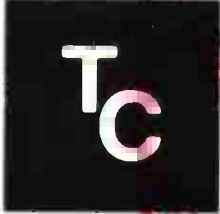


APRIL 1976

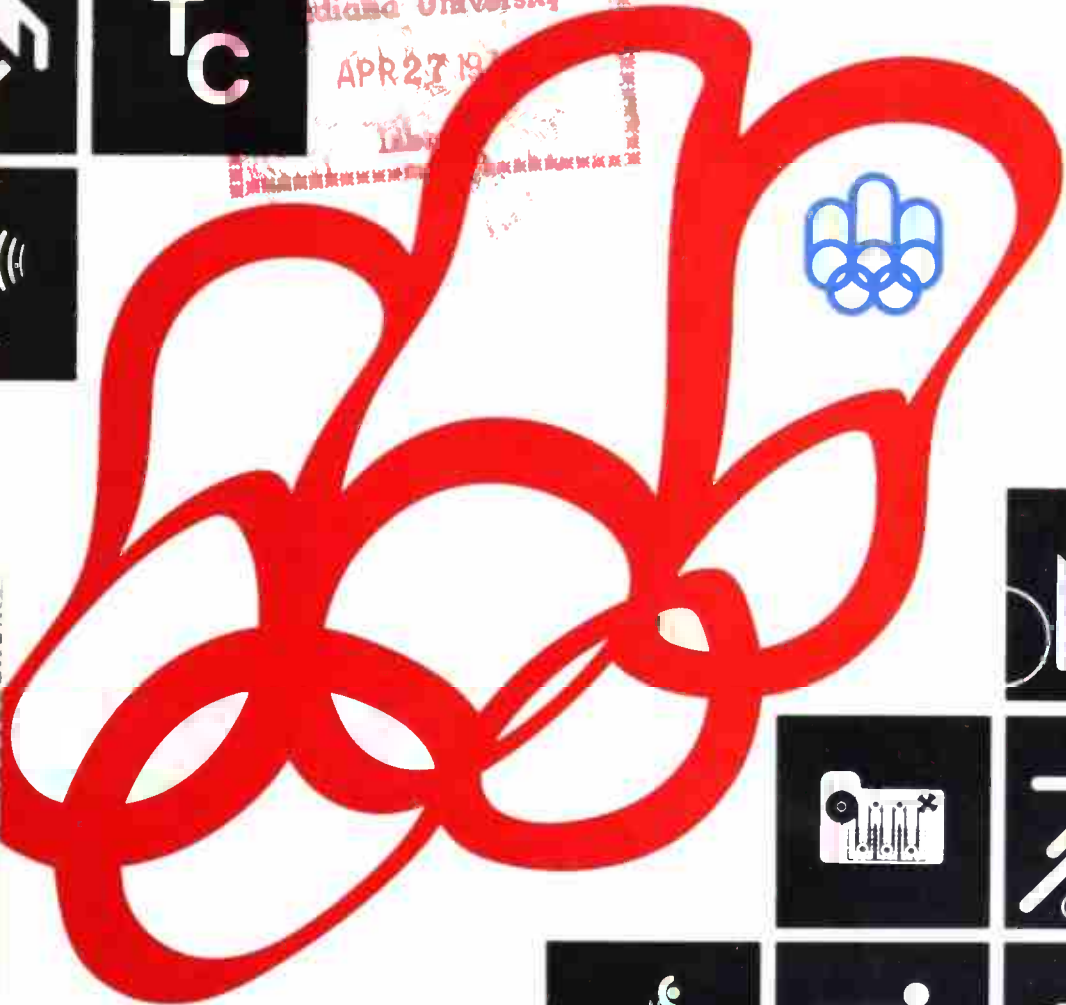
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BROADCAST MANAGEMENT/ENGINEERING

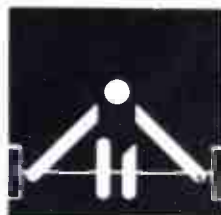
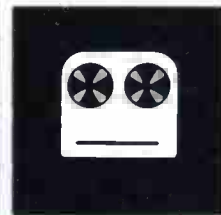
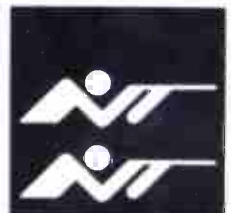
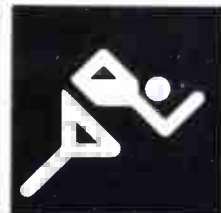
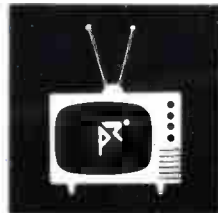


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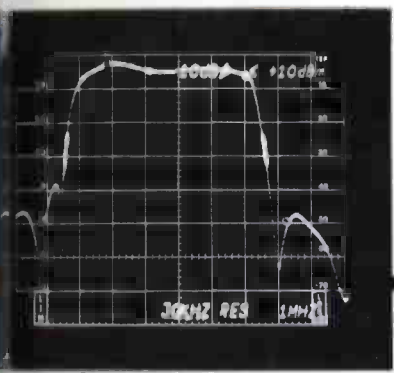
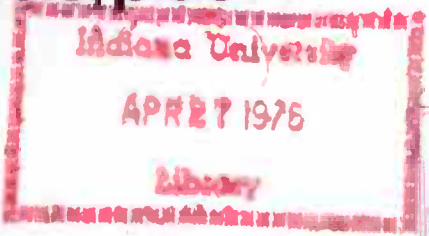
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New 1405 TV Sideband Adapter is an adapter to be used with 7L12 or 13 to analyze the re-

sponse of a TV transmitter. The 1405 generates a composite video signal, the picture portion of which is a constant amplitude sine wave signal that sweeps from 15-0-15 MHz. When this signal is used to modulate the TV transmitter, the sideband response of the transmitter will be displayed on the spectrum analyzer. The 1405/spectrum analyzer combination can be used to display the frequency response characteristics of rf and if stages of any vhf or uhf transmitter used today in the world. Video circuits from 0 to 15 MHz can also be analyzed.

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BM/E

BROADCAST MANAGEMENT/ENGINEERING



This month's cover was inspired by the smart graphics associated with the Montreal Olympics. Gus Sauter has intermixed the international symbols depicting athletic events and broadcasting around the Montreal-Olympic logo—in abstract form as it looks on a fluttering Olympic flag.

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APRIL 1976/VOLUME 12/NUMBER 4

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All radio network rules are up for first major FCC review in 30 years; Getting ready for the summer Olympics.

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Program Log Requirements

29 Ready To Broadcast To An Audience Of One Billion—ORTO And Nine "Unilateral" Broadcasters

Broadcasting the Olympics is truly an Olympian effort, but ORTO (Olympics Radio and Television Organization), a division of the Canadian Broadcasting Corp., has pulled together a large staff and the newest in equipment to handle the job.

44 "All-News Radio"—It's Great For Some Markets, If You Do It Right

Largely as a result of the opening of NBC's News and Information Service last summer, more than 70 AM and FM stations have gone over to all-news in the last half year, and nearly all of them are very glad, so far, that they did it.

51 The KTVY News Crew: Experts At Stimulating Local Interest

You've read about the achievements of this Oklahoma City news operation in recent Kodak Ads. There's more to the story than how film is used successfully.

56 Announcing The 1975 Great Idea Contest Winners And The Start Of The 1976 Great Idea Contest

BM/E is proud to announce the three grand prize winners and runners up of our 1975 contest. Also, this issue heralds the start of our 1976 contest with five new ideas for our readers to use and vote on.

67 Broadcast Equipment

New and significant products.

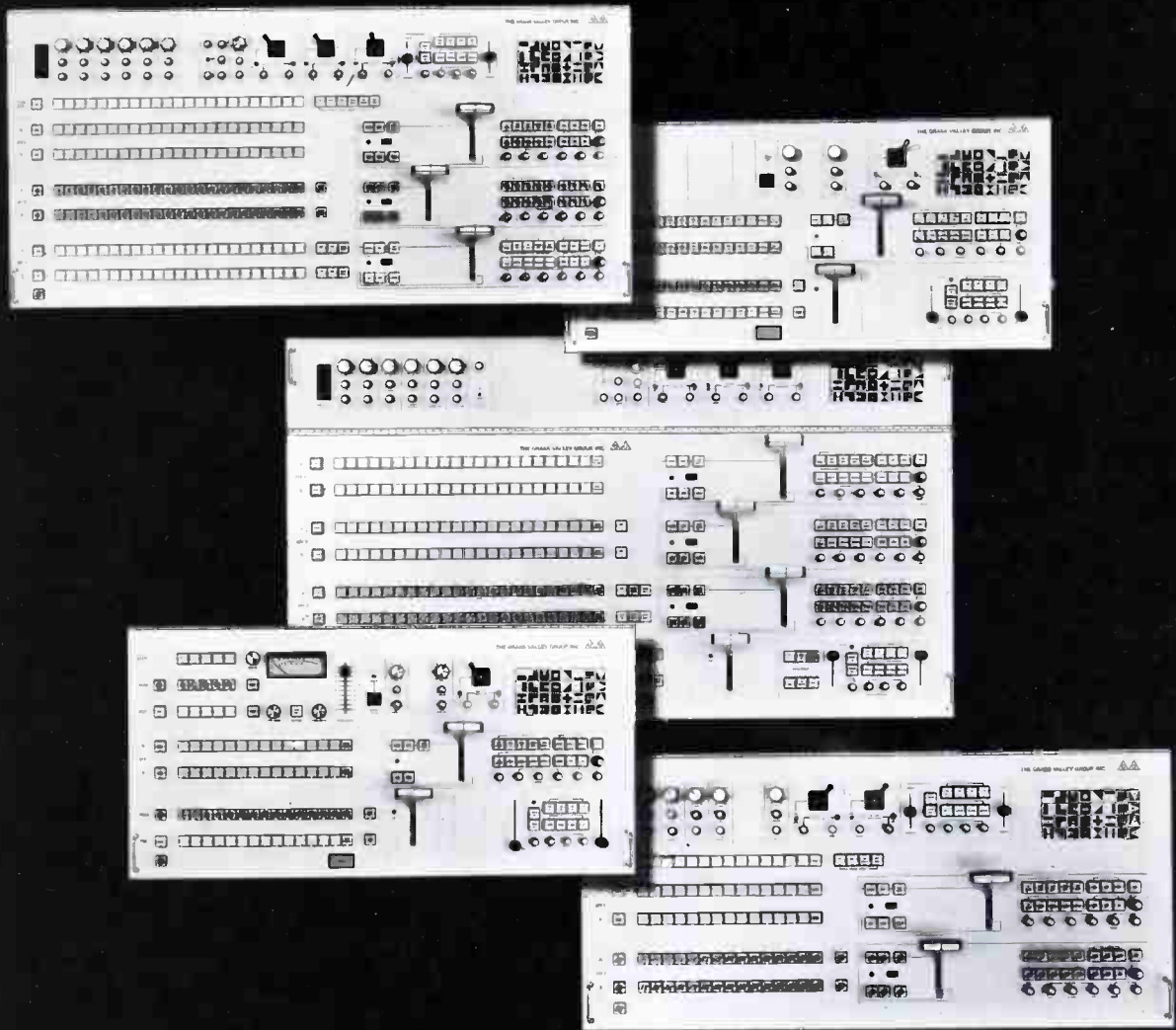
72 New Literature

Useful reading materials.

Coming Next Month: BM/E's Annual NAB Show-In-Print Issue

BPA BM/E, BROADCAST MANAGEMENT/ENGINEERING, is published monthly by Broadband Information Services, Inc. All notices pertaining to undeliverable mail or subscriptions should be addressed to 295 Madison Ave., New York, N.Y. 10017. BM/E is circulated without charge to those responsible for station operation and for specifying and authorizing the purchase of equipment used in broadcast facilities. These facilities include AM, FM, and TV broadcast stations; CATV systems; ETV stations; networks and studios; audio and video recording studios, consultants, etc. Subscription prices to others: \$15.00 one year, \$25.00 two years. Foreign: \$20.00 one year, \$35.00 two years. Foreign Air Mail: additional \$24.00. Copyright © 1976 by Broadband Information Services, Inc., New York City. Controlled circulation postage paid at East Stroudsburg, PA.

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BROADCAST INDUSTRY NEWS

All Radio Network Rules Are Up For First Major FCC Review In 30 Years

What is a "network"? What restrictions should be imposed on its operations, if any? What rights should be given individual stations as against the network?

These are just a few of the gut questions on radio networking the Federal Communications Commission tossed the industry on February 19th for a total going over, opening what it called "the first in-depth examination of this area in more than 30 years."

The announcement made clear that the inquiry and rule-making would examine radio networking rules from the point of view of every major interest involved, including primarily, of course, the public interest, but also those of the networks and of the individual stations. Heavy emphasis would be on careful consideration of every one of the present network rules, including those intended to bar network dominance over individual stations, and those aimed at insuring program diversity in areas served by the networks. Is each of these rules needed? asked the FCC. If not, what, if any-

thing, should take its place?

Going beyond the present network regulations, the FCC asked for comment on a wide range of other related matters, including how to define a network, or whether, to regulate such operations as the AP Radio and UP Audio services, the new NBC News and Information Services, the Public Service nets, ad hoc "occasional" nets, and many others of similar character.

Independent ENG Companies Emerging

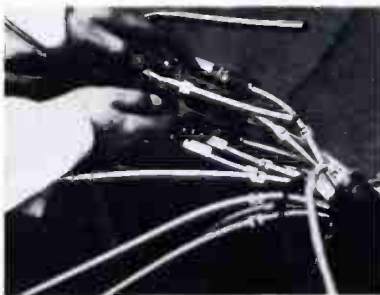
Besides bringing about a revolution in the type of equipment used by broadcasters, the development of ENG has led to another idea, companies that specialize in ENG production. One such company, Rebow Associates of New York City, produces a news service for Time-Life (see BM/E January 1976, pg. 72).

Creative Video Associates, Inc., has recently been formed by William Carlquist, Douglas Donald, and Robert Minges to provide low cost portable videotape facilities and production. The company also provides specialized video services for industry, education, CATV, sports, legal depositions, and insurance purposes. The firm is located at 4421 Riverside Drive, Suite 20, Burbank, CA 91505; 213-841-3020.

The firm of Blue Field Kennedy of the East Coast can now provide complete ENG production services for its clients. One of their first ventures was a series of videocassette TV commercials featuring Source Securities Corp., Wall Street area brokerage firm in which they provided production services. More recently, Blue Field Kennedy produced a pair of commercials for the South Carolina Arts Council. The two commercials, one 30-second and one 22-seconds, feature guest lecturer Charlotte Zwerin (co-director of "Gimme Shelter") in her own studio. Using a Sony VO 3800 videocassette recorder and a DXC 1600 Sony Ticon camera with a Canon f/1.6 lens, the commercials were shot and ready for airing in one day and have been submitted as original cassettes to stations that are equipped for ENG. BI

continued on page

Getting Ready For The Summer Olympics



The Montreal Olympics is a monumental undertaking anyway you look at it. To accommodate the over 8000 athletes participating, the Canadians have already built an Olympic Village housing complex. Under construction, still, is an Olympic Park consisting of the stadium (picture, above, taken Feb. 9), velodrome, and pool. TV plans are detailed in a special report beginning page 29. Serving broadcasters underground is a net of 2.4 million feet of coaxial tubes—including a new LD-4 system—and 33 miles of large diameter telephone cable (including 13135 KHz circuits for programs and 4262 for phone).

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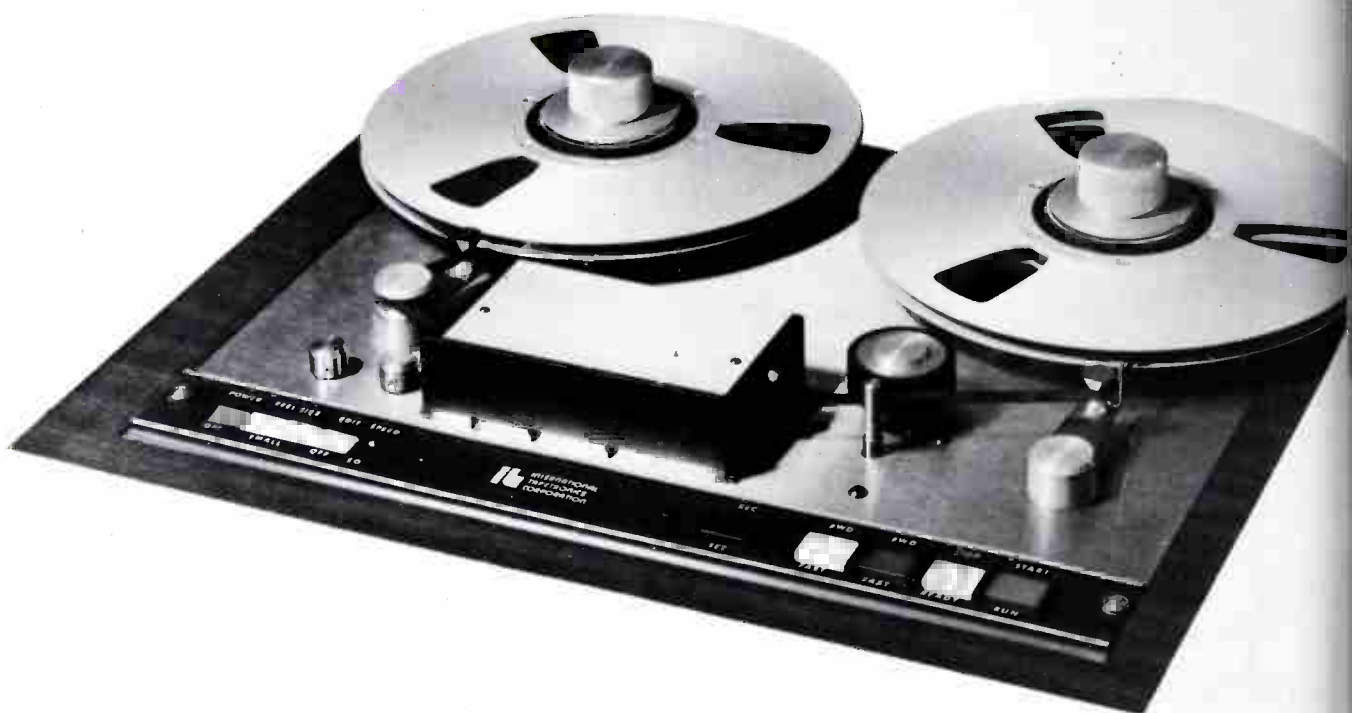
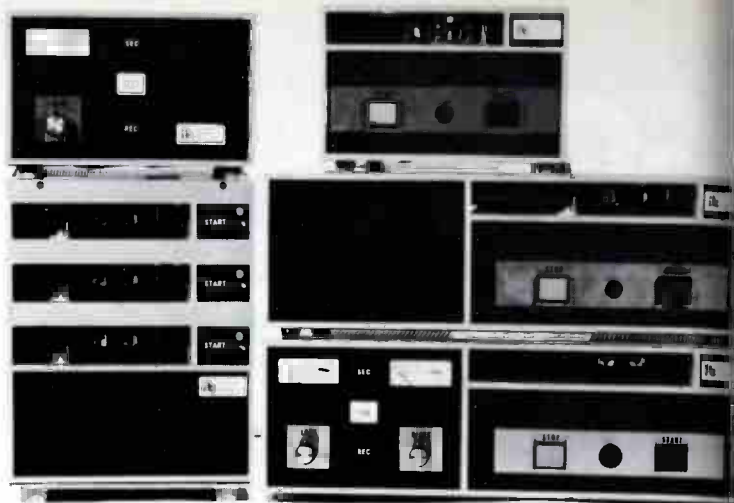
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d Kennedy is located at 220 W. d St., N.Y., NY 10023; 212-724-6.

-76 In Use At NBC NY

C-TV made its first field use of the RCA TK-76 electronic news era in mid-February, taping a news ure at Sheepshead Bay in New York broadcasting the segment locally ng an early evening news show. news crew took the 19-lb. camera



he Brooklyn docks for an interview h fisherman about the proposed 21-mile offshore limit to protect U.S. stal fisheries. While TK-76 cameras he undergone extensive field tests in rparation for delivery to customers, e NBC-TV field trials marked the first e the new camera's pictures have en aired during a regular broadcast.

NAB Proposes "Softer" Cable Copyright Plan

The National Association of Broad- casters early in March circulated to mbers of Congress what it called a "compromise" plan for cable copy- right rules, embodying a retreat from NAB's earlier "hard line" on the sub- ject. The new proposal, aimed pri- marily at influencing the House of Rep- resentatives in its current deliberations copyright, and through them the rms of the Senate bill recently passed, ludes a compulsory license, with no fee, for all local signals; a compulsory ense, with no fee, for all distant gnals for cable systems taking in \$5,000 or less per quarter; and no li- ense, but "normal" copyright li- ability, for distant signals carried by the n-exempt cable systems. The House said to be trying to pass a copyright ll this session; hopefully the very long layed Congressional action on cable pyright could be completed early this ar.

Zenith Debuts New Color Picture Tube

color picture tube with new glass sign for lower costs, a new slot-type erture mask, a high-resolution

electron gun, much smaller spot size, a hybrid deflection yoke, and reduced depth (2½-in. less than current 19-in. tubes, for example) got its first public showing by Zenith Radio Corp., the developer and manufacturer, early in March. Zenith says the new tube, the result of a four-year research effort, will go into a part of their 19-in. production this year, and will be extended in later stages to other parts of their color TV line.

In addition to improved per- formance, greater ease and lower cost of manufacture were main objectives,

according to Zenith. These are pro- vided by, among other innovations, a self-supporting mask needing no mask frame; a "skirtless" faceplate panel; and a new glass formula. Zenith worked jointly with Corning Glass in developing the tube. It will be licensed to other manufacturers later on.

NRBA Offering "Drive With FM '76"

The National Radio Broadcasters As- sociation has announced that it is once continued on page 10

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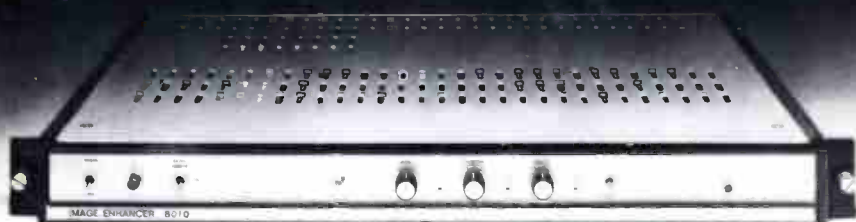
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NEWS

again distributing their "Drive With FM" jingles. This year NRBA is offering "Drive With FM '76" to members free of charge, a fee of \$15.00 to non-members.

The NRBA commissioned Paul Sound, of San Francisco, to record different jingles to appeal to all types of FM listeners and to fit any format.

NAB Petitions FCC—Stop "Dilution" Of Cable Regs

Over 160 U.S. broadcasters have petitioned the FCC to halt and reverse the "dilution" of its cable rules to "prevent further damage to free broadcasting and to the millions of Americans it serves." The delegation of radio and TV broadcasters from 28 states and the District of Columbia, who represent half of the commercial TV stations in the country, signed a brief "Declaration of Purpose" expressing concern over the "continuing and damaging dilution" of the FCC's own rules for regulating the cable industry.

RCA Acquires All-Solid-State Am Transmitter Design

RCA Broadcast Systems recently announced that it has acquired from Westinghouse Electric Corp. on a non-exclusive



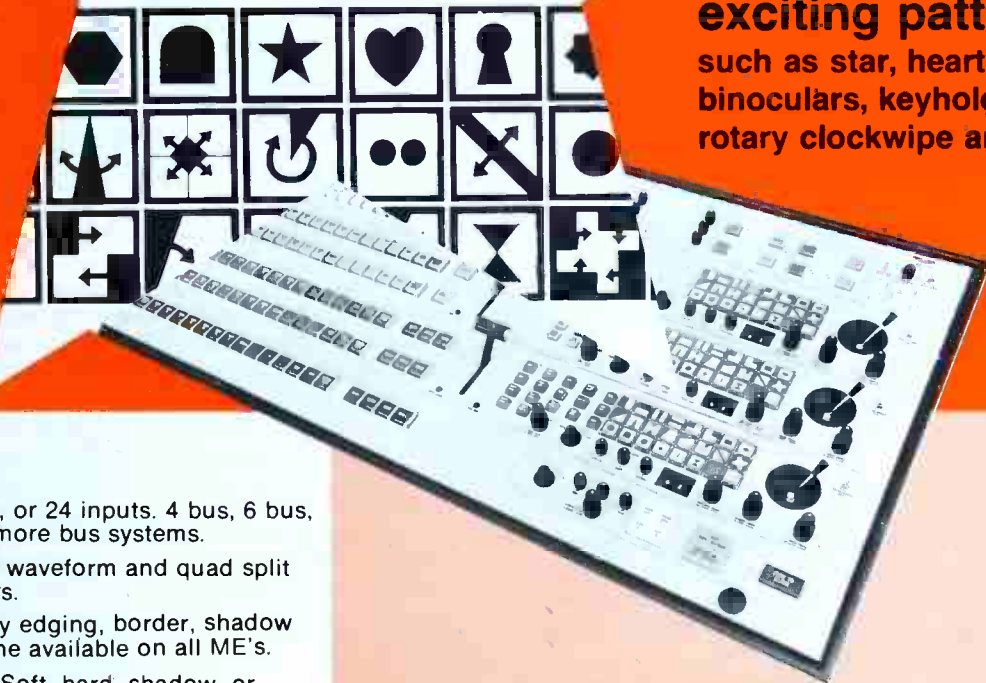
basis the circuitry, technology and technical aid critical to the design of an all-solid-state AM broadcast transmitter. Under the arrangement RCA also obtained a 5 kW model of the solid-state AM transmitter which Westinghouse displayed at the NAB convention in Las Vegas in March 1975.

According to Neil Vander Dussen, RCA Division Vice President, the RCA design goal is a high-efficiency transmitter about half the size of present tubes.

continued on page

VIX-114 production switcher with STAR studded features

Choice of over 80
exciting patterns
such as star, heart,
binoculars, keyhole,
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- 12, 16, 20, or 24 inputs. 4 bus, 6 bus, 8 bus or more bus systems.
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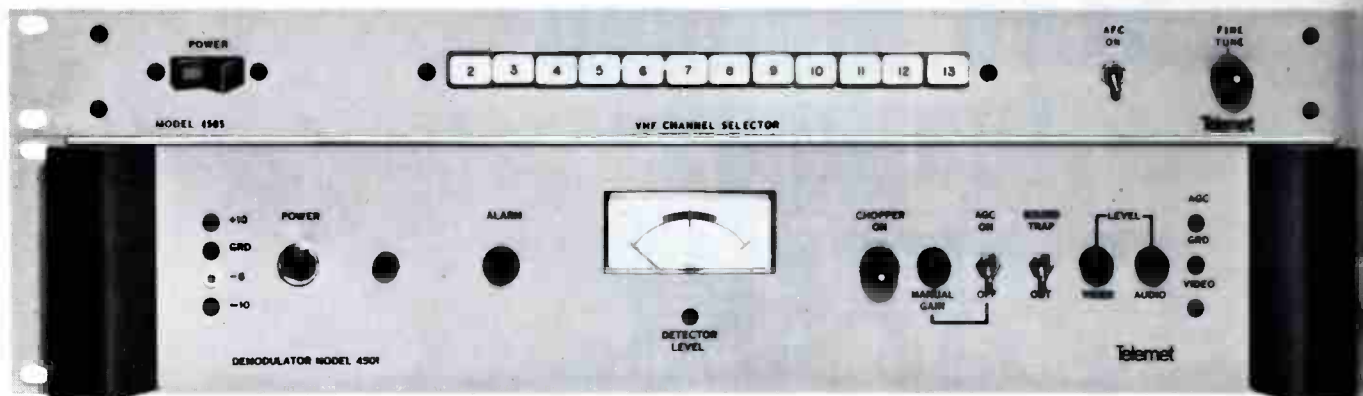
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UHF stations can also get the superior performance characteristics and quality that VHF stations get through the use of Telemet's improved downconverter which minimizes interference. This unit is only available as a fixed channel demod, Model 4501A2.

Cable installations can now have a single tunable demodulator Model 4502B1 for standby operation, that provides all the quality, performance and dependability that broadcasters have come to expect from any demodulator bearing the Telemet name. A fixed channel demodulator, Model 4500B1 is available for all VHF channels; Model 4500B2 is the industry best fixed channel UHF demodulator.

Select the right demodulator for your application from the following chart.

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Application	Broadcast	Broadcast	Broadcast	Broadcast	CATV	CATV	CATV
Tuner	Fixed	Fixed	Fixed	Variable	Fixed	Fixed	Variab
Chopper	Yes	Yes	Yes	Yes	No	No	Yes
Video Frequency Response	±0.5 db	±0.5 db	±0.5 db	±0.5 db	±0.75 db	±0.75 db	±0.75 db
Differential Gain	±0.5 db	±0.5 db	±0.5 db	±0.5 db	±0.5 db	±0.5 db	±0.5 db
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Input Sensitivity (Min.)	5 mv	5 mv	1 mv	5 mv ; 1 mv	0.3 mv	0.3 mv	0.3 mv
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NEWS

pes. Besides a sharp reduction in size, other advantages of the full-solid-state design include lower operating cost and greater reliability.

NATPE Meet On Upbeat; TV Gets Pro And Con

The young National Association of Television Program Executives meeting in San Francisco at the end of February, served notice with a highly successful affair that it is now the major marketplace for TV programming—indicators who came to the show filled their sales outstanding. Attendance at the show was up about 50% from last year's almost 1,900 program executives and station owners and managers.

Fast growth of NATPE suggested it might be on collision course with the National Association of Broadcasters. But Marvin Chauvin, president of NATPE, of WOTV, Grand Rapids, said that NATPE was not in an "adversary role" with the NAB. "I think it would be wrong for us to get into hard-are exhibits," he added.

"Family Viewing" was one topic that got a going over, with Norman Lear, Gary Marshall, and other program producers attacking it heavily for its "imprecision" and its "stifling" of creativity. But it was defended by FCC Commissioner Abbott Washburn, who said that violence was down measurably during FV hours, and that if this trend continued the regulation would be an obvious "success". Chairman Viley repeated what he had said on other occasions: that although he is against regulation in general, there would have to be some unless the industry itself did something about violence.

In a straw vote, the audience of program buyers and station executives split almost half and half pro and con TV, with the pros winning a slight edge.

Station Name Can Go Between Call Sign & City

The FCC has amended the rules to allow a broadcast station to put the licensee's name between the call sign and the name of the city, in ID announcements. Under the superceded rules, the call sign had to be "immediately followed by the name of the community . . ." Under the amendment, which was effective March 18, 1976, the station can give the call sign, then the licensee's name, then the city.

The FCC, however, refused a proposal from station KGMI that a phrase such as ". . . the sound of . . ." be allowed in ID's. The FCC said that this

would not only tend to increase confusion, but also posed a problem in terms of the FCC prohibition of promotional material in ID's.

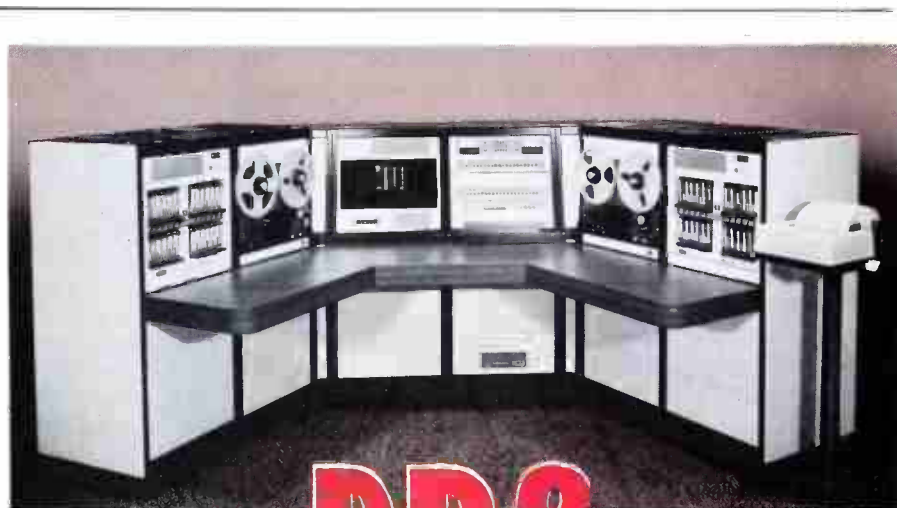
Sampling Methods For AM Arrays Adopted By FCC

A new set of sampling standards for the monitoring of AM directional antenna arrays has been instituted by the FCC, as part of a program to improve the accuracy of directional antenna adjustment by broadcast stations. The FCC had already ruled that every sta-

tion must have a type-approved monitor by June 1, 1977, eliminating "obsolete monitors of questionable accuracy." The new sampling rules apply to new stations, stations making major changes in their antenna arrays, and stations having difficulty in array adjustment attributable to monitoring inadequacies.

"Specialty" Stations Not Limited For Cable

The FCC has defined a category of
continued on page 14



all new automation system from SMC

It's here! The all-new DP-2. Microprocessor controlled, it offers more custom features than any other unit available today . . . features such as 8,000 event capacity; built-in external function control; automatic record of network; automatic transmitter logging option; mag tape, paper tape and solid state storage facilities; interfacing to business computers; sub-routines in any size; video readouts and programming; and up to forty audio channels.

The DP-2 is available in low-boy console with desk as shown or in standard racks. It's versatile and inexpensive . . . and it's from the people who invented computer assisted broadcasting—SMC. It's loaded with features that will "hype" your station's air sound and profits.

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Station

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With 1.5x and 2.5x
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f:1.6 |
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2.5x add-on extenders. | 14x37.5
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Standard
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lens with normal range. | | K10x16
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ing power with ideal
ranges of zoom and
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Image rotation and
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NEWS

"specialty station," and has ruled that they do not count in the quota of "independents" that a cable system is allowed to carry. Such a station, says the FCC, is a commercial station that generally carries foreign language, religious, and/or automated programming in at least one third of the hours of an average broadcast week and in one third of weekly prime-time hours.

Under the new rule, effective April 19, a cable system may carry as many specialty stations as it likes.

CBS "60 Minutes" Exempt From Equal Time, Says FCC

In a ruling that the CBS program "60 Minutes" is exempt, as a regular news program, from the equal time requirement of Section 315, the FCC has reaffirmed the conditions under which a station can put a political candidate on the air without incurring responsibility to air all his rivals. The law says that appearance of a candidate on a "bona fide news interview" is exempt. "Bona fide," in the CBS case, and presumably all other similar cases, consisted in the program's being a regular news program, on which interviewee's are selected solely for news interest, and with the content, format and editing of each interview exclusively under CBS control. This ruling seems particularly important with the presidential battle of 1976 imminent: it may encourage station managers to put political candidates on the air more freely.

FCC Briefs

The Commission has urged broadcast stations to "voluntarily" omit, from their weekly off-the-air monitor tests of EBS equipment, any "jazzed up" additions to the test announcements, such as music, humming, background noise, etc., this does not adhere to the "seriousness of the EBS program" A study of FM coverage throughout the country made by the Office of Telecommunications for the FCC shows approximately 150 counties, with about two million inhabitants, that do not currently get FM service; the country-wide coverage maps developed in the study can be inspected at the FCC offices.

The FCC has extended to April 5 the time for filing comments in its current inquiry (Docket 20682) into FCC policy on changes of format by broadcast stations; the inquiry was stimulated by the highly publicized case of WNCN in New York, and by the Chicago Appeals Court ruling, restricting a station's freedom to change.

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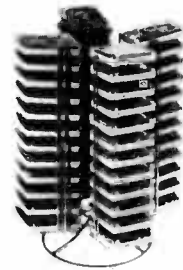
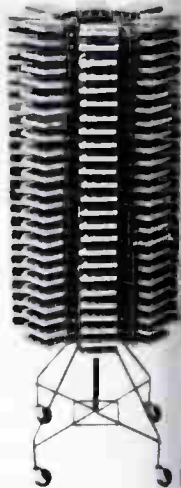


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Circle 111 on Reader Service Card

NEWS

Goldmark Develops Video Learning System

A system for extremely high density recording of still pictures and sound on magnetic tape, for use in interactive video education, has been announced by Goldmark Communications. The system also allows the program to be broadcast; and includes a unit for recording the material off the air, for later playback on home TV sets.

Called Rapid Transmission and storage (RTS), it is the invention of Dr. Peter Goldmark, president of Goldmark Communications, former CBS research head and inventor of the LP record. US patent #3,938,189 has been issued on RTS, which will be introduced this fall, according to a Goldmark announcement, in six community college districts across the U.S.

The group of community college districts, with a total enrollment of more than 200,000 students, will combine faculty teams to design the best possible courses on each topic, for joint use. The RTS system will then be used in churches, libraries, schools and other locations throughout the areas served by the colleges. Goldmark Communications has formed a wholly-owned subsidiary, Electronic Publishing, Inc., to produce the course text and picture material in collaboration with the colleges, and later other material for RTS.

The system puts 60 different half-hour teaching programs, each including still pictures and sound, on a single hour-long video cassette. Up to 10 of the programs can be delivered simultaneously to video screens. The use of still pictures, allowing the high density of the system and low cost per program, resulted from an extensive research program at the University of Southern California showing that stills were just as effective in education as moving pictures.

CATV Reps Want FCC to Adopt Rate Inquiry

Residents of state and regional CATV associations passed a resolution at their recent annual meeting urging the FCC to investigate the area of CATV subscriber rates. The resolution calls on the FCC to go beyond the "limited relief" recently proposed in Docket 20681. That inquiry the FCC is considering deleting its requirement that CATV franchises contain a provision for local rate proceedings prior to a modification of the basic subscriber rate for CATV service. Should the FCC lift the rule, local franchise officials could leave rate

continued on page 18

Increase sharpness... improve camera sensitivity



For the sharpest image, the finest resolution, the best picture quality in your station's ADI, EEV's new 30mm Coaxial Leddicon® Camera Tube is the answer.

Features the fastest leading edge signal level rise and quickest trailing edge fall of any image tube now on the market. Patented coaxial design assures consistently accurate geometry and optimum registration no matter the tube orientation. RESULT . . . a noticeably superior picture quality even under the most difficult lighting conditions.

Direct replacement for most separate or integral mesh Plumbicon®, Vistacon or older Leddicon camera tubes.

Available with exclusive internal fixed or variable light bias in extended red, extended green, luminance, blue, green, red or monochrome types. Call or write today for details.

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Ampex AVR-3. The

Two decades ago, Ampex introduced the first videotape recorder, and now Ampex opens a new generation of VTR capability with the all-new AVR-3, the machine that thinks for itself.

You'll want an AVR-3 for a couple of basic reasons: for the "intelligent" way it does an outstanding job for you, and for the superb pictures it makes. In any broadcast band it delivers superior picture quality. With Super High Band Pilot you have the most foolproof record/playback technology available.

"Intelligent." What does it mean? It's a lot of things, such as automatic sensing and switching of speeds and bands. It's an all-new optional Edit Controller for teleproduction capabilities that once seemed impossible. It's fast, efficient, gentle tape handling. And much more.

There isn't anything in the world like an AVR-3. It produces unequalled pictures; it protects you against errors in playback settings; it provides the easiest and best editing you've ever known; it's going to give you longer service life than any other VTR you've ever owned. AVR-3 is the best recording investment on the market.

Super high band pilot

The Mouthful That Becomes An Eyeful.

How does a VTR compensate for signal irregularities introduced during the recording phase? In the past, those corrections were made on the basis of "average" information. In the

new AVR-3, with Super High Band Pilot, signal correction triggered on a continuous basis. Color velocity errors and equalization variables are "seen"; corrected before they can be displayed. The result? Perfect pictures. You can see the difference.



First "Intelligent" VTR



With Super High Band Pilot, you'll get a picture at 7½ inches per second that's virtually as good as you've learned to expect from 15 ips High Band. Half the tape speed means half as much tape. It's a money saver.

Recording options

When you order your AVR-3, you'll be able to choose one of the following pairs of recording bands: Super High Band and Pilot/High Band; High Band and Low Band Color; Low Band Color and Low Band Mono-color. And no matter which pair of bands you specify, you'll get both 15 ips and 7½ ips recording capability.

"Intelligent"

Putting the Brain to Work.

The first thing you'll notice about your new AVR-3 is the way it "knows" how a given videotape was recorded. It'll automatically sense the recording speed and the band you used, and will switch to the right playback configuration. Intermixing tapes won't be a problem, because the AVR-3 always knows how to sort them out.

The second feature you'll notice is the way your AVR-3 handles tape. Punch up a fast shuttle, and AVR-3 programs the deceleration from a gradual start to speeds up to a flying 375. Then, as the tape approaches end-of-reel (or a cue point), the

program takes over again, producing a smooth deceleration curve to a precise, dead stop. You'll never damage a tape as you run it back and forth, time after time, on an AVR-3.

Editing

If You Can Imagine It, You Can Accomplish It.

The standard AVR-3 editor permits manual insert and assemble edits. If your needs are simple, you can stop right here.

The optional Edit Controller takes you the rest of the way. Using either time code or tape timer information, it includes search capability. This feature gives you separate video and audio edit points, and the keyboard control allows you to move or enter edit points at will.

There's more. An optional color framer eliminates *all* color ambiguities between edited segments. A time code generator and reader and a character generator are other handy options.

Housekeeping and computer control

What else does the AVR-3 IQ do to make your life easier? Once the video and audio edit points are keyed in, Edit Controller takes over the housekeeping. It automatically computes and controls pre-roll addresses, acceleration/deceleration profiles, synchronizing information, and all switching

necessary for precise edits. An optional computer interface lets you work with any external editing system, such as the fully computerized Ampex EDM-1.

Economics

Good at First, Better Every Year.

Even the basic AVR-3 model will outperform most previous top-of-the-line VTRs. And no matter how you equip your AVR-3, it'll cost less than you'd expect and then pay for itself with many years of reliable, professional service.

Complete technical data and performance specifications are now available in our AVR-3



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"Underground work doesn't always require trenching. In many soil conditions, vibratory plowing can be the fastest and best way to install many kinds of cable and even pipe. Since there is no trench, there's none to fill up, so a lot of restoration hours are eliminated.

Ditch Witch pioneered the development of the vibratory plow, and today we have the most complete line of plowing equipment available — ranging from the best small service plow up to the only big cross-country model designed exclusively for underground work.

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Vibratory plow modules are available for Modularmatic vehicles in the 30-HP to 65-HP range.

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Circle 114 on Reader Service Card

NEWS

determination to marketplace forces
The resolution presented to FCC Chairman Wiley urges the Commission to take the necessary first step to investigating local rate regulation by instituting a full-scale Notice of Inquiry.

Cable Arts Foundation Produces Arts Series

A Time For Art, a series of 10 one-hour color programs on a wide variety of subjects in the visual, performing, and literary arts has been produced by the Cable Arts Foundation, Inc., a not-for-profit group from New York City. Subjects of the programs include painting, sculpture, dance, crafts, photography, music, poetry, mime and television.

Sponsorship of the programs through individual libraries from 10 towns cablecasting *A Time For Art*. The libraries, together with cable companies and local arts groups, are promoting the series in the communities. The initial group of 18 sites has been selected for testing the series. The Minnesota Cable Communication Board is one group actively promoting the series.

Pay-Cable Triples Its Subscribers In 1975

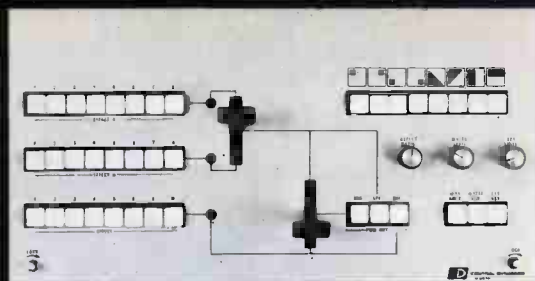
There were 464,980 subscribers to pay-cable TV as of December 31, 1975, according to a census published in the February 3rd issue of *The Pay-Cable Newsletter*. This compares to the estimated 140,000 pay-cable subscribers at the end of 1974, according to *Pay-Cable Associates*, publishers of the newsletter. The survey covered 100 pay-cable systems in some 170 communities which showed that pay-cable population more than tripled the previous year (a gain of 232%).

Canadian CATV Assoc. Against Ad Deletion

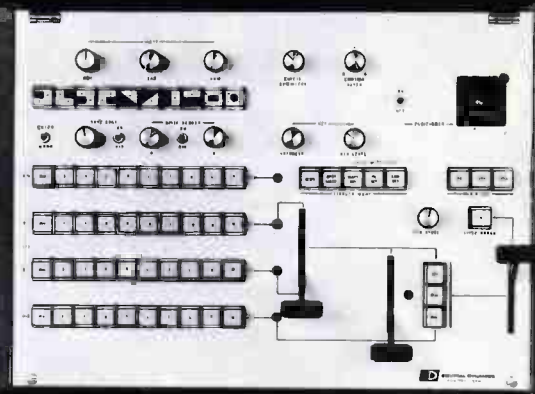
In a recent statement, the Canadian Cable Television Association opposed the deletion of commercials from programs received from the U.S. The controversial ruling was made by the Canadian Radio-Television Commission which wants to see it implemented as a condition of license renewal.

The CCTA, which represents federally licensed cable system operators serving more than seven million Canadians, feels that the ruling will not achieve its objective of repatriating a significant volume of Canadian advertising dollars, may over-reach the authority of the CRTC, threatens freedoms of Canadian viewers, is
continued on page 19

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VS-10



VS-14



AFM-10

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Team up for flexibility, compact size & price!

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The **VS-10**... an 8-input, 3-bus, compact, self contained, vertical interval, solid state switcher. Expressive special effects, Mix Amplifier, Wipe/Key Amplifier, Output selector and broad operational capabilities provide exceptional production flexibility. Includes automatic Preview; can wipe and dissolve to keys; has the On-Air Tally system. Chroma keying also available.

Sophisticated

The **VS-14**... a 10-input 4 bus switcher with a combined Mix Amp, Wipe/Key/Mask Key Amp and a Downstream Keyer that allows execution of a complex effects sequence... such as... dissolve from one source to a masked chroma key... then dissolve a color matted title over a chroma key, and finally dissolve

out of the chroma key to a different source while retaining the title. Standard features also include Soft Wipes, Soft Keys, Color Titles, Split Screens and Spotlight. Downstream Keyer can insert or dissolve titles.

& Super

AFM-10... its "teammate" power and flexibility allows it to automatically operate as an Audio Follow or an Audio Mix/Follow Switcher with the VS-10 or VS-14... plus it has a "hands-off" automatic gain riding Compressor/Limiter.

In the Follow Mode, the AFM-10 becomes an automatic remote controlled switcher.

In the Mix/Follow Mode, the AFM-10 beautifully performs a "voice over", manually or automatically.

As a Mixer, the AFM-10 handles many jobs with its 7 inputs with individual channel gain pots, independent Master and Auxiliary Line level outputs, and Comp/Lim that can be switched IN or OUT.

Actually, *Super* is what you'll say when you realize how much you can do for the price... and remember, that includes CDL Quality and Reliability


So send for brochures today or for immediate response, call or write.



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with 1.5x range extender	18-324mm	24-432mm
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Maximum relative aperture	1:1.6 (f=12-172mm) 1:2.0 (f=216mm)	1:2.1 (f=16-230mm) 1:2.7 (f=288mm)
Zoom ratio	18x	18x
Image format covered	12.8 x 9.6mm; 16.0mm dia.	17.1 x 12.8mm; 21.4mm dia.
Minimum object distance from front vertex	0.7m (27.6")	0.7m (27.6")
Object dimension at minimum object distance: Wide	103.2 x 77.4cm; 129.0cm diameter	
Tele	5.3 x 4.0cm; 6.7cm diameter	
Back focal distance	62.65mm (in air)	78.08mm (in air)
Glass compensation	69.2mm (BK7)	70.2mm (BK7)
Wavelength range for color correction	400-700nm	400-700nm
Weight	23kg (approx. 50 lbs.)	23kg (approx. 50 lbs.)
Dimensions	466.5mm length x 284mm width x 260.5mm height	
Focus and Zoom control	Manual, with plug-in interchangeable servos	
Range extender control	Plug-in servo/manual	

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 Canon Amsterdam N.V., Industrial Products Division De Boelelaan 8, Amsterdam, Netherlands

ported by the by the commercial
roadcasting industry, jeopardizes
-Canadian relations and "conflicts
Canadian's innate sense of fair-
s." The CCTA also points out that,
plemented, the ruling may result in
eamming by U.S. broadcasters of
e signals, thereby eliminating a
ar source of Canadian program-
13.

ews Briefs

Electronics Co. has formed a
operating unit, the **Beucart Divi-**
o, to produce and market an exclu-
sive line of broadcast cartridge tape
recorder/playback machines **RCA**
Corp. has formed a new wholly-owned
subsidiary, **RCA American Commu-**
nications, Inc., to own and operate its
domestic communications satellite
system **Camera Mart** has re-
cently been authorized to be the exclu-
sive distributor in the New York area
of the Multi-Track Magnetics (MTM)
product line **Jennings Re-**
search, Inc., in a factory reorganiza-
tion and expansion program, has re-
shaped its factories to keep up with
increased sales of its line of speakers

Omega State Institute has an-
nounced the opening of completely
expanded trade school facilities at
130 E. Grand Ave., Chicago IL 60611;
312-321-9400. Courses are offered in
broadcasting, FCC license training and
electronic alarm systems.

The new six-story **MPCS Video**
Center at 514 W. 57th St., N.Y.,
N.Y., offers its clients expanded ser-
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duction facilities and services
Angenieux Corp. of America has an-
nounced the formation of Angenieux
Service Corp. of New York to support
the service requirements of the East
Coast motion picture and TV industries

Electronic Arts Intermix, 84
Fifth Ave., N.Y., N.Y. 10011; 212-
919-2316, has announced that its Vis-
iting Seminar Program on the utiliza-
tion of video systems is now available
at universities, art schools, libraries,
and museums U.S. military per-
sonnel and their families in West Ger-
many will be able to receive full-color
TV programs originated by a new **RCA**
studio system now being completed
at the company's Camden, N.J. facility

. . . . **Irving B. Kahn's Broadband**
Communications Inc., 375 Park
Ave., N.Y., N.Y.; 212-838-2556, has
begun a nationwide promotional cam-
paign for the American Film Theatre
series of 13 movies being distributed by
the company.

continued on page 64

New from Cooke

SMPTE Video Taping/Editing Accessories

OUR NEW SMPTE TIME CODE SYSTEMS PROVIDE UNIQUE FEATURES AND THE LATEST STATE-OF-THE-ART DESIGNS.

SMPTE TIME CODE GENERATOR



Fully compatible with any SMPTE time code editing system, and meets or exceeds all SMPTE specs. Operates on sync or composite video input. Drop frame mode keeps generator on time when used with NTSC color video sources. Timing is unaffected by momentary power drop outs. Easy time set and large LED display readable at 30 feet. Two isolated outputs at +11 dBm into 600 ohms. Options include 10 outputs and 32 user bits per frame.

Drop frame mode keeps generator on time when used with NTSC color video sources. Timing is unaffected by momentary power drop outs. Easy time set and large LED display readable at 30 feet. Two isolated outputs at +11 dBm into 600 ohms. Options include 10 outputs and 32 user bits per frame.

SMPTE TIME CODE READER/CHARACTER GENERATOR



Reads SMPTE code, generates 36 line high resolution digital characters, and adds time code characters to video. Valuable quad recorder time can be reduced by making editing decisions off-line on inexpensive helical or cassette machines. Allows time code display on studio or mobile unit monitors during production or VTR playback.

TAPE TIMER



Replaces mechanical counter and motion sensor on RCA and Ampex VTR's. Optical system provides greater accuracy than mechanical counter with the added feature of large easy to read LED digital display. Optional remote readouts and thumbwheel time set switches.

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Circle 117 on Reader Service Card

INTERPRETING THE **FCC** RULES & REGULATIONS

Program Log Requirements

By Frederick W. Ford and Lee G. Lovett of Pittman, Lovett, Ford and Hennessey, Washington, D.C.

Program logs must be maintained continuously throughout the broadcast day. The voluminous number of entries increases the risk that the Commission's program log rules¹ will be violated. The most frequently cited violation has been the mis-logging of commercial matter broadcast time.

Program log violations may result in forfeitures as high as \$10,000. In several recent cases, the Commission cited logging violations as one of several factors (though, by no means, the only factor) for denial of license renewal.

Licensees may have difficulty in attaining strict compliance with the program logging rules because the maintenance of these logs is usually delegated to several different employees, making it difficult to impart to each of them an understanding of the seriously adverse effects that logging rule violations may have upon the licensee. Further, significant personnel turnover further exacerbates the problem for many stations.

Detailed below are the Commission's logging rule requirements.

I. Program Matter

Broadcaster's program logs must identify *each* program by: (1) title, (2) time of program initiation and conclusion, (3) type, (4) source and (5) if the program presents a political candidate, his/her *name* and *political party*.

The Commission enumerates eight major *types* of program matter. These types are mutually exclusive (i.e., no one program can fit within more than one type category). Each program type is defined below.² The letter following the typed title indicates the abbreviation for that type to be used in the program log.

- (1) *Agricultural (A)*: Market reports, farming or other information specifically addressed, or primarily of interest, to the agricultural population.
- (2) *Entertainment (E)*: Programs intended primarily as entertainment, such as music, drama, variety, comedy, quiz, etc.
- (3) *News (N)*: Reports dealing with current local, na-

tional, and international events, including weather and stock market reports; and when an integral part of a news program, analysis and sports news. (Example: network 7 PM news—which may include a three minute segment on sports).

- (4) *Public Affairs (PA)*: Talk, commentaries, discussions, editorials, political programs, documentaries, forums, panels, roundtables, and similar programs primarily concerning local, national, and international public affairs.
- (5) *Religious (R)*: Sermons or devotionals; religious news; music, drama, and other types of programs designed primarily for religious purposes.
- (6) *Instructional (I)*: Programs (other than those classified under Agricultural, News, Public Affairs, Religious, or Sports) involving the discussion of, or primarily designed to further an appreciation or understanding of, literature, music, fine arts, history, geography, and the natural social sciences; and programs devoted to occupational and vocational instruction, instruction with respect to hobbies, and similar programs intended primarily to instruct.
- (7) *Sports (S)*: Play-by-play and pre- or post-game related activities and separate programs of sports instruction, news or information (e.g., fishing opportunities, golf instructions, etc.).
- (8) *Other (O)*: All programs not falling within definitions (1) through (7).

While all programs *must* fall within one of the above eight categories, they *may* also fall within one of the following three sub-categories:

- (A) *Editorial (EDIT)*: Program presented for the purpose of stating the opinion of the licensee.
- (B) *Political (POL)*: Programs which present candidates for public office which give expression: (other than in station editorials) to views on such candidates or on issues subject to public ballot.
- (C) *Educational Institution (ED)*: Programs prepared by, in behalf of, or in cooperation with educational institutions, educational organizations, libraries, museums, PTAs or similar organizations. Sports programs shall not be included.

Note that each program must come within one *major* category, but may come within several *sub-categories*. The Commission's classic example is a program which presents a candidate for public office and is prepared

¹Sections 73.112(AM), 73.282(FM) and 73.670(TV) of the Commission's Rules and Regulations.

²These are nearly verbatim Commission definitions.

continued on page

Two editing technologies for the price of one



**SMPTE
Time Code or
Control Track**

\$7,600*...

**Start with one—expand to the other
—all for less than it ever cost before.**

The TEMPO 76 Editor... Incorporating TIME SYNC™ and *VaraScan™*

Here at last is a new concept in videotape editing systems... Datatron's truly universal Tempo 76 Series.

Now you don't have to compromise between the economy of Control Track and the speed and precision of SMPTE Time Code. Datatron's Tempo 76 Editor puts both technologies at your fingertips and at a price no one else can touch.

Tempo 76 allows you to start with a basic Control Track or SMPTE system and economically expand capabilities as you need them. And you never have to scrap

the system you initially started with. It offers you the best of both worlds in videotape editing technology.

Datatron's Tempo 76 Editor offers you economy, flexibility, versatility and adaptability. *VaraScan*, with slow motion, reverse and freeze-frame capability, makes the Tempo 76 Editor a perfect companion for 3/4" cassette editing in ENG, educational, industrial and production house applications.

For complete information on the Tempo 76 Editor and the Tempo 76 Series of editing systems, write or phone Datatron today!

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*Includes the Tempo 76 Editor only.
Does not include VTR interface
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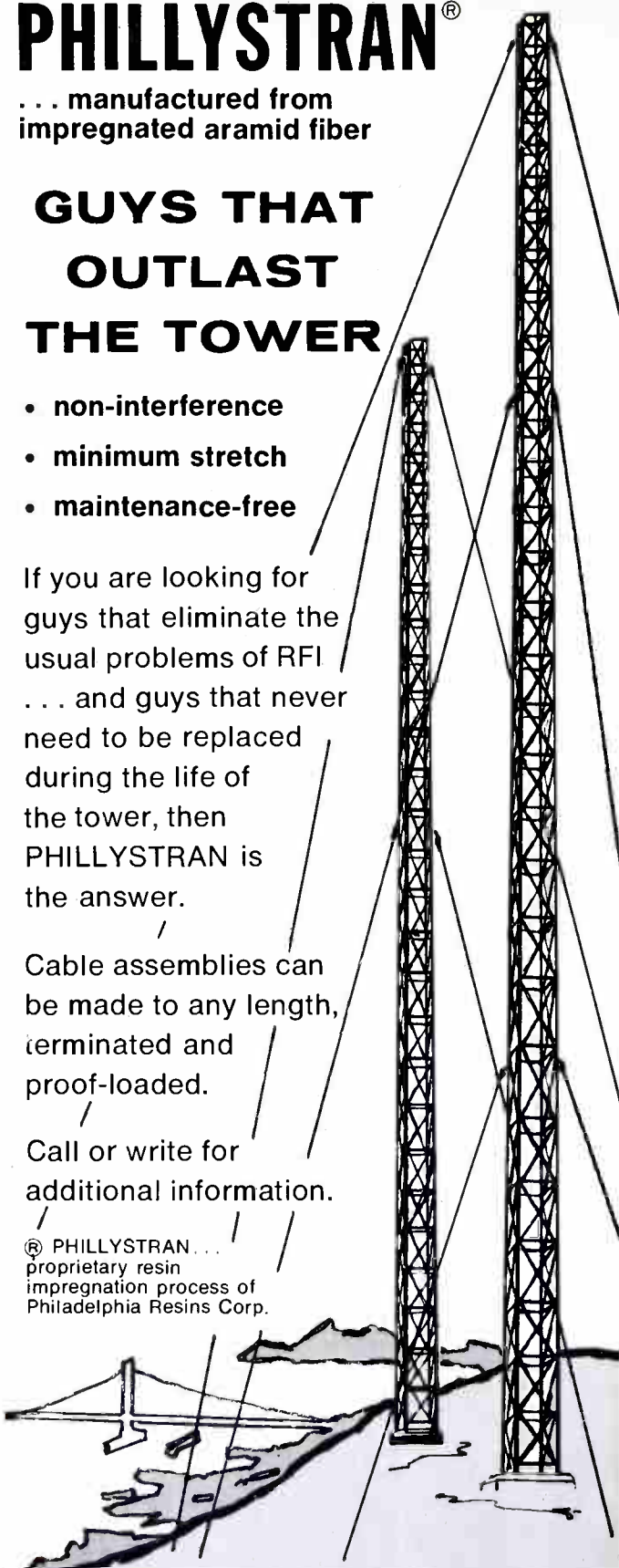
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FCC RULES AND REGS

an educational institution. This program will come within the Public Affairs (PA) category, as well as within the Educational Institution (ED) and Political (POL) sub-categories.

In addition to logging program types, broadcaster must log program sources. The Commission identifies three different sources: (1) local, (2) network, and (3) recorded. Program sources are defined as follows:

- (1) *Local*: Any program originated or produced by the station, or for the production of which the station is primarily responsible, employing live talent more than 50% of the time. Such a program, taped or recorded for later broadcast, shall be classified as local. A local program fed to a network shall be classified by the originating station as local. All non-network news programs may be classified as local. Programs primarily featuring records or transcriptions shall be classified as recorded (REC) even though a station announcer appears in connection with such material. Identifiable units of such programs which are live and separately logged as such may be classified as local (e.g., if during the course of a program featuring records or transcriptions, a non-network two-minute news program is given and logged as a local news program, the report may be classified as local).
- (2) *Network (NET)*: Any program furnished to the station by a network (national, regional or special). Delayed broadcast programs originated by networks are classified as network.
- (3) *Recorded (REC)*: Any program not otherwise defined, above, including, without limitation, those using recordings, inscriptions or tapes.

II. Commercial Matter

Program log entries for commercial matter must include the program sponsor's name, (2) the person paying for the announcement or (3) if the announcement is made in return for materials or services furnished to the station, the name of the person who furnished same. The program log must contain an entry indicating either the total hourly duration of commercial matter or the duration of each separate commercial message. Broadcasters should make special efforts to make accurate logging entries for commercial matter duration because this area appears to be a favorite target for Commission investigation.

For purposes of log entries, commercial continuation (CC) is a program sponsor's advertisement. A commercial
continued on page 2

Enter Now Great Idea Contest 1976 Win a calculator!

Tell us how you solved an annoying or time-wasting problem at your station. Gain professional recognition and become eligible for a prize at the same time. Three grand prizes will be awarded—a slide rule engineering calculator for the best idea from an AM station, FM station, and TV station. Ten secondary prizes consisting of pocket business calculators will be awarded in the categories of audio, video, control and RF. See rules for details.

Contest begins in this issue. Use entry form on page 58 and enter now.

Harris' new TF-100 for highest quality color film reproduction.

You won't find another top-of-the-line automatic color film camera that equals the TF-100 for quality, adaptability or overall performance.

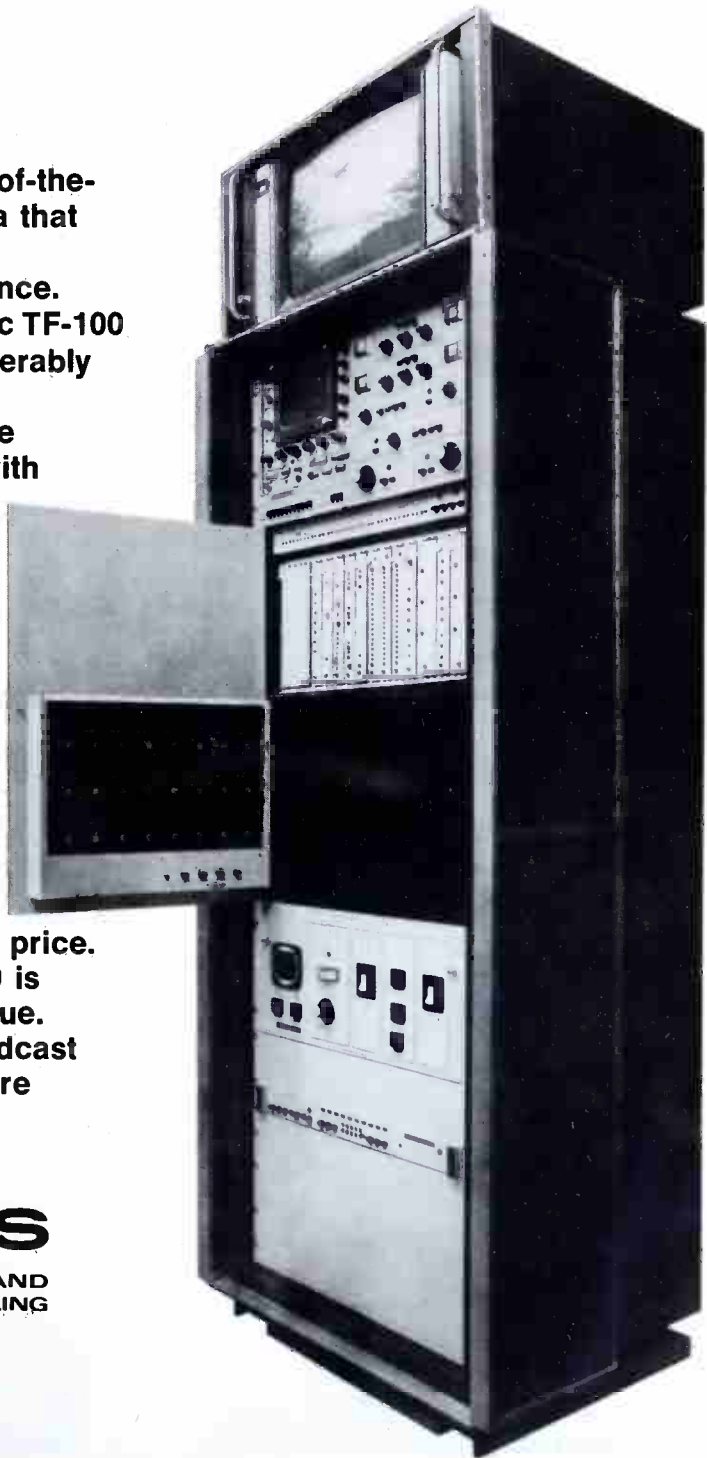
But you will find that a basic TF-100 camera system is priced considerably below the major competition.

Like all Harris products, the TF-100 is built in accordance with strict standards of quality, and offers such unique features as:

- multiple input port locations for interfacing with any film island;
- true film gamma correction for uncompromised scene reproduction;
- optional internal diplexer to allow dual inputs without additional multiplexing.

Compare the performance.

And the specifications. And the price. See for yourself that the TF-100 is unsurpassed in quality and value. Write Harris Corporation, Broadcast Products Division, 123 Hampshire Street, Quincy, Illinois 62301.



HARRIS

COMMUNICATIONS AND
INFORMATION HANDLING

THE WILKINSON AM2500B 2.5 KW AM BROADCAST TRANSMITTER

FEATURES

- Solid State Modulator Driver
- Solid State Exciter
- Only One Tube Type - (4) 4-1000A
- Variable Vacuum Capacitor Tuning
- Motorized Variable Capacitor Loading
- Low Distortion, High Level Modulation
- Accessible Drawer Construction
- Solid State Timing Circuits
- Self-Testing Silicon Power Supplies
- Automatic Recycle
- Simplified PA Tuning - Only two controls
- Double Duty Plate & Modulation Transformers
- Pretuned at Customer's Frequency
- Power Cutback (optional)
- Designed for Remote Control
- Ample, Roomy Cabinet for Ease of Service
- Completely Metered
- Uses Standard Parts with Original Maker Numbers



WILKINSON
ELECTRONICS, INC.

701 CHESTNUT ST. TRAINER, PA. 19013
TELEPHONE (215) 497-5100

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FCC RULES AND REGS

mercial announcement (CA) includes all other advertisements for which a charge is made (or for which other consideration is received, including bonus spots, trade-out spots and promotional announcements of future programs for which consideration is received).³

The following are not deemed commercial matter:

- (1) Promotional announcements (unless paid for);
- (2) station identification announcements;
- (3) public service announcements;
- (4) mechanical reproduction announcements;
- (5) announcements that a political program (or program dealing with a controversial public issue) is being broadcast in return for cash or other consideration and
- (6) announcements made pursuant to the local notice requirements ("pre-grant" and "designation of hearing").

III. Public Service Announcements

Public service announcements (PSA) include those which promote programs, activities or services of federal, state or local governments (e.g., military recruiting or programs, activities or services of non-profit organizations (e.g., Red Cross) and other announcements that serve community interest. No charge can be made for public service announcement. Further, time signals, routine weather announcements and promotional announcements are *not* considered PSA's (a mistake that many broadcasters make).

Program logs must indicate (1) name of the organization on whose behalf the announcement was made, (2) the type classification (PSA), and (3) the announcement duration.

IV. Other Logging Procedures

The station employee charged with maintaining the program log must sign the log and indicate the time that he began his duties. Program log errors should be corrected when discovered. Each such error must be initiated by the employee charged with maintaining the program log. This same employee should also sign the log when going off-duty and indicate the time that he/she did so.

Program log errors should be corrected by the person maintaining the log during those specific hours, even if the error is discovered *after* that person has gone on duty. In the event that this is impossible (e.g., due to employee sickness or discharge), the error may be corrected by the station program director or manager. An explanation indicating why the employee did not make the correction must be attached to the corrected log.

V. Conclusion

Station employees charged with maintaining program logs should make a point of thoroughly reviewing the Commission's Rules on the subject. With a little perseverance, the two most frequent rule violations (incorrect program type classification and incorrect logging of commercial matter duration) can be avoided. **BM**

³This includes an announcement which identifies the sponsor of a future program if the announcement mentions the sponsor's name as *more than* a part of the program title (e.g., "Listen to the Smith Show next Monday night brought to you by the XXX Company").

WHO-TV Eyewitness News is all over town, doubling news on film.

"There isn't a single piece of newsfilm equipment in this studio that hasn't paid for itself, one way or another," claims Lisle Shires, proudly. And that's only one aspect of their film production facility that has doubled the amount of film coverage for half-hour shows in one year.



Lisle Shires, Newsfilm director of WHO-TV in Des Moines, Iowa.

Jack Cafferty, WHO's Television News director, recalls: "WHO-TV used to average about six film reports per show. Then, management made some drastic changes in news programming.

"We jumped from six to twelve film stories per news show, as a result, and we now have a dozen reporter-photographers.

"WHO-TV has always had a high percentage of film footage winding up on the air. Now we're shooting two to two-and-a-half times as

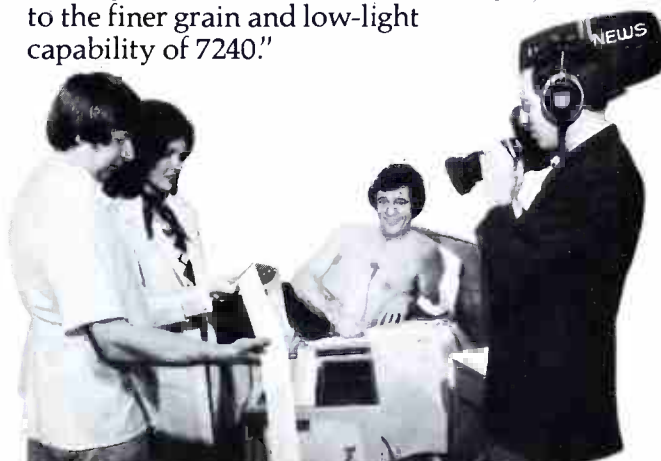
Here's Lisle with Robert Kress in the smooth-functioning, surgically clean environs of WHO's deluxe processing lab.



much film and one-third of it is still being broadcast.

"Our field reporters have some of the finest film equipment available today. And although some of our film is still shot with silent cameras, we have a continuing program to upgrade our sound equipment.

"Presently, we're shooting all prestripped Kodak Ektachrome EF film 7242 (tungsten). You never can tell when we may want to add voice-over later or use silent footage as a B roll with sound effects. We're in the process of converting to the new Eastman Ektachrome video news film 7240 (tungsten) and while 7242 looks good on the air, we're looking forward to the finer grain and low-light capability of 7240."



One of the most popular film features is "Cafferty is —" in which Jack takes on different jobs. Like driving a semi or in this case, working in a hospital where he first gives — and then gets — a cardiogram.

Cafferty anticipates continued heavy use of film. "With film, I can send a man out with a 16-pound camera and he'll come back with pictures that are simple to edit — and to store, too.

"One more thing — our news is getting a lot of attention. We've been getting very good response from our viewers. And that's what it's all about, isn't it?"

Film is good news.



THE NEW TELEVISION CAMERA REVOLUTION

AT LAST, A PORTABLE TV CAMERA WITH FILM CAMERA FREEDOM. RCA TK-76.

A way through the maze.

Today, portable TV cameras come in so many degrees of convenience, performance and price that a wise choice is hard to make.

A way through the maze is to ask these questions about any portable camera:

- 1—Can it be ready for instant use in fast-moving situations?
- 2—Does it handle like your film cameras?
- 3—Will it work with as few controls and with the same ease as a film camera?
- 4—Will its weight, size, automatic features and freedom allow your newsperson to concentrate

on getting the best news pictures?

- 5—Does it have the quality for sports, documentaries, and some local spot commercial production?

Only one camera lets you answer "yes" to all five questions. The new TK-76 from RCA.

Backpack out, quality in.

The TK-76 is a 19-pound, self-contained unit without a backpack or separate camera control. Its picture quality is equal to far more costly cameras. Built-in performance features help maintain a quality picture automatically.

By designing all camera electronics into the camera head, one camera-person becomes a TV crew. Journalism, sports, documentaries, even some local spot commercials, can be done with film camera freedom and on-air immediacy.

Camera freedom is assured, since power may be from 12v. DC batteries

or a comfortable, waist-worn 6-pc. rechargeable battery belt.

Under \$35,000.

Cost is a feature that makes the TK-76 downright revolutionary.

If you are going for two high quality



ENG cameras, you can afford three TK-76's. Moderate camera budget. You can now buy a lot more cameras than you may have thought possible.

Available in 1976.

Networks, local broadcasters, television producers and corporate users have already ordered more than 100 TK-76 cameras for 1976 delivery. Contact your RCA Representative now about your TK-76.

RCA

Ready To Broadcast To An Audience Of One Billion—ORTO And Nine "Unilateral" Broadcasters

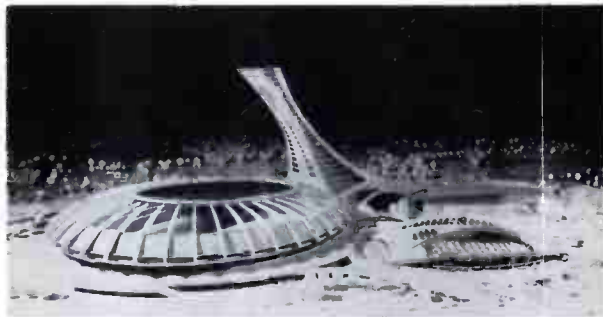
The Olympics: An athletic spectacular or an electronics extravaganza? ABC Sports goes all out. ORTO spends \$50 million.

Broadcasting the Olympics is truly an Olympian effort. ORTO (Olympics Radio and Television Organization), a division of the Canadian Broadcasting Corp. whose task is to produce a world wide Olympics program, will have pulled together a trained staff of 1680 for the two week stint taking place from Saturday July 17th through Monday August 1st. Their job will be to provide service to the 110 countries that will be represented at the 1976 Olympics (of these 70 will require TV, all will require radio). In terms of equipment, ORTO will provide 700 commentator positions each equipped with a specially designed La Consolette broadcast unit. A rundown of ORTO provided equipment facilities include in addition to the 71 Consolettes:

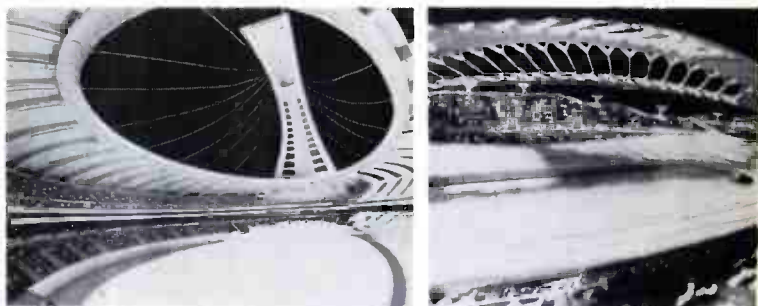
- 9 mobile units (at least, and perhaps more)
- 7 videotape recorders
- 103 color TV cameras
- 7 slow motion VTRs
- 10 telecine chains
- 1500 audio circuits
- 30 video circuits
- 53 radio studios
- 9 television studios
- 49 off-the-monitor booths
- 110 offices
- 1 television distribution center
- 1 audio distribution center
- 2 film processors
- 24 film editors

In addition to ORTO there will be nine separate broadcasting groups that will do their own unilateral broadcasting. These groups will take an ORTO feed but they will supplement this coverage with their own cameras and will produce their own programs from their own technical centers. These groups include ABC for U.S. coverage, CBC English and CBC French; BBC; Australia and New Zealand; NHK, Japan; EBU, Western Europe, EBU other; OIRT (Eastern Europe and Cuba). There is a tenth separate facility for booking by various countries.

Many other broadcasting entities will be present to use ORTO supplied facilities but each will be arranging for their own distribution of the signal to their part of the world. Some of these include the Asian Broadcasting Union, Union of National Radio and Television Organizations of Africa, Arab States Broadcasting Union, Caribbean Broadcasting Union, and Interamerican Association of Broadcasters (Central and South America). The XXI Olympiad provides a special challenge in that the 27 venues (events) will take place at 20 different



Olympic Park at Montreal will consist of the Stadium (lower left), a velodrome (lower right) and a pool (not shown).



sites. Only the track and field events, swimming, boxing, wrestling and velodrome cycling will be centralized at Olympic Park* now under construction for the games. Opening and closing ceremonies and sailing events will take place at Kingston, Lake Ontario, 290 km away. Soccer fields are at Toronto, Ottawa, and Sherbrooke (although semi-finals and finals will be moved to the Olympic Stadium). Some handball events are as far away as Quebec City. Archery, shooting and equestrian events take place at three other cities in and around Montreal (Joliette, l'Acadie and Bromont, respectively). Other events are spread around Montreal, including the University of Montreal and McGill University. All of these events will be covered by radio and TV except sailing, archery, shooting, cross country, equestrian and some pentathons which will be covered by film only. A 20-minute daily film summary of all Olympic highlights will be prepared.

Radio and TV signals originating from these many points will be routed to three centers: the Main Broadcast Center (ORTO headquarters), the Radio Canada building in downtown Montreal; the International Broadcast Center located at Cité du Havre (site of the 1967 Montreal Exposition) and Maison de Radio-Canada (the

*Semi-finals and finals of other sports will, of course, be held at Olympic Park when possible.

BROADCASTING THE OLYMPICS



Three techniques for covering events: Film camera on helmet (Karl Schranz is "cameraman" for ABC); Ikegami camera in helicopter (ABC at Innsbruck) and Editel ENC with microwave on automobile (ORTO). (ABC photos ©Heinz Kluetmeier.)



radio/TV regional center of CBC) in Montreal.** The latter will be the distribution point of local Montreal coverage by transmitter, the Eastern time zone of Canada by microwave, and the remainder of Canada by satellite, Anik-1. Anik-1 will also feed the Pacific satellite for Olympic coverage in Japan, Australia, etc.

The IBC building will house the master control room and studios for ABC, NHK, and the Australian Broadcasting Corp. ABC will feed signals to the U.S. directly from IBC via microwave.

The majority of studios and the technical center for the Olympics will be located at the Main Broadcast Center. The distribution signal for the Atlantic Intelsat will go out from MBC. The MBC houses the technical control center (TV and radio), the VTR center, the quality control room (TV and Radio), the film service, a maintenance shop and the separate master control room of EBU and OIRT plus 44 radio studios for individual countries.

The technical control center further subdivides into three areas: 1. the ORTO master control area which includes video and audio input bays, monitor screen for each venue, sync, test signals and clock pulse generators and modulators for the cable RF video and audio network to the 110 offices; 2. the commentaries control area where the commentator control and monitor units for the 700 commentators positions are located; and 3. the main distribution frame where international picture and sound, commentaries, intercom and other signals will arrive for distribution to studios, to the off-tube (TV monitor booths), to the VTR room, to telephone and microwave companies, Intelsat, etc. All of this is shown schematically in the illustration on these pages.

Coverage of the 20-odd venues will be entirely via 19 to 21 mobile TV vans—there are no "studios" built into the stadium, pool or velodrome buildings of Olympic Park. Vans will include, at a minimum, 89 color cameras, 19 VTRs, 15 slow-motion VTRs, 19 switchers and 16 character generators. None of these vans were

** All ORTO signals go first to the Main Broadcast Center and then to IBC and Maison RC. Unilateral broadcasters lease straight through feeds from their vans to their remote studio from Bell Canada.

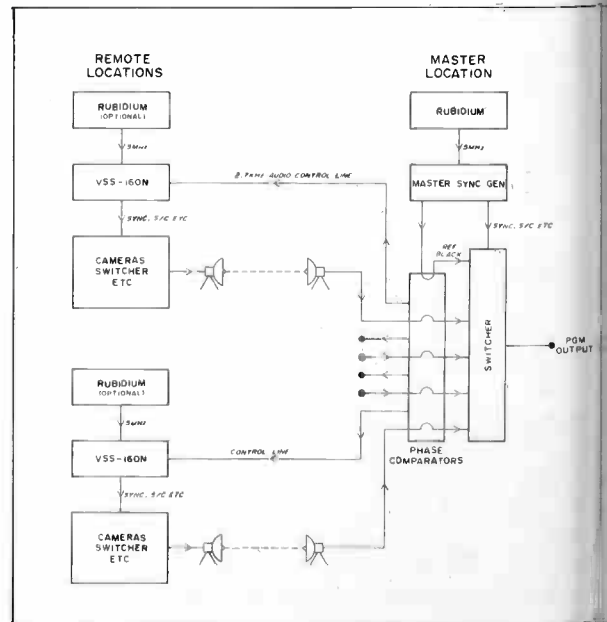
built specially for ORTO; they include units from over—CBC, CTV Television Network, Ltd., college owned vans, privately owned vans, etc. Four CBC vans will be brand new, but they were built as much for future use as for Olympic coverage. ORTO will use some signals emanating from the unilateral broadcasters. ABC's super van with PC-100 cameras will be feeding some field and track events into the MBC.

The TV picture supplied by ORTO will be in color, 525 lines, NTSC. Film will be color reversible, 16mm, 24 frames. International sound (ambience sound) will be produced at all venues covered. All sports will be covered by TV except those mentioned (archery, shooting, sailing, etc.). However, when several events in the same sport occur on the same day from more than one venue, ORTO will cover only one such event electronically. The others will be highlighted on film.

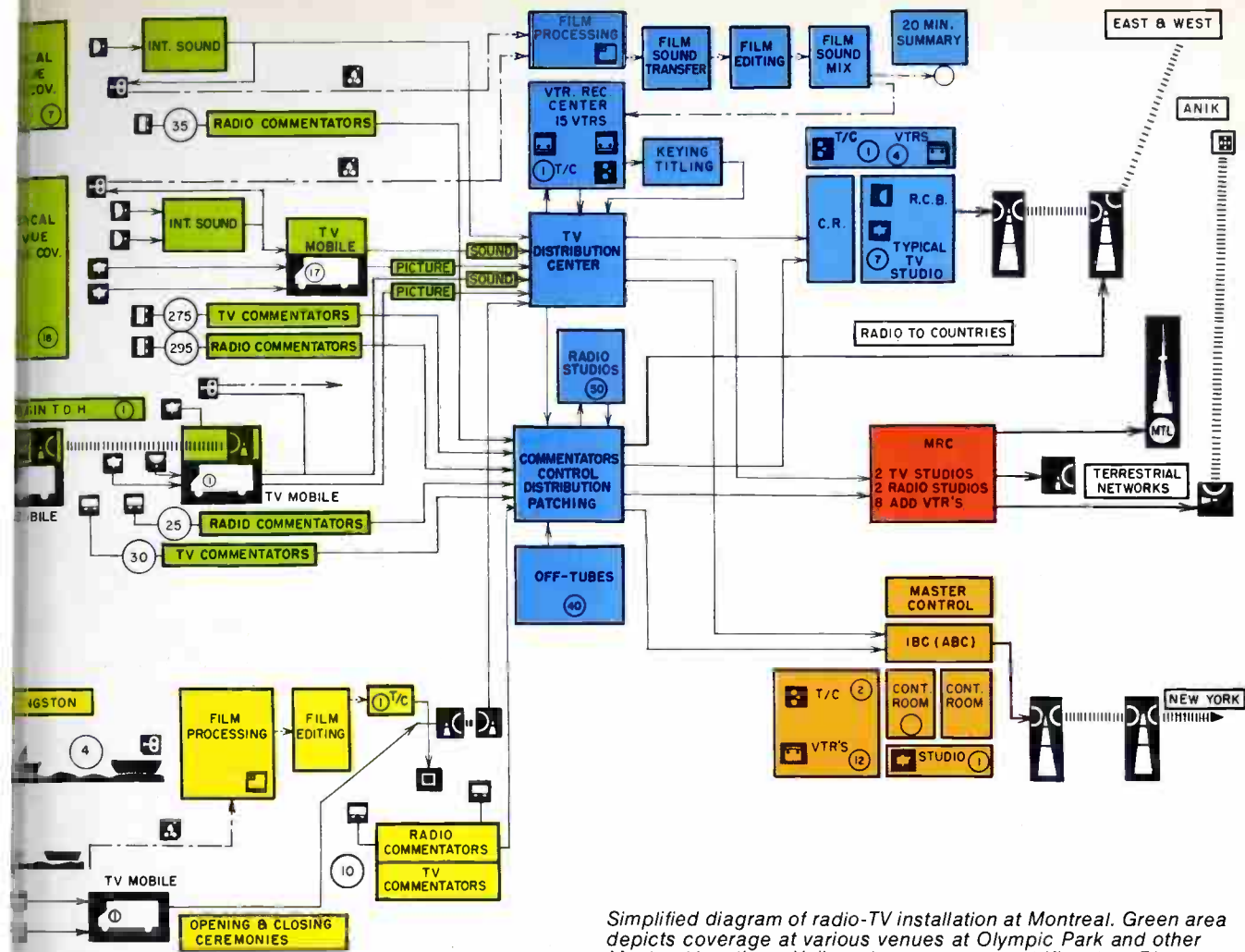
ORTO provides audio pick-up at the commentator positions so that broadcasters can transmit their own commentaries from the venues both on radio and TV. The international picture and sound and commentaries are then routed to the Main Broadcast Center for distribution, recording and transmission.

Not everything, of course, goes through ORTO

The official Canadian body in charge of the games is the Comité Organisateur des Jeux (Games) de la XX Olympiade, Montreal 1976 or COJO, in short. COJO is contracted with the CBC to provide radio and television facilities and services for world wide coverage (as required by the International Olympic Committee rules) and ORTO is the result. But those countries wishing to provide their own coverage (such as ABC) contract directly with either ORTO or COJO to do so and it is sometimes confusing to keep it all straight. If you have read in one place that Ampex has supplied AVR-2s for the Olympics and in another that RCA's TR-600 will be used, both accounts are correct. ORTO's own VTR center uses AVR-2s; the facility that ORTO will provide for EBU/OIRT will be equipped with leased TR-600 (ABC, working independently of ORTO, uses Ampex

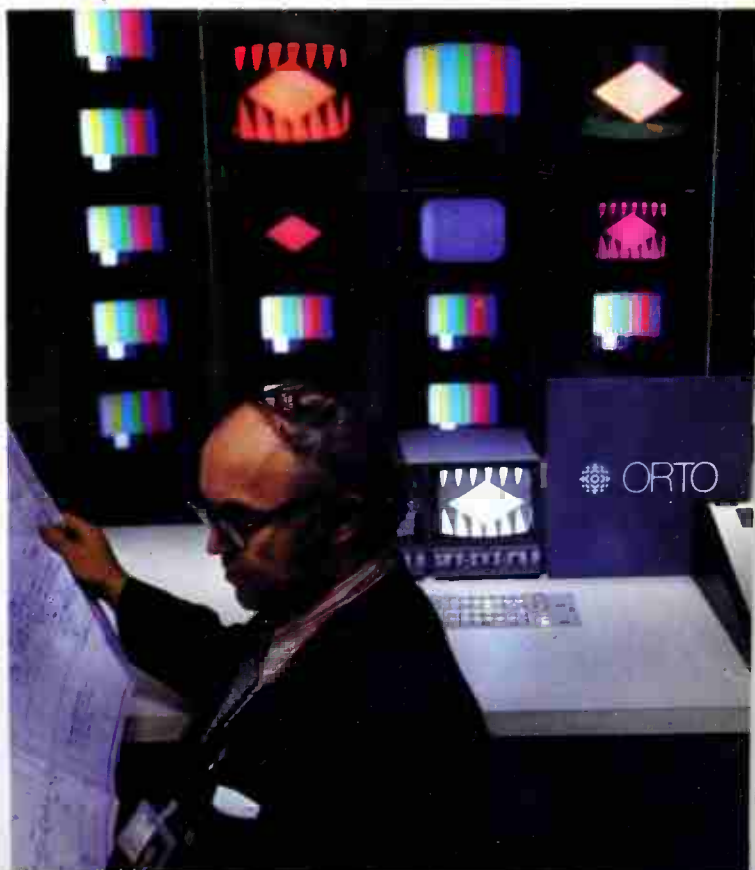


ORTO synchronizing system using Leitch Video Labs equipment.



Simplified diagram of radio-TV installation at Montreal. Green area depicts coverage at various venues at Olympic Park and other Montreal locations. Yellow shows coverage at Kingston. Blue area defines facilities at the Main Broadcast Center (MBC). Red refers to CBC facilities at Maison Radio Canada. Orange indicates the International Broadcast Center and ABC's technical center.

Scene from quality control room equipped with Conrac monitors and Ros\$ switchers. Color plates courtesy Conrac.



COJO, and not ORTO, is responsible for the Swiss timing system and the spectator displays*** in the Olympic stadiums. We'll talk about some of the ABC equipment later on, but before doing so we want to provide a few details on the ORTO facility.

Some of the differences at the 1976 Olympics

One of the primary differences that will distinguish the 1976 Olympics from those of Munich four years ago is the great effort that ORTO is going to in order to supply simultaneous feeds. Often as many as fifteen feeds will be coming in at once. This means individual countries will be able to pick and choose and put together their own program as opposed to taking a central producer's summary as was often the case at Munich. This objective, of course, requires more in the way of technical and production facilities.

There are two other objectives that ORTO holds high; emphasize the human character of the games and to maintain neutrality of coverage. Neutrality is one of the major preoccupations of ORTO programming and production managers. (They are so concerned that they have insisted on sensitivity training for all producers to ensure that they will be able to live up to the objective of unbiased coverage.) The winner of a competition is im-

*Conrac, for example, will supply indoor Telescreen systems at four Olympic sites. These systems will use Eidophor television projectors to provide video pictures 12-ft. x 16-ft. Altogether Conrac has sold \$3.3 million of display equipment to COJO. RCA sold a \$1 million two-way radio system for security purposes (consisting of 600 TACTEC portable two-way radios and 20 base stations) direct to COJO.

BROADCASTING THE OLYMPICS

portant, but the athlete who ran fourth or eighth or last place is also important to the country whose honor he or she represents.

One piece of equipment that will be of big aid in helping Canadians meet these objectives is the RCA Video IV character generator. ORTO will use 13 such units (12 in vans and one at the MBC). The floppy disc storage capability is the feature that will come into play. Prestored on the disc will be visual information on team rosters, data on participants, etc. (to supplement the official computer printouts) thus enabling producers to come up with considerable pertinent information. The system's graphic capabilities can be used to display course layouts and similar information. ORTO is also planning to achieve a standard font by coordinating its display with that provided by Swiss Timing.

Although the \$50 million equipment budget of ORTO (not including the separate contracts it signed with EBU/OIRT) is substantial, this figure did not permit the purchase of standard equipment—unless it could be reused later. Thus a lot of equipment is rented—vans, cameras, VTRs, etc. (Eight of the character generators mentioned are rented, for example.) One exception is 15 AVR-2s which will be used later by CBC. Another is four vans purchased by CBC for later use. No brand new technology will be apparent except for some new microwave cable that will be installed by Bell Canada (more on that later).

Much of the elaborate installation at MBC will later be used in that same building in its future role as headquarters for an eleven language Radio Canada International (which will be something like the Voice of America for the U.S.).

Even the product most exclusively designed for the Olympics, the La Consolette, will be used later at the Commonwealth Games in 1978.

The La Consolette

The La Consolette can be used by two commentators simultaneously or alternatively, each with his own set of

The Number Of Different Sports At The XXI Olympiad Are 21.

The number of heats or matches are enormous: approximately 3,000 (e.g. track and field 110 events; boxing 600/700 matches; football 32 matches; field hockey 33 matches; basketball 55 matches; wrestling 500 matches; fencing approximately 1,000 individual matches; swimming 150 heats; etc.). In addition there are the medal presentations and opening and closing ceremonies.

controls (A or B). There is a third position (C) which can be used for tape recorder input, or interview microphone. Controls are color-coded and internationally symbolled.

If a commentator wants to go "on" or "off air", he is free to do so, providing that he presses the red button. If he should press the green button, which is reserved for talkback with his producer, the "on air" is automatically switched off. To come back "on air", he must press the red button which then automatically cancels the green button call. The black button allows the commentator not only to hear his own voice but also that of his partner, as well as a tape recorder plugged into position (C). The blue buttons, on the other hand, are reserved for the international sound, (indicated by two globes) and the P.A. system at his venue (indicated by a loudspeaker symbol). For emergency purposes, the commentator needs only to press the emergency button which will put him in direct contact with ORTO's Technical Control Center, and also with the technical supervisor at the venue.

All the main controls for the 700 commentator unit will be installed at the Main Broadcast Center and grouped as per competition sites. Each group of 20 control units will be supervised by a sound technician who will be able to communicate rapidly with any one of the 20 commentator positions.

The main controls at the Broadcast Center will permit a) a clean feed of the commentaries, b) a mix of the international sound to the commentaries, c) control c

continued on page 3



ORTO's Master Control at MBC. Each monitor represents a venue site.

We've lightened your load.

Here and here.

New portable video cassette recorder/player makes eyewitnessing news easier than ever before.

JVC has done two things to improve your ENG capability: we've made our gear lighter and we've lowered the initial cost. Our brand-new CR-4400U Color Cable Capstan-Servo 3/4" U-VCR weighs only 24.5 pounds, complete with rechargeable battery and standard 20-minute videocassette tape. And it sits as lightly on your back as it does on your shoulder. With the CR-4400U at your side, you're set to record top-quality color video, with a S/N ratio of better than 40dB. There's a full-function keyboard, including pause/still and audio freeze. Other JVC features include auto dubbing and multi-purpose meter to monitor audio, battery, video and servo levels. Our exclusive auto assemble function enables you to get into both, glitch-free edits between takes, and can be operated by camera trigger or remote switch. With warm-up time to full speed at less than 10 seconds, you're always ready to shoot. And you can shoot 50% longer, since the CR-4400U requires 50% less power than most other decks.



JVC's unique patented dubbing switch is provided to facilitate quality tape transfers. For playback through regular TV sets, an optional RF converter can be plugged right into the deck. The CR-4400U operates on AC as well with its companion

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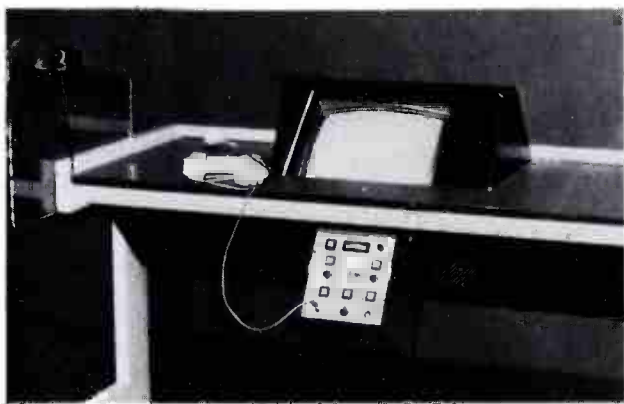
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JVC INDUSTRIES, INC.

BROADCASTING THE OLYMPICS



An "off-tube" commentator position with La Consolette shown below TV set.

Marius Morais, Director of Engineering and Technical Services, ORTO. Wall covering shows another facet of Mr. Morais' talents.



signal quality, d) swift localization of failures when reported, and e) verification of the system operation by means of test signals.

Synchronizing system

A rather unique synchronizing system has been adopted by ORTO to make sure that the various feeds can be handled without undue trouble. Key to the system is the Leitch Video Ltd. VSS-16N Video Source Synchronizer and the CSC-165N Color Sync Comparator.

The VSS-160N Video Source Synchronizer, as the name implies, is primarily a picture source sync pulse generator. When used in conjunction with a CSC-165N Color Sync Phase Comparator, multiple picture sources can be simultaneously synchronized and precisely timed. This phasing is achieved automatically without the use of a conventional genlock, see diagram page 30.

The color sync phase comparators are used at the point in the video system where precise video synchronization is necessary. A phase comparison is made between a reference color black and the picture source composite video. The error signal is PCM encoded and fed via a 2.7 KHz audio line to the VSS-160N phasing control input. Within the VSS-160N a digital phasing technique is used. Horizontal phasing in 4 nsec increments and sub-carrier phasing in 0.3 degree increments are provided.

In the case of the '76 Olympic games, the master sync generator and the remote video source synchronizers will be driven by rubidium standards. Approximately 20 remote feeds will be appearing at master control and must be simultaneously synchronized. These signals will be arriving primarily via microwave. Video phase comparators at the master control switcher input will phase compare these remote video signals to the reference color black signal. The encoded phasing control signal developed from this comparison will be fed via a 2.7 KHz standard telephone line to the remote locations, bringing them into phase coincidence in master control. In this manner any number of remote video signals could be held synchronous and in phase automatically so that they can all be treated as local signals for video mixing and other special effects. Momentary losses of the phasing control signal or interruptions of remote or reference video will not cause erroneous phase corrections. Since a

parity pulse code modulation is utilized the phase control signal is also impervious to impulse noise.

As one can see, this new approach to synchronizing remote video feeds greatly expands teleproduction capabilities. Editor's note: As we go to press we have learned that ORTO will also use four Digital Video System frame synchronizers.

The auto-camera

In the coverage of cycling road races and the Olympic Torch relay, the auto-camera, with a driver and cameraman (using a hand-held Editel mini color camera) can get close-ups of the riders becoming, in effect, a part of the pack. It will thus be able to provide the best possible action shots of the race. The quality of the pictures is excellent as the auto-camera's technical equipment is highly sophisticated.

The auto-camera is only one element of the complete cycling coverage system. A helicopter following the course at an altitude of about 1000 feet relays the auto-camera video signals to the main receive site at Maison de Radio Canada. From there it is sent by wire to the main broadcast center. The helicopter also carries its own camera which is used for overall shots of the race. Several fixed cameras placed at strategic points of the course complete the system.

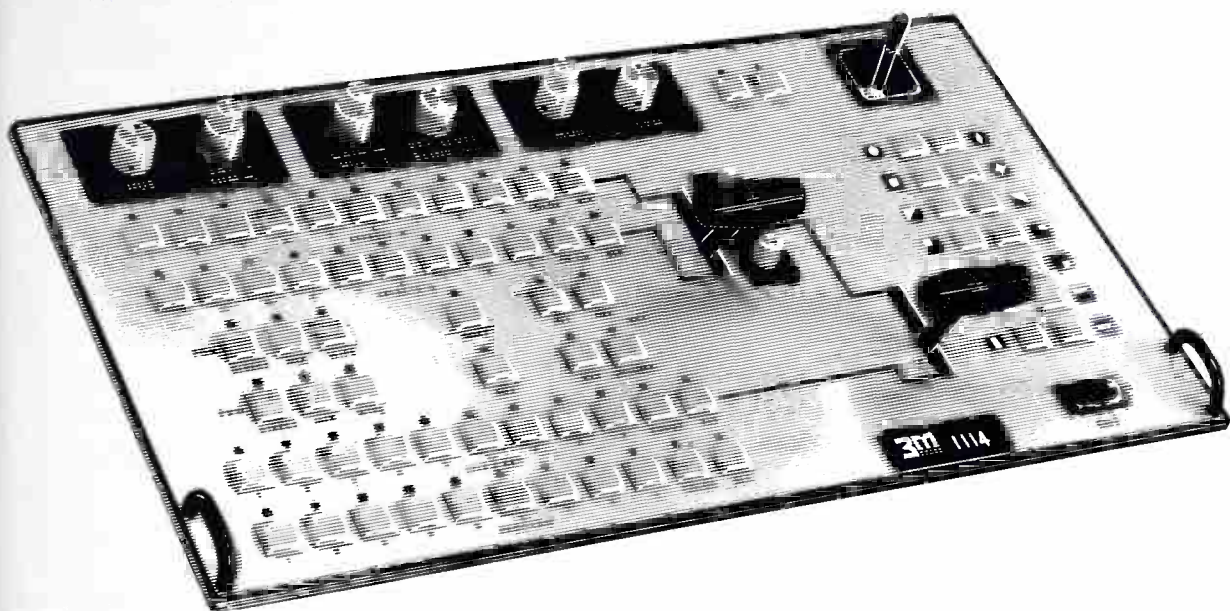
The uplink from the Auto-Cam to the helicopter will be a pair of Nural Model 20 DC1 2 GHz Omnidirectional Circularly Polarized Antennas. The downlink from the helicopter to Maison will utilize the Model 70 CO1 7 GHz Omnidirectional Antenna mounted on the chopper. The receive antenna atop Maison will be a Model 70 CR Parabolic Unit.

The 70 CO1 Omni Antenna will be configured with an extra wide (40°) elevation beamwidth so as to insure a good signal return in the face of helicopter banking, rolling, and erratic flight caused by wind gusts, ground effects, and the like. The 70 CO1 itself, displayed for the first time at NAB, is a new unit which Nural feels is a considerable promise for wide application.

All of the Nural antennas being used for the Olympics are circularly polarized. By the use of circular polarization, out-of-phase multipath signals are rejected, thereby

continued on page 35

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eliminating such undesirable effects as ghosting and smearing, which otherwise would present a great problem for a microwave link of such fragility.

TerraCom microwave equipment is used along with Nurad antennas.

New LD-4 cable pressed into service

To complete the facilities for the official Olympic opening on July 17, Bell Canada has been particularly busy. Bell Canada has ensured that the total package of video, audio, switched telephone network, dedicated-line and other special services needed for external and internal communications at the Games will be ready for final testing and fine-tuning by May 1.

Part of the problem is that venues from 20 to 330 miles distant from Montreal will be used for equestrian events, football, archery, yachting and hand-ball.

On Montreal Island alone, a total of 104 IF video circuits are needed to link the various venues with broadcasting and distribution centers operated by ORTO, the ABC network and the Canadian Broadcasting Corp. The task of supplying the needed cable would ordinarily defy sound economics since only a fraction of the expense of building a video cable network could be recouped over the two week period of usage. Bell's dilemma of reconciling cost with time was solved with LD-4 cable.

Fifty per cent of the cable used in this network is the 12-tube LD-4 cable, developed by Bell Northern Research (the research establishment jointly owned by Bell Canada and its manufacturing affiliate, Northern Telecom Ltd.). This cable was designed specially for use in the \$80 million, 415-mile, underground digital "super-cable" system which, when fully operational later this year, will carry the equivalent of 20,000 simultaneous two-way telephone conversations between Montreal, Ottawa and Toronto. Before it becomes part of the digital network it will solve the Olympic problem.

Before opting for an IF coaxial cable system, Bell Canada and its affiliates studied three other transmission systems. Use of the North American baseband network was rejected on the grounds of cost combined with the risk of signal degradation over the distances involved; restricted frequency availability and path blockage prob-

lems eliminated microwave transmission, while an FM multiplexing option was rejected because of the difficulty in designing a suitable modem within the tight time-frame.

In the LD-4 arrangement, the signals from each Olympic site are transmitted from the TV mobile van videobaseband signal. They are then modulated onto 70 MHz IF carrier. The IF signal gets amplified by repeater station several times before being demodulated back to the video baseband signal at the customer premises.

The remaining 50% of the cable to be used is standard multi-tube, PD 375 cable, manufactured by Northern Telecom Ltd. Although coaxial cable installation accounts for about 40% of Bell Canada's total workload connection with the 1976 Olympics, it represents on 34% of its budgeted costs in connection with the event.

The remaining workload and costs are incurred in connection with the supply and installation of telephone equipment, including audio facilities, necessary to meet the massive and complex requirements of the organizers, participants and broadcasters from over 130 countries.

Other details

The MBC Distribution Center will provide a master control for the reception and treatment of all video and audio signals from the venues and their distribution to the radio and television unilateral studios. Since the European Broadcasters Union (EBU) will use more than one studio, to serve approximately 35 countries, a sub-master control is required for EBU to carry out its own distribution to respective studio complex and/or country.

All the feeds going to or coming from the mobile vans, the commentator positions, the off-tube booth, the telecines, the VTRs and the unilateral studios for radio and television, will be routed, tested, controlled and monitored from the Distribution Center. They will terminate at Master Control.

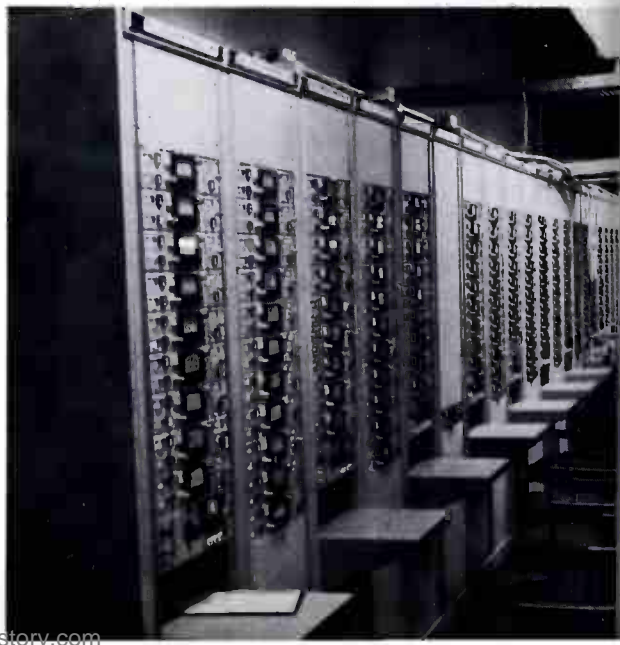
The video signals (with International sound) will be distributed by the brute force method, i.e. all signals will be delivered to all users. Commentaries will be distributed individually by patching as required by the users, i.e. 1 to 8 commentary feeds to one TV studio and 6 to one radio studio. The intercom and feedback circuits will be distributed in a married mode with the commentaries.

continued on page 37



View of the ORTO VTR Room equipped with 12 Ampex AVR-2 recorders.

View of bank of control equipment feeding 700 La Consolette positions. One group of 20 control units are under the supervision of one technician.



Full broadcast quality color VTR no bigger than a breadbox.



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Should you require something slightly larger than a breadbox, check up on the BCN 40. Designed for use in both O.B. vans and studios, it consists of tape deck and electronics unit providing on-the-spot editing facilities. Or add a processor unit and move up to the BCN 50 and take all your studio facilities into the field.

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For detailed information concerning the new Fernseh BCN, VTR system contact Fernseh, Robert Bosch Corporation, at one of the offices listed below. Saddle Brook N.J., Headquarters (201) 797-7400/ Chicago (312) 865-5200/ Houston (713) 688-9171/ Los Angeles (213) 649-4330.

FERNSEH means television.



BCN 50

BROADCASTING THE OLYMPICS

The master control will also dispatch all the signals for the R.F. distribution on 30 channels to monitors in about 250 locations throughout the building. Once the basic signals are delivered to the unilateral studios, it is up to the broadcasters to use them as they require.

Typical unilateral television studio

The studios planned by ORTO for EBU and others will encompass the following facilities:

- production room with picture mixing and insertion devices,
- audio room with console (16 inputs) and two sound tape recorders;
- lighting room with board and light intensity controls,
- video room with camera control unit,
- one telecine film and slide projector,
- four videotape recorders,
- two television color cameras and one B/W camera for titling; (the titling camera may be replaced by a character generator).

The video tape recorders and the telecine assigned to each unilateral studio are located in adjacent rooms; they are not to be confused with the video tape recording and telecine center that is to be operated by ORTO as part of the basic service.

Typical unilateral radio studio

Each of the 50 radio studios in the ORTO MBC build-

ing will be equipped with:

- a production table,
- an audio console to accept 6 commentaries at any given moment,
- three audio tape recorders,
- support intercommunication systems,
- loudspeakers,
- one TV monitor if requested by user.

The quality control room

From the quality control room (separate from master control), the Director of Program Services and/or his assistant or delegate, will be able to supervise the electronic coverage, picture and sound, at all the active venues. Twenty-nine color TV monitors will be available to present all the picture signals while the international sound from any venue could be selected at will to be monitored. A sound technician will be in attendance to assist in the selection operations.

A technical supervisor will be on duty to evaluate picture and sound quality from a technical point of view especially as to uniformity in quality of electronic signals originating from different points.

A telecine, for the playback of the films from the film covered venues, a slow-motion VTR, and a titling device, will also be controlled from this room.

Continuous Trieste processor to be used

Three Trieste MTV Series Processors will help provide film coverage of the Olympic Games. In Montreal two MTV 58 Trieste processors will be set up to provide fast film processing at the rate of 60-ft. (20 meters) p



Typical radio studio supplied by ORTO. La Consolette is seen inside announce booth.

Many different manufacturers equipment gets tested at the Olympics. RCA, for example, supplied Austria with \$2.5 million worth of equipment for the Winter Olympics including TK-44 cameras, VTRs and telecines. Central Dynamics and Ampex are big suppliers to CBC vans. At the Winter Olympics, 4 Fernseh KCUs and 4 KCNs were used. CBC will use over 30 Fernseh cameras.



Over 1500 Astrolit (Racal-Amplivox) Sportcaster headsets will be used at Olympics supplied by Conway Electronic Enterprises Ltd. Sports commentator is Ann Moore BBC (1972 silver medalist).



te each. In Kingston an MTV 38 processor will be lled to help in the broadcast of the yachting events duled for that city.

ae Triese MTV series of processors is designed to e unvarying consistent quality and performance. In hour day, 57,600 feet of film can be processed out volume problem. The MTV 38 processor, how- is capable of running at 40-ft. (14 meters) per te of 16mm film, processing 38,000 feet a day (40 per minute over a 16-hour period).

Broadcasting And The Olympics—From 1900 To The Present

adio in a rudimentary form first appeared at the 1900 Paris Olympics and TV was tested at the 1932 Los Angeles Games. It was the 1936 Berlin Olympics that marked the beginning of televising sporting events. Residents and visitors to the games of the XI Olympiad watched flickering black-and-white images on 19-in. Fernseh tube (receivers) in some 21 locales throughout the city and at the Olympic Village. The first worldwide Olympic broadcasts were the 1920 Antwerp Summer Games by radio. The 1956 Cortina Winter Games and the 1960 Rome Olympics received worldwide television coverage. Since then, the role of broadcasters and the scope of the coverage have never ceased to grow. The Games have now become a festival bringing to the entire world the spectacle of the best athletes from 21 disciplines in competition. In 1976, radio and television transmission of the Olympics will reach an estimated audience of one billion throughout the world.



Getting to the Olympics is a risky job. ABC sailed to the Winter Olympics and found Roll-on/Roll-off cargo service of Atlantic Container Line a safe method. Shipped were three 50-foot vans, one truck, and five cargo containerloads of TV gear.

ABC At The Olympics

The Canadians, through ORTO, are committed to unbiased "world" reporting of the Olympics to an international audience. ABC, on the other hand, serves primarily U.S. viewers. In providing this unilateral coverage, ABC can concentrate on events in which American athletes are key competitors (and as such can show Americans receiving more gold medals than any other

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ABC supplied superb TV coverage of the Olympics using Philips PC 100 'Triax' TV cameras equipped with Rank Taylor Hobson Varotal 17-A lenses (16:1 zoom ratio covering 30° angle down to 1.9°—more with extenders). Seven PC 100s are part of the ABC Mobile Unit 6 along with Ward-Beck audio switcher and Grass Valley video switcher (Van 1) and Ampex VTRs and slo-motion recorders.

All photos this page ©Heinz Klutmeier.

View of one of ABC's two control rooms at Innsbruck looking over the shoulder of producers' communications console.



country, even though the officials tally might be otherwise). ABC efforts at the Olympics are unique in that it, among all the other broadcasters covering the event, relies least on the host country. The magnitude of the ABC effort is second only to that of the host country.*

At the winter Olympics at Innsbruck, ABC set up and operated its own technical center and studio complex. This 56-room facility measured 100 × 120 feet not counting ABC's full-sized Production Control Sports van shipped by boat to Europe. ABC is disassembling and shipping this same complex of equipment to the International Broadcast Center, Cité du Havre to cover the summer Olympics in Montreal.

At Innsbruck, ABC set up its own cameras for

*Following the award of U.S. TV rights to the Winter Olympics to ABC in the spring of 1973, ABC engineering and ABC Sports personnel headed to Austria. The engineering group was headed by Engineering Vice President Julie Barnathan and Phil Levens, named Engineer-in-Charge, and included Joe Maltz, head of facilities design, and Jacques Lesgards (European Operations). They then started the three-year task of budgeting, planning, designing, ordering, building, testing, dismantling, packing, shipping, re-assembling, retesting, interfacing with European equipment, system testing, operating, dismantling, packing, return shipment and distribution of facilities back in to the ABC domestic operation.



ABC accomplished quick camera relocation at Innsbruck by helicopter. (Normally cameras are put on pallets and carried.

(L to R) Phil Levens, Broadcast Operations and Engineering Geoff Mason, ABC Sports; Elton Rule, President and Chief Operating Officer, ABC, Inc.; Julius Barnathan, Vice President in Charge of Broadcast Operations and Engineering and Marvin Bader, Director of Special Projects



hockey, figure skating, speed skating, the 90-meter slalom jump and opening and closing ceremonies. It relied entirely on its own signals for coverage of these events using the super sports van as the production control room. It added supplemental cameras to the 70-meter slalom jump and the Alpine events. Phil Levens, the Engineer in Charge of ABC's Olympic operations reports, "Since ORF (Oesterreichischer Rundfunk) was only covering the lower half of the Alpine events, we elected to cover the upper half of these events unilaterally and combine with the ORF feed to provide complete coverage. This also enabled ABC to cover most of the Slalom events unilaterally. The U.S. audience were the only viewers who saw the complete downhill runs."

The Innsbruck ABC TV Center included one medium-sized two-camera studio; two control rooms; nine machine VTR room; a telecine room for two complete film chains and a sprocketed synchronized tape player; and an elaborate master control room. At Innsbruck it was necessary to receive inputs in both 62

continued on page 4

BROADCASTING THE OLYMPICS



Joe Maltz, head of facilities design, standing by the standards converter necessary at the Winter Olympics.



Studio room (Olympics home of Jim McKay) used variety of props to clarify the ski-runs.



Character generators will come into their own at the 1976 Olympics. ABC used Chyron graphics units to do the job effectively.



Old reliable PC-70s performed well at the Winter Olympics.

PAL standards and 525 NTSC. A remotely controllable routing switcher made it possible to connect to any and all events without a patch board. This routing switcher and three Chyron character generators were capabilities not available at Munich. A PAL to NTSC standards converter was borrowed from the BBC so that when ABC did take the ORF PAL signal it could be fed out at the 525 lines.

An elaborate communications system is part of the complex. This is quite important for the Montreal coverage since everything is done in real time. At Innsbruck broadcasts were delayed—but this called for considerable post-production capability.

The Innsbruck installation called for some summer work in 1975. About 28000 meters of cable was laid to beat the first snow fall. By February 4th this cable was buried 14 feet under! The cables to the cameras at the starting position of the downhill ski events were each 2800 meters long, a length never before attempted on cable. During the games the cameras were moved to new locations daily by helicopter. At the Lizum Alpine location events took place on the slopes of two mountains whose peaks are three miles apart and separated by a valley (where the mobile units were located). For each event one camera was located on the opposite mountain to provide continuous coverage of a complete run of the course without camera switching. Of course a great panoramic view was a side benefit. A special lens was developed for this camera in a cooperative effort between ABC and Angenieux Corp. to add an extra dimen-

sion to the coverage. An added 3.2X multiplier was installed in an Angenieux 18X Zoom lens to extend the maximum focal length to 3.2 meters. At the conclusion of the Alpine events this facility and crew moved overnight to Bergisel for coverage of the 90-Meter Ski Jump the next day. Helicopter transportation expedited the 12-mile move across mountains. Of course all cable were pre-installed.

The total camera complement at Innsbruck was 22—either PC-100s, PCP-90s or PC-70s plus two ENG units (later dubbed ESG gear by ABC Sports). Ikegami HL-3 cameras and Sony 3800 U-Matic VTRs were used to cover feature stories and to augment sports coverage. The portable gear was also helicopter mounted to provide overviews of the competition areas and panoramic shots of the surrounding scenery. Sony 2850 VTRs and time base correctors were used to transfer this material to 2-inch quad tape for broadcast. The dual audio channels were used to separate commentators from natural sound so that the material could be edited and audio mixed required.

All of this equipment and more will be taken to Montreal. (Cables, incidentally, were precut at New York to accommodate floor plans of both the Innsbruck and Montreal facilities.) Seven ENG systems will be available. Four full-sized vans will be used. The VTR in the technical center will be increased to 12—the maximum that will fit. ABC used over 130 technicians at Innsbruck plus 13 managerial technical people. At Montreal technicians will be increased to approximately 200. **BM**

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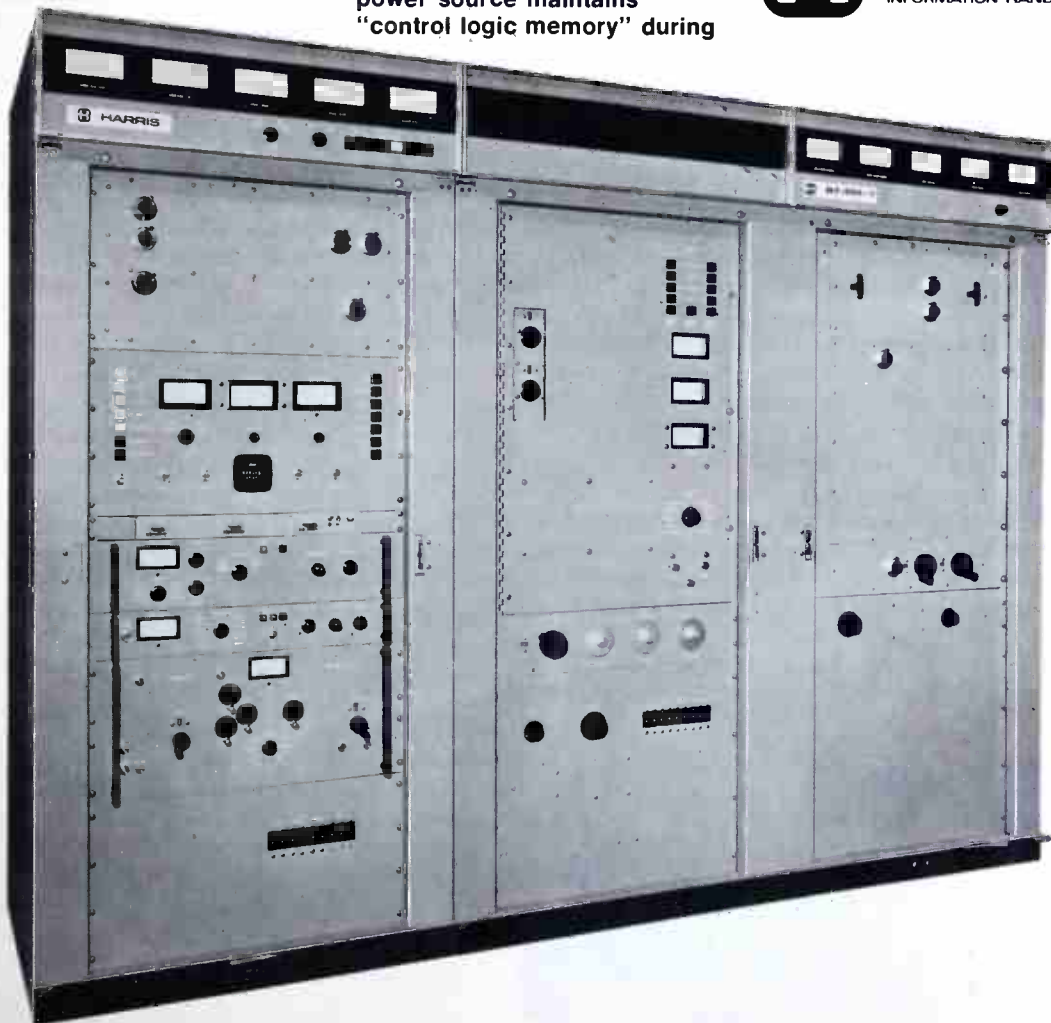
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"All-News Radio"—It's Great For Some Markets, If You Do It Right

Largely as a result of the opening of NBC's News and Information Service last summer, more than 70 AM and FM stations have gone over to all-news in the last half year, and nearly all of them are very glad, so far, that they did it. But success with all-news is far from automatic; the station has to do a lot more than just feed the NIS signal to the transmitter.

Until the past year, radio stations putting nothing but news and related material on the air were a few lonely giants—WCBS and WINS in New York, WCAU in Philadelphia, etc.

The success of these stations was usually written off as a special attribute of the largest metropolitan markets, hardly transferable down the line to the medium and small cities.

Then came XTRA, the across-the-border station in Tia Juana, which carved a big audience slice out of Southern California with nothing but news. Early last year came, too, the culmination of long thought at NBC about the inefficiency of a massive network news operation for radio, on the air, generally speaking, no more than five minutes during each hour. NBC's response was the News and Information Service, which feeds to subscribers, via telco lines, a mix of hard news and news features, designed to fill, at the station's option, between 23 minutes and 47 minutes each hour through the 24-hour day.

NIS, with headquarters and main production facilities in New York and a world-wide newsgathering framework, went "on stream" June 18, 1975, with about 20 subscribing stations. About 35 more joined up before the end of 1975; as this is written the total is around 70. The fee for the service is based on market size and on the total NIS air-time chosen; it ranges from about \$750 a month to about \$15,000 a month. Only one station in a market can subscribe; it is an "exclusive franchise" operation.

What NIS sends to subscribers is an ultra-smooth mix of headline news, 5-minute news features, short "think" pieces, all moving along at a very fast clip. There are something like 350 of the features every week, on such topics as coping with inflation, finding good health care, etc., etc.; reviews of books with the authors on tap for comment; personality pieces; trends in thought—NIS

programmers themselves capsulize the coverage "from Atomic to Zen Buddhism," and they don't overstate it.

The mix is around 23% features, 77% hard news, but the operation is kept loose so that a big hard news break can get more time.

The hard news includes actuality reports from all over the U.S. and the world. All of it—news, features—is put onto the NIS line by a corps of "personalities" chosen for air presence. Nothing is anonymous—the announcers introduce each other, there are regular voices for sports and for political news, etc.

NIS has a story to illustrate success in this personalizing of the service. A station operator in a Southern city ruefully congratulated a rival station, a NIS subscriber, on the rival's wonderful new sports announcer who, of course, was one of the regulars at NIS headquarters in New York. NIS claims that its service is structured that it is identified solely with the air personalities, who become part of the station's own roster with high recognizability and drawing power for listeners. NIS never identifies itself as "NBC" or "New York, New York."

How is it working? BM/E interviewed about a dozen station managers on the NIS list, who had been on the air with the service at least four to five months.* Although half a year is clearly not enough time to take definitive measure of such a big new thing, the success stories are so predominant that we can tentatively call it a real go.

Also tentatively, we learn that largest-market size is not the critical factor: stations in markets down to small-medium are doing very well.

There was no single reason for a switch to all news. A number of station managements were stimulated to think about the possibility by the emissaries of NIS, and went along because: (1) they were doing badly and wanted change; (2) they were doing well but thought all-news looked better for the long haul; (3) there was no all-news station in the community, and filling the gap seemed to offer a chance for long-term consolidation; (4) news stations in nearby cities were taking listeners and a local news show was the obvious way to get them back; (5) a station was dissatisfied with its demographics and believed news would shift them for the better.

In almost every case there was a substantial shift in

Typical of "personality" features on NIS is this interview of R.A.M. Copenrath, President of Adfa-Gevaret, (right), by Jim Newman, of NBC.



*In the preparation of the story BM/E interviewed the following stations: WJZ, Trenton, NJ; WJLZ, Bangor, ME; WCSH, Portland, ME; WSCQ, Columbia, SC; WNEB, Orlando, FL; WBAL, Baltimore, MD; KEND, Lubbock, TX; WERE, Cleveland, OH; WNIJ, Chicago, IL; WRHC, Jackson, MI; WNNL, Louisville, KY; WITF, Tusculum, TN. Seven of them are AM, five are FM.

audience, often entailing an initial loss in listenership, which had to be rebuilt with new listeners.

The seriousness of this shift depended on what the station was doing before. Going from rock to news meant, for example, a sharp drop in the below-20 group and a rise, after a start-up period, in the adult sections, and this was just what some managements wanted.

In every case, success has required a strongly-managed local news operation, on the part of the station itself, to fill the times left open by NIS and give the station local "identification." As Robert Mouty, Vice President and General Manager of NIS, put it to BM/E, NIS cannot run the station: whether that is done well or not depends on the station management, and a really good local news operation is an essential part of good all-news management. The NIS feed is designed to meld seamlessly with the local news. Listening to the transitions, a BM/E did several times, gives the impression that the mike has simply been handed from one part of the station's own staff to another.

Another essential of success, everyone agreed, is an *out-promotion program*, to tell people about the new character of the station, the new service it has begun to provide. Without such promotion the station would spend an acceptably long time getting back listeners after the shift, or might never rebuild enough to make all-news viable. Billboards, newspapers, even ads on other, non-competitive radio stations (which can often be bartered for ads on the all-news station) have all been used.

There was one negative report, among the dozen interviews, from a manager in a medium-large Southern city, who said he was dropping NIS. He thought the NIS material moved too fast, with "features" too light, too superficial; they had driven away his young-adult audience, he believed. He was going back to "Easy Listening." He said he still had faith in a "good" all-news operation, but thought NIS had failed to provide that. He also made the point that news has to be handled well because so much of it is "bad" news, and this is inimical to the mood for impulse buying, so important to advertisers.

The last point was echoed by a manager who was satisfied with his venture into all-news, so far, but emphasized that this was very early in the game. He noted that TV news had become more than ever "entertainment", with the announcer's hair cuts, their banter with each other, their skill in balancing pencils, becoming the main subject matter. This left a "seriousness" gap which radio might well fill. But news is a too-edged sword; if its is *too* grim, it has a tendency to depress people, drive them away.

The story that follows is a report on how one station, WBIR in Knoxville, Tennessee, went all-news. It gives some idea of what the early months are like. The whole tells us that all-news, in all probability, is here to stay. How far it will spread in broadcasting is certainly an unknown at this moment.

BM/E

WBIR, Knoxville: Why It Went All-News

By Jay Gaines

An undeniable air of excitement pervades the corridors, offices and studios of WBIR Radio in Knoxville, Tennessee, and the charged atmosphere is the result of a recent change in format by the Multi Media, Inc. station. On January 12, 1976, WBIR discontinued its music oriented programming in favor of an all-news format. No more disc jockeys; no more records to screen; no record promotion men to interrupt the program director's day; no program balance need to consider. At WBIR the newsroom has become sovereign as the station now broadcasts "News Anytime You Want It—24 Hours A Day."

The all-news concept, of course, has been a part of broadcasting for some time now. Ever since the ill-fated KPIX-San Francisco experiment of 1960, which lasted seven months and lost the station's owners over \$50,000, many stations have ventured into this high risk programming area with extremely favorable results. Noticeably, though, most of the all-news operations have been situated in the larger markets—New York, Chicago, Pittsburgh, Los Angeles, Dallas, Miami and other cities of comparable size. The majority of medium and small market stations, meanwhile, have been conspicuously reluctant to pursue any programming endeavor of such potentially hazardous nature. Consequently, WBIR venture takes on added significance. How can an all-news station survive and operate profitably in a highly competitive medium market (16 radio stations, 3 TV stations, and 2 daily newspapers)? Neal Branch, General Manager of WBIR, believes he and his staff have the answers.

The decision to change formats was not a desperation

move by an ailing station. WBIR has served the Knoxville market since 1941 and has consistently ranked as the number one, two, three or four station. The station has enjoyed the luxury of a solidly-entrenched morning personality, Doc Johnston, who for 28 years has awakened Knoxvilleans with his easy going manner and sharp wit. WBIR also enjoyed the advantage of being associated with one of the top television outlets in the market, WBIR-TV (CBS affiliate). Sales have always been excellent on both the local and national level. There had to be a reason why an apparently successful station would decide to "switch horses in the middle of the race."

"I felt that we needed to strengthen our identity," explained Branch. "We've been very successful in this market, but our morning man (Doc Johnston) is retiring in August and I decided that if we ever wanted to explore other alternatives, now would be the perfect time to do so."

In answer to the question, "Why news?," Branch replied: "In this market we have 16 stations doing everything; m-o-r, contemporary m-o-r, top 40, easy listening top 40, religious, gospel, country, up-town country—you name it and some Knoxville station is programming it. The only thing not being done was all-news. And based on our knowledge of the market, we felt news was the only way to go to strengthen our position in the market."

To achieve this objective, WBIR reorganized and established a central news department consisting of 23 persons who combine their expertise and efforts to serve both radio and TV with local and state news. The department is headed by Tom Poe, News Director, who oversees all assignments and broadcasts. Carol Utley

continued on page 48

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ALL NEWS RADIO

serves as Assistant News Director and David Faulk as Radio News Editor. Nine anchor-personalities, working in two-man teams, handle all radio news broadcasts. In addition, the news team is supported by "stringers" throughout eastern Tennessee and Kentucky and the station has reciprocal news agreements with radio stations all over the country.

The unique attitude of this combined radio-TV news operation is that radio has priority over television. All news stories are funneled to radio first, then to television. Anchor-man Carl Williams discussed this policy: "Radio news, under our concept, has been a rude awakening for the electronic journalism people. They were accustomed to going out to a fire, taking pictures, making notes, returning to the station, processing the film, and writing the story in a leisurely fashion. Now, the emphasis is on a radio news story first, TV second. Get the facts and the story on the air in minutes—every story has an immediate deadline. TV is secondary because the news is much later in the day whereas radio is now!"

According to Branch, "The secret of our operation is the news service of NIS. No local station could possibly duplicate their service."

NIS is the NBC News and Information Service which is the backbone of the WBIR operation. Fifteen minutes of the service is carried every hour during the day and at night WBIR carries the entire 23 minute feed. In addition to NIS, CBS news and features are broadcast every hour except drive-times. Therefore, WBIR newsmen are responsible for approximately 35 minutes of news during drive-time hours and during non-drive, slightly less. It

makes for a demanding schedule. Judy Jenkins, one of the nine co-anchor personalities stated, "You're always busy and there's plenty to do . . . but we love it."

Each hour of WBIR consists of the following:

Traffic Hours — 6AM — 10AM & 3PM — 7PM

- :00 Local news
- :05 Time/weather/traffic
- :06 Local news
- :11 Sports
- :12 Local news
- :15 World & National news
- :20 Time/weather/traffic
- :23 Human interest features
- :30 Local news/weather
- :40 Sports
- :41 Local news/weather
- :45 World & National news
- :50 Time/weather/traffic
- :53 Human interest news

Non-Traffic Hours — 10AM — 3PM & 7PM — 6AM

- :00 CBS News
- :06 Local news
- :11 Sports and special features
- :20 Local/time/weather
- :23 Human interest features
- :30 Local news
- :36 CBS Features
- :41 Sports
- :45 World & National news
- :50 Time/weather, Public Service
- :53 Human interest news
- :57 World & National news

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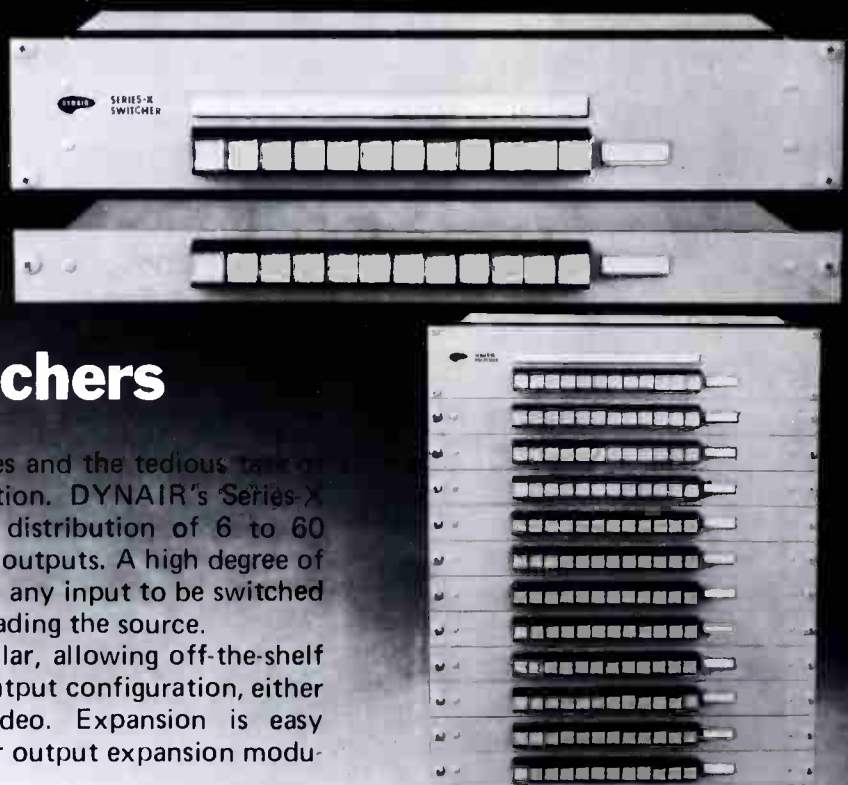
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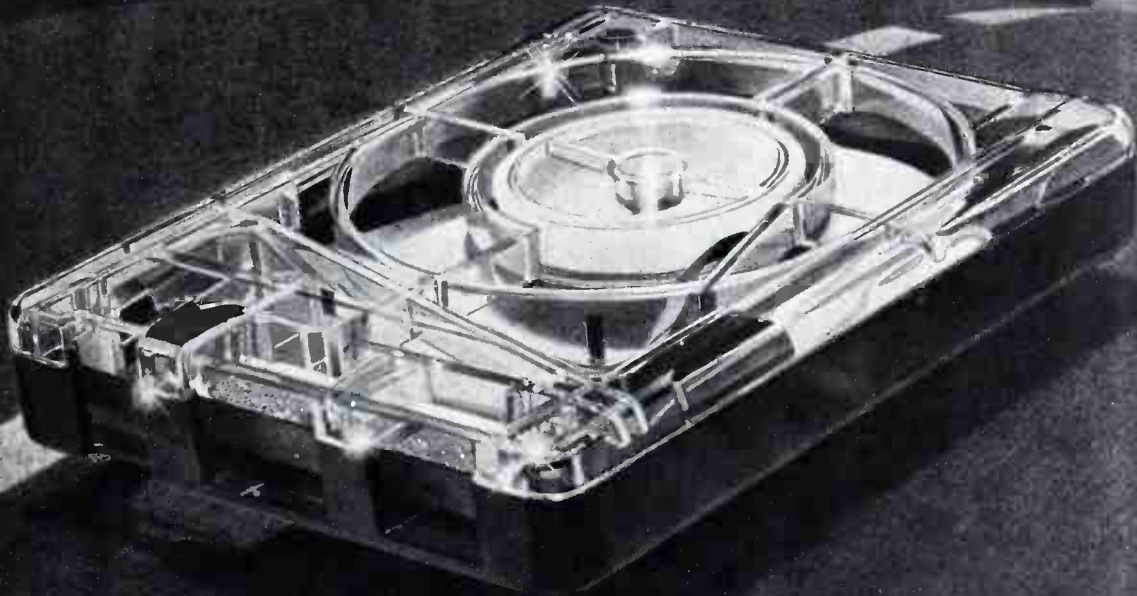
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ALL NEWS RADIO

The station schedules 14 minutes of commercials every hour. There are no station jingles, only three rotating electronic logo sounders (provided by NIS) which are utilized as signposts during each hour for the various features. There are no talk or discussion programs and no plans to editorialize unless the occasion warrants it and then only on local issues. WBIR is *all-news, all the time!*

The major problem confronted by the news people each day is the avoidance of repetition. Branch says, "There's some, of course, but there is repetition on music stations with their prime programming factor. You'll hear the same record repeated over and over and over throughout the day. You'll hear the same news story repeated on WBIR, but constant rewrite keeps the news fresh."

How will the new format be accepted? It's too early to tell, but according to Branch, response has been excellent at both listener and advertising levels. "We know we have a lot of people listening who never listened before."

The market may just be cosmopolitan enough to accept and support an all-news station. Although the city's population is only 180,447, the metropolitan area numbers nearly a half-million (452,281). Five hundred plants, representing 51 diversified major industries, are situated in the immediate area and Knoxville literally abounds with educational, cultural and recreational facilities. The University of Tennessee with its 30,000 students is headquartered in the city along with Knoxville College. Knoxville boasts a symphony orchestra, 10 museums, an art gallery, an auditorium-coliseum, a



Billboard describing all-news service. WBIR is one of the stations used by stations to alert listening public to its change in format.

half-million volume library, zoological park, choral society and opera workshop. The city is considered to be the "Gateway to the Smokies" and several million tourists pass through Knoxville each year enroute to the Great Smokey Mountains National Park which is located 39 miles south. Twenty miles west of the city is the nation's nuclear center at Oak Ridge. And within 100 miles, six TVA (Tennessee Valley Authority) lakes offer more than 2,000 miles of shoreline providing fishing, boating and swimming. Culturally and educationally, Knoxville appears ready for an all-news station.

Only time can tell if WBIR is ready. Branch said there is no way to determine if his overhead under the present operation has increased over the old format because the operation is too new. He feels that his costs have increased slightly, while, on the brighter side, billing has increased slightly when compared to January, 1975. An interesting fact is that when the change took effect, the station lost only one account. Solid success may be long way off, but Neal Branch voiced the general consensus of the entire staff when he said: "Radio is a very exciting medium and the concept of instantaneous news makes for even more exciting radio."

And that is what it's all about on WBIR . . . "News Anytime You Want It, 24 Hours A Day." Broadcasters will be watching Knoxville with more than passing interest. **BM**

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The KTVY News Crew: Experts At Stimulating Local Interest

I've read about the achievements of this Oklahoma City news operation in recent Kodak ads. There's more to the story than how film is used successfully. It is narration and story content that helps the station win awards. ENG is used when news should be live.

you make events like quilting bees or blood donations interesting enough to win both the accolades of the public and viewer ratings? At KTVY the answer is yes. Recently, KTVY News cameraman Darrell Barton and a reporter were assigned to cover a quilting bee at a church, where a women's group was making certain the Syrian refugees immigrating to the community would feel a little warmer during the coming winter. Later that afternoon, Barton visited a blood bank where 20 young men from a fraternity were making donations for a local youngster in need. Neither story offered the drama of a fire or an accident, and no one was taking aim at a

prominent politician. But it is the stuff that good, local television is made of.

Examples such as these helped the Oklahoma City, Okla., NBC-TV affiliate get selected "News Film Station of the Year" in 1975 by the National Press Photographers Association. It was the second time in eight years that KTVY, formerly WKY-TV (Channel 4) was selected for this accolade, having also been chosen in 1968. It's the outstanding work that Barton puts into such jobs that won for him last year the NPPA "News Film Cameraman of the Year," award. KTVY has consistently been number one in the market in news ratings.

"We have a strong commitment to telling local stories in depth on film" says Ernie Schultz, director of information for KTVY. "We do not believe that the number of news films in a newscast is as important as how well each story is done. This means, whenever possible, telling a story with film—a story with a beginning, a middle, and an end. This involves more than 'taking pictures.'"

Barton displayed this philosophy in action both at the church and the blood bank. On both assignments, he spent considerable time speaking to the people involved. He found out why they were really there, what they were doing, and who they were. When he was ready to film, he treated both stories as mini-documentaries. There were few standup interviews. Instead, Barton took full advantage of the portability of his CP-16/A. There were at least 15 scenes filmed for each story. Barton ranged physically from sitting on the floor to standing on tables, looking for interesting visual angles, while recording wild sound on film with a shotgun microphone.

Both stories were edited by Barton and the reporters involved. The reporters later wrote and recorded narrations on magnetic tape cartridges. It is typical of the way that the reporter camera-operator crews work at KTVY. There are three half-hour shows at noon, 6 and 10 p.m., and five-minute news breaks at 7:25 and 8:25 p.m. and at 1 a.m. Schultz, who anchors the noon show, looks for at least three locally originated film stories each morning. Others are added for the later shows, and film is rarely carried over until the next day.

There are four CP-16/A cameras, and everyone in the news department shoots film, including Schultz. Reporters and camera operators often switch roles in midday with one filming one story and the other reporting, and then changing jobs on the next assignment.

In addition, everyone knows how to use their older silent Bell & Howell camera. Barton says, however, that

Barton, one of the cameramen with CP-16A on his shoulder, can



Barton stands alongside KTVY news car, which transports reporter and cameraman team and all gear. KTVY was formerly WKY-TV; Barton was selected "News Film Station of the Year" in 1975 by the National Press Photographers Assn.



Story on donations to local blood bank by 20 young men of a college fraternity was based on extensive interviews before shooting, followed by 15 different shots, taken from every angle, to show sequence of story.



Every part of blood donation sequence was filmed. The shot-gun mike was carried open to up wild sound; narration is added later, after story written.



Story on quilting bee got same careful preparation before shooting as blood donations story. Floor shot gets close-up of sewing machine in action. Mike again gets wild sound.

KTVY maintains an ENG crew for stories that need immediate air break. Shown is Fernseh KCN camera, truck with microwave link to studios. For field recording, truck carries Sony 3800 units.



more than 95 percent of the news is recorded single-system sound on prestriped Kodak Ektachrome EF film 7242 (tungsten).

"Let's face it, in a market like this (43rd in the nation), we aren't likely to have too many big stories," Barton says. "But we make the most of what we have."

That includes shooting a higher than average ratio of film per story, including as many different angles as possible, he adds.

Reporters also don't spend much time on camera, Barton continues. Sometimes there is no option. For example, there was an instance when a judge barred cameras from a courtroom when an important local story was unfolding. So, the reporter appeared on camera in front of the courtroom.

"We seldom do that," he says. "Usually, a reporter on camera is a cop-out and/or an ego trip. But that isn't the problem. The problem is that it forces the reporter to come up with a conclusion on the spot. It doesn't allow us to do research or think through the real significance of a story."

"It is a funny thing for a photojournalist to say, but we

thrive on good writing. Our best stories go together and the film is processed and screened in the editing room when the reporter sits at a typewriter and creates a narration. We use displacement recorders, and record narrations on cartridges, usually combined with wild sound and interviews from location. It is quicker and easier than full coat."

There appears to be general agreement that this philosophy works. In 1975 KTVY won top honors in nine categories in competition sponsored in Oklahoma by the Associated Press. They won top honors for best news feature, sports story, general reporting, investigative reporting, documentary, and cinematography. The viewers seem to agree since KTVY has run first news ratings for many years, usually beating its closest competition by a 2:1 edge, Schultz comments.

KTVY has also been experimenting with electronic news gathering (ENG). "We have a Fernseh KCN camera, Sony VO 3800 field recorders and microwave gear, and try to use it as often as we can," Schultz says. "Occasionally, it really pays off. For example, we some exciting live coverage of a siege at a superm

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KTVY NEWS

including the capture of the people involved. There is no other way that we could have covered that story as well."

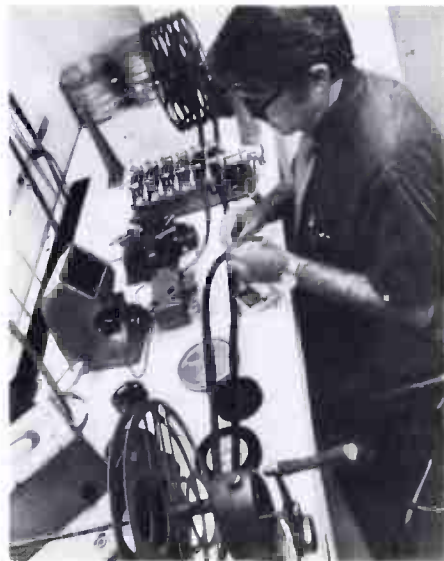
At present, Schultz has one regular ENG crew. Not every day turns up a story that needs to go on live and assignments could be covered as well by films. "As a daily working tool, it isn't nearly as portable as our film cameras," he says. Instead of getting 10 or 15 angles on a story, we usually end up with four or five. This changes the pace of the story on the air, makes it slower."

The equipment is also much more costly to purchase and operate, because of the added personnel needed, and he doesn't think that the videotape quality is yet up to film quality standards. Since the bulk of each news program is film, one can not indiscriminately switch to ENG without a noticeable colorimetry shift. ENG is used heavily for sports coverage and it is a great device for



Ernie Schultz (left), KTVY director of information, confers with associate on story assignments. Stories are written carefully, after film is processed, to have a "beginning, middle and end," then film is edited to fit the story.

Film editor at work on KTVY news story. In-depth coverage of local news has won the station a flock of awards and prizes.



getting that closing basketball show on the air, for example. The station's microwave range is over 35 miles

Schultz says that it is much too early to determine what the eventual balance between film and ENG will be. A lot depends upon what improvements are made in ENG equipment during the next several years. Meanwhile, he plans to use the one camera to best advantage whenever there is an opportunity.

During this period, he and Jack Sherry, promotion director for KTVY, have an agreement not to ballyhoo the "mini-cam" capability out of proportion. "I think some stations have made a big mistake by coming on too strong, too fast, with the instant news potential of ENG in their promos," Schultz says. "It confuses everyone and creates expectations which are impossible to live up to."

Last September, KTVY introduced a new feature "Saturday Magazine." The 30-minute program goes on the air at 5:30 p.m. every Saturday. It consists of a compilation of the best news and feature stories of the week. "Not everyone can see the news every day," Schultz notes, "and this gives them a chance to catch up on what they might have missed. So far, the reception has been excellent."

The station also has a well-deserved reputation for producing documentaries. It won an Emmy and earned several other Emmy nominations during the past several years, and is a strong candidate for consideration this season with "Until It's Not Here . . . No More." The documentary, filmed by Barton, who worked with producer Bob Dotson, focuses on Oklahoma's western plains Indian tribes.

The title comes from narration recorded for the opening scene. An old and courageous Indian woman is filmed walking on a path through the woods. She asks, "Do your children believe the stories you tell them of the past? Ours don't. They won't until it's not here . . . more."

"It was one of the most difficult assignments I ever had," Barton states. "It took months of refusing to become discouraged or impatient, and understanding that we were fortunate to get half of what we wanted in film. Our story deals mainly with the remaining members of the Arapaho and Cheyenne tribes in Oklahoma. Some 88 to 89 percent of them are unemployed. 93 percent of their children are school dropouts, and alcoholism is a rampant problem. This all occurred despite a glorious history. The surprise isn't that so many of them have surrendered to despair. It is that so many of them haven't."

Like all of the documentaries done by the news department, this one appeared in prime evening time, and thousands of brochures were sent to schools, museums and other organizations before it was aired. Another recent documentary, "The Looking Glass," which is about Black history, won an Emmy. Sherry estimates that some fifty 16 mm prints of that program are currently in distribution all over the country.

KTVY also produced a documentary about potentially explosive prison conditions months before Attica, and another warned about the dangers of high-rise fires long before "The Towering Inferno" ignited the public interest.

"We don't claim to have all of the answers," Schultz concludes, "but we know what works for us, and we stick to that to the best of our ability." **BN**

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BM/E is very proud to announce the completion of the 1975 Great Ideas Contest with the names of the contestants whose ideas won the most votes from readers. The year's contest was an even greater success than the initial one, in 1974; it more than amply fulfilled BM/E's objective of making individual broadcast engineering ingenuity widely available throughout the industry.

Each of the following three gentle-

men will take home a Panasonic 19-inch color TV set as a winner in one of the three main categories: In AM Radio — Jerry E. Shepherd, transmitter engineer, KTVX, Salt Lake City, for his waveform generator that synthesizes steady state tones; in FM Radio — Michael E. Marion, WTFM-FM, Fresh Meadows, New York, for his \$15 audio frequency counter; in TV — Myles H. Marks, engineer, WIIC-TV, Pittsburgh, for

his simple beam splitter for accurate color matching of studio color cameras.

In addition, seven gentlemen get Panasonic AM-FM clock radios as runners-up, in the subsidiary categories, as follows: In AM Control — Steven Terhaar, KVOX-AM, Moorhead, Minn., for his telephone dial that eliminates the need for a separate phone at a remote; in AM Audio — J.H. Wiegman, KWAL, Osborn Idaho, for his inexpensive set-and-forget phone patch; in AM RF — David Herbert, KXRO, Aberdeen Washington, for his low-cost bi-level modulation modification; in FM Control — Jeremy R. Burnham, KKDJ FM, Hollywood, California, for his control circuit that needs no common bus; in FM Audio — Robert Groome WBWC-FM, Berea, Ohio, for his inexpensive conversion from mono to stereo audio facilities; in TV Video — William Gramling, TV engineer WRC-TV, for a dead color channel of a camera; and finally, in TV Control — David F. Miller, design engineer WMAB-TV, Chicago, for his interphone power regulator. BM/E was prepared to give three more of the clock radios for ideas in FM-RF, TV-RF, and TV Audio, respectively, but no entries in these classes turned up.

With the 1975 contest complete, we are now plunging into the 1976 contest; the first batch of entries follows with a description of the 1976 prizes and rules. Remember, every reader has an important part in the most popular feature BM/E has ever run: *Send in your ideas; Vote on all the published ideas. This is your contest.*

First 1976 Entries

1. Inexpensive Limiter To Prevent Tape Overload In Recording.

Daniel J. Terta, Junior Engineer, WPTR, Albany, N.Y.

Problem: To build a very low-cost limiter that will prevent the overload of tape during recording.

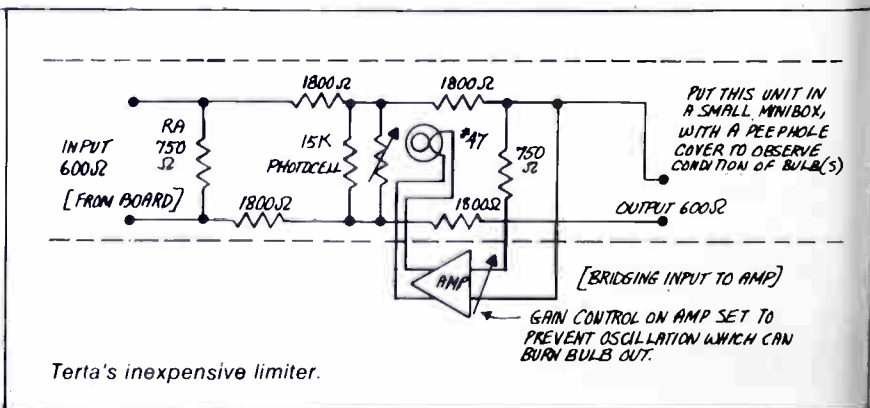
Solution: A photocell is used as the shunt element in a loss network, and is illuminated by a bulb driven from the output of the network. An amplifier between the output and the bulb raises the power to the required level. Increasing the gain of the amplifier increases the amount of compression, but the range is only about 1.5 dB and at high levels the bulb has a shorter

life.

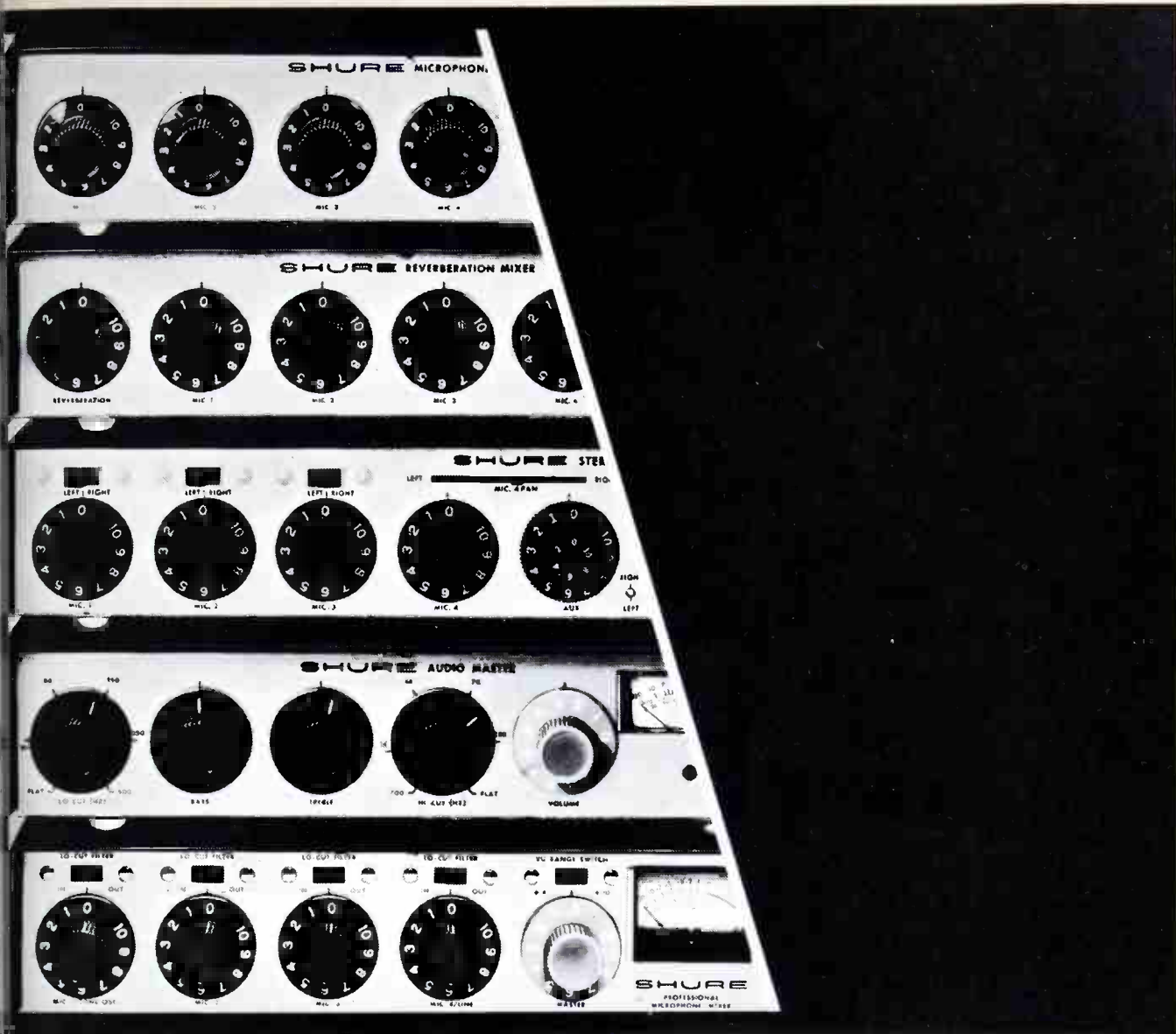
A spare bulb can be wired in parallel if the amplifier can handle it. The #47 bulb has a resistance of 3 ohms so use the low-impedance output on the amplifier. The fidelity of the amplifier is not critical, and we have found an old type with one 6L6 in the output very satisfactory. The total system is flat

out to the inaudible frequencies, and has no coloration of its own. Its only limitation is that at minimum limit the insertion loss is still 28 dB. The range from bulb burnout to a sudden onrush of light causing distortion is about 12 dB.

continued on page 3



Terta's inexpensive limiter.



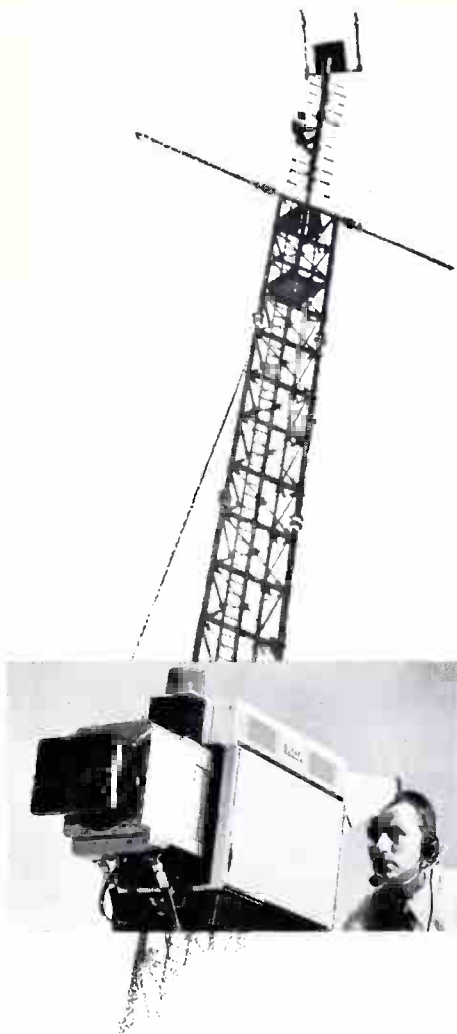
Rack 'em up.

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GREAT IDEAS

2. Still-framing The Sony VP-1000 Video Cassette Player.

*Richard H. Ward, TV Engineer,
Arizona Medical Center, Tucson.*

Problem: To find a simple conversion that would allow still framing on the Sony VP-1000 video cassette player.

Solution: The required conversion was carried out with two 24 v dc relay and one doublepole, double-throw switch, as follows: Connect the coil of one relay across coil of RY-1 on "D" board. A set of normally open contacts of this relay are connected to the common (green/white) wire and the yellow wire (play) on the "Q" board. When this relay closes, it locks play function on. (See Fig. 1.)

Then lift video mute (blue/white) wire from Bp board and tape up exposed wire end. This disables video
continued on page 6

Rules for BM/E's Great Idea Contest

- 1. Eligibility:** All station personnel are eligible. Consultants to the industry may enter if the entry indicates the specific station or stations using the idea or concept. Manufacturers of equipment or their representatives are not eligible.
- 2. How to Enter:** Use the Official Entry Form on this page or simply send *BM/E* a description of your work. State the objective or problem and your solution. Include diagrams, drawings, or glossy photos, as appropriate. Artwork must be legible but need not be directly reproducible but not exceeding three in number. Camera reproducible material is preferred. Length can vary, but should not exceed 500 words. *BM/E* reserves the right to edit material. Entry should include: Name, title, station affiliation, and the class of station—TV, FM, AM. Indicate if idea is completely original with you.
- 3. Material Accepted for Publication:** *BM/E* editors will make all decisions regarding acceptability for publication. If duplicative or similar ideas are received, *BM/E* editors will judge which entry or entries to accept. A \$10 honorarium will be paid for each item published.

4. Voting: Every reader of *BM/E* is entitled to rank the ideas published. This can be done on the Reader Service Card in the magazine or by letters or cards sent to the *BM/E* office. To vote, readers should select the three ideas they like best and rank them 1, 2, or 3.

5. Winners: Relative ranking of each month's entries will be published periodically. Top-rated entries for various categories will be republished in late 1977 for a second and final round of scoring. Final winners will be picked in February 1977 and notified by mail. Winners will be published in the March 1977 issue of *BM/E*.

6. Prizes and Awards: Three top prizes will be awarded: a slide rule engineering calculator for the entry receiving the most votes in the respective categories of AM, FM and TV. Ten pocket business calculators will be awarded as secondary prizes for the highest voted entries in the following additional categories (except the three top winners): audio (three prizes or each in categories AM, FM, TV); RF (three prizes one each in the categories of AM, FM, TV); Control (three prizes one each in the categories of AM, FM, TV); Video (one prize in TV).

Mail to: Editors, *BM/E*
295 Madison Avenue
New York, New York 10017

1976
Entry Form

Name _____ Title _____

Station Call Letters _____

City _____

State _____ Zip _____

Telephone No. _____

Licensee _____

Class of Station at which idea is used (check one) TV _____ FM _____
AM _____

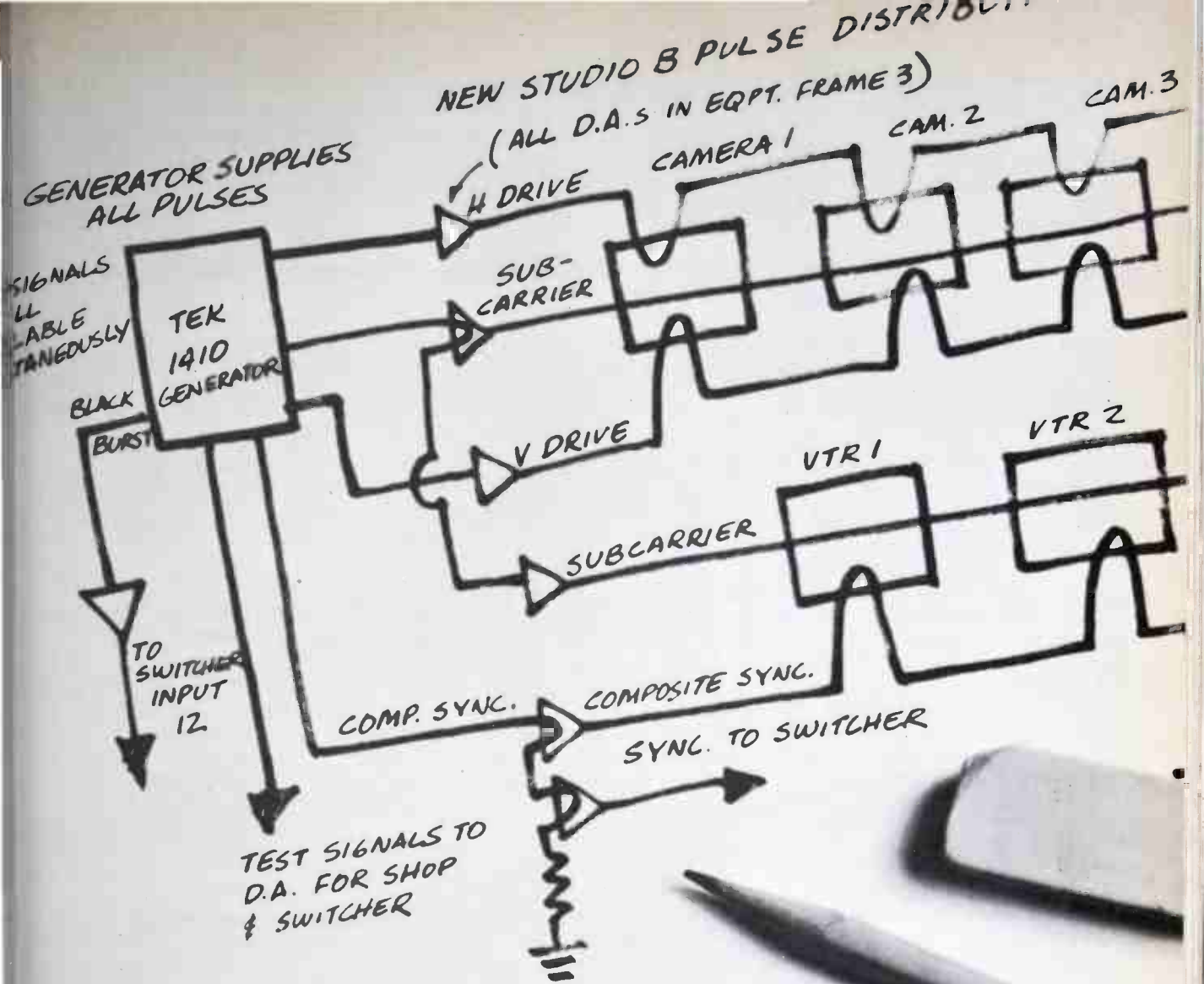
Category: Audio _____ RF _____ Video _____ Control _____

Objective or Problem: (in few words; use separate sheet for details) _____

Solution: (Use separate sheet—500 words max)

I assert that, to the best of my knowledge, the idea submitted is original with this station; and I hereby give *BM/E* permission to publish the material.

Signed _____ Date _____



Think of the Possibilities!

Think of the possibilities that the new 1410 series offers when planning a facility. This series has two color standards, three sync generators and four test signal sources to choose from. They can be teamed to do almost any job that you want done.

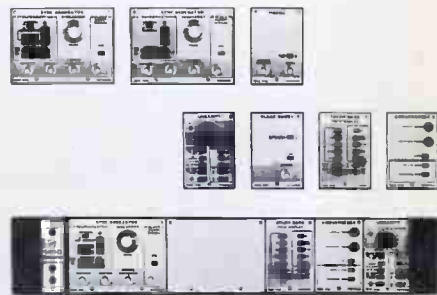
Think of the signals you need.

Perhaps you need a master sync generator with a ± 1 Hz color standard, or perhaps you need a sync generator with a ± 10 Hz color standard. You may be that you do not want sync signals at all, just test signals such as color bars, linearity test signals and convergence patterns. Or you might want a genlock master sync generator plus one or more test signals. These system requirements

are among the many that the 1410 series generators can be combined to deliver in one compact package.

The 1410 is flexible so that we can easily configure a generator to meet your needs now. How about the future? That's easy. Just order the plug-in card or cards for the signal you want and install it yourself.

Write us, or use the reader service card, to get more information about the 1410 Series. See the 1410 at NAB-76 along with presentations on operational measurements presentations in the Tektronix Measurement theatre.

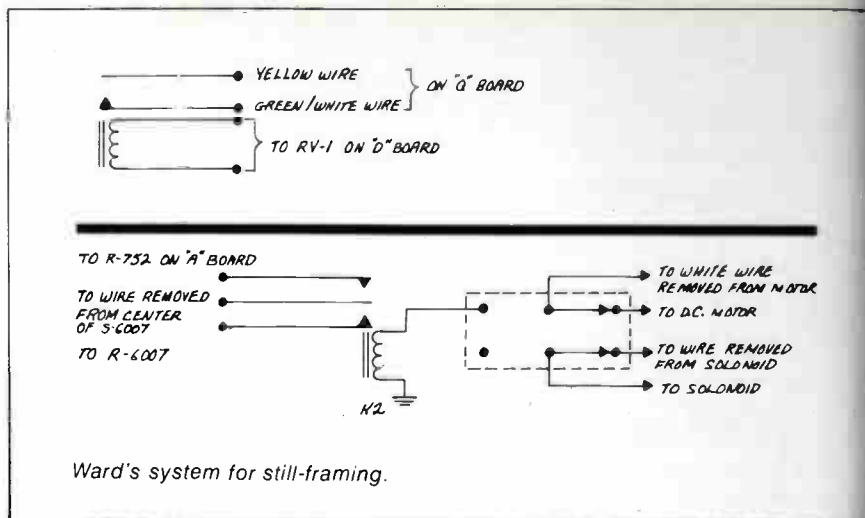


GREAT IDEAS

mute circuit and allows video to exit the machine without forward motion of tape.

Disconnect the white wire from dc motor. Run a wire from this white wire to the center arm of a D.P.D.T. switch. From the associated contact of the switch, run a wire to the point on the dc motor from which the white wire was just removed. Now, lift the top wire from the play solenoid, and run a wire from this wire to the other contact of the D.P.D.T. switch on same side of switch to the point on play solenoid from which the top wire was removed (See Fig. 2.)

On the other side of the D.P.D.T. switch (on same pole that dc motor is connected) wire the second relay coil (k-2) as shown in Fig. 2. On switch S-6007 (on color lock pot), remote the three wires, and connect them to the relay contacts as follows: The center arm of the relay goes to the wire removed from the center of S-6007. The normally closed contact goes to R-752 on "A" board. (This is the wire that is toward the front of machine end of S-6007). The normally open contact goes to the wire that goes to color lock pot arm from S-6007. You will note that this relay merely replaces S-6007



in the circuit.

Operation of machine is normal when switch is thrown to the right as shown in Fig. 2. When thrown to the left, dc motor is disabled, play solenoid is de-energized, lifting pinch roller. Still framing occurs. At the same time, relay K-2 picks up switching color lock to the color lock pot on back of machine. Throwing switch back to the right starts the machine where it left off on the tape being played, and operation is normal again.

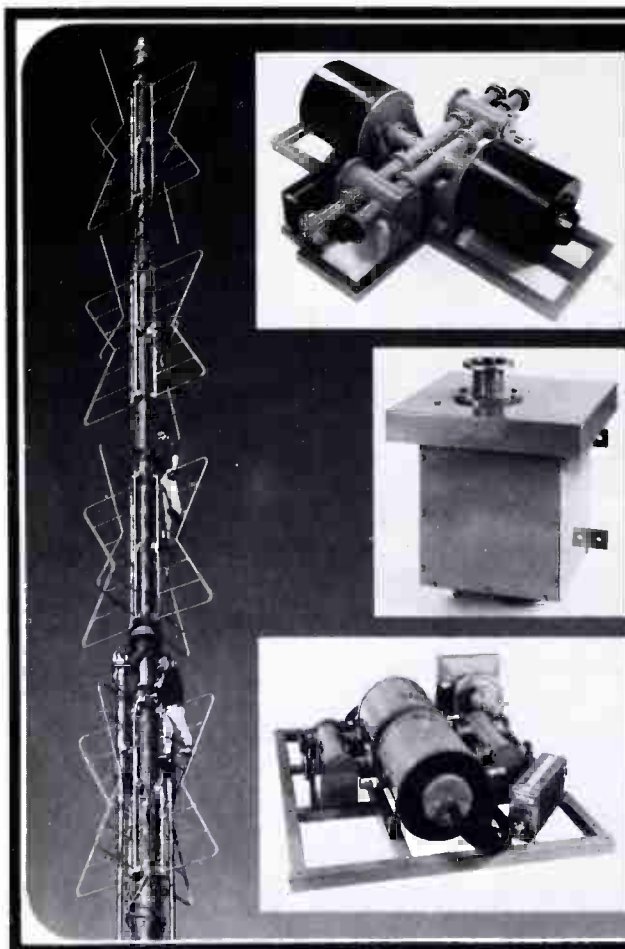
When in still frame all pushbuttons are inoperative. They can only be

WIN A CALCULATOR, ENTER YOUR GREAT IDEA NOW.

operated when the still/normal switch is in normal position.

The two relays were mounted in brackets in the right rear of machine. The toggle switch (D.P.D.T.) was mounted on trim panel just above the operating buttons.

continued on page



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GREAT IDEAS

3. Keeping Start-up Off-frequency Radiation Out of The Air.

Richard E. Weeks, CE, WETD, Albany, N.Y.

Problem: Many 10 watt FM transmitters use a "cold" crystal with AFC loop to maintain accuracy. At start up, however, the AFC is not in capture for approximately 20 to 30 seconds. During this time the transmitter has power applied to the final amplifier and is therefore radiating energy off frequency.

Solution: At WETD-FM we have Gates BFE 10 G3 which, like other similar units, has an AFC alarm circuit with spare relay contacts brought out to the rear terminal strip. We lifted a dc supply lead going to the power amplifier collector current ammeter and ran it through a N.C. relay contact so that while the AFC is out of capture, no power is supplied to the final amp, thus preventing any radiation of energy while the transmitter is off frequency.

4. Two-For-One Idea: Recording Suggestions.

Gene Randolph, Owner/C.E., KLGR AM-FM, Redwood Falls, Minn.

Problem One: How to record after-dinner speakers without crawling up to the head table to turn-on cassette recorder when speaker is introduced.

Solution: We bought an AM/FM portable radio with built-in cassette recorder. Also, an inexpensive (\$15) wireless FM mike. This is put on the speakers' rostrum before the head table is seated. Then, from virtually anywhere in the room, or auditorium, we record only those speakers' parts of speeches we want. (Note: This may not work in a metropolitan area where there are many strong radio signals and it's difficult to find a blank spot on the FM dial. For us it worked beautifully.)

Problem Two: How to monitor VHF radio scanner for news leads when you have a one-man news department.

Solution: At KLGR we bought a voice operate switch for automobile telephone recording from Burster Applebee for \$30. We connected the V-O-S between our VHF scanner's audio output and a cassette tape recorder and record all transmissions. Since we are in a small market area there aren't many. When the news is

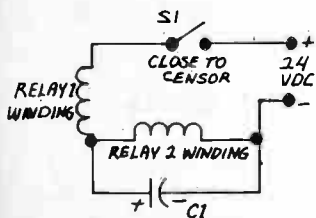
turns to the newsroom . . . and when the morning sign-on man comes in each day, he listens to the cassette for possible news leads and makes the necessary follow-up. We're now getting many stories our police and sheriff's dispatcher "forgot" to bring our attention.

Fool-proof Phone-talk Censor System.

Frederick Baker, Ass't CE, WRKL-AM, Bloomington, N.Y.

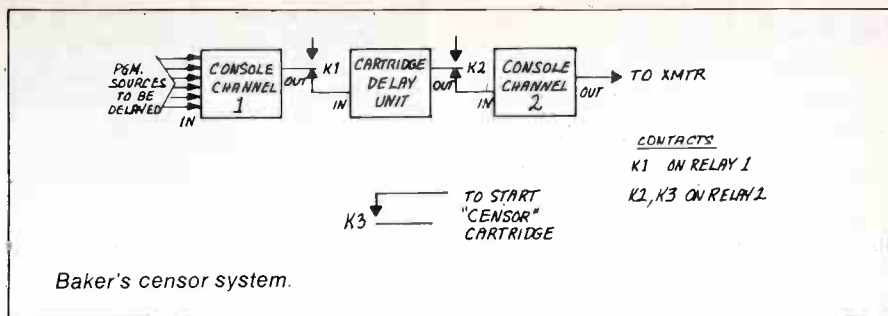
Problem: To simplify and make more fool-proof the censoring of "phone-in" or other delayed programming. Often, the board engineer can get confused as to which key to pull, etc., when the need arises and, when it's all over, wonder if he really did censor the program in time.

Solution: We solved this confusion using a couple of relays and a capacitor. Normally, the program to be delayed (in our case a phone-in show) is mixed into channel 1 of our dual channel board. The output then runs into a cartridge delay recorder, the output of which is delayed about 7 seconds. From the cart machine, the delayed program is fed into channel 2 of the board and then to the transmitter.



Baker's relays.

In the event something needs to be censored, the talk-show's host pulls a switch (S1) at his table, engaging the two relays. Relay 1 opens the input to the delay recorder and relay 2 opens the output of the recorder and starts a "censor cart" in a prescribed cart machine live on the air. Our censor cart consists of nothing more than 3-15 seconds of music which fades out. When the host is ready to proceed with the show once again, he throws S1 back to its normally open position. Relay 1 is thus turned off, but capacitor C1 decays the voltage on relay 2's winding, holding it on. For our application, we found that a 25 volt 1000uf for C1 gave a decay time of the desired 7 seconds. Some experimentation will be necessary to find the right value for C1, depending on winding resistance, initial voltage

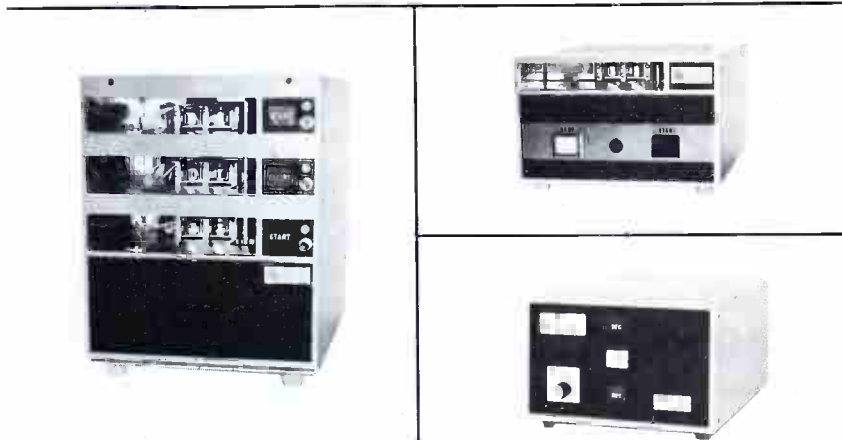


Baker's censor system.

supplied to the winding, and the minimum voltage which will keep the relay on.

With this system, the censoring is all done automatically, and a board engineer need not even be present.

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Ampex Corp. and International Video Corp. have announced that the two companies have resolved three lawsuits between them involving patent infringement and antitrust claims. The settlement includes the dismissal of all claims and counterclaims which are the subject of the pending litigation, a non-exclusive worldwide license to IVC under Ampex patents with respect to non-broadcast videotape recorders and helical broadcast videotape record-

ers, and an option to Ampex to obtain a non-exclusive worldwide license from IVC under the latter's videotape recorder patents Radio station **KZUL**, Parker, Ariz., has received the first CP for 2,500 watt operation under the FCC's June 1975 power level establishment from **Sparta** .

Business Briefs

RCA has announced that it has been awarded a \$19.1 million contract to design and build a new domestic

communications satellite for Telesat Canada, a \$5.6 million contract from the North West State of Nigeria to supply and install a complete color TV production studio and two transmitting systems, and has received an order from **WNAC-TV**, Boston, for eight RCA color TV cameras, valued at more than \$500,000 The Pulitzer Publishing Co. has placed a \$280,000 order for two VHF high band color TV transmitters with the **Broadcast Products Div. of Harris Corp.** . . . **Ampex Corp.** has announced that it has received the following contracts: a \$3.5 million contract with the Egyptian Federation of Broadcasting and TV for an all Ampex-equipped videotape operation; a \$2 million contract to deliver color broadcast equipment to the government of Benue Plateau State, Nigeria; a \$1.2 million contract to supply videotape recording equipment to TRT, the Turkish State Broadcasting Authority; and an order for over \$1 million in videotape recorders from the American Broadcasting Co. for use in the network's coverage of the 1976 Olympics, conventions and other major events.

Hervic Corp. has officially obtained exclusive distribution of the TOPCON line of 35mm SLR photo equipment . . . **International Tapetronic Corp.** has announced that their 750 Series Open Reel Reproducers are available through the Harris Corp.—Broadcast Products Div., IGM/NTI Schafer Electronics, and Systems Marketing Corp.

Financial Briefs

The Cine Products of **Agfa-Gevaert, Inc.**, have announced 1977 net sale revenues of over \$125 million a 25% increase, and forecast a net sale increase of 11% for 1976 . . . **Ampex Corp.** reported a 36% increase in net earnings on slightly higher sales for the third quarter ended January 31, 1976. The company announced net earnings totaling \$2.0 million, equal to \$.19 per share, on total revenues of \$60.8 million.

Conrac Corp. has reported sales of \$90,427,000 and net income of \$3,503,000 for the year ended December 31, 1975. This compares with sales of \$81,129,000 and net income of \$3,093,000 for 1974 . . . **Cox Broadcasting Corp.** reported record net income of \$14,304,000 for the year ended December 31, 1975, an increase of 12% over net income of \$12,736,000 in 1974.

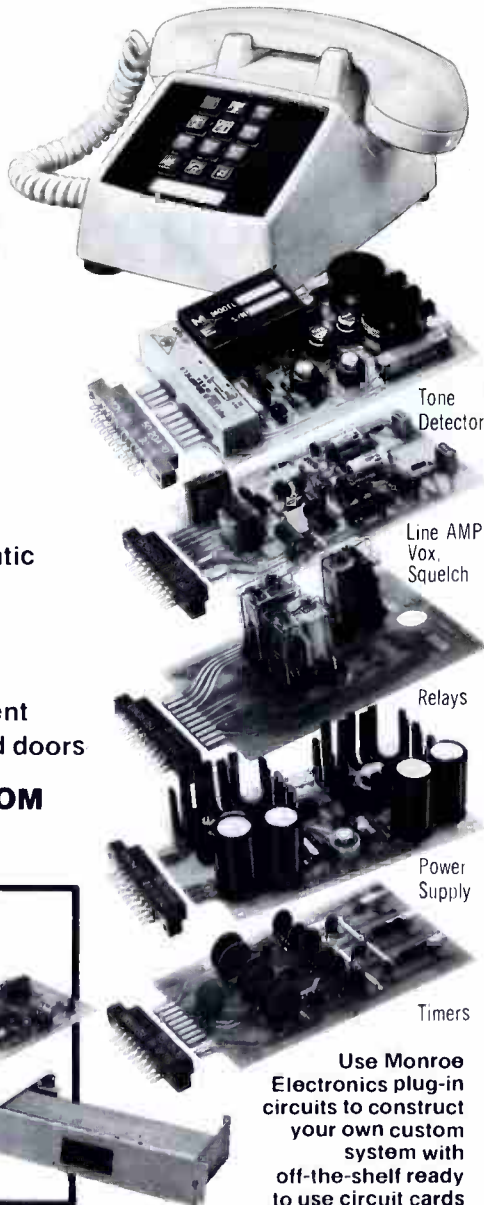
GBC Closed Circuit TV Corp. reported record sales and earnings for the first six months of fiscal 1976 which ended November 30, 1975. Net sales were \$4,422,145 as compared to

control
by
phone

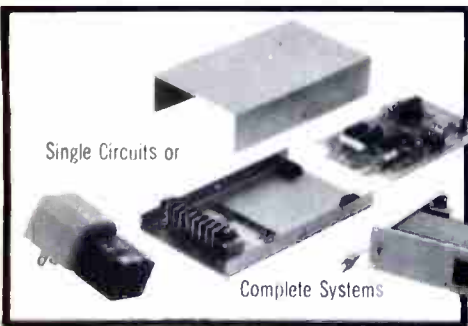
Use a regular touch button telephone to control:

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- Antenna systems
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1,407,072 for the first half of the preceding year. Net income was \$42,815 or .42 per share compared to last year's first half figures of \$126,278 or .36 per share.

International Video Corp., Sunvale, CA has reported a net income of \$162,000 or \$.06 a share for the quarter ending January 31, 1976. This compared to a loss of \$1,667,000 or \$1.51 a share for the same period last year. Sales for the current quarter were \$1,155,000, an increase of 8% over the \$1,071,000 reported in last year's comparative quarter.

The Javelin Electronics Division of Apollo Lasers, Inc. announced record earnings for fiscal 1975 and an 85% increase in sales over fiscal 1974.

Pioneer-Standard Electronics, Inc. reported sales of \$25,923,124 for the nine months ended December 31, 1975, compared to \$24,760,250 for the same period of 1974.

Scientific-Atlanta, Inc. reported sales of \$20,375,000 for its first six months of fiscal 1976 from \$16,058,000 for the same period last year. Net earnings for the first half ended December 31, 1975 were \$1,090,000, an increase of 57% over net earnings of \$515,000 for the first half last year.

Tracor, Inc. reported that for the 12-month period ended December 31, 1975, it had sales of \$103,729,000, a 10% increase over 1974 sales of \$94,368,000.

Wabash Magnetics, Inc. reported that for the fiscal year ended December 31, 1975, it had net earnings of \$1,329,912 compared with earnings of \$1,185,895 in 1974. Sales in 1975 were \$33,016,179, compared with \$32,925,795 in the previous year.

Warner Communications, Inc. reported income from continuing operations of \$50,118,000 for the year ended December 31, 1975 and revenues of \$669,774,000. The comparable 1974 results were \$46,646,000 and revenues of \$720,076,000.

Cometco Enterprises, Inc. reported unaudited figures net income in 1975 of \$11.6 million, a 29% increase over the \$9 million in 1974, while sales rose 12% to \$181 million from \$161 million in 1974.

Zenith Radio Corp. sales for the year ended December 31, 1975, totaled \$901 million, compared with \$911 million the previous year. Net income in 1975 totaled \$30.8 million compared to \$11.4 million in 1974.

People

Arnold C. Blakeslee has been named president of Television Research International. . . . **A.J. "Rick" Aurichio** has been named President of Compu-

Net, Inc., a subsidiary of Control Data Corp. . . . **Zenith Radio Corp.**'s Board of Directors has announced that **John J. Nevin**, the company's President, has been elected to the additional post of Chairman of the Board, effective April 1, 1976. . . . **Marc Plitt** has joined Comprehensive Services Corp. as Vice President/Video.

Fred W. Hohage has been elected Executive Vice President of Robert Bosch Corp, a U.S. subsidiary of Robert Bosch GmbH, Stuttgart, Germany. . . . **Edward M. Corse** has been appointed Staff Engineer for

LPB Inc. . . . **Norman H. Christiansen** has joined W & G Instruments, Inc. as Director of Engineering. . . . **Duca-Richardson Corp.** has appointed **Carl A. Hedberg, John C. Labin** and **Jimmie R. Adair** as Senior Electrical Engineers.

Kenneth T. MacDonald has been appointed General Manager of WKBS-TV, San Francisco. . . . **Phillip Rock** has been appointed Executive Producer at KETC-TV, St. Louis. . . . **Don Culp** has been named Assistant Chief Engineer for WMAL Radio, continued on page 66

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NEWS

Washington, D.C.

The National Association of Broadcasters has announced the following personnel changes. **LaRue M. (Bud) Courson** has been named Vice President for Administrative Services. **Brenda Lee Fox** has been named an Assistant General Counsel. **Roger C. Field** has been named Manager of the Hollywood Code office. **Virginia (Ginger) Carnahan** has been appointed to the newly created post of

Radio Information Office Writer. **George J. Gray**, AVCO Broadcasting Co.'s Vice-President for Washington Affairs, has become a Hundred Plus TV Market Specialist in the Government Relations Dept. **Jerry Fitch**, President and General Manager, KDGO, Durango, CO.; **Elliot Franks**, General Manager, WOIC, Columbia, S.C.; and **William F. O'Shaughnessy**, President, WVOX, New Rochelle, N.Y. have been appointed to the Radio Information Committee.

The National Cable Television Association has announced the following

personnel changes. **Burt I. Harris** President of Harris Cable Corp., has been elected Chairman and **Danie Aaron**, Vice-President and co-founder of Comcast Corp., has been elected Vice-Chairman of the NCTA. **Henry W. Harris**, President of Cox Cable Communications, Inc., has been elected Treasurer. **Ralph Baruch**, President and Chief Executive Officer of Viacom International, Inc., has been elected Secretary. **Kathryn Hilton** has been named Director of Research. **Thomas H. Otwell** has become Public Information Manager in the Public Affairs Dept.

The NAEB has announced that **Sandy Sauser** has been elected to the Board of Directors and **Dr. Florene Monroe** and **Dr. George Blair** have been re-elected to the Board.

TeleMation, Inc. has announced the appointment of four individuals to positions in that firm's newly-organized National Sales Dept.: **George G. Elsaesser** has been named National Sales Director, **R. Dennis Fraser** has been named National Broadcast Marketing Manager, **Marshall A. Ruehrdanz** is now in charge of TeleMation's National Distributor and Sales Program and **Donald E. Rhodes** has become National Government Relations Manager.

Robert W. Kuhl has rejoined International Video Corp. as Manager National Accounts.

Cindy Guzzo has been named Marketing Manager at Pacific Recorders & Engineering Corp. . . . **Barr Holman** has been appointed Sales Manager for the OPTIMA Electronic Enclosure Division of Scientific Atlanta, Inc. . . . **McMartin Industries, Inc.** has appointed **Tom S. Butler** as Central Sales Manager with responsibility for McMartin broadcast, engineered sound and background music product sales throughout the Midwest. . . . **Charles E. Collett** has been appointed Sales and Marketing Manager for the Beaucart Division of EMC Electronics. . . . **Spectra Sonics** has promoted **Bruce Ball** to Division Sales Manager and **Brian Morze** and **Steve Cannon** have been added to the Engineering Sales staff.

The Broadcast Products Division of Harris Corp. has appointed **Dave N. Evans** to the position of District Manager-Radio Sales in Colorado, Nevada and Northern California. . . . **Dick East** has been promoted to Sales Manager, major accounts, Eastern area, for Davis Manufacturing Division of J.I. Case. . . . **Peter McCaffer** has been appointed Southwestern Area Sales Manager for Cerro Communications Products. . . . **Jack E. Banter** has been appointed Manager, Sales Development and Proposals, for RC Broadcast Systems.

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EQUIPMENT

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Radio console has inputs for 32 microphones, 32 lines, 32 tape signals, with seven-line control direct room monitor, four echo returns. Model 1032-32 also has 32 direct outputs, four echo send, four quad, two stereo, one mono, four control room monitor, two studio, cues A, B,



Included is a 15-frequency graphic equalizer, a signal generator, many other operational features. Frequency response is rated $\pm 1/4$ dB, 20 Hz to 20 kHz, SNR 82.5 dB, distortion less than 0.01% at +18 dBm. \$56,576.06. SPECTRA SONICS 300

WWV receiver is upshift double-conversion superheterodyne dedicated to reception of WWV and WWVH on 5, 15 and 20 MHz. Model TF-4 uses frequency scanning, provides NBS time information at all times without



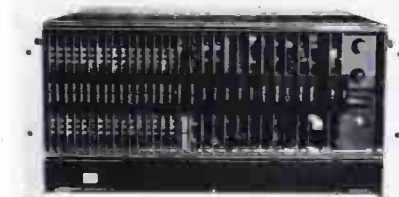
Monitoring attention, with active filter select tones at users option. WWV time in IRIG H format is constantly available. Monitor speaker and meter signal comparisons are built in. \$90.00. TRUE TIME INSTRUMENT 301

Graphic equalizer has two independent channels, each with ten one-octave



equalization bands. Model 2200 provides boost or cut up to 15 dB on each band; built-in line drivers allow interface with hi fi equipment or low-level mixing systems. Both input and output have transformer balanced or unbalanced connections. Distortion is rated below 0.06% at 10 volts output, SNR at better than 80 dB. \$289.00. TAPCO 302

Video processing system supplies videographic capability—production, alteration, animation of synthetic images, including character generation. "Intellect" can also manipulate images from a video signal, or synthetic images produced by computer. Uses are in aerospace research, medical electronics, infra-red imaging, in



addition to broadcasting. About \$70,000. MICRO CONSULTANTS, INC. 303

Limiter amplifier uses LED/photo-diode feedback. Model TLC-222 has an integrated-circuit, low-noise gain stage. Gain is adjustable 0 to 35 dB; compression adjustable in range of -10 to +10 dBm output, ratio 8:1; attack time 5 ms. ITI ELECTRONICS 304

Multi-channel audio recorder/reproducer has individual selection for Sel Sync, input, and repro for each



of up to 24 channels, with LED indicator for each function. Model MM-1200 has electronic tape timer; continued on page 68

AT LAST . . .

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EIAJ 10 pin plug (male)			
cable end	E10P	8.75	7.87
chassis/panel	E10PCM	7.70	6.93
EIAJ 10 pin jack (female)			
cable end	E10J	9.76	8.78
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PRODUCTS

search-to-cue system usable either forward or back; Sel Sync performance identical to reproduce; separate electronics for each channel plug-in on front. Some of the options are a variable speed oscillator; EECO time code sync systems; sync lock; video layback head kit; search-to-cue remote control. Eight-channel version, about \$17,000; 16-channel, \$23,000; 24-channel, \$32,000. AMPEX 31

SMPT/EBU time code reader operates in forward or reverse, low-high (shuttle) speeds. Model TCR provides LED read-out in hours, minutes, seconds and frames; with optional plug-in card the read-out can also be keyed into the video signal for display on monitors or recording on helical machines. ELECTRO & OPTIC SYSTEMS LTD (CANADA) 31

Current limiting transformers protect filaments of large electron tubes from overload by inrush current. Series includes models for tubes with output ratings from 8 to 500 kW. Units are air cooled, have reactance shutters to reduce noise level. UNION MANUFACTURING PRODUCTS CO. 31

Waveform monitor has internal or external synchronization, two video inputs with loop-through, Y-pass filter and selectable 1 V p-p or 4 V p-p sensitivity. Model XWM-2000 has display modes of 2H lines, 2V fields, blanking, V blanking, internal calibration and sync generator test. Price \$750 SHARP ELECTRONICS CORP. 31

RF tracking sweep analyzer covers range 1 MHz to 350 MHz. Model 9650 combines a tracking sweep generator, spectrum analyzer, display scope, reflection coefficient bridge detector, gain and loss measuring attenuators, crystal markers, and time mode selector. Sweep width is continuously adjustable, 10 KHz to 30 MHz; sweep rate, 0.05 Hz to 30 Hz; analyzer frequency response, 500 Hz to 350 Hz ± 1 dB; display range, 40 dB. \$6,600.00 TEXSCAN 31

Plug-in card holds digital clock thermometer, uses monolithic A/D converter circuitry. The 60 Hz line frequency is the time base; internal oscillator can run on batteries during power failures. Thermometer reads -20° to $+140^{\circ}$ F, with 0.6° F accuracy using platinum probe. BCD output can go on to displays, printers, computer. \$194. NATIONWIDE ELECTRONIC SYSTEMS 31

Low-cost oscilloscope camera has fixed-focus f/16 lens, shutter speeds 1/5, 1/25, bulb, time. Model C-1 can be used on 9.76×12.2 cm, or 31

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Keep an eye on your sound with the Amber Audio Spectrum Display. The Amber 4550 has a wide range of production, transmission, and maintenance applications. Graphic, calibrated representation of spectral energy content in real time lets you see the effects of equalization and compression; evaluate studio acoustics and microphone placement; control quality and consistency in cartridge and tape duplication. The 4550 even lets you take a look at what the competition is up to. Two independent memories store information for before and after observations. Put the sound you have always been after right before your eyes with the Amber Audio Spectrum Display. Write for more information.

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PRODUCTS

8 x 10 cm displays, with selectable magnification of 0.67 or 0.85. Graticule flash is optional. It runs on two AA batteries. With graticule flash, \$235; without, \$200. **TEKTRONIX 311**

CATV test and monitoring system uses up to 48 remote "senders" at monitoring points, linked by voice-grade line to analysis unit at headend



or elsewhere. The Series 5300 provides graphic performance monitoring, showing cable system performance at each of monitored points, with hard copy available. Central analyzer, \$3500; each remote monitor, \$800. **INTECH LABORATORIES 312**

Color sync generator for EIA RS-170 format has oven controlled crystal, from which all signals are derived. Model CSG-1 supplies sync, blanking, H-drive, V-drive, burst flag and sub-carrier at outputs. **VIDEO CONCEPTS, INC. 313**

Two-wheel-drive trencher has 12-hp drive, trenches from four to six inches wide and up to 36-in. deep. Fleetline 12+2 goes through standard yard gates, has four-speed drive, air-cooled electric start engine. **DAVIS MFG DIV OF J.I. CASE 314**

Portable light source has "daylight" temperature of 5800° Kelvin, with HMI bulbs. Unit has output of 80 lumens per watt, is rated at 200 watts. Lighting head weighs less than 5-lb., has pistol grip for one-hand operation

continued on page 70

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PRODUCTS

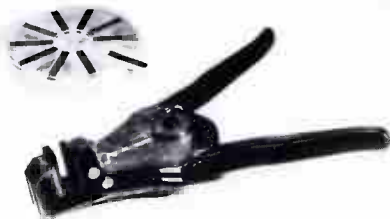
with focusing wheel. Battery pack-charger weighs 15-lb. fully loaded with silver-zinc batteries or 110 V ac is also provided. Square-wave electronic



system makes light flicker free for film, live, or video use. ROSCO LABORATORIES 315

Video processing amplifier automatically selects internal circuits for handling video inputs of wide variety. Model VPA-3000 is intended to work with quads, helicals, and with broadcast video signals, tracking all automatically from 1/2 line down to 1 nan-second. Instant lock mode follows tape with extremely poor tension stability or large dihedral error. \$3600.00 VERSA COUNT ENGINEERING 316

Wire stripper uses jaws of a plastic harder than insulation but softer than wire, can strip single wires, twisted pairs, multi-conductor cable, without

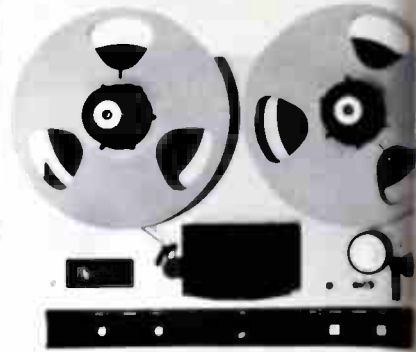


separating conductors. The Plastic Blade Stripper does not nick or cut the wire, does not require precise placement of wire in jaws. ALPHA WIRE CORP. 317

Digital desk-top timer displays elapsed time in hours, minutes, seconds and tenths of seconds. Model DSC-1 has a maximum time of 9 hours, 59 minutes, 59.9 seconds. Push-buttons allow for start, stop, reset; rear-panel connections allow remote control of all functions. Kit, \$79.95; assembled, \$99.95. CARINGELLA ELECTRONICS 318

Filters for CATV drop lines attach directly to ports of most multi-taps. Series 3900 removes specific video frequencies with stopband attenuation

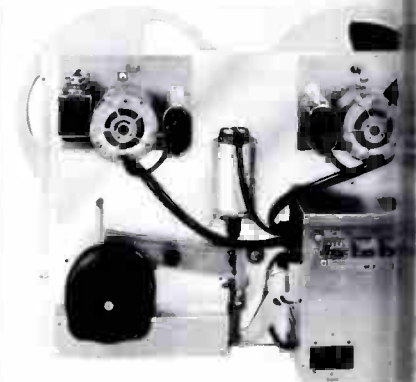
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PRODUCTS

46 dB minimum. Construction is tight. Also for CATV: video automatic control, plug-in for maker amplifiers, provides means of controlling CATV systems standard video frequencies as carriers. GTE SYLVANIA 319

Digital multimeter measures ac and dc volts, ohms, and capacitance. Model 20 has 3½ digit readout, resolution of 1 pf, accuracy of 0.2% on dc; 0.1% on ac. \$179.00 DATA TECH 320

Intruder sensor for cyclone and wire fences detects any vertical motion, caused by climbing or penetration of fence. Model P6 operates without power, creates momentary open in test loop if moved, sounds alarm if attempt made to remove cover; cutting cable sensor also operates alarm. \$20.00. MOUNTAIN WEST ALARM SUPPLY CO. 321

Power-amplifier has 12 outputs, each separately controllable, and 100 watts of continuous-duty power output. Model M-251A allows for customized inputs with plug-in modules, including six-channel comb. Output can be boosted to over



1000 watts with Model M-250A. Harmonic distortion rated 0.2%; SNR, 90 dB below full output. PULSE DYNAMICS MFG. CORP. 322

Surge arrester is a three-electrode miniature gas tube, installed on balanced lines, one electrode for each side, one to ground. Model 21 ionizes between conductor and ground to short out high voltage surges. Can handle up to 10,000 amperes repeatedly, with 8 microsecond rise and 20 microsecond fall; delay time is less than 1 microsecond. Firing voltages are optional, 150 to 300, 300 to 500, and 500 to 900 V dc. TII CORP. 323

TV signal indicator responds only to VHF high-band TV signals, lights an LED indicator if signal level is adequate. "Levelite" has a local-distance switch, can be connected to almost any TV signal source. JERROLD ELECTRONICS 324

Resettable circuit protector takes

ENTER GREAT IDEAS CONTEST, PAGE 58

same space as standard cylindrical fuse holder, has comparable cost. "Re-Cirk-It" opens the circuit after a delay on sustained overloads, and instantaneously on short circuits. Center pushbutton moves out when device is tripped, is pushed back to reset. Available in all standard current ratings. HEINEMANN ELECTRIC CO. 325

True rms voltmeters are rated for converter accuracy of ±0.25%, full-scale accuracy of ±1%. The 733 Series convert inputs of any waveshape for rated accuracies, up to 1 MHz. Crest factor is 5.5:1, the response time has two selectable values. Models available with ranges from 3 mV to 300 V. \$345.00. UFAD CORP. 326

Digital multimeter has 3½ digit readout, covers all standard ranges of ac and dc volts, current and resistance. Model 360 Series 2 has automatic polarity, low-power ohms ranges (200 mV maximum voltage), includes a zero-centered analog meter for nulling, peaking, and scanning. Resolution is 100 microvolts on dc, 10 nA, and 0.1 ohm. \$257.00. SIMPSON ELECTRIC CO. 327

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TENTROL Tape Tension Control

Automatic, accurate tape tension control with reels up to 14", ¼ to 1" tape. Available for Ampex 300/350 series, Ampex AG 440, Scully 280/280B, and other recorders. Eliminate pitch change, improve high-frequency performance, extend head life.

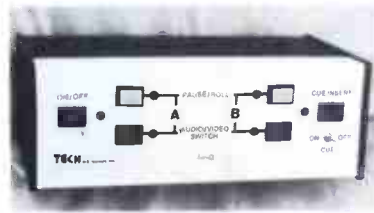
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The TE-150 "Auto-Q" makes cueing of Sony VO-2850's quick and easy. Tones are recorded onto the tape from the "Auto-Q" during the editing process. During play back the "Auto-Q" will cue the tape precisely at each cue tone. Indicators on both the Local and remote control panel indicate when a machine is cued. The remote panel permits remote starting of the unit.

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NEW LIT

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

A video accessory catalog, **Catalog of Video Supplies & Accessories** is aimed at the video user. It contains hard-to-find items that many video people need in a hurry but often have trouble locating. The catalog contains production aids, connectors, adaptors, reels, books and media supplies, portapak protection, lighting, cable, videotape, cleaning accessories, tools and a line of original items. WIDL Video **250**

A comprehensive and informative brochure on the **uses and advantages of pre-recorded background music** for educational and industrial films, slide films, audio cassettes, and radio and TV spots has recently been issued. The brochure describes the possibilities of recorded background music, its artistic and economic advantages and the legal protection afforded its users. MusiCues Corp. **251**

The complete line of **Beau torque and hysteresis synchronous motors** for use in tape recorders, audio turntables, video recording equipment, data handling equipment, and telemetering instruments is described in a 6-page brochure. Beau Motor Div. of UMC Electronics. **252**

A four color brochure to introduce the new **BroadCom** broadband communication system has been published. BroadCom is a "modern two-way broadband highway for the transportation of multiple video, audio and data channels over a single coaxial cable." The brochure explains systems which are used in such diverse companies as Dow Chemical, American Motors and Xerox. Jerrold Electronics. **253**

An 8-page catalog, **Ferro Cousti-Products Noise Control Systems**, describes a full line of noise absorber, barrier, and damping materials and products for industrial, architectural, construction, and OEM applications. Ferro Corp. **254**

Descriptive literature on a recent study, **New Trends In Cable TV—A Market and Technology Analysis** for the years 1975-1984 is now available. It discusses the scope and key results of the study and includes a complete table of contents and list of exhibits. ComQuest

Corp.

255

A technical data sheet gives the specifications of the **Model TCK2 In-Line Chroma Keyer**. The Chroma Keyer is designed to accept a 1 volt p-p composite NTSC color video input signal into a high impedance bridging input. International Nuclear Corp. **256**

A 20-page color brochure completely describing the **Optima** line of vertical and sloped racks is now available. Panels heights from 22-in. to 77-in. for 19-in. and 24-in. panel-mounted instruments are available. Optima Enclosures Div. Scientific-Atlanta. **257**

A six page full-color brochure that fully describes the features and specifications of the **Model 3000 Signal Generator** is now available. Design considerations for this unit, that operates in the 1 to 520 MHz frequency, are also presented. Wavetek. **258**

Britain's Top 1000 Electronic Companies, a comprehensive financial survey of the major electronics, computer and related industries is now available by mail. The book shows the present trends and gives a clear picture of trading activities within the industry. Copies are £4.95 (approximately \$10.00 U.S.) postpaid. Financial Analysis Group Ltd., 145 London Road, Camberley, Surrey, England.

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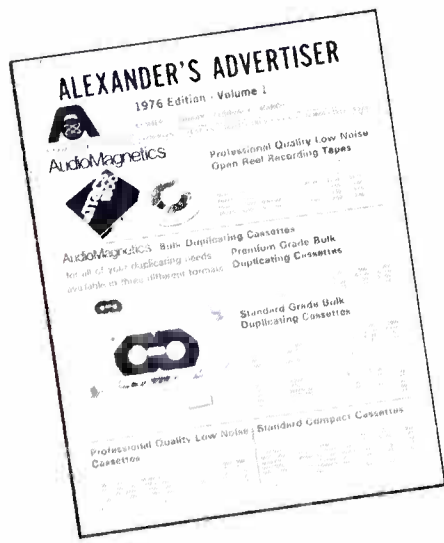
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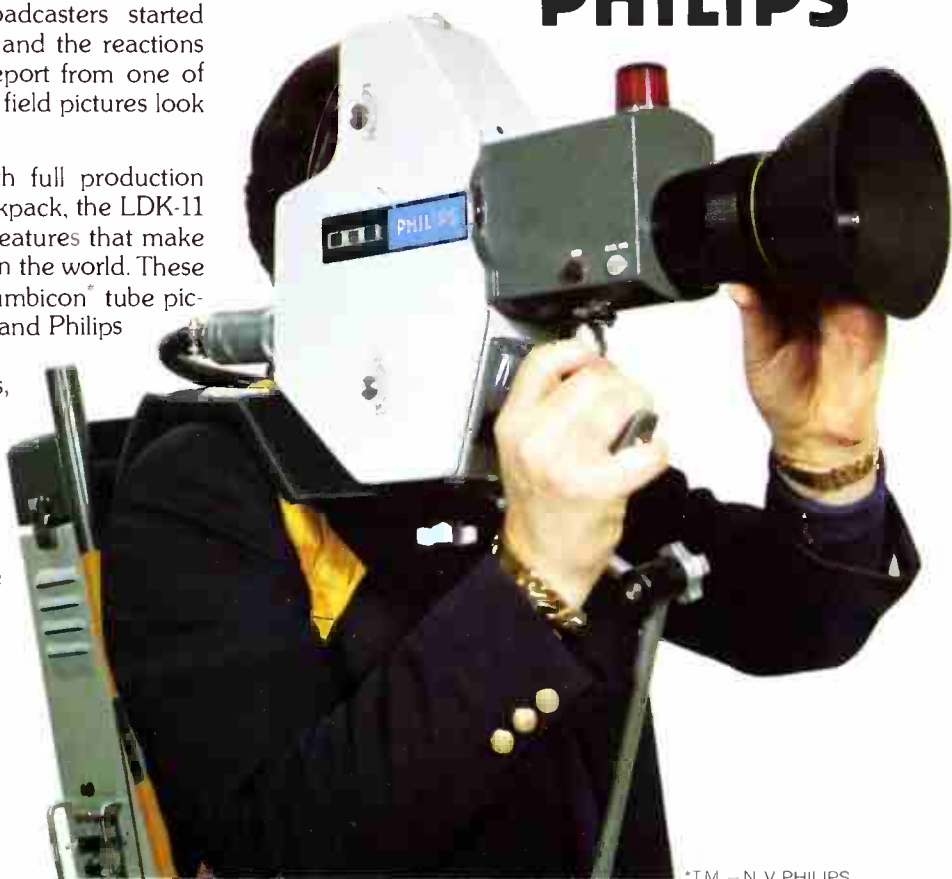
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