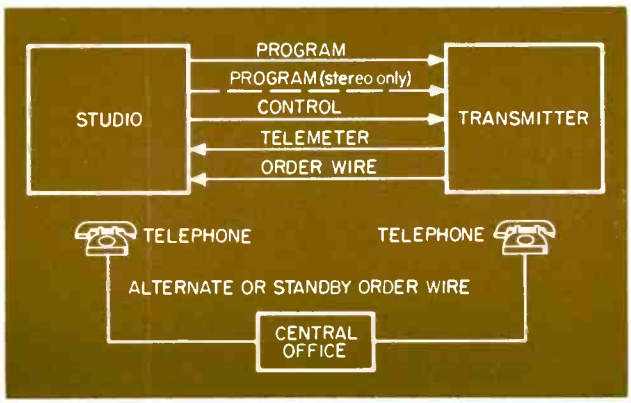


Fig. 1. Remote Control Circuit Requirements.

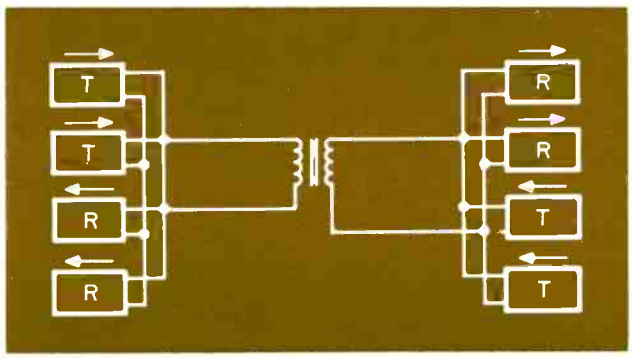


Fig. 3. Up to 32 tone channels can be accommodated by a voice grade circuit. Transformer illustrates that DC path is not required.

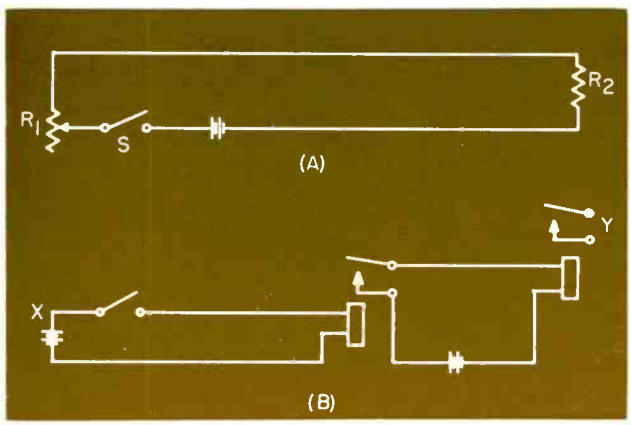


Fig. 2. Two Types of Metallic Circuits. (a) Metallic DC Circuit can be used for transmission of quantitative information. (b) A signaling circuit may not necessarily provide a direct DC path from X to Y.

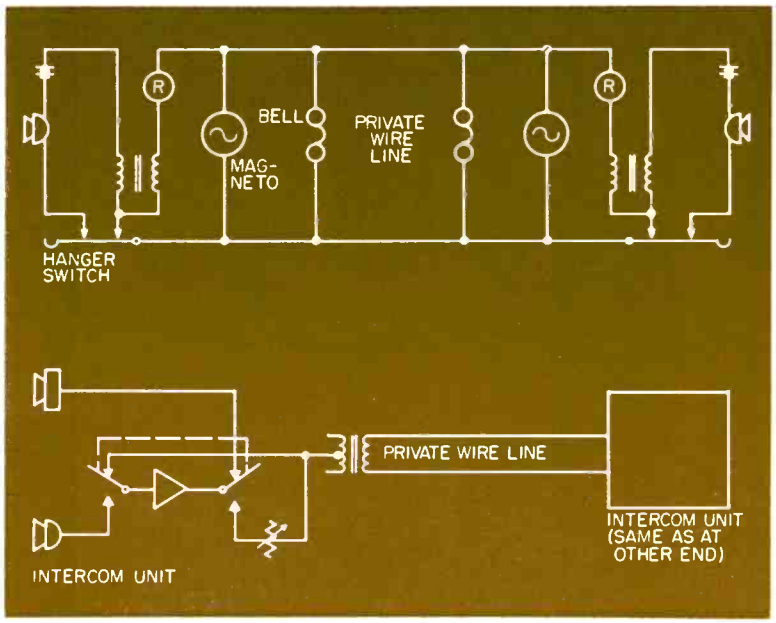


Fig. 4. Private Line Order Wire Circuit.

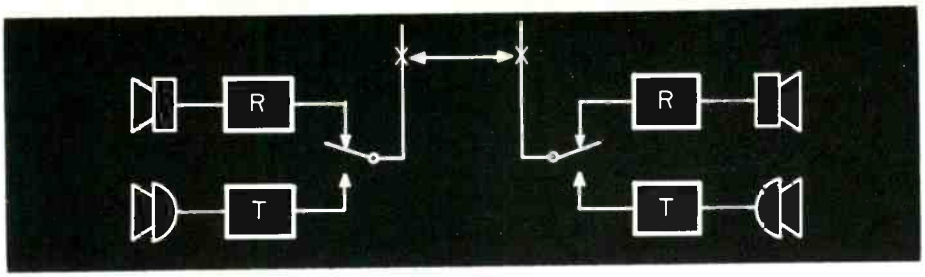


Fig. 5. Radio Link Order Wire.

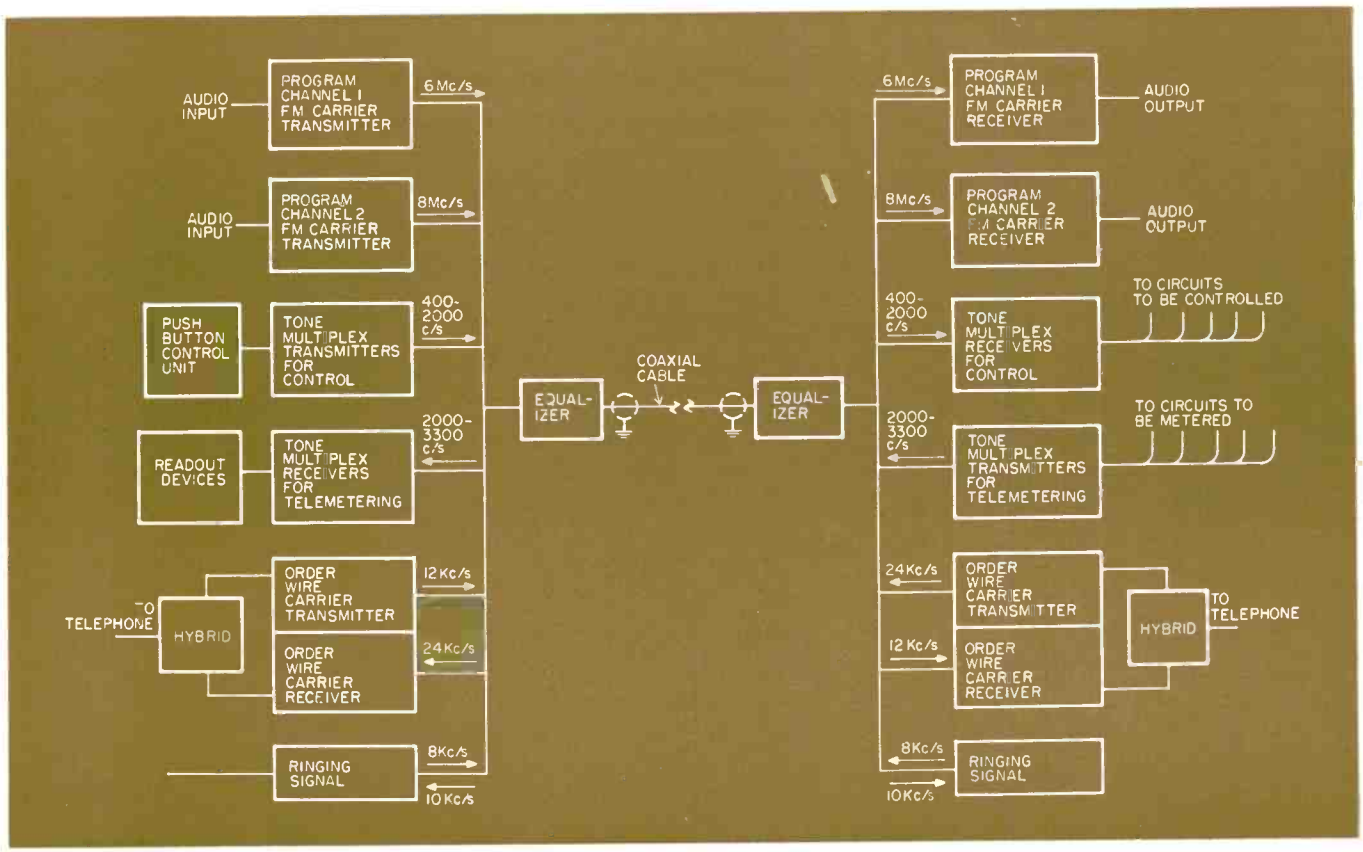
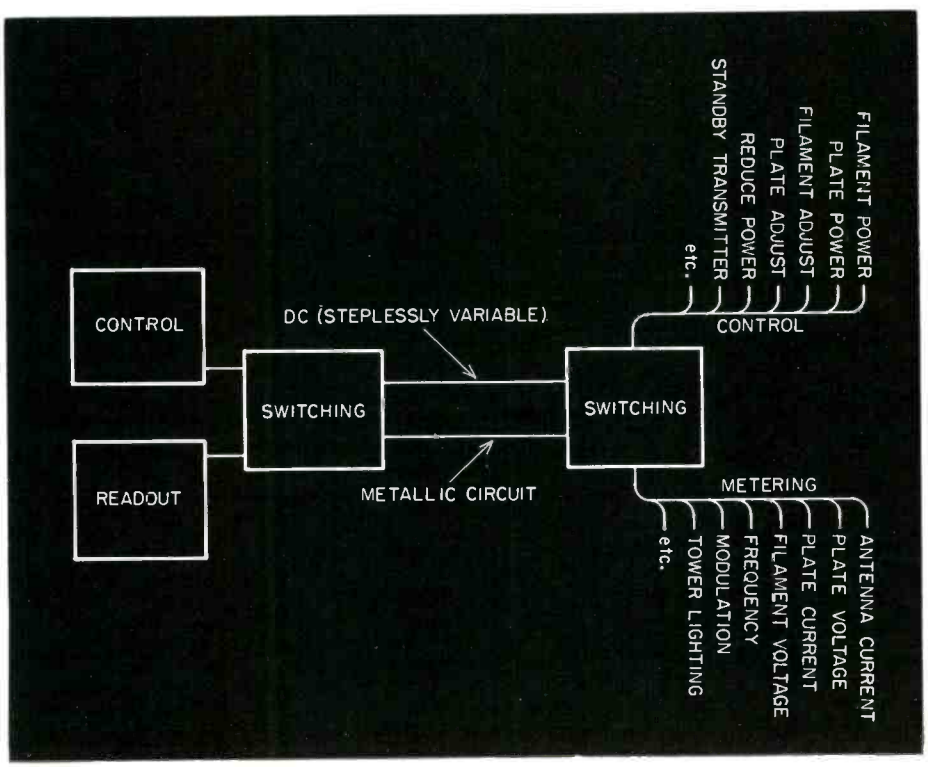


Fig. 6. Short-haul coaxial cable system for programs, order wire and simultaneous remote control and telemetering.

Fig. 7. Remote Control and Telemetering System.



nel (Fig. 8C), a tone at the channel frequency is transmitted when S is in its center position. When S closes one contact pair, the tone is shifted up; when in the opposite position, tone decreases in frequency.

The output relay (K) may be a three-position differential or polar relay, which is normally in its center position and is pulled one direction or the other, depending on whether the frequency shifts up or down.

Or, separate output relays may be provided for all three tone frequencies, as shown in Fig. 8D. When S1 is closed, relay K1 pulls in; K2 pulls in when S2 is closed. Both switches should not be closed at the same time. Relay K3 operates whenever the tone frequency is shifted.

Since each tone channel operates on a different frequency, sev-

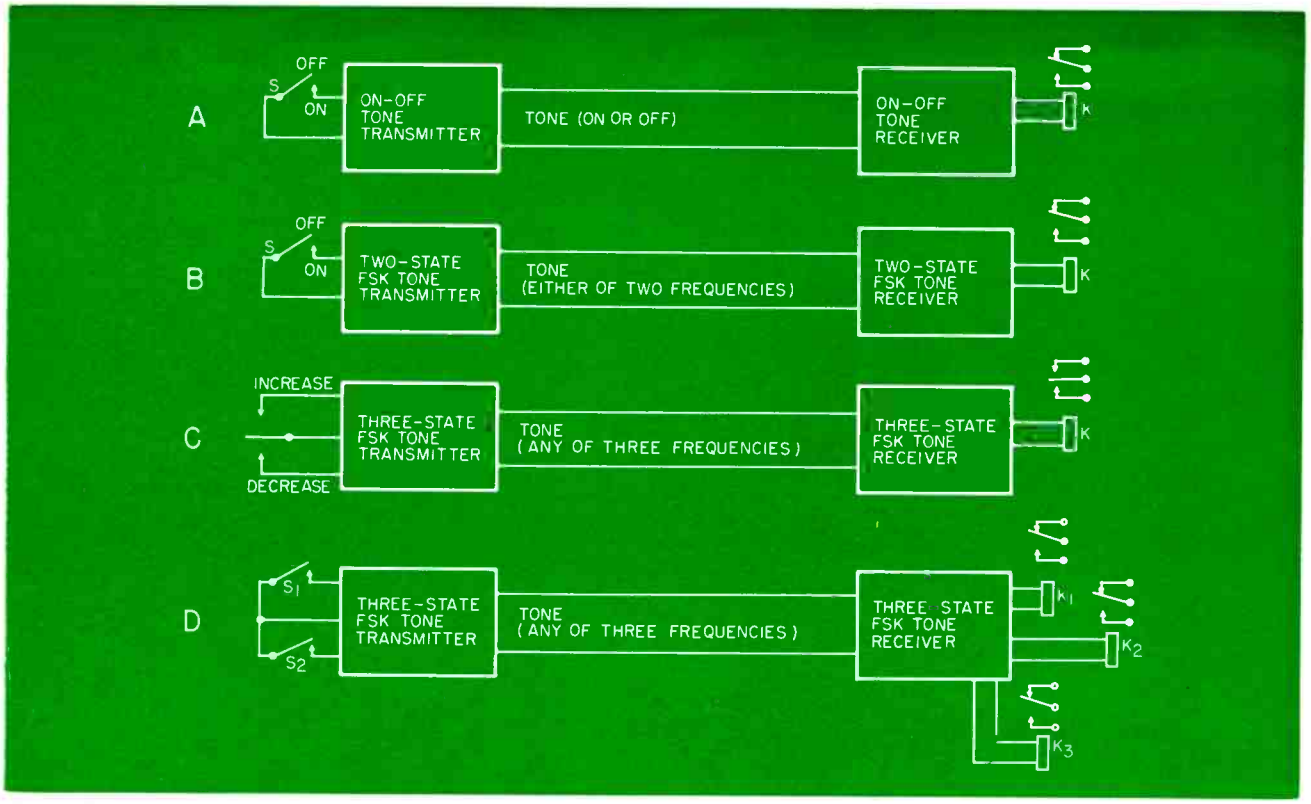


Fig. 8. Types of Tone Channels.

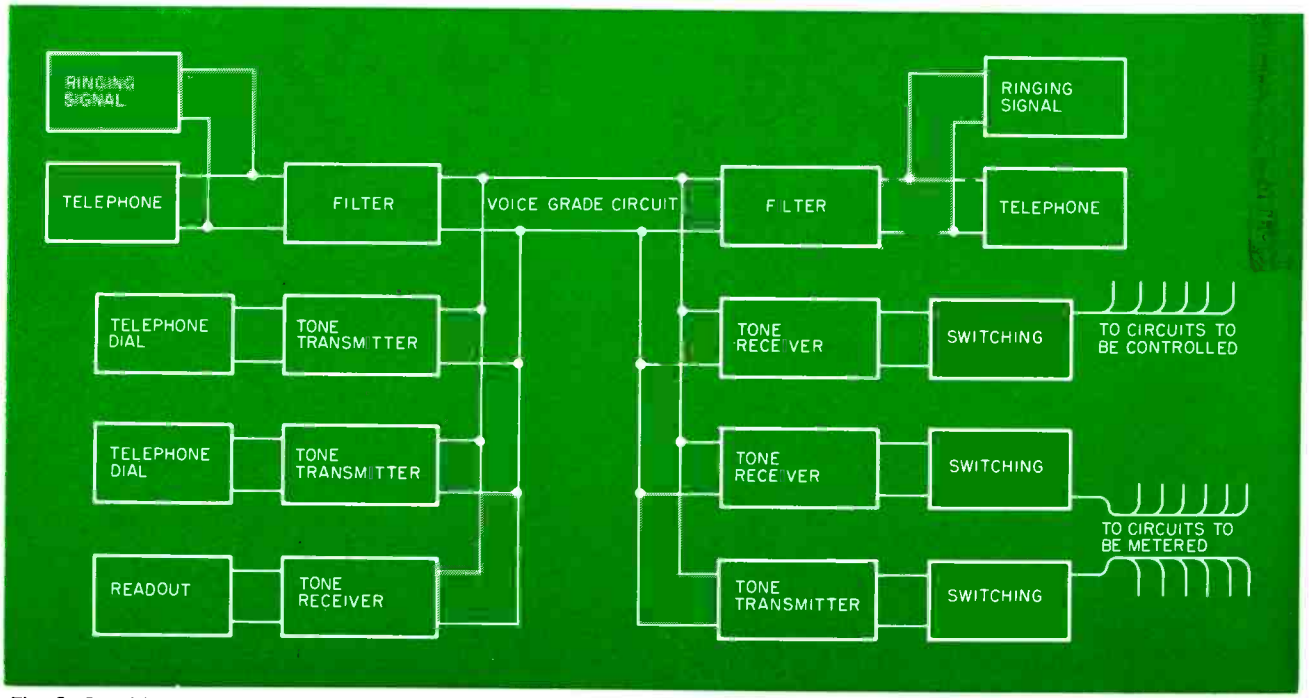


Fig. 9. Combined order wire and sequential remote control and telemetering system.

eral tone channels may operate simultaneously on the same circuit. Up to 32 tones can be transmitted, in either or both directions, over a voice grade circuit.

Speech Plus Tones

Three or more tones may be transmitted along with speech over a voice grade circuit without mutual interference by using filters as shown in Fig. 9. The filters may cut a slot in the voice band at around 2000 cps or attenuate frequencies above 2600 cps or higher, allowing room for tones at the top of the voice band.

The foregoing has given you a look into currently known and used methods of remote control operation. Some methods are much more complex, technically, than others, and will probably see some refinement in the future. The decision of which system is best must be entirely determined by the station in question. ●

Automation in CATV Systems

by Robert B. Cooper, Jr.

Cable TV systems are "naturals" for automation, and suitable equipment is readily available.

WEBSTER and other noted authorities define automation as "the transfer of human tasks to mechanical (electronic) functions." In a sense, much of the modern CATV system is already highly automated, although we normally do not consider it so.

Systems utilizing weather information channels rely on a combination of mechanical and electrical equipment to display, at a set repetition rate, current weather conditions. No operator is required to keep the equipment performing. *Automation.*

At the 1965 NCTA convention in Denver, cable operators saw for the first time a service called "News Channel," a product of Associated Press and TeleMation, Inc. With "News Channel," an automated scanner device allows leisurely viewing of news reports as they are printed out on a modified AP wire news machine. The equipment operates unattended. *Automation.*

Then there is the non-duplication switcher, which can be preprogrammed to change head-end connections for the purpose of avoiding program duplications. *Automation.*

Automation is alternately cursed as a replacer of people, and applauded as the backbone of American technological know-how.

Mr. Cooper is Vice-President, allocations and plant engineering, Valley Vision, Inc., Modesto, Calif.

Automation in CATV is a horse of a slightly different hue. Automation offers today's cable operator the opportunity to improve his service, lower his equipment down-time, and to operate more fully in the interest and needs of the public.

Automation in Line Equipment

Line equipment has become more and more automated over the past few years. In the days of tube-only amplifier equipment, tube aging was a constant problem. As tubes aged, amplifier gain characteristics changed — usually for the worse. This meant that technicians had to make regular amplifier checks to maintain slope, tilt and levels into and out of each amplifier. And there was always the unexpected tube failure (usually right in the middle of the Ed Sullivan program!). The cable operator in the early days may not have been very automated, but he was plenty flexible.

Then in the late 50's, and early 60's, as the cable industry began to learn more about equipment, automatic level control equipment became available. With ALC equipment, a pilot (or reference) carrier was generated at or near the head end and passed through the entire cable system as a means of referencing the levels of the combined signals on the system into and out of each amplifier against a known standard signal level (see Fig. 1).

Here was the first automation in line equipment, a means of having the equipment itself compensate for tube aging and changes in cable characteristics. As the gain in any section of the system went down, for almost any reason, the reference pilot carrier detected this change and compensated for it—automatically—in the proper amplifiers.

A later version of this was (and is) the (automatic) thermal control. As cable systems became more sophisticated, measurement techniques improved. It was discovered that many of the problems with cable levels, day-to-day and hour-to-hour, were due to changing cable temperatures. As the sun heated the cable during the daytime, its loss characteristics increased. The hotter the sun, the greater the loss. If the sun got hot enough, the far end of a long section of trunk would drop out completely, especially on the high band channels. And very cold weather had the opposite effect.

Thermal-compensation could be accomplished manually by assigning a man to travel the entire length of the plant every day, cranking amplifier gain up in the morning sun, and then retracing his steps in the late afternoon to crank the gain controls back down. Some operators still do this.

But much of the modern solid-state equipment now on the market carries a special thermal-compensated amplifier circuit. This equipment senses changes in cable temperature, and alters the gain characteristics of the amplifier to maintain consistent signal levels.

Automation in trunk and line equipment is available now, and operators who are using it will tell you it saves them not only money and time, it is a definite step forward in public service.

Information Channel Display Equipment

Ameco P.O. Box 11326 Phoenix, Ariz.	"Weather-Matic"—time, weather, news
CAS Manufacturing Co. 3301 Royalty Row Irving, Tex.	"Weather/View" system
Industrial Electronic Systems, Inc. Tacoma, Wash.	"Tele Weather"—time & weather
TeleMation, Inc. 2275 South West Temple Salt Lake City, Utah	"Weather-Channel"—time, weather, slide, live news "News Channel"—AP News reports
R. H. Tyler Co. 1410 Dallas St. Wellington, Tex.	"Roto-Scan"—time & weather "Tri-Scan"—time, temperature, slide "Weather-Scan"—time & weather

Head-End Equipment

Some forms of automation have been with us for more than a decade. AGC, or automatic gain control, is the foremost of these. Very few head-end sites receive non-fluctuating, constant signal levels

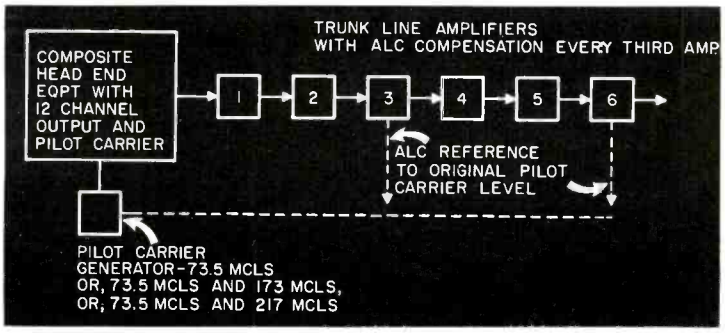


Fig. 1. Block diagram showing application of automatic level control (ALC) equipment.

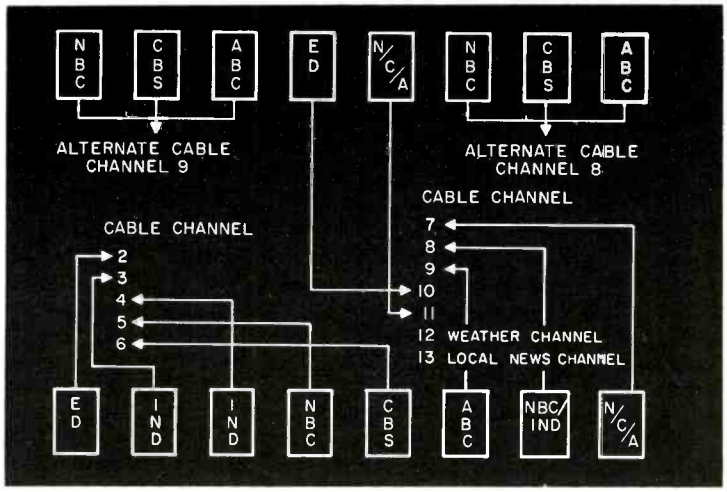


Fig. 2. Greatest diversity of program selection is maintained at all times by switching duplicated programming on cable channels 8 and 9 with primary network affiliates at top left and top right. Three network (N/C/A/) affiliates on cable channel 7 is local station and must be carried at all times under terms of local ordinance.

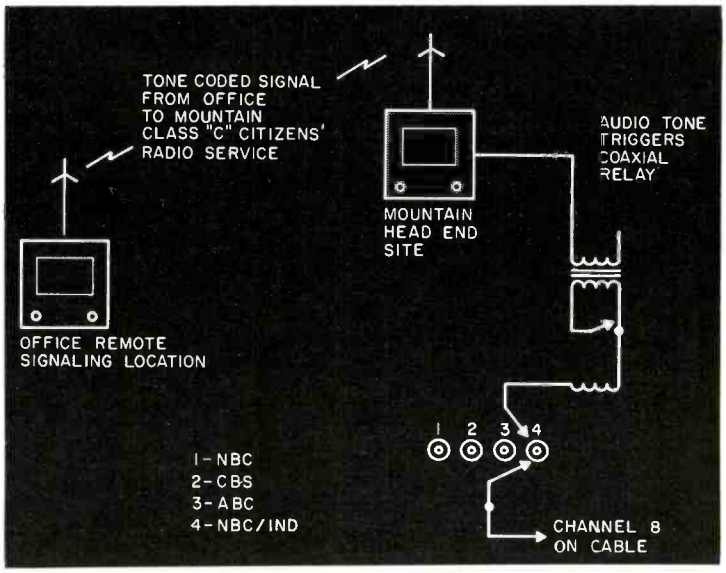


Fig. 3. Coaxial switching relay is latching type, engineered to continue rotation as long as tone signal is received by head-end receiver. Office operator holds tone-key closed until proper channel appears on the cable. Each of the four channels are converted to cable channel 8 ahead of the coaxial switching.

from off-the-air originating stations. The signal level present at the input of the first off-the-air amplifier varies considerably throughout the day. The automatic gain control circuit in the first (and frequently subsequent) amplifiers compensates for this variation, and (within the db range of the AGC circuit) adjusts the output level of the amplifier accordingly. Without this type of automatic control, it would be necessary to station a man at the head-end site almost constantly.

Another form of automated head-end equipment now available is automatic (or semiautomatic) channel switching, for use in situations where network station duplication results in two or more channels carrying the same program at the same time.

Fig. 2 illustrates a situation where XYZ Cable Company has a head-end site with 16 available off-the-air signals. The operator has a 12-channel system, carrying ten off-the-air signals. The two remaining channels are used for weather and public service announcements.

Once each week, this operator makes an advance check of the program schedules for all 16 of the off-the-air stations, and notes on a master cable-logging sheet when program duplications will occur. When he finds one or more duplications for any given program, he immediately checks the programs carried during that same time slot by the other six off-the-air stations available at the head-end site. Usually, he is able to substitute one of the non-regular stations for one of the regular stations.

The decision made, this operator must first of all inform his viewers of the change. He does this by adjusting his weekly program guide (which he mails free of charge to every system subscriber) to show the change. Secondly, he must accomplish the change. The head-end site is nine miles by twisting, turning road out of town. He could drive to the site and change his coaxial patch cords around. If he did this, he would be "on the mountain" every night of the week changing patch cords and throwing switches. Or, he could automate the entire changeover by pre-programming the changes one week in advance, and using one of the new non-duplication switchers.

The Telemation model TMP-204 Switcher, for example, is primarily designed for use by CATV

systems to avoid non-duplication of local stations (which is required with microwave-fed CATV systems). The TMP-204 will repeat up to 480 program switches weekly, and will switch up to six video (or RF) channels on any precise minute setting throughout the week.

Perhaps our example operator is still experimenting with his head-end switching technique, so he uses semiautomation. He must still be present (or have someone present) at his office to do the switching, but this is nine miles better than the mountain! Switching is accomplished with simple, low-power Citizens Band radio transmissions on the 27-mc band. Equipment suitable for such RF transmission and reception purposes is commonly available at under $250.00 for the entire two-transceiver package.

The transmitter end of the package (see Fig. 3) uses a tone-reed, which effectively codes the office transmission with a special audio note.[1] The receiver on the mountain is equipped with the same tone reed, in an audio decoder circuit. And unless this particular coded signal is received by the mountain receiver, it will not respond to the message.

[1] E. F. Johnson Company, Waseca, Minn., manufactures such a transceiver package, with tone-calling and decoding functions.

AGC/ALC/ATC Equipment Manufacturers

Manufacturers supplying automatic gain control (AGC), automatic level control (ALC) and automatic temperature compensation (ATC) units.

Ameco, P.O. Box 11326, Phoenix, Ariz.
Benco, 1051 Clinton St., Buffalo, N. Y.
Blonder-Tongue Labs., 9 Alling St., Newark, N. J.
CAS Mfg. Co., Box 47066, Dallas, Texas
Delta Electronics, 70 Ronson Dr., Rexdale, Ontario
Entron Inc., 2141 Industrial Pkwy., Silver Spring, Md.
Jerrold Electronics, 15th and Lehigh, Philadelphia, Pa.
Kaiser Electronics, Box 9098, Phoenix, Ariz.
SKL, 1320 Soldiers Field Rd., Boston, Mass.
Viking, 830 Monroe St., Hoboken, N. J.
Westbury CATV, 212 S. Fulton Ave., Mt. Vernon, N. Y.

Connected across the output of the audio transformer on the tone-controlled receiver is a relay which closes when the audio tone appears across the output of the audio stage, and opens when the audio tone ceases. This relay, in turn, drives a coaxial stepping switch which selects the desired input channel.

Obviously, one such installation would be required for each of the cable channels the operator might wish to switch from time to time. In this instance, the cable operator has picked three channels with frequent duplication problems, and one or all of these three are remotely and semi-automatically switched from the office downtown.

Origination Automation

Program origination on CATV systems is still a highly controversial subject. Yet, and in spite of telephone company pole-line agreements to the contrary, it is being done with increasing frequency. Origination until the present time has generally taken one of two forms—the so-called passive origination, and the active origination.

Passive origination is the weather channel or the display of public service announcements on typed or lettered cards. Several manufacturers now offer weather channel equipment which is virtually all automated. Alternate displays of meter readings for temperature, wind direction and speed, humidity, and other meteorology data are scanned automatically by a closed-circuit camera. The equipment runs unattended, usually 24 hours a day. As weather conditions change, exterior weather sensing elements transmit these changes to the dials and scales and the viewer has a constant appraisal of the weather around him. This is about as automated as one could be.

The *News Channel* previously mentioned combines a closed-circuit camera, a modified Associated Press news printer machine, and a video-RF modulator to provide news direct from the AP wire. This service will run (usually) on a *second* closed-circuit channel up to 24 hours a day.

Because the AP news printer is not typing out news 60 minutes of every hour, 24 hours per day (it does not print as much as 20-30 minutes an hour during off hours), a special mechanical playback device allows the camera to re-scan the most recently wired-passed news items at a comfortable reading speed. All of this is accomplished automatically, and without the attendance of any operator in the cable company office. This type of local origination borders on being *active origination*.

Also at the recent NCTA convention, Sony Corp. displayed a new combination VTR and 9-inch receiver which will sell for under $2,000. Other relatively low cost video recorders are also on the market. It is no secret to most operators that a low cost VTR would be an extremely handy device to have around. One operator in the east is reportedly finishing his first complete year of taping local high school sporting events, which he plays back on a spare channel the following evening.

Yet another operator in the midwest has been video-taping off-the-air movies from stations he does not carry on his system for later playback during periods when duplication of network programming finds him faced with two or more off-the-air channels duplicating a program. This is all, of course, a form of active origination. And automation, in the form of video recording, takes a very active part in this type of activity.

Today's cable operator, living under the terms of today's usually well written cable ordinances, is faced with a multitude of problems when he attempts to transgress the never-never land between passive distribution of off-the-air signals and providing a well balanced, heterogeneous mixture of local public service programming (live or on tape) *and* off-the-air programming.

Most operators are agreed that if the cable company is able to supplement its viewing channels with honest-to-goodness, non-sponsored public service programming, he will not run afoul of the local telecaster, the local radio station and/or newspaper, or the FCC. It is, after all is said and done, public service upon which the modern cable operator seeks to build his company. And if public service can be improved through the ever greater automation of his facilities and the increased supplementing of his viewing fare with local origination, the industry will continue to grow and thrive.

Bill Daniels said it. "Nobody loves us but the public." ●

Considerations for

Automated Radio Programming

by Joseph D. Coons

To automate or not to automate—a penetrating survey of the pros and cons.

EVEN IF ONLY because of imaginative mailing pieces portraying sophisticated equipment, every manager and chief engineer has at least casually considered automation. Those with actual experience express either unequivocal acceptance or outright rejection of totally automated programming.

In a broad sense automation means any function performed by equipment. In addition to an entirely automated format, equipment may be used to accomplish simple sequential functions where, for example, a cartridge tape machine automatically starts another tape machine or turntable.

Program automation generally will conjure up a vision of a combination of reel-to-reel and cartridge tapes and/or record changers, time clocks, etc. There are many stations operating with such systems, particularly FMs. However, there are instances where *partial* automation will fit into any format.

Why automate?

Complete automation of *any* station must obviously either eliminate some personnel or improve operational efficiency. However, some formats will require complicated equipment to produce a multiplicity of program elements, such as frequent time and weather announcements, record introductions, in addition to spot announcements and promotionals. Equipment is available to do this, but it's expensive. On the other hand, if the cost is justifiable, the same number of people can do more, or fewer people can do just as much as before. Tighter and more reliable production will likely result from automation. Mistakes, inherent in live programming, should not be present in prerecorded material, and since tape doesn't become scratchy after repeated use, overall sound should be improved. Management can also keep a tighter rein on program content. A live announcer frequently faces situations where he must "ad lib" his way out, and this can be disastrous at times.

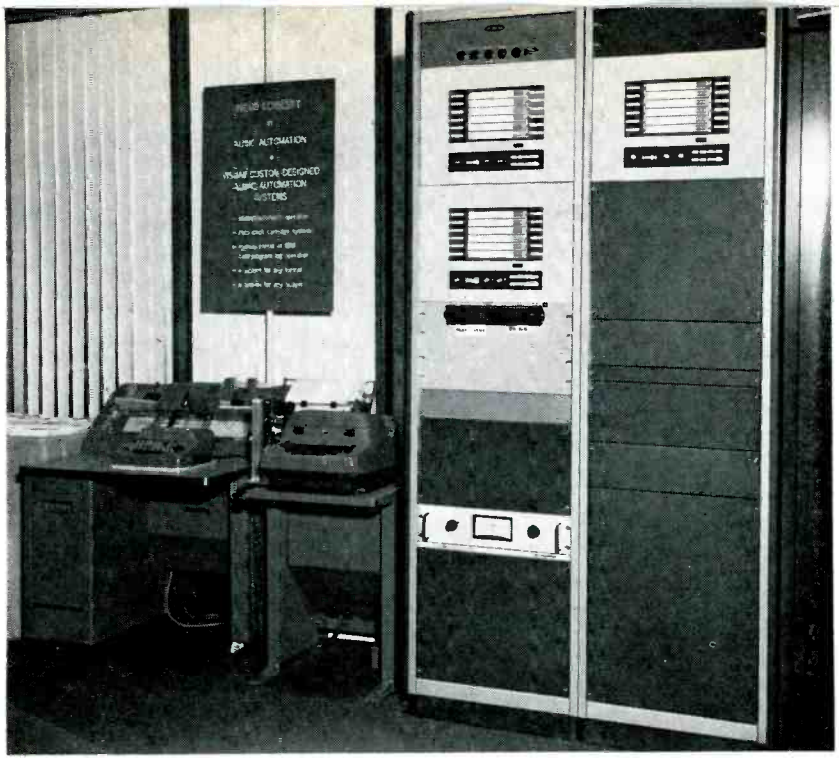
Many AMs, particularly "personality" and "Top 40" format stations, are finding that partial automation is serving them better. Multi-cartridge tape machines and "trip cue" cartridge tape machines which, by means of a tone, start another tape or turntable, or any desired unit. Usually, just as many employees are required, but station sound and efficiency are better. New devices "in the works" may eliminate the more laborious tasks and as a result, allow an announcer to attend to more detail, enhancing tighter production and a proportionately improved image.

Format Adaptation

Uncomplicated music-news-announcement programming is the simplest to adapt. Pre-taped music, on 14" reels, with announcements recorded on a separate reel-to-reel tape or on cartridges in a multi-cartridge machine, is the most frequently used system of complete automation. The music tape starts

Mr. Coons is president and general manager, WOHI-AM-FM, E. Liverpool, O.

Magnecord Model 1048 used as a component in some automated systems is adaptable to semi-automated programming. The 1048 is a 2- channel unit which can operate for three hours at 3¾ ips. The second channel can be used for cue tones, or subsonic tones can be used in a stereo system. It has 2/10 sec. start—1/10 sec. stop response at 3¾, and ¼ sec. start—1/10 sec. stop at 7.5 ips. Since it is solenoid operated, only a s.p. switch is required for remote start/stop operations.



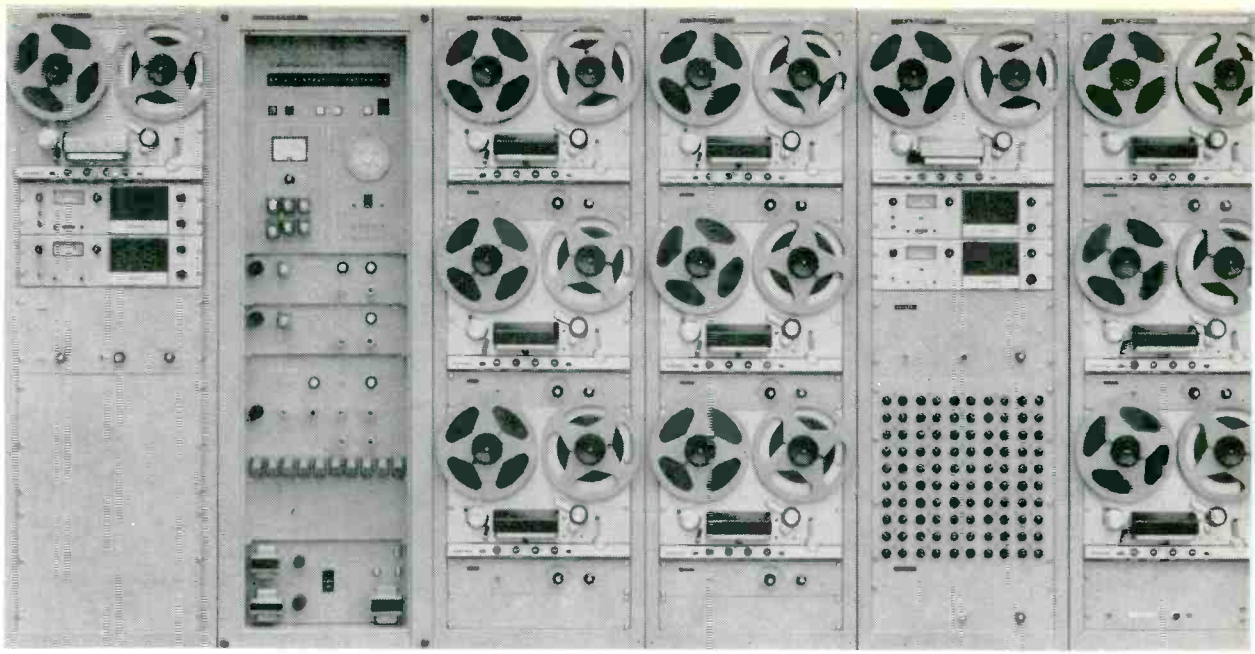
Visual 12000 IBM card-controlled system typically utilizes Spotmaster "Tenspot" and KRS 6-Stact units, operates any reel-to-reel, automatic cartridge, or other remote-controlled equipment. Program material is coded on IBM cards, and preliminary log printout is provided by automatic typewriter. As programs are aired, station log is automatically typed and verified by pulse coding from tape cue track. On-air time is automatically stamped on log. Provision is made for manual take-over, to enable last-minute corrections as well as continued operation in case of component failure. Silent sensing of both audio console and transmitter gives proof of program play. Loss of audio or RF is indicated by failure code, which initiates restart of cartridge. Next program event is aired in case of restart failure. IBM cards can also be used for printout of billing, sales records, etc. System components can be integrated into existing setups on building-block approach, enabling flexibility and custom design to suit individual station requirements.

the talk tape by means of a tone inserted at the appropriate time, providing insertion of commercial or promotional announcements, At the conclusion of these precisely-timed talk breaks, the music tape restarts. News, including network news, can also be inserted by fading the music tape or stopping it, whichever is compatible with timing. If frequent copy changes are necessary, the multi-cartridge tape machines work better, simply because a single or specific spot may be re-recorded without disturbing an entire reel. Emergency news or announcements of immediate importance can also be inserted merely by fading the music tape. System timing will not be interrupted unless the music tape is stopped off schedule.

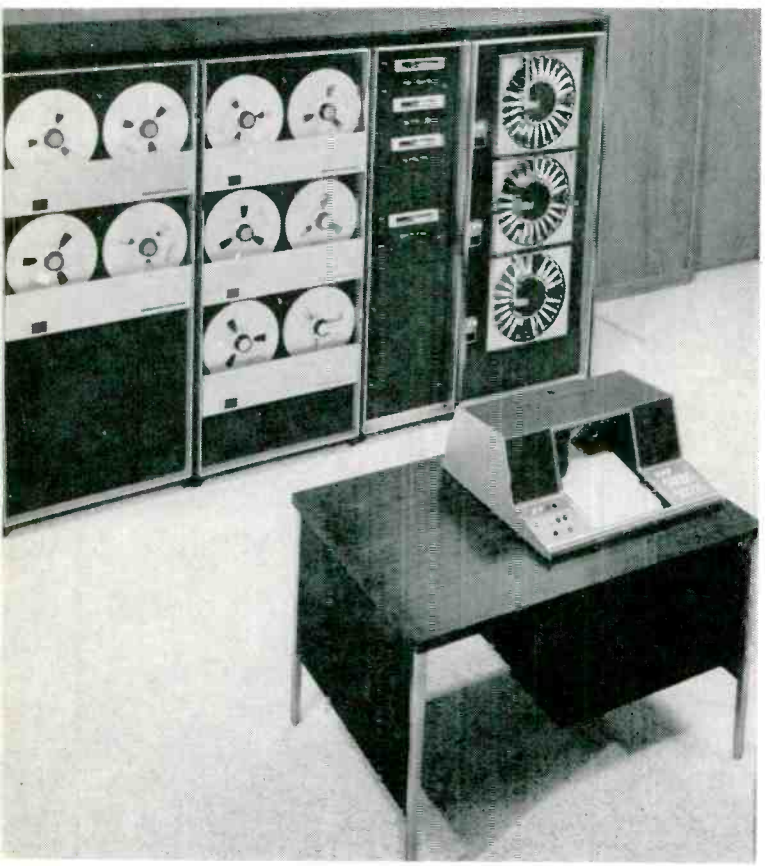
In so-called one-man operations, where the announcer operates the board and writes both program and transmitter logs, complete automation seems to be of little value, since unattended operation would doubtfully gain FCC approval. However, partial automation would permit the announcer to direct his attention to other details, such as news gathering and providing a much needed voice change in a one-man operation, not to mention better production. But, if another staff member (the traffic girl, chief engineer) could monitor, one announcer could tape the talk portion of an entire day's programming. Logging would have to be automatic in this case.

A larger staffed station with control engineers can undoubtedly economize by eliminating announcer air time. Logging and monitoring functions would be the

IGM Model 600 automates both programming and logging. The "random select" type control unit works from punched cards, automatically controls programming for a full day or more, types the log complete with time and all required FCC data. Modular, roll-out units include digital clock readout and "next event" indicator (upper left); automatic network switcher (lower left); monitor unit (center); first four tape channel modules (upper right); three more channel modules and playback control (lower right). Interphase and clock controls are housed behind panel at lower left. Punched card reader is high-speed NCR unit. Typewriter is IBM automatic. Unit illustrated will soon be placed in operation by Storer station WJW-AM-FM Cleveland, using IGM's "Heritage" taped music series. Equipment also readily lends itself to efficient billing and accounting procedures. IGM Model 500 insertion-type control unit permits starting on smaller scale, with as few as one voice and two music channels, building up to any desired system.

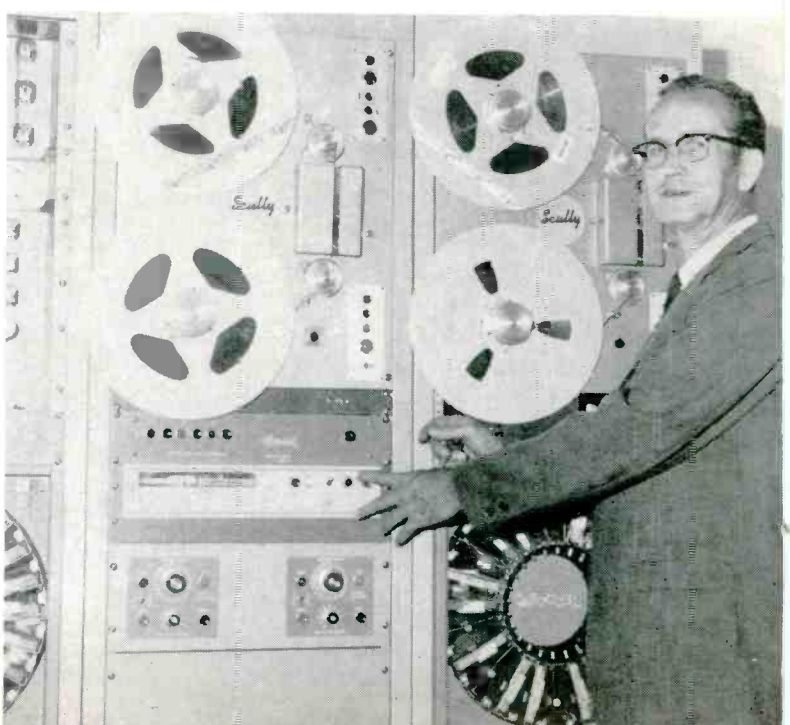


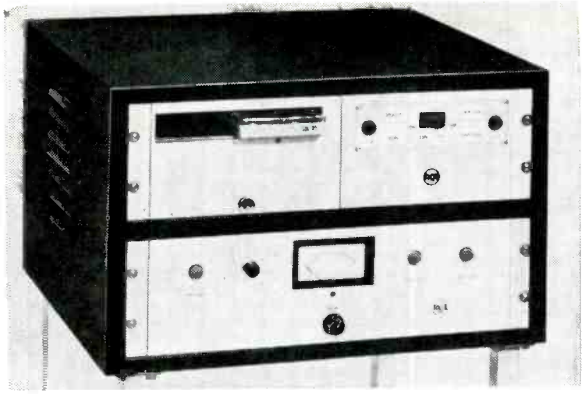
Schafer systems are adaptable to FM stereo and virtually any type AM operation. Basically, the system employs Ampex tape recorders, but cart machines may also be used if desired. "Random Access Spot Locator" allows commercial or any other material to be played in any order desired; it's possible to set up on a "memory unit" the order in which any of the items on the "Spot Locator" are to be played. If a particular song or commercial must be played several times a day, it need appear only once on the "spotter" tape. Time signals may be aired as frequently as desired on the audio clock. Network switching is accomplished by using a digital clock to anticipate joining the net; dead-rolling pre-timed music fill, arranging for the system to finish whatever program is being aired, then cross fade to the fill in progress which has been timed to end at the proper time to allow for identification and network adjacency commercial. The digital clock then switches from net to local and restarts the system for the desired sequence. FM stereo system shown costs $27,690, or $600.87 monthly lease.



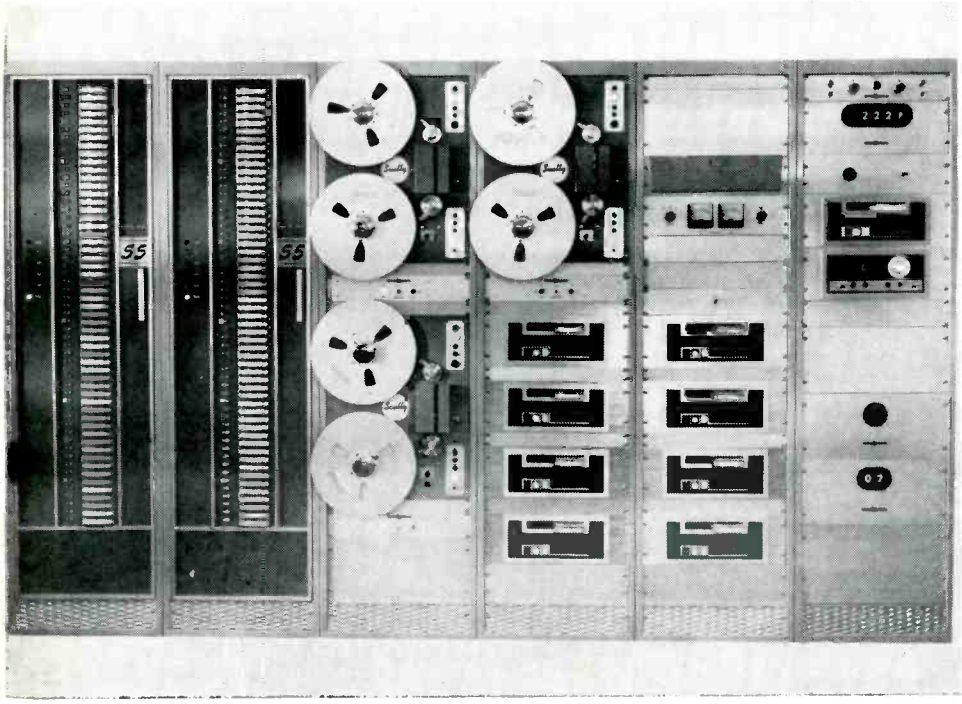
LTV-Continental's **Prolog** utilizes the station log to accomplish any degree of automatic programming and logging. It assembles any program element from any one of 253 sources and mixes it into a tightly integrated on-the-air format. **Prolog** can operate completely unattended for 24 hours or more, mono or stereo. Unattended or live, it automatically prints on the log the year, date, and time of every element aired. A basic system can begin with a background music, sequential programming, or voice injection capability, and grow to meet demands of "personality" or "top 40" programming. **Traffaccounting**, combined with **Prolog**, offers a complete traffic and accounting system, using IBM tabulating equipment to automatically perform almost all station operations.

Wilbur Fattig, Chief Engineer at WSB Radio, shows custom automation equipment used for multiplex stereo programming. System consists of modified Garrison control system, customized IBM type switching system, RCA Model RT-7 cartridge unit, MaCarTa Model 248RS Mark II Carousels, MaCarTa Model RS-10 Random Select control, and Scully Model 270 stereo tape reproducers. System was customized to provide complete flexibility.





RCA's "trip cue" cartridge tape units can be automatically started in a predetermined sequence. The system actually produces two cue signals—one recorded on the cue track to indicate the beginning of a tape, the second recorded on a different frequency at the end of the recording to start another unit.



Automatic Tape Control system provides two basic control concepts—tape memory and sequence/time. The basic system consists of a system programmer, three tape machines as program sources (cartridge or reel), master switcher, logging decoder, printer, digital clock, program time control, AGC amplifier. Program sequence is dialed on telephone-type dial, causing clusters of control tones to be recorded. An entire day's programming sequence can be recorded on a single cartridge. Automatic program logging provides start time and 5-digit code printed on the program log. A manual system control unit provides for remote operation of all tape sources, and makes available start and stop functions on the system programmer and the fade on the program control device. Manual control can be achieved at any time. System shown was recently installed at KPOL-FM, Los Angeles.

engineer's tasks, as they may already be. Announcers not required to prepare the talk tape can be reassigned.

A more involved format presents a different breed of problems. A strong personality format, with many program elements, will work, but not nearly so simply. Talk portions without the music take far less time to record in actual man hours. Records (which are not on the talk tape) are played by an automatic changer on cue from the talk tape. Since music represents at least half of the time, only one half as much announcer time would be necessary to prepare a program. Time checks and weather forecasts may be inserted at any predetermined time by clocks.

How Do Automation Users Feel?

"Our system is doing a fine, dependable job on FM," reports Elmo Ellis, WSB Atlanta. Automation is not used for WSB-AM because they do a great deal of audience participation programming.

"Automation will eventually take over because of economic pressure," reports P. H. Cunningham, WGET-FM Gettysburg. "We are happy with the job our system is doing for us." Mr. Cunningham says automation eliminates his need for three additional people and offers better quality and control.

WITH-FM manager R. C. Embry says, "Our equipment is performing quite capably and keeping sponsors happy." Automation was used for a period on WITH-AM, but abandoned due to a lack of compatibility with the format.

Stations who feel vitally obligated to continue with live informal, down-to-earth programming will be wise to adopt some automation techniques. Even the "plush" operations, with the gain-riding control engineer and the disc jockey who plays cartridge tapes and records, multi-cartridge and trip cue machines, can lessen menial chores and allow more devotion to air work. Generally, more mechanical operations mean fewer human errors.

Engineering Considerations

Your engineering department must bear the brunt of any new equipment installation and they must maintain it; therefore, they should have a part in selecting equipment. New units must be

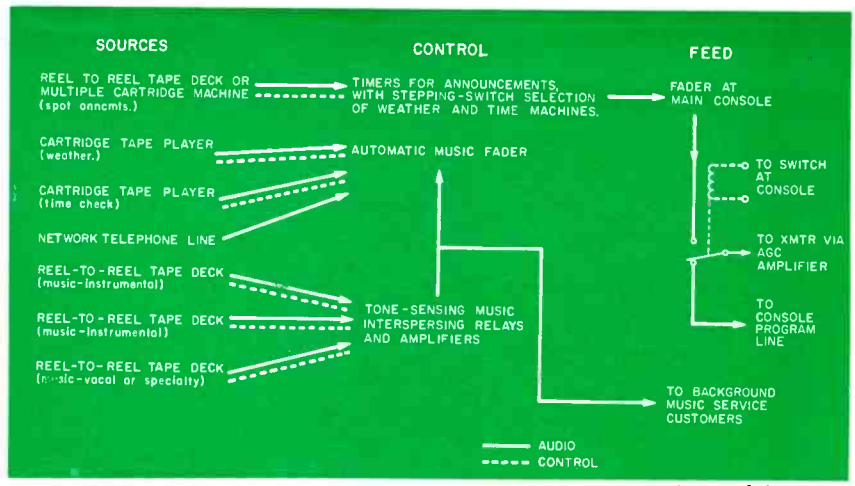
integrated with old, unless you plan to replace all gear. It will be engineering's responsibility to train personnel to operate new equipment, too, and if changes are extensive this will be no slight endeavor.

If you install total automation, provision must be made to assure station breaks at required times. Automatic clocks will accomplish this, but all must be considered initially. Accurate logs are required and unless automatic logging is a part of your plans, engineering must have a guarantee that this obligation will not be slighted or ignored. In most cases of complete automation, automatic logging is a wise investment. A reliable EBS system is required and it must alert a responsible person who can take necessary action.

Sales Considerations

The reliability of automation's continuity can be used as a selling point. Most broadcasters have found, though, that advertisers insist mainly on performance—automated or not—and haphazard practices will not be obscured solely by automation. Announcement *length* assumes new importance with automation. Many times, not too much attention is given the actual length of a spot. This practice will throw a system completely out of time; consequently, advertisers who like to run "overtime" must be dealt with.

If a reel-to-reel tape is used for announcements, advertisers who demand frequent and short-notice copy changes will create many problems. Of course, cartridge machines help ease this situation.



Block diagram illustrating some of the functions possible with a fully automated system.

Costs

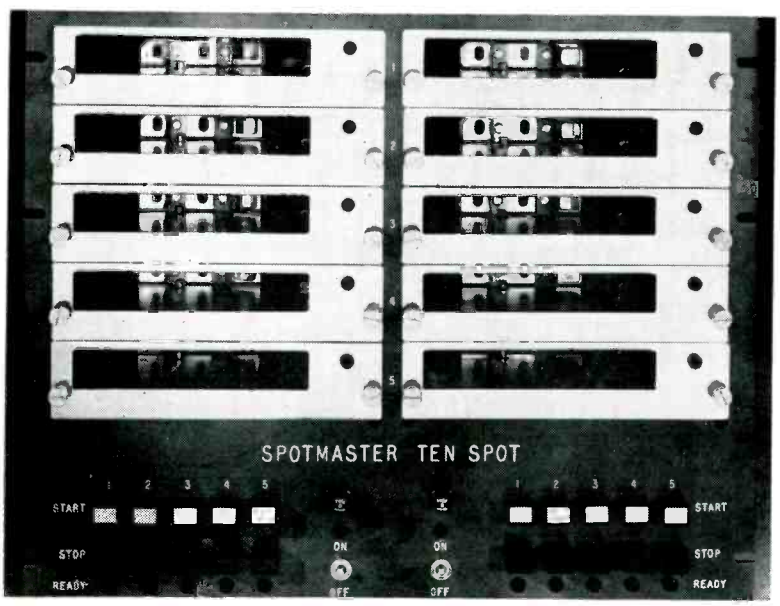
Complete automation equipment for simple program formats (such as FM) may cost up to $4,000. Most manufacturers offer lease-amortization plans. Pre-taped music averages $200 a month. This does not include any recording facilities or audio equipment.

Total automation equipment for modern programming (top 40, etc.) in an AM-FM operation can cost as much as $35,000.

Individual equipment costs vary, depending on function and degree of automation. Playback cartridge machines start at $400; trip-cue machines with record-reproduce functions are $1300 ($1800 for stereo). Timing machines vary—from as little as $100 to as much as $1200 and more in highly complex systems.

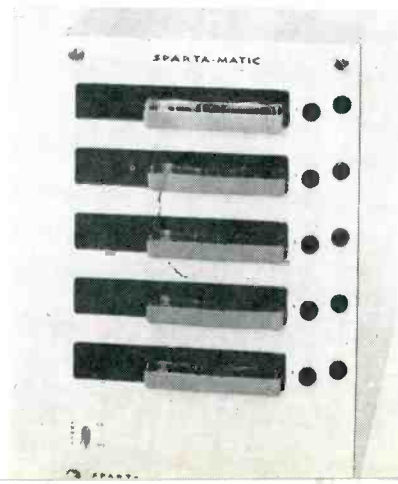
Conclusion

Will you automate? It's a tough decision, involving not only costs, but the entire image of your station. Currently, automation's biggest success stories come from FM operations, where automatic equipment is easily adapted to a desired format. FM automation will continue as economics require tighter reins on operating costs and as stations are required to program separately from AM. AM automation is quite another story, but as equipment improves, it becomes more feasible and practical. ●



Spotmaster "Tenspot" comprises two 5-bank decks which can be preprogrammed for sequential operation, yet retain full manual control.

Sparta MC-105 multiple-tape cartridge deck has capstan drive common to all decks. Each deck incorporates transistorized playback and tone-burst cue amplifier, operates independently through manual control, or when coupled to sequential electronics using multiple cue tones, may be operated in a pre-set automated sequence. If rack-mounted, the width allows two units to be mounted side by side in 19" space.

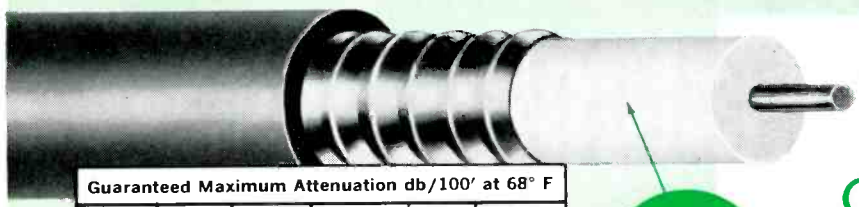


Guaranteed for 5 years!

SUPERIOR COAXIAL CABLES
Guarantee the CSR in any CATV system!

1. *Full Spectrum Capability*
2. *Long-term transmission Stability*
3. *Outside plant Reliability*

Quality-controlled from raw materials through every critical phase in the manufacturing process, SUPERIOR Coaxial Cables with Coppergard offer you performance unmatched by any other cable! For aerial or direct burial use, buy SUPERIOR!



Guaranteed Maximum Attenuation db/100′ at 68° F

	Ch. 2	Ch. 6	108 mc.	Ch. 7	Ch. 13
4920	0.75	0.93	1.08	1.41	1.57
4930	0.58	0.68	0.80	1.07	1.20

"Cell-O-Air" expanded polyethylene dielectric

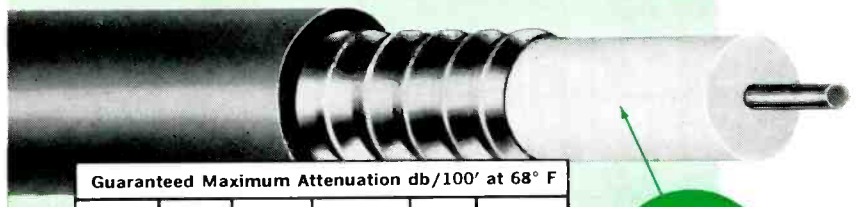
For Aerial Plant

SUPERIOR

Cell-O-Air®

COAXIAL CABLE

Every Reel Sweep-tested over its full length



Guaranteed Maximum Attenuation db/100′ at 68° F

	Ch. 2	Ch. 6	108 mc.	Ch. 7	Ch. 13
6020	0.74	0.91	1.05	1.38	1.55
6030	0.56	0.67	0.79	1.05	1.19

"Solid-D" solid polyethylene dielectric

For Buried Plant

SUPERIOR

"Solid-D"

COAXIAL CABLE

Every Reel Sweep-tested over its full length

5-YEAR GUARANTEE

Superior 75 ohm coaxial cable with "Coppergard" shield is guaranteed to be 100% sweep-tested prior to shipment, with no attenuation discontinuity greater than 1% at all frequencies up to 220 megacycles, and with high frequency impedance guaranteed to be 75 ohms plus or minus 3 ohms; and can be expected to show no excessive attenuation increase, provided jacket and/or outer conductor are not damaged during installation and remain free from damage caused by external sources.

The specific coaxial cable product manufactured in accordance with the requirements of the factory order number listed below, is guaranteed to be of first quality in material and workmanship. In the event of failure under normal service conditions, when such failure is proved to be caused by faulty material or manufacturing defects, Superior Cable Corporation will:

(1.) Replace material and pay for labor costs incurred for replacement, if such failure occurs within one year after date of installation.

(2.) Replace material only, if such failure occurs during the next four years after date of installation.

This five-year guarantee pertains to Superior "Cell-O-Air" expanded polyethylene coaxial cable only when utilized in aerial installation; and pertains to Superior "Solid-D" solid polyethylene coaxial cable when utilized in aerial or direct burial installations; and is applicable only when proper installation procedures and techniques are followed.

For detailed information and prices, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
HICKORY, NORTH CAROLINA 28601

9657

Circle 20 on Reader Service Card

Is Automated Transmitter Logging Paying Off?

Yes—according to dozens of users. Properly installed and maintained, continuous chart recording equipment conserves manpower, improves logging accuracy, and provides a complete record of transmitter operation.

by Charlie Buffington

FOR YEARS, broadcasters have been faced with the FCC "bugaboo" of logging semi-hourly transmitter readings. Everyone knows what a pain in the neck it is to have to make these readings by the clock. In this day and age, and especially where modern and reliable transmitter gear is used, tedious meter reading and logging often seem a waste of time. Yet, one cannot deny the validity of the Rules, nor the value of properly logged data in preventive maintenance. Thus, it is only natural that more and more stations are resorting to automatic logging equipment as the logical solution.

From a survey of many users of such equipment, logging accuracy is immeasurably better, and a constant, continuous, permanent log of transmitter parameters is provided. It is very easy for a busy operator to overlook regular half-hour reading times. When a chief engineer inspects a manual log, he can't be positive of its accuracy. An automatic log chart, on the other hand, gives him truer and continuous operational readings. Slight changes in operating constants, indicative of impending trouble, can easily go unnoticed in half-hour readings, whereas a continuous recording will readily show intermittent momentary variations.

Effects on Manpower

Aside from the engineering values of having an automatic "watchdog," and a continuous record of transmitter performance, are there any other advantages to be gained? Very definitely! Numerous stations using automatic logging equipment are unanimous on this point.

Automatic logging has freed transmitter engineers and operators from long, boring transmitter watches to handle other important jobs in the control room, in production work and in maintenance. A multitude of financial gains have been derived from more useful deployment of personnel in various phases of operation. Some stations have reported cutting transmitter staffs in half, thereby providing much needed manpower for maintenance and production. In many cases, where nondirectional stations are operating remote, a technician need spend only an hour or so a day at the transmitter site.

One station reduced its transmitter staff from four to two men. Two were reassigned to studio work and the remaining two maintain the equipment and manually log entries during nighttime operation. Another station reassigned three of four men to studio control, leaving transmitter supervision to a resident operator. At still another station, one man has enough time to maintain visual and aural transmitters, two microwave receiving stations, an FM transmitter with two SCA operations, and an FM standby transmitter. Previously, a large part of his time was spent merely logging transmitter readings. Although it's not required (as long as licensed operators are available in emergencies), many stations keep one man at the transmitter, charged with maintenance responsibilities and an occasional check on overall operation.

DA Automatic Logging?

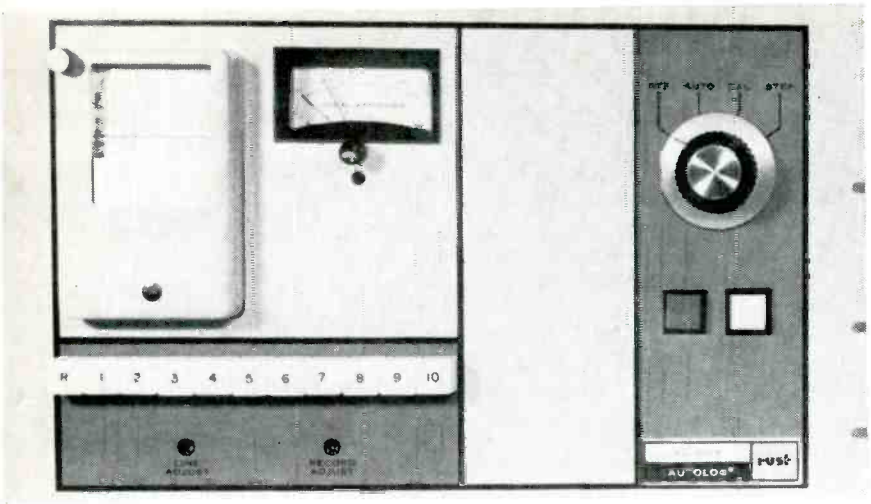
The FCC Rules permit automated logging of antenna loop currents and phase relationship, but the burden of accuracy is on the broadcaster. Phase readings are required once an hour for normal operation. Stations with remote control authorization need to read and log phase relationship only once, within two hours after going on the air with each pattern.

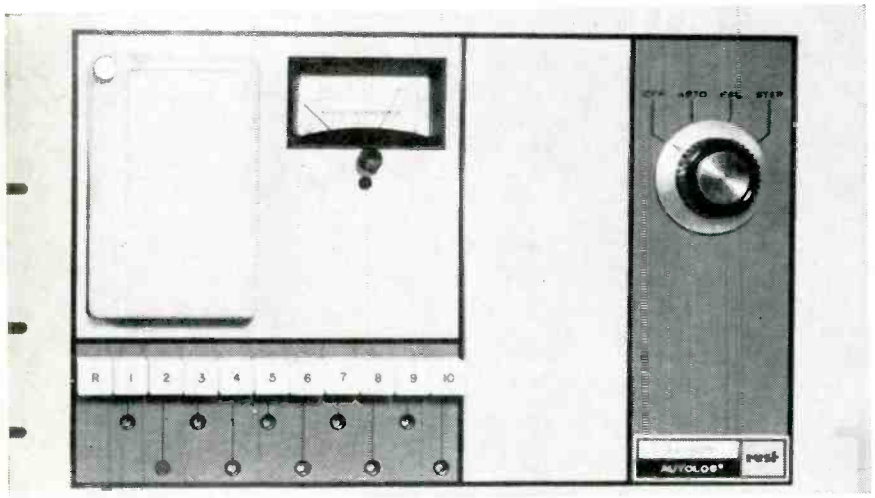
Antenna current ratios must be within 5% of their required values with respect to the reference tower. If automatically logged, an alarm must be provided to indicate a variation of more than 5%. Accurate sampling voltages to indicate phase relationships are difficult to obtain with present-day phase monitors.

Equipment Performance

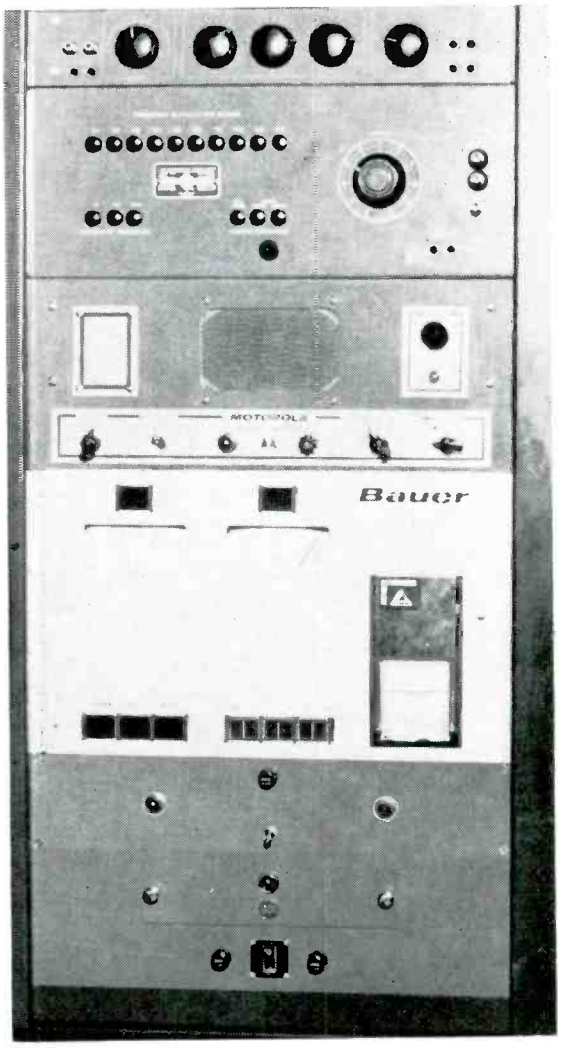
Automatic loggers are meeting and exceeding the expectations of the chief engineers we talked to. Initially, though, some didn't find everything so rosy. Some problems were encountered in matching sampling voltages to logger requirements, and a bit of experimentation was necessary to produce the required levels. While most logging equipment will accept a fairly wide range (10v or so) of input sampling voltage, high plate voltages and currents are tricky to reduce to acceptable levels. Engineers who have worked with remote control gear will find their experience quite useful. If you are installing a remote logger, the sampling voltage problem may not be so complicated since you already have data coming in from the transmitter at levels suitable to most loggers (if yours is a DC system). However, in a few cases, line noises interfering with logger accuracy were reported. This presents a particularly knotty problem since phone company line quality is involved, and the only solution is to improve line quality. Transmitter RF on phone or sampling lines, especially if it's intermittent, gives erroneous readings until it's tracked down and eliminated.

Components used in sampling and alarm circuits, and in the logger itself, must be of the highest quality; at least comparable to broadcast equipment standards. To

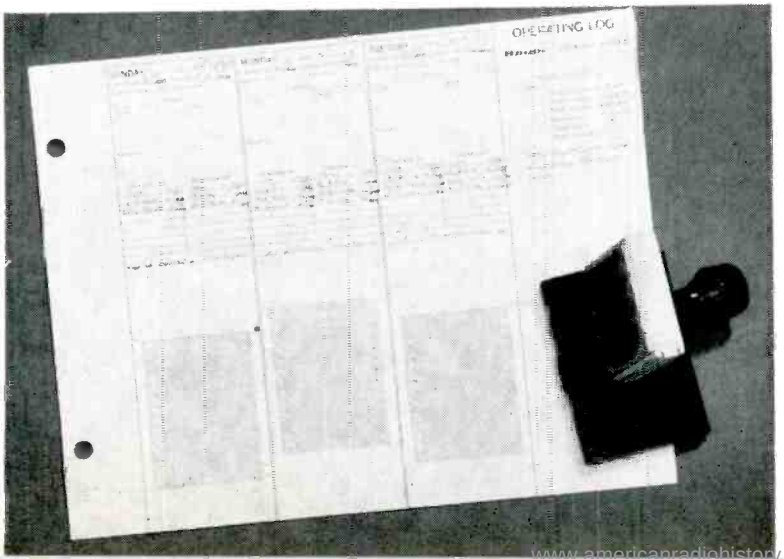




Rust AUTOLOG equipment is designed for local or remote logging. Requiring a single pair of metallic phone lines, the AL-100R is compatible with DC remote control systems and will use the same pair of phone lines. Sampling voltages are fed through one of the remote metering positions. Sampling voltages of 10mv to 10v, usually derived by sharing remote control samples, may be fed into any of the 10 inputs. Readings displayed on the chart recorder appear as continuous lines which vary in direct proportion to any parameter variation. Each parameter is also displayed on the panel meter beside the chart. The system provides continuous alarming of desired parameters, and when a pre-set upper or lower limit is exceeded, it stops sequencing on the defective position and indicates which parameter has varied. Contacts for aural alarms are incorporated for instant alerting. Rust Model AL-100, designed for local logging, has identical basic features.



Bauer Log-Alarm equipment records necessary parameters 7 times each hour on a 1" per hour strip chart. If transmitter frequency or power output varies beyond preset limits, the unit sounds an internal alarm, plus external alarms at any desired location, until the condition is corrected.



Automatic logging charts become a part of the daily operating log. This form provides a complete permanent record of transmitter operation.

sacrifice quality is to invite all sorts of problems: repeated failure, difficult calibration maintenance, and the risk of inaccurate readings.

Also, personnel must become familiar with the equipment, which is unlike most other broadcast gear. Adequate installation time serves as a "get acquainted" period and allows for accuracy and stability checks, and "debugging." One chief expressed, as his only regret, allowing insufficient installation time.

Importance of Maintenance

An automatic logger without a properly moving recorder chart is less than useless. When a new roll of paper is installed, special care must be taken to insure that it is inserted properly and moving at its proper pace. If carelessness in setting up the recorder is permitted you may discover later that you have no operating log for an entire day! Chart paper quality is of utmost importance; use of cheap, off-brand paper may result in sprocket hole tearing, as it did in one station, which wound up with no operating log for several hours.

Logging Procedures

Some stations remove the length of chart at the end of each broadcast day and attach it to a daily log sheet containing carrier on and off times, tower light records, DA phase readings, etc. Others leave the roll chart in place until used up before filing it in the records. In the latter case, the date is stamped on the chart at the beginning of each day.

If tower loop currents are to be logged automatically, these readings must maintain their correct *ratios* (within 5%) to the reference tower. Current *ratios* are as important as current *values*. Stations using automatic logging to record loop currents are required, by FCC rules, to install an alarm system which will indicate a variation of more than 5% in tower current ratios. Phase relationships are very difficult to log automatically, particularly with many existing and older phase monitors, since it's not so simple to derive accurate sampling voltages. We found very few stations which have had any measure of success in automatically recording phase relationships.

Actually, however, phase relationships need be logged only *once* an hour in normal operations; with remote control authorization, phase need only be checked within two hours after operation is begun on each pattern. If two patterns are used, day and night, only two daily readings are necessary.

What About Costs?

Surprisingly, automatic logging equipment is fairly reasonable, ranging from a minimum of $2,000 to as high as $5,000 where a more complex installation is involved. TV and AM-FM stations will need two loggers to accommodate both transmitters.

Automated logging installations in remotely controlled stations require phone lines capable of carrying DC. If existing lines fulfill the requirements, without disrupting remote control and fail-safe functions, installation costs will be that much lower. If transmitter sampling circuits do not exist, they will have to be installed. If the transmitter was designed for remote control, at least some of these sampling circuits can be adapted to feed the logger. Manufacturers' recommendations should obviously be closely followed. Sampling voltage *levels* are critical; if they are not at recommended values, logger calibration will be difficult to adjust and maintain.

Most logging equipment uses internal relays to operate external parameter tolerance alarms, but it's up to the station to devise necessary alarm apparatus. Bells, buzzers, flashing lights, or any combination of devices which will attract attention will do the job. Intermittently ringing bells and buzzers and flashing lights have been found to attract attention more readily than a steady ringing or buzzing, or a constantly glowing light.

Is Automatic Logging For You?

While it may be possible to do so, it usually isn't practical to discharge transmitter staff personnel whose jobs are eliminated because of automated logging equipment. Most stations have found that they have a need for technical personnel in other phases of their operations. On the other hand, after a period of stabilization, an employee who resigns may not always be replaced.

From a manager's viewpoint, automated logging makes it possible to accomplish more with the same number of people, and to enhance better technical operation. There are many ways to use an engineering staff's additional time to advantage — more thorough maintenance, for example. Better maintenance is almost like money in the bank!

Your situation must, of course, dictate whether or not automatic logging will be advantageous to you. Stations using it say it's a wise investment. ●

Here's What Automatic Logger Users Say

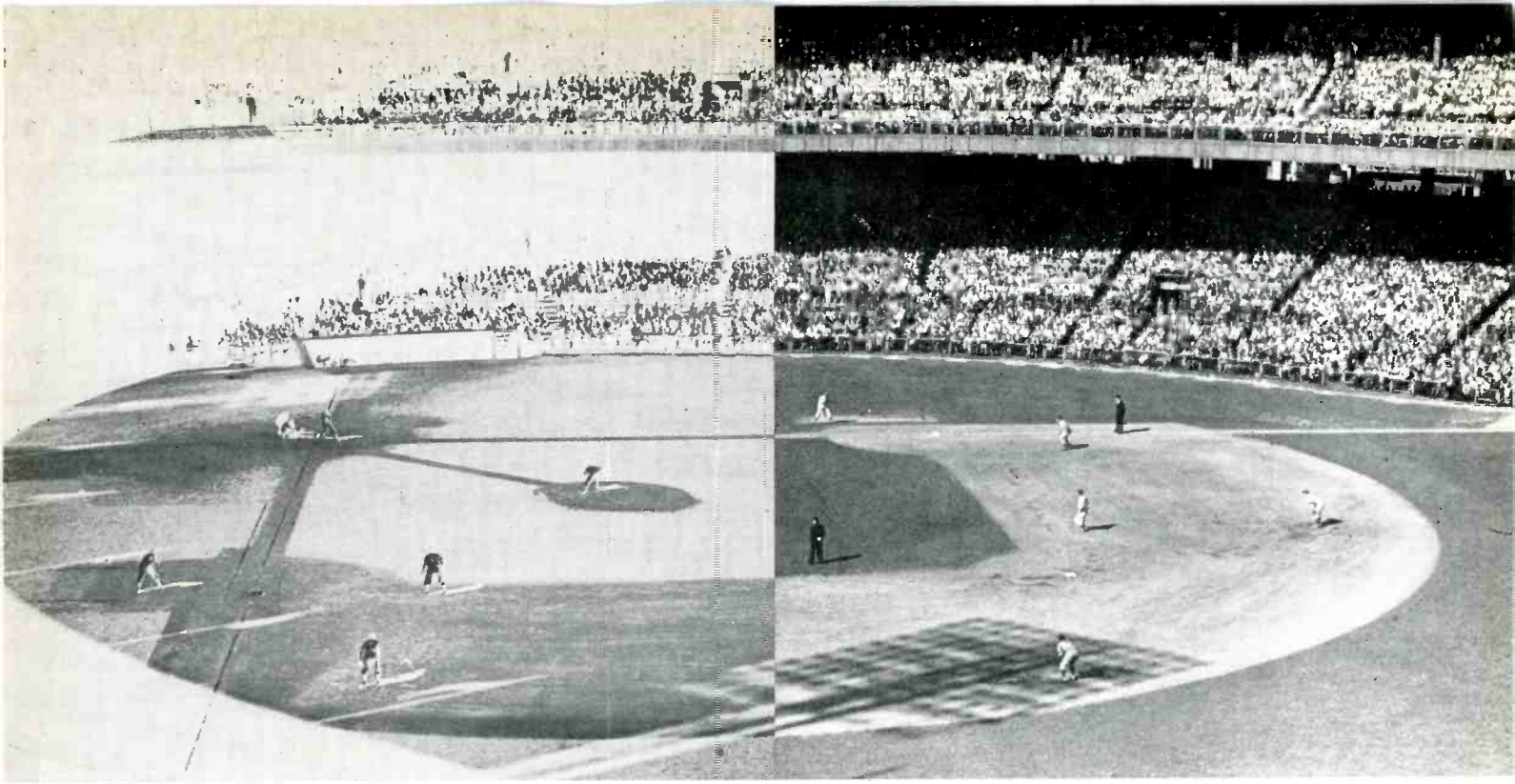
Virgil D. Duncan, Chief Engineer, WRAL-TV, Raleigh, N. C., "This is the first time we have had real good, accurate records of the transmitting equipment performance, one of the outstanding features of automatic transmitter logging."

Charles Siebold, Jr., Chief Engineer, WCAO, Baltimore, Md., "Since we combined our studio and transmitter operation, automatic logging has saved a lot of the technicians' time by eliminating most half-hour readings, allowing more time for maintenance and greater concentration on console work. We also have a better check of operating parameters."

Guy Raver, Manager for Engineering, WEJL, Scranton, Pa., "This device probably maintains better supervision of the transmitting equipment than an operator, since it records each of the required measurements seven times each hour."

Donald R. King, Chief Engineer, K-RED, Eureka, Cal., "We installed the unit for better FCC compliance. Logging proved difficult to obtain with accuracy, since we are using 3rd phone DJs during the day."

A. L. Harmon, Chief Engineer, WTTG, Washington, D. C., "Prior to automatic transmitter logging, one or two engineers were always on duty at the transmitter. With automatic devices we felt we could maintain more accurate records and drop our manpower need. Use of automatic logging has worked out closely with original planning."



NIGHT... DAY...

A BROADCASTER'S DILEMMA... SOLVED BY RCA 8092A IMAGE ORTHICONS

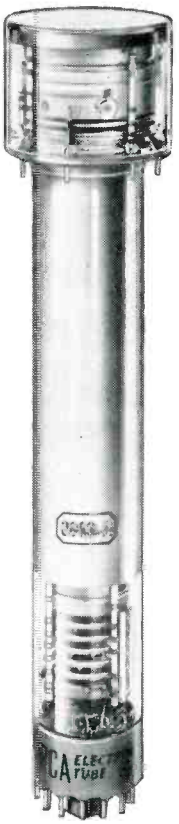
One of our broadcast customers got a hooker thrown at him when he found he had to do a daytime ballgame after a long night stand at a ball park. He did not have time to change his Image Orthicons to tubes that would produce the best picture under bright daylight conditions.

He had been using our RCA-8092A Image Orthicons in his color camera for nighttime baseball pickup since they produced the best possible sensitivity. We introduced the 8092A several years ago after we were able to provide the increased sensitivity, improved signal-to-noise, and eliminated some of the graininess in the picture...problems which had plagued some of the earlier attempts to use these Image Orthicons in quality television pickup.

This broadcaster was very happy with the nighttime operation because he could put a zoom lens on the camera and still obtain good picture quality with infield illumination from about 150 foot candles. When he had to run the outdoor game the next day in broad daylight he certainly didn't need the high sensitivity.

We told him to go ahead and try them out in daylight, feeling that the tube should produce a good picture if he could "stop" the camera lens down far enough to keep from overloading the tubes. We felt that the contrast should be pretty well handled by these RCA 8092A's.

Well, he tried it, and, surprisingly without stopping the lens down all the way, he found that the 8092A's were



able to pull a lot of the low-light signal out of the mud and beat down the highlight signal without washing out the highlights.

He could pan the camera from the brightly-lighted infield to the shadows of the stadium and look into the dugout without seriously upsetting the color balance, or he could watch the runner on first base without having the brightly-lighted outfield overload the picture.

He has been using his 8092A's for both outdoor daylight and nighttime broadcasts ever since.

Of course, he can not get the color fidelity and the signal-to-noise ratio that might be expected from some of our studio tubes. But the operational flexibility and the fact he has all the sensitivity he needs for nighttime pickup are the things that put him into business day after day with no changes of tubes between games.

These tubes do require a little consideration in handling since they have a gossamer thin target which can be damaged by the wrong kind of jolts or camera handling but if you treat them right, they will give you good service and a wide range of operation.

For further information on the RCA-8092A, ask your RCA Broadcast Tube Distributor for a copy of the RCA-8092A bulletin.

This is one of a series of interesting field situations faced and solved by broadcasters through the coordination of RCA Broadcast Tube Distributors and RCA sales and factory engineers.

RCA ELECTRONIC COMPONENTS AND DEVICES, HARRISON, N. J

The Most Trusted Name in Electronics

Circle 21 on Reader Service Card

Automatic Remote Control of TV Cameras

by Donald B. Patton

Primarily through the persistence of a few leading broadcast engineers, the dream of sophisticated automation for TV camera operation has come true.

Televise news, weather, sports, interviews and commercials without a full production crew?

Add a third or fourth camera without adding to production cost?

Reduce goofs and make-goods where trick pans and fast zooms are required?

Relieve engineering and production personnel from live show operations to concentrate on maintenance, rehearsals, and productions requiring camera mobility?

One operator to control from one to four cameras?

Improve control of present studio cameras?

ACHIEVEMENT of any and all of these things does not require any miracle. They were accomplished at WKRG-TV, and the small investment has paid off in improved camera operations, better local service, and increased time sales. How? By installing an automated remote control system on one camera.

When we first considered using a remotely-controlled camera, every live show on our permanent schedule was mapped out and scaled off. When lens angles were checked and all shots were blocked out, it was found that 90% or more of our live shows could be handled with the use of two such

Mr. Patton is Chief Engineer, WKRG-TV, Mobile, Ala.

Elements of the Autocam System

Section I—Zoom Lens Unit: Any of four servo-controlled designs for use on vidicon, I.O., Plumbicon, 35mm motion-picture cameras.

Section II—Pan and Tilt Unit: For specified camera make and model. Accommodates combined camera and zoom lens weight of 200 lb.

Section III—Junction Box: With cables to connect servo pan and tilt head to servo-controlled lens.

Section IV—Shielded Studio Cabling: Connects junction box to studio wall or amplifier unit.

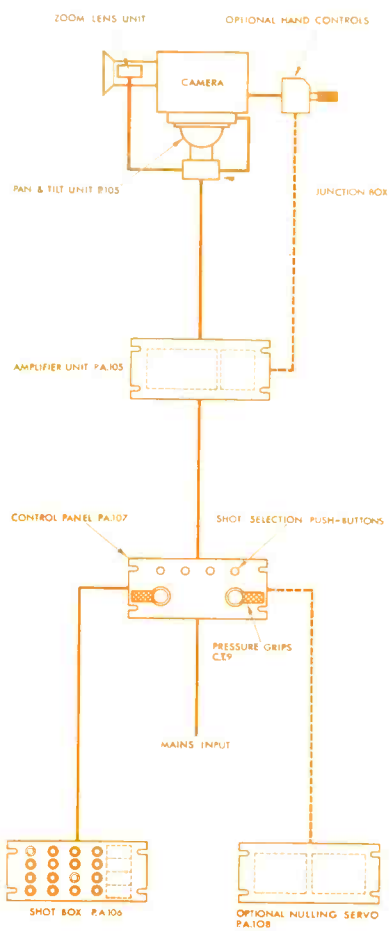
Section V—Amplifier Unit: Rack-mounted or portable for 2-, 3-, 4-, or 5-function systems.

Section VI—Shot Box: Contains all controls for one camera, normally of 5-shot design. Additional sets of push-button panels for 2nd, 3rd, and 4th cameras available.

Section VII—Shot Box Accessories: On-air speed control for pan, tilt, zoom, and focus. Trimming controls to correct on-air or preparatory shots. Remote panel with 5 push buttons for activating shot box. Scaling pot to regulate sensitivity of single shot box function.

Section VIII—Control Panel: Two combined pressure-sensitive position controls for remote manual operation.

Section IX—Optional Nulling Servo: Provides "bumpless" on-air transfer from shot box to remote manual control.



Section X—Optional Hand Controls: Camera-mounted controls for operation by studio cameraman.

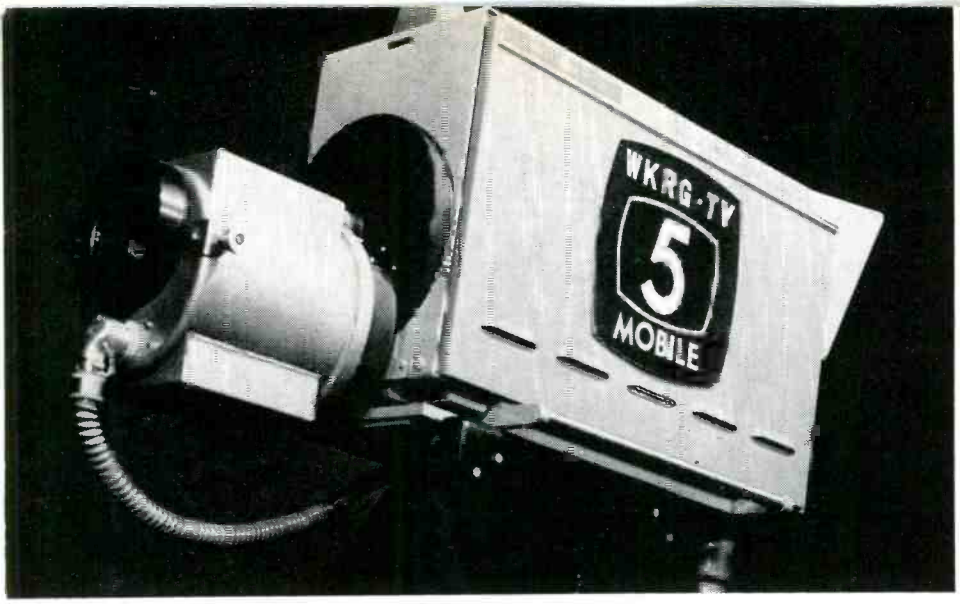


Fig. 1. Close-up of automated G.E. PE-23 vidicon camera head. Servo-controlled Angenieux 10-to-1 zoom lenses are also available for I.O. and Plumbicon designs.

Fig. 2. Author Don Patton seated at console-mounted "Autocam" shot-box. Four rows of controls provide for selection of six pre-set positions for each function —pan, tilt, zoom and focus.

Fig. 3. Remote console installation at WDAF-TV includes pressure-sensitive "handle-bars" for manual camera control.

systems. These shows included musical variety, news, weather, sports, kiddie shows, panel shows, spontaneous celebrity interviews, etc.

WKRG-TV presently operates only one of these automatic systems. Fig. 1 shows the camera-head assembly, including the camera head, pan and tilt head, 10-to-1 Angenieux zoom lens, and control cables. Fig. 2 shows the remote panel, consisting of 4 toggle switches for fast or slow mode of operation, six shot controls to provide automatic preselection of focus, zoom, tilt, and pan. Any of the six previously-selected shots are automatically accomplished by depressing the appropriate shot-box button. The large control at the right of the operator's hand is the iris control.

WKRG's Decision to Automate

Prior to installation of their remote camera setup, WKRG-TV televised no local-live programming between sign-on and 11:30 A.M. or 8:00 P.M. to sign-off. The desire was to provide spontaneous news coverage during these periods, yet the added cost of personnel—three people, under standard operating conditions (director, audio technician, and cameraman)—was out of the question. With the automated camera operation, one person (normally the director) can successfully handle all audio and video during live studio news telecasts. Moreover, the operation has proved successful enough, both technically and financially, to consider expanding the setup and increasing local-live programming.

Engineering must, of course, assume responsibility for proper equipment setup, but the big challenge, and the responsibility for the success of such an automated camera operation, falls on the program producers and directors. Yet, in preparing for remote camera coverage at WKRG-TV, many benefits were derived by dissecting every live show.

Production

From a production standpoint, there are a few obvious drawbacks. For example, the camera cannot dolly itself. To overcome this, we think of the studio as being a circle with the camera in the center. The camera should be mounted on a heavy pedestal, capable of maintaining absolute stability during pans, tilts, and zooms. A 10-to-1 zoom is a must.

We found it inadvisable to pan

Fig. 4. WDAF-TV vidicon camera is also equipped with optional manual controls.

Other Station Operations

William H. (Bill) Hansher, V-P and Director of Engineering, Taft Broadcasting Co., is one of the pioneers in remotely-controlled camera operations. Some six years ago he began experimenting with a variable-speed AC motor-control system at WKRC-TV Cincinnati. While the system worked, speeds were too slow and zoom speed was not variable. The design was just not sophisticated enough for professional camera work. At Bill Hansher's instigation, Minneapolis-Honeywell developed servo controls which provided greater speeds (3-second zoom) and better speed control. This modified and improved system, while it does not include push-button selection of pre-set shots, is still in operation at WKRC-TV. One operator can control studio camera shots, as well as the console setup adjustments. This integration of operating functions has improved on-air camera techniques, yet a savings has been effected by having one man perform duties previously handled by two.

Continually striving to accomplish more without an increase in staff, Mr. Hansher was responsible for the decision to try the "Autocam" system at another Taft station—WDAF-TV Kansas City. James Schmidt, Chief Engineer, supervised the installation, only recently completed and put into operation. The idea was to provide additional news coverage without expanding the staff. Using an RCA TK-11 I.O. camera, slide-only news summaries are slated for live newscaster presentations. The regular 10-10:15 P.M. news-weather program can now be handled efficiently with one less person. Additionally, plans call for use of this camera as a supplementary second camera for other live shows, expanding camera coverage without additional manpower. Additional live shows which can be televised without adding to the off-air crew are being considered.

In another large group-owned station (with preference for anonymity) two "Autocam" systems were placed in operation last May, using TK-11 cameras. One of their problems has been finding high-caliber cameramen (who are not technicians, but part of program staff). The automated units were first used on the 6 and 10 P.M. news-weather-sports shows, with the director handling two cameras from the console position. For more complex studio shows, a cameraman assists at the console, and on occasion another man operates the rear-screen projector. Even then, however, this is one less man than previously required. Moreover, simultaneous control of iris gives the console operator better control of speed and optical focus. Also, the two automated cameras are used to supplement manually-operated units, freeing a cameraman to give cues, change slides, control lighting, etc. Camera action has been greatly improved, from engineering aspects as well as aesthetic qualities.

This station also found the pre-set camera functions invaluable in the production of taped commercials, particularly those requiring a rapid succession of shots. Spots that previously required a full production crew for two hours have been prepared in less than half the time.

and tilt from extreme tight shots to wide-angle cover shots (normally a change accomplished with two cameras), because such an on-air change is readily evident and distracting to the viewer. Zoom shots, if not full range, can be handled on air if pan and tilt are not used. We use a slide or another camera between shots of this type. In doing news shows, we change camera shots while airing films or slides. A "fader," or "speed-adjuster," which we do not have, is now available to permit slow on-camera changes between preselected shots.

Operation

The camera will pan a full 380° at 50° per second, and tilt a full 90° at 30° per second. These speeds are maximum, and can be adjusted for slower pan, tilt, or zoom. A switch is provided so the camera may be operated manually at any time.

This system permits one operator to control video switching, a live camera, two VTR's, film and slide facilities, and audio without the assistance of a full production crew. It has proven so reliable, from production as well as engineering standpoints, that we are presently planning to integrate it into our live color system.

Engineering

Our particular system uses servo motors which are soundproofed for studio operation. The motors have a constant AC potential applied to them, and will not introduce the electrical interference in the picture normally experienced with DC motors.

A separate amplifier is used for each function (pan, tilt, focus, and zoom). All are of solid-state plug-in design, and feedback voltages are such that tracking accuracy need be checked only once every six months. Installation is as simple as connecting a field camera chain. The servo amplifiers require about 7 inches of rack space. Console space depends on individual requirements.

Costs & Equipment

Like any other system, there is always a cheaper way, but the best way costs a little more. The system we use costs about $24,000, complete with camera and all hardware. If you already have a vidicon camera, the cost would be about $12,000. To equip an existing image-orthicon camera, cost would be about $18,000 (because

of the different zoom lens requirement). For a Plumbicon camera, which already has a built-in 10-to-1 Angenieux zoom lens, cost would be about $10,000. We use a Houston-Fearless dolly along with Evershed power optics and pan and tilt head. The camera is a General Electric PE-23. Television Zoomar was the prime contractor.

Personnel Considerations

Some union contracts include clauses which may preclude advantageous use of an automated camera system. This was true in our case. However, before ordering the equipment we had a few brief meetings with local union officials. When it was understood that we had no intention of cutting the staff, our contract was modified. The personnel affected have been most helpful in making the operation successful. I feel it is important to meet with union people *before* purchasing and installing such equipment, showing respect for their position.

The importance of the production department in making this method of operation successful is paramount. This is not to deny or belittle competent engineering requirements, because the demand for technical know-how and knowledge is certainly needed, as with any other innovation in broadcast gear. The point I want so strongly to make is this: All of us have talked, written letters, argued, and negotiated for permission to automate other segments of our operations, very few of which placed much of a demand on management or production. I feel the decision to automate, wherever feasible, is ethically right. But the challenge for making it work applies to everyone. This method of operation, to be successful, depends on full cooperation from engineering, production, talent—and most of all—the manager.

Will It Work For You?

It is difficult to discuss an operation of this type and relate it to operations in other stations, but I think one of the worst things you could say before fully understanding the capabilities of the system is, "Well, it may work for them, but it won't work for us." However, when approached intelligently, in the spirit of good business judgment, I feel any station could profit from the use of an automated camera system for at least part of their studio and production operation. ●

BROADCAST EQUIPMENT

"VAT" Preselect Switcher

A preselect switcher for *v*ideo, *a*udio and *t*ransitions is being offered by Visual Electronics Corp., New York. The VAT system provides for a "take" bar to run off a series of preset events with the inclusion of cuts, automatic laps, fades, or supers. The system is said to facilitate presetting a number of events, utilizing compact thumbwheels for control, storage, and readout of preselected material. It's also possible to

preview the signal immediately prior to airing, and a "Take" or "Pre-roll" button activates each succeeding event. Price, as pictured, is under $20,000.

Circle 38 on Reader Service Card

Video Processing Amplifiers

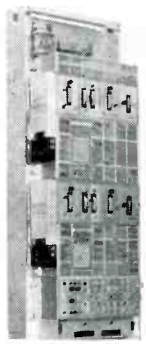
A new CDL video processing amplifier series is being marketed in the U. S. by Ward Electronics, Mountainside, N. J. Intended for a wide variety of applications in TV systems, units are designed for use at the program output of a video switching system, at the input of systems receiving an incoming network or remote-line feed, and at the input of a TV or microwave transmitter. Because of the modular construction of the CDL 2080 series, a station can, by the selection of appropriate modules, tailor the facilities and functions of the overall system. As needs expand, additional modules may be added.

Circle 39 on Reader Service Card

One-Watt Microwave

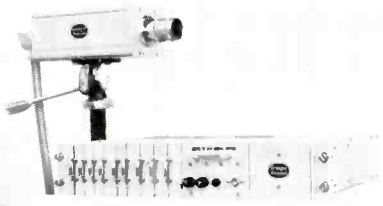
Collins Radio, Dallas, Tex., has developed a 1w Universal Microwave Group unit for intermediate range TV relay systems, carrying video and audio, or video only. The equipment is available for 6, 11, and 12 gc bands, using the remodulating method of repeating. It may be arranged for simplex or duplex single- or multiple-channel operation using a single antenna system. The gear is fully transistorized except for klystrons.

Circle 37 on Reader Service Card



Compact TV Film Camera

Granger Associates, Palo Alto, Cal., has introduced a compact TV film-camera chain with a 30-mc bandwidth, said to provide excel-



lent transient response and phase characteristics. A 60 gauss focus field and high G3 voltage produce a small scanning spot. The camera and control unit use integrated circuits and silicon transistors. The 9 in. long camera weighs 7 lb. Two plug-in camera control units and an EIA sync generator will fit into a 19 in. wide chassis with 3½ in. panel height. Price for one camera chain is less than $4,000. The EIA sync generator is $920.

Circle 40 on Reader Service Card

Solid-State PA Mixer-Preamp

A solid-state mixer-preamplifier with four mic inputs and separate program input, Model LX-40, has been added to the line of public address equipment offered by McMartin Industries, Inc., Omaha.

Features include master gain and tone control, cueing switch, phone jack for monitoring, and silicon transistors. Output level at 600 ohms unbalanced is +10 dbm.

Circle 41 on Reader Service Card

Utility Quality CATV

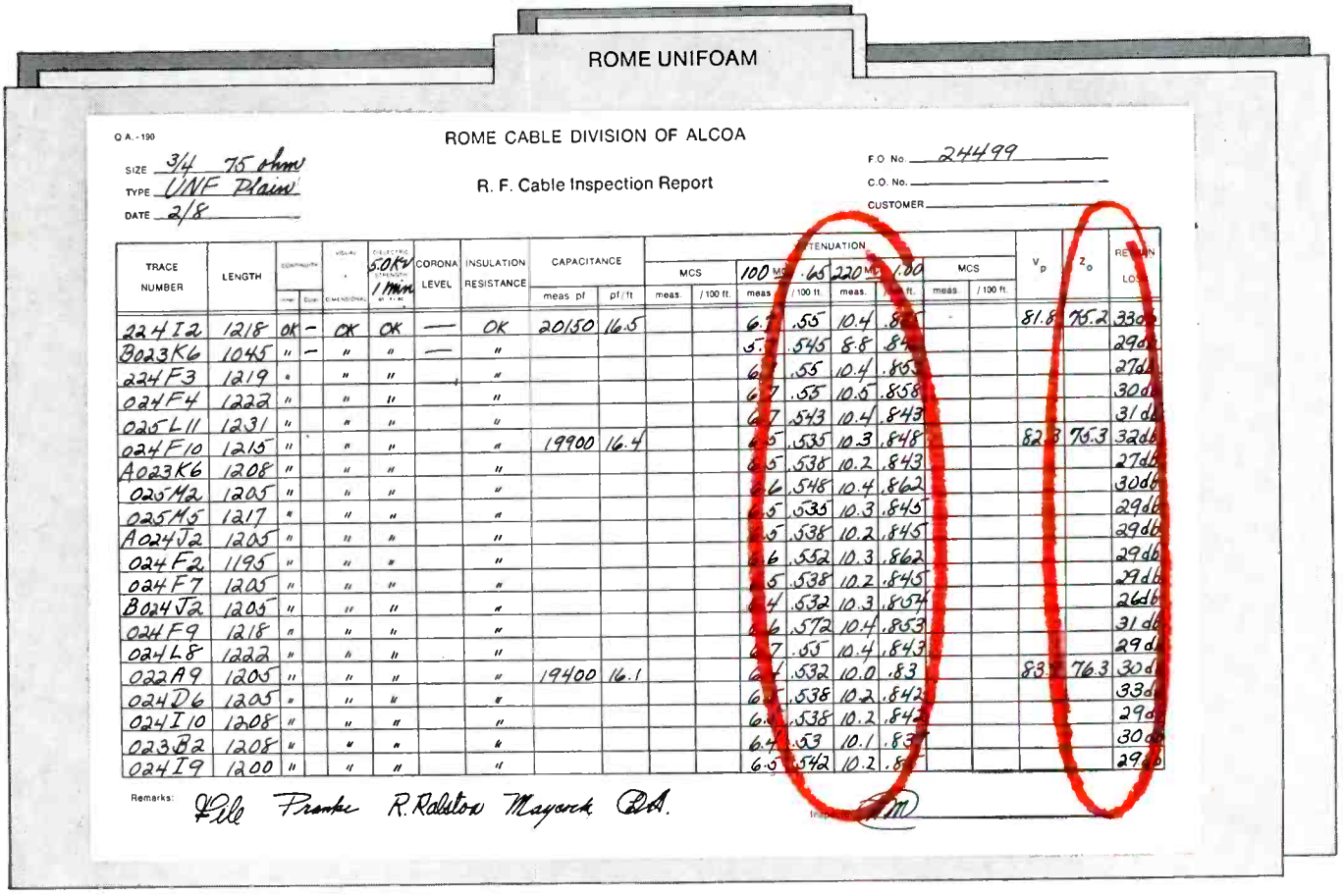
Jerrold Electronics, Philadelphia, Pa., has introduced a completely new line of CATV gear. Designated as "Starline," the system is said to be capable of carrying 12 TV channels through 50 amplifiers at —57 db cross modulation. The new system features compact, unitized stations, and all equipment for each main station is contained within a single aluminum housing which is airtight, waterproof, dustproof, vapor-proof, and as radiation-proof as aluminum-sheathed cable. Model SA-1 (pictured), AGC controlled all-band trunkline amplifier with bridging amplifier in cast aluminum hous-

Super-Cardioid Ribbon Mic

Shure Bros., Evanston, Ill., Professional Products Div., has announced a professional studio microphone, Model SM33, with a pickup characteristic more directional than conventional cardioids. Designed for rugged voice and music use, frequency response is 40 to 15,000 cps. Dual output impedances: 30-50 and 150-250 ohms. Output level at 1,000 cps is —60 db at 30-50 ohms, —58.5 db at 150-250 ohms. Comes with 20′ 2-conductor shielded cable and Cannon XLR-3-11-C connector.

Circle 43 on Reader Service Card

The monotonous uniformity of our CATV cable



ROME UNIFOAM

Q.A.-190

ROME CABLE DIVISION OF ALCOA

SIZE 3/4 75 ohm
TYPE UNF Plain
DATE 2/8

R. F. Cable Inspection Report

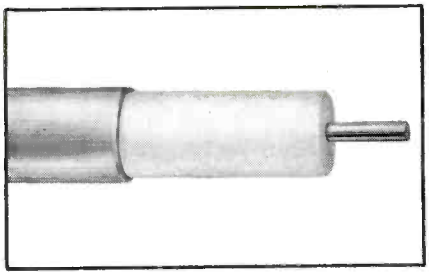
P.O. No. 24499
C.O. No.
CUSTOMER

TRACE NUMBER	LENGTH	CONTINUITY Inner	CONTINUITY Outer	VISUAL DIMENSIONAL	5.0 KV 1 Min.	CORONA LEVEL	INSULATION RESISTANCE	CAPACITANCE meas pf	CAPACITANCE pf/ft	ATTENUATION MCS	ATTENUATION MCS / 100 ft.	ATTENUATION 100 Mc meas.	ATTENUATION 100 Mc / 100 ft.	ATTENUATION 220 Mc meas.	ATTENUATION 220 Mc / 100 ft.	MCS meas.	MCS / 100 ft.	V_p	Z_o	RETURN LOSS
224I2	1218	OK	–	OK	OK	—	OK	20150	16.5			6.7	.55	10.4	.85			81.8	76.2	33db
B023K6	1045	"	–	"	"	—	"					5.[illegible]	.545	8.8	.84					29db
224F3	1219	"		"	"		"					6.[illegible]	.55	10.4	.855					27db
024F4	1222	"		"	"		"					6.7	.55	10.5	.858					30db
025L11	1231	"		"	"		"					6.7	.543	10.4	.843					31db
024F10	1215	"		"	"		"	19900	16.4			6.5	.535	10.3	.848			82.3	76.3	32db
A023K6	1208	"		"	"		"					6.5	.538	10.2	.843					27db
025M2	1205	"		"	"		"					6.6	.548	10.4	.862					30db
025M5	1217	"		"	"		"					6.5	.535	10.3	.845					29db
A024J2	1205	"		"	"		"					6.5	.538	10.2	.845					29db
024F2	1195	"		"	"		"					6.6	.552	10.3	.862					29db
024F7	1205	"		"	"		"					6.5	.538	10.2	.845					29db
B024J2	1205	"		"	"		"					6.4	.532	10.3	.857					26db
024F9	1218	"		"	"		"					6.6	.572	10.4	.853					31db
024L8	1222	"		"	"		"					6.7	.55	10.4	.843					29db
022A9	1205	"		"	"		"	19400	16.1			6.4	.532	10.0	.83			83.7	76.3	30db
024D6	1205	"		"	"		"					6.5	.538	10.2	.842					33db
024I10	1208	"		"	"		"					6.5	.538	10.2	.842					29db
023B2	1208	"		"	"		"					6.4	.53	10.1	.83					30db
024I9	1200	"		"	"		"					6.5	.542	10.2	.8[illegible]					29db

Remarks: Ok Frankie R. Ralston Mayock QA.

Examination of the inspection reports on Rome Unifoam* Cable reveals that they are even more monotonous to read than we have been claiming. In fact, they're so monotonous they're exciting.

We have talked so much about the quality and uniformity of Rome Unifoam CATV Cable, that it's about time we got down to specifics.



This is the Rome Unifoam CATV cable used in the majority of installations: unjacketed, unvarying, unbeatable.

We see literally hundreds of Inspection Reports in the factory, and they serve only to convince us that, if anything, we have been too conservative in what we've said.

For example: Look at this test sheet recording routine tests on 20 reels of ¾" 75 ohm cable. There is nothing special about this report, as far as we are concerned. Length after length, the test data has a monotonous sameness, day after day. Look, for example, at the 220 mc attenuation column on this sheet. The lowest value measured was 0.830 db/100 ft., and the highest 0.862. The average of the 20 reels is 0.847 db/100 ft. All of the individual measurements are within ± 2% of the average. Statistical analysis of data from several hundred lengths tested tells us that no more than 2 lengths out of 1000 will exceed the average by more than 5%.

Return Loss. Notice the last column on the test sheet. Here, Return Loss measurements are recorded. Values range from 26 to 33 db down. And each value recorded is the *poorest* return loss found in that length at *any* frequency between 20 and 220 mc. Each length is checked from both ends and no length is shipped with less than 25 db return loss. That's *25 db minimum at any frequency from 20 to 220 mc!*

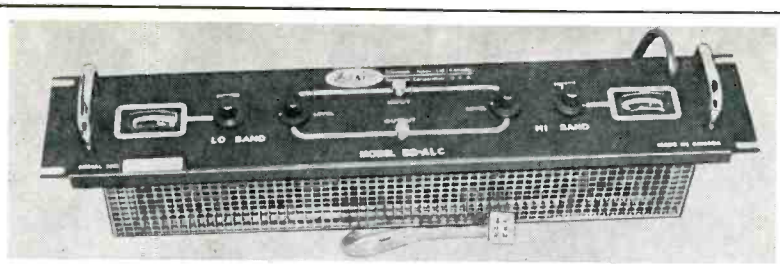
Can you use cable like this? Can you afford not to?

Get the whole story. We offer you a fact-filled folder on Rome Unifoam CATV Cable. For a copy, just call your nearest Rome/Alcoa representative or write Rome Cable Division of Alcoa, Dept. 44-95, Rome, N. Y. 13440.

*Rome Unifoam—Trademark of Rome Cable Division of Alcoa

Rome Cable
DIVISION OF ALCOA

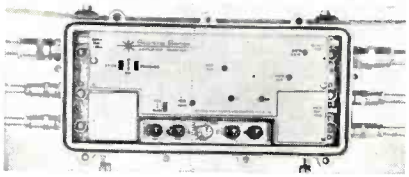
Circle 23 on Reader Service Card



CATV Level Control

Benco Television Associates, Rexdale, Ont., Canada, has developed a solid-state automatic level control for use with BB-500 and BB-1000A broadband amplifiers. The BB-ALC samples high and low bands separately, and will correct amplifier output within 1 db for input changes up to 10 db.

Circle 42 on Reader Service Card



ing, is priced at $635. Other units include SX-1 line extender, SPS-12 power supply, SHS-2 hybrid splitter, 50-series single and multiple output feeder makers (4 models), directional couplers (3 models), SPJ-2 power combiner, STE thermal equalizer, and other accessory units.

Circle 43 on Reader Service Card

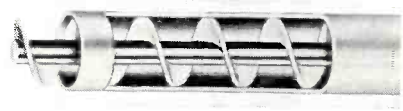
Semi-Automatic Master Switching System

The Marconi B3720 semi-automatic TV switcher, distributed in the U. S. by Ampex Corp., Redwood City, Calif., offers video and audio switching for 12 inputs. Fully transistorized, the unit can be operated both manually and automatically. Other features include full color capability, roving preview and rehearsal facilities, and 8 event switching memory unit with readout and video switching in the blanking field. All equipment except the control panel fits into a 7′ standard 19″ rack, allowing enough space for automatic control circuitry. Ampex also is offering the Marconi B3723 self-contained 4-channel switcher in a 12″ x 10½″ x 10″ package.

Circle 44 on Reader Service Card

Helical Membrane Cable

A coax cable has been developed by Phelps Dodge, North Haven, Conn., to meet a demand for high-



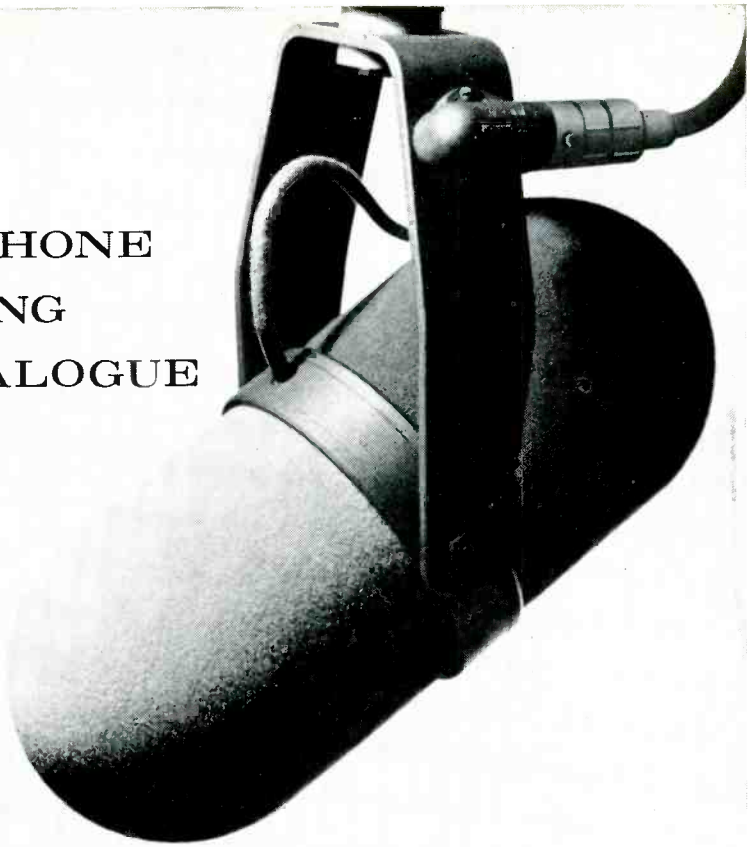
power, low-loss and extreme uniformity in the CATV field. The new Helical Membrane guarantees 26 db return loss across all channels, from 20 to 225 mc. The manufacturer reports average VSWR will not exceed 1.03:1.

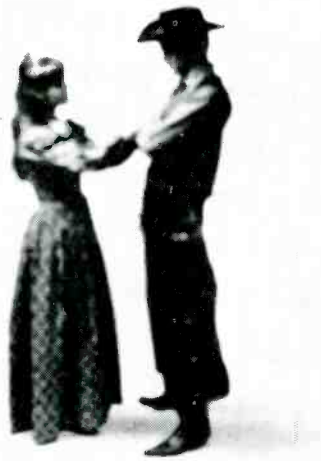
Circle 45 on Reader Service Card

Coax Dead-End

A single-leg dead-end for RG-59/U coax used in CATV systems is being marketed by Preformed Line Products Co., Cleveland, O. The one-piece "Telegrip" is designed for easy installation; it is simply wrapped on the cable, then hooked

THIS BOOM MICROPHONE IGNORES EVERYTHING ...EXCEPT THE DIALOGUE





Consistency of sound track quality on an endless variety of locations and sets can be dramatically improved with the remarkable Shure SM5 Boom Microphone. It "hears" the dialogue rather than the ever-changing character of the surroundings.

Because its cardioid directional pattern is uniquely uniform with frequency and symmetrical about its axis, the SM5 is singularly independent of the effects of environment. Even in extreme shooting situations (such as with tight sets, low ceilings, hard walls, low microphone angles, traffic or air conditioner noise and rumble, and changing distance) the SM5 minimizes sound coloration and ambient noise pickup. Equalization changes — on the set or in transfer — are seldom, if ever, necessary.

The highly effective attached windscreen completely encloses the two-stage mechanical filter, so that there are no external "rubber bands" for the wind to "strum." The absence of response-correcting inductors or impedance transformers assures freedom from hum.

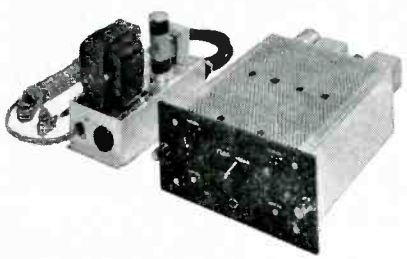
Call on the Shure SM5 to solve your most annoying boom problems!

For additional information, write directly to Mr. Robert Carr, Manager of Professional Products Division, Shure Brothers, Inc., 222 Hartrey Ave., Evanston, Illinois.

SHURE SM5

UNIDIRECTIONAL DYNAMIC BOOM MICROPHONE

SHURE STATION-TESTED AUDIO CIRCUITRY EQUIPMENT

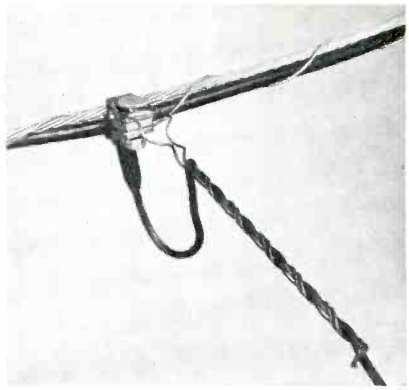


Shure stereo equalizer and preamplifiers are praised as MAJOR contributions to upgrading station quality by broadcasters.

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.

Circle 25 on Reader Service Card

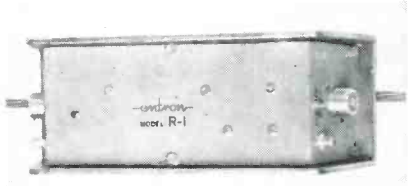


to the tap-off at the cable, pole or spool insulator at the service drop. A short-radius twist at the leg end prevents spinout, and no tools are needed for installation.

Circle 46 on Reader Service Card

Solid-state Repeater Amplifier

Entron, Inc., Silver Spring, Md., has introduced a new fixed-gain, transistorized repeater amplifier covering the entire VHF and FM bands. Model R-1, with 22 db

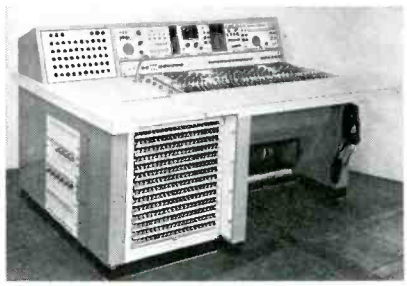


gain and variable tilt, is designed for use in CATV trunklines in conjunction with ALC amplifiers such as the LHR-45R. It has an electronically regulated power supply for 28 or 60v AC and is housed in a sturdy weatherproof, cast aluminum enclosure designed for strand mounting.

Circle 47 on Reader Service Card

TV Sound Mixers

Three new solid-state TV sound mixers with plug-in modular units manufactured by EMI Electronics, Ltd., are being offered in the U. S.



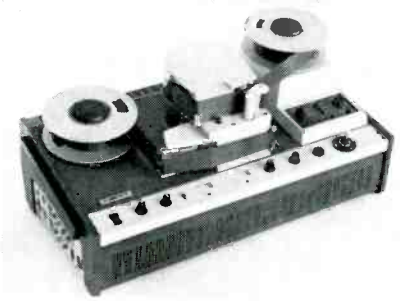
International Broadcast Industries, Chicago. Type 9001 priced at $14,900, is an 8-channel mixer suitable for a combined video and sound desk of a small studio. Type 9002, at $38,750, is a 16-channel mixer and type 9003, $49,000, handles 24 channels. These mixers

have low noise performance and the 16- and 24-channel mixers have built-in echo circuits. There is space in all three for optional facilities—effects for imitating telephone sound and equalizers for microphone frequency response correction. Modular system flexibility permits custom-designed sophistication from stock models.

Circle 48 on Reader Service Card

Portable Broadcast VTR

An advanced version of the VR-660 VTR is being marketed by Ampex Corp., Redwood City, Cal. The new VR-660B is reported to offer improved electronic circuitry

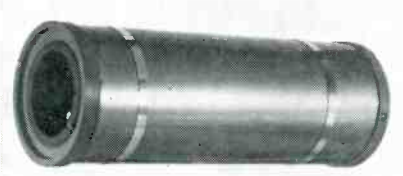


and mechanical design, giving increased reliability to the helical recording technique. Features include a second audio channel and a spare set of recording heads which makes possible a 500-hour and/or a 6-month warranty. Price is $11,500.

Circle 49 on Reader Service Card

Plumbicon Deflection Unit

An assembly including deflection yoke, focus coil, and alignment coil is being manufactured by



Cleveland Electronics, Cleveland. Designed for the Plumbicon tube, it uses the basic 30-40 gauss field as design center. The yoke portion will furnish line resolution in accordance with tube capabilities, with geometric distortions held to 1%.

Circle 50 on Reader Service Card

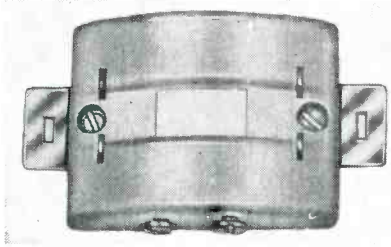
All-Purpose Audio Console

Model 250 SU control console from Altec Lansing Corp., Anaheim, Calif., utilizes miniature plug-in preamps, amplifiers, and utility input devices to provide complete flexibility. Specifically designed for use in TV, AM, FM, recording studio, or sound studio applica-

tions, the console has 10 input positions, each equipped with bus switchers and mixer attenuators. All output circuitry for single-channel, single-line, 2-channel, 2-line, dual stereo, or 3-channel/2-channel stereo is included and wired. Desired functions are achieved by plugging in the necessary number of amplifiers.
Circle 184 on Reader Service Card

Replacement Tape Heads

Minneapolis Magnetics, Inc., Minneapolis, Minn., is offering replacement caps for Magnecord record playback are erase heads. The caps are said to be impervious to



head cleaners normally used in professional work, and feature a nonmagnetic stainless steel tape guide which maintains better alignment of tape and head. Also available for Magnecord replacement are full- and half-track pole pieces. Replacement heads for Ampex machines are being planned for future production.
Circle 185 on Reader Service Card

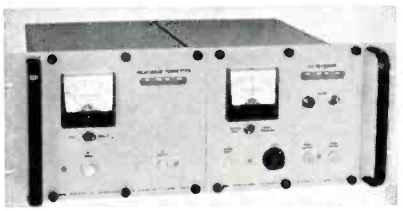
New AM Monitors

New AM frequency and modulation monitors are offered by Gates Radio, Quincy, Ill. The Model M-4990 frequency monitor can be operated off the air in remote control applications, at distances up to 20 miles, or over telephone lines with the Gates extension meter panel. Design advances include greater accuracy under heavy modulation or with wide changes in RF input level. The Model M-5693 modulation monitor also has many design advances, including a higher speed meter response to indicate peak program pulses as short as 50msec. The unit has controls to compensate for varying phone-line characteristics in remote operation in conjunction with the Gates remote meter panel.
Circle 186 on Reader Service Card

Wideband FM Receivers

For use in high resolution FM, TV and microwave relay links is the solid state wideband FM re-

ceiver line announced by RHG Electronics Lab., Inc., Farmingdale, L. I. The units, using modular construction and incorporating full RFI protection, include coverage at L, S, C, X and K bands;



IF and discriminator bandwidths of 30 to 60 mc; basebands to 10 mc; and interchangeable front ends. Specs for typical unit are an RF input of 1710 mc; 9.5 db noise figure; IF bandwidth of 30 mc; video output of 2.0 v p-p for 8 mc deviation. Availability in 45 days; price $3995.

Circle 187 on Reader Service Card

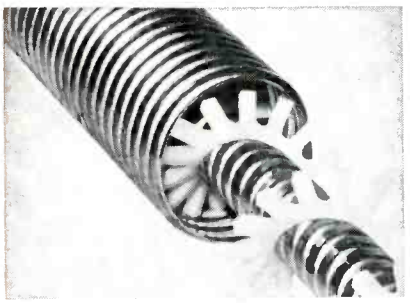
2,000′ CATV Cable

Viking, Hoboken, N. J., is offering its seamless aluminum-sheath cable in 2,000 ft. lengths, providing splice and trouble-free installation, along with reduced VSWR and ghost problems. According to the firm, the cable has the same quality and 26 db return loss as shorter lengths.

Circle 188 on Reader Service Card

New Waveguide & Microwave Antennas

Andrew Corp., Chicago, has developed a series of new dual-polarized antennas with a gain of 43.1 db typical for the 8′ reflector in the 6-gc range and 46.0 db in the 11-gc range. Continuous polarization adjustment is allowed from the center of the



6′, 8′, and 10′ reflectors. Standard units have a VSWR of less than 1.10. Andrew has also designed a Heliax elliptical waveguide to replace rigid designs for all microwave relay and radar applications in the 3.7-11.7gc range. Attenuation is equal to or lower than conventional rigid rectangular waveguide, ¼ that of flexible waveguide, and 1/10 that of flex-

Circle 31 on Reader Service Card

ible coax cables. Eliminating bends, twists, and special configurations, the cost of $3 per foot brings its overall price down to less than half that for a conventional system.

Circle 189 on Reader Service Card

7.5-kw FM Transmitter

American Electronics Labs., Inc., Colmar, Pa., has developed a completely self-contained 7.5-kw FM transmitter, housed in a cabinet 76″ high, 35″ deep, and 40″ wide. The entire assembly requires only 9.7 square feet of floor space. It uses 18 tubes with a total of 8 types, and block-type solid-state rectifiers. An air interlock switch prevents application of any voltages in the event of the loss of air pressure, and the status of the various circuits is indicated by lamps, a lighted lamp indicating an active circuit. All important voltages and currents are displayed on front panel meters, and provision is made for remote control.

Circle 190 on Reader Service Card

Etched-Circuit CATV Amplifier

An etched-circuit solid-state mainline CATV amplifier from Ameco Inc., Phoenix, Ariz., features etched-circuitry in place of conventional hand wiring. Model ATM-65 is designed for pole mounting, will also fit existing Series 60 housings. All popular cable sizes are said to be readily adaptable to this hermetically-sealed weatherproof unit. External input and output test point receptacles permit performance checks to be made without taking the amplifier out of service.

Circle 191 on Reader Service Card

Conversion Lens Kits

TelePro Industries, Inc., Cherry Hill, N.J., is offering a new line of lens kits for the TelePro 6000 front/rear screen projector. The kits cover short, medium, mid, and long-throw ranges and will give the broadcaster flexibility in placing slide projection equipment in the studio. The kits include all the components necessary for the conversion: front condenser, lens holder, rigid and flexible light shields, couplings and bench rods. The long-throw conversion will still produce 6,000 lumens from the 3,000w light source.

Circle 192 on Reader Service Card

BM/E

ADVERTISERS' INDEX

ADVERTISING SALES OFFICES

Bryce Gray, Jr., President
Mal Parks, Jr., Publisher

NEW YORK AREA
820 Second Ave., New York, N. Y. 10017
Ralph Richardson 212-MO 1-0450

NEW JERSEY/PHILADELPHIA
820 Second Ave., New York, N. Y. 10017
Charles C. Lenz 212-MO 1-0450

NEW ENGLAND
228 Main St., Stoneham, Mass.
Harold Short 617-438-3743

MIDDLE ATLANTIC
18 Frederick Rd., Thurmont, Md. 21788
Mal Parks, Jr. 301-271-7151

MIDWEST
612 No. Michigan Ave., Chicago, Ill.
Charles E. Moodhe 312-MI 2-3774
22310 Blossom Dr., Rocky River 16, Ohio
Allen "Bud" Prymmer 216-228-1550

SOUTH CENTRAL
Media Representatives, Inc.
2600 Douglas Avenue, Irving, Texas
Joe B. Sissom 214-BL 5-6573
Parker Harris

WEST COAST
1245 E. Walnut Street, Pasadena, Calif.
Lawrence C. Papp
Pasadena: 213-795-1528
Los Angeles: 213-684-0590
Jules E. Thompson Co.
681 Market Street, San Francisco, Calif.
Jules Thompson 415-DO 2-8547
William Healey

LITERATURE of INTEREST

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

Remote amplifiers, transistorized and portable, described in brochure from Gates. Four newly designed models. **102**

Audio limiter amplifier, small, lightweight, with unique variable gain device which reduces thump and noise, illustrated in fact sheet from Kahn Labs. **103**

Fm Multiplex & Stereo Transmitters from 250w to 20 kw, amplifiers and multiplex exciter from Standard Electronics in 32-p. catalog. **85**

Coax and cables with a series of air-filled polyethylene "balloons" for insulation are described and illustrated in a 6p Cap-Cel bulletin from Simplex Wire & Cable. **105**

Weather channel system, type TMW-2B and non-duplication, type TMP-204, programmed switcher for CATV systems, illustrated in new folder and fact sheet from TeleMation. **145**

Video distribution equipment, test generators, flying spot scanners, described in fact sheets from Telemet Div. of Giannini Corp. **114**

Master tape recorder, Studer C37, completely illustrated in 6-p. brochure from Gotham Audio. **133**

"The Jerrold CATV Story" a booklet discussing systems, services, and equipment. **170**

Remote control for FM stations, Moseley Associates Type II and III STL, detailed in 4-page brochure. **61**

Klystrons, for UHF-TV, 55-kw and 30 kw models, plus 300w TWT, described in separate brochures from Varian Associates. **62**

Precision audio equipment, variable equalizers, line equalizers, diameter equalizers, dip filters, etc., listed in 8-page catalog from Hi-Q Div., Aerovox Corp. **65**

Microwave CATV, broadcast towers illustrated in literature from Ft. Worth Tower Co. shows installations and applications. **171**

CATV cable, Phelps-Dodge "helical-membrane" coax specifications includes cable for burial applications. **172**

CATV equipment catalog, 18-pages, includes distribution equipment, head-end systems, weather/view system from CAS Mfg. Co. **131**

Scope-Mobile cart specifications and prices in catalog sheets from Tektronix. **148**

Audio adapter cables for speaker and stereo headphones described in product bulletin from Switchcraft. **149**

Plumbicon deflection assembly explained in technical literature from Cleveland Electronics. **156**

Coax trunk cable, aerial and burial types, sequentially foot-marked, described in catalog sheet from Superior Cable Corp. Also 10-page booklet: Impedance Discontinuities in CATV cables. **106**

Two-way radio—What You Should Know About It. 20-p. covering VHF and UHF transmitter powers, FM bands, systems cost, from G.E. **127**

TV Translators, VHF and UHF, listed in brochure from EMCEE. **128**

CATV broadband, high gain amplifiers, cascadable in trunkline use, described in spec sheets from Benco TV Assoc. **136**

The Lenkurt Demodulator, a monthly brochure available to anyone interested in multi-channel carrier, mw systems and allied electronics products. **75**

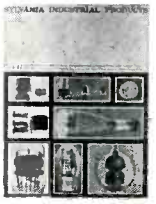
Tele-Weather, video display weather-time system described in spec sheet from Industrial Electronic Systems, Inc. **118**

TV relay system catalog, including specifications and performance data, from Microwave Associates. **154**

Weather-Matic, time-weather equipment with alpha-numeric direct readout for direct camera pickup, described in fact sheet from Ameco. **167**

CATV capabilities detailed in booklet "Scope of TeleSystems." **124**

Towers for CATV, broadcasting; brochure from Utility Tower Co. includes drawings, specs. **168**



Electron tube technical data on Sylvania's industrial products line in 38p catalog, alpha-numerically indexed for quick reference. **197**

Communications-CATV cables, seamless aluminum and polyethylene jacketed types specified in product sheet from Amphenol. **113**

CATV line amplifiers and distribution equipment literature package; CATV Electronic Transmissions Systems booklet from Entron. **198**

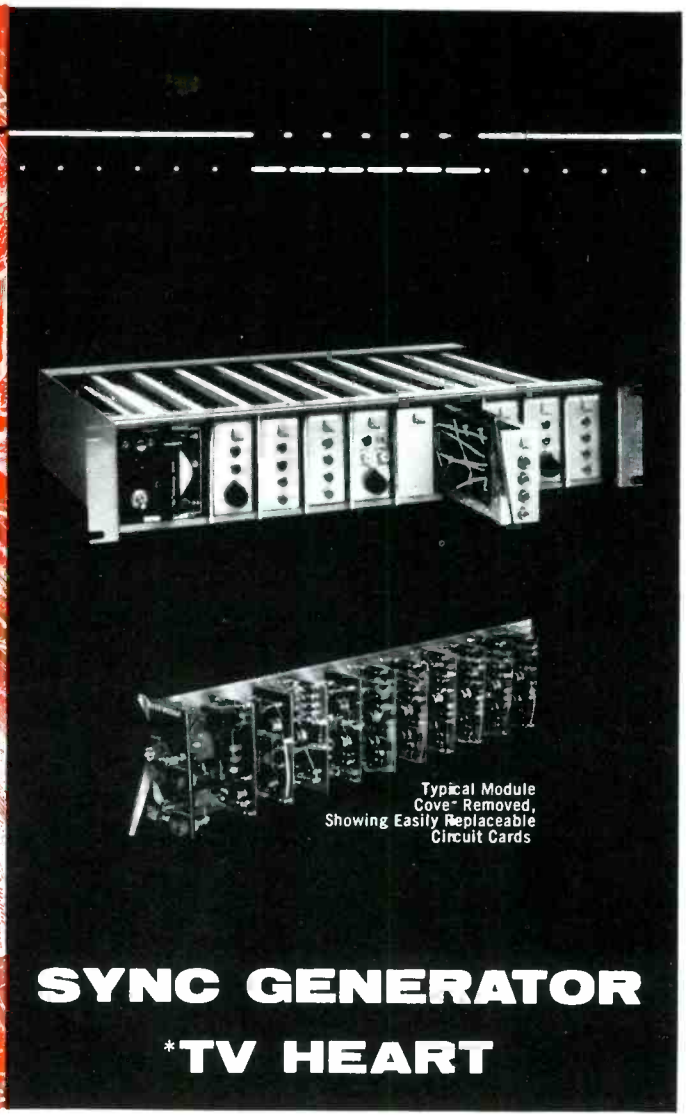
CATV coax, Anaconda "Sealmetic," specified in 8-page brochure, includes cable data, handling-installation facts, connectors. **120**

CATV amplifiers, including solid-state AGC, mainline, and bridging types, illustrated in 8-page brochure from Viking. **121**

CLASSIFIED

FOR SALE

Signs, Nameplates, Labels. Decals of all kinds. Badges, Trophies and Plaques. Free Samples. Seton Corp., Dept. BME, New Haven, Conn. 06505.



2nd BEST WON'T DO

SYNC GENERATOR—THE REAL HEART OF YOUR TV SYSTEM

If it falters or stops, everything ceases! Like your heart, it sends pulses throughout your TV facilities. All other equipment depends on its **reliability, accuracy, stability.** Riker Industries Sync Generators are based on computer logic techniques — not merely transistorized versions of tube circuitry. Imagine an EIA Sync Generator so stable that no front panel adjustments are necessary. To be sure, parameters are adjustable but once set, they DO NOT VARY—pulse widths and amplitudes are controlled by fixed delay lines, binary counters and zener diodes. From a cold start, all levels are as pre-set. In long term use, there is no drift. Switchable-Free running, Crystal, AFC, Color.

All portions of the Riker Sync Generator are supplied as modules. Systems may be assembled to meet your exact present requirements, features may be changed or added to meet future needs.

All units, 3½" high, may be rack mounted or in portable cases.

AVAILABLE MODULES: Timer • Pulse Gates • Counter • Pulse Amplifier • Sync Lock • Switchable 3 Speed Vertical Lock • Bar and Dot Generator • Remote and Automatic Sync Change-over • Color Frequency Standard • Subcarrier Regenerator • Diagonal Bar Generator • Vertical Phasing Module.

Proven by 4 years of continuous operation. In use in all major networks, prominent TV centers, the White House and many government agencies.

FOR COLOR AND MONOCHROME

IMMEDIATE DELIVERY

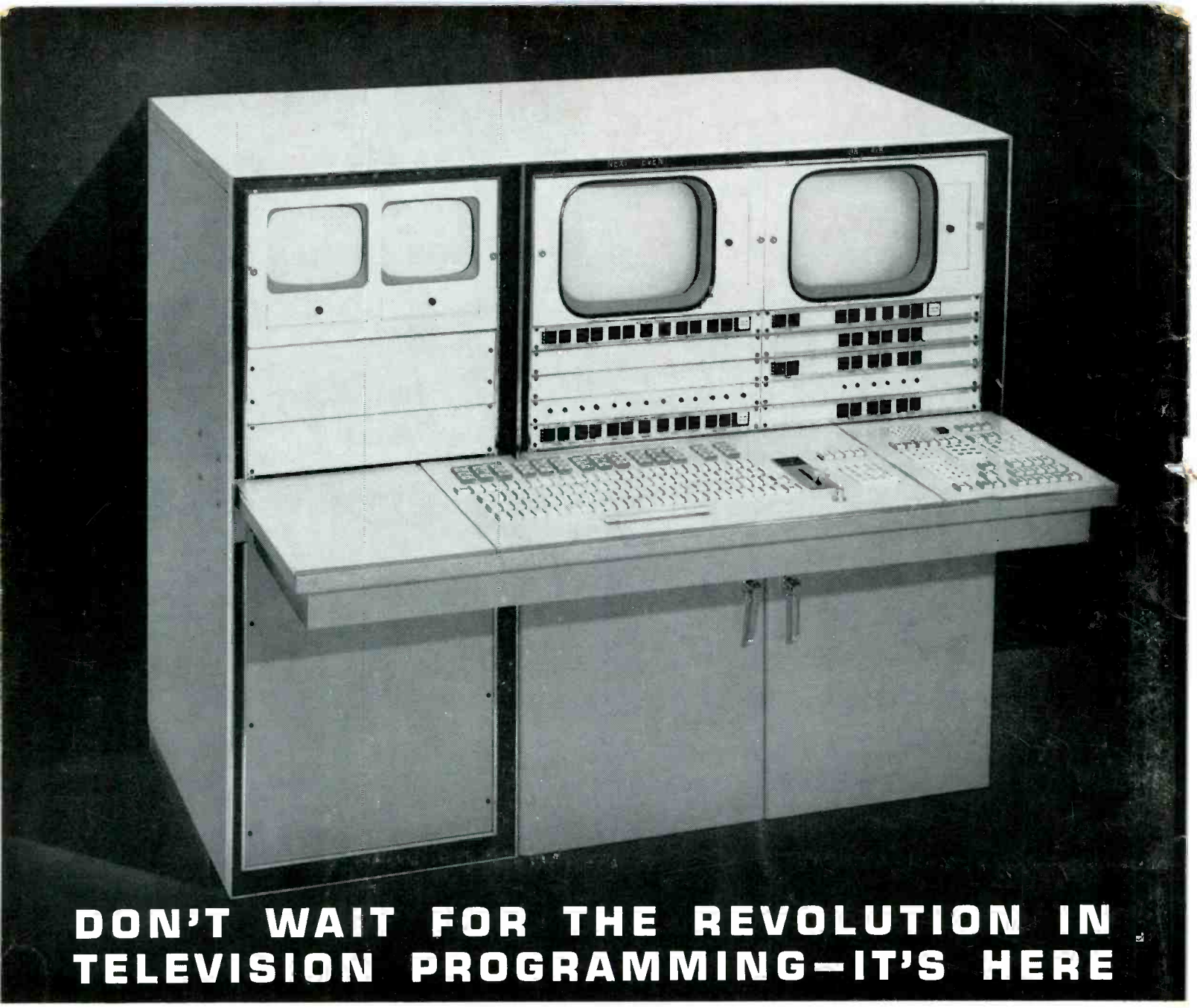
RIKER INDUSTRIES, INC.

...thinking always of tomorrow

NORDEN LANE, HUNTINGTON STATION, NEW YORK: PHONE 516 HA 1-3444

ATLANTA • LOS ANGELES • DETROIT

Circle 3 on Reader Service Card



DON'T WAIT FOR THE REVOLUTION IN TELEVISION PROGRAMMING—IT'S HERE

It started about a year ago, when Sarkes Tarzian introduced an automatic programmer for television. A few were skeptical. There were many questions, naturally, for nothing so sophisticated in television automation had ever before been attempted.

Now, experience confirms it.

Tarzian's APT-1000 is the most versatile television programming system in existence. In fact, performance of the APT has been so sensational, we invite you to try to stump it. We're confidant this solid state computer can handle any programming problem you have—better, faster, and smoother than you ever thought possible. Fact is, it has never been possible . . . before.

A special purpose computer, APT-1000 was designed solely for total and flawless television programming. It can't panic, prime time or any time. Easy operation develops an operator confidence that shows up in improved efficiency and quality of programming.

Television programming now enters a new era . . . for even while the complexity of operations continues to increase, a greater competence and significant cost reduction become possible with APT.

If Automatic Programming for Television sounds phenomenal . . . you should see it in action. All it takes is a call or letter. And ask, too, for details on Tarzian's revolutionary new TASCOM, the digital computer which solves those costly and time-consuming traffic-availabilities-scheduling problems.

SARKES TARZIAN

BROADCAST EQUIPMENT DIVISION — BLOOMINGTON, INDIANA

Circle 4 on Reader Service Card