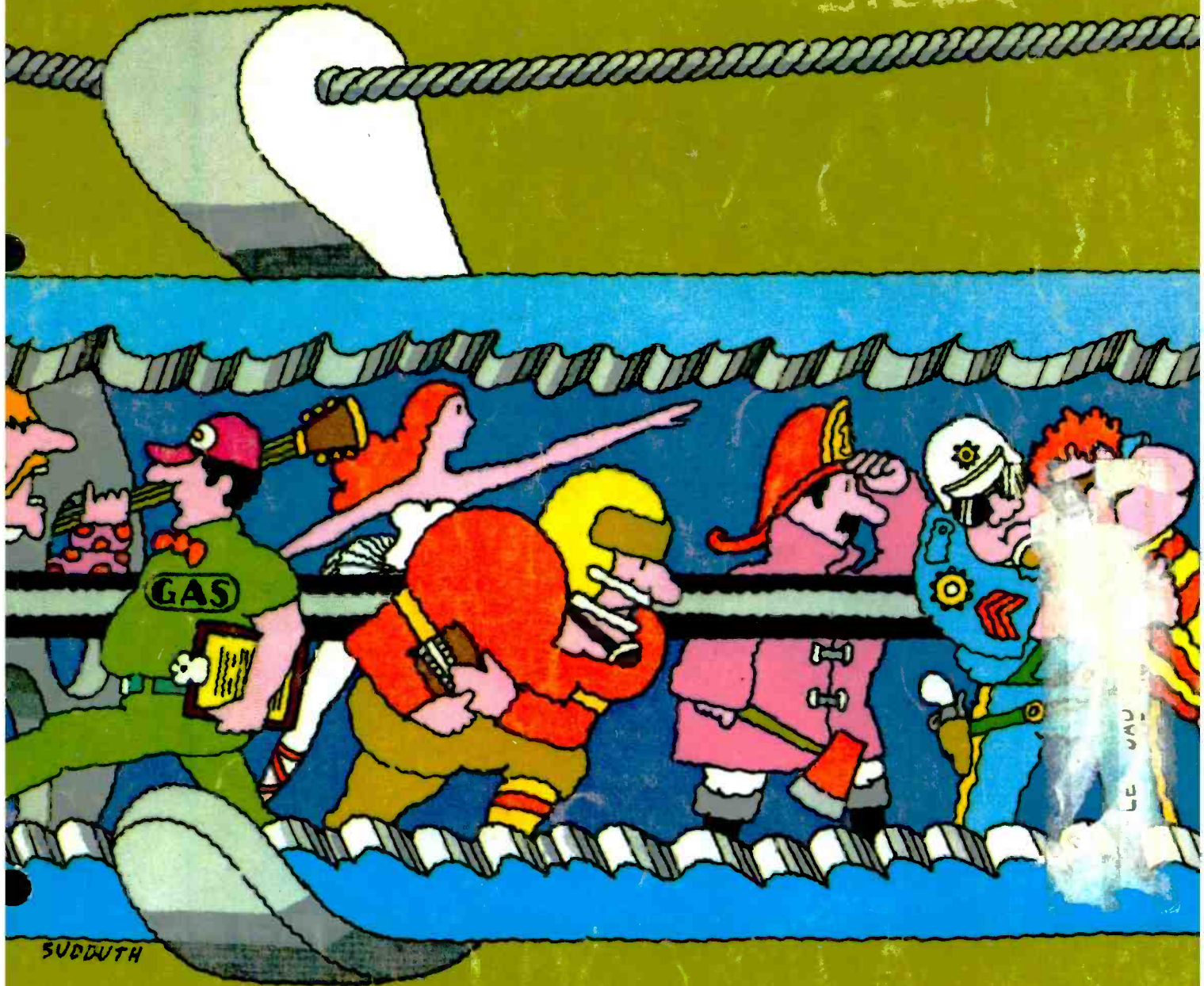


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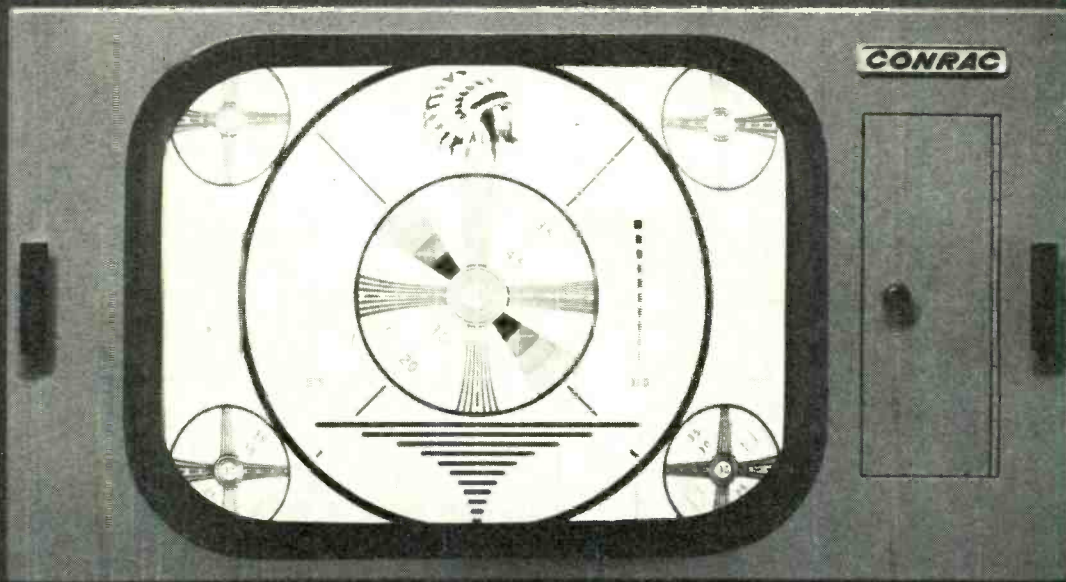
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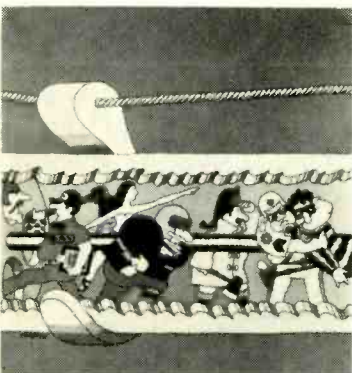
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What began as a one-way entertainment medium has now reached a big turning point: CATV is about to become a two-way high-volume channel for many services. Art Sudduth's cover suggests a few: automatic meter reading, pay TV, fire and burglary protection. For a look at how one proposed system would accomplish such multifarious capability, turn to page 28.

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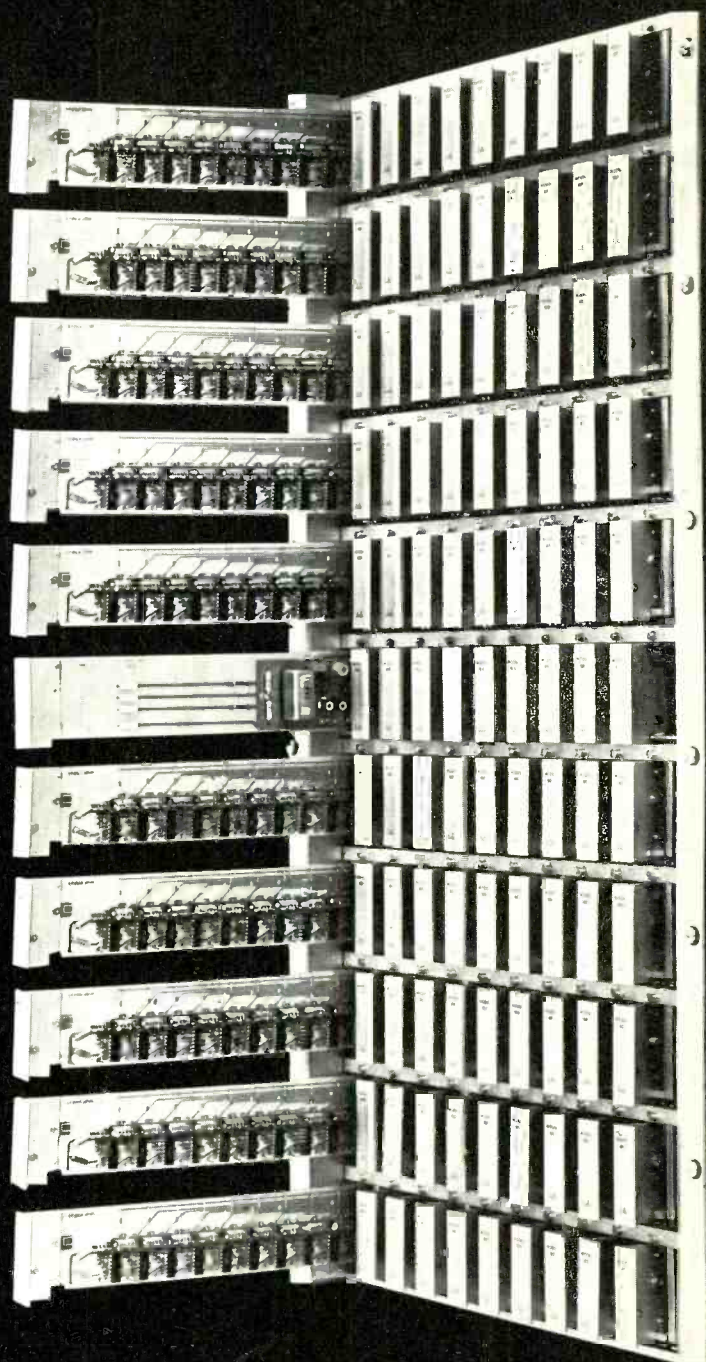
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The illustration shows a 100 X 10 video switching system. The eleven modules partially withdrawn comprise a complete 100 X 1 portion of the matrix and serve to illustrate how The Grass Valley Group has designed its system to allow servicing of one bus without affecting adjacent buses.

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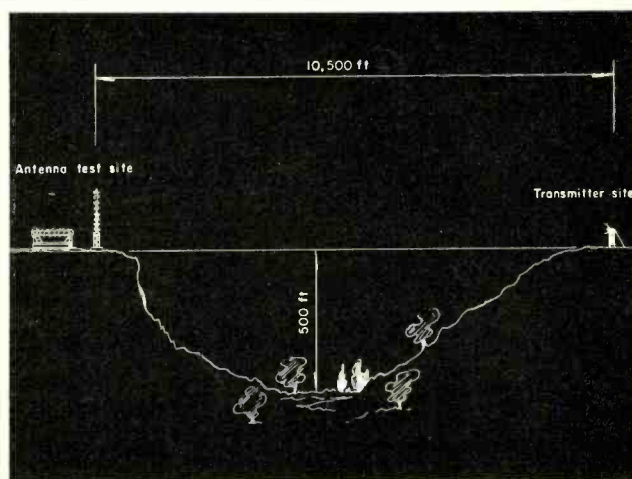
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BROADCAST INDUSTRY NEWS



New TV transmitting antennas tested in "free space"

Obstruction- and reflection-free testing areas are what they need to prove-out the ideal transmission and reception characteristics of TV antennas. Ampex's antennas (left) get a run-through on the newly-developed site near Westfield, Mass. Signals are beamed across a 600-ft deep valley from a hilltop 6000 feet away. Since 1954, GE has had a similar set-up (right) with the transmitter 10,500 feet distant. While the antennas rotate 360°, tilt horizontally and vertically, and revolve on their own axes, radiation pattern measurements are made and data recorded for specific customer needs.

Network prime time limit: Will it last?

For the moment, at least, the FCC has ruled that as of fall 1971, TV broadcasters must run a full hour of nonnetwork programming during the four hours of prime time each night.

Supporting the rule were Commissioners Cox, Johnson, Bartley, Robert E. Lee and H. Rex Lee. But the majority might become a minority at the end of June, when Commissioner Cox's term ends. Commissioner H. Rex Lee has admitted he might consider softening the rule when it is reconsidered, which will occur after Commissioner Cox's possibly anti-prime-time-limitation successor steps in. That would leave only three supporters against four "revisionists."

The new rule's purpose is to promote independent programming and more diversity in prime-time viewing. In his dissent, Chairman Burch predicted that it wouldn't work. He told an interviewer: "If your object is to make money for

the syndicator of 'Son of Lassie' or 'Daughter of I Love Lucy,' the rule is all right. But I don't believe it is going to introduce a new dimension in television pleasure."

The only exception to the rule is made for news specials and on-the-spot news reports. For the hour filler, stations will not be able to carry network reruns or second-run movies. Networks won't be able to syndicate domestically, and foreign syndication will be allowed only for network-produced programs.

Burch gives answers

A lot of what state broadcasting presidents wanted to hear, they heard from FCC Chairman Burch speaking at the NAB State Presidents' Conference.

Answering questions for an hour, Burch said he wanted broadcasting to be profitable; the Commission was making too many "management decisions"; he didn't like the WHDH decision; he didn't like the three-hour prime-time re-

striction for network programming; some of the recent FCC fee raises were "a little cavalier."

Distant signals for CATV?

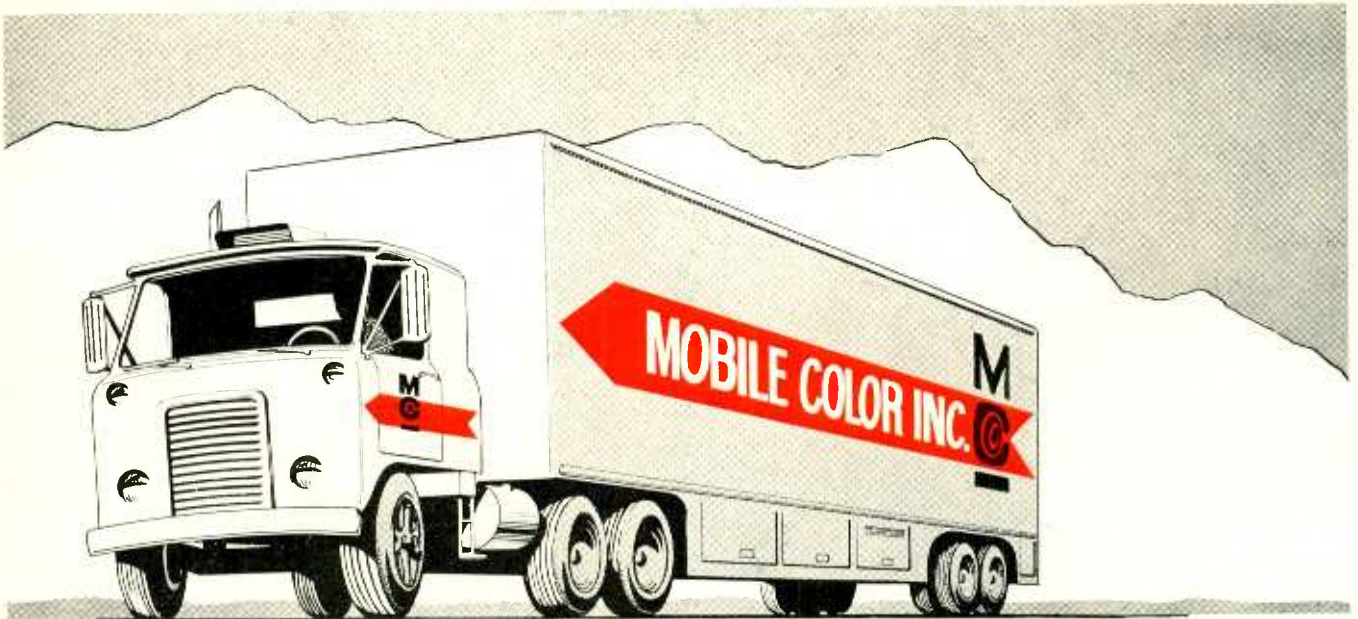
The FCC might issue a Notice of Proposed Rulemaking if its staff comes up with an acceptable proposal allowing cable systems in the top 100 market to import up to four distant signals, paying copyright fees (which requires passage of the copyright bill by Congress) and substituting local stations' ads free so as to avoid competition for ad space.

As to how, when and if it can be done . . . there's a lot of controversy about that.

Harsh pay-TV bill approved by committee

The House Commerce Committee passed, 17-10, a strict pay-TV bill now going to the House floor.

Prohibited for subscription television by the bill: commercials;



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films older than one year; regular series programs; and any sports contest which has been televised in the last five years. Programming requirements for the pay-TV series, which would be allowed only in markets already served by at least four commercial stations, include a minimum of eight hours of broadcasting a day, no more than 45% of which (60% during prime time)

may be films and sports in any 24-hour period.

The bill is much more stringent than FCC rules limitations, and pay-TV proponents fear it may kill the service if it becomes law without substantial softening. Some go so far as to say its passage by the House Committee might "tear the Committee apart" because of the byplay involved in its passage—

Rep. Dingell (D., Mich.) brought it up when several pay-TV supporters were absent.

If the bill makes it through the House, speculation is that the Senate will be more accommodating to subscription television when the legislation comes up.

A boost for videotape printers

Thermal duplication is the name given by Memorex for its new process of high-speed printing of color videotapes. Copy tapes are chromium dioxide, while masters may be any type. The company says an hour-long tape can be printed in four minutes, and several copies may be made simultaneously from the same master. Prototype system at Santa Clara, Calif., is copying helical tapes. It does not use the external magnetic field of the IBM, Panasonic, and Ampex systems. The Memorex transfer agent is simply heat.

Duplication of broadcast tapes seems about ready for a significant boost. 3M continues working on a high-energy videotape which will permit direct tape-to-tape transfer without need for mirror image master. And Ampex is readying its ADR-150 quadruplex duplicator for delivery.

Panasonic showed, at IEEE, a machine for quadruplex tape duplication, but has gone mum about its helical printer. Industry speculation is that Japanese manufacturers are redirecting efforts toward printers capable of handling new EIAJ helical standard format.

AM stereo debuts

Since May 2, a Mexican station which can be heard in the U.S. has been broadcasting stereo on the AM broadcast band. XETRA, a 50-kW station at 690 kHz in Tijuana, uses stereo equipment developed and built by Kahn Research Laboratories of Freeport, N.Y. In normal monophonic AM operation, both sidebands are identical. In the Kahn system, one sideband contains L information, the other, R information. Thus to receive AM stereo you tune one radio slightly to the left of the station carrier, and tune another slightly to the right. A mono listener tunes to the center and gets L + R.

AM stereo was proposed in the U.S. some years ago but rejected by the FCC. Although a high-power AM station can cover a much larger area than an FM sta-

Rf plumbers save the day



"Any power is better than no power" is the motto of at least one chief engineer. When 80-mile winds ruined part of the transmission line at WKTR-TV Dayton, two men got the station back on the air at reduced power with a homemade antenna. The dipole—made of 3½ inch coax—is held in the photo by WKTR-TV chief engineer Erv Warnick. He and RCA Service Co. field engineer Claude Parker rigged the temporary antenna. Warnick says they were able to get about 10 kW into the makeshift radiator. WKTR-TV normally runs 760 kW ERP (visual).

On April 2, high winds moved a section of the transmission line at the 300-foot level, causing internal arcing which built up carbon. Strangely, the carbon acted as a dummy load which kept VSWR low, preventing relays from shutting the transmitter down. But the rf was being dissipated in the coax, not radiated by the antenna. Warnick called Parker and the two got busy with a spare piece of line.

They built the temporary antenna by the cut-and-try method, using a reducer balun from the station's dummy load to convert from 6½ inch to 3½ inch line. The dipole was mounted on the station tower at the 300-foot level, and WKTR-TV got back on the air April 4 at low power. Warnick conducted an informal telephone survey and was surprised to find acceptable pictures at many locations in the market.

The damaged line was repaired and WKTR-TV resumed full-power operation April 7. Warnick says he's had his fill of rf plumbing for now.

How do you pick up sound without noise?

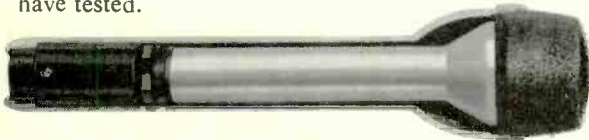
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Model RE50 omnidirectional dynamic \$120 list. Model RE85 lavalier dynamic \$133 list. Less normal trade discounts.

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Small, light, and just barely larger than the smallest microphones of their type. Yet both use a unique double-wall construction that is more effective in reducing microphone noise than any other we have tested.



Let's look into the RE50 first. A cutaway shows that inside each RE50 nestles the familiar 635A, case and all. It's shock-mounted at top and bottom to the outer case. Even the connector is isolated from the actual microphone. And the problems

of mass and resonance have been worked out (with the aid of our computer) so that contact noises and cable rustling never reach the Acoustalloy* diaphragm.

The result is remarkable isolation from all but air-borne sound, even in hand-held applications where microphone movement is uncontrolled. And when you add the extra protection of the built-in Acoustifoam* blast and pop filter, this is one of the quietest omnidirectional microphones you can find. Yet response, output level, and polar pattern are essentially the same as the 635A (one of the most popular professional microphones of all time).

But if noise can be a problem with hand-held and stand microphones, it is a plague to lavalier types. Clothing rustle, cord noise, and accidental contact with hard surfaces are common troubles. Ex-

cept with the new RE85. Again, we have created a microphone within a microphone. But we've gone even farther. A special low-noise grille, for instance. And even the hard, smooth paint finish was chosen to reduce small rubbing noises.

The result is virtually noise-free operation even with inexperienced performers. And at no expense to sound quality. Like all E-V lavaliers, output of the RE85 is peak-free and natural. Each RE85 comes complete with neck cord, tie clip, and a belt clip to help control the cable. The RE50 is supplied with a Model 300 stand clamp.

Both the RE50 and the RE85 are now available at your E-V microphone headquarters. In this noisy world, it's a relief to know that help has quietly arrived.

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tion of comparable power, the AM signal is subject to static and other interference which is practically nonexistent in FM. Also, the AM system inherently has a poorer signal-to-noise ratio than FM. Finally, most AM receivers have an audio bandwidth of only about 5000 Hz, unlike the 15,000-Hz response of FM.

McDonald touts Congress's concern over CATV growth

"Movement rather than stagnation" is how Chairman Torbert H. McDonald of the House Subcommittee on Communications characterized recent government activity in CATV.

Mentioning FCC moves toward cable-originated programming, microwave links between CATV systems and the telco ouster from cable service, McDonald suggested that the Commission has acted quickly, "in frame of reference to the FCC's historically glacial time scale."

But most important, he emphasized, was "informed Congressional concern," which he credited with spurring progress toward breaking the "cable stalemate." "Congress does not necessarily have to pass a law to be effective in a given field," he added.

As evidence of "Congressional concern" the Congressman cited the developing copyright law dialogue and the continuing hearings initiated last year by his House Communications Sub-committee.

McDonald was speaking before the annual meeting of the Ohio Cable Television Association in Columbus.

IN BRIEF...

A finished 30 sec animated sequence can be produced in three hours—including shooting, recording and transferring to videotape. National Teleproductions Corp. has a full Ampex HS-200 Teleproduction System in operation and claims it will produce special effects and animation faster and at less cost than film. The makers of a recent half-minute animated ad for Boron Oil claim they saved 20 days production time by using the new system.

Advertisers spent \$1,697,420,500 on network TV last year, according to TvB figures. Number one spender was Procter & Gamble Co. (\$120,540,700) and investments

ranged down to \$2,800 spent by number 434 (Pacific Northwest Bell). The total, highest ever, was 9.6% above 1968's figure. Recent FCC statistics show that the net revenues and income for the three networks plus their 15 owned and operated TV stations reached \$1.5 billion for 1969, 12% higher than in 1968. Profits (before Federal income taxes) were \$226 million, up from 1968's \$179 million.

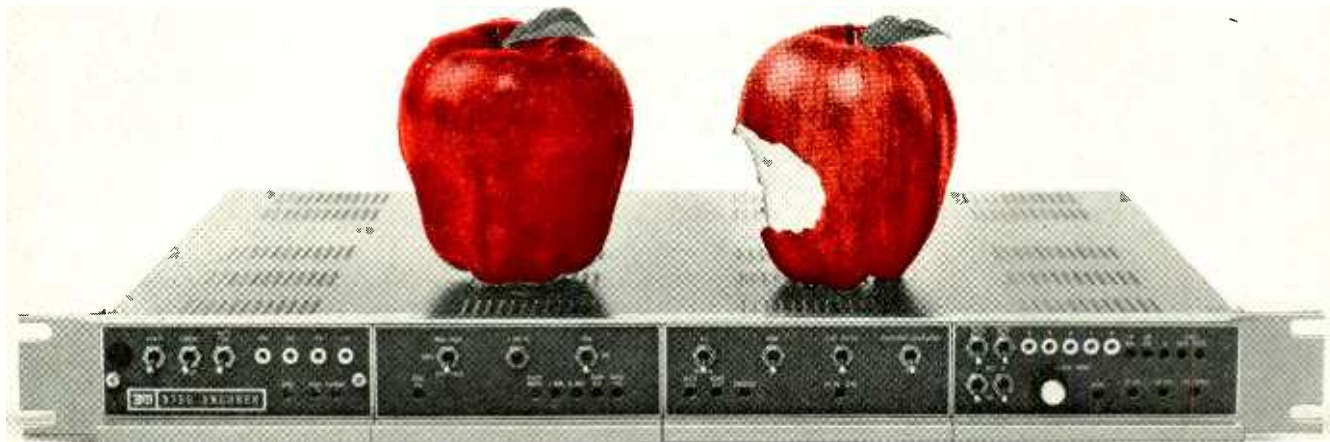
HMH is a new marketing and sales organization formed to distribute and market broadcast, CCTV, CATV and tele-communications equipment. Covering the Northeast U.S., H. M. Holzberg Associates is going to open a New York City location soon.

GE has a new marketing organizational line-up—a new product manager for each of four areas: program production (Robert W. Cochran); radio-frequency products (Thomas F. Bost); station operation products (O. A. Lively); and CCTV products (Paul D. Hauler).

They put the sight on video and the sound on FM stereo in Boston and it came off well. WGBH Educational Foundation cut and cued the videotape with the stereo tracks "to within one frame accuracy" for the WGBH-TV and -FM simulcast of NET's "My Heart's in the Highlands." It was so successful they plan to use the technique again for 13 upcoming Boston Pops concerts and some more operas.

Business notes: Financial ups and downs reported recently include a decline in overall sales at **C-COR** to \$2,009,685 for 1969, from the CATV equipment maker's 1968 total of \$2,430,019. Profits dropped from about \$80 million to \$47 million. **Certron** (audio-magnetic tape) recently went on the American Stock Exchange and reports first-quarter fiscal 1970 sales up 124% from same period last year. **CBC's** broadcasting revenues gained 3% for the first quarter, while **Cox Cable's** quarter revenues rose 10%. Cash earnings at **Cypress Communications** for the last six months of 1969 were up a little more than a third from the previous year. **DEI Industries** had a net loss of under a million dollars for 1969. **H & B American's** net income for the six months through January increased 16% while gross revenues rose 12%.

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The 3M Color Encoder is compatible with all 3-tube and 4-tube cameras, meets all applicable FCC and EIA specs. There's also a 2F notch filter in the horizontal aperture equalizer to prevent noise beyond camera frequency response.

Luminance enhancement at the flick of a switch assures a sharp picture even if registration is not perfect. With a 4-tube camera, enhancement is from the luminance tube. The green channel is used for enhancement in 3-tube cameras. Switching is on the front panel, as are all operation and setup controls, including notch filter.

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More color control, convenience. Now the PC-70S-2 is also available with non-linear matrixing to achieve an infinite range of tints and hues. You can color-match to any camera you own. Even those problem colors in packages and costumes snap into true-to-life color.

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INTERPRETING THE **FCC** RULES & REGULATIONS

FCC Restricts Multiple Ownership

The Federal Communications Commission has recently adopted far-reaching rules restricting multiple ownership of broadcast facilities.

The new rules affect virtually all broadcasters and should be carefully read and analyzed by all present and potential licensees.

Background

The FCC's multiple ownership rules¹ (§73.35, §73.240, and §73.636) are essentially divided into two parts: (1) the "duopoly" rule and (2) the "concentration of control" rule.

In effect, the "concentration of control" rule attempts to foster maximum competition in broadcasting and to promote diversification of programming sources and viewpoints—by limiting one party's ownership of broadcast facilities to seven AM, seven FM and seven TV stations (with no more than five vhf stations). The "duopoly" rule attempts to promote additional diversification and competition by forbidding ownership of identical facilities (e.g., two AMs) with overlapping contours. For example, a party cannot own an AM station in community "A" if he already owns an AM station in community "A," or in an adjacent community if the two 1 mV/m contours overlap. More broadly, the duopoly rules prohibit the same party from owning, operating, or controlling more than one station *in the same broadcast service* in the same area. However, this rule has not prevented the ownership of stations of a *different* service in the same area; hence, many communities have an AM, FM and TV facility owned by the same licensee. And it is this situation which the new rules are designed to restrict.

The New Rules

The new provisions adopted by the Commission retain all the preceding standards, but prescribe future acquisitions of common ownership interests in different broadcast facilities in the same area or "market."

Generally, the new rules will not allow an additional grant of a license to a party who already owns one or more full-time stations in the same "market" as the proposed new station. Thus, a party owning an FM station in a community, for example, would not be allowed to construct or purchase an AM or TV station in the same "market" or community.

Of course, there are exceptions to the new

rule, but they are highly restrictive and will affect only a minute number of licensees.

The basic exception involves Class IV AM stations (those assigned to 1230, 1240, 1340, 1400, 1450 and 1490 kHz) in communities of less than 10,000 population. In these areas, AM licensees will be allowed a license for an FM station *even though the two stations would be in the same market*. However, the converse is not permitted: an FM licensee in a community of less than 10,000 population may *not* obtain an AM station or construction permit for a new AM station in the same "market."

It is easy to see the Commission's rationale: A broadcaster may operate a *full-time* broadcast facility in a given market. If he has only a *day-time* AM station, therefore, he may provide full-time broadcast service to the community by adding a full-time FM station.

Similarly, recognizing the economics of communities with under 10,000 people, the Commission will allow low-power full-time Class IV AM operators to get an additional license for an FM frequency (which, in such communities, would probably otherwise go unused).

Certain other Commission "exceptions" are directed to the many AM-FM combinations that now operate throughout the country. One exception covers facilities in which an FM station has been constructed as an integral part of the AM station: the same tower has been utilized, the same studios are used for production, and the like. This exception allows a broadcaster to get licenses for an existing AM-FM combination in the same market as long as a "proper showing" is made by the seller: The seller must demonstrate that economic or technical considerations preclude separate sale and operation of the AM-FM combination.

The real meaning of the phrase "proper showing" has yet to be interpreted. It will probably evolve on a case-by-case basis; however, it is a certainty that applications proposing the assignment or transfer of such facilities will be scrutinized carefully by the Commission, and most requests for waivers (on economic and/or technical grounds) are apt to be denied—at least initially.

Happily, the FCC has set forth with specificity definitions of other terms in its new rules.

1. For previous **BM/E** articles on multiple ownership, see May, June, July, 1966; and June, September, October, 1968 issues.



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Definition of "Market"

The new rules do not define "market" by community or city name; rather they set forth exact terms of *contour overlap*. Specifically, these new standards are as follows:

1. Common ownership of a TV station and an AM station is prohibited if the Grade A contour of the TV station encompasses the entire community of license of the AM station.
2. Similarly, common ownership of TV/AM is prohibited if the 2 mV/m contour of the AM station encompasses the entire community of license of the TV station.
3. If the 1 mV/m contour of an FM station encompasses the entire community of license of an AM station, common ownership of the two stations is not permitted.
4. If the 2 mV/m contour of the AM station covers the entire community to which an FM station is licensed, the same party may not own both facilities.
5. Common ownership of TV/FM facilities is not permitted if the 1 mV/m contour of the FM station covers the TV community of license; similarly, if the Grade A TV contour encompasses the FM city of license, common ownership is prohibited.

Forced Sale of Stations Proposed

The broadcast industry is replete with rumors of eventual forced divestiture of multiple stations owned by one party in a single market.

The initial Notice of Proposed Rule Making in Docket No. 18110 considered the possibility of forced sale, but the Commission has made it clear that no divestiture, by any licensee, of existing facilities is *now* required. Ominously, however,

the Commission concludes its declaration of no divestiture by noting that such will not be required "at this time." (Emphasis supplied.)

Moreover, the FCC has instituted a Further Notice of Proposed Rule Making in Docket No. 18110 to consider forced divestiture and newspaper ownership of broadcast facilities.

Since the study is restricted to proposed rules, a full examination is not warranted at the moment. However, the Commission saliently notes that it is concerned with common TV and newspaper ownership in a single market. Observing that newspapers and television have a singular influence on the nation, and that research indicates 94 television stations are affiliated through common control with newspapers in the same city, the FCC poignantly declares that "it is not desirable that these two organs of mass communication should be under the same control in any community."

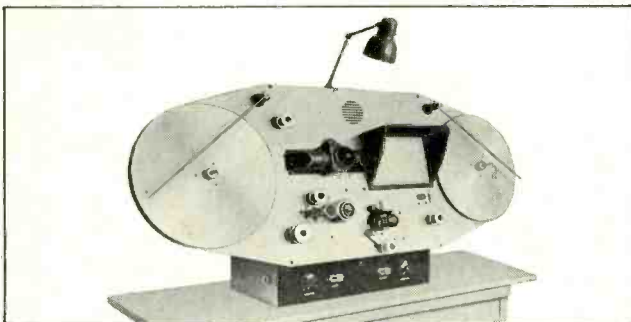
Thus, the Commission, "for the purposes of promoting competition among the mass media involved, and maximizing diversification of service sources and viewpoints" proposes to adopt rules requiring divestiture of newspaper or multiple-broadcast holdings. The rules, if adopted, would require divestiture, *within five years*, to reduce holdings in any market to one or more daily newspapers, or one television station, or one AM-FM combination.

Future Uhf-FM Growth?

The Commission has fostered the growth of uhf television and FM by encouraging existing AM licensees to construct such facilities. The FCC

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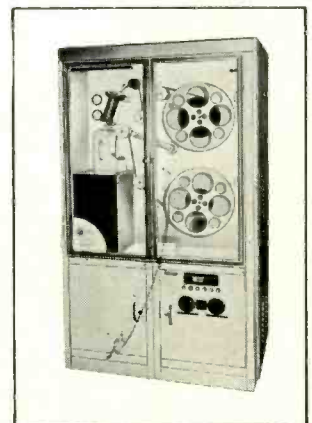
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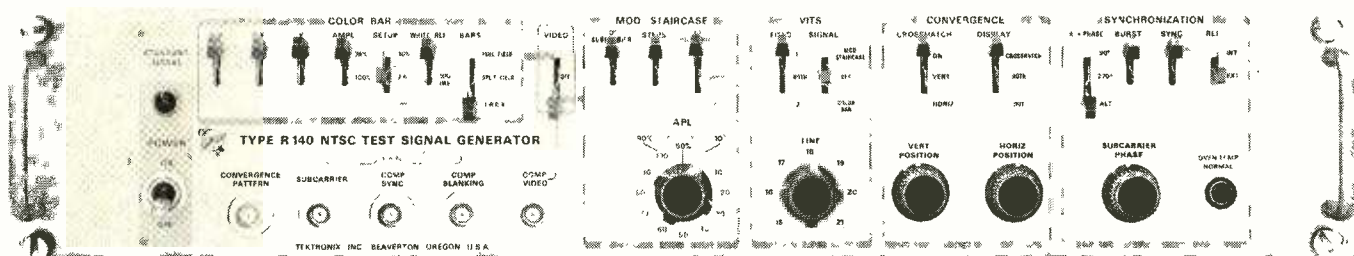
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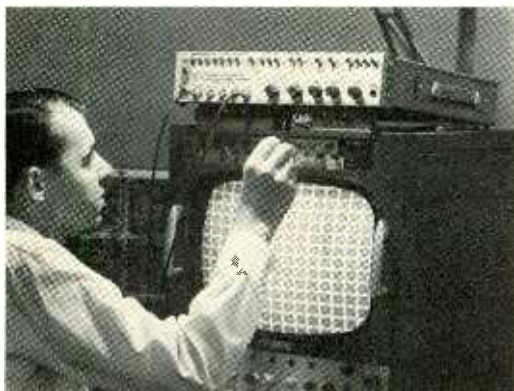
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The Proceedings is 256 pages, 8½x11", and is bound in durable vinyl for convenient use. The Special Prepublication Price of \$7.95 prevails through June 30, 1970; thereafter the regular list price is \$10.00. Three copies or more ordered at one time obtain a 10% discount.

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- SOLVING THE OPERATIONAL PROBLEMS OF LIVE COLOR CAMERAS**—Thomas M. Jordan, Jr., General Electric Co., Syracuse, N.Y.
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- MICROWAVE ECONOMIES**—Albin R. Hillstrom, KOOL AM-FM-TV, Phoenix
- A SYSTEM FOR LOW-COST FRONT-SCREEN BACKGROUND PROJECTION**—James W. Hulfish, Jr., Spindler & Sauppe, Inc., Glendale, Calif.
- FCC/INDUSTRY TECHNICAL PANEL**—Moderator: Benjamin Wolfe, Post-Newsweek Stations, Washington, D.C.

recognizes that "surely independent uhf stations still need all the support they can receive" and that "financial data reported by FM stations indicated that they are generally losing money."

As noted above, the FCC will counter these problems by permitting, in some instances under the new rules, the transfer or assignment of an AM-FM combination to a single licensee. Also, the Commission will take up proposed acquisition or construction of uhf facilities by AM and/or FM licensees on a case-by-case basis. Lenient treatment of such uhf proposals may be forthcoming.

Conclusion

By the adoption of these new rules, the Commission has effectively prohibited the further acquisition of broadcast properties in the same market by the same licensee. The new rules now apply to all applications for new stations, assignment of license and transfer of control of existing facilities (except pro forma or involuntary assignments and transfers), as well as to applications for assignment or transfers to heirs or legatees by will or intestacy.

The Commission is, of course, fighting its years-old precedent of encouraging some licensees to build and operate TV and FM stations in the same market. "Changed circumstances" is the reasoning. Notes the Commission:

We believe that the increased amount of broadcast service now available forms the basis for the conclusion that, with exceptions (noted above), it is no longer necessary to permit the licensing of combined operations in the same market, as was the case in the early days of broadcasting, in order to bring service to the public. It is urged that the Commission not only permitted but encouraged AM licensees to become TV licensees in their own area, and again, later, to acquire FM stations in their area, that it is inequitable now not to permit such common ownership for it robs such owners of the fruits of their risk taking, and that the rules will hinder FM and uhf development. At the time that such encouragement was given to AM licensees, we considered that the objective of encouraging the larger and more effective use of radio was overriding, for TV and FM channels were lying unused. *But conditions have changed, and we are obligated to change the priority of our objectives, in the public interest.* (Emphasis supplied.)

Hence, the new rules are based on the avowed purpose of "the widest possible dissemination of information from diverse and antagonistic sources . . . essential to the welfare of the public," together with "a concomitant desire to prevent undue economic concentration" of the broadcast services.

The political, philosophical, social, and other considerations behind the new rules and proposed divestiture rules will stimulate heated discourse among the pundits. Regardless of one's personal disposition, however, it is apparent that the broadcast ownership patterns are being gradually restructured. **BM/E**

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NCTA 70: CATV Comes of Age

Palmer House,
Chicago, June 7-10, 1970

FCC Greetings

In a surprising about-face the FCC commissioners have come up with a novel solution to permit unlimited distant signal importation into almost any market.

For a copyright fee of 0.7% of a system's gross income, any distant signal could be carried provided that: Congress approves the copyright fee; another 5% of the system's gross income goes to the Corporation for Public Broadcasting; and advertisements of local independent stations are substituted for those on the distant signals (to prevent dilution). To protect the cable system, the proposal would limit franchise fees paid to cities to 2%.

The FCC staff has been asked to draw up a workable proposal. In addition to expected opposition from cities, large broadcasters, copyright holders, and some CATV operators, there remain the technical problems of how local ads could be inserted practically—and whose, assuming there are several local channels.

Following closely the industry's first CATV programming conference (see report on page 26 of this issue), cable operators come to the big convention with a mixture of apprehension and expectancy. The apprehension is caused by the general state of the economy (not good) and the expectancy is due to the FCC's recent actions toward cable. Where last year CATV was faced with a freeze, this year the Commission is showing an about face in its attitude on importation of distant signals.

For two years the big emphasis has been on broadened channel capacity. This year it will switch to two-way transmission capability. At the 1969 convention, Cascade and HTV claimed that capability. This year Jerrold and C-Cor promise to show two-way amplifiers. A newcomer advertising two-way capability is Electronic Industrial Engineering, Sylvania, also is expected to announce its entry as an amplifier source—at the IEEE Convention in March. Sylvania displayed a two-way trunk amplifier. Vikoa, prior to the show, has been mum on the subject.

A new concept in amplifiers will be shown by Anaconda. Its new Century 21 line will use hybrid ICs. A cooperative effort by Anaconda and Hewlett-Packard, the IC amplifier re-



Fine points of local origination will be discussed. Photo from Texas CATV meeting.

duces the number of discrete components needed, increasing reliability. The Century 21 is basically a one-way amplifier but a two-way option is available. Anaconda's specs will claim excellent stability and repeatability and the broadest bandwidth available today in cable.

Although two-way amplifier capability will be touted, there is likely to be a dearth of subscriber encoder equipment, essential to practical two-way communication, shown. (Subscription Television—see story beginning on page 28 of this issue—has such proto-type equipment but is not an exhibitor.) In fact the industry is still waiting for more practical subscriber converters to make 12-plus channel reception easier. Craftsman will show a 25-channel varactor-tuned converter following up on its announcement of last year. AEL Communications will show a tuner-less block converter. Seven channels are converted to vhf channels, 7-13. It's said to have outstanding frequency stability. Electronic Industrial Engineering says it has a 24-channel in-system converter.

Multi-channel systems are here. The Twin-County, Pennsylvania, system has 27 channels (see story on page 22 of this issue) and a system operated by the Philadelphia Bul-

General Sessions:

Sunday, June 7

- 10:00 am—Registration
- 1:00 pm—Exhibit areas open
- 6:00 pm—Reception

Monday, June 8

- 8:00 am—Eye-opener sessions
- 9:15 am—Opening session
- 12:30 pm—Luncheon. Speaker: Eugene V. Rostow (former chairman of the President's Task Force on Telecommunications Policy)
- 2:30 pm—Management and technical sessions

Tuesday, June 9

- 8:00 am—Eye-opener sessions
- 9:15 am—Management and technical sessions
- 12:30 pm—Luncheon. Speaker: Herbert Klein, (Director of Communications to President Nixon)
- 2:15 pm—Technical session
- 2:30 pm—Business meeting

- 6:30 pm—Chairman's reception
- 7:30 pm—Banquet

Wednesday, June 10

- 8:00 am—Eye-opener sessions
- 9:15 am—Management and technical sessions
- 12:30 pm—Luncheon. Speaker: Dean Burch (FCC Chairman)
- 2:30 pm—Management and technical sessions

Eye-Opener Sessions

- Intermodulation and Cross-Modulation Testing
- Performance Testing of Modulators and Demodulators and Vertical Interval Test Methods
- Measuring VSWR
- Summation Sweeping Method
- Signal-Level Meter-Calibration Techniques
- Noise, Noise Factor, and Hum Measurement
- Cable Amplifier Powering Methods

- Frequency Measurement Methods
- Echo and Ghost Measurement Techniques

Technical Sessions

- Two-Way Transmission Systems
- The Coaxial Cable
- CATV Amplifier Design
- Headend Design
- TV Receiver—CATV Interface (Discussion)
- CATV Standards Proposals (Discussion)
- Microwave for CATV
- Program Origination
- System Design

Legal Sessions

- Broadcasters Look at CATV and a Response
- New Regulatory Approaches
- Do's, Don't's, and Why's of Labor-Union Campaigns
- Power Companies, Telcos and Their Regulators
- Cablecasting—An Insatiable Appetite

letin in Bucks County, Pennsylvania, has 24 channels on two cables.

Among a new class of exhibitors are a number of programming sources. Over a dozen will be on hand. Be sure to check the seventh floor because not all of the companies were able to get exhibit floor space. Studio equipment manufacturers will be out in force to woo cable operators who will begin cable-casting come Jan. 1, 1970. There will be over 100 vendors present.

Win a TV Camera!

You might be the lucky cable guy who'll take home a \$3,245 monochrome video camera complete with a sensitive Plumbicon* pickup tube. TeleMation is giving away a TMC-2100V/LO professional low-cost camera

*Registered trademark, N. V. Philips of Holland.

which has high resolution, low lag, video processing, automatic target, and light weight portability. You can register at the TeleMation booth, number 3-27, Sunday through Wednesday. The drawing will be held Wednesday, June 10, at 2:30 pm. Hope you win!

Exhibitors:

- | | | | |
|--|--|---|---|
| Aberdeen Co.
Booth 3-24 | C-COR Electronics Inc.
Booth 4-32 | Hoyle & Co.
Room 732 | Rohn Communication Facilities Co. Inc.
Booth 3-09 |
| Advance Industries Inc.
Booth 4-41 | Central Dynamics
Room 704 | HTV Systems Inc.
Booth 3-12 | Shibaden Corp. of America
Booth 4-31 |
| Advanced Research Corp.
Booth 4-04 | Century-Strand Inc.
Booth 3-19 | International Telecable Productions Inc.
Room 787-88 | Sigma Industries, Inc.
Booth 3-20 |
| AMECO, Inc.
Booth 3-02 | Chomerics Inc.
Booth 4-05 | International Video Corp.
Private Dining Room 17 | Scientific-Atlanta, Inc.
Booth 4-58 |
| AEL Communications Corp.
Booth 4-47 | Collins Radio Co.
Booth 4-45 | Jerrold Electronics Corp.
Red Lacquer Room | Sod Master Division Jacobsen Mfg.
Booth 4-23 |
| American Pamcor Inc.
Booth 4-59 | Comm/Scope Corp.
Booth 4-49 | JFD Electronics
Room 703 | Sony Corp. of America
Private Dining Room 16 |
| Ampex Corp.
Booth 4-64, 65 | Commercial Electronics Inc.
Booth 4-22 | Kaiser CATV
Div. of Kaiser Aerospace
Booths 4-33, 4-34, 4-42, 4-43 | Spencer Kennedy Labs Inc.
Booths 4-35, 4-36, 4-37 |
| Anaconda Electronics Co.
Booths 3-14, 3-15 | Communications Publishing Corp.
Booth 3-13, 3-28 | Laser Link Corp.
Booth 4-10 | Sylvania Electric Products Inc.
Booths 4-26, 4-27, 4-28, 4-29 |
| Andrew Corp.
Booth 3-21 | Computer Image Corp.
Booth 4-38, 39 | Leghorn Corp.
Private Dining Room 17 | Systems Engineering Co.
Booth 3-06 |
| Aqua Instrument Co., Inc.
Booth 4-68 | Cox Data Systems
Room 707 | Leviathan Communications Inc.
Booth 4-31A | Systems Wire and Cable Inc.
Booth 3-24A |
| Associated Press
Booth 4-53 | Craftsman Electronic Prods. Inc.
Booth 3-16 | Listec Television Equipment Corp.
Booth 4-30 | Tape-Athon Corp.
Booth 4-19 |
| Belden Corp.
Booth 4-52 | Data Technology Corp.
Booth 3-53A | MarKit Communications
Booth 3-08 | TeleMation Inc.
Booth 3-27 |
| Benco Television Corp.
Booth 4-25 | Davis Manufacturing
Booths 4-60, 4-61 | Monitel
Booth 4-66, 67 | Telemet
Div. of Geotel Inc.
Booth 4-17 |
| Berkey-Colortran Inc.
Booth 3-01 | Delta Electronics Ltd.
Booth 3-10 | 3M Co.
Booth 4-51A | Television Digest
Booth 4-40 |
| Blonder-Tongue Labs Inc.
Booth 4-48 | Diversified CATV Services
Room 778 | Microwave Associates Inc.
Booth 3-03 | Television Presentation Inc.
Booth 3-07 |
| Burnup & Sims Inc.
Booth 4-13 | Dolphin Communications Corp.
Booth 3-24B | National TeleMedia Inc.
Room 760-61 | Theta-Com Corp.
Booths 3-11, 3-11A, 3-11B, 3-11C |
| CBS Electronic Video Recording
Booths 3-10B, 3-10C | Dynair Electronics Inc.
Booth 4-54 | Phelps Dodge Communications Co.
Booth 3-26 | Texscan Corp.
Booth 4-51 |
| CBS Labs
Room 705 | Electronics Development Corp.
Booth 3-10A | Philips Broadcast Equipment Corp.
Booth 4-14 | Times Wire & Cable
Booth 4-44 |
| Cablecasting Magazine
Booth 3-21 | Electronic Industrial Engineering
Room 777 | Plastoid Corp.
Booth 4-16 | Trans American Film Corp.
Room 763 |
| Cable Channels Inc.
Booth 3-17 | Entron Inc.
Booth 4-50 | Preformed Line Products Co.
Booth 3-09A | Trompeter Electronics Inc.
Booth 4-01 |
| Cable Communications Corp.
Booth 4-02 | Essex International Inc.
Booth 4-09 | Pruzan Co.
Booth 4-57 | Thomas J. Valentino Inc.
Booth 4-08A |
| Cable TV Production
Room 730 | Fort Worth Tower Inc.
Booth 3-04 | Quick-Set Inc.
Booth 4-24 | Van Ladder Inc.
Booth 3-12A |
| Cama Electronics Inc.
Booth 4-12 | GBC Closed Circuit TV Corp.
Booth 4-15 | RCA Corp. Commercial Electronic Systems
Private Dining Room 14 | View-All Television Products Corp.
Booth 3-25 |
| Cascade Electronics Ltd.
Booth 4-46 | General Cable Corp.
Booth 4-20 | Raytheon Co. Communication & Data Processing Operations
Booths 3-22, 3-23 | Vikoa Inc.
Private Dining Room 18 |
| CAS Manufacturing Co.
Booth 4-55, 4-56 | General Electric Co.
Booth 4-52A | Riker-Maxson Corp.
Room 701 | Visual Dynamics
Booth 3-18 |
| The Catel Corp.
Booth 4-11 | Gilbert Engineering Co. Inc.
Booth 4-18 | | Visual Electronics Corp.
Booth 4-21 |
| CATV Marketing Inc.
Booth 3-05 | Graybar Electric Co. Inc.
Booth 4-62, 4-63 | | |
| CCA Electronics
Room 702 | J. R. Hampton
Booth 4-03 | | |



J20

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You get added value every foot of the way with Ditch Witch . . . because Ditch Witch offers design features that mean superior performance under the toughest digging conditions. That's why Ditch Witch outdigs everything in its class.

MAXIMUM VISIBILITY of digging operation is assured by positioning the operator at the rear — near the digging boom. He has a perfect view of the trenching operation at all times, as well as a clear view of the terrain ahead.

FOUR WHEEL DRIVE gives superior traction and greatest mobility under the toughest conditions — even mud. Heavy-duty tires mounted on extra-wide rims provide added flotation while the suspension system maintains constant ground contact.

HYDRAULICS provide easy operation by powering backfill blade, steering and Ditch Witch attachments. The minimum-capacity hydraulic system requires a smaller pump, eliminates hot-weather hydraulic heat problems. Yet it's powerful enough to lift the whole machine from the ground on the backfill blade and digging boom.

SELECTIVE MECHANICAL DIGGING CHAIN SPEEDS put full power where it's needed — in the digging chain with a choice of up to four digging speeds, plus reverse. Independent travel speed is provided by the variable speed hydraulic control system, giving exactly the right combination of digging and travel speeds for every trenching situation.

Look to the "Extra Value Advantages" from Ditch Witch . . . and get the most from your trenching dollar!



R60



V30



V30

The Professionals



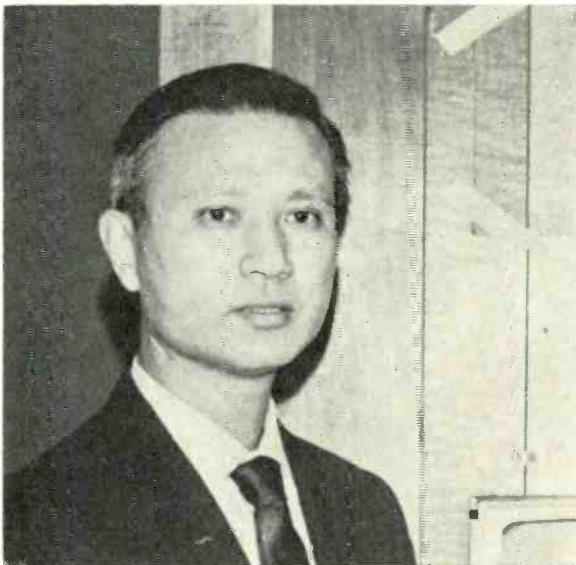
PROFESSIONAL TRENCHING EQUIPMENT FROM 7-HP to 60-HP... BUILT BY PROFESSIONALS FOR PROFESSIONALS

A Division of Charles Machine Works, Inc., 100 Ash Street, Perry, Oklahoma 73077

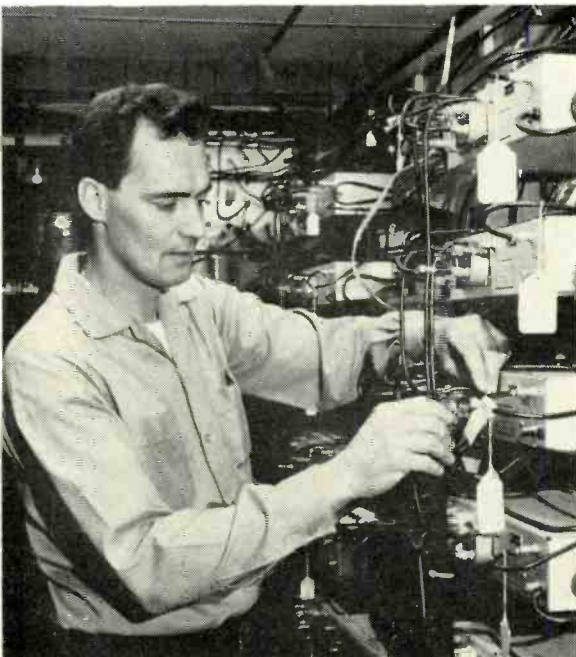
Circle 113 on Reader Service Card

Twin County Cable Brings State-of-the-Art to Subscribers

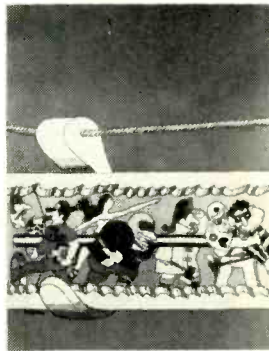
If you've seen Vikoa's ads you know that Twin County Cable is doing the unlikely—carrying 27 channels through 96 cascaded amplifiers. *BM/E* went to see for itself and found a few other amazing facts—like 11 VTRs (five of which were color) but no salesmen. Expansion plans are being fulfilled by public service.



Bark Yee Lee—an innovative cablecaster.



Fred Schmidt, field engineer, points out solid sheathed interconnecting cable to eliminate cross-coupling.



YOU MIGHT SAY Bark Lee Yee, president and owner of Twin County Cable, Northampton, Pa., has a penchant for being first. His system is actually carrying 27 channels of TV, which to our knowledge is a first. Quality color at the end of 96 amplifiers in cascade has to be a first. Yee was among

the first operators to make a heavy commitment to local origination and he bought the first available hand-held portable camera-VTR combo from Sony. Remember the Sony demonstrator at the '68 Boston NCTA Convention? Yee took that one home with him and that fall it brought candid views of presidential candidates Humphrey and Nixon, taken at the local airport, to Twin County's subscribers. Yee's studio was the second to originate in color but he was the first to own two Sony cameras (the DXC 5000's) to do the job. Twin County was one of the first systems to buy Ampex 7500 color VTRs. And before the summer is out, Twin County will be the first cable system to own and operate portable microwave equipment for remote news and sporting event coverage. During *BM/E*'s visit, Twin County was finishing off another first: the addition of 60 crystal-controlled FM receivers so that its subscribers could enjoy all the best programming coming out of New York and Philadelphia.

No doubt several cable operators produced their own specials for Earth Day last April 22. If they did not, Twin County may have another first for it did a special in cooperation with a local school district. The system won one of the first NCTA awards for cable origination and is entering the competition again this year—the energetic staff hopes to stay in the winner's circle.

Twin County serves two counties, Lehigh and Northampton, and thirty different communities. Come election time, Twin County is all over. Every VTR is in use then, Yee says. Last election

eight were in use. Now three more Sony color models are ready to go: two EV-320s and the newest ½ inch AV-5000. The program director, Francis Swirble, points out that at one time 18 cameras were on assignment—seven were borrowed to add to the 11 owned by the system.

Impressive as these numbers and firsts are, Twin County's reputation as a leader is earned, not in the statistics department, but in the engineering department.

Twenty-seven Channels

Not every system could carry 27 channels and cascade 96 amplifiers even if they duplicated the equipment owned by Twin County. Not a little engineering knowhow is also required. In this area Bark Lee Yee is largely self-taught, but he and his engineering assistants, Fred Schmidt and Jim Varkonyi, have learned their business well—in fact several equipment manufacturers made numerous trips to Northampton to see how it is done.

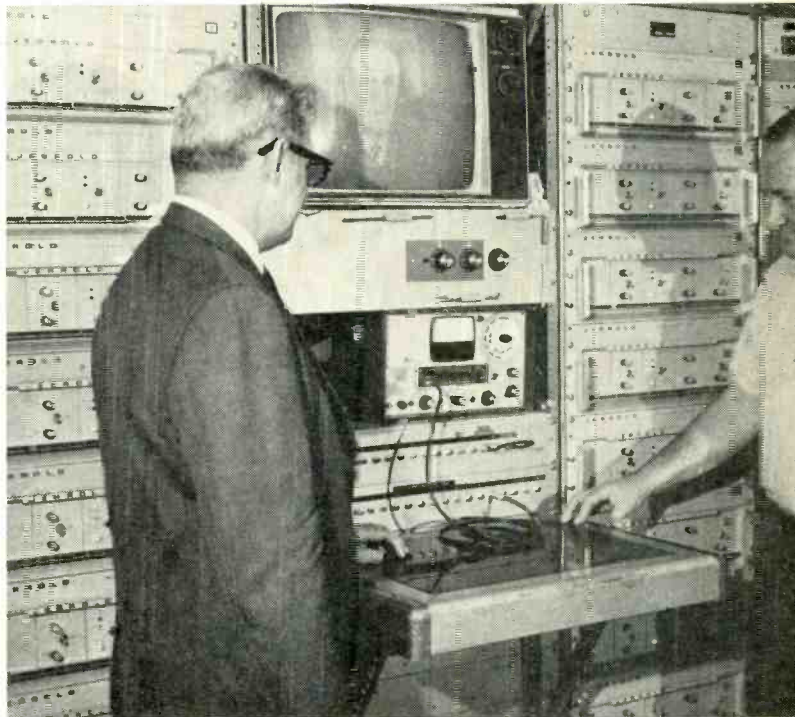
What the visitors discover is great respect for electromagnetic energy. The headend building, for example, is completely screened. The only signals that get in are those coming from the system's antennas (on three towers). Right now there are 29 TV signals piped into the converter room. Each signal is treated as if it carried the Plague. Braided RG cable is not trusted; only solid aluminum sheathed cable is used. Neither are commercial couplers and matching pads trusted by Twin County; they build their own for maximum rejection and isolation and optimum impedance matching.

Converters are all solid state from Jerrold (normal TV bands) and Cas (mid and superhigh bands). Yee pays particular attention to sound and picture levels and precise bandpasses. The head-end setup has a special test station built by Twin County. A patch panel permits inspection of the signal direct from the antenna, and again after the i-f stage in the converter.

There is no real secret in carrying 27 clean channels on the Vikoa Futura "21" amplifiers except how to avoid overloading. This means setting the pilot carrier lower than that recommended in the instruction book. Vikoa amplifiers, cable (.750, .412 and 59U drops), splitters and directionals, are used throughout the entire distribution system.

The reception at the end of the system is said to be outstanding. The farthest point from the head-end is 26 miles. *BM/E* saw fine color on 17 channels 18 miles from the headend. (Of the 27 channels, nine are dedicated to schools for their private use, one to doctors for medical education, leaving 17 available to subscribers.)

A quality signal at all time requires attention. Twin County relies on its 55 employees and their neighbors to keep it on its toes. One of these household monitoring stations includes a connection to a competing cable system which shares the Allentown franchise. Yee wants to make sure there is nothing superior to Twin County on *any* cable. (The one piece of equipment *BM/E* didn't



Special test points permit inspection of antenna signals—all 29—and converter i-f output. Joe Schmidt, assistant manager, looks on while Jim Varkonyi explains.



Twin County's control room. Uncased chassis is new synchronized switcher being built by staff.

AU photos
BM/E

see was a rumored ancient Chinese torture device apparently in standby readiness for the engineering staff should a customer ever leave Twin County for the competition because of picture quality. This story is probably untrue since Yee instills enthusiasm and inspiration by personal example, rather than threat.) Signal levels are held so that they never vary over 2 dB anywhere on the system at any time, according to Yee.

The problem of 27 channels is not in the distribution—it's in the reception at the subscriber's set. Ironically, most of the 27 channels being carried by Twin County are not being viewed. Yee hasn't figured out how to charge subscribers for the receiver-converter required to view the extra channels. Those subscribers now getting pictures via the midband and the superhigh band are getting them gratis—with a subscriber set-top converter on loan without charge. Twin County has bought 500 such converters but isn't happy enough with them to commit themselves to this solution. Yee says he has tried everything on the market and has listened to all proposals. Right now he's waiting to test Craftsman's final production model (shown for the first time last year at the NCTA Convention). The objective is getting a clear color picture from three different selector settings (regular, midband, superhigh band) without having to fine-tune the TV set.

If the converter problems can be solved, then a subscriber pricing policy can be worked out.

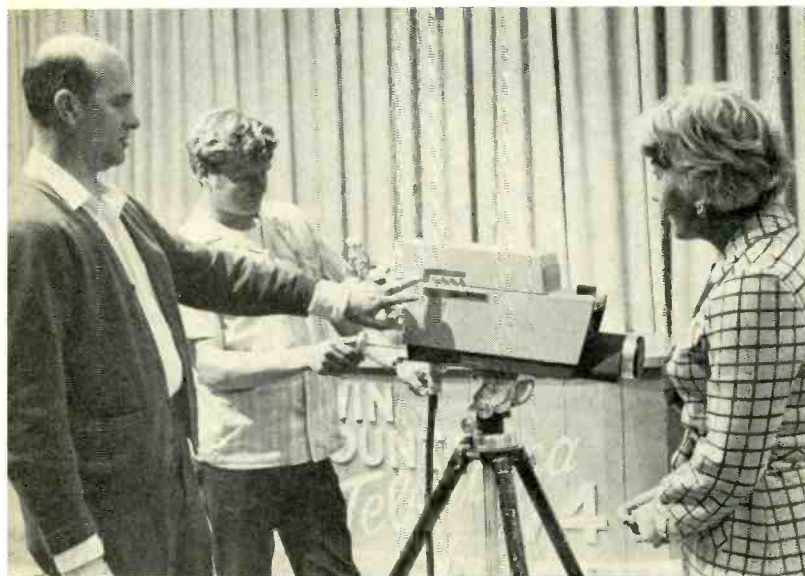
Public Service Route to Expansion

Visitors to the Allentown area quickly learn that Allentown considers itself the Truck Capital of the world. It's the home of Mack Trucks. During *BM/E's* visit, we premiered a videotape produced by Twin County which told about a new Mack plant opening the following week. Mack paid nothing for this "promotion." Twin County undertook the project as a public service. Yee's explanation was simple: "Many of our subscribers work for Mack; they're interested. They'll tell friends and one day we'll be getting another subscriber by this word of mouth." Last year, according to Don Berner, Twin County's controller, the system spent about \$75,000, including depreciation, on local origination. Next year the figure will probably double. The total capital expenditure for origination gear, including the studio facility, is about \$250,000. This expense is considered very worthwhile promotion. Twin County has no salesmen, yet the phone rings about 20 times a day with new business. About 200 miles will be added in 1970 as a result of such public service selling.

Twin County gives free time to large stores, all in the interest of carrying items of interest to its subscribers. Yee has no plans to solicit regular advertising to underwrite such local programming. Only when the cable will offer a special entertainment program will sponsorship be sought. For example, when the cable bought the rights to



With two Sony color VTRs, Francis Swirble, program director, can do editing. Twin County also has two Ampex 7500s and seven other VTRs.



Don Berner, controller, shows off his satisfaction with new Sony color camera to cameraman and program hostess.

the Daytona 500 live on microwave from Tele-Prompter, it sold participating sponsorship to the local Volkswagen dealer. Altogether, though, advertising represents less than two percent of the system's revenues and it is not out hustling. Because of the good will generated by free promotion, Twin County finds it can quickly sell time for its occasional special entertainment blockbuster. "All we need to do is pick up the phone," said Joe Schmidt, assistant manager. More on the mind of Yee is how to solve the subscriber converter-receiver problem.

Doing public service programs keeps the staff hopping—Twin County hates to turn down any request for coverage. And to be even more accommodating. Twin County now has a new mobile van to help cover some of these events. One example of Twin County's service: traveling out of the area to cover high school championship games (paying AT&T for a microwave linkage). Once the new remote microwave equipment gets delivered from Microwave Associates, more of this kind of programming can be done.

Twin County has been fortunate in finding volunteer hosts who do a lot of the scheduled programming. A regular Monday night feature on community affairs is hosted by a city councilman. On election night, the councilman and a state senator, along with several Democratic and Republican committeemen, provide professional commentary. (Twin County also pays 200 field reporters \$5 each for inputs from the various polling districts.)

A local public relations man organizes a weekly live program called "Outlook." A regular program of current interest is put on by the Weight Watchers. Another rather unique series is done by a local graphologist. Viewers send in samples of their handwriting for an on-the-air analysis.

Aid to Education Big

A lot of the studio staff's time is spent with the three school districts (48 individual schools) who have 12 channels given to them by Twin County Cable—each has its own converter supplied by Twin County. As a free service to doctors, the cable system also carries a regular medical education channel.

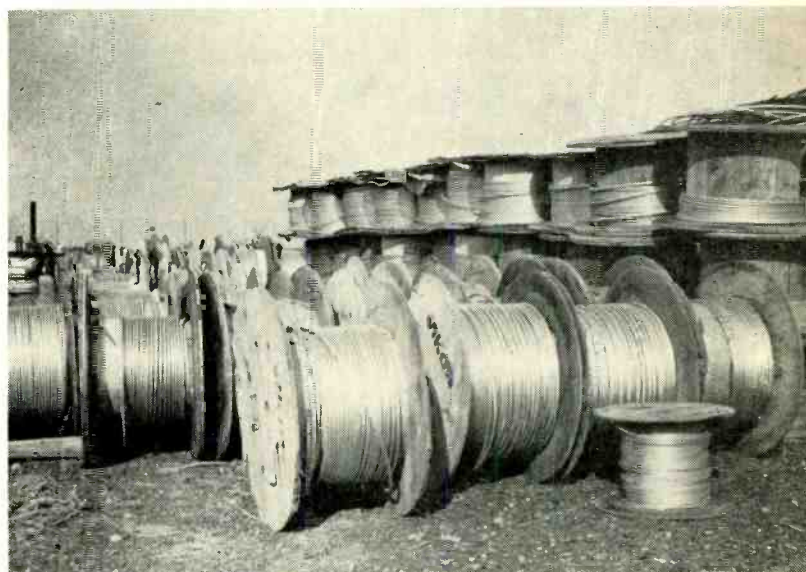
How Successful?

Bark Lee Yee, along with Mrs. Yee who acts as an office manager, is obviously proud of his firsts, but his pride is a quiet one. He's actually reluctant to talk about the system from a business point of view. "If the trade hears that I'm successful, I'll be hounded by brokers who will want to buy me out. I don't want such publicity; I'm happy the way it is," Yee said.

Yee does admit that he expects 90,000 subscribers some day but is chary about how far along toward that goal he is now. He's probably over 20,000 or he could not afford the heavy investment in cablecasting—or the payroll of 55. **BM/E**



Local programs are in full color and flowers and other props show off color capability. Hostess of local show is on camera.



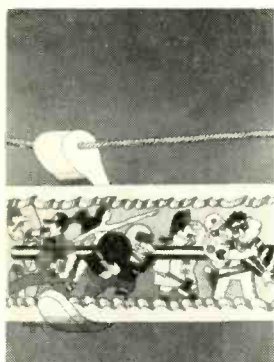
Local origination helps sell subscribers and Twin County is constantly building—as this fresh stock of Vikoa cable shows.



Of the more than 300 attendees at the NCTA programming conference, only half were cable operators.

Cable Operators Move Toward Local Origination With Apprehension

There's no paucity of programming ideas and sources but opportunities for revenue are slim



THE FIRST NCTA Programming Conference for cable operators, April 30—May 1, was sort of a manic-depressive affair. On the one hand there were program vendors describing the FCC's Oct. 20 ruling (which requires systems with 3500 subscribers or more to begin local origination by Jan. 1, 1971) as a great step forward—as significant as that first giant step on the moon. This was the analogy drawn by John Reynolds of Cable Communications Service, a former CBS-TV and Paramount executive.

But also present were some grumbling cable operators who felt put upon to be forced into origination. They interpreted the FCC ruling as just further evidence of bureaucratic hand-tying regulation and were worried about paying for the extra service.

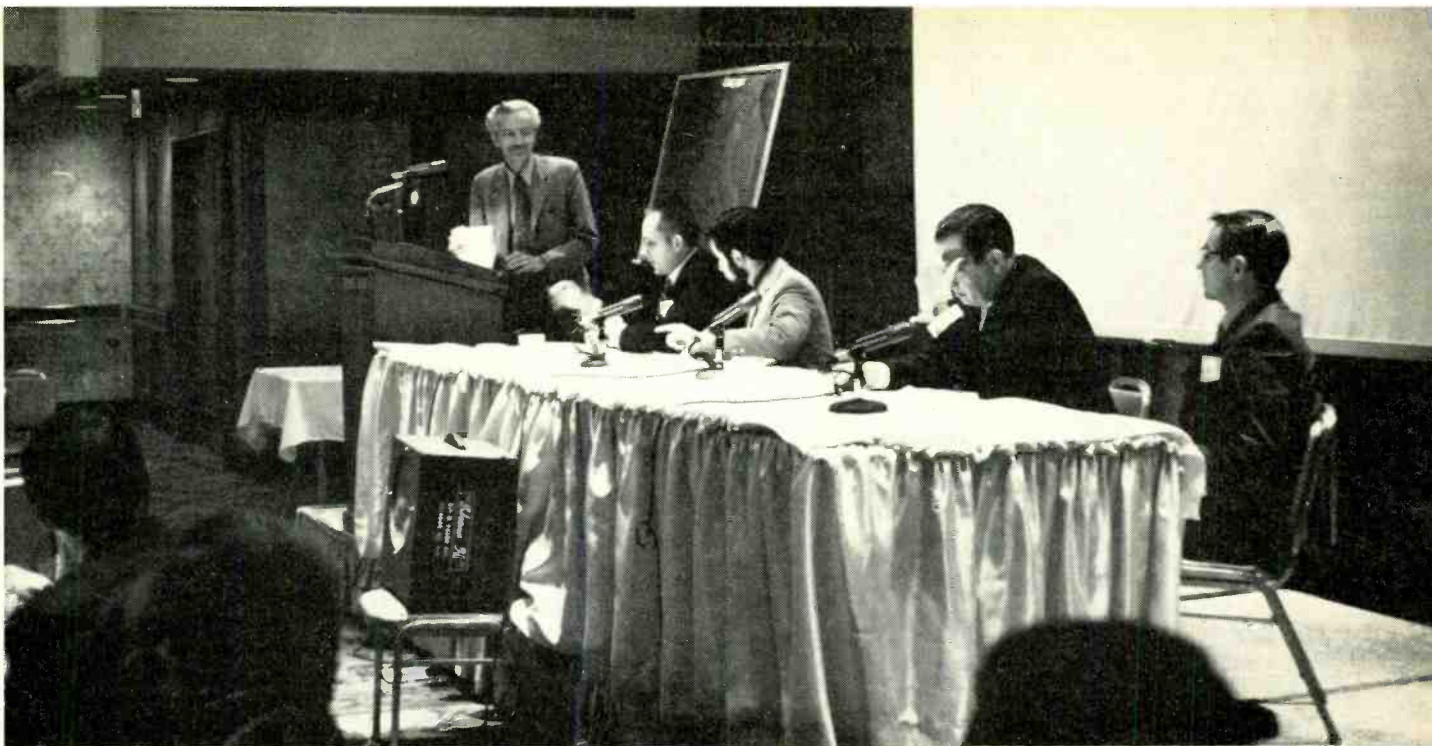
Other marked contrasts were evident. One program supplier envisioned its format alone ca-

pable, in theory at least, of bringing in \$5000 of advertising per week per every 1000 subscribers for a paltry investment of \$1.86 Plan A or \$2.77 per hour, Plan B. On the other hand, there were cable operators present who seriously doubted whether a time salesman could earn his own grocery money, let alone help defray programming costs. The FCC ruling permits advertising but only during “natural breaks” in the program material.

There were visions of a national rep organization being formed to sell time on cable nationally, but there were also admissions by operators present that they had no solid data available on who their subscribers were, or what were their viewing habits or purchasing patterns. The program vendors tried to say cost per thousand was not the important statistic, but any operator who had ever made a sales call remained skeptical.

Although the cable operators present didn't know for sure who their audience was, or what it wanted, the program purveyors were confident that they did have the answer.

One study showed news as most important and an 18-hour news package was offered by Leviathan Communications Inc. (It was Leviathan that came up with the estimate of \$5000 per week ad



An advertising panel during the conference discusses how to sell ads.

revenue. The company offered a break every 14 minutes permitting four commercials per hour which calculates out to 72 per day, or 504 per week. Suggested ad rate was 1 cent per subscriber per ad.) News services were also offered by Television Presentation Inc., and Press Association Inc. (part of AP).

Another study shows sports to be the hot item and Cable Channels Inc. has a blue-ribbon package of sports films with natural breaks for ads totaling 210 minutes in 14 hours.

Still other studies showed the feature film as the only program to stand the test of time and there were several film distributors and brokers present.

MarKit Communications said its survey revealed a great need for better children's programs and added that it was creating programs to fill that need. Merchandising would be part of the package to prove the pulling power of the program for tie-in merchants.

Testimonials on the value of baby-sitting channels were offered on the behalf of TeleMation Program Services by several satisfied customers. Also catering to this market was Bert Cluster of International Tele-Cable Productions Inc. who produces Romper Room.

Bingo the Answer?

Bingo was the answer of J. R. Hampton and Associates. The only cablecaster present who boasted of making money from a local programming effort was John Trent of TV Transmission Co., Peru, Ill. He attributed his success to the popularity of bingo. Trent is selling about \$50,000 worth of time a year based on \$12 per spot one time rate (although he generally tries to sell a yearly contract). Total subscribers are about 9000. Proof of viewership is the number of bingo

cards requested each week by subscribers from local participating merchants. "We don't sell c.m.p.," says Trent, "we talk about nearly a million bingo cards a year." That figure may be an exaggeration but each merchant is satisfied with his traffic. The Peru cable has no local TV station in the community but is selling ads against two local radio stations and one newspaper.

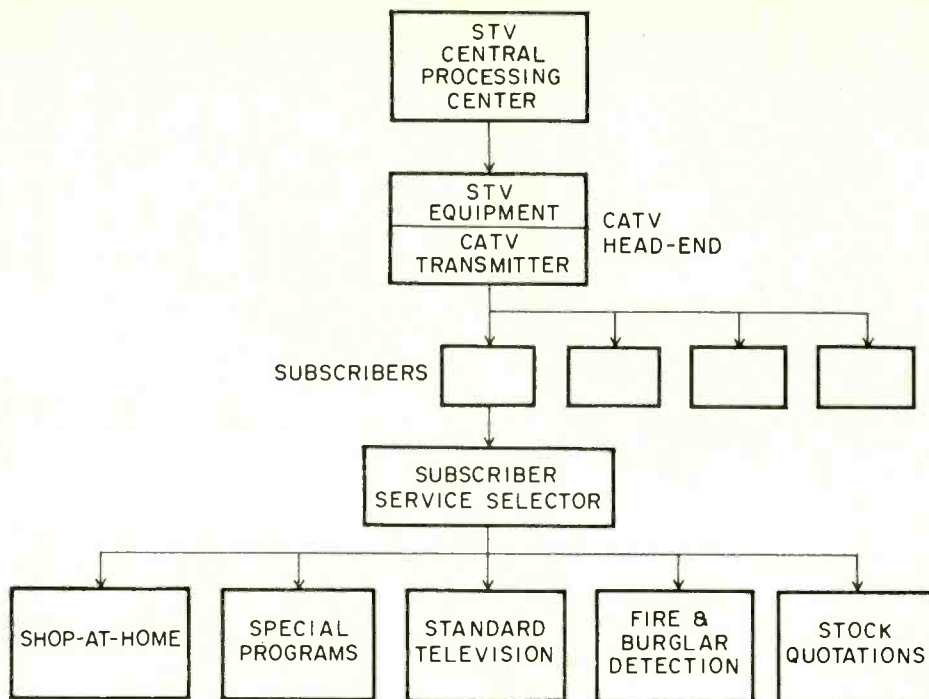
Diversity Offered by Most Program Packagers

A balanced package was offered by several program sources, which includes not only children's shows and feature films but other packages designed to appeal to housewives and local sponsors. The Dick Clark-IVC enterprise, National TeleSystems Corp., offers a 30-minute children's education show and cartoons plus programs covering book reviews, physical exercises, home decoration, cooking, beauty hints, family living, outdoor living, guitar playing, sports and others for a total of 18 hours. Supporting NTC's concept of ideal programming is an extensive survey of cable subscriber interests. Both self- and home-improvement subjects scored high—with the greatest interest for a single topic shown in interior decorating. Cable Communications Services, L.O.T.S. (Local Origination TV Systems, Inc.) and Monitel, a new service of Reader's Digest, were other sources offering a wide variety of programs prepared specifically to counter network TV fare.

Many of the complete program sources offered guidance and help in selling local sponsors. L.O.T.S. showed a series of color cartoons that could be used by local sponsors such as food markets, banks, sporting goods dealers, etc.

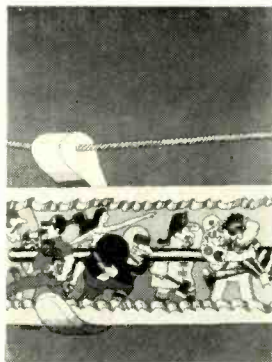
Monitel, with a former McCann-Erickson ad man Ed Grey on its staff, said it was ready to

Continued on page 58



This proposed system includes computer-controlled video shopping, pay and standard TV, stock market quotations on demand, burglar and fire alarms, credit-card verification, and other options — all on CATV cable. Why let the wide-band spectrum of coax go partly unused, when it could be a high-density two-way information tap in your home or business?

Two-Way Communication in a CATV System



SHOPPING AT HOME by television may soon be here—not in five years, but possibly this year. And CATV subscribers may be watching Broadway plays at home, getting stock market news when they want it, and having their homes protected from intruders. The technology has been around

for some time, and just the other day a phoenix-like firm called Subscription Television, Inc. put it all together. STI demonstrated what may be the first available system for talking back to your TV set. (Nicholas Johnson, please copy.)

You may recall that the original Subscription Television, masterminded by former NBC president Pat Weaver, tried to sell pay TV in California. The firm went bankrupt following a crushing defeat when Californians voted to ban pay TV. Later the courts held the referendum unconstitutional, but the damage had already been done to STI.

Now the company has risen from its own ashes to demonstrate a two-way communication

system that's designed as an add-on to CATVs. For some months STI has been showing the prototype to CATV operators, and so far the reception has been good.

Subscriber Benefits

When STI facilities are added to a cable system, they don't impair existing services. Subscribers continue to receive off-air and cable TV. Options available through STI include: video shopping; pay TV; stock quotations; burglar alarm; hotel reservations; automatic electric, gas, and meter reading; and facsimile for hard-copy documents.

When a cable system is converted to STI facilities, new equipment is installed at three points, as shown in the diagram. Most important is the computer and support equipment at the Central Processing Center (CPC). That's the brain of the entire system.

At the CATV headend, some additional interface gear is used between the CPC cable and the CATV trunklines.

The third point is the subscriber's home, which gets a service selector. That's a box with a number of switches which gives the subscriber the capability of the various services available from STI.



You wouldn't want the Hotel Availabilities service (shown above) in your home, but wouldn't it be nice to walk into a travel agency or car-rental office and ask for a single room in Boston—and get the rooms and rates on a TV screen? What's more you could then reserve a room by simply punching that keyboard. And if you forgot your hotel and room number, you could walk into any place subscribing to the service, interrogate the computer, and be told where you should be.

Video Shopping is easy (upper right) with this selector. You move the lighted cursor on the TV screen with the vertical and horizontal levers, then press the button marked "ship" to start the product on its way to your house.

Another business-oriented option is the Stock-Quotation service (middle right). Punch the stock abbreviation into the keyboard and the computer will tell you what the current figures are. Equipment shown would be added to the subscriber selector shown at top.

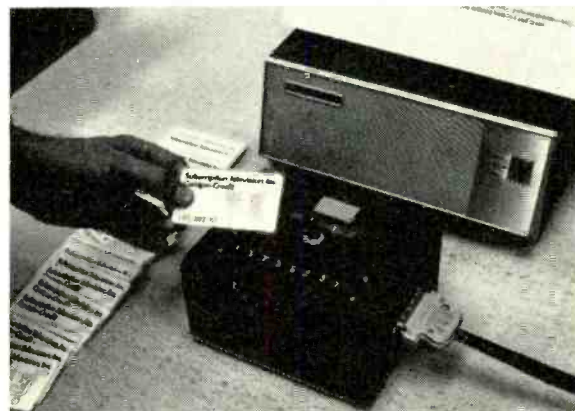
Credit cards could be verified instantly by a computer (bottom right) with this optional service. It would minimize errors. Prototype box shown has three indicators which show status of card: good, bad, questionable.

Shop at Home

Video shopping is presented to the subscriber by running a videotape of the product. Then the viewer presses a switch to indicate she wants to buy the product. (STI's experience so far is that women like video shopping, while men are cool toward it.)

During the demonstration in New York, STI ran a short videotape which included back-to-back commercials for half a dozen products. After each commercial, a picture of the product appeared on the TV screen along with its price and a box. Sometimes there were two prices (with or without accessories) and two boxes.

To purchase, the home viewer presses a switch which causes a lighted mark (cursor) to appear



on the screen. Then she moves two levers to position the cursor in one of the boxes. Finally she presses another switch to order the product.

Pressing that second switch generates a signal corresponding to the position of the cursor. The signal is sent back to the STI computer controlling the system. Later the product is sent to the viewer, and still later, the bill. The computer handles everything.

Pay TV

STI can furnish a pay TV channel which is distributed to every subscriber in the CATV system. However, horizontal sync is suppressed to 50% of normal, so TV receivers can't lock on the picture, making cheating unlikely. If a subscriber wants to watch what's on the pay channel,

he uses his selector. The computer then sends him horizontal sync and bills him for same.

Stock Quotations

Stock-market information is available to every subscriber in an STI-equipped cable system, upon demand. When a subscriber calls for stock info, the computer feeds him data on the stock which is printed out in alphanumeric characters on a special keyboard and display device.

Burglary Alarm

This feature is accomplished by installing ordinary pickup devices in the subscriber's house at doors and windows. The pickup devices are connected to the service selector, and the computer interrogates the unit periodically. If someone breaks into the house the sensor tells the computer, which alerts a human operator, prints out the subscriber's name and address, and even (if desired) notifies the police.

How it Works

STI has fitted its communication channels into presently unused CATV spectrum space. A bandwidth of 5 MHz is required for the two-way system. The out channel (from the CPC to the subscriber) is 2.5 MHz in the midband of the vhf region. The return link (to carry signals from the subscriber to the CPC) is also 2.5 MHz, in the region below TV channel 2. All information is converted to digital signals which modulate an rf carrier.

It's obvious that adding this two-way communications system to a CATV network means changing trunk and line amplifiers so they'll handle signals in both directions. STI president Kenneth F. Julin says this seems no problem, as many cable operators are ready to replace trunk gear anyway. Julin also points out that STI is a hardware and system supplier, and has no plans to operate its own cable company.

A single computer at a CPC can service up to 50,000 subscribers. Since few cable systems are that large, under normal conditions one computer will handle several CATV systems.

The computer constantly scans the system, interrogating each subscriber selector in turn. When a subscriber orders a service, the command is stored in his black box until the next computer interrogate. At that time it's read out and executed.

It takes 160 μ sec to interrogate a subscriber selector and get the command back to the CPC. Therefore in a system with 10,000 subscribers, the computer interrogates each subscriber once every 1.6 seconds. If there's no command at the selector, the computer simply goes on to the next subscriber installation.

Since the CPC repeatedly interrogates each subscriber in the system, instant TV rating service is a natural. A 100% sample of cable viewers is

possible, and the sample can be repeated almost as often as a client desires it. For instance, a new half-hour TV program might be run and the system polled every five minutes. The readout could then be plotted on a graph of time vs percentage of viewers, and compared with other shows on the air, a script of the show, and the various commercials on the program. Result: Instant analysis with minimum error.

System Capability

STI's equipment is capable of transmitting and receiving a total of 500 kilobits per second to and from all subscribers. That can mean one subscriber and 500 kilobits, or 500 kilosubscribers and one bit each. Or any number in between.

Electric and gas meters can be read automatically via the STI system, given suitable sensors to interface with the meters. In fact, any service done routinely and involving a parameter which can be read into digital form, can be automated into the STI system.

Marketing Opportunities

STI's Julin says cable operators will gain several advantages by adding two-way capability. Many potential customers won't buy cable just for a better picture, especially where their off-air video is good. But these same prospects will buy the additional services outlined above.

By adding services to his CATV system, an operator can increase revenue both from present subscribers and outside users. These include shop-at-home advertisers and commercial users of high-density services.

With both entertainment and data transmission capability, an operator can expand his cable networks into areas with few homes but many industrial users. He can furnish businesses with data transmission terminals.

Looking Ahead

Julin sees private intercity microwave links as useful tools for data transmission with the STI system. Many microwave systems will carry TV and business communications during normal wakeup hours. But from perhaps two to six a.m. the traffic volume will probably be low, and Julin foresees a lower tariff at that time, which STI can use to interconnect CPC's into regional networks.

Suppose that during one day 10,000 subscribers in Denver order imported perfume stocked in San Francisco. The Denver CPC stores the orders all day, then transmits them at high speed on the microwave link to San Francisco after two a.m.

Ultimately most of the urban areas of the U.S. could be so interconnected. You could order data at any hour of the day, but if you wanted info right now it might cost more than if you were willing to wait. **BM/E**

Watch Out for Back Pay Liability Under Wage-Hour Laws

Don't get caught having to cough up back pay because of careless scheduling of employees. Exemptions are tricky.

By William L. Walker

THIRTY-ODD-YEARS AGO, the Congress enacted the first Federal Minimum Wage Law. It appeared innocuous enough at the time since its chief object was to require employers engaged in interstate commerce to pay not less than 25¢ per hour for a 40-hour week.

But things have escalated since then. Today there is, under the Department of Labor, a Wage-Hour Division headquartered in Washington. It is backed up by ten regional offices, plus some ninety field offices and is staffed with an army of inspectors (called compliance officers). Their job is to seek out employers who are guilty of depriving the working man of his just wages. Not just the number of people mark the growth of this bureaucracy. Rules, regulations, and interpretations clog the filing cabinets.

Unfortunately numerous broadcasting managers are ignorant of the rules and appear to rely on foggy old wives' tales, fables and folk lore. How many have heard such comments as: "*My signal stays in this state, I'm miles from the state line, I'm not subject to wage and hour.*"

or

"Of course my people who work at actual broadcasting are covered, but I don't have to pay minimum wage to the bookkeeper or the man who sweeps up the station."

or

"I have it all set up. My people have a contract. I pay them a flat rate, regardless of how many hours they work. It is all spelled out in the contract."

or

"I don't have to worry about the Wage and Hour people. My employees all make so much money that the Law can't touch me."

If you've heard them, let's hope you are not heeding them or you're headed for trouble, and it could be expensive trouble.

Mr. Walker, formerly on the NAB staff, is now a principal of Larson/Walker & Company, brokers and consultants in Washington, D.C. and Los Angeles.

Take that last notion about an employer paying his people so highly that they were automatically exempt. A classic example to the contrary took place fairly recently. A band leader employed an assistant at a salary of \$200 per week. He raised his salary first to \$300, and finally to \$400. The employee arranged transportation and hotel reservations, kept an eye on the baggage and instruments, and generally made himself useful. He put in an average of seventy hours a week. While highly paid, his duties were, if not menial, at best routine. When the bandleader and the employee came to an unfriendly parting of the ways, the employee sought out the Wage-Hour authorities. He claimed back pay and overtime. They supported his claim, took it to court, and collected \$32,000 for him.

Incidentally, the bandleader in this instance should have been forewarned. There is a landmark case in the matter of band employees. It involves Zarno Cay, better known as Sammy Kaye—who doesn't remember "Swing and Sway with Sammy Kaye?" Sammy, or Zarno, got his lumps from the Wage-Hour division back in the big-band era by not counting hours carefully. A little attention to history could have saved our aforementioned friend \$32,000.

If an employer is forced to disgorge \$32,000 for an employee who was working in a \$20,000 a year assignment, what hope is there for the typical broadcaster, especially in a smaller market, where he may not make \$20,000 himself. Well, regardless of how uncomfortable it may be, he is going to have to live with the present law, at least for the foreseeable future. So, let us take a good look at its application in broadcasting, cutting away some of the folk lore and fables.

No Broadcaster Is Exempt

First, to whom does the Fair Labor Standards Act apply? Well, it applies to any business engaged in interstate commerce. This means every broadcaster. It may not be logical that a class IV

radio station deep in the heart of Texas, selling spots only to Main Street merchants, is engaged in interstate commerce. But, the Department of Labor says it is, and the courts have upheld this. When the broadcaster receives that FCC license, he becomes a member of the lodge. This is the situation, with the battle fought and lost. Instead of deploring the fact, how does one operate, efficiently and economically, and avoid the fate of the Zarno Cays?

Two Commandments

This brings us to our second question. What does the Fair Labor Standards Act require? Essentially, its requirements are rather simple. It almost boils down to two commandments.

Thou Shalt: Pay a minimum of \$1.60 for each hour worked by one of your employees
and

Thou Shalt: Pay not less than time and one-half for each hour worked by one of your employees in excess of forty in any one week.

Those two commandments overlook some minor items as child labor provisions, equal pay for women, and the like, but these tend to give comparatively little trouble to broadcasters. Most headaches in radio and television stations stem from failure to comply with these two dictates. The fact that the basic requirements are so simple, and the problems of complying with them are so difficult, pays eloquent tribute to the ability of the Federal civil servant to complicate life for the American businessman.

While these two requirements—a minimum wage, and time and one-half for overtime—are simple, they are deceptively so. It is doubtful that there is a business in this country which could afford the price tag, if it complied literally with the second requirement.

Most employees can meet the minimum wage. But, to put in an across-the-board time and one-half reimbursement for hours worked would strain any firm. If anyone doubts that, he should stop to consider how many hours he worked last week in his job, managing his station. How much would he have had to pay himself in overtime if he were not exempt as are executives? This example will show that employers simply cannot pay time and one-half to every person on the payroll. Therefore, certain exemptions and exceptions came into being. This is where most of broadcasting's headaches originate. Is an employee covered, or is he exempt? To clarify some questions which arise in this regard, let us consider the appropriate exemptions.

Know the Appropriate Exemptions

Now, we stated that all broadcasting employees must be paid at least the \$1.60. But there is an exception—one exception for all practical purposes. It is not the janitor. It is not the bookkeeper. *It is the outside salesman.*

The outside salesman is not only exempt from minimum wage, he is also exempt from overtime. But in order for these two exemptions to apply, the employee must be regularly and customarily engaged away from the station in making sales, obtaining new customers, and contracts for services. He must spend *no more than twenty percent* of his time in non-exempt work. If he does so, both exemptions go out the window.

While there are comparatively few problems with outside salesmen and minimum wage—after all a salesman who cannot produce enough sales to earn \$64 a week is not going to last long on anyone's payroll—the loss of the overtime exemption can be costly. The trap for management here is that the salesman, by the very nature of his job, works uncontrolled hours. The overtime price tag might not run to the \$32,000 collected by the band's baggage smasher, but it can run upwards of \$5000 in many instances. So every broadcaster should keep that in mind when assigning other duties to his salesmen. If the non-exempt people work a 40-hour week, and the salesman puts in more than eight hours a week in one of those functions, the station is liable for overtime payments, even though the balance of his 60- or 70-hour week is devoted exclusively to sales.

Exemptions in Small Markets

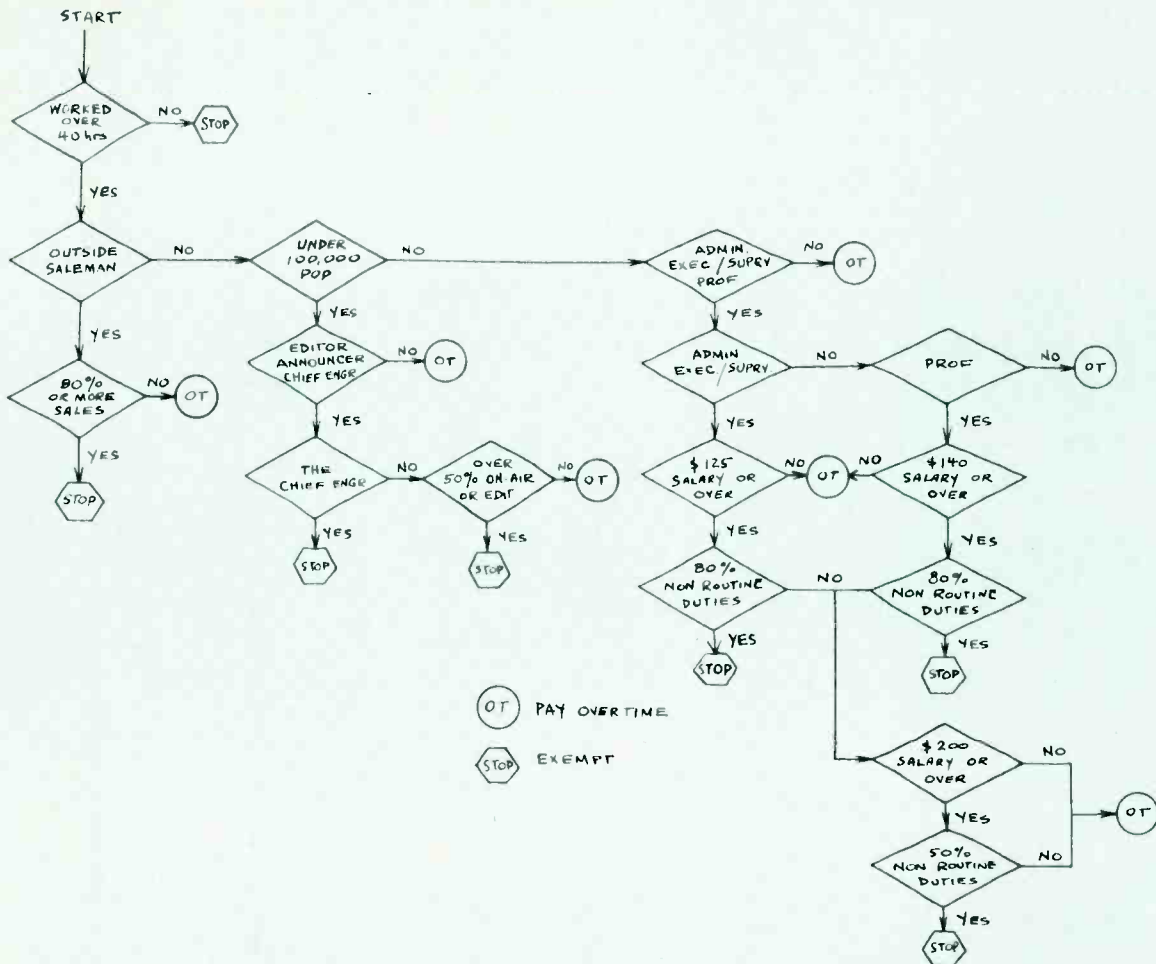
What other overtime exemptions apply in broadcasting? Well, some 4,250 stations in the U.S., in cities of less than 100,000 population, are among the beneficiaries of the small market overtime exemption. While they must meet the minimum wage, they need not pay time and one-half to:

Announcers, news editors, and the chief engineer.

Now, let us spell out what this means. It means that the employees who spend more than 50 percent of their time doing air work, before the mike or on camera, or, in addition, operating the control board, or making recordings, need not be paid overtime. These exemptions were sought and secured from Congress by NAB.

The small market exemptions apply further to the station's employees who gather, edit, and rewrite the news. They may also select and prepare news items for broadcast, and present the news on the air. If they do this more than 50 percent of the time, they again are exempt from overtime, as was the case of the announcers.

The final provision of the small market exemption is its application to *the* chief engineer. Here is the one exception to the general rule in wage-hour matters, that job duties and not job title determine the employee's status. For purposes of this exemption, every small market station has one employee, the holder of a first class ticket, who may be designated the chief engineer. If he is primarily responsible for the operation, maintenance, and repair of all the electronic gear in the station and at the transmitter, he, too, is exempt from overtime.



Work your way through this flow chart for each person on your staff. Then you'll know if he or she gets overtime.

The small market exemption covers only *overtime*. Announcers, news editors, and chief engineers must still receive the minimum wage.

Possible Overtime Exemptions

There are three classifications of employees who *may* be exempt from the requirement for payment of overtime. These are Executive or Supervisory employees, Professional employees, and Administrative employees. Employees in these three classifications are also technically exempt from the minimum wage. However, the weekly salary they must receive renders this somewhat meaningless. Unless the employee regularly works more than seventy hours a week, the minimum wage will normally be met by his required salary.

To qualify as an executive or supervisory employee, the person must receive a salary of at least \$125 per week.* He must supervise, as his *primary duty*, the operation of the station, or one customarily recognized department, including the work of two or more subordinate employees. He must have the authority to hire and fire or to make recommendations as to employment status of employees. He must regularly and customarily exercise discretionary power. And, here comes the

catch, he must perform not more than twenty percent non-exempt work.

Just what constitutes non-exempt work in such a situation? The question always arises as to whether the supervisor has to remain aloof from the work being performed by his subordinates. As an example, take an accountant, who supervises an accounting department. Two bookkeepers do the actual figure work, the posting, billing, and the like. The accountant can step in and do such work as reconcile the bank statement, write up invoices, and similar duties, normally performed by the bookkeepers. However, should he devote more than twenty percent of his time to these routine tasks he then loses the exemption.

In the event his salary is \$200 or more per week, he can usually devote up to 50 percent of his time to the routine, non-exempt work. However, the \$250 per week accountant, who has but one subordinate bookkeeper, with whom he splits the job, is not exempt as a supervisory or executive employee. There are some rather fine distinctions in this area, and the prudent manager keeps a weather eye on what his employees are doing, to

*These so-called "white collar salary tests" were increased as of February 21, 1970, by action of the U.S. Department of Labor.

insure that there is no inadvertent change in status.

An occurrence a year or so back points up the wisdom of this vigilance. A major market radio station had a veteran chief engineer. Over the years, advances in the state of the art from a technical standpoint, plus evolution in operating methods, slowly eroded that crew of technicians who operated the transmitter and other gear. One day a wage-hour inspector came in, and asked about the status of the chief. He was told the chief was exempt, he was a supervisor. The inspector said, "Oh yeah, who does he supervise?" The station could not say that the announcers working the board worked for the chief. If they did, they would have a program director with no subordinates. Result, the chief collected more than \$12,000 in back pay, took off, and bought his own little property with the proceeds. Broadcasters should watch their step with their supervisors, make sure they supervise, and they do not lose their status by pitching in to assist to an excessive degree.

Next, let us consider the administrative employee. To qualify as an Administrative employee, the person must receive that same minimum salary of at least \$125 a week. He must perform, as his primary duty, office or non-manual work directly related to management policies or general station operations that require him to exercise discretion and independent judgment. Again, he cannot perform more than 20 percent non-exempt work.

Let us talk about the accountant we discussed earlier. If he had two bookkeepers, he was exempt, but with one, he could not be a supervisor. Could he be an administrative employee?

The accountant, earning \$125, with one bookkeeper, can be exempt from overtime, provided, and this is a big proviso, the bookkeeper does the routine work—the billing, posting, and drawing of checks. The accountant keeps aloof from this, and devotes himself to collections, preparation of statements, and signing checks. Then he can be exempt as an administrative employee. But, let them split the duties evenly, and the station is asking for a wage-hour claim.

Again, the amount of salary comes into play. If the accountant receives \$200 or more in salary, he can then devote up to 50 percent of his time to the routine, and still be exempt as an administrative employee.

The third classification which may be exempt is the professional employee. In order to be exempt as a professional, the employee must receive a minimum salary of at least \$140 each week. He must perform *as his primary duty* work requiring knowledge of an advanced type in a field of science or learning, or original and creative work in an artistic field, and consistently exercise discretion and judgment as required by the work, which must be predominately intellectual and varied in character. Again, he is subject to that trap, the limitation on the amount of non-exempt work. More than 20 percent of routine duties, and he is subject to overtime, unless he earns that magic

\$200, when up to 50 percent routine once more becomes permissible.

Probably no classification is as difficult to define as this professional category. Many television stations, as an example, classify their artists as professional. The employee is highly trained, he designs sets, logos, the works. Then a neighboring station signs a union contract, including the artist in the bargaining unit. If that doesn't lose the ball game, the wage-hour inspector drops in on a day when the artist is doing nothing but lettering cue cards. That can really frost it.

It must be remembered that the duties of the person involved are what really determine whether or not he is exempt or non-exempt. Calling the janitor a sanitation engineer will not suffice. The job in which he is engaged when the inspector passes through is what matters. If anyone thinks the sanitation engineer is happy, working 48 hours a week as an administrative employee, just wait until the inspector stops him from washing the windows, and says, "Joe, you are really a janitor. Just sign here, and I will collect back overtime for you to the tune of X hundred dollars." Good old Joe is going to get the idea in a hurry that he never was an administrative employee. And, the manager can't fire him. He can't threaten him. All he can do is pay him.

Double Check the Double Brass

These payments for back overtime come up quite often in two particular areas. First, the combination employee. This is at once the blessing and bane of the radio industry. Without the employee who doubles in brass, the small market radio station could not survive. But, the announcer, who doubles in sales, or the salesman who does air work can create overtime problems. In a small market, the announcer—one who spends 50 percent or more of his time on the air—is exempt under the small market proviso. An outside salesman is also exempt, provided he does no more than 20 percent air work. But how about the salesman who does air work 30 or 40 percent of the time? Many broadcasters tell the inspector such an employee is either an announcer or a salesman and, as such, is exempt under either category. They usually make it stick, but in some instances, an inspector has refused to honor this.

The next problem involves the news man, in the larger market, who may or may not be a professional. Trained? Yes. Independent judgment? I would say yes. Even when he rips copy off the AP wire, he exercises judgment in the selection of the items to be read. But working against broadcasters, in this case, is the fact that the newspaper reporter is considered a non-exempt employee. Further, metropolitan area stations have labor agreements covering news personnel. In each instance, overtime payments result. As with the artist, or sanitation engineer mentioned earlier, many back overtime claims on behalf of newsmen result from the employee's appraisal of his pro-



If the chief engineer doesn't supervise anyone, he may not be exempt from overtime.

fessional status, after a talk with an inspector, and a realization of the money involved.

How to Keep Score

Now, let us consider the payment of overtime. Employers must pay time and one half for hours worked in excess of 40. How does one arrive at hours worked? Management must keep records of hours worked, and here is another little trap. The manner of record keeping is not prescribed. It is not necessary to have a time clock, but, the records must not be pro-forma. A time card, showing that a secretary comes to work promptly at nine each morning, takes exactly one hour for lunch, and departs on the stroke of five is immediately suspect. People just are not that dependable. Many recommend a station log. Keep it at the receptionist's desk, and have every station employee sign in and out. Note actual times. When overtime is involved, it may be rounded up or down to the nearest quarter-hour, but it should cover all hours worked. Do not forget that hours worked cover hours which are productively the station's. An announcer who finishes his board trick, and who sits around reading *Variety*, could be construed as working. The station could owe him some money as a result.

Without becoming dictatorial, it behooves management to run what the Navy refers to as a tight ship. Keep track of hours. Keep track of its people. Keep track of what they are doing. It can save overtime.

Overtime can be expensive. An \$80 per week employee, as an example, earns \$2 an hour. Overtime on that would be \$3 for each and every hour in excess of 40. He works a sixth day one week, and the station pays him \$24 for that Saturday. One additional day's pay is equal to 30 percent of his weekly stipend. There are ways to save on this.

One means *not* to be utilized is the so-called Belo contract. This is an arrangement whereby an employee is guaranteed a certain amount of money for a work week which fluctuates between 40 and 60 hours. In either instance he gets the

same amount of money. It worked well, and was legitimate. However, the Labor Department fought it, and finally secured a ruling that the fluctuation in working hours had to be *less than 40 hours per week*, as well as in excess of that figure. In other words, if the employee worked 50 hours one week, he could work only 30 another week. This effectively eliminated the Belo contract. The reason this is brought up at this point is that some employers still are using such arrangements. They should discontinue the practice as soon as possible.

The fluctuating-work-week system is attractive. It works in this manner. When the station employs a person, it is understood that the agreed upon salary covers all straight time work, whether for 30, 40, or 50 hours. Overtime, for hours worked in excess of 40 in any one week, is computed at one-half rather than one and one-half times the straight time rate.

In the case of the eighty dollar per week employee discussed earlier, on a regular basis, overtime is \$3.00 per hour. He would receive a total of \$104 for working 48 hours.

On this fixed salary basis, the \$80.00 per week would cover all straight-time work. When he works 40 hours for this figure, his hourly rate is \$2.00 per hour. However, when he works 48 hours, his straight time rate is ascertained by dividing the number of hours worked into the agreed upon weekly stipend. This would be \$1.67 per hour. Overtime is an additional one-half of this for the hours worked in excess of 40. This would be \$.835 per hour for eight hours, or \$6.68. Adding this to the \$80.00 straight time pay gives total compensation of \$86.68. The savings to the station would be \$17.32. This plan is acceptable to the wage-hour people.

It has a further advantage in that it tends to discourage overtime. The more the employee works, the less he is paid for that work. This process follows until the minimum wage is finally reached.

If it is so good, why is it not more widely used? In all candor, there are drawbacks. If instituted in a station, where the crew is accustomed to working lengthy overtime at straight time and one half, it effectively reduces take-home pay. The result is employee disgruntlement. Another difficulty is simply explaining it to employees. They get the idea that management is somehow attempting to put something over on them. Finally, the bookkeeper finds it necessary to compute each paycheck on a different basis each pay period. But if it saves the station \$17, as in the instance of the \$80 per week employee we cited earlier, many managers tell the bookkeeper to get out the pencil and start figuring. Further, handy charts are available with all of the figuring done for the bookkeeper. With such a chart, that problem can be alleviated.

The matter of minimum wage and overtime is indeed fascinating. Ignore them at your own peril.

BM/E

Mini-Mote for Maximum Mobility

TV remotes are often bulky, complicated, and expensive. Jacksonville's public TV station WJCT has found a way to do frequent live or taped field coverage with compact, simple, and low-cost gear. Result: more community involvement, greater public service.

IN BALLROOM or operating room, kitchen or press conference, barber shop or beer parlor, WJCT's Mini-Mote has given the Jacksonville community ideas, philosophies, and reactions to almost every political, social, and cultural event on the local scene. It has made WJCT local affairs programs as popular as those of the commercial stations.

What's a Mini-Mote? It's a highly compact, easily portable two-camera live and VTR remote unit. All control equipment is housed in a rack no larger than a standard quadruplex VTR. Conceived by WJCT chief engineer Gene Napier, the first Mini-Mote (black and white) went into operation in September, 1968, and has been used since then chiefly on the popular news and public-affairs program, *Feedback*. Following the success of the monochrome unit, a color Mini-Mote was built by the station engineering staff.

According to *Feedback* producer Richard V. Brown, the two Mini-Motes have made the entire city a potential studio for Channel Seven. "Any news-happening-location can be set up for a program in a matter of minutes. Mini-Mote is probably the quickest, lightest, easiest TV remote in use today. It allows us to bring to viewers the important political, social, and cultural events of the day as they happen. We often set up a miniature microwave city network, allowing practically

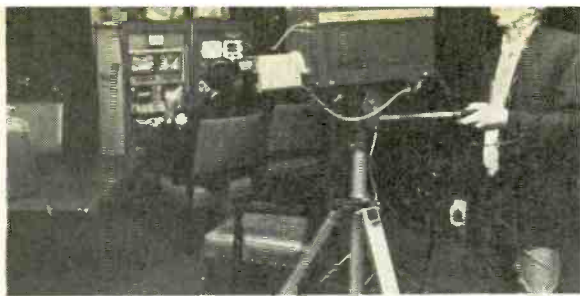
the entire community to participate in the program."

Better News Coverage

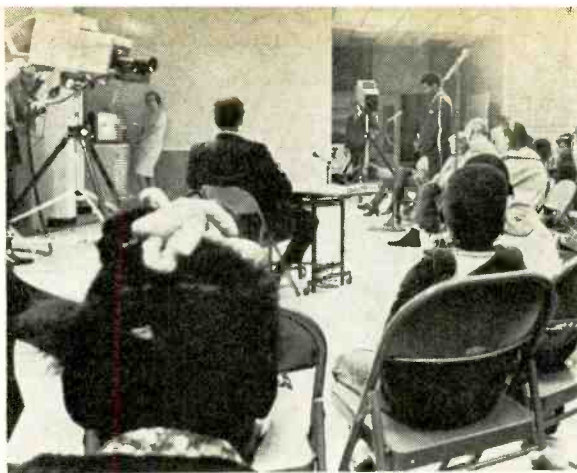
In WJCT's day-to-day news and public affairs, the two Mini-Motes are making film coverage nearly obsolete. "Equipment mobility and the near-immediacy of videotape playback has eliminated the usual newscast deadline, and has given us the edge on breaking news," says Brown. Newsmen are no longer hampered by film limitations or the luck of a cameraman-reporter team in judging what to shoot or not shoot. Mini-Mote goes where the action is and gets it all. Then a selective news judgment is made, based on the whole event, not just the filmed excerpts that reporters usually get. There's no processing, no grain, no splices—but rather that live/tape look.

For WJCT's two recent town-meeting type programs on hunger and nutrition, both Mini-Motes were set up in separate parts of Jacksonville and tied to a third video source in the studio. That arrangement proved a most effective way to encourage a meaningful public discussion by citizens from vastly different socioeconomic levels. As WJCT has discovered, people are more relaxed in their everyday environment than in the artificial





During a recent public affairs program, black-and-white Mini-Mote (above) covered one action while color unit (right) was used at another location. WJCT Chief Engineer Gene Napier (below, with beard) explains operation of his brainchild during demonstration at last year's NAEB Convention.



Minimote II Color Equipment

Quantity	Description	Manufacturer
2	Model 860 Color Electronic Edit Video Recorder	IVC
2	Model 300 Color Plumbicon Cameras, 10:1 Zoom Lens, 250' of Camera Cable	IVC
1	Video Processing Amplifier Mark 10-E	Ball Bros.
1	Electronic Module Housing Mark IX	Ball Bros.
5	Pulse Distribution Amplifier Mark IX	Ball Bros.
3	Video Distribution Amplifier Mark IX	Ball Bros.
1	Card Extender Mark IX	Ball Bros.
2	Filler Card Mark IX	Ball Bros.
1	Video Insert System (Spec. Eff.) Mark VII-D	Ball Bros.
1	Pattern Card #3 (Mark VII Accessory)	Ball Bros.
1	Pattern Card #4 (Mark VII Accessory)	Ball Bros.
1	Color Synthesizer, Color Matting (Mark VII Accessory)	Ball Bros.
1	Card Extender (Mark VII Accessory)	Ball Bros.
1	Filler Card (Mark VII Accessory)	Ball Bros.
1	18-Station Remote Control Panel with 50' Cable	Ball Bros.
1	Transistor Broadcast Color Monitor TCB-14R (with pulse cross, two switchable video inputs)	Ball Bros.
2	Waveform Monitor, Half Rack Mark 21	Ball Bros.
2	Transistor Picture Monitor 9" TE9	Ball Bros.
1	Portable Microwave System, Item #33, Model MA-2B	Microwave Assoc
1	Two Ft. Antenna (1.7-2 GHz) with panhead, mount, tripod	Microwave Assoc
1	Four Ft. Antenna (1.7-26 GHz) with panhead, mount, tripod	Microwave Assoc
1	TM Color EIA Sync Generator # 258, TSG-2000C	Telemation
1	TM Sync Changeover Relay, CO-2000	Telemation
2	TM Color Genlock, GL-2000C	Telemation
1	TM Bar Dot Generator, BD-2000	Telemation
1	TM Color EIA Sync Generator #328, TSG-2000C	Telemation
1	Broadcast Switcher/fader, Model VS-121B	Dynair
2	Hercules Tripod and Elevator, #5302	Quick-Set
2	Hercules Cam-Link Heads, #5230	Quick-Set
2	Hercules Heavy Duty Dolly, #5645	Quick-Set
1	Professional Mic Mixer M67	Shure
1	Mic Mixer M68	Shure
2	Rack Panel Kits A68R	Shure
2	Audio Level Controllers, Level-Loc M62	Shure
8	Microphones (hand held), SM 58	Shure
8	Microphones (Lavalier including flexgrip assemblies) SM51-A57L	Shure
3	Desk Stands for SM58 Microphones, S39A (isolated type)	Shure
1	Five 1/2" Monitor Unit, Model VM 601 side x side x side	Concord
3	Monitors)	
2	Transistor Amplifiers, LT-80B (audio 8 watt)	McMartin
2	Universal Microphone/Mic. Trans., MT-4	McMartin
2	19" Rack Panel Assembly, RP-80	McMartin
1	Portable Lighting Kit, Model EQ3	Colortran
1	Image Enhancer, Model 526	CBS Labs
2	Color Video Encoder	3M
2	Waveform Monitor, Rack Mount, Model 529	Tektronix
1	Vectorscope, Model 520	Tektronix
2	Rack	Premier

Approximate total cost less labor: \$137,211

Minimote I Equipment

Quantity	Description	Manufacturer
2	Camera-3207 Plumbicon with Viewfinder	Cohu
1	Control-Dual Camera-2484-750	Cohu
2	Cable-Camera-100' (and Remote Cont. Cable)	Cohu
2	Modifications for Motorized Iris	Cohu
2	Zoom Lens, 15-150 mm Man. Zoom and Focus, Elect. Iris	Cohu
1	Recorder-Video-IVC 860C	IVC
2	Tube-Plumbicon	AmpereX
1	Processor - VI 10G0	Vital
1	Console - Audio M67	Shure
1	Mixer - Preamp Audio (Microphone type) M68	Shure
1	Generator - Sync (with Rack Mount)	Telemation
2	Tripod, Springhead, Dolly (BHD)	S & D
2	Rack	Premier
3	Monitor-Picture VM 901 (9") with Dual RM, 1-SRM	Shibaden
1	Monitor-Waveform	Tele-Quip
2	Monitor Waveform Mark 21	Ball Bros.
1	Switcher-Video-Tally	Custom
1	Switcher-Preview-Eng.	Custom
8	Wheels	Custom
4	Rails-Handle, 2 on each rack	Custom
1	Tally System	Custom
1	Image Enhancer 526	CBS Labs
1	Lighting Kit	Colortran
2	Earphone-Audio	
4	Earphone-Intercom	
8	Microphone	
8	Stand-Microphone Desk	Custom
1	Audio Amp. LT-80B	McMartin
1	Speaker	

Approximate total cost less labor: \$33,248.50

NAFMB 70: Specialized Formats Hold Key to FM Success

IT WAS APRIL IN CHICAGO, and FM broadcasters gathered at the Palmer House apart from the gleaming distractions of the bulging NAB exhibit halls a few blocks away. Eager NAFMB delegates spent two long days getting lots of work done. And, NAB had no FM sessions.

Last year's FM conference had zeroed in on sales; this one thoroughly explored programming in the medium that's seen the most drastic change in recent years. Sessions covered such specialized formats as Top 40, MOR, Fine Arts, Black Radio, Modern Country, Progressive Rock, Beautiful Music and News/Editorials.

Mood of the conference was set at the opening by NAFMB board chairman Lynn Christian (KXXX-FM Dallas). He opened the affair by calling on the FCC to ask Congress for an all-channel radio law "if you really consider AM and FM similar broadcast services." Following that theme, some speakers were from AM stations, some from FMs.

The Saturday luncheon speaker was Frank Gunther, president of Radio Engineering Laboratories and of the Armstrong Memorial Research Foundation. He urged the FCC to update FM technical rules, saying that any station should be allowed to use a directional antenna to improve its coverage area. Gunther also concurred with Vice President Agnew on radio-TV news coverage. "Don't glorify kooks and troublemakers." He said he noticed less sensationalism on FM than on AM, TV, or in newspapers.

George Koehler of Triangle Publications, (WFIL AM-FM-TV) Philadelphia, advised FM stations to adopt completely different calls from their sister AMs. He found that twin calls (WFIL, WFIL-FM) confuse some listeners who thereupon credit AM instead of FM when polled by rating services.

An innovation this year was the 8 a.m. Sunday breakfast of the newly formed FM Broadcast Pio-

neers. Commissioner Robert E. Lee addressed the sleepy-eyed audience.

Audience Measurement

Psychographics is the science of finding out what motivates a person to follow a certain life style, according to Herb Neu of progressive-rock WLS-FM Chicago. He said they like the psychographic approach better than the demographic, for it tells them how their listeners think. He spoke of two consumer types: A creative consumer can accept a completely new product (like the hula hoop) while a passive consumer can accept only replacement products (new, improved toothpaste).

Neu reported that in spots his audience likes honesty, hates hype. "These young people feel free enough to wear long hair; if a commercial is phony they'll tune you out." He said WLS-FM rewrites most spots to fit their style and retain audience rapport. His goal: "Reach the man inside the shell we all wear to impress the world. We rewrite copy to that inside man, not the facade."

MOR is Changing

Dave Klemm of Blair Radio looked ahead, said what we know as MOR today won't exist in ten years. In 1975, a 35-year-old will have been born in 1940, won't have known depression and global war. We have to reach people like this, said Klemm, because our world will soon be theirs. Thus the MOR format must constantly change pace and absorb some contemporary music. When Bobby Darin started ten years ago he was a noisy rock singer; now he's got an adult MOR style.

Peter Taylor of KFOG-FM San Francisco agreed: MOR is constantly accepting some new music while retaining some old. Five years ago no MOR station would play the Fifth Dimension, but today all do. Taylor thought the FCC



Fine Arts Radio: Harry Ward (WGMS Washington/Bethesda) told announcers: "Don't be so stiff and formal." He also prescribed humor in promotion.



Modern Country Radio: Don Nelson (WIRE Indianapolis) reported switching from lackluster MOR to modern, aggressive Country, gaining listeners and ratings.

one-to-a-customer rule will engender further format specialization. He also thought an all-channel radio law no panacea. Even the new horizontal windshield antenna on 1970 cars hasn't proved as efficient as the standard whip, and Detroit is still wary of buying FM time because they don't think there's any FM driving audience.

Progressive Rock Growing

The key to this format, said ABC-FM's Allen Shaw, is the new life style of many young people, which melds musical expression and political statements. The audience didn't exist three years ago and is still small, but growing. In his opinion progressive and underground FM stations are bringing back the personality DJ with the freedom to talk meaningfully to listeners, unlike the stereotyped AM jocks with their bubblegum music and shrieking promos. "You must offer the young audience an alternative to 15-year-old mediocrity from the 1950's," he admonished.

Public affairs is where the progressive rock format can excel,



Black Radio: Lucky Cordell (WVON Chicago/Cicero) was only black speaker at ethnic session. He recommended strong community involvement, gutsy editorials.



Top 40 Radio: Jim Hilliard (WNAP Indianapolis) changed FM call letters (from WIBC-FM), went live 24 hours, has growing contemporary audience.

continued Shaw. This doesn't mean putting a public discussion in the empty Sunday morning hours; it means developing a meaningful program you can run at 6 pm Tuesday and get good response.

Craig Bowers of WLS-FM Chicago said news and special events must be handled to fit the progressive format. Above all, it must be relevant to your listeners. A flood in India may be important news to some people, but a revised draft law is paramount to the progressive rock audience. He recommended avoiding rip-and-read newscasts, rewriting copy to focus on what's important to youth.

Queried about net news, Shaw admitted even ABC-FM newscasts are pretty straight, and said there's no national news service that fits the progressive audience. Until the audience is larger, there won't be.

Both men advised editorializing, to let that listener know what you stand for.

Fine Arts Radio: Quality Audience

Ray Nordstrand of WFMT-FM Chicago revealed thorough knowl-

edge of his carriage-trade audience: "Our listener earns more money, has a better education than the radio audience as a whole. Our people drink a lot, watch less TV, buy hi-fi, stereo, and tape recorders." Nordstrand advised keeping such facts in mind if you go the classical-music route. WFMT has strict commercial acceptance policy, and spots aren't allowed to disturb the esthetic mood of the station's programming.

Harry Ward of WGMS AM-FM Bethesda, Md.—Washington, D.C. belied his staid appearance with his opinion that classical broadcasters err in adopting two of their listeners' bad habits: indifference and snobbishness. "Young people are turned off from classical music because we're stuffed shirts."

WGMS takes a light approach to Fine Arts Radio through such vehicles as a classical mystery tune contest. Reported Ward: "Once we had a recording of a German police dog barking the last movement of a Beethoven symphony." He also uses humorous promotions: "We sell a Beethoven poster for 50¢ if the listener picks it up at our studio. That gives us a chance to meet our audience. But now the Mozart people want equal time."

Ward also stressed promoting live music: "If people listen to your station but don't go to concerts, you're destroying your source."

C. K. Patrick of WCLV-FM Cleveland predicted that 1970 will be a strike-bound year. He then reasoned that strikers have little money to spend and advertisers will shun the mass market. That, he said, is the time for advertisers to use serious-music stations, whose audience is management and engineering. Backing up Ward's comment about promoting concerts, Patrick reported that WCLV did a 24-hour marathon to raise money for the Cleveland Orchestra, reaching a total of \$31,000 in pledges.

Modern Country Radio

Bob Ardrey of wwco-FM Waterbury, Conn., pointed out that country music stations are given a free boost several times each week by TV, when people watch the *Glen Campbell*, *Johnny Cash* and *Hee Haw* programs.

Chuck Renwick, WDEE-AM-FM Detroit advised lots of promotion when you go country. Do live concerts, he said; they're very popular. Don't be patronizing on the

air; use class. Your listeners are modern, and want 1970-sounding programs, not old-time, down-home stuff.

Dan McKinnon, KSON-AM/KSEA-FM San Diego said they used to do modern country on AM, old C&W on FM. But FM had more listeners and hurt AM sales. Finally they went to progressive rock on FM, keeping country music on AM. Now, McKinnon says, they have two separate audiences. He felt that country fans want music, not news, comments, or DJ talk. He thought automated country just right for FM.

Black Radio Means Responsibility

Joe Whalen of WDAO-FM Dayton gave a mini-history of the growth of black-oriented radio. His station was the first FM aimed at blacks, now outgrows sister AM. Whalen's pet peeve: ABC-FM network. "What's an FM network? Is there an AM network?"

Lucky Cordell of WVON-AM Cicero (Chicago) said the black audience has special requirements the mass audience doesn't have. For example, many blacks are poor, so WVON runs a "Mailbag" feature: Listeners write in to buy or sell used goods, benefiting both those who can't afford new items and those who want to realize some cash from a used object. Cordell advised a strong editorial position in keeping with the needs and desires of the black community. He also recommended airing forums for community expression, but felt that four-letter words don't belong on the air.

Gary Arnold of WJLB-AM Detroit stressed knowing your audience. Meet with your community, he said. Talk to militants and moderates alike, and find out what they're saying. He also urged asking sponsors if they hire and promote without discrimination. How about your station—do you have an integrated staff? If you're a white-owned black-aimed station, you take money out of the community and therefore ought to put some back in.

Beautiful Music: Foreground Medium

Robert Howe of WRTH-AM Wood River, Ill. (St. Louis), said in a few years, half our population will be under 35. Good music stations will have to play up-tempo music to keep an audience. Still, we

Replace Mercury Vapor Tubes Directly with



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foreground music stations will never have the ratings, he said. So damn the ratings—sell the station for its sound. Howe also felt that foreground commercials must become upbeat.

Top 40 May Splinter

Pat O'Day, KJR-AM Seattle, reminded FMers that MOR stations have copied much of Top 40. But he felt that voice-over record intros, screaming jingles, and no dead air were a bit much for FM.

Woody Roberts of K TSA-AM San Antonio talked about the shrinking single-record market. The 45-rpm disc today is chiefly a promo piece for an album. So you've got to get into album cuts in contemporary music. Roberts pushed editorials, and found no reason why you can't use music, sound effects and taped interviews to give them impact.

James Hilliard, WNAP-FM Indianapolis, predicted that Top 40 as a category would soon disappear. He said specialization is here, and the numbers game will soon end. Pop music will splinter even more, and the demographics game is the best thing that ever happened to FM. In the 70s you'll find your own special audience.

If FM is Radio, You Have to do News

You can't afford *not* to get into news, FMers were told at the session on news and editorials. Major advice: Get a good chief honcho as news director. His job is to make himself well known in your community. Tom O'Brian of ABC Radio said local news shows have the highest priority; for state coverage, he recommended a stringer or a tie-in with a station in the state capital. Nationally, the job is to keep in touch with your representative in Congress, O'Brian said. International news is available from AP, UPI, Reuters, and the networks. ABC Radio spends over \$4M annually collecting news for its four networks.

John Kilgo, WAYS-AM Charlotte, said the three R's of broadcasting news—wrecks, rapes, and robberies—are gone. Kilgo called for enterprise reporting. "Skip a city council meeting and dig up your own material," he advised. "This is news nobody can scoop you on, because you have the facts."

Kilgo told the audience to present both sides of the story—this gets more attention than pseudo news with bells, bongs, and "Wal-

ter Winchell" separators. He also urged the news staff to look for some honest *good* things being done. But don't sugarcoat it, he advised.

The news director has to have freedom to write as he sees fit, and shouldn't be under the program director, said Kilgo. WAYS uses four young journalists to do five-minute news reports every hour.

Dan Kops, Kops-Monahan Communications, New Haven, Conn., urged editorializing—but only after the station has a sound reputation as a good news source. The news director or announcer shouldn't deliver the editorial, as it may subtract from his image as an objective reporter. And go into editorializing only if you have the temperament to live in a sea of controversy, Kops said.

Pleas for Better FM Quality

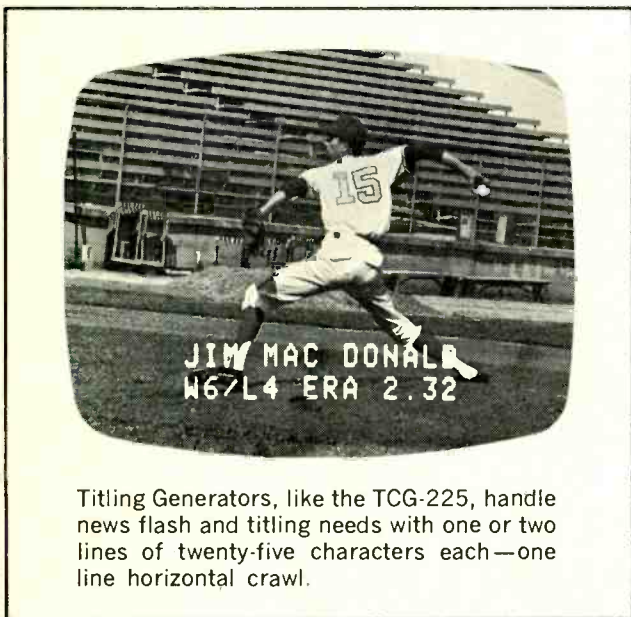
Half the FM stations on the air are sickening, because of inferior quality, said Jim Gabbert of K-101 San Francisco. Alfred Antlitz of WFMT Chicago agreed. FCC requirements must be considered as absolute minimum; much higher standards are needed, said Antlitz. Engineers must care, skilled employees must be hired, and equipment and time must be devoted to putting out a good signal. "Monitor your off-the-air signal," Antlitz said. There's far too much limiting done, just to put out maximum modulation, he declared, and called for engineers to pursue the quest for excellence.

Quad Sound That Produces Tears

The convention closer gave broadcasters a listen to what many consider FM's big boom of the 1970's—four-channel stereo. K-101's Jim Gabbert and San Francisco engineer Lou Dorren demonstrated quad sound and briefly explained Dorren's proposed system for compatibly multiplexing four channels on a single FM station. For details see *BM/E*, May, 1970, page 38. **BM/E**

Station Planning and Modernization. That's the theme of the August *BM/E*. Have you done something at your station or facility that other broadcasters or cable operators would find useful? Let us hear about it. Send photos. We'll give you and your company full credit.

Get "in" gear



Titling Generators, like the TCG-225, handle news flash and titling needs with one or two lines of twenty-five characters each—one line horizontal crawl.

Want to know about the latest in sophisticated terminal equipment?

Talk to TeleMation!

Or talk to any of literally thousands of smart satisfied users of TeleMation products who know our equipment has achieved a standard of excellence in quality, flexibility and reliability that others are hard-pressed to meet.

For the finest in gear,
TALK TO TELEMATION.



TeleMation's new, solid-state audio control unit, the TAM-105, is the industry's most compact and versatile unit with five microphone mixers, thirteen inputs, separate cuing facilities and other features found only in larger, higher-priced production units.



TELEMATION

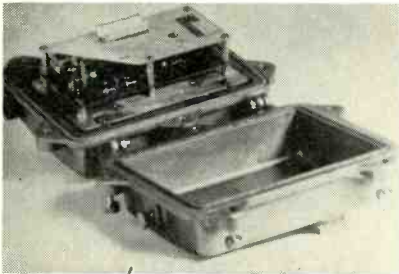
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BROADCAST EQUIPMENT

CATV amplifiers

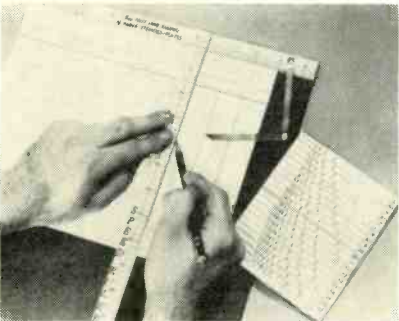


Model C701 (example of a new series operating over full 50 to 270 MHz band), offers 25 dB gain with 0.5 dB flatness; typ noise 14 dB (channel two), 10 dB (channel 13); operates in -40 to $+140^{\circ}\text{F}$; crosstalk between channels -57 dB, hum modulation and harmonic interference -60 dB; solid state design; delivery stock to four weeks. PREMIER MICROWAVE.

Circle 276 on Reader Service Card

Log/graph ruling kit

Speed-Ruler straight-edge and measuring device eases drawing of parallel horizontal and vertical lines for custom-ruled charts, graphs, program logs, etc.; handy proportion card for dividing any sheet five to 17 inches wide into equal-width columns with parallel lines; can be used with pencil, ball point or ink pen. Request Item Number L-77 from Professional Aids Co., Suite 400, 1 North Wacker Drive, Chicago, Illinois,



60606. Price: \$9.95 plus \$.75 postage and handling.

Color densitometry system

Datacolor 702, self-contained desk console model, converts b/w pictures into multicolors for image enhancement and analysis; will backlight photo, converting it to a TV video signal by CCTV camera; represents density values of photo by analog voltage levels of video signal for display in color on monitor; color signals coded into compatible TV sig-



nal for broadcast or closed-circuit TV. SPATIAL DATA SYSTEMS.

Circle 275 on Reader Service Card

Baseball Interviews Offered Free

Disc contains ten programs, each $3\frac{1}{2}$ minutes, of interviews with Jerry Grote of New York Mets and Phil Pepe of New York Daily News. Called "Inside Baseball," record is compatible stereo and airable on AM or FM. Program was paid for by Sportade (new soft drink) but disc contains no commercial, only mention of brand name. Record will be furnished to radio stations at no charge as long as supply lasts. For your free disc, write on your station letterhead to: Radio & TV Roundup Productions, 111 Maplewood Ave., Maplewood, N.J. 07040.

CATV cable splice block



Model SS/U seized center-conductor coaxial cable splice block, designed for all sizes of cable in rf coaxial transmission and CATV systems operating in 5 to 300 MHz range; features input and output test points and exhibits rf characteristics comparable to the cable itself so as to allow signal level monitoring. ENTRON.

Circle 277 on Reader Service Card

TV modulator for MATV and CATV

Telemod crystal controlled TV channel modulator accepts video and audio inputs to produce complete TV channel; designed specifically for MATV and CATV and will accept any input from simple vidicon camera and mike to film chain or complete CCTV studio; provides outputs for vhf channels two through six or (especially useful for ETV systems) any of five subchannels; freq acc $\pm .005\%$; accepts 0.5 to 2.5 V video input plus balanced or unbalanced



Continued on page 44

the first 14" RECORDER/REPRODUCER without hang-ups

Other big names in tape machines have tried to design a 14" unit to handle extended playback and recording — but if high price isn't their hang-up, tape breakage, stretching, wow and flutter and drifting become the big problems.

Now let's look at the 1400, Tape-Athon's new tape unit — sensibly priced — unexcelled performer — ideal for any AM and FM broadcasting or recording facility.

NO TAPE HANG UP — Tape-Athon uses dual capstan drives to provide an even speed of tape across the pickup heads no matter how great the torque difference between the reels. Pickups are virtually isolated from tension variations, eliminating problems of excessive wow and flutter, tape breakage and stretching. (Why not use dual capstans if you can keep the price reasonable?)

AND NO SIDE "OVERHANG-UP" The reels on the 1400 are located in the center of the chassis, eliminating side overhang and the inherent problems of reels being bumped or knocked off. (Why do it any other way?)

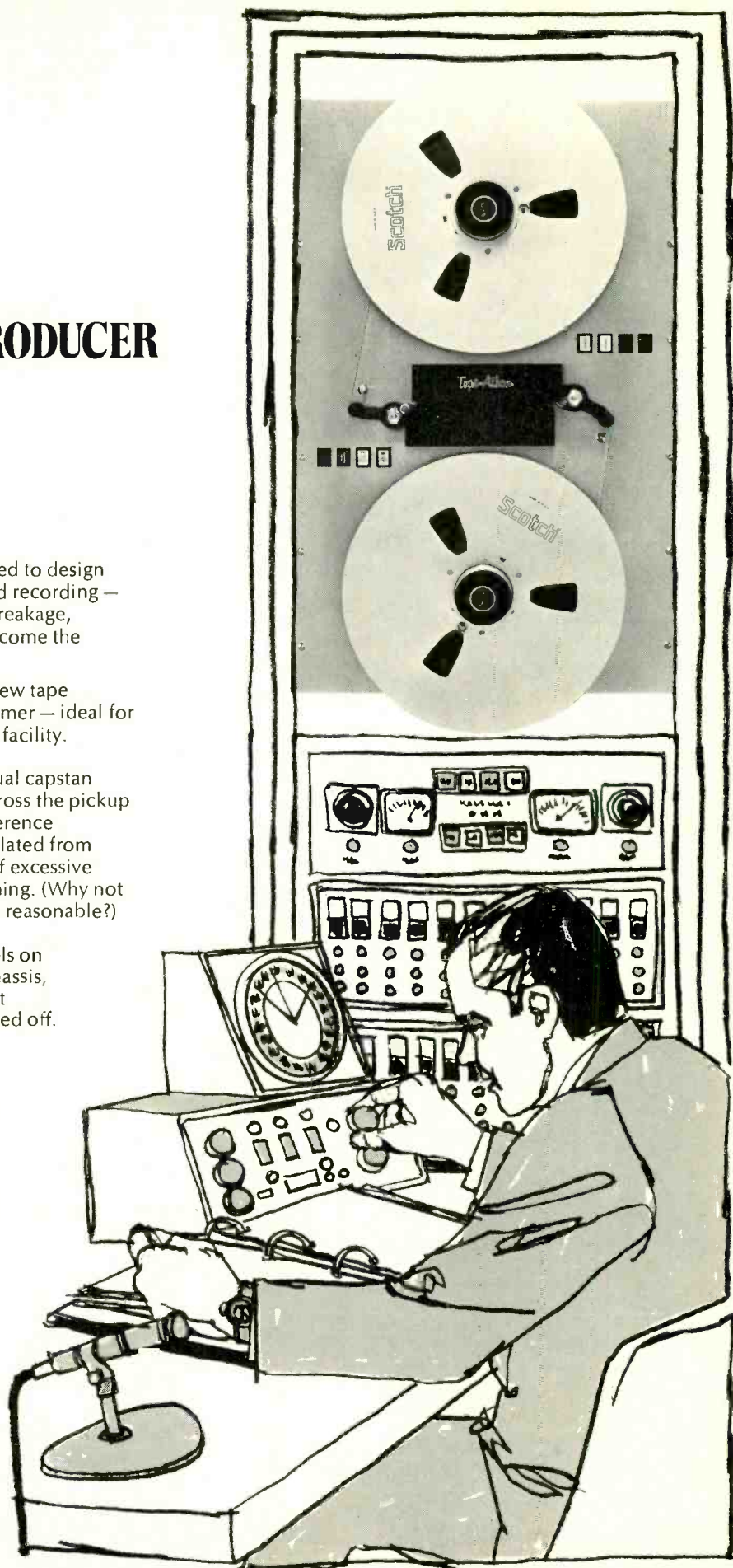
NO TAPE REVERSING HANG-UP — Tape direction reversing is fully automatic and operates electromechanically or by foil sensing. (Why not have your choice?)

Plus — illuminated touch-button control, automatic tape lifts, a fast drum-band type brake system, local or remote cueing, and high speed rewinding.

Detailed specifications are available in data sheet 265-5. Send for a copy today.

Tape-Athon Corp.

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BE SURE YOU'RE RIGHT



**MEASUREMENTS'
MODEL 950
FIELD STRENGTH CALIBRATOR**

Your field strength meter can now be quickly calibrated as often as necessary to assure accuracy traceable to the National Bureau of Standards.

- **CARRIER FREQUENCY:** 54 to 250 MHz in two bands. Covers all TV channels 2 through 13 and fm band 86 to 110 MHz. Other frequencies can be provided on request.
- **FREQUENCY ACCURACY:** $\pm 0.5\%$; dial individually calibrated in MHz and segmented by TV channels.
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- **SOURCE IMPEDANCE:** 75 ohms (other impedances on request).
- **OUTPUT VOLTAGE:** 100,000 microvolts (+ 40 dbmv) across 75 ohms automatically maintained. May be attenuated to 0.3 microvolts (approximately — 70 dbmv) by means of piston type attenuator.
- **POWER SUPPLY:** 115 or 230 volts, $\pm 10\%$, 50/60 Hz, 12 watts.
- **DIMENSIONS:** 7" high x 12 $\frac{3}{4}$ " wide x 7 $\frac{1}{2}$ " deep.
- **WEIGHT:** Approximately 13 lbs.
- **PRICE:** \$360.00 f.o.b. Boonton, N. J.

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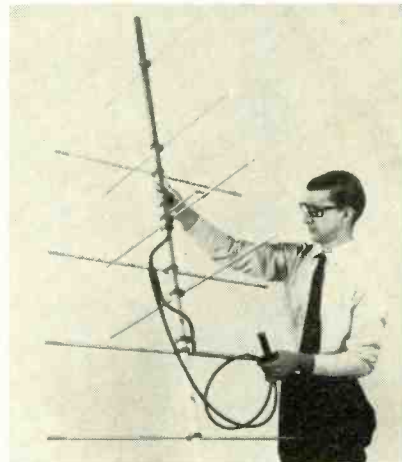
Circle 115 on Reader Service Card

audio input and has separate audio and video carrier gain controls to facilitate signal balancing; stable operation with line voltage variations from 105 to 125 Vdc. JFD ELECTRONICS.

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Circularly polarized yagi antenna

Model No. 356-509 circularly polarized yagi antenna designed for transmitting to receivers where the polarization varies randomly, reduces possibility of signal loss because of

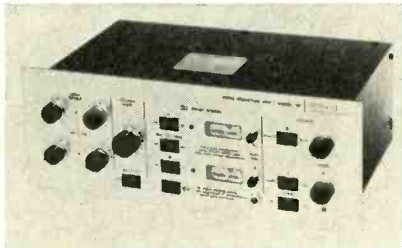


cross polarization; operates from 144 — 174 MHz; 3% or 9 MHz bandwidth; forward gain 3.3 dB; front-to-back ratio 15 dB; VSWR 1.5:1; 50 ohm input impedance; max input power 500 W. PHELPS DODGE.

Circle 279 on Reader Service Card

Stereo noise reduction

Model 100 simultaneous record-playback control center claims first direct adaptation of Dolby Audio Noise Reduction System for use as separate component with "home tape recorder of high quality," to reduce noise and



hiss in tape recording process without changing integrity of the recorded signal; 3 dB signal to noise ratio improvement at 600 Hz, to 6 dB at 1200 Hz and 10 dB at 4000 Hz; features include separate input level controls on both channels for both mike and line inputs, master recording level control; retail \$250. ADVENT CORP.

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Continued on page 46

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Focal length 15~145mm
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**A new member to the superb
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The most efficient 10:1 zoom lens, unmatched for its optimum performance, both optically and mechanically with impeccable definition and resolution throughout its entire zoom range.

Also available are scores of other lenses, ranging from 8.5mm to 1,000mm telephoto, zoom and those motordriven among them, for immediate delivery, after being tailored to your specifications.



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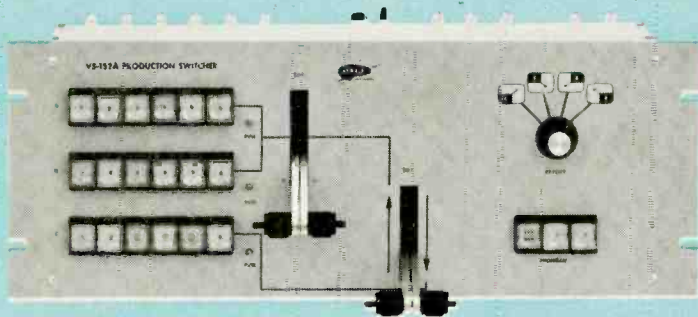
568, Shimoochiai, 2-chome, Shinjuku-ku,
Tokyo, Japan

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June, 1970—BM/E



MODEL VS-150A VIDEO SWITCHER FADER



MODEL VS-152A PRODUCTION SWITCHER

Start Your 1972 Studio NOW!

Dynair's new Vertical-Interval Switchers Make it Possible

You'll probably have to wait at least two years before you see anything comparable to Dynair's brand-new VS-150A Video Switcher-Fader and VS-152A Production Switcher. *Right now*, these completely new units give you professional programming capability . . . *and they do it by means of electronic switching during the vertical interval to assure glitch-free signal transfer.*

Both units are designed especially for the small studio: CATV, educational, broadcast or remote. Over 80 percent of their circuitry is made up of IC's.

They can be mounted in a shallow console arm. Both operate on broadcast or most industrial sync and color or monochrome video. They are easy to operate, with illuminating pushbuttons and interlocks which make it impossible to mix or fade any but a non-composite signal.

Finally . . . and here's one of the most important features of all . . . *the VS-150A and VS-152A are the lowest cost units on the market today offering professional quality and vertical-interval switching.*

Model VS-150A Video Switcher-Fader

- Accepts 3 non-composite and 2 composite video inputs.
- Provides: Instantaneous switching between two inputs
Fade-in or fade-out of a single input
Manual fade or dissolve between two signals at any desired speed
Superimposition of two inputs with any desired degree of mixing
- Easy operation: Split lever, locking fader handles \$750.00

Model VS-152A Production Switcher

- Accepts . . . 6 non-composite and 2 composite video inputs
- Provides . . . Horizontal and vertical wipes, inserts from any corner and diagonal expansion
Mix control for fade-in, fade-out, lap, dissolve and superimposition.
- Easy operation . . . Automatic preview system for positive indication of program conditions \$1795.00

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Buy Belar!



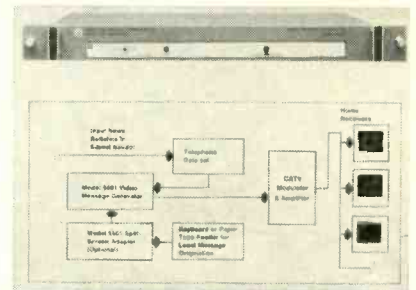
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Video message generator

Model 5401 converts incoming teleprinter data into alphanumeric characters for display on CRT as "page"

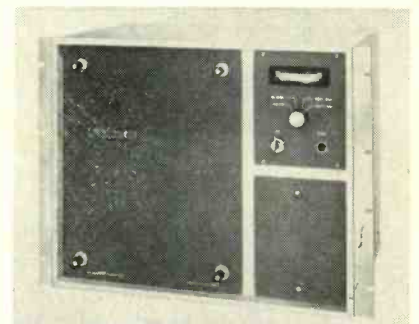


of eleven 25 char lines, which rolls up as new data appear at bottom; designed especially for CATV local origination, video output can be carried by any RS-170 video system. DATA VOX.

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Microwave heterodyne repeaters

HR series of solid-state microwave

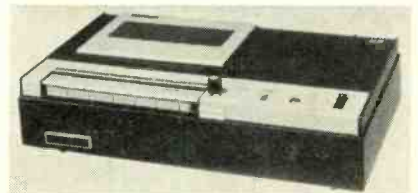


heterodyne repeaters (no klystron) use double balanced parametric up-converter allowing operation over 2—8 GHz range with output powers to 2.0 W; model HR-7 shown here provides "transparent" (distortionless) operation over 6.875—7.125 GHz range. RHG ELECTRONICS LAB.

Circle 282 on Reader Service Card

Variable speed cassette recorder

Model VSP-702 modified cassette recorder was designed for broadcast



use to dub playback off-speed tapes made on battery-powered portables with aging batteries. Speed may be varied over range of $\pm 20\%$ of normal. HOLLAND ELECTRONICS.

Circle 283 on Reader Service Card

Continued on page 49



WNHC-TV got into color film and got out more promotion spots.

"The one reason why I had more promotion spots on the air last year than before was color film," says Walter Liss, Assistant Promotion Director for Triangle Stations, and former Promotion Manager for Triangle's Hartford-New Haven outlet. "In one year with our Kodak ME-4 Process I also saw a tremendous difference in news, documentaries, and local commercials.

"Before color film, we used a full production crew to shoot spots. With ME-4 and Kodak Ektachrome films I turned out many more spots, in less time, for less money. I could shoot a spot in the morning and get it in the afternoon in beautiful color.

"We discovered the flexibility of color, too. We rigged up a simple animation method using a light box hung on a wall, and a single frame movie camera that

gave terrific effects. We could edit quickly. We were more mobile with film.

"Color film allowed our news people to shoot more documentaries, such as our 'Scene '70' series which covered local problems like traffic safety, unemployment, ghettos, etc. We, on the other hand, used the film to promote the series.

That's just one way we got double use out of the ME-4 Process capability.

"My job was to get as much on the air as I could—quality and quantity. I did my job better with the Kodak ME-4 Process and Kodak films."

"There are a lot of things you can do with your Kodak ME-4 Process. And if you haven't gone to color yet, make your move now; you're already late. Contact a Kodak Regional Chief Engineer for more specific data. In New York, Ray Wulf. Chicago, Dick Potter. Hollywood, John Waner. Go!



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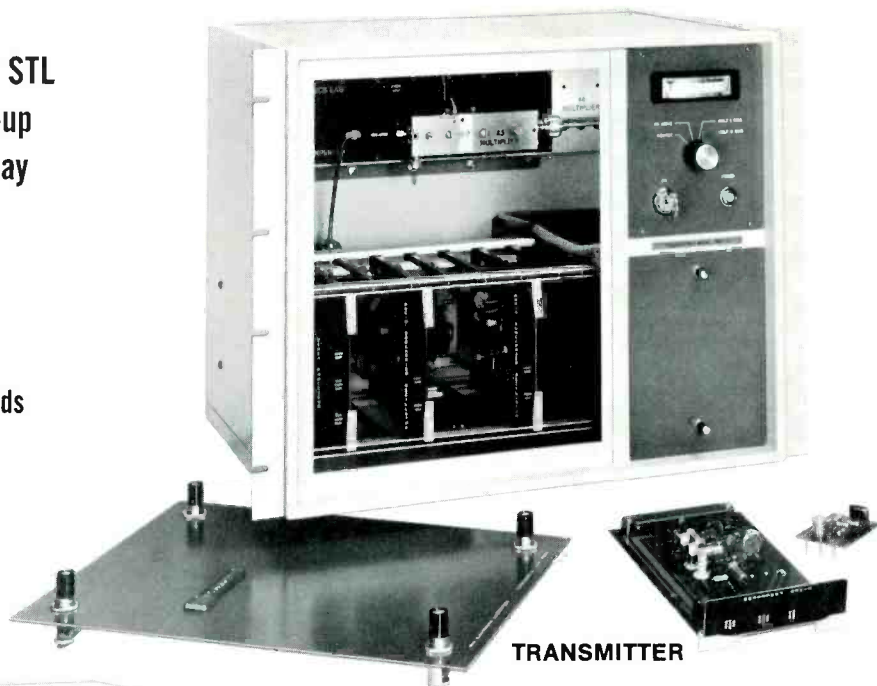
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Use as rack mounted STL
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RHG, a leading supplier of military TV relay links, now offers Series MRS to the broadcast industry. Transmitters and receivers, with advanced field proven designs provide solid state reliability, no warmup, and low power drain.

To improve your color transmission quality and to insure trouble free operation specify RHG equipment fully described in Bulletin 69C. Call for "no obligation" demonstration.



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Miniature camera cable

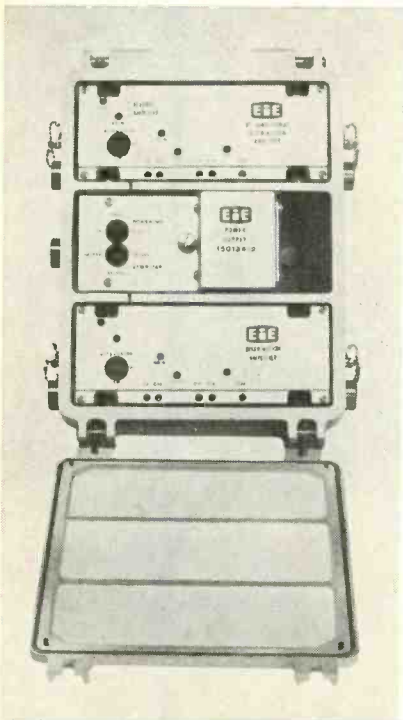


For color TV cameras, MiniCable TV-81 is about half the diameter of standard cable, weighs less, is easier to handle. Includes miniature 85-pin connectors which mate with standard sized units. Color coding permits determination of length at a glance. Retained dust cap included. Woven cable grip and molded rubber boot provide bend relief and protection against cable pullout. **BOSTON INSULATED WIRE & CABLE CO.**

Circle 284 on Reader Service Card

Two-way CATV amplifiers

New line of trunk, bridger, and distribution amplifiers have optional single or two-way capability using 10—30 MHz band. May be adapted to single or dual cable systems. Modular plug-in design featured, with

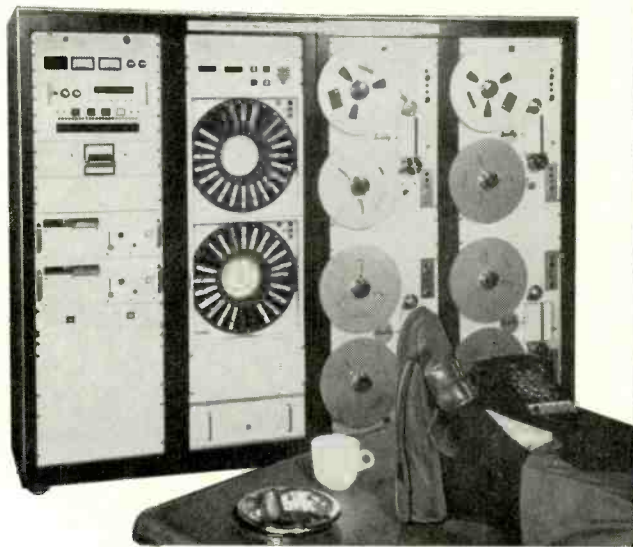


AGC and tilt compensated gain controls, moisture and rfi shielding. **ELECTRONIC INDUSTRIAL ENGINEERING.**

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Continued on next page

For the Program Director who wants everything...



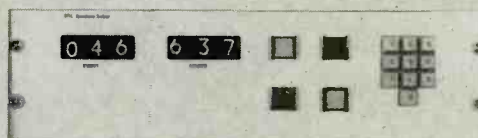
Total Automation means:

- Pre-programming up to 24 hours in advance from
- 12 separate audio sources with the new

AR-1000 AUTOMATION SYSTEM

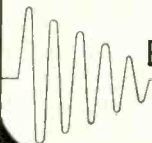
The new AR-1000 is an all solid-state, modular designed, total automation system that provides the ultimate in programming flexibility to meet any format requirements. It permits any station to readily individualize its programming up to 24 hours in advance, from up to 12 audio sources, and enables format changes to be made quickly and easily. The AR-1000 features all plug-in circuit elements, independent power supplies, photo-cell audio switching with full overlap, and built-in facilities for network joining. For real-time program logging, an all solid-state digital logger is also available.

NOW AVAILABLE... ...RANDOM SELECTION OF 500 EVENTS FROM UP TO 9 CAROUSELS



- Readily expandable to 1000 events
- Simplified push-button operation
- Easily programmed while "on the air"
- Direct visual display of current and next event
- All solid-state memories for high reliability
- Compact 5 1/4" panel height

For complete information, write or call:



BROADCAST PRODUCTS COMPANY, INC.

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AUDIO CONSOLES
CARTRIDGE SYSTEMS
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CONTROL SYSTEMS

THERE'S A
NEW SLANT
TO SPARTA
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Sparta Electronic Corporation
recently acquired
Bauer Broadcast Products Company
and can now supply any professional
broadcast equipment need from microphones,
audio equipment, antennas to
AM/FM transmitters.

Bauer transmitters are "top of the line" and
have over 700 installations currently in use
throughout the world. The set up of a complete
station facility concerning financing, service,
and delivery can now be handled by one
company, Sparta Electronic Corporation.

Any Sparta/Bauer representative can give
you full information on how you can obtain a
package deal on all your broadcast
equipment needs.

Call or write us today!

SPARTA

ELECTRONIC CORPORATION

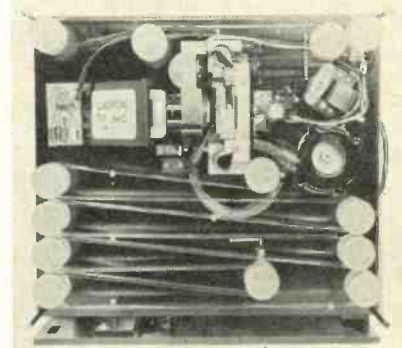
5851 FLORIN-PERKINS ROAD (916) 383-5353
SACRAMENTO, CALIFORNIA 95828

A DIVISION OF COMPUTER EQUIPMENT CORPORATION

Circle 120 on Reader Service Card

Random access projector

Model 133-B 35-mm film projector holds 1000 frames of film, can search, locate, and project any frame in maximum of five seconds. Frame-

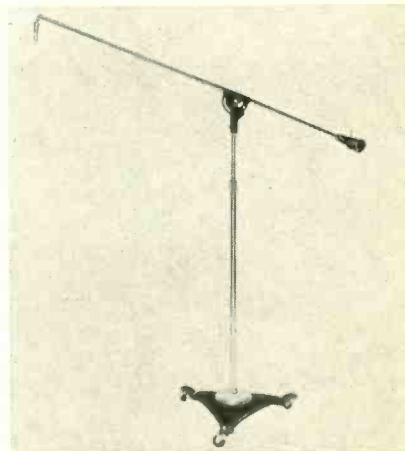


positioning feature assures repeat positioning in aperture within .005 inch. Projector designed for rear screen projection with 35.5 magnification, but may be adapted for vidicon pickup. MAST DEVELOPMENT Co.

Circle 286 on Reader Service Card

Mike boom

Model BS-36W boom stand has triangular base with rubber casters. Stand height adjustable from 4 to 7 feet. Horizontal boom is 62 inches long; optional attachment extends length to 92 inches. Gyromatic swivel



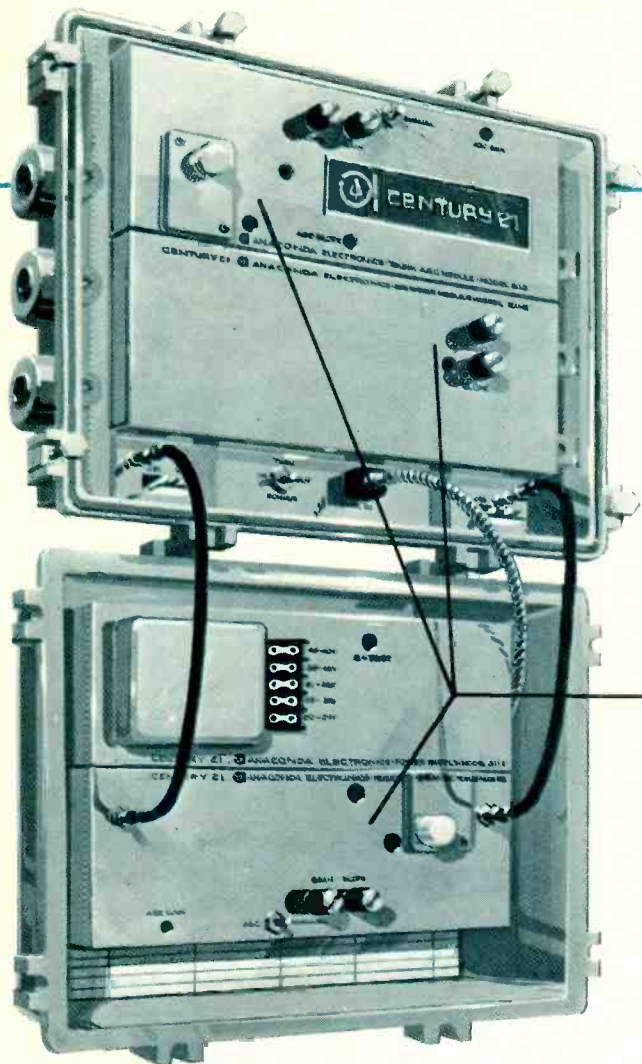
at boom end permits mike directionality. ATLAS SOUND DIV.

Circle 287 on Reader Service Card

Sony camera lens modification

Modification of Sony DXC-500 color TV camera, allowing use of standard c-mount TV zoom and fixed lenses, now available to owners or sellers of the small and easy-to-use camera. Now in the planning stage: CATVan Mobile Color Origination Vehicles and CATV studio multiplexer systems, to be used with the modified camera. VIDEOTECHNIQUES.

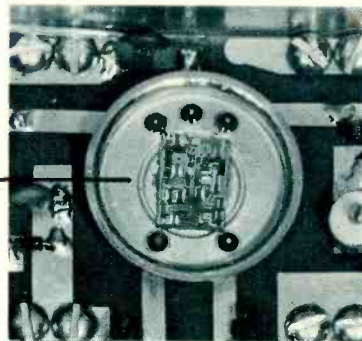
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Introducing Century 21

The CATV Industry's
First Hybrid Integrated-Circuit
Push-Pull Amplifier.

Here's the heart of it!



High quality and improved reliability of hybrid thin-film amplifier (shown actual size) meets stringent requirements of today's wideband cable communications systems. The RF microcircuit in hermetically sealed package provides superior operational characteristics in trunk, bridgers, distribution and reverse amplifier applications.

Enter: The age of sophisticated thin-film circuitry for CATV cable systems!

How do you design quality service into large, elaborate metropolitan cable systems? . . . quality that keeps subscribers satisfied?

One of the best places to start is with the amplifiers. Anaconda Electronics did. And, the result is this new hybrid IC, Century 21 Amplifier.

At its heart is the industry's first application of thin-film, microcircuitry designed specifically for cable communications.

The reason why an IC amplifier delivers better quality signals than conventional amplifiers is that thin-film hybrid microcircuits make it possible to incorporate as much sophistication, or circuit complexity, as is absolutely necessary for the best possible performance with optimum reliability or repeatability.

Anaconda Electronic's use of advanced IC techniques in the Century 21 results in a minimum number of discrete components thus affording a high reliability factor in each unit.

The totally modular Century 21 is basically a high-performance,

unidirectional, push-pull CATV amplifier, but designed with optional two-way transmission capabilities.

This new amplifier not only provides excellent stability and repeatability, but it offers the broadest bandwidth of any cable communications amplifier available today.

For the best built-in quality throughout your cable system, no matter how large (or small) get all the facts about Century 21, the new one from Anaconda Electronics — first in IC technology. You'll see it at booths 3-14 & 3-15 at the 1970 Chicago NCTA Convention.

"The Right Equipment Makes the Difference"

ANACONDA electronics

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ANACONDA electronics Ltd.

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A DIVISION OF ANACONDA WIRE AND CABLE COMPANY

Circle 121 on Reader Service Card

CROSS-TALK

Ed. Note: Readers have provided this month's Crosstalk with plenty of corrections—but first we have to clear up some more transmitter static . . .

In the January 1970 *BM/E*, the FM transmitter article omitted a modulation system used by Collins and Visual in their newer exciters. The technique is direct FM with heterodyne, not frequency multiplication.

In each case, modulation takes place at a relatively low radio frequency (14 MHz in Collins, 21.5 MHz in Visual) and everything goes into the modulator—main-channel audio, stereo sidebands and pilot, and SCA (if used). At this point 100% modulation is 75-kHz deviation.

Then the modulated signal is heterodyned up to carrier frequency in the 88–108 MHz band by beating it with a crystal oscillator. No multipliers are used, and frequency deviation with modulation is the same at the carrier frequency as at the low radio frequency.

Thus there is no reason to infer that either the Collins or the Visual

exciter has problems with stereo sidebands.

BC History Updated

Dear BM/E:

As an author and historian I read with great interest "Broadcasting at Half-Century" in your April 1970 issue. I was particularly interested in "Broadcasting Milestones." I found two sections in which erroneous information was included.

In 1929, it states, "All-electronic TV (using an iconoscope camera tube and a kinescope receiver tube) is demonstrated at an IRE meeting at Rochester, N.Y." This is not so, although Dr. Zworykin (then of Westinghouse Research Laboratories) had developmental iconoscopes which he used for experimentation. The iconoscope was not publicly revealed until June 26, 1933, at the 8th Annual Convention of the IRE in Chicago.

A report of the (1929) meeting which appeared in *Radio Engineering* discloses that a kinescope tube was used at the receiver. But the pickup was done with a modified 35-mm film projector using a vibrating mirror as a scanner. The projector ran at a constant speed (no intermittent was used) and synchronizing information was provided by a special commutator connected to the film sprocket drive. Thus both picture and sync came from mechanical devices. In fact, RCA announced that they were able to eliminate their rotating photocell synchronizing generator with a purely electrical one sometime late in 1934.

The other error was in stating that Machtronics introduced the first helical VTR in 1961. My information is that the slant-track VTR was introduced by Toshiba in Japan in September 1959. Machtronics did not introduce their helical-scan machine until 1962.

Two milestones not reported were the introduction of the Ampex VR-2000 VTR using the new high-band recording standard, in 1964; and of course the introduction of the Philips color camera using Plumbicon pickup tubes in 1965.

Albert Abramson
Van Nuys, Calif.

Dear BM/E:

In the April issue there are at least two mistakes under "Broadcasting Milestones." In the first paragraph, 1919-20, the station called K1KA should be KDKA.

To the best of my knowledge KFOO, the station of the Latter Day Saints University in Salt Lake City, went on the air in December 1921, which would have predated the listing appearing in the magazine.

Having worked with the historical file of Broadcasting's First Fifty

A STAR IS BORN
FILMLINE'S MODEL FE-50
A Processor for Ektachrome Film
Processes 16mm Color Emulsions at 50 FPM.

Model FE-50
 FROM
\$18,500
 F.O.B.
 Milford, Conn.

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

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

ADDITIONAL FILMLINE FEATURES:

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

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

ually while machine is in operation, without breaking film or causing lower film assemblies to rise. Provisions for extended development to increase ASA indexes to 250 and higher are incorporated. Machine threadup allows use of standard ASA indexes or accelerated indexes because of Filmline's Film transport system features.

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

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

For more details write: Dept. BMJu-70



Circle 122 on Reader Service Card

Years, for about five years, and presently working on a chronology of actualities of the first fifty years, I would appreciate knowing whether or not these corrections are valid.

John M. Lyons
WWRL
New York City

Dear BM/E:

Because the records for history are important to posterity, you will appreciate our solicitation of accuracy for understandable reasons of personal pride.

WFGP-TV, channel 48, Atlantic City, N.J., was the first commercial uhf station. To it was delivered the first commercial type RCA uhf transmitter in 1952. Your checking the records will verify this.

Fred Weber
Rust Craft Broadcasting
New York City

AM Telemetry

Dear BM/E:

I have just read "Multiplexing Telemetry Signals at an AM Station" in your April issue. To say that I was surprised, dismayed and disgusted, is putting it mildly! I suggest that Thomas R. Haskett familiarize himself more thoroughly with the proceedings within the industry about which he is reporting, if he intends to accurately, factually and fairly report these proceedings.

I have long been an advocate of BM/E and have held great respect for its interesting and timely articles. Therefore, I must wonder at the source of information for the article for which Mr. Haskett takes credit. Perhaps both had best re-examine the proceedings and final rulemaking in this action.

I refer specifically to the section of the article captioned "How it works" and the first sentence which reads "The first system available for AM telemetry was introduced recently by Moseley (who else?)."

What a ridiculous statement! I'll tell you who else—Marti Electronics, Inc.

Giving credit where credit is due, we are quick to acknowledge that Marti Electronics was not responsible for the inception of the idea or a participant in its original proposal to the Commission. We are equally quick to point out, that it was the Marti RMC-2AX remote control system, which incidentally, was designed some two years ago and is now in use in some 25 to 30 installations, both AM and FM, which was the basis for final approval of subaudible telemetry on an AM carrier. It was the Marti RMC-2AX remote control system which was on the WTOP, Washington, D.C., carrier, just prior to the 1969 NAB Convention in

Washington, D.C., monitored by the EIA, FCC, NAB and other interested parties, which was responsible for EIA withdrawing their objections to the proposed subaudible telemetry, allowing final Commission action. Should you care to question this fact, may I suggest that you review the Commission's proceedings in Docket 17873.

It should also be rather obvious that the Marti RMC-2AX was the basis for final approval since it does not require interface or add-on equipment to make it compatible with the final rulemaking pertaining to filtering, meter signal mixing and auto-

matic prevention of overmodulation. Obviously not; this was a part of the original design, and I might add, saves several hundred dollars in the cost of add-on equipment.

I call your attention to our sales bulletin, "Let's Tell It Like It Is," which has been mailed out to all of our distributors and many of our customers. It is available to any of your readers who may care to know the accurate facts pertaining to the approval of subaudible AM telemetry.

Robert E. Richards
Marti Electronics Inc.
Cleburne, Texas

Solid State Solid Service

WILKINSON

AM MONITORS

Shield Serve Save



TAMF-1A AM Frequency Monitor FCC Approval 3-158 Ultra Stable $\pm \frac{1}{2}$ Hz per month . . . $5\frac{1}{4}$ " rack space . . . Weight 10 lbs. . . . Approved for modulated RF input . . . Self Testing Self calibrating . . . Instant operation.

TAMM-1A AM Modulation Monitor FCC Approval 3-156 Extremely precise remote or local RF range .1-30MHz Weight 11 lbs. . . . rack space $5\frac{1}{4}$ " Demodulator provides 2 audio outputs 30 Hz-45 KHz $\pm \frac{1}{2}$ db at $\frac{1}{4}\%$ distortion.

For complete details, write or call:

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ELECTRONICS, INC.

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WOODLYN, PA. 19094

TELEPHONE (215) 874-5236 874-5237

Circle 123 on Reader Service Card

NEW LIT

For copies of these literature offerings, circle numbers for appropriate items on Reader Service Card.

Production switcher, Ampex VS600, described in data sheet with specs and control panel diagram. **201**

Sound-insulating doors and frames,

eight models from Pioneer Industries, lined up in four-pager with test charts and design information for field installation. **202**

Electric clips and insulators for quick, temporary electrical connections, in Mueller eight-pager, giving complete specs for entire line, fully illustrated. **203**

Retractable electrical power cords, test leads, miniature and communications cords, in four-page catalog from Russell Industries, listing specs and prices, with illustrations. **204**

Drum programmers and circuits of Sealectro's S-500 line of Sealectro-

switches, in loose-leaf catalog with schematics plus technical and ordering information. **205**

Service catalog from Thomas J. Valentino Inc., includes company's offering of some 70 hours of background music in 32 categories ("Bach to hard rock") to CATV organizations under special one-year rate covering unlimited performance use of copyrights. **206**

AM/FM transmitters, 250 W to 100 kW (AM) 10 W to 20 kW (FM), in AEL eight-pager, includes other equipment such as AM/FM automatic transmitter switch, stereo generator and direct FM exciter. **207**

Almost two dozen broadcast TV products, photos and specs included in Cohu's six-page "condensed" catalog. **208**

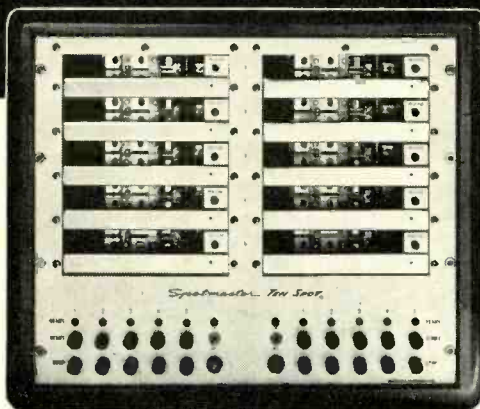
Two brochures from Visual Edcom: Circle **209** for description of RP-9511 continuous duty automatic recycling remote program source—two speed, four-channel, quarter-track playback unit with 7 in. reel capacity; circle **210** for information on 620P portable tape recorder, professional quality but priced "within the reach of most institutions," with magazine-type tape deck, dual channel amp and speaker system in rugged carrying case with storage area.

Coaxial load resistors, absorption wattmeters and directional wattmeters, stocked by Bird Electronics Corp., listed in four-page short-form catalog, includes chart of rf letter band designations with their associated frequencies. **211**

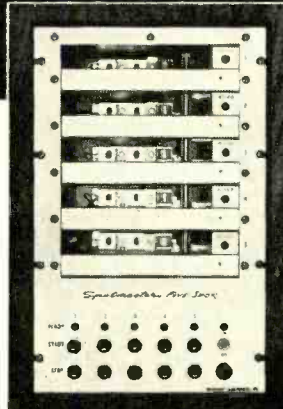
Modern Radio Broadcasting, Management & Operation in Small-to-Medium Markets, by Robert H. Coddington. With twenty years in radio-television broadcasting the author writes practical, nuts-and-bolts advice. He begins with descriptions of market searches and FCC applications. Then he tells how to build the station from the ground up, and how to select a staff. A summary of programming follows, and a chapter devoted to sales and promotion. There is a good deal of material on engineering and equipment use, and even advice on maintenance. Throughout the text, the author's point is clear: the small-station manager must be part salesman, part engineer, part announcer. He should be a generalist, not a specialist, and should live and breathe radio. This book will be useful to newcomers and aspiring manager-owners, and could well be the backbone of a college course in radio broadcasting. Hard cover; 286 pages plus index; 1969. Price \$12.95. Tab Books, Blue Ridge Summit, Pa. 17214.

Continued on page 57

Spotmaster Multiple Cartridge Playback Units



Ten • Spot Model 610B



Five • Spot Model 605B

... bringing a new dimension to pushbutton broadcasting

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

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

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

BROADCAST ELECTRONICS, INC.

8810 Brookville Road, Silver Spring, Maryland 20910; Area Code 301, 588-4983





**AS MUCH AS 10%
LOWER IN COST!**

COMM/SCOPE TYPE CA COAXIAL CABLES WITH COPPER-CLAD ALUMINUM CENTER CONDUCTOR!

Order now! We can give you immediate delivery on all sizes (412, 500, 750) of Comm/Scope Type CA Coaxial Cables.

Type CA Coaxials feature a center conductor of copper-clad aluminum. It gives the same attenuation and same return loss as coaxials with solid copper conductor. But Type CA Coaxials cost up to 10% less!

They're available now in Comm/Scope's exclusive Alumagard® and Coppergard® constructions for aerial or direct burial installations.

And they're covered by Comm/Scope's exclusive **five-year guarantee!**

For all of your coaxial cable needs, call on Comm/Scope.



A SUPERIOR CONTINENTAL COMPANY

For information and prices, write or call:

**COMM/SCOPE
CORPORATION**

P. O. Box 2406 Hickory, North Carolina 28601
Phone 704/328-5271

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REMOTELY CONTROLLED CAMERA SYSTEMS

for: *News & Weather Presentations
Workshop & Demonstrations
Interviews & Panel shows
Commercial Video Taping
Special Effects*



With the P.O.I. Remote Camera Control System it is possible to precisely set shots for repetitive exact recall:

*Pedestal Height . . . Pan . . . Tilt . . .
Zoom . . . Focus . . . Iris.*

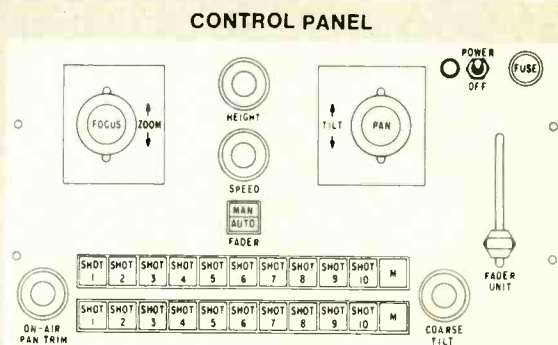
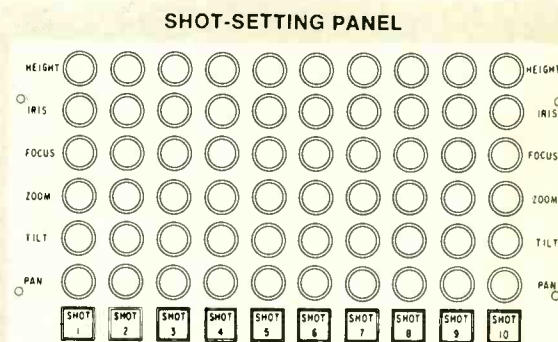
The Shot-Setting Panel provides for up to ten shots, each of which may be carefully pre-set in rehearsal under the complete control of a production staff.

The speed of the shot-to-shot transitions may be varied to suit the situation.

Each shot is recalled, on air, by the simple pressing of appropriate shot buttons. If a subject should move from prearranged pattern, on-air adjustments can be made at the Control Panel. The pre-set shots may be used in predetermined sequence or at will, depending on the nature of the production.

Investigate the P.O.I. Remote Control System as a production aid, it will open your eyes to unlimited possibilities, not only in production but in the economic aspects of automated camera control.

We invite inquiries on this equipment and urge you to request our material describing it, together with a list of stations now using it.



006



POWER OPTICS, INC.

FAIRVIEW VILLAGE, PA. 19409 • (215) 272-5300 • TELEX 846411

Western Inquiries contact: Television Products, Inc. (213) 678-2388

Circle 125 on Reader Service Card

New Lit

Continued from page 54

Services brochure, four-color, from Raytheon, in training, installation, field engineering and systems support fields. **212**

CATV product line features Anacoda Electronics' headend, active and passive CATV products and associated equipment, with design features, performance characteristics and technical specs, plus prices. **213**

Three products for rf and video systems described in Integral Data Devices four-pager: digitally controlled elliptical filter bank; rf and video reed switches; telemetry down converter system. **214**

"Pollution Solutions," from Carus Chemical Company, suggests ways for private citizens, businessmen and industrialists to help clean up air and water pollution; booklet contains self-addressed card for requesting speaker provided free by Carus to address and discuss solutions with groups; bulk lots of booklet also available. **215**

1970 Wire and cable catalog for telephone/CATV companies gives all necessary information on equipment including coaxial cable, pole-line hardware and supplies, protective and terminal equipment, Nicopress sleeves and tools and other construction accessories—from Tele-Wire Supply Co. **216**


Solderless electrical terminals in 32-page catalog from AMP Inc., covers descriptions, electrical and mechanical specs and dimensional data for such products as straight and right angle receptacles, tabs, insulating sleeves, quick disconnect splices, multi-purpose connectors and special purpose items. **217**

Adjustable equalizer for transmitting high-speed, voice frequency data over telephone, military and overseas record carrier operations, described in Lenkurt Electric Co. eight-page brochure. **218**

Alphanumeric characters produced for display over standard rf TV channels by TeleMation's TCG-1440 Character Generator described in four-page brochure—includes explanation of unit's dynamic and static modes of operation, optional keyboard, other interface equipment and data sources available. **200**

An Alphabetical Guide to Motion Picture, Television and Videotape Production, by Eli L. Levitan (McGraw-Hill, 797 pages, \$24.50) defines and explains terms, phrases, techniques and processes used in production—in non-technical language—illustrated with diagrams and photos.

**Need
split-second timing?**



**FIDELIPAC® NAB
AIRS IT PRECISELY!**

Distributors located in every state and most foreign countries.
For nearest, write or call

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A Subsidiary of El-Tronics, Inc.
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Cherry Hill, New Jersey 08034
Phone (609) 424-1234

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Spotmaster

**Tape
Cartridge
Racks**

- Free standing
- Table top
- Wall mounting





Enjoy real fingertip convenience with these Spotmaster tape cartridge racks. Three styles, holding up to 200 cartridges, meet every need. RM-100 wood rack stores 100 cartridges in minimum space, for wall or table top mounting, \$47.50. LS-100 lazy susan rack holds 100 cartridges on table top rotating stand, \$79.50. RS-200 revolving rack is on casters for floor storage and mobility, accepts 200 cartridges, \$145.50. RS-25 rack sections, used in rotating racks, hold 25 cartridges, may be wall mounted individually; rugged steel construction, \$13.00.

Order direct or write for details.

BROADCAST ELECTRONICS, INC.
A Filmways Company
8810 Brookville Rd., Silver Spring, Md. 20910

BUILDING BLOCKS TO BETTER TV SYSTEMS



Record sharp TV at slow speeds on CrO₂ tape with this new low-cost portable!

The Norelco LDL-1000 Video Recorder is designed specifically for new 1/2" Chromium Dioxide tape, a video breakthrough that gives optimum picture quality at the tape-saving speed of 7.9 ips Light—only 26 lbs. Compact—16 1/2" x 13 3/8" x 7 3/4" Low priced for educational, business and home use Records locally-originated picture and sound from TV cameras or monitors and microphones Tapes programs

"off-the-air" from TV receivers Simple connections and controls—anyone can use it easily Tapes play back on any other LDL-1000 Digital program indicator For full data, contact the innovators.

Norelco® PHILIPS BROADCAST
EQUIPMENT CORP.

One Philips Parkway, Montvale, N.J. 07645-201/391-1000
A NORTH AMERICAN PHILIPS COMPANY

Circle 126 on Reader Service Card

Local Origination

Continued from page 27

represent cable operators on a national basis. NTC made a similar offer for its Cable-Casting Sales Division. Jack Mann, NTC president, envisioned cable ad revenues of \$15 million for 1971, \$190 million by 1975 and \$1 billion by 1980. John Kepler, Kepler Television Productions, was ready to go on the cable with a presold program, i.e. he will lease a channel from the cable operator for \$1 per subscriber per year or 5 percent of advertising revenue.

Although visions of sugar plums occasionally dazzled operators, a sober keynote set by Barry Stiger, Athena Communications, provided perspective. Getting into local origination means shifting from a service organization into "almost broadcasting." There is no such thing as free programming, Stiger said, and he warned that if five to ten per cent of one's gross income went into programming after Jan. 1, many operators would be in trouble. To get advertising, one has to demonstrate an ability to move products, said Stiger. "This is a job totally different from anything you have been exposed to up to this time," he said. But the opportunity to program on an selective local level, rather than on a mass appeal basis, is exciting and rewarding, Stiger said.

The question facing operators is whether to "import" that local program featuring some Holly-

wood host or to aim a camera at a local personality. Certainly the former isn't going to impress the FCC greatly. Bob Weisberg of TeleMation Program Services, who met with some of his customers at the conference, feels most operators will tread water for a time. Local live looks attractive after seeing the canned fare, Weisberg said.

Perhaps the Pennsylvania Community Antenna Television Association has part of the answer. As a genuine public service they are taping interviews with the two candidates for governor in the Democratic primary (Casey and Shapp) and sending them out for cablecasting before election day. The Committee, headed by Joseph Gans of Hazleton, intends to continue this service for the November general election.

The program sources exhibiting at the programming conference are tabulated in the accompanying box. Other sources making up part of the audience included: Copley Productions, La Jolla, Calif.; Diversified CATV, Dallas, Texas; Documentary Broadcast Syndicate, Bryn Mawr, Pa.; Goodson-Todman Cablevision, New York City; Joshua Tree Productions, New York City; Nicholas-Muir Productions Larchmont, N.Y.; Reuters, Ltd., New York City; Screen Gems, New York City; Sandler Films Inc., Hollywood, Calif.; Twentieth Century Fox, New York City; United Artists Television, New York City; WGN Televents Inc., Chicago, Ill.; and Gridtronics Inc., New York City. **BM/E**

Who knows? What's green or blue or red to you one day may not look the same to you the next.

Now the new Minolta TV Color Analyzer eliminates all doubt. Because it measures color more accurately than any human eye.

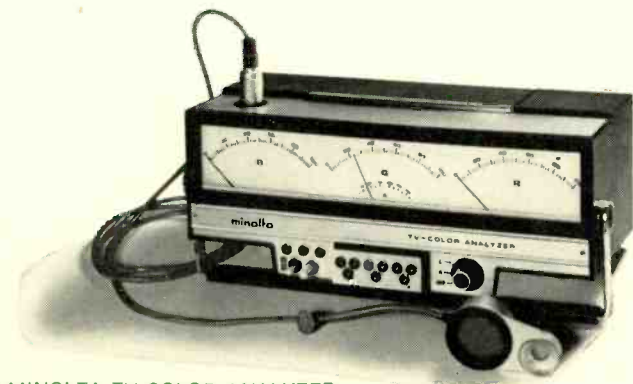
The Minolta TV Color Analyzer provides accurate electronic readings that let you adjust primary color values in perfect balance with an objectively measured white standard. You can make *individual* measurements of one color. Or *simultaneous but independent* read-outs of primary colors with no color

influencing the others.

And the Minolta TV Color Analyzer has an exclusive memory module. It never forgets. Once the characteristics of an individual monitor are registered in the module, they are infinitely repeatable. So you can be sure that what's green, blue or red one day is the same green, blue or red the next.

For more detailed information about the electronic way to analyze color, write for our free brochure: Minolta Corp., Industrial Sales Division, 200 Park Avenue South, New York, N.Y. 10003

How green is green?



THE MINOLTA TV COLOR ANALYZER

Circle 127 on Reader Service Card

FAIRCHILD

FAIRCHILD'S PRECISION MAKES 57 OF THE WORLD'S FINEST PROFESSIONAL AUDIO COMPONENTS

... Fairchild's complete Series of Attenuators: 10 models with new packaging plus Slide Wire Fader / The Integra I Series: an automatic Attenuator, 3 Preamplifiers, 3 Compressors, 3 Program Equalizers, 4 Dynalizers, De-Esser / 692 Remote Card Series: over 12 inputs with extensive switching capacity / Integrated Control Module Series: Input-Output-Monitor Modules / 7 Audio Control Devices including the well known Conax, Limiter and Reverbertron Systems / 2 Gain Shifter Intercom Systems / 7 Power Supply Models / over 24 Accessories. Contact your Fairchild Distributor or write **FAIRCHILD SOUND EQUIPMENT CORPORATION**
Dept. BM/E-6 10-40 45th Avenue
Long Island City, N.Y. 11101

Circle 128 on Reader Service Card

Mini-Mote

Continued from page 37

setting of a TV studio. Mini-Mote observes rather than intimidating.

One-Man Operation

In addition to viewer benefits, Mini-Mote offers the production staff more flexibility. Only one man is needed to direct, switch video and audio, do camera control, and run the helical VTR (if used). Says WJCT general manager Fred Rebman: "A remote that once cost \$1500 in labor can now be done for \$150, and our local public-affairs coverage has increased accordingly."

Each Mini-Mote is a complete two-camera unit including camera control, sync generator, picture and waveform monitors, a helical VTR, and an audio mixer. Everything but the cameras is contained in a rack mounted on balloon tires.

The monochrome Mini-Mote uses two Cohu 3207 cameras; the color unit has IVC 300 types. All pickup tubes are Plumbicons. A CBS model 526 image enhancer is used at the switcher output. A few years ago, power and space requirements would have made Mini-Motes impractical. Example: The two sync generators and two color encoders used require a total of only seven inches of rack space. A single tube type sync generator would use almost all the space available in one rack, and more power than a complete Mini-Mote.

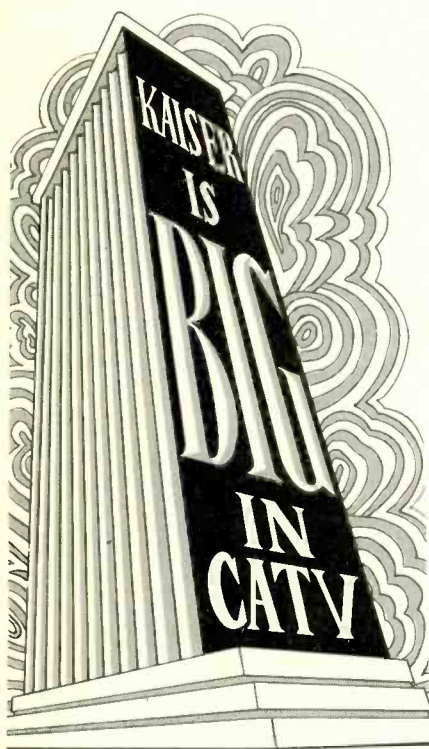
Even the color unit requires little power; you can plug it into a wall socket. The control rack can be operated in a remote van, but it's usually wheeled into the remote site. That way a single truck can place both Mini-Motes on location. Typical setup time for each is about 15 minutes.

Live or Tape

For live remotes, WJCT uses a 2-GHz microwave gear by Microwave Associates. CE Gene Napier says the lower microwave frequencies seem to penetrate obstructions better than the higher channels. Often a remote crew doesn't even have to find an obstruction-free path to get a clean picture back to the station. WJCT has microwaved pictures through trees and even buildings with good results.

Where live coverage isn't required, an IVC type 860 helical VTR is used to tape the coverage for later broadcast. A Ball Bros. processing amplifier (Mark 10-E) cleans up the slant-scan signal for air use.

GM Fred Rebman feels that Mini-Mote has freed WJCT from the usual static filmed show, opening dynamic vistas coverable only with live cameras or video tape. To show other broadcasters how they did it, Rebman and Napier and a remote crew brought both Mini-Motes to the November 1969 NAEB Convention in Washington. The WJCT suite, with Mini-Motes in operation, was a popular spot with conventioners. **BM/E**



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NAMES IN THE NEWS

Former FCC Chairman **Rosel H. Hyde** has joined the law firm of Wilkinson, Cragun & Barker.

Glenn Boundy has become the first member of the Society of Broadcast Engineers to be elected to the grade of Fellow. Announcement was made at the Society's annual meeting in Chicago April 5. Boundy recently retired as vice president for engineering of Storer Broadcasting in Miami.

Charles Hartman has been appointed chief engineer of KHVH-TV and KHVH-AM/FM Radio in Honolulu. He was formerly chief engineer with WCAU-TV, Philadelphia and technical operations supervisor for WFLA-TV, Tampa.

Edward C. Gannon has joined Reelpro Division of Mutschmann Films, a Paoli, Pa., firm specializing in films and videotape programs, to produce and direct studio and location productions. He was producer and director at WKBS-TV in Philadelphia and also with WCAU-TV in the same city.

Elie C. Katz has become vice president in charge of the Video Tape Recording Division of Sonocraft. Mr. Katz had been general manager of Riker Information Systems, and, before that, chief electronics engineer with the Camera Equipment Company.



Elie C. Katz



Jack Daniels

The new vice president, administration, of TeleMation is **Jack Daniels** who joined the company three years ago after working in ETV as chief engineer at the Universities of Ohio, Arizona and Colorado.

KQED-Channel 9, San Francisco's public TV station, has a new chief engineer, **Gerald Plemmons**, who joined the station in 1963 and served

during a two-year leave of absence as senior engineering consultant to the Voice of Kenya in East Africa.

Eastern regional sales manager for Jerrold's distributor sales division is **Leonard Elkins**, whose diversified background includes operating his own radio-TV shop and forming an antenna service company.

Pieter C. Vink has been elected president and chief executive officer of the North American Philips Corp., succeeding Pieter van den Berg who has been elected Chairman of the Board. Mr. Vink has been president of the former North American Philips Company, Inc., which recently merged with Consolidated Electronics Industries Corp. and changed to its present name.

Donald E. Lemire is the new administrative assistant to the president of Northeast Cablevision Corp., Harold W. Solomon.

The New York State Broadcasters Association has elected **Joseph T. Dembo**, vice president of CBS Radio Division and general manager of WCBS Radio, to a two-year term on its board of directors.

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The engineers we seek will include their talents in Video, Audio and Computer related circuitry designing products for the Television Broadcasting Equipment market. Send resume to the personnel manager. Vital Industries, Inc., 3614 S.W. Archer Road, Gainesville, Florida 32601.

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LIGHTING DIRECTOR—Mississippi ETV Authority seeks experienced lighting director for all color production center. Challenging ground-floor opportunity for national quality production. Eight station networks. Send resume to Director of Engineering MAET, P.O. Drawer 1101 - Jackson, Miss. 39205.

If you are mature, have a good background and in Broadcast Engineering—if you are a self starter and take pride in your work—if you're qualified to handle SKC D/500W DA Night remote control—if you are you're worth five figures, a vehicle plus fringe benefits to us. Rush resume with photo to Bernie Baker, Vice President General Manager WDAK Radio Box 1640, Columbus, Georgia 31902.

STUDIO MAINTENANCE SUPERVISOR for New York City UHF Station. Must be thoroughly familiar with Ampex 1200VTRs and Color Terminal equipment. Union scale with salary commensurate with experience. Send resume to: Fred M. Samuel, Chief Engineer, WXTV Channel 41, 641 Main St., Paterson, New Jersey 07503, or call (201-345-0041). An equal opportunity employer.

HELP WANTED (cont'd)

ATTENTION ANNOUNCING SCHOOL GRADUATE! An unusual opportunity exists at KSVF-AM/KSVP-FM Stereo. If you have completed your announcing school course and desire to pursue announcing as a career—Write! Dave Button, Mgr. Radio Station KSVF, 317 West Quay, Artesia, N. Mex. 88210. No phone calls, please!

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POSITIONS WANTED

Production-Technical-Administrative experience (B'dcast and CCTV). Seeking position in systems design, sales and consultation with multi-line audio-video group. Strong on "grantsmanship" and proposal writing (samples available). Prefer Southeast. Box 670-1, BM/E. Blue Ridge Summit, Pa. 17214.

EQUIPMENT FOR SALE

G. E. transmitter type TT-42-A modified for Ch. 2 used by WBBM-TV as its main transmitter until October 1, 1969. Equipment still installed at 33 N. LaSalle, Chicago. To be sold as is, buyer to remove. \$25,000. RCA transmitter type TT-5, water cooled; for Ch. 2, used as a spare at the above location until October 1, 1969. Equipment still installed to be sold as is, buyer to remove. \$10,000. Monoscope, RCA, model TK1A Indian head tube, poor condition. \$500. L. A. Pierce, WBBM-TV, 630 N. McClurg Court, Chicago 60611.

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TRANSLATOR POWER Now put your translator where antenna should be for best coverage not where power line happens to be. Use a TELAN thermoelectric generator. No moving parts, simple to operate, leave unattended 6-12 months. General Instrument Corp., Thermoelectric Division, Dept. BM, 65 Gouverneur St., Newark, N.J. 07104, 201-485-2100 ext. 481, 486.

SOLID-STATE AUDIO PLUG-IN OCTAL (1" Dia x 2" H) modules. Mic preamps, disc & tape preamp-equalizers, tape bias osc. & record ampl., power amps & power supplies. Send for free catalog and audio applications. Opamp Labs., 172 So. Alta Vista Blvd., Los Angeles, Cal. 90036.

FOR SALE—Used Model 4TE20 GE Vidicon Cameras with 50MM lens. Includes sync. gen. capable of 405, 625, 675, 735, 525, 875 and 945 line scanning rates. The Associated Press, 475 Tenth Avenue, 8th floor, New York, New York 10018. Contact Mr. Pace, 212-262-6233.

AMERICA'S LARGEST STOCK AND ASSIGNMENT LISTING of new and used broadcast and recording equipment. We trade-sell and buy. THE MAZE CORPORATION, P.O. Box 6636, Birmingham, Ala. 35210.

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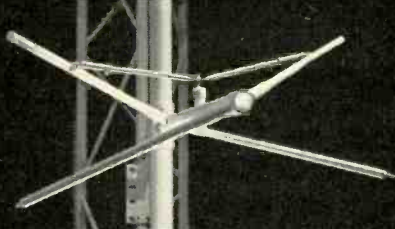
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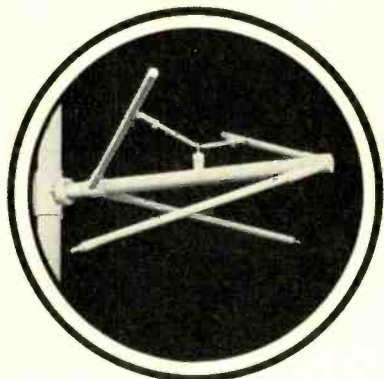
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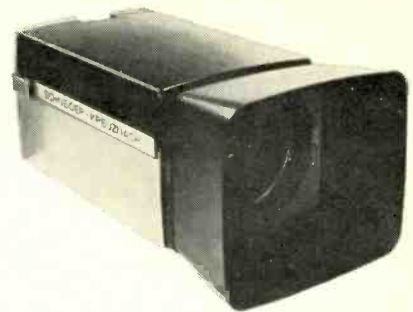
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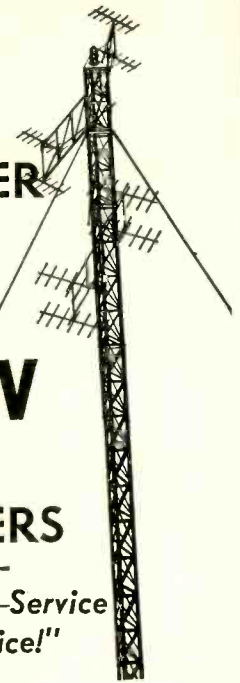
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FROM THE EDITOR

"Interactive"—Important Word for the 70s

Interactive is a useful and heavily used word in computer technology and in education. The first broadcasters and cablecasters to include the word in their workday vocabulary will be in the communications vanguard.

In the computer world, interactive devices are user terminals that both receive and send, with one message modifying the other instantly—an example is altering a CRT display connected to a memory by writing on it with a light pen. In the educational field, interaction means instant 100 percent involvement on the part of both teacher and student. The instructional process calls for a response to very small units of information.

A major push in the computer field is to improve interactive terminal devices to make it easier for the non-specialist to talk to the computer. Educators are learning that no learning takes place unless the student is genuinely involved. More and more classrooms are now being equipped with student response buttons tied to a tally counter. The instructor poses a question and is immediately informed as to how many students can produce the right answer. Individual records and testing can be done on the same equipment.

Mr. Wizard, the popular TV science teacher, has recently modified his format to stop the action long enough for viewers to make a response. Educational broadcasters have long achieved two-way communication by leasing a telephone line for feedback. Some commercial broadcasters have achieved partial feedback by telephone. Tally recorders connected to separate telephone numbers quite easily record a multiple-choice response from a mass audience over a reasonably short time. Such feedback may not be statistically valid, but it is involvement. Close personal ties with the total community allow such feedback to be roughly calibrated.

Cable operators will achieve a viable two-way link as soon as they install encoders at the subscriber's location. The encoder can be on or off signifying any number of pre-arranged messages. A computer scanning these encoders can rapidly produce a printout indicating which subscribers have responded and what their message is.

As soon as the telephone company converts any given community to a touch-tone telephone system, any broadcaster could set up a comparable system. The viewer/listener would have to pick up the phone and press some buttons but by doing so he could record a vote, make a request, get a sports score, or order an album from Helen O'Connell. And he won't get a busy signal! Many inputs can be handled simultaneously. With the addition of an accessory box, signals such as fire or burglary alarms would be transmitted automatically.

Everyone recognizes that the industry is headed towards more personalized broadcasting. The ultimate in personalized programming is maximum communication between the source and the recipient. If the two-way link is effective, one could never say with certainty which end is the source and which end the receiver.

James A. Lippke
Editor

PRODUCT INDEX

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- 50/286 **Film projector, 35mm/Mast Development**
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- 18/111 **Books/Tab Books**
- 62/135 **Graduate placement/Career Academy**
- 10/105 **Surge protectors/Wilkinson**

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THE CARTRIDGE KILLER.



This man doesn't have time to baby the tools of his trade. Not with a commercial, a traffic report and time check breathing down his neck. He's got to keep those records spinning fast and furious. And, if he kills a cartridge or two along the way, well—that's how it goes.

Until now.

Meet the Stanton 500AL—the cartridge that's tougher than disc jockeys. Here is the workhorse of the broadcast industry. We designed the entire stylus assembly to withstand the rugged demands of back cueing and the kind of handling that would quickly ruin ordinary pick-ups. Yet its high restoring force and tracking reliability is accomplished without sacrifice of professional standards for frequency response, output, channel separation, etc.

Also inquire about Stanton Models 500AA and 500E—the standards for critical auditioning and broadcast applications. They're designed especially for uninterrupted broadcasting of long-playing records or for disc auditioning and evaluation.

SPECIFICATIONS

500AL

Frequency Response	20Hz to 17kHz \pm 2½ dB
Output	1.0 mv/cm/sec.
Channel Separation	30dB
Load Resistance	47,000 ohms
Cable Capacitance	275 pF
DC Resistance	800 ohms approx.
Inductance	550 mH approx.
Channel Balance	within 2 dB
Stylus Tip	0.7 mil Spherical
Tracking Force	3-7 grams
Cartridge Weight	5 grams
Mounting Dimensions	¼" to ½" centers

For complete information and specifications write Stanton Magnetics, Inc., Terminal Drive, Plainview, L.I., New York 11803



Scott Muni
WNEW-FM, New York

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