A MACTIER PUBLICATION / MAY 1971

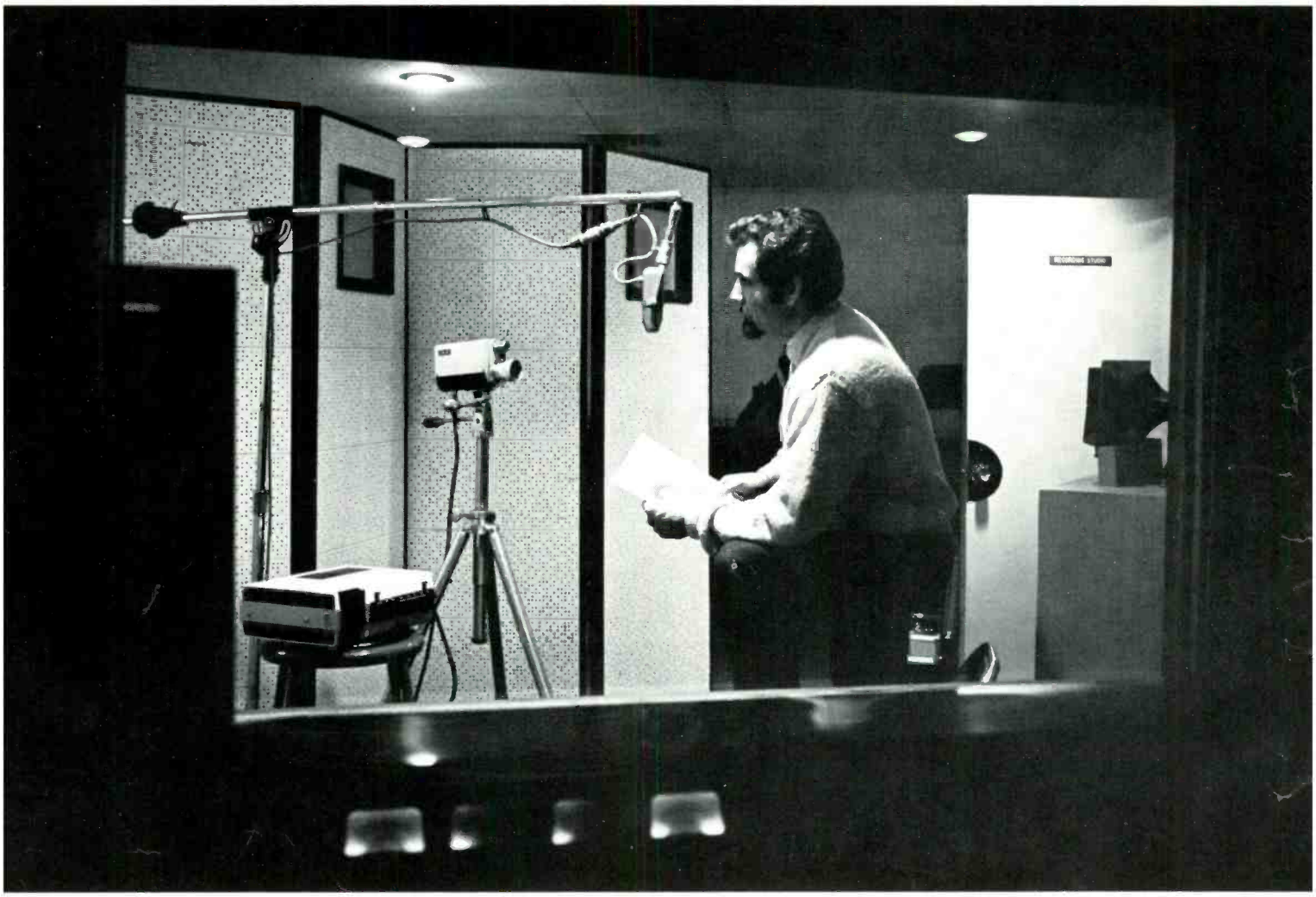
BM/E

BROADCAST MANAGEMENT/ENGINEERING

A DOLLAR-CONSCIOUS NAB
BM/E WRAPS IT UP

INSIDE
CM/E SUPPLEMENT FOR CABLE OPERATORS

Air Check? Why Not A Video Check?



AKAI's ¼" Portable Video Tape Recorder Makes It INSTANTLY!

AKAI's remarkable new ¼" VT-100 Portable Video Tape Recorder provides everything your station needs to produce professional audio-video tapes. No film processing costs. No expensive lighting setups. No special equipment of any kind. And, all on exclusive, low-cost ¼" video tape *at much lower operating costs than other systems.*

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After installing an IGM 500 control system: "billings up—112 man-hours saved per week"

Another station reports satisfactory experience with IGM equipment, including Instacart and MOS memory. This from WBFD-AM, Bedford, Pa.

Since WBFD-AM automated with an IGM Series 500 control system in October, 1970, good things have been happening.

—WBFD listeners hear the same on-air sound, still more consistent, to which they have been accustomed for 15 years. "We have had no difficulty maintaining the same audience and sponsor support as previously," says Glenn Ritchey, station manager.

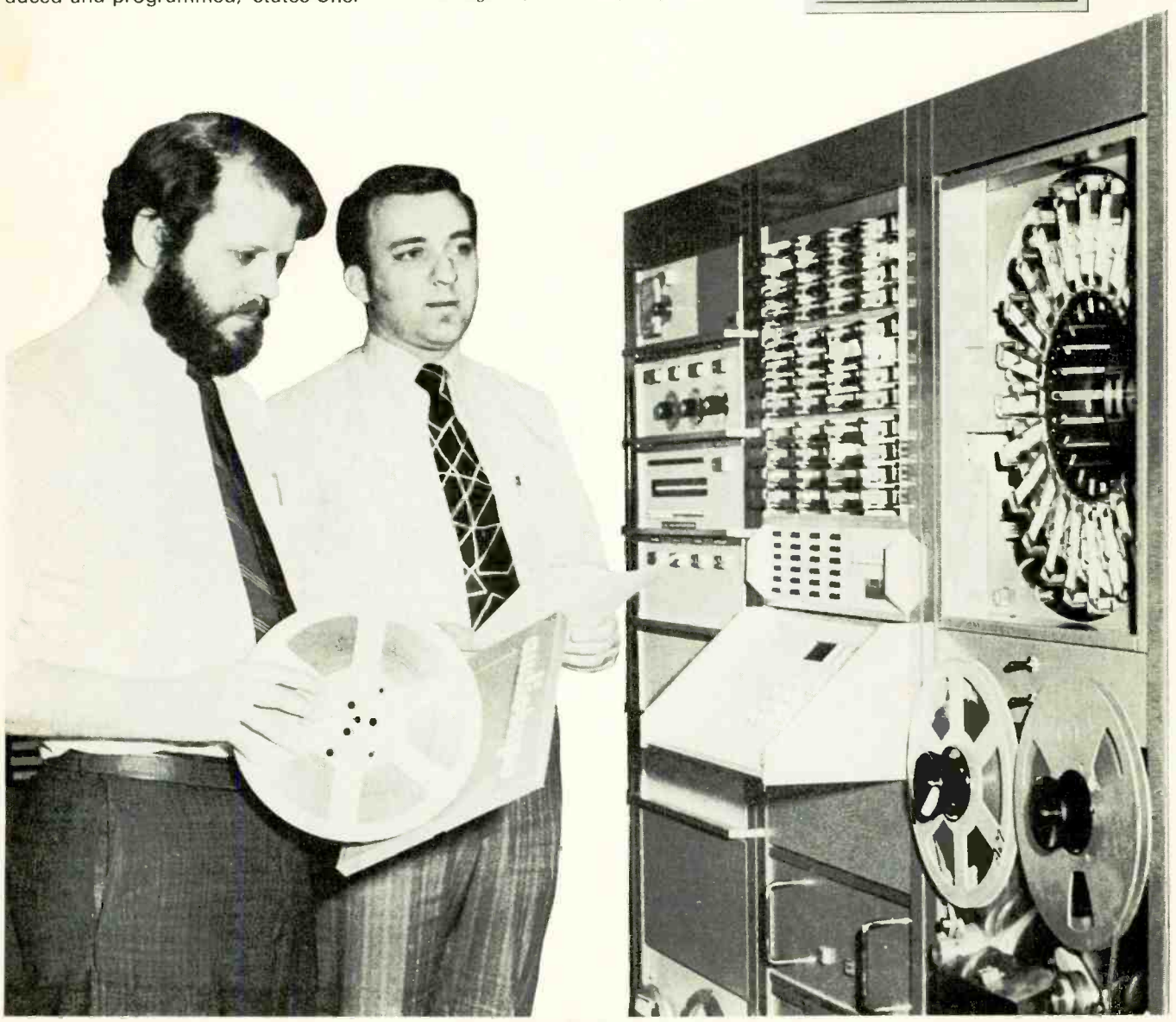
—The accustomed format of announced MOR music from 6 a.m. to 3 p.m. and top 100 rock from 3 p.m. to sign-off is now "more easily produced and programmed," states Sherwood Hawley, program director. Voice track production averages only eight minutes per three-hour music show. System set-up requires only one-half hour per day. Two full-time announcers, George Hull and Paul Imgrund, as shown in the photo below, share in using the IGM MOS-type memory unit to schedule the day's programming, before taking off on daily sales rounds.

—A trend to shrinking profits in spite of good billings, prior to automating, has not only been halted but reversed. Billings have remained as good or better, while savings include not only an estimated 112 man-hours per week, but also, adds Ritchey, "a corresponding reduction in costs for hospitalization, taxes, sick leaves, nervous breakdowns, pregnancies, vacations and personality conflicts."

—Long after the original installation, IGM's technical and programming support has continued to back up the equipment sale.

For "tomorrow's engineering today" in automation equipment, write or call International Good Music, P. O. Box 943, Bellingham, Wa. Tel (206) 733-4567.

IGM



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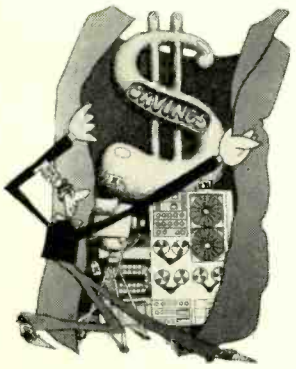
MAY 1971/VOLUME 7/NUMBER 5

BM/E

BROADCAST MANAGEMENT/ENGINEERING



Sudduth's cover: Cost consciousness was what BM/E found in most NAB exhibits—equipment to do the job, no frills, no unnecessary capabilities. Some luxury items were there, too. See page 24 for our time-saving coverage.

MANAGEMENT:

The big news is NAB and it's all here, divided into equipment categories, major products described in concise detail—price and performance advantages pointed out briefly. If you weren't there, or can't remember it all, check **page 24.** We've saved you a lot of time. Other feature coverage: A new and sophisticated videotape timer can help your production crew do more accurate editing easily. See **page 30.** Cablemen will be interested in new gear described on **pages 34 and 36**—better performance and, right now, a workable system for selective programming. For recent FCC activities, read Broadcast Industry News, **page 6,** and Interpreting the Rules, **page 12.**

ENGINEERING:

NAB equipment rundown starts **page 24.** A new videotape timer, **page 30.** CATV equipment, **pages 34 and 36.** Other new gear, **page 41.** We've covered a lot of facts and specifications in not much space—but it's all there and you won't find yourself wasting time before you get the information you want. Our new Audio File department goes to Chicago to cover an exciting twist on the Dolby noise reduction system —**page 10** shows the FM engineer how to increase his signal coverage area without power adjustments or rule infractions.

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BROADCAST INDUSTRY

NEWS

FCC Actions: VHF goes remote

Those hand-written signs on display transmitters at the NAB show, saying "Capable of remote operation," prove manufacturers were ready and waiting for the FCC's rule change allowing remote operation of VHF transmitters.

Adhering to specified inspection and maintenance schedules included in the rule change notice, VHFs can now join U's in freeing valuable engineering time from the drudgery of constant transmitter attendance. New regulations, which U's must also meet in a year, provide that calibrations and transmitter inspections be done at least five days a week, unless the broadcaster is equipped to switch automatically or manually to a standby transmitter. The back-up must be capable of at least 20% of authorized power in case of main transmitter power failure.

Off-the-air monitoring facilities are required, including a visual wave-form monitor, picture monitor, loudspeaker and an aural modulation monitor.

If any color is broadcast, a color monitor is required, along with some instrument like a vectorscope (designed to depict the instantaneous phase and amplitude relationship of color components).

Telemetry signals can be sent to the remote location via a single subcarrier used to multiplex the aural carrier.

As to test signals, the Commission has asked for comments. Assuming the signals would be generated in the vertical interval, the Commission is now accepting suggestions as to which of the commonly accepted test signals should be used—advantages and disadvantages of particular signals or combinations. Also the Commission wants to hear whether there should be other rule provisions, such as one limiting the period of operation during which test signals should be transmitted, and specifying which line or lines should be occupied by the signals.

- A *Notice* has been issued reminding licensees that Rules require them to keep available for public inspection certain records (specified in Section 1.526) and that such records should be available "at any time during regular business hours." The *Notice* reported complaints received from members of the public claiming that convenient access had been denied them.

- One-to-a-market rules have been amended: There are no longer one-to-a-market prohibitions as to AM-FM combinations. Case-by-case decisions will be made as to joint ownership of UHF and radio stations in the same market; however, the prohibition remains in effect as to VHF-radio combinations.

- A *Memorandum Opinion and Order* is now released which "constitutes the Commission's definitive statement" on the matter of broadcasting popular songs which tend to promote illegal drug use.

The *Memorandum* is in response to petitions from broadcasters and others asking the Commission to reconsider or stay the earlier (March 5, 1971) *Notice* (see page 6, April 1971 *BM/E*) reminding licensees that their responsibility to know what they are programming extends to the area of drug-related songs.

The *Memorandum* explained that the earlier *Notice* was "erroneously depicted" by many as "a directive by the Commission not to play certain records." It then pointed out that "nothing in the prior *Notice* stated, directly or indirectly, that a licensee is barred from presenting a particular type of record."

This was not, however, intended to be a softening of the *Notice*. The *Memorandum* reasserted that the Commission "did make clear in the *Notice* that the broadcaster could jeopardize his license by failing to exercise licensee responsibility" in the drug-song area.

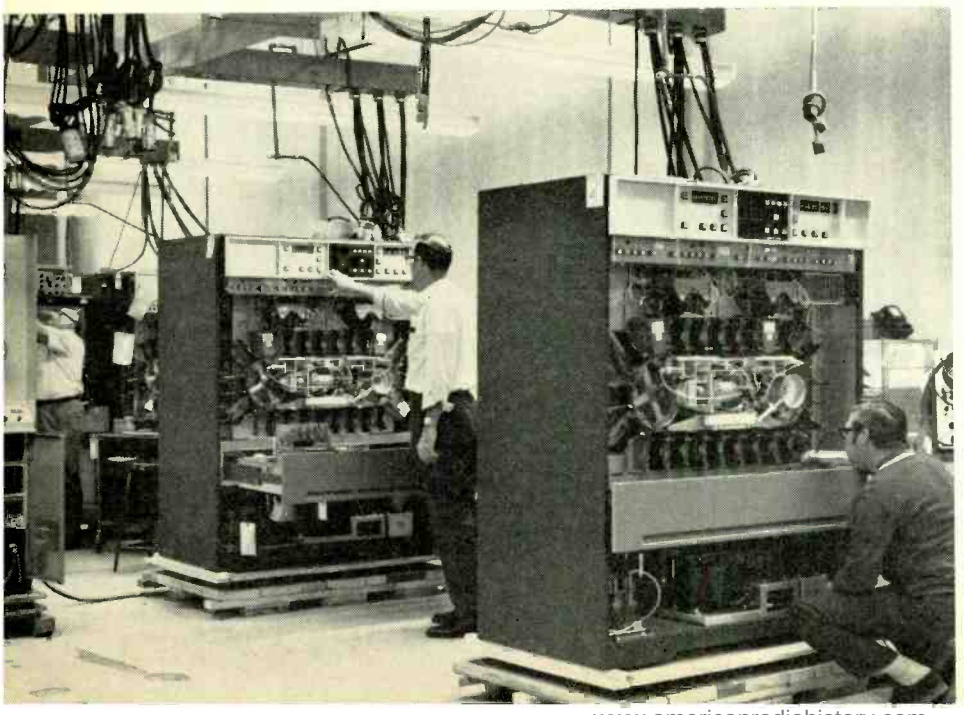
What this responsibility is the *Memorandum* described with what it termed an "egregious" example: "A licensee should know whether his facilities are being used to present again and again a record which urges youth to take heroin or cocaine."

How to interpret this second attempt by the Commission to explain what it considers nothing new? Commissioner Robert Bartley gives some advice in his concurring statement: "This *Memorandum Opinion and Order* purports to return to the situation prior to release of the Public No-

Continued next page

Videotape cartridge system in production

RCA's TCR-100, in volume production at the company's Camden, N.J. plant, has claim as the industry's first videotape cartridge system—holds 22 carts, each capable of three minutes play; pushbutton sets programmed tape sequence into operation. First model went to WBAY-TV, Green Bay, Wisconsin.

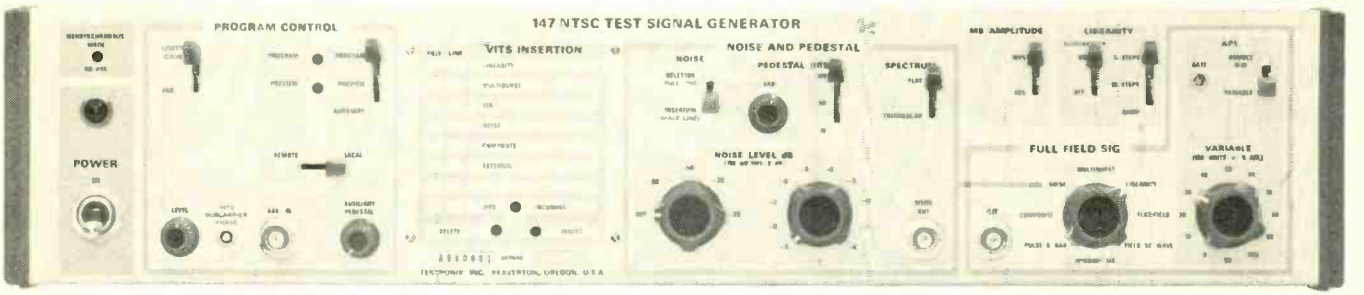


Coming Next Month

Color TV—A BM/E Special

VITS and full field testing

VIRS atility



147 NTSC TEST SIGNAL GENERATOR

This new Tektronix signal generator is a complete and versatile source of all recognized vertical interval and full field test signals except color bars. In addition the 147 is the first commercially available source of the vertical interval reference signal (VIRS). All signals are produced with precision and stability by use of digital techniques that minimize adjustments and compensations. Test signals are easily modified by internal jumper changes to shift signal line, signal position on a line, amplitude and other characteristics.

Safe VITS insertion on program material is a major feature of the 147. For example: Insertion cannot occur in the absence of gen-lock. VITS are previewed before insertion. To further assure safe processing of program material, VITS insertion control can be remoted. Only those VITS preselected internally will be inserted and incoming VITS will be deleted before that insertion occurs. Even in the event of power failure fail-safe operation is assured by relay loop-through control.

Eight full field test signals are available separately from program material and are produced with or without external synchronization or gen-lock. Full field output includes preselected VITS and a front-panel-selected full field signal. Each full field signal can be modified to meet specific requirements. For example: APL can be selected or automatically varied (bounced) in the flat field mode. In the linearity mode, five or ten steps or ramp luminance with 0, 20 or 40 IRE chrominance can be selected. Time position, amplitude and transition time of most signals can also be varied by internal jumper changes.

Some 147 test signals, but not all, are shown at the right. To complete its testing versatility there is even a provision in the 147 to insert signals from non-composite sources such as swept generators.

Ask your Tektronix Field Engineer for a demonstration of 147 Signal VIRSatility.

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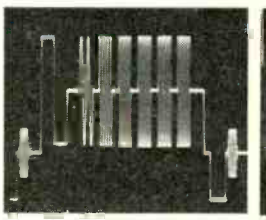
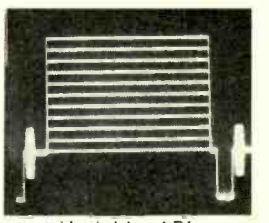
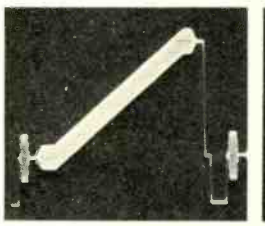
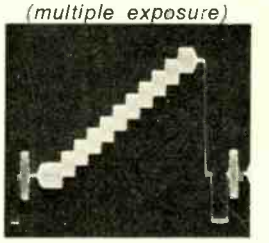
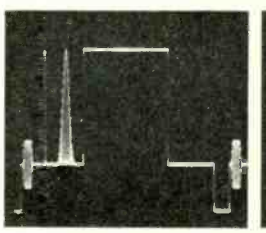
R147 NTSC TEST SIGNAL GENERATOR
(including rackmount hardware) $2700

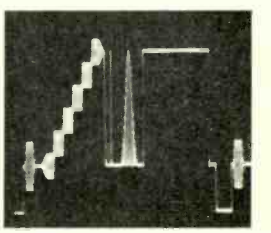

Multiburst

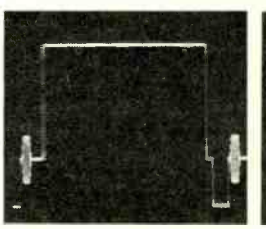

Variable APL (multiple exposure)

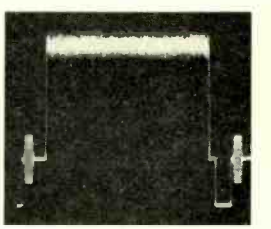

Ramp


Linearity


Pulse & Bar


Composite


Field Square Wave


Noise

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tice of March 5, 1971.

"To the extent that it does so, I concur in the action here taken."

IN BRIEF:

A computer monitoring system for a microwave relay link will be built for Western Tele-Communications, Inc. by Proprietary Software Systems, Inc., West Los Angeles, Calif. The system (consisting of a mini-computer, a teleprinter, and a device which interfaces with a microwave receiver used for fault detection) will monitor a PSS link running between Denver and Salt Lake City that carries network and educational TV, as well as CATV programming. The mini-computer system may be the first of its kind.

Another scheme for transmission of TV signals via light beams has been announced by University Instruments Corp., Boulder, Colo. Called an analog optical-communications link, it uses a light-emitting diode at the transmitter to produce infrared light that is changed back into an electrical signal by a photodetector at the receiver. Variations in weather are said to have little effect on transmissions. FCC licensing of the system is not required.

New services: With 20 years combined experience in CATV, two former Centre Video Corp. men, Robert E. Tudek and Everett I. Mundy, have formed a new company in the Pittsburgh area that will build, acquire and operate CATV systems. Based in State College, Pa., **Tele-Media Corp.** already has purchased a telephone CATV lease system in Ohio and is planning additional CATV acquisitions in Pennsylvania, Virginia, New York, New Jersey, Ohio and Indiana. . . . Marconi of Britain has formed an American subsidiary, **Marconi Electronics, Inc.,** based in Elmsford, N.Y. The company will provide support for the many activities of Marconi Communications Systems in the U.S. According to Marconi, the British parent company exports more broadcasting equipment to the U.S. than any other firm. Tom Mayer will be president of the new company; Frank Cassidy will be the executive vice-president. . . . A new photographic equipment rental firm, **Rent-A-Camera,** has been started in Hollywood, Calif., by Alex Gordon. The company will handle both still and motion picture equipment, with the emphasis on portability.

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* 55 db separation . . . . . 7500 Hz-10000 Hz
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* FM Noise – 75 db . . . . . Cross Talk – 60 db

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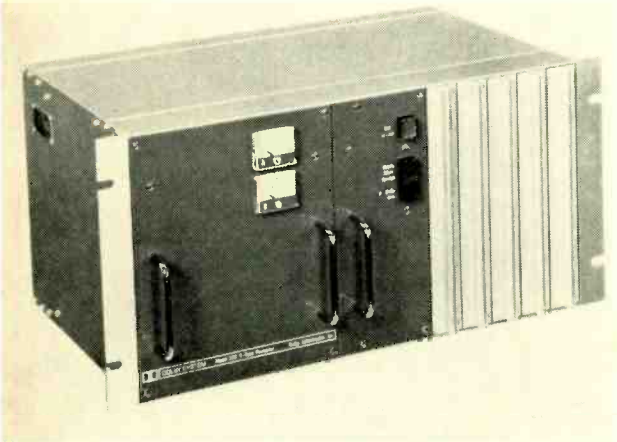
AUDIO FILE:

FOR BETTER IDEAS
FROM AUDIO ENGINEERS

Dolby B—For Greater FM Coverage

Here's a special report from the Chicago NAFMB Convention, covering a new Dolby application of special interest to FM audio engineers.



Model 320 Dolby Noise Reduction Processor can be used at FM stations to reduce background noise.

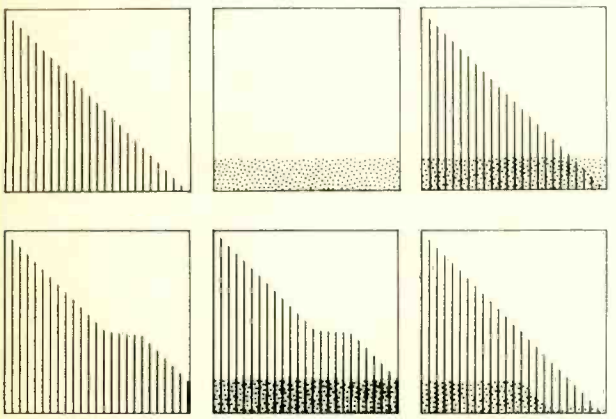


Illustration compares Dolby process with normal recording or broadcasting. Vertical lines indicate varying degrees of loudness—the taller, the louder. Dotted areas represent noise level. Top row shows normal practice—music to be recorded or broadcast has loudness ranging from high to low levels (left box); noise is introduced by recording or broadcasting (center box); resultant sound as heard—noise covers quieter passages (right box). Bottom row demonstrates Dolby System approach: The System analyzes the music, automatically increasing volume during quiet passages before recording or broadcast (left box); noise added during recording or broadcast does not hide low-loudness passages since they have been increased in volume (center box); sound then played on equipment using the Dolby Circuit has all original loudness levels restored (right box), thus also reducing noise at quiet end of loudness range.

NAFMBers gave rapt attention to two Dolby Laboratories gentlemen, Robert Berkovitz and D. P. Robinson, as they demonstrated a method of noise reduction which increases the signal-to-noise ratio of an FM broadcast 10 dB. This 10-dB improvement is equivalent to increasing power tenfold.

In other words, close-by listeners experience considerably more quieting. Tape hiss noise is eliminated, for example. But, just as importantly—or more so—if your station revenues are low, the improvement means more listeners can hear you. Your service area is expanded.

The 10-dB quieting causes the sensitivity figures of FM tuners to be divided, in effect, by slightly more than three. Thus a tuner of about 10 microvolts sensitivity at 20 dB quieting would achieve that same degree of quieting at about 3 microvolts. The result is a coverage area three times as large. Alfred Antlitz, WFMT, Chicago, figures that his 40-dB S/N contour, which is now about 95 miles from Chicago, will increase to 135 miles.

There is only one hitch to this new world of improved quality or expanded coverage. The listener has to have a Dolby B-type decoder. The decoder is simple and the necessary IC circuitry is expected to cost not more than $10. New receivers will undoubtedly incorporate the feature. But existing receiver owners would have to buy a separate decoder and the broadcaster would have to purchase an encoder—a stereo version of the encoder is expected to cost about $1000. (Consumers already can enjoy Dolby B benefits. The B-type system is used in some tape recording equipment. Players now on the market from Advent, Fiscer and Harman-Kardon are designed to replay Dolby B-type precoded tapes being produced by Ampex, London and others.)

How it works

FMers who are familiar with Dolby A-type noise reduction systems (BM/E, December 1968, p. 27) know that, in essence, low-level signal components are boosted separately to well above any noise threshold and added to the main signal. During playback these signal components are subtracted from the main signal, thus restoring the signal to its original level. Dolby A systems incorporate four separate bands for boosting low level signals. Dolby B is simpler (and less expensive) in that only one band is used—a high frequency band which can be used to help mask objectionable high pitch noise in the form of tape hiss.

Although equalization techniques are universally used to decrease tape hiss, this high pitch noise is still apparent when not masked by some other high frequency sound. Bass notes alone, for example, do not drown out tape hiss.

The Dolby system integrates the ideas of masking and automatic level control. The system automatically increases the recording or broadcast level of quiet musical passages which could not mask noise. Then it reduces the level of the same passages during reception or playback. In the process, the original sound is exactly restored, but noise which would otherwise be audible is greatly reduced.

Dolby B is expected to prove a real boon to stereo and SCA broadcasters since stereo broadcasting (and SCA) increases noise level theoretically by at least 24 dB per channel. It will also improve reception on inexpensive tuners that have poor sensitivity.

A number of observers feel the encoding process selectively amplifying low level sounds to raise them above noise, improves quality even for the listener who does not have a decoder. When the treble control is turned down slightly to compensate for the pre-emphasis, experienced listeners have a hard time detecting any modification of the program material—other than that it is less noisy.

Now showing...the New Reliables

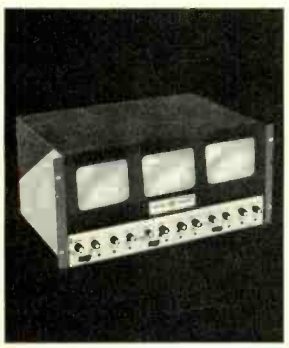
Five Inch monochrome assembly features three 5″ units in rackmount configuration. Small size requires less rack space than similar units and permits monitoring of 3 separate video signals. High quality, all-purpose monitors with Setchell Carlson UNIT-IZED® plug-in circuit modules.

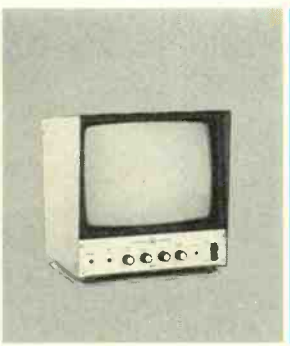
New 10″ monochrome video monitors offer horizontal resolution of 640 lines or better plus 100% solid-state circuitry for long-life reliability. Unit is available in rackmount or in attractive metal cabinet. A 12″ model is also available.

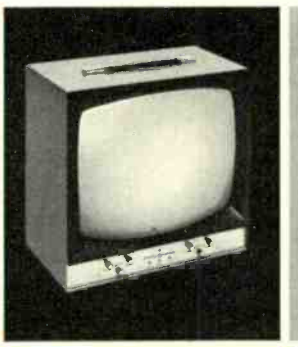
In addition to 640-line resolution, the 16″ monochrome monitors have all major operating controls located on the front panel for ease of operation. Front-panel screwdriver adjustments for vertical linearity, vertical height, and focus provide protection against accidental misadjustment.

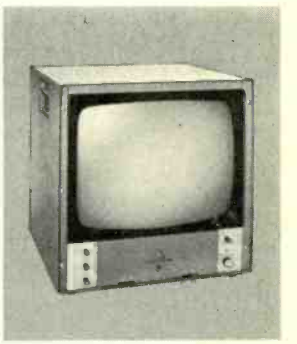
Nineteen inch monochrome video monitors offer traditional Setchell Carlson quality, including exclusive UNIT-IZED® plug-in circuit modules for easy maintenance. Horizontal resolution is 640 lines or better. Available in rackmount or attractive cabinet models.

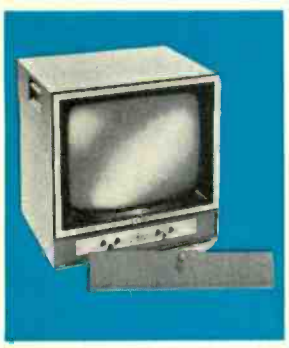
Professional quality 19″ color video monitors offer broadcast quality at a modest price. Horizontal resolution is 300 lines (color) and all set-up controls are located behind a hinged front panel to prevent accidental misadjustment. Also available in 25″ model.

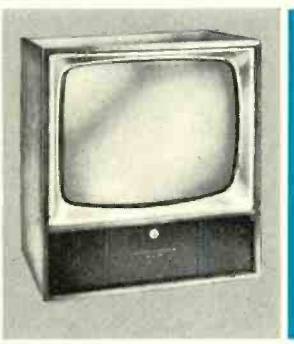












The 23″ monochrome video monitor offers excellent picture quality and attractive styling at a modest cost. Circuitry is 100% solid-state and the horizontal resolution is rated at 640 lines or better. Monitor has a variety of applications due to multitude of professional-quality features.

Regulated circuitry in the 25″ color monitor provides extremely stable operation and prevents raster size or brightness deviations due to line voltage fluctuations. Horizontal resolution is 300 lines (color). Set-up and operating controls are front-mounted for ease of operation.

"Educator" Monitor/Receiver, 23″ monochrome model, is designed specifically for educational and training applications. Controls are front-located. Tamper-proof control compartment door with lock is optional. Horizontal resolution is 600 lines or better with video signal input. Also available in 25″ color model.

The Color "Educator" is a 25″ model offering big-screen, sparkling color — 300-line (color) resolution — plus big-room audio. Designed specifically for educational and training applications, the "Educator" series Monitor/Receivers offer the utmost in reliability, flexibility, and ease of operation.

Setchell Carlson's solid-state UHF/VHF television receiver and RF demodulator provides a high-quality composite video signal and separate audio signal, assuring excellent monochrome and color picture quality. It is ideal for video recording and as a signal source for video monitors.

The quality and reliability of Setchell Carlson products is legendary. SC Electronics pioneered the concept of modular circuit construction. Every Setchell Carlson product features this concept in our UNIT-IZED® plug-in circuit modules, assuring operating dependability and maximum ease of maintenance. One hundred percent solid-state circuitry means maximum stability, long-life, low power drain, and a minimum of heat. Every feature in a Setchell Carlson product is meticulously designed to give you outstanding performance at a modest cost.

For many years, people involved in many different facets of broadcasting, closed circuit television, medical training, industrial TV applications, custom remote installations, and in the field of education have been able to depend on Setchell Carlson quality and reliability. It has become a tradition. We know that whatever your application, you will find a product to fit your need in the Setchell Carlson line.

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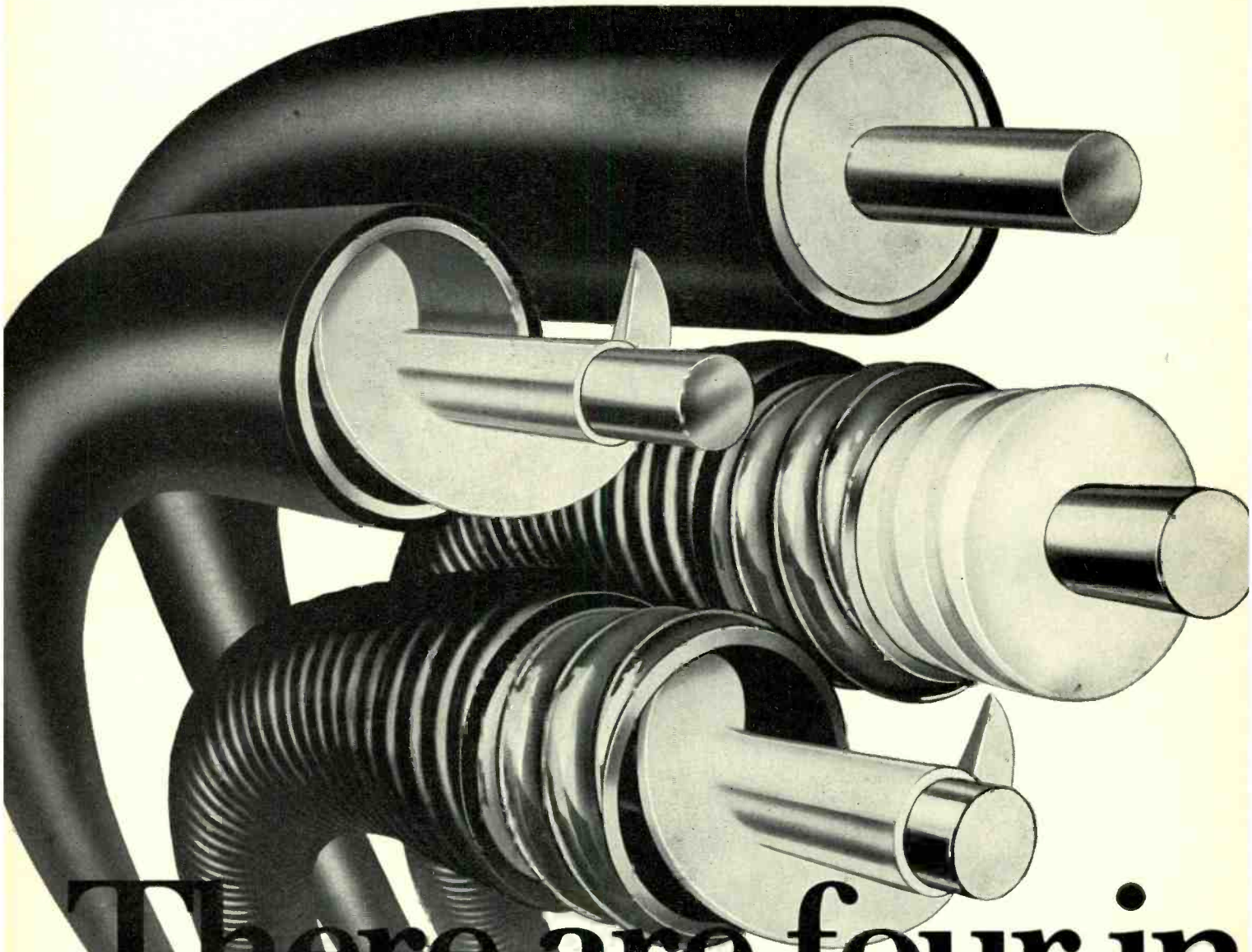
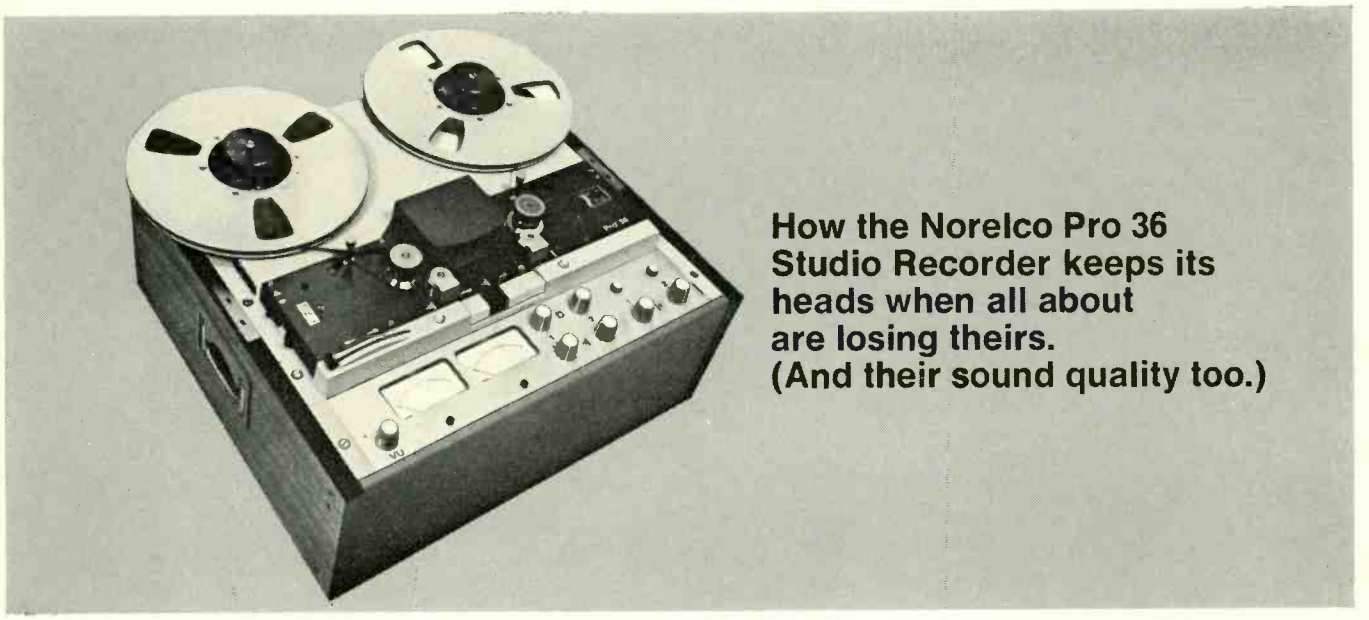


There are four in this family. For every coaxial cable need.

Announcing the recorder with 10 times normal head life.



How the Norelco Pro 36 Studio Recorder keeps its heads when all about are losing theirs. (And their sound quality too.)

Conventional recording and playback heads wear out within a couple of thousand hours of use. But long before then, their electrical characteristics change . . . so your sound changes too. With the Pro 36 studio tape recorder, these problems are non-existent.

Reason: Norelco's exclusive glass-bonded Ferroxcube heads. Made of material almost diamond-hard, they take 10 times the wear of conventional heads. But that's not all. The unique glass-bonded construction maintains precise gap width and electrical characteristics in spite of wear. Amplifier adjustments are virtually never needed. And precision head mounting also makes azimuth adjustment a thing of the past.

The rest of the Pro 36 lives up to the heads. It's the only professional tape recorder with 3 speeds. You get 15, 7½ and 3¾ IPS. Electronically switchable.

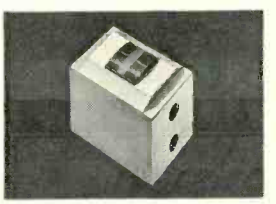
Then there's the new ultra-stable Servo tape transport control. A photocell counts capstan revolutions, compares them to line frequency, (or external 1 volt reference source) and provides instantaneous speed-correction signals. To this, Norelco adds constant capstan loading. Plus automatic tape tension control. All together, they hold wow and flutter down to 0.04% maximum.

Other features: total remote control, push-button semiconductor switching, NAB and CCIR equalization, provision for fourth head, controlled tape lifters, horizontal or vertical operation, and much more.

Every broadcast studio, production studio, and sound studio deserves the tape recorder that keeps its head...so you won't lose yours. The Pro 36! Contact Norelco for all the technical data now.

PERFORMANCE SPECIFICATIONS

Wow and Flutter:
weighted peak value at 15 in/s: max. 0.04%
Overall Frequency Response (NAB Specs):
at 15 in/s: 30 . . . 15,000 Hz ±2 dB
at 7½ in/s: 30 . . . 15,000 Hz ±2 dB
at 3¾ in/s: 50 . . . 10,000 Hz±2 dB
Signal-to-Noise Ratio: NAB unweighted (reference standard operating level)
62 dB at 15 in/s
60 dB at 7½ in/s
56 dB at 3¾ in/s



Glass-bonded Ferroxcube heads make possible an incredibly precise gap width and hold that precision throughout a wear life 10 times longer than conventional heads. The Pro 36 is the only studio tape recorder that has them.

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The Medium is as Modern as the Message

It took about as long for graphic arts to develop Vidifont as it took for the space program to land men on the moon. And for television programming the results are equally innovative. This new generation television display system by CBS Laboratories offers broadcasters:

• A choice of type fonts and sizes • Exclusive proportional letter spacing • A unique type font (CBS NEWS 36) that is graphically superior to any being used today • Upper and lower case characters • Display on command and in real time • Instant editing and automatic centering • Word by word color • Built-in edging • Three-speed flashing, roll and crawl • Message storing up to 9600 lines.

Vidifont adds a new dimension to television display and opens up a whole new area of programming possibilities for your station.

CBS LABORATORIES

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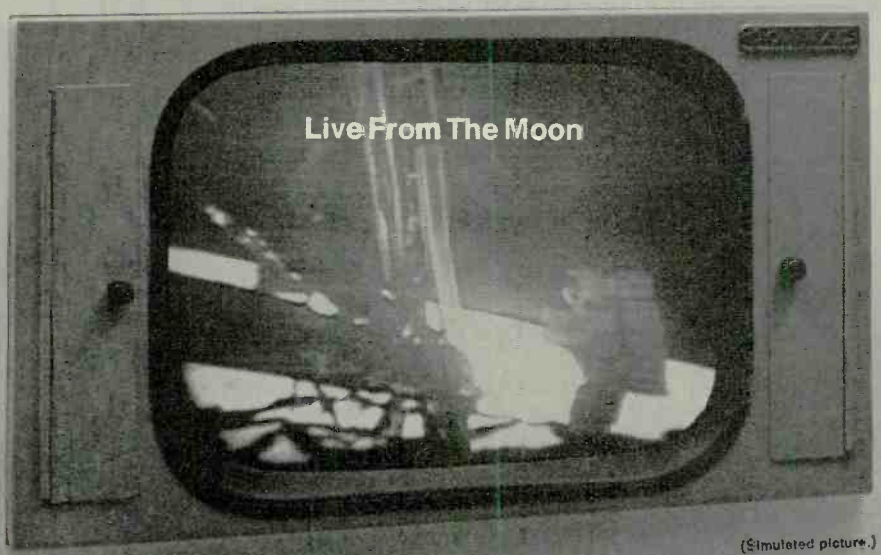

(Simulated picture.)

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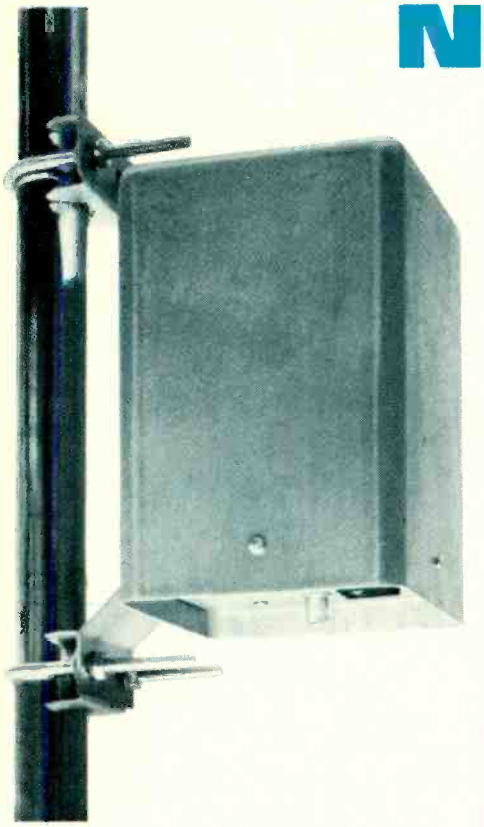
NOW...

a pole-mount UHF tuner for the DYNA-TUNE



Because of the higher frequencies utilized in UHF television transmission, quality reception becomes difficult when the receiver is located a considerable distance from the antenna. High frequencies are greatly attenuated by coaxial cable necessitating amplification at the receiver end to restore the signal to a usable RF level. The signal will often be attenuated to the degree that the low-level noise inherent in the input amplifier stage has a significant amplitude as related to the attenuated television signal. Consequently, when the television signal is amplified, the noise is also amplified, with the end result being a noisy signal.

This problem can be solved, to a degree, by placing a broadband UHF amplifier directly adjacent to the antenna with which the signal is amplified prior to transmitting it down the cable to the receiver. This assures a strong signal at the receiver end of the cable.

A much more desirable solution, however, is to place the tuner, converter and IF amplifier sections of the receiver at the antenna location, with the resultant 45-MHz IF signal then transmitted down the cable to the receiver location. Since this IF signal is significantly lower in frequency than the received UHF channel, less loss is incurred in the lead-in line and a strong signal is applied to the receiver.

The DYNAIR FT-4BU Fixed Tuner is housed in two separate packages. A formed aluminum housing which has a universal pole-mounting bracket contains the tuner, converter and IF amplifier sections. It has a terminal strip for the 300-ohm antenna input and a BNC connector for the IF output to the lead-in cable. The second package consists of a plug-in module which replaces the standard tuner of a DYNAIR RX-4B "DYNA-TUNE" Television Demodulator. The plug-in module contains automatic frequency control circuitry which assures a stable signal. A switch is provided on its front panel for selection of either automatic or manual frequency control. An AFC tuning adjustment is also mounted on the front panel. The antenna lead-in from the pole-mounted tuner is applied to the SO-239 connector on the rear panel of the DYNA-TUNE which is normally used for the VHF antenna connectors.

The pole-mount tuner receives d-c power and AFC voltage from the demodulator via the coaxial lead-in cable. No other cables need be routed to the pole-mount unit.

SPECIFICATIONS

Input Level	200 uV to 31,620 uV (-14 to +30 dBmV)
Noise Figure	12 dB
Maximum Cable Length (RG-59)	1000-uV input: 500 ft 10,000-uV input: 1000 ft 20,000-uV input: 2000 ft
Price	FT-4BU: $335.00
DYNA-TUNE with FT-4BU	$1685.00

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INTERPRETING THE FCC RULES & REGULATIONS

Ascertainment of Community Needs —Part II

Last month *Interpreting The FCC Rules* examined in detail the first half of the Commission's major Report concerning Ascertainment of Community Needs (as released February 23, 1971).[1] This 1971 Primer, clarifying portions of the Commission's December 1969 "Primer on Ascertainment of Community Needs" sets forth specific guidelines for community needs surveys. This month's column will conclude examination of the Report with a close look at the second half of the 1971 Primer, which contains the most important revisions.

(1) Who should be interviewed?

The Commission has made it clear that licensees must interview community leaders *and* members of the general public to ascertain community needs and problems. In its 1971 Primer the Commission has declared that members of the general public (laymen) *must* be interviewed, "for they may perceive community problems differently than community leaders."

(2) Surveys outside community of license

It should be remembered that a licensee's primary obligation is to the city of license and other obligations are secondary. However, if a station is licensed to two cities (e.g., Minneapolis-St. Paul) community needs and problems must be ascertained in both cities. In the 1971 Primer, the Commission has *removed* the 1969 Primer's requirement that an applicant for a station licensed to a city within a Standard Metropolitan Statistical Area (SMSA) must ascertain community problems in each of the cities within that area. Explains the Commission:

> First, many metropolitan areas have numerous political subdivisions. For example, there are more than 100 communities within the SMSA of New York City and Chicago. We do not, and cannot, require a station licensed to Chicago to present broadcast matter that is specifically responsive to the problems of each of those subdivisions. Second, as presently stated, an applicant for a station licensed to Joliet, Illinois, part of Chicago's SMSA, would be required to ascertain community problems in all the political subdivisions surrounding and including Chicago, if its signal actually encompassed that area. That, too, is an unnecessary result, since it would apply a more stringent requirement as to applicants for stations licensed to suburban communities than to those in the central city.
>
> We are adopting, instead, a somewhat different limitation on the discretion of all applicants, as to the communities in which an ascertainment of community problems must be made. That is that an applicant will be required to submit a showing as to why he does not undertake to serve a particular major city that falls within his service contours, up to a maximum of a 75-mile radius from the transmitter site.

In those outlying areas which applicants decide to survey, consultations with community leaders who can be expected to have a broad overview of community problems will be sufficient to ascertain community problems. Thus, *it is clear that survey efforts in outlying areas need not be nearly as extensive as those for the city of license.*

(3) Determining composition of city of license

This is the area most perplexing to broadcasters attempting to complete a comprehensive and meaningful survey of community problems. The Commission has declared that data relating to the composition of the community (demographics) must be submitted with the application and that a statistically reliable sampling must be made. "The applicant is expected to choose [and interview] members from each of those broad groups that reflect the compositions of the city of license." *A random sample is not sufficient!* Each applicant is expected to contact leaders of "each significant group" within the community.

After attempting to conduct a "statistically reliable" survey of his community and trying to compile data relating to the community's composition, few broadcasters will find solace in the Commission's pronouncement that, "in our view, the ready availability of the sources of that information make such studies easily within the resources of all broadcast applicants."

The 1971 Primer clearly states that each applicant is required to submit, in exhibit form, a study of the composition of the community (demographic data):

> The applicant must submit such data as is necessary to indicate the minority, racial, or ethnic breakdown of the community, its economic activities, governmental activities, public service organizations, and any other factors or activities that make the particular community distinctive with respect to its composition.

The Commission notes that reliable demo-

1. FCC 71-76, ... FCC 2d .....

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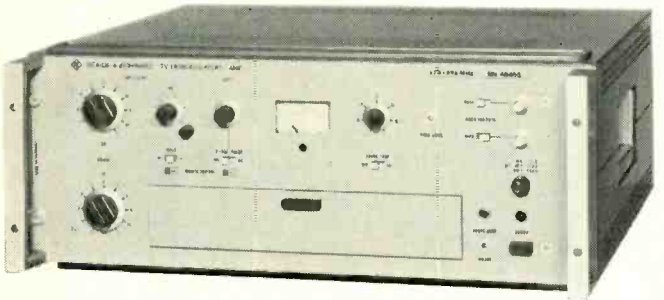

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Type HS 2064
for off-air monitoring

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- VHF and UHF Receiving Antennas available

Applications: The TV-Demodulator makes the following measurements possible:

Display of transient response of a picture transmitter.
Measurement of phase and envelope delay.
Accurate Zero-Reference indication (Vert. Int. Chopper)
Monitoring picture quality during transmission.
Measurement of video frequency response.
Measurement of grey-scale distortion (linearity).

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graphic data are available from such sources as the U.S. Census Bureau and local Chambers of Commerce. As an example of available data, the Commission makes reference to the Census Bureau's periodically-issued *County and City Data Book—A Statistical Abstract Supplement*.

> This publication does not contain the most detailed information published by the Census Bureau. However, the following partial listing of data set forth there as to cities is indicative of the extensive information that is readily available: total population; land area; population density; percent nonwhite; percent Negro; percent foreign born; total foreign born; country of origin as a percent of total foreign stock; median age; percent under 18 years of age; percent 65 years of age and over; the median number of school years completed, the percent completing less than 5 years of school; . . . total income; median family income; . . . hospitals; total general city revenue and breakdown as to source; total city expenditures and a breakdown as to disposition, including public welfare, education, highways, health and hospitals, police protection, fire protection, sewerage, other sanitation, parks and recreation, interest on general debt, outstanding debt, and city payroll. This information is given for every city with a population over 25,000. Similar information is given for each county, with more agricultural data, so that cities less than 25,000 would be included in the county portion of the publication. More detailed information or source of information as to other areas may be found in the following government publications which may be available in local libraries or can be purchased from the Government Printing office: *Statistical Abstract of the United States; Directory of Federal Statistics for Local Areas, A Guide to Sources; Directory of Federal Statistics for States, A Guide to Sources.*

While the partial list above seems ominous in terms of the wealth of available data, the Commission has declared that it is not concerned with minutia, and those challenging an applicant's showing must demonstrate that the applicant has failed to recognize a significant group. For example,

> It should be noted that if an applicant finds that there are ten labor unions in the community, the group we consider significant is that of unions generally, each union is not considered a separate group.

(4) Consultations with community leaders

In its 1971 Primer, the Commission has reaffirmed that the applicant's principals and management should consult with community leaders for survey purposes. The reason: If non-decision-making personnel, or some organization or person other than the applicant, conducted the survey, the information gathered would go through a "filtering process" that might exclude many valuable details. Notes the Commission:

> It is doubtful that a written report can fully convey the nuances of any extensive conversation, or the extent of the sincerity, frustration or anger that may be associated with some community problems. Moreover, the person-to-person interview with the management of the station is more likely to establish a contact with the station in the interviewee's mind. Thus, a community leader knows someone to call if he believes there are matters that warrant further discussion.

However, joint consultations—such as luncheons, group meetings, and the like—may be used by the principals or key management personnel

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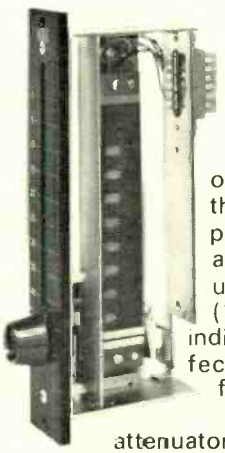
More than 1000 standards



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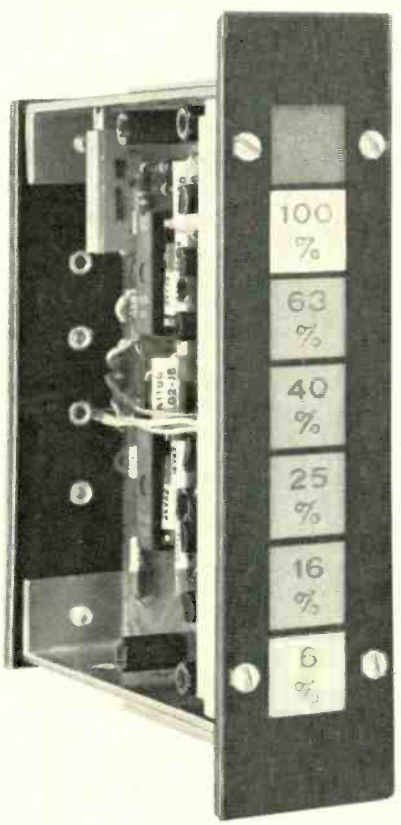

Other benefits, too. Like size: Each indicator can be mounted on a 1" center.

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FCC Rules

Continued from page 18

in communicating with community leaders.

(5) Consultations with the general public

The broadcaster has a wider choice in determining who may conduct consultations with the general public, and the Commission has revised the Primer to make it clear that an applicant's *employees below management level* may conduct consultations with laymen. Also professional research or survey services may be used; however, all such consultations (whether by nonmanagement personnel or research services) must be supervised by principals, management-level employees, or prospective management-level employees.

The Commission continues its less-than-enthusiastic endorsement of the use of professional survey organizations, even for consultations with members of the general public. The FCC's attitude is best summed up in the Primer with a response to the question "To what extent may a professional research or survey service be used in the ascertainment process?"

> Answer: A professional service would not establish a dialogue between decision-making personnel with the applicant and community leaders. Therefore, such a service may not be used to consult community leaders. However, a professional service . . . may be used to conduct consultations with the general public. A professional service may also be used to provide the applicant with background data, including information as to the composition of the city of license. The use of a professional research or survey service is not required to meet Commission standards as to ascertaining community problems. The applicant will be responsible for the reliability of such a service if it is utilized.

(6) How many persons should be consulted?

The Commission still refuses to designate a specific number of community leaders and/or members of the general public to be interviewed. The Commission says it is not a question of numbers, but whether the applicant has consulted leaders of the significant groups found within the community. Therefore, in response to the specific question "How many should be consulted," the FCC has declared:

> No set number or formula has been adopted. Community leaders from each significant group must be consulted. A sufficient number of members of the general public to assure a generally random sample must also be consulted. The number of consultations will vary, of course, with the size of the city in question and the number of distinct groups or organizations. No formula has been adopted as to the number of consultations in the city of license compared to other communities falling within the station's coverage contours. Applicants for stations in relatively small communities that are near larger communities are reminded that an ascertainment of community problems primarily in the larger community raises a question as to whether the station will realistically serve the smaller city, or intends to abandon its obligation to the smaller city.

Suppose, however, that after surveying the area the broadcaster discovers he has had limited success in eliciting data, or that there appear to be few community problems. Is it safe to assume that

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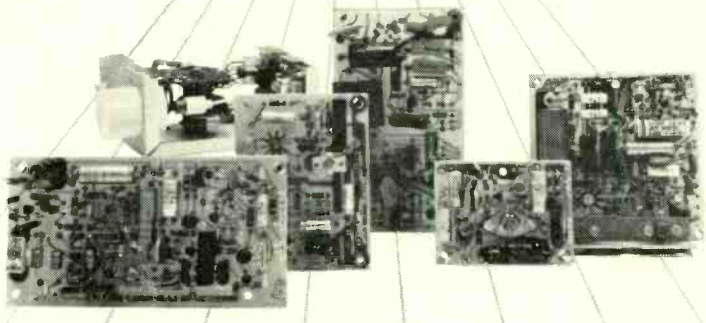

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- **Pushbutton white/black set—instantaneously sets video level, pedestal level, color balance.**
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General assemblies heard guest speakers praise local news (Klein) and blame network news (Capp, Romney). Wasilewski urged NABers to hold the line when besieged. Children's programming and real alternatives got support at Programming '71 session.

It Was A Dollar-Conscious NAB Convention

Exhibits stressed cost effectiveness and functional equipment to do the job.

LAST YEAR'S BOASTFUL ANNIVERSARY THEME, "50 Golden Years And The Best Is Yet To Come," dissolved in apprehension over how many lean years are in the immediate future. Exhibitors already hit with one extremely lean year responded by demonstrating dollar saving equipment. Some price tags were higher than before, but such prices reflected very sophisticated equipment with many automatic features. Ampex's "third-generation" videotape recorder, for example, the AVR-1, could be loaded and operated by an unskilled secretary. On the other hand, many reduced price tags reflected equipment without frills.

Frequently, emphasis was not put on the top-of-the-line, but on functional gear that would do the job. World Video, for example, found tremendous interest shown in its lower-cost color monitors featuring Trinitrons. Norelco's LDH-1 economy-priced companion camera to the PC-70 got close attention. Visitors at GE looked more at the Pinto TE 201 camera and not at the LTD of the line, the PE 400, although the latter was functioning without cameraman via a Power Optics automation system.

Typifying the trend toward economy equipment, GE showed a low-cost film chain island (the Mini-Telecaster) that features a multi-purpose camera and a Super 8-mm projector. New low-priced economy cartridge players were featured by Visual Electronics, Broadcast Electronics, Tapecaster and others. But still lower-cost cassette players as real dollar savers popped up all over: Gates, RCA and International Tapetronics showed cassettes in addition to Schafer, which introduced them

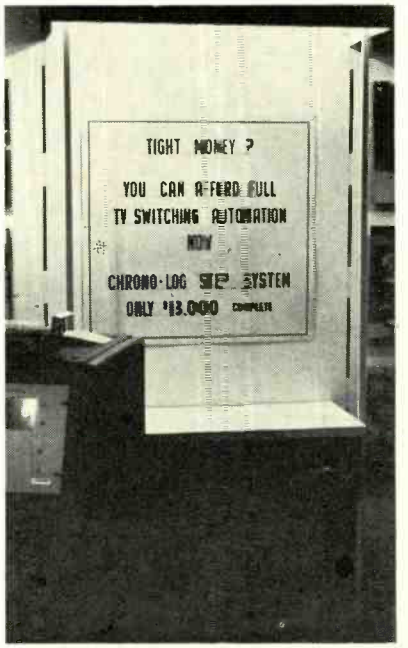
Exhibits were well attended by engineers seeking value.

last year. Cost effectiveness was the RCA exhibit's message and a recurring theme at other exhibits. The real sign of a new era of dollar-minded broadcasting, however, was the week-earlier FCC order permitting remote control of VHF transmitters. This new rule automatically meant a broadcaster's payroll could be cut by one or more persons.

There were separate issues raised at the convention over the qualifications of the technical staff needed for today's and tomorrow's station. However these may be solved, the equipment trend at the 1971 NAB was unmistakably toward lowering a station's total operating cost—either through use of high-priced but more efficient equipment or through lower-initial-cost machines.

The principal focus was on dollar consciousness, but quality was not forgotten. Test equipment manufacturers revealed several new instruments aimed at helping broadcasters put over a better, more consistent quality picture.

Specific new products follow under the categories of Transmitters, Color Cameras, VTRs, Film Chains, Test Equipment/Monitors, TV Automation and Radio Automation, Audio, and Character Generators.



Cost effectiveness featured at the booths of RCA (top left), Chrono-Log (bottom left), Tape-Athon (top right) and Ball Brothers (bottom right).

Transmitters, Remote Control

Hand lettered signs, "Designed for remote control," were taped onto VHF transmitters exhibited by Ampex, Gates, GE, Philips and RCA. Gates and Philips got the most mileage out of the week-old new ruling permitting unattended remote control—the former had a working model on hand showing just what was involved in remote control. Philips placarded its Swedish import with a sign "Sold to WNEW-TV, New York." These units will be remote controlled.

So far both Gates and Philips will be represented at New York City's new World Trade Center transmitter-antenna site (CBS has bought Gates). Both use low-level intermediate-frequency modulation, which is gaining wide acceptance as the logical way to go.

Although the remote-control ruling directed interest to VHF, UHF transmitters were not ignored. RCA showed a new (for RCA) 55-kW UHF basic unit (with an IF modulation) priced at $289,900. Gates had a mini-theatre within its exhibit to show slides of the 220 kW powerhouse UHF transmitter just installed at WDCA-TV. GE showed a new 60-kW UHF klystron tube (ZM-6800) which is a new record for a single stage.

Gates remote control for transmitter

Selected "new" Products at NAB:
For more information circle the corrseponding Reader Service Card number.

Gates VHF transmitter, circle 302.
Ampex VHF transmitter, circle 303.
Philips VHF transmitter, circle 304.
RCA UHF transmitter, circle 305.
GE UHF klystron tube, circle 306.
AEL FM unit, circle 307.
Collins AM and FM transmitters, circle 308.
CCA AM and FM transmitters, circle 309.
Gates AM and FM transmitters, circle 310.
Continental AM transmitters, circle 311.
Sparta AM and FM transmitters, circle 312.
Standard AM transmitter, circle 313.
Standard UHF transmitter, circle 314.
Visual AM transmitter, circle 315.
Wilkinson AM and FM transmitters, circle 316.
Moseley remote control systems, circle 317.
Time and Frequency TV monitors, circle 318.
Belar TV monitoring system, circle 319.
McMartin modulation monitor, circle 320.
Marti logging system, circle 321.

AM and FM transmitters were plentiful. AEL showed a new 12-kW FM unit, the FM-12KD (with a solid state direct carrier exciter and a grounded grid final tube). AEL's theme: Sound fidelity of the seventies. Collins showed 1- and 5-kW AM and 20-kW FM transmitters, all with a high degree of solid-state circuitry. Continental showed 5-, 10- and 50-kW AM rigs. Gates displayed three AM and two FM transmitters. Sparta showed both AM and FM units, the latter featuring stable stripline tuning. Standard was on hand offering AM and TV transmitter service. Visual displayed an AM rig. Wilkinson showed a new FM transmitter (along with exciters, SCA generators, stereo generators and peak limiting amplifier, all designed, said Wilkinson, to cut costs and problems).

Because of the fresh interest in remote control of VHF transmitters, monitoring and logging-equipment manufacturers go close scrutiny. The Gates demo of remote control used Rust's telephone-line equipment.

Moseley showed the TAU-2 Tolerance Alarm Unit working with an Automatic Data Printer, all of which could be run from a new 15-channel remote control system, the PBR-15.

In the way of off-the-air monitoring facilities, Time and Frequency Technology, Inc., showed a TV frequency and modulation monitor for monitoring aural and visual frequency and percent aural modulation. An automatic logging adapter and digital clock was available to work with the monitor to convert visual carrier and inter carrier into digital codes. The monitor was said to be sensitive enough to operate remotely up to 30 miles.

Belar showed a four-piece system for remote monitoring: an RF amplifier (RFA-3 accurate enough to meet FCC requirements), a digital clock, an aural modulation monitor (TVM-1) and a frequency monitor (TVM-2) for aural and visual carrier measurements.


Low-power transmitters by Wilkinson

McMartin showed its TBM-5500 VHF-aural modulation monitor which was monitoring one of the Chicago TV stations.

Marti showed an ACL-100 Automatic Digital Transmitter logging system working in conjunction with its 950 MHz Aural STL system.

Color Cameras

No one really expected this year's exhibits to focus on color cameras, as has been the case for the last four or five conventions. But, cameras did again this year draw top attention—in large part due to impressive demos put on by the Europeans, Fernseh and Marconi, and new camera entries by IVC and TeleMation.

Last year Fernseh made its debut at NAB, but outside the packed exhibit area (they were across the street at the Essex). This year, Fernseh more or less took over. The company took much of the space relinquished by Visual and its clear-picture demos in bright yellow and other hues wowed the crowds. (Good resolution comes from one tube being used for luminance; bright colors from an "optimum" matrixing scheme.) Fernseh cameras were also a big attraction at the Sarkes Tarzian exhibit. (On the eve of the convention Sarkes Tarzian concluded an agreement with Fernseh GmbH to become the U.S. sales agent for the German camera.) Sarkes Tarzian was confidentially passing out a spec sheet comparing the KCU-40 with the TK-44A, the PC-70, the PC-100 and the PE-400.

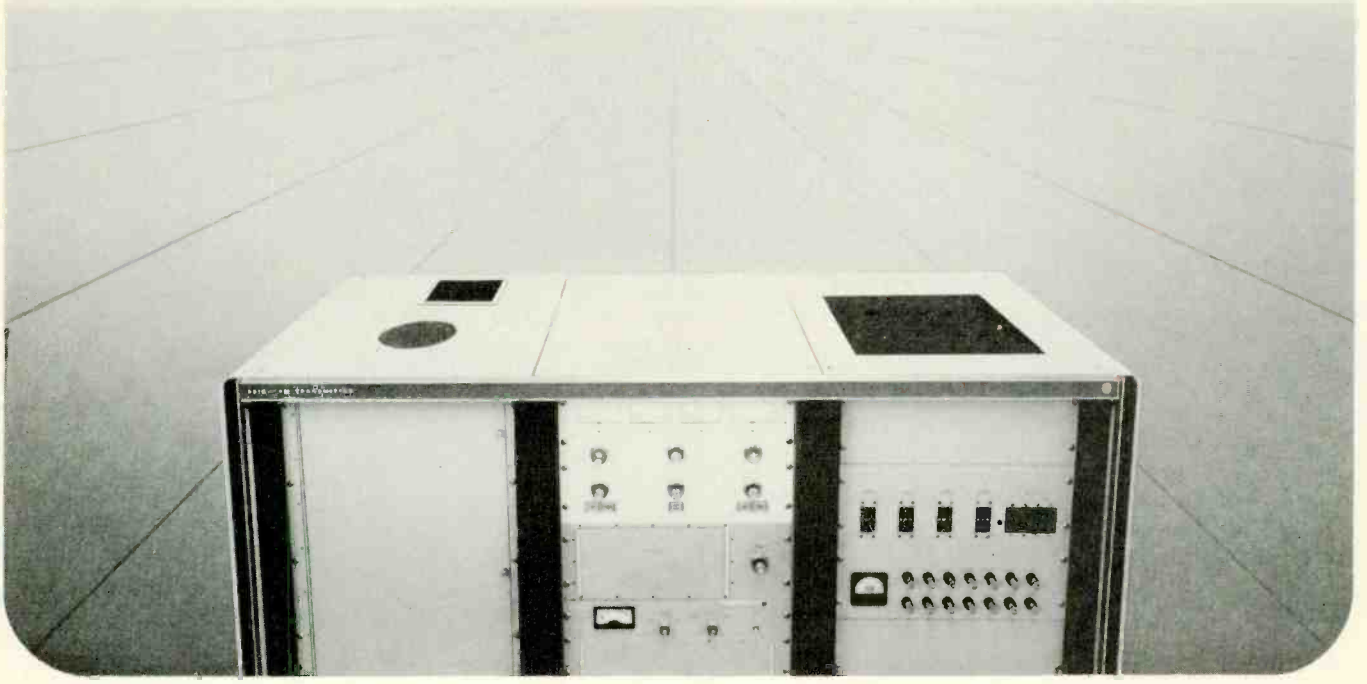
The Marconi Mark VIII, billed as the industry's first truly automatic color camera, got a lot of attention. Automatic features include auto registration and line up, color balance, centering and check-out. (For details, see *BM/E*, February 1971, p. 23.) The new camera was exhibited by Marconi Electronics Inc., a newly created U.S. company.

The biggest camera display was

For more information:
Sarkes Tarzian (Fernseh) camera, circle 322.
Marconi camera, Mark VIII, circle 323.
Philips, PC-100A camera, circle 324.
Philips, LDH-1 camera, circle 325.
TeleMation Chroma III camera, circle 326.
IVC-500 camera, circle 327.
Angenieux lens, circle 328.

Collins FM transmitters have the best record for uninterrupted service.

Meet our newest: the 20-kW 831G-1



Collins new 831G-1 transmitter gives the quality- and economy-minded broadcaster uninterrupted, dependable performance.

The 831G-1 uses solid-state on-off switching and is equipped with automatic power output control. It offers front panel tuning with complete metering and control facilities on the extended control panel. The direct FM all-solid-state exciter offers such options as stereo multiplex and an SCA generator.

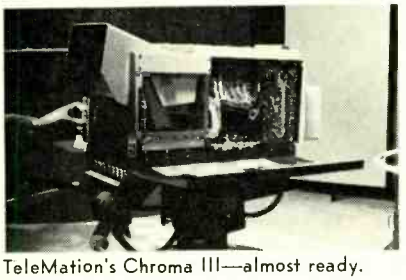
For more information, contact your Collins representative or Collins Radio Company, Dept. 400, Dallas, Texas 75207. Phone: (214) 235-7863 (direct line).

COLLINS

COMMUNICATION / COMPUTATION / CONTROL

Circle 119 on Reader Service Card

Sarkes Tarzian's booth featured a Fernseh camera.



TeleMation's Chroma III—almost ready.

put on by Philips. And, since the PC-100A is now functioning in accordance with the specs advanced two years ago, Philips personnel were happy. To prove that the digitally-controlled PC-100 on hand was real and no fluke, Philips assembled the camera from scratch 30 times in live shows. From packing case to pictures in 60 seconds was Philips' claim, and perfectly registered pictures were achieved each time—by an all-female crew recruited from a local model agency. Other cameras demonstrated included the hand-held PCP-90B, the PC-70-2 and compact LDH-1.

Although the PC-100 and the Marconi MK VIII are billed as the industry's most advanced cameras in terms of simple operation, that claim may not hold for long. The young up-start TeleMation is planning to rewrite the ground rules. TeleMation's entry, Chroma III, was not turned on at the convention, but when it becomes operational, it promises to be pushbutton simple. Conceived in 1971, Chroma III will take advantage of the current state of the art. Among other things, the camera (1) accommodates new low-light-level silicon-diode pickup tubes (strong contender as a replacement for Plumbicons); (2) has an optic system optimized for today's pickup tubes and phosphors; and (3) uses ICs extensively to simplify operation. ICs make it possible to include within the camera head a digital sync generator, an NTSC encoder so stable a Vectorscope isn't necessary, and various memories for fast check-out. Because of the self-contained sync generator, field operation is possible without a camera control unit.

TV camera lens from Angenieux.

The Philips booth's PC-100A Norelco "instant" camera.

Set-up time of one minute is possible, using pushbuttons, because of use of internal IC memories—for example, shading corrections are made automatically by modulating channel gain in accordance with correction data put into memory.

TeleMation wasn't boasting that it made any sales at the show, but it did look as though it had blocked a few sales to competitors until the Chroma III can show its stuff.

RCA may have been interested in TeleMation's entry, but it appeared not to be fazed. Claiming $30 million worth of sales for the TK-44A in the last two years, RCA predicted further penetration of the market with some such new optional features for the TK-44A introduced at the show, such as "bias light" which produces good contrasting pictures at low light level without scene lag and "coring"—a technique for reducing picture noise under low light levels.

Another RCA optional feature offered for the TK-44A is a blur eliminator for stop-motion modes of operation. To solve smearing sometimes seen on slow-motion shots, or when chroma key is used (because of 1/60th second exposure per TV field), RCA has a device which permits an effective exposure time of 1/240th of a second.

IVC scooped other camera manufacturers, including one of the to-be features of the TeleMation Chroma III camera, by being the first to demonstrate in color a broadcast-quality camera using a silicon-diode tube, the Tivicon (Texas Instrument trademark). IVC put the Tivicon in the red channel where Plumbicons are weakest and came up with unsurpassed red discrimination and good sensitivity. (The Tivicon is seven times more sensitive in the red region than the Plumbicon and has a specified response to 200 nanometers.) The Tivicon, for this application, costs about the same as a Plumbicon according to IVC. The IVC-500 is priced at $26,795.

Commercial Electronics showed a model of a new low-priced ($15,000) two-tube camera in its booth —which will operate with full signal—(50 dB) at 50 fc. The unit was not turned on, however. No new camera announcements came from Ampex or GE.

In the camera accessory area the outstanding item was a new 15 to 1 Angenieux *f*/2 zoom lens billed as an all-purpose lens for studio and remote work. The short (18-mm) focal length made for very wide angle shots (good in the studio or the sports field) but one could also shoot close-ups using the 270-mm focal length at narrow angles (675-mm is also possible using the integral range extender turret). The combination of close focusing and longer focal length means a single camera can do more for production cost savings. Basic price of the 15x18E is $11,800.

VTRs, Tape

In the video cartridge/video cassette arena, the momentum at NAB was on the side of RCA, which announced it had begun commercial shipments. But Ampex was there with what it said was a production model of its automatic cassette recorder player, the ACR-25, first demonstrated last year as a feasibility model.

RCA proudly pointed out at NAB that the pre-production model seen by visitors the year before has been in regular broadcast service for nine months at WDCA-TV, Washington, D.C. Tests show that video cartridges can undergo 300 replay passes without degradation. More than 500 replays have been achieved in some instances.

The cartridge system is available as a slave unit ($98,500) for operation in conjunction with an RCA high-band VTR or as a complete independent system ($135,000). Two tape decks within the

For more information:
RCA TR-100 cartridge VTR, circle **329.**
Ampex ACR-25, circle **330.**
Ampex ADR-150 duplicator, circle **331.**
IVC 960 helical VTR, circle **332.**
3M high energy tape, circle **333.**
Magnetek tape cleaner, circle **334.**

system mean a continuous sequence of up to 22 cartridges can be played on an alternate basis (in a predetermined sequence).

The Ampex ACR-25, which uses a vacuum-operated tape transport system, boasts a faster reload time. It claims it can play 10-second cassettes back-to-back. Roll is instant and no roll delay need be accounted for. Cassettes can be selected randomly. The ACR-25 will cost $160,000 when deliveries begin in 1972. This is $25,000 more than the RCA unit. The Ampex unit, however, contains some logic control that offers extreme programming flexibility in operation.

Ampex also showed a production model of the ADR-150 high-speed broadcast videotape duplicator. The unit can make from one to five copies at a time in one-tenth the time required by machine-to-machine methods.

For multiple copy reproduction of short spots, Ampex also showed a VBL-1 video bin loop adapter as an accessory for the VR-1000 or VR-2000.

A major feature of the Ampex exhibit was the AVR-1 automated VTR introduced last year. For closed-circuit applications, Ampex showed the VPR-7900 and VPR-5800 1-in. helical-scan recorders first shown at NAEB.

Helical-scan recorders for broadcast application were shown by IVC. The IVC 960 VTR with time-base stability correctors (see *BM/E*, March 1971, p. 16) meets broadcasting standards.

RCA's videotape cartridge system for automatic station breaks.

Cassette VTR from Ampex.

A new advance in videotape was shown by 3M. Memorex was back in the quad market with Chroma 90. High energy tapes from 3M use a modified cobalt iron oxide to increase coercivity and the net gain is a higher signal-to-noise ratio—which means more dubbings are possible without deterioration of the picture. 3M says the new tape is in large volume production.

A new type of videotape cleaner was shown by Television Equipment Associates. Called the Magnetek (from Canada), the device uses scrubbing belts and a knife blade. Drop outs are decreased by 40 to 70% and head life is increased.

Film Chains/Color Correctors

Cassette loading and playing are not confined to the videotape players category. A 16-mm telecine-projector that handles eight automatic-threading film cassettes was demonstrated at the Listec booth. The projector comes from the Hokushin Electric Works of Tokyo.

A new projector, with many interesting features, was shown by Eastman Kodak. The CT-500 boasts channel threading, which is about the same thing as automatic threading. The film is slid into a C-shaped slot and attached to the take-up reel. All other operations such as loop formation and gate closing are done by pressing a button. The CT-500 also features fast forward and reverse (25×), an integral cueing system, a Geneva-type drive, automatic exciter lamp changer, and 100-hour easy-change tungsten-halogen projection lamp.

For aid in aligning, tracking and shading of color film chains, Eastman Kodak showed its cross-step gray scale slide.

Cohu demonstrated a color camera for film chains that features automatic control of luminance and black level. The automatic sensitivity circuit maintains picture white level constant at 100% video level and automatically resets to intermediate sensitivity on black film leaders. The camera includes an image enhancer with comb filter.

GE introduced a new film camera, the PE-245. FET pre-amplifiers provided a better than 50 dB signal-to-noise ratio, a new encoder offered greater stability and a new masking amplifier improved the colorimetry. New optics were also incorporated.

GE also introduced a new Mini-Telecenter system for low-cost film origination and live studio programming. The camera in this unit is essentially the TE-201 without a viewfinder. It can be pivoted out of the multiplexer path to pick up studio action. The chain included a Super-8-mm film projector.

Advances in the TK-27B color film chain were demonstrated by RCA. These included an improved signal-to-noise ratio, and built-in contour enhancing circuits.

A new look in telecine was shown by Rank Precision Industries. As previewed in *BM/E* in March, Rank Cintel telecine is an in-line unit designed to take minimum floor space. A uniplex format can be increased to multiplex (16/16 or 16/35 plus 60 slides) without major alterations.

To make this possible, Rank designed a new camera head to take advantage of the narrow angle optical requirements of film projectors. Other features of the unit: redundant projection lamps with automatic switchover and easy film loading.

Other new products offered by Rank included a slide change system for random access (max. time 3 sec.) and a flying spot scanner for 35-mm slides. Unit is expensive ($26,750) but superb colorimetry is achieved—without registration problems.

ABTO, which last year announced a revolutionary new concept for producing color from drug-store black-and-white film, showed a complete telecine system for the broadcaster including 2×2 in. taking camera and a 16-mm movie camera available on a rental basis.

ABTO intrigued visitors by showing how ABTO b&w cassettes could be played at home to produce full color. The cassette medium was inexpensive vinyl reproduced from an ABTO master by non-photographic pressure printing.

Test Equipment/Monitoring

Tektronix packed them in. Curiosity to see Tektronix's new color monitors probably was the reason for the large number. The 650, which uses a Sony Trinitron tube, has only four adjustments com-

Continued from page 38

For more information:
Hokushin 16-mm cassette, circle **335.**
Eastman Kodak CT-500, circle **336.**
Cohu automatic level chain, circle **337.**
GE Mini-Telecenter, circle **338.**
Rank telecine and color corrector, circle **339.**
CBS color corrector, circle **340.**
ABTO color chain, circle **341.**

Greater Accuracy in a Videotape Timer

You can now replace that mechanical counter in your VTR with a new photo-optical timer/counter that reads down to an individual frame for accurate tape timing and editing. Developed at the request of ABC-TV New York, the first unit is currently undergoing field testing there, where a heavy schedule of news and sports demands much editing with precise timing.

NOT LONG AFTER THE FIRST VIDEOTAPE recorder was introduced in 1956, editing became practical. It became necessary to precisely time spots, segments, and even entire programs. And through the years, there has been little or no change in the hardware used to time tapes. To read true (real) time, a stopwatch is often used.

To read tape footage (tape time), a Veeder-Root mechanical counter is supplied with nearly every quadruplex VTR. The counter is driven from a tape idler on the transport. But the mechanical counter has several disadvantages:

- It's inaccurate because of inherent mechanical inertia which permits tape slippage.
- It doesn't relate to true time, and doesn't indicate frames (only hours, minutes, and seconds).
- It wears out rapidly, since oxide particles clog the worm gear. Every 100 hours or so, the mechanical counter must be repaired or replaced, thus temporarily disabling the VTR for editing use.
- It provides no remote readout for viewing at a distance. (You have to be *at* the VTR to read the counter.)

Recently, various proposals have been made to record time codes on videotape and thus provide frame-by-frame readout of footage. Such proposals entail considerable electronics. An alternative would be a more reliable counter.

Figure 1. Details of transducer.

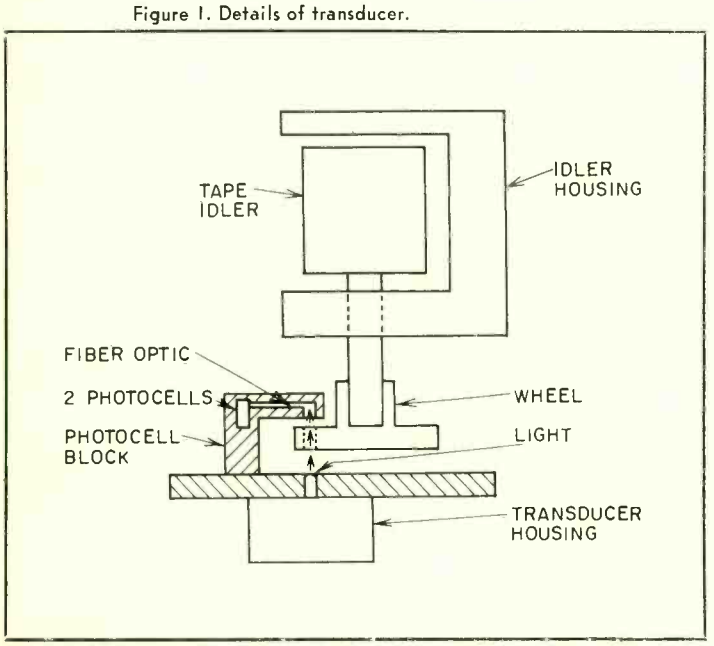


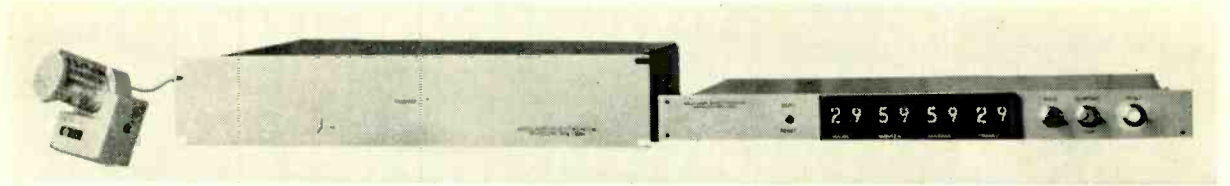
Photo-optical counter/timer

Holland Electronics (Brooklyn, N.Y.) has developed a photo-optical videotape counter/timer which provides the accuracy and performance features the mechanical counter lacks. Additionally, the Model 700 Holland counter will accept the information recorded by a tape code system, thus insuring future compatibility. And it has other important features:

- There is no inertia and negligible tape slippage because the idler transducer is a photo-optical device.
- The system is calibrated in TV frames, thus providing greater accuracy than a mechanical counter.
- There is nothing in the transducer to wear out in normal use so the VTR won't be out of editing service due to timer malfunction.
- Up to five remote displays may be used with a single VTR. These displays use Nixie tubes and may be viewed from a distance of 10 feet.
- While timing an entire tape, it's possible to measure separately the elapsed time of one segment, then return to regular timing, without stopping the tape or disturbing the overall footage count.
- The timer may be switched to display true time (derived from the house time/frequency standard) and thereby indicate true elapsed (running) time of a tape.
- An optional printer output makes a hard-copy record of elapsed time measurements, simplifying the editing job.

How the pickup transducer works

Today the most commonly accepted tape speed of a standard quadruplex VTR is 15 in./s. On the transport, the tape idler used for timing/counting is accurately machined to a 5-in. circumference. Since that idler is rotated by tape



The Holland videotape timing system.

travel, one idler revolution equals 5 in. of tape travel, or 10 TV frames per revolution. Therefore, three idler rev./sec equal 15 in./s, or 30 frames per second.

As Fig. 1 shows, assembled to the idler shaft is a black anodized encoder wheel with five elongated slots equally spaced around its body. A lamp is mounted on the transducer housing underneath the encoder wheel, with the result that light passes through the slots, striking the photocell block above. Within the block, a fiber-optic pipe routes the light to a pair of photocells (photo transistors) acting as pickup devices.

Since the two photocells are side by side, each receives a light pulse through a given encoder wheel slot at a slightly different time. Photocell output waveforms are shown in Fig. 2 for a portion of idler revolution. These waveforms are fed to a bidirectional counter which senses not only footage (tape timing) but direction, depending on which photocell gets a given pulse first. Thus, direction of tape travel is indicated by the phase relationship of the two waveforms. Therefore the count is additive when the tape travels forward, and subtractive when the tape travels backwards. An output of 10 counts per revolution is accomplished by generating a count pulse every time both outputs are at the same level.

Basic counter chassis

Mounted behind the VTR is a chassis (it can actually go almost anywhere) which contains the basic tape counter, composed of a bi-directional counter, input logic and buffers to drive the remote displays. This counter accepts photo transistor pulses and forwards the count—in frames, seconds, minutes, and hours—to the display units.

Local display unit

The basic or local display unit is mounted on the VTR frame; see box next page. This unit (Fig. 3) contains a Nixie tube display, a memory section, and an elapsed time counter. There are several pushbuttons on the front panel, and their functions are as follows:

Reset: This pushbutton resets the basic counter to zero, and is used when loading up a new tape to be edited or timed. The switch also puts the display unit in the normal "count" mode.

Hold: This pushbutton switches the count from the basic counter to the memory unit (on the display chassis) and also feeds this information to the Nixie-tube array. Note that the basic counter continues to operate, while display indicates the time spot frozen in the memory. The hold pushbutton also feeds the count from the basic counter to the elapsed-time counter (in the display chassis), and this counter begins to time the segment.

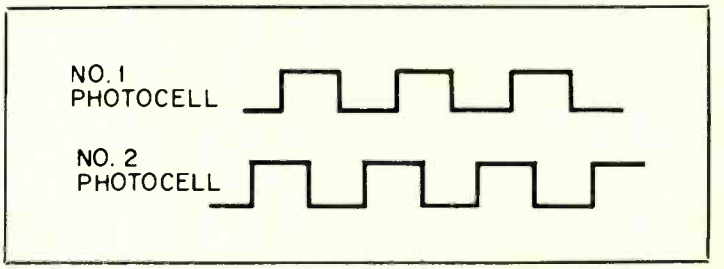
Elapsed Time: When this pushbutton is pressed, count pulses going to the elapsed time counter are stopped and the information in that counter is displayed. Thus the display indicates the exact timing of the interval between pushing the hold and elapsed time pushbuttons.

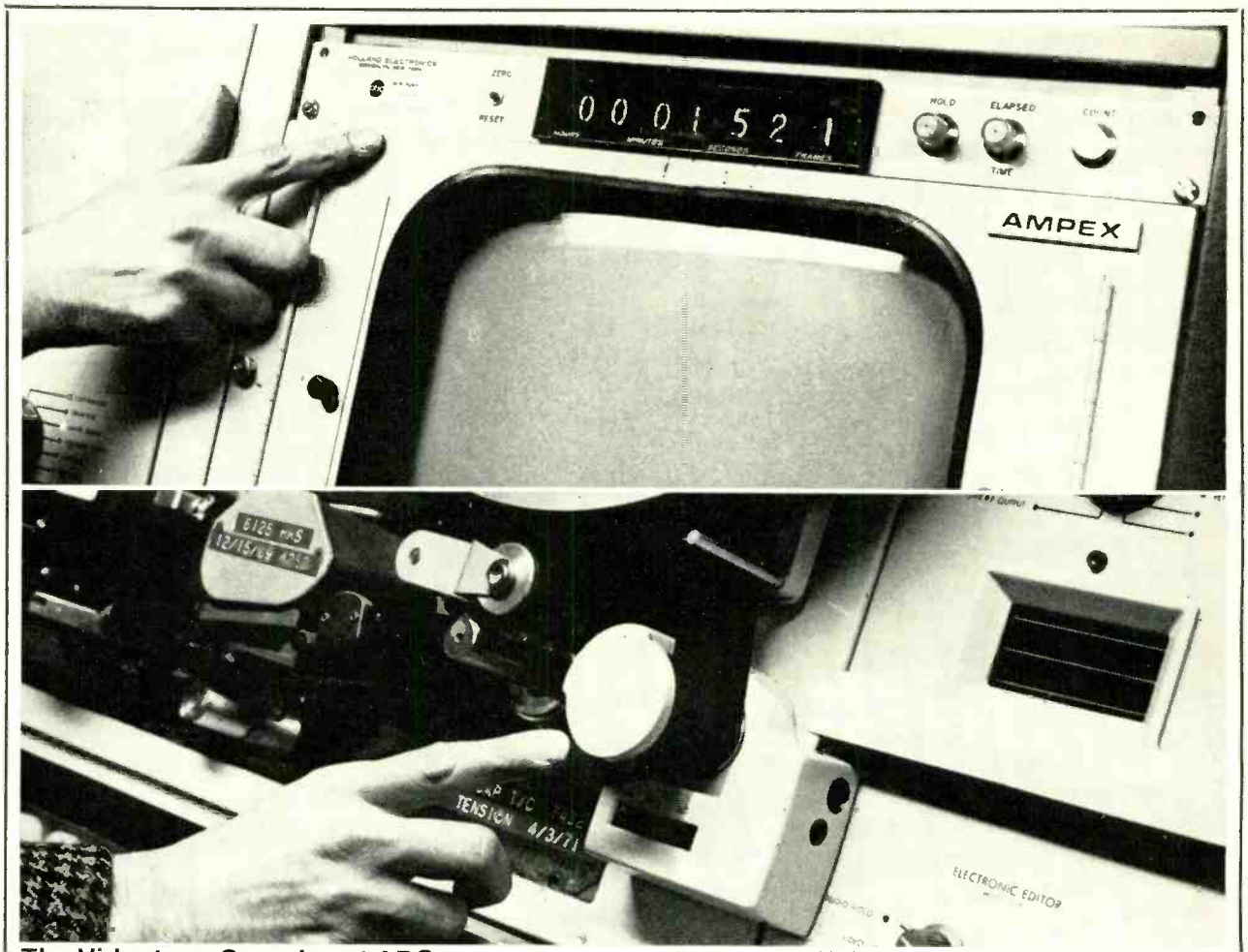
Count: This pushbutton switches the display back to the basic counter (which has been running all the time) and resets the elapsed-time counter to zero.

Remote unit

While the VTR operator uses the local display unit at the machine, a remote unit is mounted some distance away at the desk or console used by producers, directors and other production personnel. This remote display is identical to the one previously described, with two additions

Figure 2. Photocell output waveforms. Photocells determine direction of rotation.





The Holland system as installed at the ABC studio.

The Videotape Complex at ABC

The videotape counter/timer was developed as a result of conversations between Joseph Maltz, senior project engineer at ABC-TV New York, and Holland Electronics president Len Cohen and chief engineer John Silverman. Maltz felt there must be a better way of timing videotapes and took his problem to Cohen and Silverman, who had already built a number of custom devices for the ABC plant on West 66 St.

It's not surprising that such an innovation should debut at ABC-TV New York, as Maltz and his coworkers have labored for some years to build an ever more efficient VTR complex. The area is divided into eight tape rooms containing two VTRs each, and a supervisory maintenance area. Two rooms are permanently assigned to news and two to sports. One additional room is news backup, two are utility, and one is for general editing. The complex is used for both network feeds and on flagship station WABC-TV. Nine additional rooms are presently under construction to accommodate video cassette/cartridge VTRs and high speed duplicators presently on order.

Certain measures have been taken to make life pleasant for both the VTRs and the human operators and directors. The entire complex is operated under a positive air pressure system to reduce the possibility of airborne contaminants entering through the doorways. Static mats are provided at each entrance to collect dirt from shoe soles, as well as from equipment casters. Fresh air is drawn through an electrostatic air filter and dried. Humidity throughout the complex is maintained at approximately 40%. Each room has separate air-handling equipment, with additional filtering and temperature controls, to enable a 72°-76° temperature range to be maintained, even with varying numbers of operating personnel. Air is divided proportionally between VTRs and personnel, with cool air being directed to the air intake of each VTR. To insure that vacuumed dirt cannot reenter the rooms, each is equipped with a floor-cleaning vacuum recepticle.

All rooms are provided with acoustic ceilings, vinyl wall coverings, and nylon carpeting. Wherever possible, windows and sliding doors are provided between adajcent rooms, since quite often two rooms will work on one job.

All VTRs receive compressed air for headwheel bearings from a central supply. Similarly, a central vacuum source is provided for tape guide operation. There is also a central source of Freon TF which feeds an outlet in each room, between the pair of VTRs.

A slow-motion videodisc recorder is located elsewhere, but each VTR room is equipped with connections for remote operation.

One small room is provided for a fulltime maintenance engineer, tools, spare heads, etc. Thus VTR down time is held to a minimum.

A complex yet flexible crossbar system enables VTR inputs and outputs to be connected to test signals, studios, telecine chains, remotes, network and local lines. A similar facility exists for intercommunication.

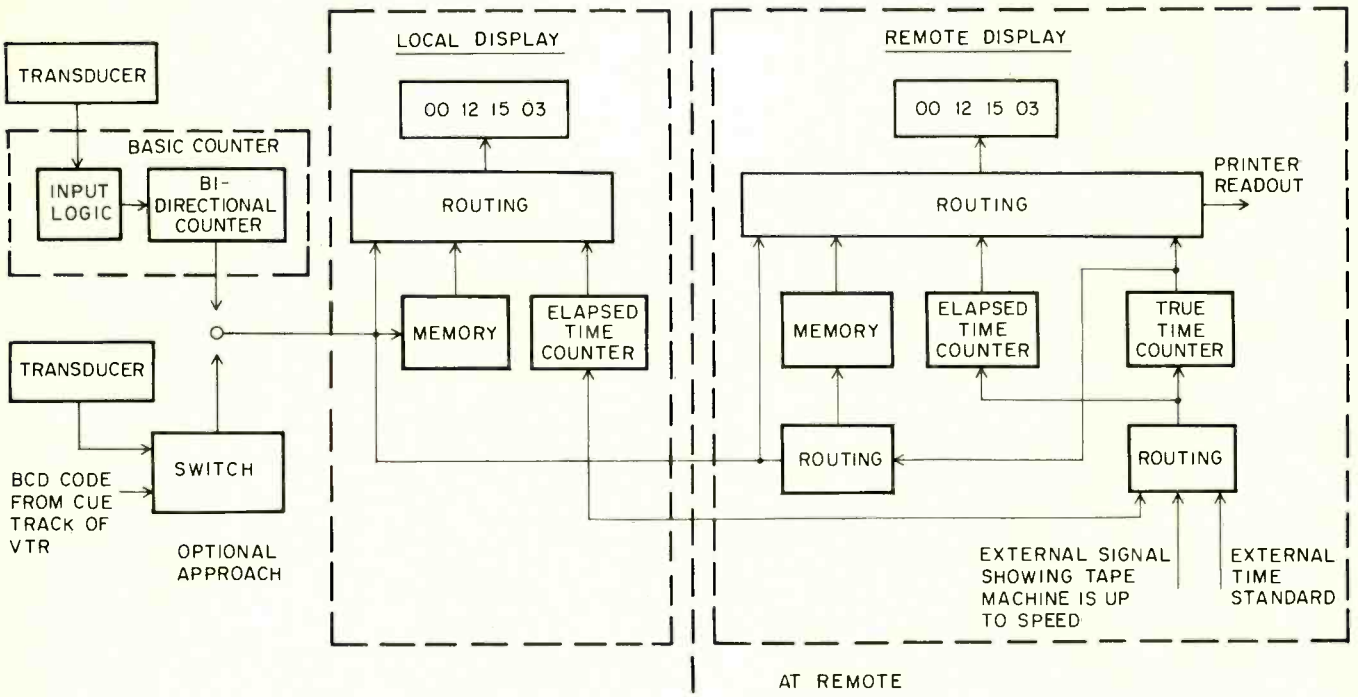


Figure 3. Block diagram of counting system.

—a true-time function and a printer output from the elapsed-time counter. The former operates as follows:

On the front panel there is a two-position selector switch marked tape time/true time. When the switch is in the true-time position and the VTR is started up, the display indicates actual tape footage (time) until the tape gets up to speed. Then a gate in the remote display chassis switches the Nixie-tube array to indicate true time from a house standard. (Tape time is also indicated in fast-forward and -reverse modes.) When the switch is in the tape-time position, the display always indicates tape footage (time) regardless of tape speed or direction.

Note that tape time is useful for searching or editing a tape, as what you are reading is tape footage converted to a time scale. On the other hand, true time is essential for measuring the actual running time of a tape.

In the remote display unit, the reset push-button zeroes the true-time counter only. (The tape-time counter is reset at the local display unit at the VTR.)

The other addition to the remote display chassis is the printer output from the elapsed-time counter. A hard-copy printer (not supplied) using adding-machine type paper receives pulses whenever the hold and elapsed-time pushbuttons are pressed. Thus the director has a printed record of all elapsed-time segments.

Options

The system described so far is presently in use at ABC-TV New York, where it was designed to fit a specific need. Holland Electronics advises that the system is flexible and available in several versions. A basic counter would consist simply of a tape footage counter and a single display unit. To this could be added the elapsed-time and/or the true-time functions. And up to five display units can be driven by the basic counter, as described.

Two additional features are under development: preset and tape search. The preset function would use thumbwheel switches to program a desired time and frame. When the count on either the tape or true-time counter reaches that preset time, a relay closure occurs. This closure could be used for any desired start or stop function, such as pre-programming assemble editing using several VTRs.

The tape search option would use thumbwheel switches to preset a desired time and frame, and the VTR would be programmed to find that spot on the tape. **BM/E**

Cable Pay-TV You Can Install Now

A converter/transponder on each subscriber set and additional transmission equipment will allow cable operators to program selectively. Any special program the subscriber hasn't ordered will be jammed at his receiver. The secret? A set-top converter that can be disabled from the headend.

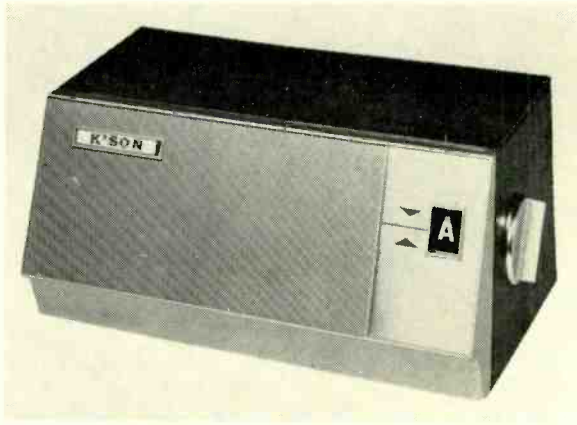


Figure 1. The K'SON converter/transponder.

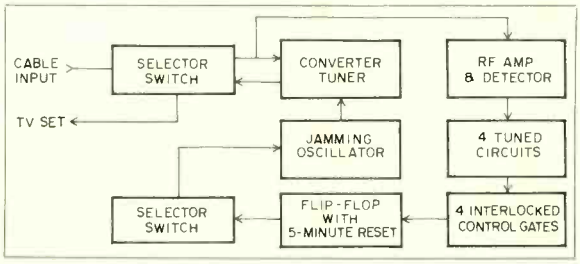
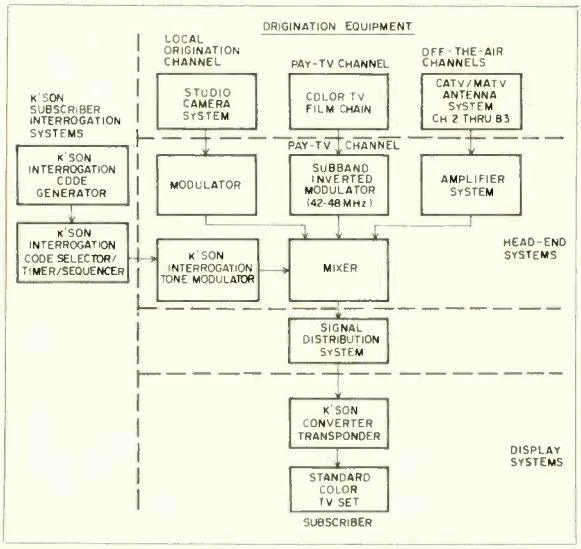


Figure 2. Disabling procedure.



Suggested application of K'SON equipment in existing systems.

ON YOUR PRESENT ONE-WAY CABLE SYSTEM you can program selectively, using a converter/transponder to jam signals at each individual subscriber's set unless the subscriber has ordered the particular program. The equipment for this system has been developed and is available from stock at K'SON Company, Placentia, California.

Here, briefly, is how this pay-TV system works: Subscriber TV sets are equipped with the K'SON unit which converts to VHF the frequencies of up to three sub- or midband channels carrying special programming. Coded tones are sent along the cable to all subscribers from K'SON's headend interrogator, a different code for each subscriber. These codes cause the subscriber unit to jam the signals it is converting. If the subscriber has ordered a particular program, however (by checking it off on an IBM-sized postcard to be mailed in each week or month), the headend unit can be programmed to omit his code from those being transmitted along the cable. This allows the subscriber unit to convert without jamming the signal for the special program. If the subscriber wishes to view regular programming, he switches the converter off.

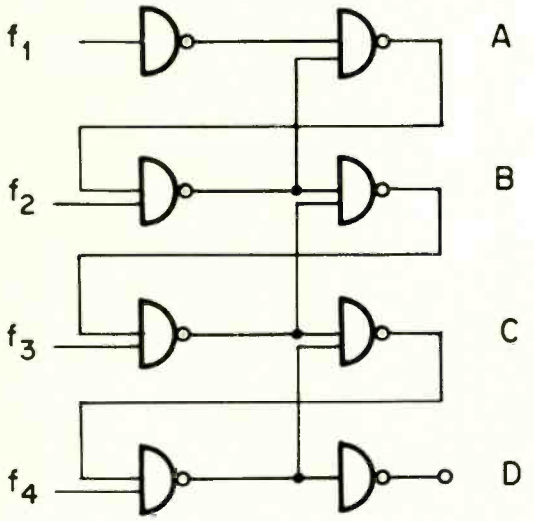
Subscriber unit

Figure 1 shows the converter/transponder attached at each subscriber's receiver. This unit converts the sub-band or midband TV signal to a standard VHF signal; also, it accepts interrogation control signals from the headend, and is disabled upon receipt of a certain sequence of signals. A particular sequence of tones disables only one subscriber unit.

Figure 2 shows the disabling procedure. The converter contains four frequency-selective networks and signal level detectors which respond to the control tones (coming from the headend interrogator) by yielding a voltage change when receiving a tone matched to the circuit. Output goes to interlocked gates which respond only when activated in a prescribed order. Only when the proper combination of frequencies is applied in the proper time sequence will the final gate open to set a flip-flop. This flip-flop will in turn

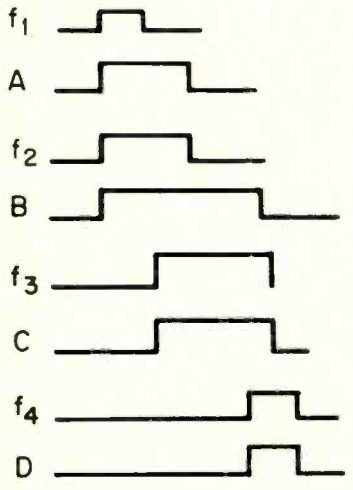
K'SON's Selective Addressing Method

The logic used to interlock the K'SON system for selective addressing is seen in the diagram and equations below:



$f_1 + A \cdot f_2 = A$
$f_2 \cdot A + B \cdot f_3 = B$
$f_3 \cdot B + C \cdot f_4 = C$
$f_4 \cdot C = D$

Assuming only two of the f_n inputs are present at any time, the sequence shown below leads to $f_4 \cdot C = D$.



If ten frequencies are available and assuming no two frequencies can be equal in a set of four, the number of legal sets available is:

$$\frac{10!}{(10-4)!} = 5040.$$

An alternative approach yielding the same result is to compute the number of possible sets without regard to order:

$$\frac{10!}{(10-6)!\ (6!)} = \frac{10 \cdot 9 \cdot 8 \cdot 7 \cdot 6!}{4 \cdot 3 \cdot 2 \cdot 6!} = 210$$

Then compute the number of possible orders within a set of four: $4 \cdot 3 \cdot 2 \cdot 1 = 24$; and this results in 210 sets each with 24 possible orders, or $210 \cdot 24 = 5040$. Re-examination of the earlier Boolean equation and logic timing diagram will show that only one order of a given set will yield D. Therefore each reordering of the same set of frequencies will yield a new and unique address.

Fringe benefits of this addressing technique include the difficulty of accidental addressing and the ease of transmitting additional information via pulse code modulation of f_4 once the address sequence has been completed. Also, blocks of units within the 5040 superset may be addressed simultaneously in several ways:

- All units with common $f_1 \cdot f_2 \cdot f_3$ and an uncommon f_4 (groups of seven).
- All units with common $f_1 \cdot f_2$ and uncommon $f_3 \cdot f_4$ (groups of 56).
- All units with common f sets, regardless of order (group of 24).
- All units with f sets common to five frequencies (groups of 120).
- All units with f sets common to six frequencies (groups of 360).

Other benefits: Individual units may be selectively addressed at 24-millisecond intervals; group addressing without regard to order may be accomplished at 8-millisecond intervals.

Finally, addressing sequences can be programmed and initiated in several ways: Inputs from magnetic tape, punched paper tape, disc, OCR and cassette tapes are easily conditioned to steer the address scanner unit. The input medium can usually be generated inexpensively on nearly any general-purpose computer or on a key-to-cassette transcriber.

switch on an oscillator which serves to interfere with the proper operation of the tuner, thus jamming the video signal output. A time-out circuit is provided to reset the oscillator after a predetermined interval—usually five minutes—to stop jamming activity. To jam continually, the address tone sequence must be retransmitted before time-out circuit stops jamming.

Sub-band or midband modulators

To prevent unauthorized viewing of selected program material, the material is sent on a signal not receivable except through the subscriber converter. Carrier signals in the sub- or midband frequencies are modulated with TV and interrogation control signals. If the subscriber has his converter on the appropriate setting, it will convert those sub- or midband signals to a VHF channel (Channel 6, usually). If the customer has ordered the program, no jamming signals will accompany the program material and the show will be viewable. If not ordered in advance, the program will be jammed by the converter.

Interrogation tone generators

The interrogation tones signalling a jam in the subscriber's converter are generated from the head-

end, a specific coded arrangement of tones for each subscriber. Each subscriber converter/transponder is equipped to respond to a different coded series. A single trunk cable using ten tones can carry addresses separately for up to 5040 individual subscriber converter/transponders.

Address selector units at the headend interrogation system control the release of a multiplicity of tones from the interrogation tone generator. The addressing units release the tones in prescribed order of time and frequency, the order being dependent on which subscribers are to receive the jamming code.

The addressing units are actuated by a standard computer program control tape or disc pack. The computer programs the order and frequency of jamming tones according to data from the marked IBM cards subscribers have mailed in earlier for computer processing.

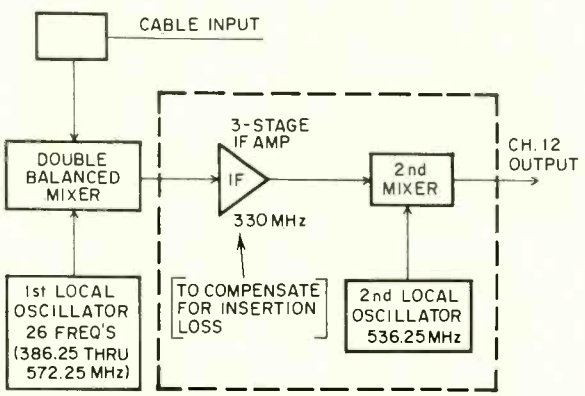
Two-way use available

For systems with two-way capability, the setup allows the operator to "poll" subscribers to ascertain which special program, if any, they are watching. The oscillator used for jamming the converter tuner is instead fed back on the CATV input line where it is transmitted back to the headend for correlation with the interrogation. Thus the headend interrogator can constantly monitor the position of the program selector switch on the subsciber's converter/transponder. **BM/E**

CATV Converter Design Eliminates In-Band Interference

Gamut 26 design details revealed as Oak Electro/Netics sets up mass production.

Gene Walding points to outstanding specs.



Block diagram of Gamut 26 converter which produces no interference signals. For more information, **circle 300.**

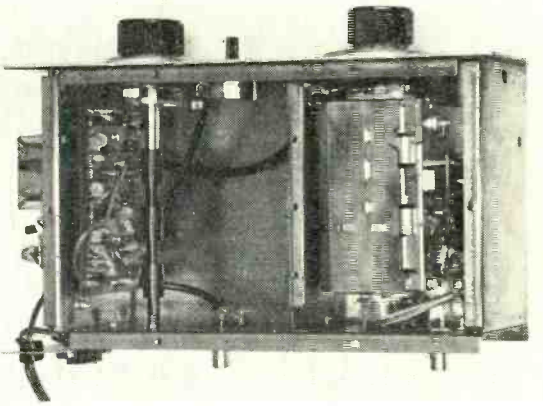
LAST FEBRUARY Oak Electro/Netics, Selectronics Division, announced an agreement with Sterling-Manhattan Cable Television Inc., giving O/E/N manufacturing and marketing rights to the Gamut 26—a 26-channel converter for cable television systems. Up until this time O/E/N had produced the Gamut 26 exclusively for Sterling, which holds the patents. Subsequently O/E/N has revealed to *CM/E* the design concept of the converter which boasts a number of features, the most important technical one being its local oscillator frequency which up-converts incoming signals into the 330 MHz range. Any beats are well out of any other TV channel's range.

Another design feature of the Gamut 26 is a vastly reduced number of available RF circuits. O/E/N says the Gamut 26 has 70% fewer contacts.

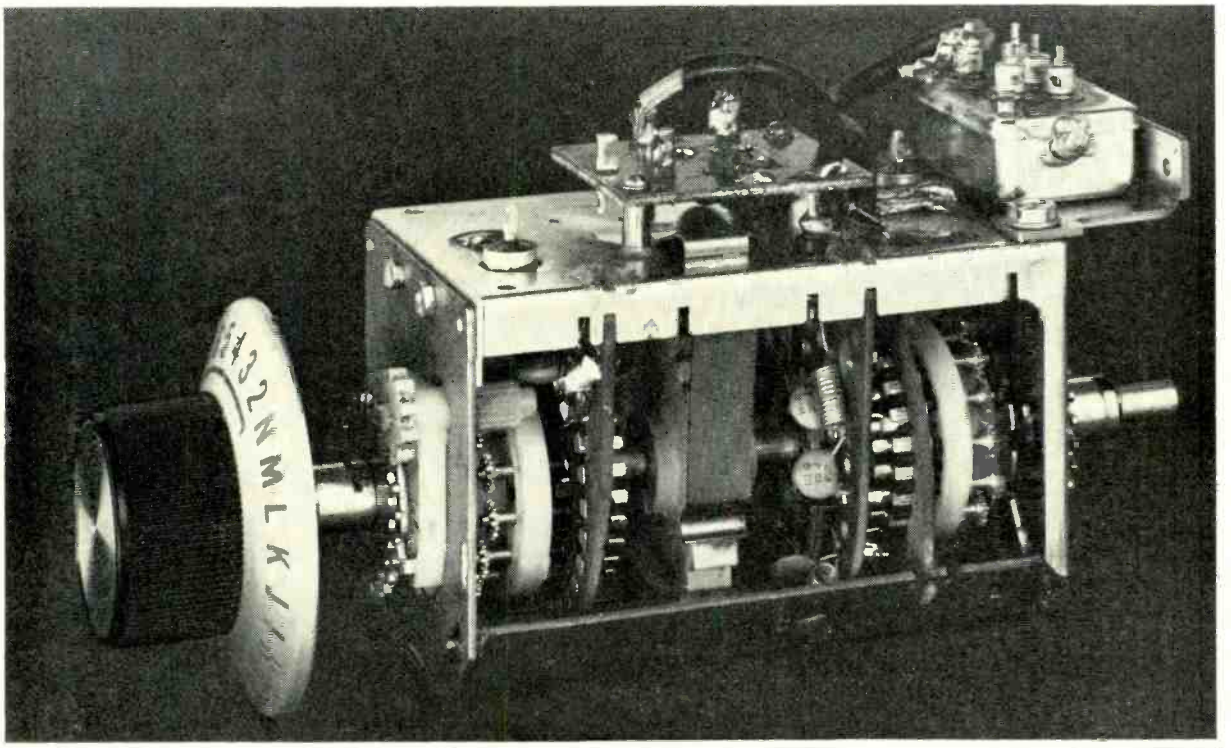
As a consequence of the local oscillator scheme (see diagram) all channels appear in an uninterrupted sequence on a single tuning dial—2 thru 13 and A (121.25 MHz video carrier) through N (241.25 MHz video carrier).

Earlier 25-channel-type tuners generally combined two existing tuners—one for channels 2-13, another for channels A through L. The need to use two tuning dials is a disadvantage—and interference problems may result from using conventional tuners with local oscillators operating within 44 MHz IF band.

Adjacent-channel or cross-modulation interference generated in the TV receiver are not visible with the use of the Gamut 26. The unit has a fine-tuning range of ± 0.75 kHz maximum for a 20° rise above ambient temperature. Field intensity isolation is spec'd as follows: In a field of one volt per meter, the output of the converter is 10 microvolts or less. **BM/E**



Inside views of the Gamut 26



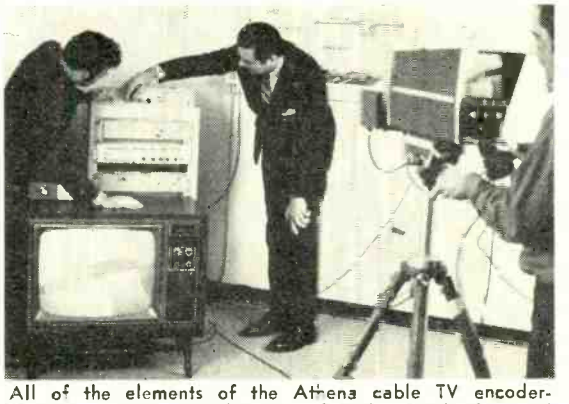
Cable TV Scrambler-Unscrambler Designed for Gamut 26

A low-cost system to scramble and unscramble cable TV programs has been recently announced by Athena Communications Corp. The unscramble (decoder) portion is a small printed circuit card which fits into the Gamut 26 converter and Oak will manufacture the decoder.

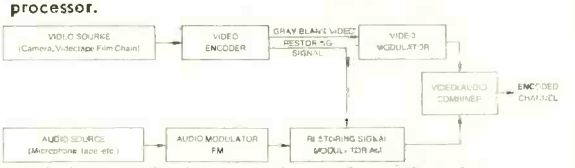
The Athena system consists of two devices. An encoder to scramble the audio and video signals, and the decoder as part of the Gamut 26 (which could also be constructed as an independent device).

The encoder uses a "gray-blank" encoding method. A switching circuit replaces the synchronizing and blanking pulses of the composite video picture and shifts the audio to a new audio carrier.

Athena (part of Gulf and Western) expects to market test the interest of cable subscribers in paying extra for additional programming of various types. About 10,000 will be involved in the Athena tests. The company will lease the encoder and sell decoders (add about $2-25 to the price of a Gamut 26) to other cable operators.



All of the elements of the Athena cable TV encoder-decoder system. Encoder precedes the headend signal processor.



Block diagram of Athena encoder. **Circle 301** for info.

NAB

Continued from page 29

pared to 20 or so required for shadow-mask tubes.

But visitors saw more than bright color pictures. Both the 650 and a new monochrome monitor from Tektronix, the 630 (either of which fits in a 19-in. rack), were designed to make measurements as well as display a picture. The high resolution and stable 630 included a preset control so that black and white levels would come in at one volt, sync pulses (either horizontal or vertical) that could be brought into the picture area, and a raster scan that could be cut 20%, permitting VIT signals to be seen as well as the picture.

The 650 color monitor was designed to show the effects of residual subcarrier (a shift of color during the vertical interval) and a NTSC specified display. Two signals can be differentially compared in either as a "pulse-cross" display or vertical-shift-only, or horizontal-shift-only mode to observe interval errors.

An automatic mode cuts a chroma channel in or out depending on the presence or absence of a signal burst.

The color monitor may have attracted initial crowds, but Tektronix had another goody to hold visitor attention. The new Model 147 NTSC Test Signal Generator includes the new Vertical Interval Reference Signal (VIR). The 147 permits full VITS testing while on the air without disturbing program material. Line segments which carry test signal are programmed digitally.

Full-field signals provided by the 147 are Sin^2 pulse and bar (with T, 2T, 14T or 20T pulses), a linearity waveform, multiburst (with many options), composite video, plus sync-, burst- or other waveforms. A wide spectrum noise source is also included.

Tektronix also showed the 146 NTCS Signal Generator to measure nonlinear distortion in video systems. Major signals included in this instrument are encoded color bars, modulated staircase, convergence cross hatch, staircase or

For more information:
Tektronix Trinitron monitor, circle 342.
Tektronix 147 NTSC generator, circle 343.
Rohde & Schwarz Videoskop, circle 344.
Rohde & Schwarz Delay Tester, circle 345.
Telemet 4501-A demodulator, circle 346.
Rank color monitor, circle 347.
World Video Trinitron color monitor, circle 348.
Conrac DZA monochrome, circle 349.

WBNS-TV found profits in color film, and Columbus discovered America.

"Thanks to the Kodak ME-4 process, our viewers are getting a more complete picture of what's happening around the country," says Ed Eakins, Promotion Manager for WBNS-TV in Columbus.

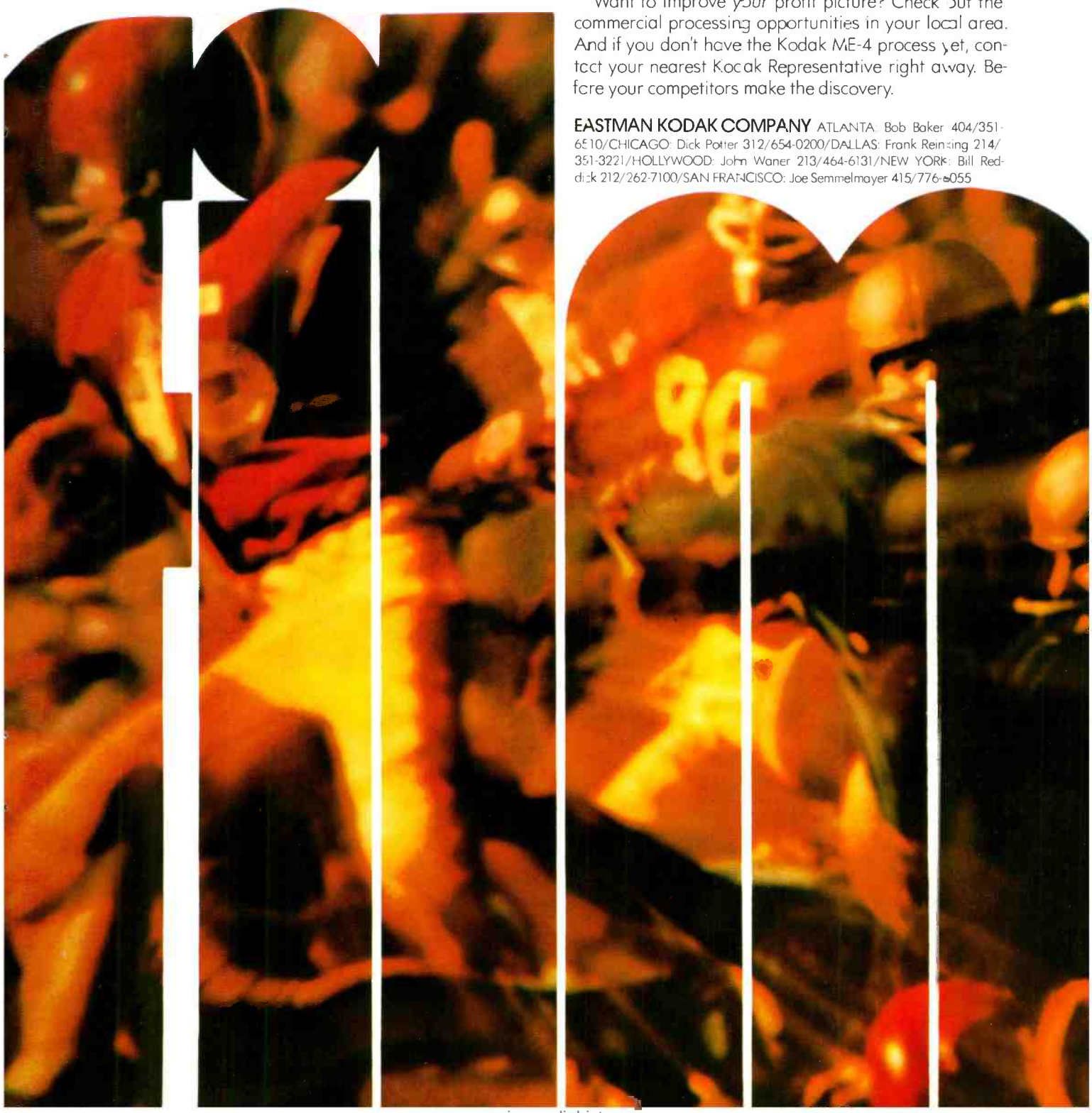
"We've increased our news and sports coverage to over one million feet of color film a year. And since we no longer depend on outside processing, our deadlines are more flexible. When a big story breaks we can film around the clock—updating our news for each broadcast.

"The actual switch to ME-4 processing was no problem at all. Thanks to the ease of operation and Kodak's packaged chemicals, we were getting first rate film quality right from the start.

"And once you have a color processor, the word gets around pretty fast. We're processing commercials for advertising agencies, industrial films for a nearby research institute and sports films for one of the State Universities. At the rate we're going, our outside business alone should pay for the investment!"

Want to improve *your* profit picture? Check out the commercial processing opportunities in your local area. And if you don't have the Kodak ME-4 process yet, contact your nearest Kodak Representative right away. Before your competitors make the discovery.

EASTMAN KODAK COMPANY ATLANTA: Bob Baker 404/351-6510/CHICAGO: Dick Potter 312/654-0200/DALLAS: Frank Reinsing 214/351-3221/HOLLYWOOD: John Waner 213/464-6131/NEW YORK: Bill Reddick 212/262-7100/SAN FRANCISCO: Joe Semmelmayer 415/776-6055



color bars on line 15-21, EIA color standard and EIA sync.

Over at the Rohde and Schwarz exhibit was a new instrument that could check out the TV system while it was on the air *without* a VITS. Called the Videoskop, Type SWOF III, the $9000 instrument is a combo videosweep generator, receiver, and display device. Through the use of narrow-band-pass filters, sensitive frequency vs. amplitude measurements can be made in the presence of sync pulses, spurious signals, etc. By feeding in test signals, video or RF measurements can be made. An adapter permits the analysis of vestigial sidebands. Other new R & S instruments seen included a Gain and Delay Test Set, Type SPAF, which in conjunction with 2T/20T pulses and bars permits direct reading measurements of envelope delay and amplitude distortion between luminance and chrominance subcarriers.

R & S also showed an improved version of its $6300 TV demodulator, Type AMF, and other instruments.

An inexpensive TV demodulator ($1300) was shown by Dynair. Telemet showed its 4501-A demodulator (priced at $3000) which gives both an accurate picture of the transmitted signal and envelope delay. Telemet's approach to test signals was modules. Nine different plug-ins, as part of the 3538-A1 test set, were displayed.

In addition to the new color monitors from Tektronix were those show by Rank and World Video. Rank's entry to the USA market was a 22-in. unit with active convergence circuits for independent registration and an "ergonomic layout of convergence controls"—what ever that may be.

World Video, the first company to introduce a Trinitron color monitor, was not upset by the entry from Tektronix. World Video offers inexpensive monitors in the $1300 range. Tektronix monitors, with built-in measurement features, cost $2500. W-V also sells compactness—the CB 6200 10-½ in.-high unit boasts a 12-in. rectangular tube. It can be rack mounted.

In the color monitor area Conrac displayed three monitors, all with identical truly-matched color. One of the three was a retrofitted job showing Conrac's modification program works. New products from Conrac included several solid-state monochrome monitors. The DZA (12 or 14 in.) includes dual inputs to make picture comparisons possible. Conrac's new solid-state line uses pc boards that are interchangeable from one model to the next.

Color monitor and test generators at the Tektronix booth.

World Video Trinitron monitor.

Test equipment from Rohde and Schwarz.

Color Correctors

No less than three new systems for automatic color correction of films were unveiled at the 1971 NAB. A system called Auto-Colorgrade was introduced by Rank thus adding one more correction system to the two—Ampex and CBS Labs—mentioned in the NAB preview in March *BM/E*, page 19.

The Rank Colorgrade equipment makes it possible to differentially balance both high and low light components of a film and to differentially vary the gamma for mid-tone correction.

The corrections deemed desirable are punched on a paper tape which is then run in synchronism with the film. The Colorgrade unit is $10,000 without the automatic feature and $15,000 with.

The Ampex ACC-1 program-

Continued on page 42

BROADCAST EQUIPMENT

Tape reproducer Model RR-200 can drive up to 10 slave recorders in duplicating system. Has speeds of 30/60 and 60/120 in/s, plug-in head assemblies for format selection; automatic tape tension control, master transport tape widths of ¼ to 1 in. Available in 4- and 8-track versions. $11,000. AMPEX. **261**

Compact amplifier is rated at 40 W rms per channel (stereo) into 4 ohms at .05% THD, 30 W into 8 ohms, IM less than 0.3% 10 mW-30 W, freq resp 20 Hz-20 kHz ± 1 dB, damping factor over 200, channel separation 80 dB minimum. $229. CROWN INTERNATIONAL. **262**

Microphones are omnidirectional dynamics with smooth response, light weight, high shock resistance, BK-14A (outdoor) and BK-16A (indoor) models have replaceable cartridges, come with swivel mount, 30-ft cable, connector. RCA. **264**

Compact sync generator weighs 3 lb, measures 1¾ in. high, 9 in. deep, 7½ in. wide. Conforms to EIA RS-170 requirements for 525-line scan, RS-343 for higher-rate scans. Has dual outputs of composite sync, composite blanking, vertical and horizontal drive. Controls: power, AFC fast/slow, line/crystal. $575. DAGE TV-VISUAL EDUCOM. **266**

Video/pulse distribution amplifier, Model TDA2-D/8 has differential input, eight video outputs, is compact and solid-state. **Sync generator,** Model TSG-502-LL is B&W model for broadcast, CATV, CCTV with switch selection of external 31.5 kHz, crystal, or line lock, or drive from TCS2 color standard. Produces composite sync, composite blanking, horizontal and vertical drive as required by EIA RS-170. INTERNATIONAL NUCLEAR. **270**

Portable VTR has capstan-servo electronic editing, automatic control of video and audio recording levels. Model AV-3650 helical uses EIAJ Type 1 format, permits roll-free assembly editing. Has audio-after-video recording capability, 300-line resolution, stop motion and variable slow motion playback. Provides one hour B&W recording. $995. SONY. **271**

For more information, circle boldfaced numbers on Reader Service Card.

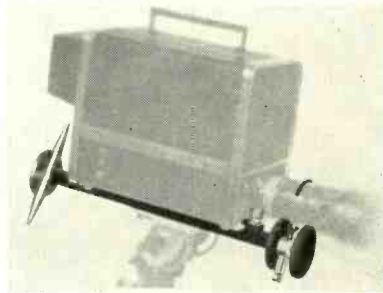
New and significant

Modulation monitor, Model AMR-1, for off-air AM signal, has two program audio outputs, operates at remote control point without RF amplifier. Ceramic ladder filter provides selectivity; 10-kHz notch filter can be switched into audio outputs to remove unwanted beat notes due to adjacent channel signal. Circuitry included for recovery of subaudible telemetry signal from AM carrier. $1095. MOSELEY. **275**

Lighting control memory system,

Q-File, uses computer techniques to allow one operator to activate many lighting cues through unlimited number of control channels. System controls up to four lighting cues simultaneously or in overlapping sequence, with manual override provision. Console surface under three square feet. KLIEGL. **276**

Zoom and focus control from rear, with attachment for CCTV



cameras (Panasonic or Sony models) which fits on to rear of camera, allowing control of zoom by rotating handle, of focus by turning knob. Maintenance free operation, attaches "in seconds." $99.95. D. E. CARLSON. **277**

Studio soft light provides 64 fc at ten ft from two 500 W lamps, fits into 24 × 16 × 4 in. case when folded, opens to 21 × 23 in. (7 in. deep) in under a minute;

7 lbs; $118 for folding unit less lamps, $32.50 for case. LOWEL-LIGHT. **278**

FM converter, MFC series for inclusion in CATV systems. Converter translates frequency of one FM signal to another frequency in the FM band. Device is solid-state, having two crystal-controlled LOs, 10.7-MHz output and output mixing circuit. Input/output impedance: 75 ohms. Bandwidth is 3 dB at 250 kHz. Image rejection is 50 dB. Input and output frequency specified by user: 26-channel selection. MUDEL ELECTRONICS. **281**

Alignment oscilloscope has 12-in. CRT, vertical sensitivity of 2 μV/cm. frequency response of dc-10 kHz ±3 dB. Horizontal sensitivity is 100 mV/cm, frequency response, dc-1 kHz ±3 dB. Single-trace Model 5121, $580; dual-trace Model 5122, $798. KIKUSUI. **292**

Oscilloscope is battery-powered with 35 MHz response, delayed sweep, and 6 × 10 cm display. Model 1701A is dual trace, draws 18 W from batteries, runs 6 hours on single charge. Also works on 117 or 235 Vac, and any dc source from 11.5-36 V. Each input has less than 10 ns risetime; inputs may be added or subtracted. Sweep times down to 10 ns/div (with X10 magnifier). $1850. HEWLETT-PACKARD. **294**

NAB

Continued from page 40

mer, as described in March, uses a solid-state memory system for storing up to 32 different correction factors that can be applied during a preview of the program

Both the Rank and Ampex approaches require previewing. The CBS Labs approach is an *on-line* system for automatic color correction. As an on-line technique, it is not limited to film or tape but can balance, for example, signals coming from different cameras operating under different lighting conditions. The Model 6000 corrector is put into the signal path after it is encoded for transmission. A sample of the signal is taken and decoded. Individual corrective adjustments are made to each color element of the sample and added linearly to the main signal path. The result is color-corrected control of the encoded signal. A built-in test signal generator provides an alignment signal for the automatic color balance adaptor.

Radio Automation

Automation systems for any kind of station (AM-FM-mono-stereo), any format (fast or slow, including heavy talk) and any budget ($3000 to $30,000 and up) were on exhibit at the 1971 NAB. No startling new concepts were unveiled; the emphasis was on flexibility not exclusiveness.

Schafer showed a large automation system feeding simultaneously an AM and FM station. Gates' fully-automated operating station (an AM transmitter operating into a dummy load) divided its time between three formats—contemporary, MOR, and C & W to demonstrate that you can get any "sound" you want.

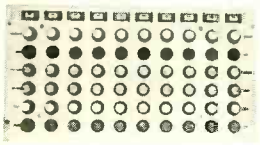
IGM showed a new real time switcher for its model 500 control system for smoothly joining the network or other remotes. One could join or leave a program up to six times an hour. Indicative of

For more information:

Schafer AM-FM automation, circle 350.
IGM 500 real time switcher, circle 351.
IGM temperature announcer, circle 352.
Systems Marketing programmer, circle 353.
Broadcast Products automation, circle 354.

Photograph courtesy of WNYS, Syracuse

Where are the cameramen?



They're quietly and calmly calling up six-function, pre-set shots with one finger from a remote location.

Try to picture, if you can, the ablest cameraman handling zoom, focus, iris, pan, tilt and camera height, shot-to-shot, simultaneously, with smooth transitions, perfectly paced. Whether it be a one-man newscast or a team of news, weather, sports and special events personnel, a variety of pre-set shots can be stored for precise programmed recall or random use. On-air adjustments may be made from the control or shot-setting panels or, at the flip of a switch on the camera, manual control may take over.

The typical shot-setting and control panels shown here provide for ten shots, each of which may be carefully planned and pre-set in rehearsal under the complete control of the production staff. The speed of the shot-to-shot transitions may be varied to suit the situation.

Visitors at the NAB Convention had the opportunity of seeing one of these systems operating from the General Electric Company's GE/BAC 100 Computer-Supervised Control Center.

We invite inquiries on both the standard Remote Control System and the Computer-Supervised System. The unlimited possibilities, not only in production but in the economic aspects of automated camera control will surprise you. We'll be glad to send you literature and technical material for the asking.

POWER-OPTICS, INC.

Germantown Pike & Trooper Road—P.O. Box 266
Fairview Village, Pa. 19409—215-539-5300—Telex 846429

103

Circle 122 on Reader Service Card

the flexibility now possible with automation systems, IGM showed a broader than ever array of taped programs including new C&W services. Also new from IGM was a fully automated temperature announcer—consisting of a control module and a temperature announcement cartridge, the former cues up latter at correct temp.

Both the simple and sophisticated were on display. In the latter category was a new digitally-programmed system from Systems Marketing Corp. (Sono-Mag) called the dp-1. The programmer was capable of taking 2048 instructions—more than enough capacity for 80 events per hour for 24 hours from 24 different programming sources.

Broadcast Products Company, Inc., showed the AR-1000 built around a modular concept for expansion. The basic system permits 48 events on a sequential basis plus 60 events per hour on a time basis to be stored. Up to 10 individual program sources can be handled. If you want full random access, Broadcast Products has a controller for that too.

Simpler equipment for smaller budgets was displayed by Tape-Athon and CCA—the latter termed its different systems mini- and midi-automation.

In the RCA exhibit area an 8-input console radio station was set up that could run alternately manually or automatically.

TV Automation/Switchers

Total automation in TV broadcasting was the major theme at GE and Sarkes Tarzian exhibits—GE essentially repeated last year's display showing how a production switcher could be automated and how these stored program data could be interfaced with a business computer. Sarkes Tarzian, which last year stressed a total system concept that could do everything (TASCOM), backed off slightly to show a less ambitious but here-now system, STARCOM. A remote computer terminal (complete with a cassette buffer memory) was functioning in the S-T booth to show how easily availabilities data could be obtained and how a daily program schedule could be constructed from contract data. Whereas TASCOM was real-time, STARCOM is time-shared. Cost per month for availability data, log preparation, automatic switching and automatic billing is about $2000.

Central Dynamics exhibited a new station automation approach designed around the APC-610 master control switcher and mini computer. System was designed to interface with sales, traffic and tech ops.

A brand new automatically controlled production switcher was announced by Vital Industries. The company says it's simple and economical and avoids mistakes and gimmickry found in earlier automated production switchers. Vital's system, called VIMAX-27, is easy to understand and use. Information is entered in a "Plain English" language and 27 up-coming events can be stored in a core memory. A CRT display terminal is used. The system is organized to be programmed by "exception" which means the most used functions are assumed to be normal and no coding for them is necessary. (Normal includes such actions as audio following the video source, and next event a cut or instant direct take.) Thus the entry effort is a bare minimum.

Grass Valley also entered the ranks of those making automated switchers and showed an extremely simple approach to the subject.

Non-automated production switchers were plentiful as in previous years. Generally what was on display was a custom unit already sold and waiting to be delivered to a station as soon as the convention closed. Visual, RCA and Ampex showed such custom production switchers. Heavy production capability units were also displayed by Ward and Central Dynamics.

Automation and Editing

If automation implies a computer memory at work, automation was the key to VTR editing aids at NAB. Editing devices were on display at the VTR manufacturers, Ampex and RCA. The latter has taken over Datronics' designs, built

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For more information:

Sarkes Tarzian STARCOM, circle **355.**
Central Dynamics APC-100, circle **356.**
Vital automated switcher, circle **357.**
Grass Valley automated switcher, circle **358.**
RCA production switcher, circle **359.**
Ampex production switcher, circle **360.**
Visual production switcher, circle **361.**
Ward Production switcher, circle **362.**
Central Dynamics switcher, circle **363.**
RCA tape editor, circle **364.**
Memorex CMX-6000 tape editor, circle **365.**
Central Dynamics PEC-102, circle **366.**

No hangups. No sloppy focus. No accidental changes. No bull.

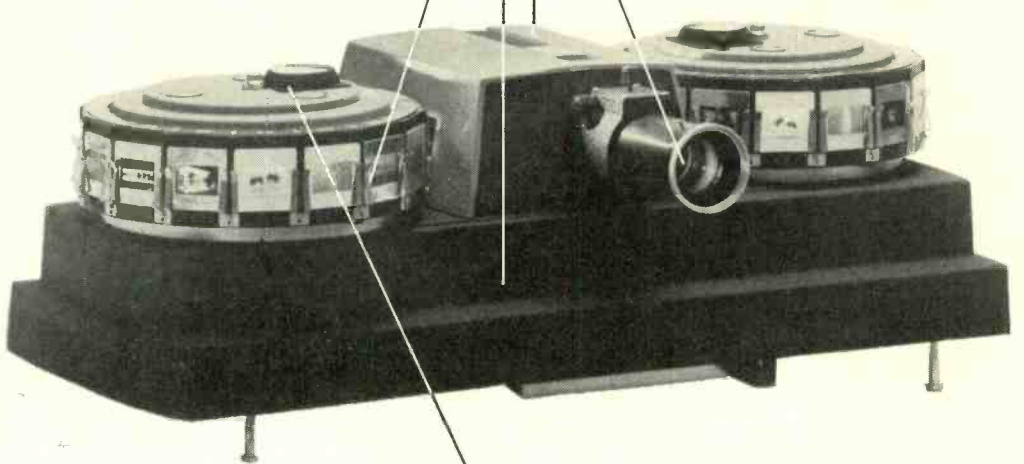
The thing you're looking at is the Spectrum 32 film chain slide projector. It's made for TV. Strictly.

1 The logic's all solid state. The optical, mechanical and electronic assemblies are modular. They can be unplugged and serviced without messing up the film chain alignment. All that makes your job a lot easier.

2 These things make it better. You have two channels. 16 slides each. The color, intensity and polarization of each is balanced perfectly. Automatically. There are soft preview lights so you can check all slides without spinning the magazine.

3 Each channel has only one mirror surface and it's set so it never needs adjustment. The magazines are so finely tuned there's no change in sharpness as you go from one slide to another. And if you need speed, they'll flip one to another in a second.

4 The lenses are all color corrected, coated and have a diaphragm and holder for neutral density or color correcting filters. You've got a choice of lenses including 7½" and 9" for multiplexing. Plus inverted 3" and 5" for direct projection onto a camera tube face.



5 Lamps have a low-glow Standby Mode. There's never a big surge current. You get longer lamp life. There's also a turbine blower for each lamp. And a blower system that cools every slide. And an air filter that keeps dust out of the works, slides and optics.

6 Warning: you have to pay a little bit less than you'd expect. You can't buy better. For all the specs ask your supplier, or contact Spindler & Sauppe, Inc., 1329 Grand Central Avenue, Glendale, California 91201. (213) 247-1610.

SPECTRUM 32 PROJECTOR Spindler & Sauppe

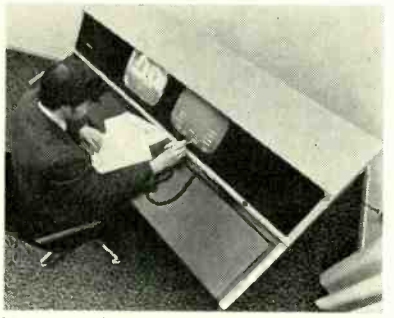
Circle 124 on Reader Service Card

around a time-code generator which produces a succession of digits showing hours, minutes, seconds, and frames. This digital info appears on the audio cut track and is stored in a Unit Programmer. During editing, the Unit Programmer matches tape playing time with cue information previously stored and at the same time controls transport functions in accordance with edit assignments.

Ampex's key editing device was the previously-shown RA-4000.

A brand new edit system, the CMX-6000, was on display in the Memorex exhibit. It was immodestly billed as "the most important development in television production since the advent of videotape itself."

The CMX permits editing from a random sequence to single frame. Later the CMX automatically assembles the final program. What's different? High speed and an intermediate transfer storage medium —disc packs. Good takes are transferred, automatically, into the direct-access disc system that simultaneously stores the picture and audio as well as frame code information. The edit console has dual monitors for simultaneously viewing entry and exit points. These edit points can be instantly selected and reviewed simply by pointing a light pen at the CRT display of the frame number. The light pen is the only tool the editor uses—no push buttons or levers need be operated.



CMX 600 that allows either video tape or film to be edited electronically using only a light pen to make a finished production. High speed minicomputers perform every tedious chore, remember editing decisions, and accomplish the assembly.

A unique variable speed system makes it possible to do precision cutting on audio, too. The editor can "jog" frame by frame a whole word or syllable at one-fifth the normal speed and still understand the word.

Each disc stores five minutes of material—up to 12 can be incorporated in the system to store 60 minutes.

The CMX is a joint development of CBS and Memorex. CBS predicts that the new editing system, which cuts post production costs and time, will cause producers to switch many prime-time television shows and commercials from film to videotape. Because of the post-production capability, single camera techniques and out-of-sequence shooting are possible.

Central Dynamics displayed a new videotape editor, the PEC-102. This unit features a computer controller and a time-code generator using the new SMPTE time code.

Continued on page 48

Ask these people how to process 16mm and 8mm Ektachrome film fast.

CBS NEWS
New York, New York
Washington, D. C.

TELEVISIONE ITALIANA
Rome, Italy

NHK-NIPPON HOSO KYOKAI
Tokyo, Japan

EASTMAN KODAK COMPANY
Rochester, New York

ABS-CBN
Manila, Philippines

WISH
Indianapolis, Indiana

WTVM
Columbus, Georgia

KHOU
Houston, Texas

KDTV
Dallas, Texas

KVII
Amarillo, Texas

KMOX
St. Louis, Missouri

KHVH
Honolulu, Hawaii

WFGA
Jacksonville, Florida

WETA
Washington, D. C.

WTTV
Indianapolis, Indiana

WRBL
Columbus, Georgia

KCST
San Diego, California

KXTV
Sacramento, California

WKY
Oklahoma City, Oklahoma

KTVT
Fort Worth, Texas

KRGV
Weslaco, Texas

WDAM
Hattiesburg, Mississippi

WDHN
Dothan, Alabama

WTVY
Dothan, Alabama

WINK
Ft. Meyers, Florida

KLFY
Lafayette, Louisiana

WAPT
Jackson, Mississippi

WJTV
Jackson, Mississippi

WSWO
Springfield, Ohio

WLVA
Lynchburg, Virginia

KNXT
Los Angeles, California

WNDU
South Bend, Indiana

WPRI
Providence, Rhode Island

WTVC
Chattanooga, Tennessee

KJAC
Port Arthur, Texas

WCTV
Tallahassee, Florida

KCBD
Lubbock, Texas

WEAU
Eau Claire, Wisconsin

WUSN
Charleston, South Carolina

WLUC
Marquette, Michigan

KFYR
Bismarck, North Dakota

WTOK
Meridian, Mississippi

KOSA
Odessa, Texas

WJAR
Providence, Rhode Island

WHTN
Huntington, West Virginia

WRDW
Augusta, Georgia

WNCT
Greenville, North Carolina

WDAY
Fargo, North Dakota

KARD
Wichita, Kansas

WANE
Fort Wayne, Indiana

WBRZ
Baton Rouge, Louisiana

KHAS
Hastings, Nebraska

KRBC
Abilene, Texas

KATV
Little Rock, Arkansas

WPTA
Fort Wayne, Indiana

KOTV
Tulsa, Oklahoma

KTUL
Tulsa, Oklahoma

KNTV
San Jose, California

KBMT
Beaumont, Texas

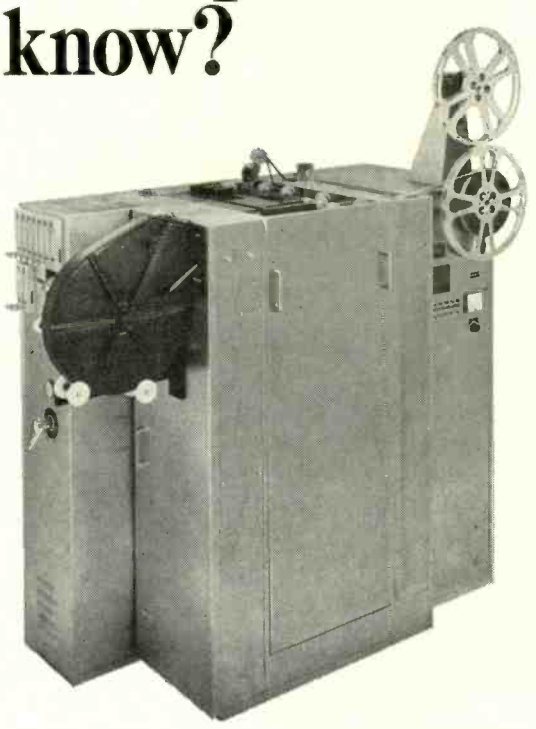
KARK
Little Rock, Arkansas

KALB
Alexandria, Louisiana

WSPA
Spartanburg, South Carolina

Do they know something about Jamieson's Mark IVA color processor you should know?

Jamieson's re-engineered low-cost Mark IVA 30 FPM color processor is the easiest of all machines to operate. It is fully instrumented. Automatically controlled. It has a warm-up time of just 10 minutes. A put-through time of just 23 minutes. And the Jamieson Mark IVA delivers processed film at a rate twice that of other machines of similar size.
Write us for complete information on the Mark IVA and our other processors.



EQUIPMENT DIVISION

JAMIESON FILM COMPANY

9171 KING ARTHUR DRIVE, DALLAS, TEXAS 75247 (214) 638-2660

Circle 127 on Reader Service Card

Audio

The new products making the biggest impact in the audio area were the cassette players—from Gates, International Tapetronics, Schafer International and RCA. Tapetronics had the most compact unit but both the Gates and RCA models were designed for rack mounting. Prices for the Gates unit started at $675—about half that of standard cartridge players. (However, as mentioned earlier, lower cost versions of cartridge players were shown by a number of exhibitors and a line of compact cartridge players were shown by almost every cartridge manufacturer.) Wow and flutter for the cassette transport by RCA was listed at "less than 0.2%" and speed (either 1⅞ ips or 3¾ ips) was rated at ± 0.4%. Schafer's rating of wow and flutter was the same.

Something new was shown in cartridge players. Television Equipment Associates displayed a solidly-made device from Australia called the Cuemaster. Tape deck and side panels were made from cast aluminum.

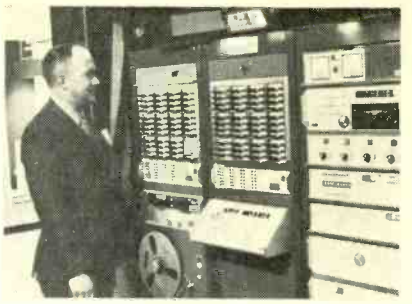
A new look in the cartridge itself was shown at the Systems Marketing Corp. booth. Tapex Corp. had on display there a unit with a built-in grip for easy insertion and removal. The unit did not include pressure pads—they are unnecessary in the Tapex design according to Tapex claims. Unit also incorporates a resilient material as a tension controller.

The Mincom Division of 3M showed a new ¼-inch two-track recorder/reproducer suited for the broadcast industry. Featuring 3M's "Isoloop" tape drive, the unit was priced at $3500.

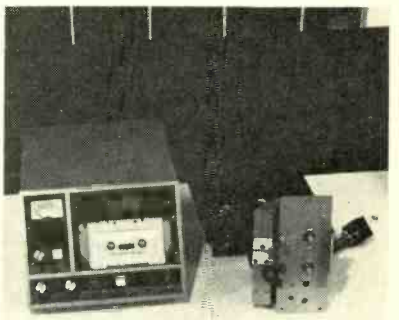
Gotham Audio Corp. showed an Audio Signal Delay System which incorporated a digital processing feature and no mechanical moving parts. The Delta-T model 101 provides to five separately controllable outputs from a single input, which are adjustable in 5 ms time-delay steps to a maximum of 320 ms without affecting S/N ratio or frequency response.

Fairchild Sound Equipment Corp. showed custom broadcast consoles, as did Visual Electronics. New audio consoles were shown by Collins, McCurdy, McMartin and others.

For more information:
Gates cassette player, circle **367.**
RCA cassette player, circle **368.**
International Tapetronics cassette player, circle **369.**
Schafer cassette player, circle **370.**
Cuemaster cartridge player, circle **371.**
Tapex cartridge, circle **372.**



IGM automation, Model 500, with temperature announcer.



Cassette player from International Tapetronics.

Gates cassette system in studio.

Visual Electronics displays custom console.

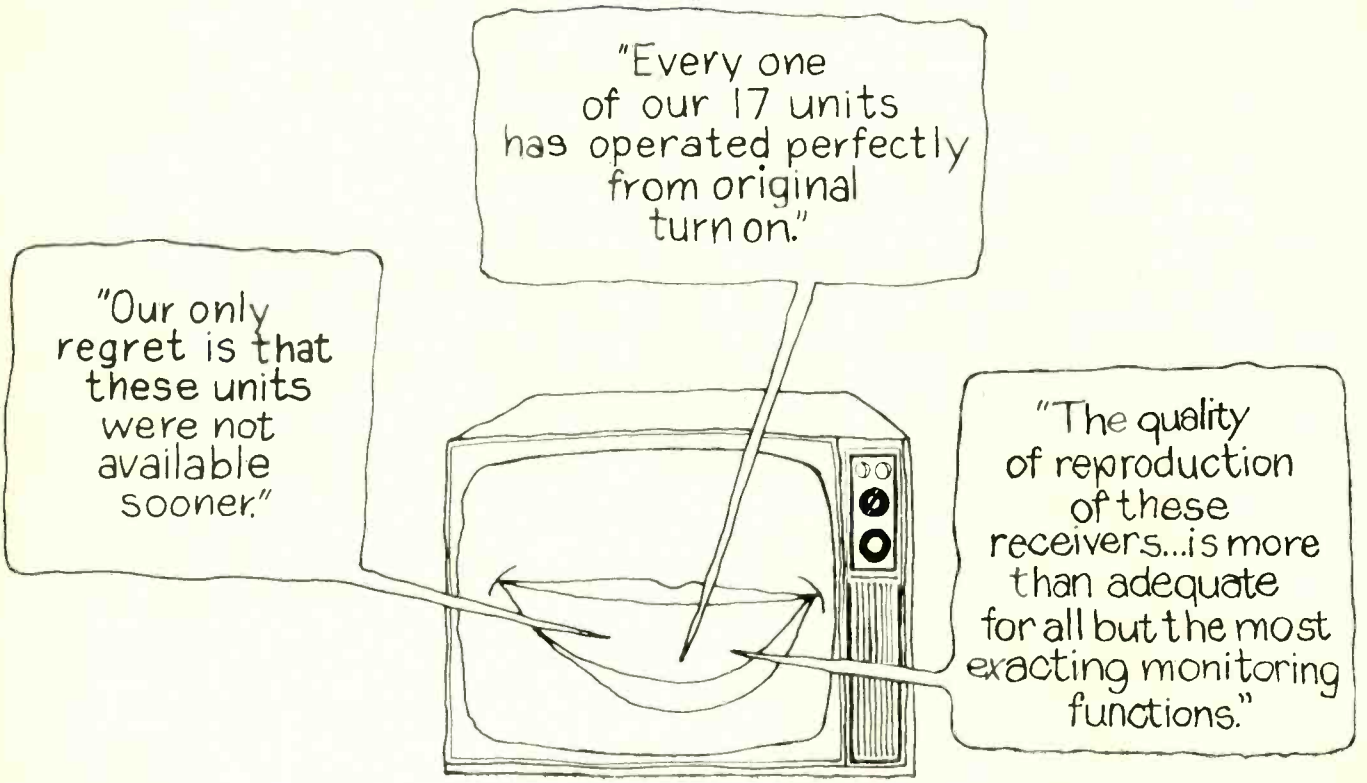
Character Generators

CBS showed a titling system that would generate a message in several different type fonts—they could be intermixed. Called Vidifont, the new system incorporates proportional spacing and color control is possible on a word-by-word basis.

Systems Resources Corp. (Chiron), perhaps better known as a supplier of Visual Electronics display equipment, was exhibiting on its own and showed a large variety of systems from low-cost to programmable fonts. Its Model

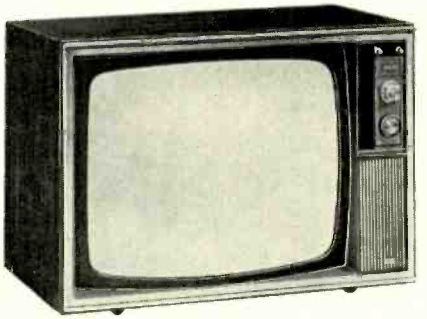
COLOR MONITORING FOR UNDER $400 ...AND THE QUALITY SPEAKS FOR ITSELF!

Listen to what Otto Claus, Chief Engineer, WBAL-TV, Baltimore, says about general purpose monitoring with RCA'S low-cost commercial color receiver:



Broadcast Engineers all over the country are raving about this special model. Unlike color sets intended for home use, this receiver is equipped to accept RF or bridged direct video and audio line feed without the need for costly adaptors. *For under $400,* you get every non-critical monitoring function you can ask for — picture, sound, live or tape, color or monochrome. It's especially suitable for monitoring needs back-stage, for the band, for the audience, and similar applications.

For complete details, send the coupon. We'll show you cold cash reasons why RCA's commercial color TV is your best answer.



RCA Commercial Products

Circle 128 on Reader Service Card

RCA Service Company S-143
A Division of RCA
Commercial Products Sales, Bldg. 203-3
Camden, N. J. 08101

Please furnish further information about RCA commercial color sets for broadcast monitoring purposes.

Name _____

Title _____

Station _____ Phone _____

Address _____

City _____

State _____ Zip _____

D-1500 was a totally self-contained, compact, low-cost keyboard/memory/generator system with roll-up and crawl modes. Priced at $4000 it would do most broadcast jobs.

TeleMation showed an updated version of its TCG-1425 which included a disc memory to store up to 1000 lines. A single line could be retrieved instantly.

What was billed as a Total Automatic Electronic Display system was shown by a new company, MSI Television, in the Listec exhibit area. Basically the unit offers local time and weather for CATV in color, but does it with a split screen presentation so that local messages and color slides can be shown simultaneously.

The unit incorporates the Sylvania flying-spot color slide scanner for clear color pictures, a local message keyboard and an audio tape cassette message storer.

Weather data include some 13 different readings of local conditions (highs and lows, wind peak gusts, etc.) using built-in memory and logic circuits. **BM/E**

CBS Labs' real-time character generator.

For more information:
CBS Vidifont, circle **373.**
Systems Resources Corp D-1500, circle **374.**
TeleMation TCG-1425 disc memory, circle **375.**
MSI Television CATV electronic display, circle **376.**

Chiron character generator—"word-by-word color."

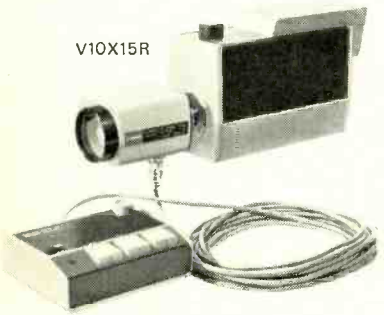
P17X30B2

We've got your lens!

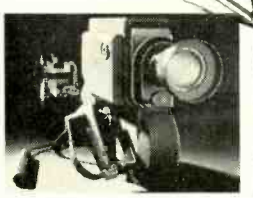
Broadcast or CCTV, manual or motor, 1" or 1¼" plumbicon or 1", ⅔" vidicon—Canon's almost sure to have just the size and performance you need, plus extra features you can't afford to pass up.

There are good reasons why the big names use Canon lenses when they build their cameras—and it's not just price or range. It's also to get the optimum in clear, sharp images for any TV need.

Check our new pride, for example: Canon TV Zoom Lens P17X30B2. Even with a zoom ratio of 17X, the relative aperture at maximum focal length is F2.5 (440-500mm). At 30-440mm it's an impressive F2.2.



V10X15R



Sound Scoopic 200

This lens is most suitable for telecasting in dim light conditions, providing ideal pictures for field events in huge open areas like race tracks and athletic fields.

Here are a few examples of the whole Canon line.

	Manual	Servorized/Motorized
1¼" plumbicon	P17X30B2 P10X20	P10X20B4
1" plumbicon	PV10X16 PV10X15B	
1" vidicon	V10X15 V6X16 V5X20 V4X25	V10X15R(DC) V6X16R(AC/DC) V4X25R (AC/DC, EE)
⅔" vidicon	J10X13 J6X13 J5X15 J4X12	

For 1" vidicon cameras, try the Canon fixed focal length lenses; they range from 100mm to 13mm.

Professional 16mm movie photography takes on a new simultaneous sound recording dimension with the Canon Sound Scoopic 200 (200 ft. film magazine).

CANON U.S.A., INC.: 64-10 Queens Blvd., Woodside, New York 11377, U.S.A. (Phone) 212-478-5600 **CANON OPTICS & BUSINESS MACHINES CO., INC.:** 3113 Wilshire Blvd., Los Angeles, California 90005, U.S.A. **CANON AMSTERDAM N.V.:** Gebouw 70, Schiphol Oost, Holland **CANON LATIN AMERICA, INC.:** Apartado 7022, Panama 5, Panama **CANON INC.:** 9-9, Ginza 5-chome, Chuo-ku, Tokyo 104, Japan

Canon

Circle 130 on Reader Service Card

FCC Rules

Continued from page 21

only a few problems exist? The Commission's answer is no:

> The assumption is not safe. The applicant should re-examine his efforts to determine whether his consultations have been designed to elicit sufficient information. Obviously, a brief or chance encounter will not provide adequate results. The person interviewed should be specifically advised of the purpose of the consultation. The applicant should note that many individuals, when consulting with broadcast applicants, either jump to the conclusion that the applicant is seeking programming preferences, or express community problems in terms of exposure or publicity for the particular group or groups with which they are affiliated. The applicant may properly note these comments, but should ask further questions designed to elicit more extensive responses as to community problems.

(7) Listing of problems

The December 1969 Primer was unclear as to whether *all* community problems ascertained had to be listed, or whether "significant" problems would suffice. The Commission has made it clear that *all ascertained community problems should be listed,* whether or not the broadcaster intends to include them in program fare; however, those comments that are clearly frivolous need not be listed.

Following the listing of all community problems, the applicant must evaluate all responses and decide which problems are the most significant—the problems that will be treated via proposed program fare. However, in listing the most significant problems and proposed programs to be broadcast in response thereto, the applicant must avoid overly broad descriptions. He must specifically show *what* broadcast matter is proposed to meet *what* problem:

> The applicant should give the description, and anticipated time segment, duration and frequency of broadcast of the program or program series, and the community problem or problems that are to be treated by it. One appropriate way would be to list the broadcast matter and, after it, the community problem or problems the broadcast matter is designed to meet. Statements such as "programs will be broadcast from time to time to meet community problems," or "news, talk and discussion programs will be used to meet community problems," are clearly insufficient. Applicants should note that they are expected to make a positive, diligent and continuing effort to meet community problems. Therefore, they are expected to modify their broadcast matter if warranted in light of changed community problems. If announcements are proposed, they should be identified with the community problem or problems they are designed to meet.

Conclusion

The Commission continues to place great emphasis on community-needs surveys. While this two-part series has closely examined the most pertinent provisions of the Commission's 1971 Primer, for specific survey problems, all broadcasters should consult their counsel. **BM/E**

This section, providing broad interpretation of FCC rules and policies, does not substitute for competent legal counsel. Legal advice on any given problem is predicated on the particular facts of each case. Therefore, when specific problems arise, you would be well advised to consult your own legal counsel.

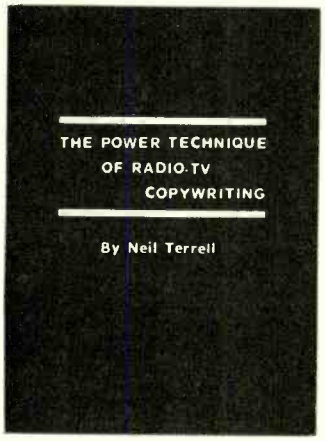
NEIL TERRELL'S WELL-KNOWN "POWER TECHNIQUE" FORMULA NOW AVAILABLE IN ONE HANDY GUIDE

SAVE $3.00 on this Special Prepub Offer!

THE POWER TECHNIQUE OF RADIO-TV COPYWRITING By Neil Terrell

A practical handbook for active copywriters, broadcast salesmen, and students who are aiming for a career in broadcasting.

A Brand-New Guide for Everyone Connected With Broadcast Sales



- BASED ON PROVEN SUCCESS FORMULA
- TECHNIQUES CAN BE APPLIED TO TV AS WELL AS RADIO
- MONEY-BACK GUARANTEE
- 224 Fact-Filled Pages
- Handsome Hardbound Volume
- ONLY $7.95 (if you order now)

Here's a brand-new fast-paced guide on how to write copy that moves and inspires consumers—copy that Sells. Written by one of broadcasting's most successful salesmen and instructors, the content covers basic advertising principles as they apply to broadcasting. You learn to recognize each client's prospects, then how to create copy that motivates those prospects, copy designed to move them to buy.

The author begins with an analysis of the copywriter's potential power to motivate people, whether the station serves a community of a few thousand or a metropolis. You learn how to understand the viewpoint and attitudes of people, why they buy a particular item or a specific brand. You'll understand the emotions that motivate masses to act in a certain predictable way.

By capitalizing on the author's six proven "Power Appeals", you'll soon be turning out copy that will excite the imagination—copy that will motivate your station's listeners or viewers into decisive action! The author explains how to recognize the correct motivating appeals for each product or advertiser category —how to create such an insatiable desire within the client's prospects that inaction would be unthinkable.

The importance of language in effective copy creation is thoroughly explained. The choice of appropriate words and phrases, as the author illustrates, enables you to aim your copy directly at the most likely prospects. Whether you need a 60-second or a shorter spot, you'll learn how to select the most effective words and combine them into a motivating sales message.

For almost every client there are several possible types of copy which can produce results. What you need, of course, is the one that will produce the **best** results. By analyzing the advertiser's business and his aims, you'll learn how to select the most effective type of copy. Using numerous practical examples, the author presents hypothetical clients' needs and, step-by-step, shows how to convert these needs into the needs of his prospects. You'll learn how to develop leads that will capture the attention of the advertiser's prospects, compel them to listen. Then, with the techniques recommended in this book, you'll build a desire—in fact, an overwhelming need—for your clients' products. In a relatively short time you'll become a real pro, capable of producing compelling sales copy, whether it be institutional or "bargain-day" style, straightforward promotions or hard-hitting sales messages.

Production copy—announcements using two or more voices and sound effects—receives appropriate attention. The basic approaches are illustrated by numerous examples, drawn from the files of some of the nation's most prolific innovative creators, including material developed by the author. There's a Copy Basics section covering major advertiser categories, listing the dominant prospect appeals, the key ideas in each case, and helpful words and phrases designed to aid you in producing copy with that "hypnotic" power to persuade. Also, the sample copy scattered throughout the text and in Chapter 13 shows "how it's done." The samples may be adapted, at least in part, to some of your clients' needs. There's no doubt, whether you're a beginner or a practiced copywriter, this book will help you to improve the convincing power of your copy. It's also an excellent reference manual for management. 224 pps. 13 Chapters plus Index. Hardbound.

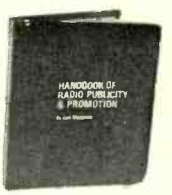
"The Power Technique of Radio-TV Copywriting" is published to sell at $9.95. But, if you order now, you save $2.00. The Special Prepublication Price of $7.95 prevails through May 30, 1971.

Order today at our risk for FREE Examination. SEND NO MONEY! Simply fill in and mail the handy NO-RISK coupon below to receive your own copy of this helpful volume.

CONTENTS

Other Helpful Books On Broadcasting For Every Station!

HOW TO SELL RADIO ADVERTISING
By Si Willing. Millions of words have been written about salesmanship, yet thousands of salesmen are still groping for the right formula. And therein lies the secret as Si Willing illustrates it by theory and, even more important, by practice. You'll hear all sorts of objections and how they've been successfully countered. You'll learn the approaches and the clinchers, how to use available sales tools to the best advantage, how to overcome fear and timidity, and how to deal with the competition. You'll learn ways to sidestep objections, how to recognize the "opportune moment," how to convert a "No" to a "Yes," and how to satisfy the prospective sponsor who has everything. If you want to improve your selling techniques and increase your sales, this book has what you need. 320 pps.
Order No. 511 ..... Hardbound $12.95



HANDBOOK OF RADIO PUBLICITY & PROMOTION
By Jack Macdonald. Absolutely the world's greatest radio promotion sourcebook! Here's the MUST book for stations who want to attract more listeners, boost ratings increase sales and profits. Contains 1500 on-air promotion themes adaptable to any format, just about all the sure-fire ideas a radio station might ever need. One idea alone can be worth many times the cost of this indispensable sourcebook. The comprehensive all-encompassing audience-building sections include contests, outside stunts, fun promotions, special station promotions, promotions for special days, weeks and months, station anniversary promotions, on-air themes, and personality promos. A GIANT 372-page handbook bound in handsome 3-ring binder.
Order No. 213 ..... Hardbound $29.95

PUBLISHER'S GUARANTEE
Put the information in these books to work for you for 10 days. If they don't prove to be worth several times their cost, return them and we'll cancel invoice.

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Used but Guaranteed Reusable.

Top Manufacturers IBM, Honeywell, Ampex, 3M, ½" x 2400' digital computer tape. 800 bpi, $3.50 ea.; ¾" x 2400' $4.50 ea. New Ampex ½" x 9200 Ft. Instrumentation Tape $15.00 ea., 10 for $25.00. Video Tape 2" x 3600 Ampex $15.00 ea. Certified Degaussed by Govt., 10 for $125.00.

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3	RCA TK31 camera chains,	ea.	4000.00
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1	TA9 stab amplifier	ea.	200.00
1	TS5A switcher	ea.	390.00
5	TM5A Master Monitors	ea.	300.00
2	TK20C Icon Cameras	ea.	200.00
12	580D power supplies plus other RCA equipment	ea.	50.00
1	General Electric master monitor	ea.	200.00
1	Sync generator	ea.	300.00
1	TV19B Video mixing amplifier	ea.	50.00
1	TV 51B sync mixing amplifier	ea.	50.00
2	TV 17B video DA and power supply	ea.	150.00
1	Zoomar lens, 10:1, 50mm-175mm	ea.	895.00
1	Eastman 275 movie projector	ea.	3000.00
1	Ampex VR1000B tape recorder with 3 Mark III heads	ea.	4500.00

Contact: Chief Engineer
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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.

Bell & Howell Jan 614DB 16mm sound projectors—finest made, excellent condition, $595.00. De-Vry Jan same as # above, excellent condition, $295.00, $150.00 list. Cameras, more will trade. Free list, S.K. Film Equipment Co., Inc., 6340 S.W. 62nd Terrace, Miami, Florida 33143.

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Ampex 300, 350, 352, 400, 450 users, for greater S/N ratio, replace first playback stage 12SJ7 with our plug-in transistor preamp. For specification write VIF INTERNATIONAL, PO Box 1555, Mtn. View, Ca. 94040.

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EQUIPMENT WANTED

WANTED—A one thousand watt transmitter. Contact Louis Ripa, KNBA Radio, 3267 Sonoma Blvd., Vallejo, Cal. 94590, (707) 644-8944.

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Automation broadcasters! Custom programing for high speed multiple duplicator prices! Or looking for specialized libraries like "Country Gentleman Instrumentals"? CnB Studios, 3415 Beresford Ave; Belmont, Cal. 94002.

Command Comedy . . . The "best" deejay comedy collection available anywhere! You must agree -or- your money back! Volume #1 — $7.50. Command, Box 26348-A, San Francisco 94126.

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MISCELLANEOUS FOR SALE

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American Institute of Radio, by encouraging students to attend both day & night classes can guarantee you a First Class License in 2½ to 3½ weeks. New classes start every Monday. Housing can be arranged for $12-15 per week. Total tuition $330, 2622 Old Lebanon Rd., Nashville, Tenn. 37214, 615-889-0469 or 889-2480.

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535-6614

Yoshi Yamamoto

FROM THE EDITOR

New Look in Broadcast Equipment

The functional—as well as the deluxe—is today's new look in broadcast equipment. The contrast is readily apparent in two different Philips Norelco cameras, the LDH and the PC-100A. The LDH has less style than a Volkswagon bus—it's a couple of functional blocks assembled to deliver good pictures economically. The PC-100A, on the other hand, has style and almost everything else you might want in a camera. For the same dollars you can have several LDHs or one PC-100A.

The broadcaster of the seventies is going to think out carefully, before he buys, what it is that he wants to do with his equipment. He may decide, for example, that it's better to own a pair of ponies and run two races at local fairgrounds for show than it is to have the finest-bred race horse in the country and shoot only for a Kentucky Derby.

It's all how you figure the handicaps. Or, to drop this analogy before it becomes too abstract, how you figure the trade-offs. It's not necessarily a simple issue of economy versus first class or choice grade versus prime quality. It's one of dollar consciousness in relation to the job to be done.

For example, introduced at this year's NAB show was one of the finest and most flexible camera lenses ever developed, the Angeneiux 15X18E. It was also the most expensive. But if you wanted to excel at sports telecasting you might find the short and long focal lengths and easy range extender features just what you want to be best. If you are doing studio work you may determine that the flexible features of this lens on a single camera alone, in combination with new tape editing equipment, will permit lower cost production of commercials than would multiple cameras with more conventional lenses. With the flexible lens you need only one camera—you simply quickly shoot all scenes for any given camera angle out of sequence, move the camera and repeat. Camera time is a minimum, and with modern editing techniques total production time is less. In this case the most expensive product is a time and dollar saver.

In other situations, an economy model is the best approach. If you are a small-market radio station you may, in the past, not have been able to afford the tape cartridge equipment you would have liked to own. This year you can find economy-priced cartridge players at about a third less or, more significantly, you can buy cassette players for about half less. You sacrifice some playing quality, but you may improve your overall over-the-air sound with an equipment set-up that you could heretofore not afford.

The principal danger in the move to economy is lower quality. Fortunately the industry has already set some standards that aim towards excellence. As long as we keep these standards in mind and avoid sacrificing signal-to-noise and distortion we are on safe grounds. We can compromise on technical excellence and fidelity goals if we are able to say honestly, albeit subjectively, that we are doing better programming than before. Today's equipment offers you a choice.

James A. Lippke,
Editor

What cost-effective equipment purchases have you made recently? Share them with us—$25 paid for every case history published; $50 for the first five to arrive!

PRODUCT INDEX

A quick reference to products mentioned editorially or in advertisements. Page number is listed first (light face type) followed by reader service number (bold face.)

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3/101 **Automated control system**/IGM
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8/104 **Control equipment**/Belar
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CATV (See also: Components, Wire & Cable)
*Appears in CM/E (CATV supplement) only

*12/153 **Pay-CATV system**/K'SON
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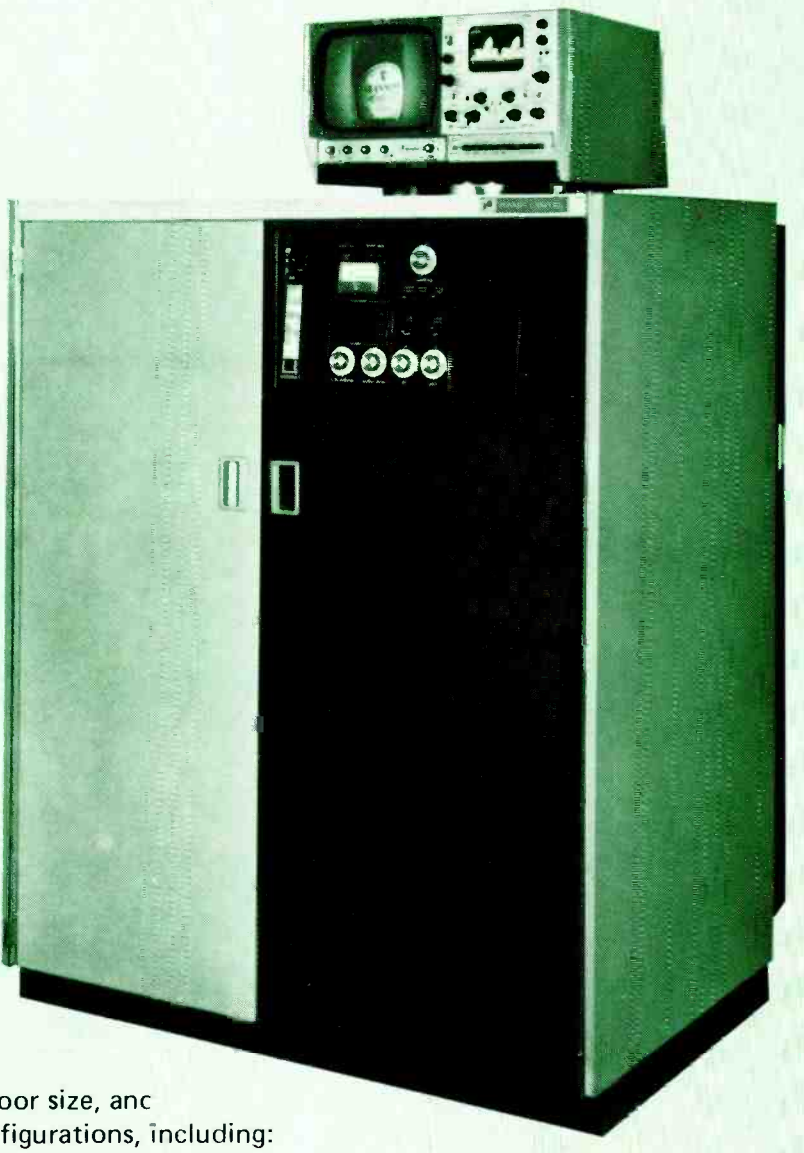

The RANK CINTEL 3 tube photoconductive telecine offers the most advanced concepts in upgrading film-originated broadcast. It is compact, only 78 x 30 inches floor size, anc available in a variety of optional configurations, including:

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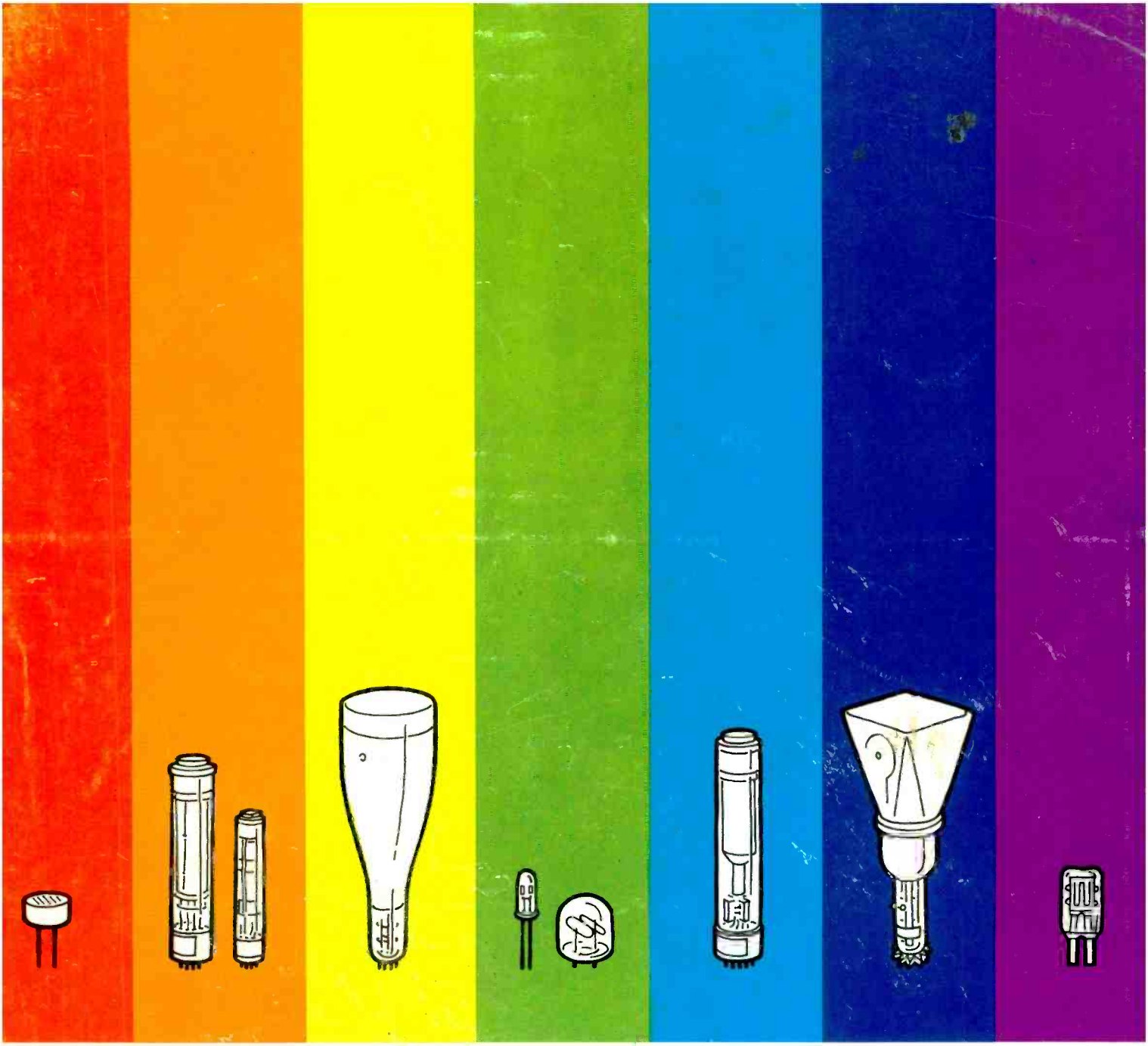

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Yes — there's more to come... new state-of-the-art devices that will broaden the Spectrum for the world's top systems designers and end-users. Meanwhile, continue to contact us, by mail and by 'phone, to discuss your specific needs, including applications engineering help, where needed. Electro-Optical Devices Division, Amperex Electronic Corp. Slatersville, Rhode Island 02876. Telephone: 401-762-3800

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