at NAB look for NEC BROADCAST
Booth 1301

and you’ll find these new products:

- Portable Helicopter Tracking FPU
- UHF Television Exciter with stereo audio
- New DVE Control Panel
- NTC-10 Time Base Corrector
- TAP-170 Processing Amplifier
- FS-16 Frame Synchronizer
- TAKS-1000 Production Switcher
- MNC-81A Camera with fiber-optic control
Digital television is here to stay. Digital memory, large scale integrated circuits, microprocessors, and improved imaging devices from tubes to optics, are all contributing to modularity, automatic setup, self-diagnostics, and longer mean-time-between-fails in the industry's future camera products.

The time is coming when a broadcaster selecting replacement cameras literally may need a scorecard generated from a computer readout to discern parameters formerly visible to the human eye.

The best cameras of the 80's will represent levels of performance and possess characteristics limited only by the vision of the designer.

Toshiba has been an established leader in the design of broadcast systems around the world for the last 30 years. Over $10 billion in consolidated sales in the last year supports hundreds of research scientists who are challenging the frontiers of science and technology to produce tomorrow's products today.

Toshiba's design engineers are establishing new standards in all parameters of color camera performance for an entirely new product family. The leader in the new Toshiba camera line will be the PK-40 microprocessor-controlled studio camera. On a comparative basis with any competitive camera products we know of, we believe the PK-40 to be substantially ahead of its time and superior in performance.

A visit to our NAB exhibit (Booth 1415) will prove the point. We invite you to use the PK-40 as a standard of measurement against which to judge all of the studio camera products displayed at this year's NAB.

If your goal is to reproduce the highest quality images faithfully, and purchase the finest studio camera in the industry, Toshiba will be in your budget during the 80's.
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THE COVER

The cover is adapted from NAB’s brochure promoting their 58th Annual Convention and International Exposition to be held in Las Vegas, April 13-16, 1980. The theme is “Sight & Sound: Broadcasting '80.” Emphasis is on the new challenges in technology which broadcasters will face as they enter the decade of the '80s. The artwork was copied and reproduced here with the permission of NAB. Art was designed by Lynne Branthover, Watermark Design, Alexandria, VA.

NAB CONVENTION GUIDE

See page 40 for an introduction and overview of this year’s big 58th Annual Convention in Las Vegas. Our extensive pre-NAB coverage of this event is indexed on the left of this page.

APRIL ISSUE

• Audio in TV and radio
• Digital standards update
• SMPTE/Toronto convention replay
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Inside this superlative broadcast studio camera lives an equally superb hand-held module for field production. Here at last is a convertible that makes no compromises in picture quality...with S/N ratio of better than 51 dB...three 3/4" Saticon...500-line resolution...built-in ABO...internal triax adapter...AC/DC operation...and more. All wrapped in a super tough but lightweight diecast housing. For an unprecedented low price. Call your Hitachi dealer for more details.

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- Los Angeles (213) 328-2110
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The Hitachi
Hard-to-Top Convertible.
New from Hitachi
A Colossal One-Inch Step

One-inch is the V"R format of the future. It's too important a step forward for a scaled-up 3/4" or a scaled-down 2" system. It deserves to be totally original, with every advance designed in. That's how we approached the new Hitachi HR-200, after almost 20 years of experience making quad machines. The result: a one-inch Type C VTR destined to establish new broadcast standards everywhere. In every department, the Hitachi HR-200 is miles ahead of the one-inch competition!

Fast, sure, easy operation
Hitachi one-inch VTR's are loaded with features—many of them Hitachi exclusives. Like the brake release for easier threading. Both video and audio confidence. A "B-wrap" configuration, for reduced dropout. A precision moveable tape guide for easy loading, with an incredible 1-micron tolerance that's accurate for up to 2 million threadings! Plus a sloped design and easier-to-see top mounted drum for still easier threading.

Dazzling performance extras
Imagine shuttling a 1-hour tape end-to-end in just 80 seconds! It's possible, only on the Hitachi HR-200, because an internal air compressor injects a column of air into the tape guides to reduce friction and increase acceleration. The same air compressor provides air for the non-contact air drum, cushioning the tape when in the standby or fast shuttle modes. For fumble-free shuttling and jogging and fast editing, a single knob controls both. There is audio spot erase capability. And a Hall-Effect head on the third channel reads the time code more accurately, regardless of tape speed.

A microprocessor makes the built-in editor the most advanced you'll find today. And, just as important: it can be re-programmed to interface with editing systems of the future. Serial or parallel logic for remote control? Both have advantages, so Hitachi gives you both. Built-in cable compensation boosts the signal so you can use cable up to 300 feet.

Uniquely simple service
Serviceable components have been human-engineered for easy access and replacement. The PC modules are front-mounted and can be removed in an instant. The six heads come as a pre-aligned drum assembly that snaps out and snaps back in minutes.

The HR-200 is available as a console, or for tabletop use or 19" rack mounting. Best of all, it costs no more than ordinary 1-inch VTR's!

Smallest Type C portable ever!
The HR-100 portable model has many of the HR-200 features, yet it's the smallest Type C portable in the world. And the most serviceable too, with plug-in PC modules. Die-cast uniblock construction makes the HR-100 durable yet extremely light. And like the HR-200, it has a non-dropout tape path. Plus an extended tape path for less edge wear, an auto back space assemble editor, and 3-way power with built-in battery pack, AC adapter or external DC.

Take a big one-inch step. See the New Hitachi 1" VTR's...today.

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* Dallas * Denver * Seattle * Washington, D.C.

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Superb Prism Performance
At a price you’ll think was done with mirrors.

Remember all those great news stories that went by the boards for lack of an extra camera and crew? Never again, with the remarkable Hitachi FP-40 ENG prism camera. The price is so low that you can literally afford two. And the quality so high that there’s almost no sacrifice in noise or resolution. The +6 and +12 dB gain switch can add two f/stops when the sun goes down or you move indoors. And the pacesetting, Hitachi-developed Saticon tubes at the heart of the FP-40 generate virtually flawless color pictures. Small wonder that more and more competitive cameras are building upon the Saticon image.

To appreciate the FP-40’s agility in action, you need only slip it onto your shoulder (left or right, thanks to Hitachi’s exclusive flip-over viewfinder). It’s light, balanced, comfortable, and totally self-contained, down to its integral DC power pack. No battery belts—no wires.

For the small station expanding its news and production capability, or the larger station growing with the times, the FP-40 is made to order. Options such as a 5” viewfinder, genlock, and remote operation panel let you easily convert it to studio use. You can tape in the field and broadcast that evening with the same camera.

With all this and more, we consider the FP-40 to be a newsworthy camera in more ways than one. Why not call your Hitachi dealer...today?

Hitachi FP-40...Tomorrow’s technology today.

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...and now for the weather, brought to you by Telex.

Because of the split second accuracy of the Telex/Mageneord DC servo drive, weather satellite services worldwide have chosen the Model 1400 to record meteorological telemetry.

However, the 1400 is not just a weather monitoring aid. It's the high quality recorder/reproducer favored by broadcasters who require exceptionally rugged stability and clean electronics - the demanding characteristics they've come to expect from Magnecord by Telex.

The Model 1400 recorder/reproducer is made in the U.S.A., so service and parts are continually available. We invite you to compare our specs and prices. Write for further information today.

Quality Products for the Audio Professional
HITACHI FP-20

Who but Hitachi could have achieved it? A portable 3-tube camera so professional that even broadcasters are using it. For a price that just about any school, business, or production company can afford.

Remarkably, no expense was spared in making the FP-20. It has Saticon tube sophistication, high resolution, 49dB S/N ratio, adjustable blanking, 1.5" viewfinder, and built-in color bar generator. The options are as enticing: manual and servo zoom lenses ...studio viewfinder and operation panel...and Genlock.

Upgrade to three tubes without upgrading your budget. Compliments of Hitachi.

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- Dallas  - Denver  - Seattle  - Washington, D.C.

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Three tube quality.
One tube price.

Circle (9) on Reply Card
AM and FM reorganization
In reorganizing the Broadcast Bureau, the FCC has abolished the Aural New and Changed Facilities Branch and the Aural Existing Facilities Branch and established AM and FM Branches. The AM Branch is responsible for all applications and matters pertaining to AM broadcast stations which were previously handled by both of the abolished branches. Similarly, the FM Branch is responsible for all applications and matters concerning FM broadcast stations that were previously handled by both of the abolished branches. Both new branches are located at 1919 M Street NW. Contacts: AM Branch—Room 354; Status Line: (202) 632-7010; FM Branch—Room 300; Status Line: (202) 632-7166.

Whittaker to office of plans and policy
James M. Whittaker has been appointed assistant chief for management in the Office of Plans and Policy. In this position he will be responsible for directing the policy research program as well as the administration of the Plans and Policy office.

1981 budget to Congress
The FCC’s Fiscal Year 1981 Budget Estimates to the Congress requests an appropriation of $77,142,000, a net increase of $950,000 over the Commission’s FY 1980 appropriation (after taking into consideration the Commission’s pending FY 1980 pay raise supplemental request).

The requested $950k increase represents the additional amount required by the Commission to fully fund leased office space during FY 1981.

Programming for TV off-hours
The Commission has amended its TV transmitter operating rules to permit the broadcast of visual information programming—such as news, weather or sports, either with background music or no audio—during early morning hours when television would otherwise be off the air.

The Commission said use of new rules permit use of a previously unavailable service in the graveyard hours and allows visual informational programming at a time when such programming is thin or nonexistent.

The Commission said it was proposing to restrict such presentations to normal dark or off-air hours starting with sign-off and continuing only to the next sign-on. All pertinent FCC regulations would apply during these hours, such as station identification, and advertising would be allowed. The Commission said, however, that it did not contemplate allowing licensees to count such presentations toward the total hours of informational programming on station reports or applications requiring such tallies.

Comments are due March 31 and replies April 30. BC DOCKET 80-10; FCC 80-22.

WARC Report submitted
The FCC Office of Science and Technology has formally reported that the 1979 World Administrative Radio Conference (WARC), held in Geneva, Switzerland, from September 24 to December 6, was a substantial success from the US point of view.

Among the major achievements of the conference, according to FCC chief scientist Stephen J. Lukasik’s report, were:

- A 100kHz expansion of the AM broadcasting band, which in the present US spacing pattern would create 10 additional AM radio channels.
- Additional radio frequency spectrum for satellite broadcasting uses, which will provide separate bands for broadcasting to the public and for fixed international and domestic communications uses.
- More high frequency spectrum for amateur and maritime mobile uses and for international high frequency broadcasting.

Those and other actions of the conference will have no immediate effect on the US telecommunications system, the report said. The conference is a function of the International Telecommunication Union (ITU), an international organization predating the League of Nations. Conference actions have treaty status and as such must be ratified by the US Senate to take effect.

Final actions of the conference take effect in 1982, and most incorporate a timetable for phasing them into operation over a period of years. Further, most will require FCC rulemakings before they can take effect, since they involve reallocation of segments of the radio frequency spectrum. The actions listed as major achievements, for example, will require FCC realignment of the uses now occupying the affected parts of the spectrum before the proposed expansions can take place.

9 kHz channel spacing for AM
In a closed meeting the Commission voted in December, to recommend that the US propose a reduction in channel spacing from 10kHz to 9kHz in the AM broadcast band.

If approved by the State Department, this proposal will be made to the other nations of the Western Hemisphere at the Region 2 Administrative Radio Conference in Buenos Aires, Argentina, in March.

FCC rules currently specify that AM broadcast stations operate on the 107 channels spaced at 10kHz intervals from 540kHz to 1600kHz. Approximately 2250 fulltime stations have been assigned to those channels. A reduction in channel spacing to 9kHz would increase the total number of channels from 107 to 119 and permit the authorization of an additional 200 to 1400 fulltime stations depending on the action of the Conference and assignments by the Commission.

The decision to recommend 9kHz channel spacing will be incorporated in a Commission Report on Region 2 proposals. A complete report on the Notice of Inquiry on 9kHz spacing (BC Docket No. 79-164, adopted June 21, 1979) will be released after the March session of the Region 2 Administrative Radio Conference.

AM Broadcasting/Region
The Advisory Committee on AM Broadcasting for the Region 2 upcoming meeting has recently met
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1979 Emmy award winner for video technology

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March 1980 Broadcast Engineering 11
Radio deregulation

The Commission has extended from January 25 to March 25 the deadline for filing comments and from April 25 to June 25 the deadline for reply comments in its radio deregulation proceedings. The extensions were granted in order to permit interested parties sufficient time to study and to comment on new and additional materials being released. This inquiry and proposed rulemaking opens a wide-ranging re-examination of FCC radio regulations. BC DOCKET 79-518.

Broadcast station count

The Commission has announced the following broadcast station totals as of December 31, 1979:

<table>
<thead>
<tr>
<th>Service</th>
<th>AM Radio</th>
<th>FM Radio</th>
<th>FM Educational</th>
<th>UHF-TV (Comm.)</th>
<th>VHF-TV (Comm.)</th>
<th>UHF-TV (Ed.)</th>
<th>VHF-TV (Ed.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>4559</td>
<td>3155</td>
<td>1038</td>
<td>229</td>
<td>517</td>
<td>162</td>
<td>105</td>
</tr>
</tbody>
</table>

Children's TV programming

The FCC has asked for public comment on five options for increasing the diversity of children's television programming and also requested public comment and analysis of its Children's Television Task Force Report (presented to the FCC on October 30).

The options are:

- Repeal the 1974 Policy Statement and rely for children's programming on program sources other than advertiser-supported television.
- Maintain or modify the Policy Statement and modify the television license renewal form to obtain more comprehensive and precise information about licensee program practices for children.
- Adopt interim mandatory programming rules for amount, scheduling and type of programming for children.
- Adopt a TV license renewal processing guideline to determine if license renewal applications meet minimum guidelines for children's programming.
- Increase both the number of advertiser-supported television outlets in each market and the amount of for-pay video programming through cable, over-the-air subscription TV and/or direct satellite-to-home broadcasting.

The Commission hopes to adopt one of these options at the close of this proceeding, except that if it chooses the mandatory programming rule option, it will issue a further notice of proposed rulemaking to outline the specific aspects of such a rule and allow for further comment on it.

Comments June 2, replies August 1. Docket 19142;

Children's TV Task Force

The FCC's Children's Television Task Force is relocating to the Policy and Rules Division of the Broadcast Bureau.

With the Commission's recent decision to adopt a Notice of Proposed Rulemaking on children's television, this proceeding has now concluded its policy development phase and enters the rulemaking phase. The Broadcast Bureau, which has principal responsibility for rulemaking proceedings on broadcast issues, will now take primary responsibility for the conduct of the children's television rulemaking.

The Task Force will become a part of the Policy and Rules Division, but will maintain its status as a separate entity under the direction of Susan Greene. The Task Force will report to Henry L. Baumann, chief of the division.

Reimbursement in rulemaking

The Commission has proposed a 1-year pilot program of reimbursement to individual consumers, groups and small businesses for expenses incurred in their participation in FCC rulemakings if funding for such a program is provided by Congress.

The Commission concluded that the high cost of effective participation in its proceedings limited and often prohibited contribution of information and opinions by the public. It found that an increase in public participation would assist the FCC in making sound decisions in the public interest.

It emphasized that reimbursement of expenses to encourage participation would be for the FCC's benefit in making its decisions, not for the benefit of any individual or group.

Reimbursable participation would include presenting evidence to the Commission and staff, the costs of research and analysis, fees for legal representation, experts and consultants, travel to Washington, DC, or elsewhere, as necessary, and similar expenses.

The program would be for one year, if Congress approved funding. The actual amount sought for reimbursement would be $500,000.

The program would not create any new or additional right to participate in FCC proceedings.

Comments April 7, replies May 23. GEN DOCKET 79-208, FCC 79-852.

Miscellaneous Action

The FCC has:

- Declined to impose a general restriction on the pre-release of US programs over Canadian TV despite objections of US networks/affiliates.
- Denied a Seattle TV station special relief from cable TV use of Canadian pre-released US programs to border audiences.
- Found that a San Francisco Bay area newspaper publisher with 10% ownership (but no voting right or management role) in a radio station licensee would not be violating FCC multiple ownership rules.
- Denied a Fairborn Electric petition seeking to expand the secondary fixed point-to-point communications capability permitted in the 450-470MHz band.
- Granted W.G.P.R., Inc. authority in Detroit to operate subscription TV (STV) over WGRP-TV. This is the first STV authorization made possible by the repeal of the "one-to-a-community" rule.
- Granted seven applications for "mini-TV stations (TV stations utilizing videotaped programming) to serve remote Alaskan villages.
- Denied a rulemaking petition seeking to require "occasional" TV networks (those presenting only occasional programs) to make their programs available to independent stations before offering them to network affiliates in the same market.
- Denied a petition for a rulemaking to limit network programming to 56 min./hr. during prime time at least twice weekly to air local programs.
- Modified its procedure for completing Item 6, Form 313 for remote pickup and low power auxiliary broadcast applicants.
- Held a seminar on fiber optics for its staff and the public; Dr. Charles Kao, vp and chief scientist, ITT Electro-Optical Products Div., and a pioneer in optical fiber communications, conducted the seminar.
- Sponsored a seminar for its staff and the public on biological effects of RF/microwave radiation; Dr. Robert Cleveland of Equitable Environmental Health made the presentation from research he's conducting under a NIOSH contract.
World's first Instrument to Measure Chroma Noise Generated in Color and Black and White Television Transmission Equipment, TV Cameras, VTRs, Video Disc Units, Digital Image Processors.

Measure the value of this unique instrument*, Model 925C Video Noise Meter, and you'll see why it has been purchased by a major USA network. It measures chroma band noise with a single color signal of desired level that contains both a sync signal and a color burst signal. Chroma noise can even be split into AM and PM components which can be measured separately.

Unbalanced 2 head of VTR can be corrected for proper measurement.

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SBE spring certification exams planned
The Society of Broadcast Engineers’ spring 1980 certification exams will be given from May 19 through June 6. Applications must be received in the SBE national office by April 8. Persons interested should write to the SBE Secretary, P.O. Box 50844, Indianapolis, IN 46250, for an application and the certification booklet. The booklet includes sample exam questions, suggested reading material and a list of SBE chapters where the exam will be given.

Emmy Awards Committee
A new Emmy Awards show committee has been formed to oversee the content of the 1980 Emmy Awards program. Hank Rieger, president of the Academy of Television Arts and Sciences, has appointed Bob Sweeney of Sweeney/Feldman/Rosen Productions to serve as chairman for a second consecutive year.

The following Academy members have been selected to serve on the committee: Tony Barr, CBS TV City; Fred Berger, film editor; Bob Finkel, producer; Michael Gallant, ABC-TV; Romain Johnston, art director; Jeff Sagansky, Columbia Pictures TV; Joe Sands, Worldvision Enterprises; Larry Stewart, writer/director; and Sara Dempsey, NBC.

Vital wins Emmy for video technology
Vital Industries, and its late founder Nubar Donoyan, were honored by the Florida chapter of the National Academy of Television Arts and Sciences as recipients of the industry’s highest award, the Emmy.

The award, presented December 2, 1979, in Miami, was given to Vital Industries for their invention of the Squeezoom, an electronic television device that allows unprecedented versatility in producing special effects.

Accepting the Emmy for Vital Industries is Mal Malgieri, company vice president. Mike Douglas, national television personality, presented the award.

ITA election results
ITA has announced the election of Henry Brief to the position of executive director. He succeeds Larry Finley, who organized ITA and served as executive director for nine years.

Brief was formerly executive director of the Recording Industry Association of America for 19 years.

Finley will continue to serve as ITA vice president of membership/events, and will remain on the board of directors.

Matsushita develops innovative video camera
Matsushita Electric Industrial has announced the development of the first solid-state color video camera featuring a single-chip, high sensitivity video sensor. The sensor eliminates the blooming phenomenon that is inherent in conventional solid-state cameras. Blooming occurs when intense light, such as flames or shining materials, cause white vertical streaks to appear in the picture.

The solid-state color camera uses photoconductive silicon plates to replace conventional image pick up tubes, making it as compact in size as a home movie camera. The camera incorporates a solid-state image sensor with approximately 210,000 picture elements. It requires a standard scene illumination of 500 lux with an f2 lens.

RCA and CBS announce licensing agreement
RCA and CBS have announced an agreement that RCA has licensed CBS to manufacture and distribute video discs worldwide using the RCA SelectaVision system.

John D. Backe, CBS president said, “CBS is committed to full participation in all the audio/visual technologies which hold great promise in the 1980s and thereafter. Edgar H. Griffiths, RCA chairman, said, ‘We regard this decision by CBS as a breakthrough in establishing a video disc system...that will set a standard of excellence for the electronics industry worldwide.’

The RCA SelectaVision video disc represents 15 years of research and development, and was designed to provide a simple, reliable and inexpensive system for the home.

CBS’s records division is the world’s largest US-based producer, manufacturer and marketer of recorded music, known throughout the world for its discs, tapes, cassettes and cartridges on Columbia, Epic, Odyssey, Portrait, Columbine, Masterworks and associated labels.

Ampex introduces metal particle tape
Ampex has introduced its MPT metal particle audio cassette. MPT metal particle tape is compatible with the new generation of metal tape cassette decks and
Introducing the most advanced TV audio production console ever, the Neve Model 7056. Already chosen by a major U.S. TV network as their standard large audio console for the 1980's. And for good reasons! 36 channel positions with multiple mic/line inputs, 8 submasters, 16 masters, 4 band EQ, full stereo, but most of all because of the incomparable Central Assignment System controlled by an efficient software based microprocessor. Multiple assignment programs can be stored in solid state memory for instant recall between or during productions. If you're considering buying large audio consoles, don't buy yesterday's technology for tomorrow.

Discuss your requirements with Neve We're in your future!

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Rupert Neve Electronic International Ltd. Cambridge House, Melbourn, Royston, Hertfordshire, SG8 6AJ England Tel: 0763/60776
Rupert Neve GmbH 6100 Darmstadt Bismarkstrasse 114 West Germany Tel: 06151/81784

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provides a more than 100% increase in high frequency dynamic range over typical high bias audio cassettes. The tape also allows low distortion at elevated record levels. The new cassette offers dramatic improvements in saturated output at short wavelengths: about 5-6dB above the best available high-bias cassettes, and 11dB above standard gamma ferric oxide products.

The MPT audio cassettes are available in 60-minute lengths.

New video transmission system tested
A cooperative effort by RCA Americom and David Sarnoff Research Center engineers has resulted in the installation of a video transmission system for experimental testing, conveying two new video channels within the same frequency band formerly assigned to one. The experiment is being conducted on RCA's microwave link between New York City and its major satellite transmission facility in Vernon Valley, NJ.

Gerry Kaplan, an RCA Americom systems engineer and video expert, explained the existing frequency situation. Kaplan said, "The ever-dwindling availability of frequency allocations, especially in urban areas, has been aggravated by the increased use of satellites for distribution of TV signals. Frequencies are reserved for use by a communication common carrier upon application to the FCC after coordination with all other carriers. They permit video transmission originating from TV studios located in metropolitan centers to be conveyed via terrestrial radio to the earth station for transmission to a satellite."

John Christopher, RCA Americom vice president technical operations said, "The performance of the new system is comparable to that achieved with the prior transmission techniques. It yields high-quality television pictures that meet the stringent requirements of the cable TV industry. The ability to convey two video channels in the frequency band that formerly carried a signal channel will allow RCA Americom to effectively double the capacity of its video terrestrial transmission facilities without a corresponding increase in required frequency allocations."

NASA studies predict growth in telecommunications
Demand for US telecommunications services is expected to grow fivefold by the turn of the century, according to recent NASA studies. An increasingly prominent role for space satellite video and data communications traffic is foreseen.

The studies were conducted for NASA Lewis Research Center by U.S. Telephone and Telegraph, New York, NY, a subsidiary of ITT, and by Western Union Corp., Upper Saddle River, NJ. The studies show that demand for conventional voice services, message-toll service and private-line traffic, will continue to predominate.

By the turn of this century, as much as one-fourth of all long-distance voice traffic may be carried by satellites, as well as half of all data and video traffic.

The studies were done in conjunction with NASA's recently announced communications satellite research and technology. Management of the work is assigned to the Lewis Research Center.
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VIDEO PRODUCTS
Dynasciences A Unit of Whittaker Corporation, Township Line Road, Blue Bell, PA 19422 215/643-0250 Telex 846358
Primary emphasis is on developing technology needed to open the 20/30GHz frequency band for commercial use during the next two decades in a cost-effective and spectrum-conserving manner. The band has not been used to date in the US.

The concluded studies show that by the early 1990s growing demand for long-distance telecommunications services will have saturated the nation's existing domestic satellite capacity in the bandwidths at 4-6GHz (C-band) and 11-14GHz (Ku-band). To accommodate this expected rapid growth in demand, more versatile satellites that have higher capacity and operate in the 20/30GHz band, as well as in currently used bands, will be required.

A major attraction of the 20/30GHz band, called Ka-band, is the broad frequency range allocated to communications satellite use—five times the band allocated at C-band or Ku-band.

Using the Ka-band, advanced technology satellite systems would have message capacities of 50 to 100 times those operating in the C-band.

The studies conclude that most data-services traffic will originate and end at terminals served by computers, with executive videoconferencing expected to become a partial substitute for business travel by the year 2000. By then, 90% of all telecommunications traffic will require real-time or instantaneous service. The remaining 10%, such as electronic mail delivery, will be non-real-time traffic.

Minimum performance requirements for magnetic recording and reproducing equipment

The IEC has issued a new international standard laying down minimum performance requirements for magnetic recording and reproducing equipment.

The standard is one of a series being developed by the international body giving minimum performance requirements for individual types of high fidelity audio equipment and systems. Such international standards for record-playing equipment and cartridges and for amplifiers have already been released. Designated Publication 581-4, the latest in the series has been endorsed as an international agreement by the many member countries of the IEC involved in the manufacture of audio equipment and systems.

The standard comprises two sections. The first concerns minimum requirements for characteristics directly related to the reproducing quality of equipment and systems and the second, other characteristics and requirements.

For each characteristic specified, its correct method of measurement and minimum performance requirement is provided. Characteristics described include: weighted wow and flutter; overall weighted signal-to-noise ratio; separation between neighboring non-related tracks; reproduce effective frequency range; and overall effective frequency range. Other characteristics comprise the rated recording level, maximum start time to record/reproduce speed, interconnection (both mechanical and electrical), and characteristics of equipment to be specified in a manufacturer's manual or description leaflet and technical specifications. On this latter point, the manufacturer is now required to specify the reference tapes used for the overall measurement and the calibration tapes used for the reproduction measurement.
Our ADM 1600: modest but mighty

Although it's a desk-top model, our 1600 Series audio console offers a brilliant array of features and capabilities for handling the most demanding program material.

One of our new breed of consoles, the ADM® 1600 is available with up to 16 discrete inputs, 4 submaster and 2 master outputs. Combined with a host of pre-selector, buss selector and processor modules, the ADM 1600 creates perfect harmony with today's video. Like all ADM consoles, the 1600 is designed to exacting standards and manufactured to the most rigid tolerances. Each ADM console is backed by an exclusive 5-year warranty.


See us at Booth 1404

March 1980 Broadcast Engineering 21
Information critical to copyright

NAB has asked the Copyright Office to amend its forms CS/SA-2 and CS/SA-3 to require cable TV systems to indicate if the radio stations they carry are distant or local. This information could be gathered, the Association stated, if the cable systems telephone the radio station to ask the boundaries of the appropriate signal strength contour.

Direct to home policy

The Joint Board of Directors of NAB issued a statement saying that direct satellite to home broadcasting cannot be authorized by the FCC unless Congress first approves it and determines the terms and conditions under which it may be operational. The Board said that direct satellite to home broadcasting is inconsistent with the system of local TV and radio licensing and regulation which were provided by the 1934 Communications Act.

FM educational frequencies hurt reception

Saying that the FCC’s educational FM frequency assignments have had a disastrous effect on Channel 6 TV reception, NAB has asked the FCC to expedite its pending proceeding aimed at preventing such interference. NAB also asked for an immediate freeze on all applications seeking increased power or antenna height of existing educational FM stations.

NAB opposes bill

A Michigan House of Representatives subcommittee has been told by NAB that there is no need to pass legislation regulating TV advertising directed at children. NAB said its Television Code and federal regulations adequately cover such advertising.

The bill before the House Judiciary Subcommittee would prohibit advertisements for consumer items that may be inappropriate for or potentially hazardous to children. It also would impose strict limits on the content of children’s advertising—limits on what could be said, how much, and by whom.

National Radio Systems Committee

NAB and the Electronic Industries Association have formed the National Radio Systems Committee (NRSC) to investigate and recommend methods of improving the overall transmission and reception of AM and FM broadcasting services.

Committee chairman if Wallace E. Johnson and James D. Kearney is vice chairman. Committee members represent manufacturers of receivers, transmitters and broadcast components; broadcasters and associations.

The committee will identify equipment design and operating practices to assure the best possible AM and FM service quality. Its initial consideration will center on AM stereo and FM technical standards. The committee will meet April 15 during NAB’s Las Vegas convention.

NAB, RTNDA sponsor training program

An advanced management training program for news directors will be sponsored by NAB and the Radio Television News Directors Association. It will be held June 22-28 at the University of Pennsylvania’s Wharton School.

Radio and TV news directors will participate in a program designed to cover areas of people management, planning, organizational design, problem solving and executive self-management. Also in the curriculum will be discussions of budgeting and finance, labor relations and the law as it relates to broadcast news.

Registration information will be mailed shortly to all NAB and RTNDA members. Inquiries can be directed to Ron Irion, director of broadcast management, National Association of Broadcasters, 1771 N Street, N.W., Washington, DC 20036.

NAB opposes loud commercials

NAB has told the FCC that since the broadcast industry and the government’s interests regarding the control of loud commercials are in harmony, no further government involvement is warranted.

According to NAB, any practice that annoys the audience, promotes complaints or discourages listening is harmful to the station.

NAB said its Engineering Advisory Committee has established a Balanced Audio Levels subcommittee which is studying loudness variations in radio and television, and that work is being done at the CBS Technology Center in Stamford, CT on further refining the loudness meter and the loudness compensating amplifier.

Lowest unit charge ruling

The FCC has been asked by NAB to reconsider its ruling that the “lowest unit charge” provisions of Section 315 of the Communications Act are applicable to the Iowa political caucuses and any other caucus.

In its filing, NAB said the FCC action changes a substantive agency regulation despite the terms of the Communications Act and the legislative history of the Federal Election Campaign Act and that the changes were made without allowing for public comment. Congress has stipulated that the lowest unit charge applies to the 45 days preceding a primary or primary runoff election and the 60 days preceding a general or special election—not to political caucuses. The Commission based its decision on the concept that the charge should apply “where the general public at large could partic-
Ikegami’s third microprocessor-controlled camera reduces registration set-up time and cost

The ideal camera for field broadcast television assignments must meet three major criteria. It must be air-ready moments after arrival at the camera site. It must deliver pictures of studio-quality color, crispness, and clarity. And it must be consistently reliable.

The Ikegami HK-357A meets those criteria in the field and is equally suitable as a studio camera. And it allows the camera crew to concentrate on creative aspects of their assignment instead of on time-consuming set-up and readjustment tasks.

Once on-site, the HK-357A requires hook-up to only three cables and power source. Then, a push of the microprocessor activate button automatically cycles it through a check and recheck of all set-up and registration adjustments. This takes approximately 45 seconds per camera (up to six cameras can be handled). No external registration and chip charts are necessary because a test pattern projector (diascopes) is built into the lens. Camera distance from the compact base station can be nearly a mile with triax, or 2,000 feet with TV-81 multicore cable.

Because the HK-357A optimizes the capabilities of the newly developed Diode Gun Plumbicon®, the picture output is of very high resolution, low lag, low noise and wide dynamic range. Dynamic Beam Stretch to reduce comet tailing; Geometric Correction for near-perfect registration; auto iris and auto white balance — all contribute to the superior color picture program output of this camera.

The HK-357A is notably versatile too. It offers selectable contrast compression levels; built-in chroma keyer; gen-lock to Sync and SC or VBS, BBS; and several other features, including an unusually compact CCU, optional RCU, tiltable and rotatable 7-inch high-resolution electronic viewfinder.

The performance record of Ikegami cameras at the major networks in the United States and around the world attests to their consistent reliability, and long, trouble-free service life.

If you are upgrading, a demonstration may well reveal that the other cameras you’ve considered may already be obsolete when compared against the HK-357A.

Ikegami HK-357A

See us at NAB Booth #927

Broadcast Products Division, Ikegami Electronics (USA) Inc., 37 Brook Avenue, Maywood, N.J. 07607; (201) 368-9171. West Coast: 19164 Via Ness Ave., Torrance, CA 90501; (213) 328-2814; Southwest: 330 North Belt East, Suite 228, Houston, TX 77060; (713) 446-0100; Southeast: 522 So. Lee Street, Americus, GA 31709; (912) 924-0061.

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ipate in the candidate selection process”—a complete departure from stated policy.

Radio board urges study
The Radio Board of Directors for NAB reaffirmed its position that the FCC appoint a joint government-industry advisory committee to prepare in-depth studies of various methods of providing full-time service without significantly diminishing the service of other classes of stations.

The NAB Radio Board also urged that the United States and other nations defer resolution of the 9-kilohertz question until a full factual record including comprehensive engineering and economic studies has been compiled.

First Amendment Congress opens
The First Amendment Congress designed to emphasize the importance of the public's right to know and threats to that right will be held March 16-18 at Williamsburg, VA.

Herbert W. Hobler, chairman of NAB's First Amendment Committee and a member of the Congress' steering committee, noted that "this is the first time the entire media industry has joined forces to alert citizens of their rights under the First Amendment."

NAB asks court to rehear arguments
Saying that the case should be decided now, NAB asked the US Court of Appeals to rehear, either by a panel or the full court, NAB's arguments that the Memorandum of Understanding adopted by the FCC and the Equal Employment Opportunity Commission is illegal. Last December 17, a 3-judge panel dismissed the appeal as "unripe for judicial review."

Policy statement procedure suggested
Erwin G. Krasnow, NAB's senior vice president and general counsel, today suggested that policy statements be put in loose-leaf binders and placed in the FCC public reference room, library and field offices as a means of providing broadcasters access to policy statements. The FCC now announces policies in the form of public notices, declaratory rulings, reports and orders, and primers and does not provide licensees with copies.

Radiation standards need review
According to NAB, federal safety and health standards should be based on sound research data, be implemented by agencies having jurisdiction in the area and not be more stringent than existing standards for covering electromagnetic radiation.

In its filing, NAB said that prior to implementation of procedural and practice standards by OSHA, the FCC should not implement such standards itself especially since the more expert agency has not chosen to do so.

NAB said the public interest would be served by the government's adoption of radiation regulations or policies based on a firm body of scientific evidence.

NAB said it is unaware of any sound basis for any change in the present American National Standards Institute standard of 10 mW/cm². It said this could be applied to the general public without disrupting the existing or foreseeable operations of the broadcast industry.

NAB asks for ban
NAB has asked FCC to abandon its mandatory horizontal and vertical TV blanking regulations and adopt recommendations made by NAB's subcommittee on TV blanking widths. The subcommittee proposed that the Commission continue its current policy of nonenforcement of its rules for a 5-year period during which the industry would recommend standards.

In its filing, NAB said present regulations prohibit the broadcasting of all programming material which does not conform to blanking standards despite its news, public interest or entertainment value. The Association said it questions the validity of such rules which deprive the public of programming on the basis of a technicality, adding that by enforcing them, the FCC would be in the undesirable role of a technical censor for the TV industry.

NAB asks for reversal
Saying that provision of the Administrative Procedure Act (APA) have been violated, NAB asked the US Court of Appeals to reverse the FCC's new policy for cable TV signal change waivers.

The Commission has authorized Arlington Telecommunications Corporation (ARTEC) in Virginia to import Baltimore TV signals and shifted the burden of showing any potential damage to Washington, DC stations from the cable system to the broadcasters. NAB asked the Commission to reconsider its decision, but it refused.

In its filing, NAB told the court that the FCC has changed the distant signal carriage rule in fundamental respects and "crossed the line between developing reasonable standards for review of an otherwise generally applicable rule and rewriting the rule itself." The Association stated that the APA and elementary fairness preclude this action.

NAB opposes reimbursement
According to NAB, the National Telecommunications and Information Administration does not have the authority to reimburse participants in its proceedings, and that if it wants to do so, it should seek congressional approval.

In its filing, NAB said NTIA is erroneously basing its authority on statutes that do not expressly authorize or provide appropriations for the agency, but merely permit it to expend funds for its necessary expenses as provided by law.

Committee acts on children's commercials
Guidelines concerning audio and video depictions of a balanced breakfast regimen in children's commercials and a new policy regarding sweepstakes commercials aimed at children have been clarified by the The Children's Advertising committee of the NAB television code board. The action, in the form of questions and answers was effective October 15, 1979, for new commercials and March 1, 1980, for all current commercials.

Government meddling danger cited
NAB chairman of the board Thomas E. Bolger warned that if the federal government ever sets rules for broadcast revenues "the media will be liable to total government control." Bolger cited several examples of potential government encroachment in broadcasters' financial affairs in an address to the Broadcast Financial Management Association.

New representative
Mutual Broadcasting System will be represented by Martin Rubenstein, newly-appointed president and chief executive officer on the NAB's Radio Board of Directors. He replaces Dr. Bernard R. Schafms, vice president, communications and properties, Amway.
Harris' CP* antennas lead the way to vastly improved coverage and signal strength.

With the Harris CPV antenna, there's no need to replace your present tower when switching to CP — because it has windloading specifications comparable to Batwing and traveling wave antennas. The Harris CBR (Cavity Backed Radiator) is designed for a wide variety of directional patterns. Both antennas allow multiple stations to operate from the same antenna.

Harris CP antennas deliver excellent circularity, low axial ratio and low VSWR. And each may be tailored to your specific coverage requirements.

Learn more about the Harris CP antennas. Contact Harris Corporation, Broadcast Products Division, P.O. Box 4290, Quincy, Illinois 62301, (217) 222-8200.

*Circular Polarization

Visit the Harris TV & Radio Equipment display at 1980 NAB, Las Vegas.

CP provides the best TV signal. Harris provides the best CP system.
NRBA tone for the 80s

The Board of Directors has reviewed the status of NRBA’s programs, services and plans for expansion of service to the radio industry.

The Board noted that the times demand forceful forthright industry leadership and expressed determination to fashion NRBA into a more outspoken advocate for radio.

Several important decisions were reached by the Board:
- Opposed 9kHz channel spacing;
- Voted to establish a National Committee for Responsible Public Interest Groups;
- To petition the FCC to amend the rules which limit application of full-time service by a daytimer in a market which already has two or more full-time signals, though expansion to full-time service is technically feasible;
- Supported Arbitron’s delisting of stations that air diary promotion announcements;
- Opposed Arbitron’s issuing monthly audience survey reports;
- Expanded the number of NRBA Regions from 9 to 15, effective this summer, 1980;
- Elected Martin Rubenstein, President of Mutual Broadcasting, Director at Large.

“The Board, in response to our members and the radio industry at large, is determined to provide aggressive, outspoken leadership for the radio industry,” NRBA President Sis Kaplan said. “The problems and opportunities facing radio in the coming years demand that boldness and innovative leadership be displayed,” Kaplan added.

“Radio is one of the most powerful mediums and serves the public interest...to an even greater extent than any other. The public is aware of it and its time the Congress and regulatory agencies were made to realize it, too,” explained Kaplan.

RE: Deregulation

The Board of Directors passed the following resolution on the FCC deregulation proposal:

Be it resolved: that the National Radio Broadcasters Association reiterates its long held and often states support for the deregulation of radio.

It is further resolved: that the FCC Notice of Proposed Rulemaking (BC Docket No. 79-219), while a commendable gesture, is not true deregulation and NRBA cannot, therefore, approve The Proposed Rulemaking in toto.

Many of the FCC proposals and options would, in NRBA’s view, create more onerous over-regulation than now exists and would create an even greater lack of license stability than is provided under the present rules. Degradation of service to radio’s listening public would inevitably follow.

NRBA will submit detailed comments on the Proposed Rulemaking including specific alternatives which will beneficially serve the interests of the radio industry and the American public.

But NRBA is not completely opposed to all of the current FCC proposals for the “deregulation” of radio. The facts are that NRBA views the FCC proposals as reregulation and not deregulation and that the “preferred” options which are being highly touted could, if adopted as stated, create for radio licensees more confusion, less certainty, only slightly less paperwork, and...most important...would further weaken license stability.

In short, NRBA sees more negatives than positives, more danger than security in the “preferred” options being pushed by some interests.

RE: 9kHz

The Board of Directors adopted the following resolution against 9kHz.

“Be it resolved that the NRBA for valid technical reasons, flatly opposes the adoption of the 9kHz AM channel spacing proposal which will be considered at the Region 2 Administrative Radio Conference.”

The Board believes that the adoption of 9kHz spacing on the AM band will result in a loss of signal quality and degradation of service to the public, prohibit the development of AM stereo and would forever limit AM from reaching a parity with FM.

“It seems to us,” said Sis Kaplan, NRBA President, “that the public and the radio industry are being asked to pay an exorbitant price for the dubious advantages claimed for 9kHz spacing.

“We will submit to the FCC detailed comments supported by technical information backing our position that adopting 9kHz spacing is unnecessary and would be unwise.”

RE: Loud Commercials

The NRBA filed comments opposing any FCC regulations “Eliminating Objectionable Loudness of Commercial Announcements” (Docket 79-168), calling them “unnecessary and inappropriate.”

NRBA questioned the need for regulating commercial audio levels; the question of loud commercials has been reviewed by the Commission a number of times over the past 17 years with no action ever taken because of fundamental problems in defining and measuring commercials that are “too loud.” NRBA maintains that these same problems exist today and that regulating commercial audio levels is also unnecessary because marketplace competition can effectively resolve all problems.

NRBA comments noted that even if loudness could be defined objectively and measured accurately, to regulate audio levels the FCC would have to “determine what degree of loudness can be ‘tolerated’ by the public’s sensitivity,” acting as an arbiter of taste, attempting to divine some nationally acceptable standard of loudness where no such standard can be said to exist.

Deregulation Filing Extended

Pressure from the National Association for the Advancement of Colored People (NAACP) and other powerful interest groups has prompted the Federal Communications Commission to extend filing deadlines for the Proposed Rulemaking for radio deregulation January 25 to March 25.

Broadcasters are urged to use this extra time to prepare individual comments to offset the flux of opposition.

Time Limit Urged

The NRBA filed comments with the FCC supporting the National Citizens Committee for Broadcasting’s (NCCB) petition that would require the FCC to take action on all petitions and applications within 180
Harris' TV transmitters lead the way to greatly enhanced reliability and performance.

For example, the TV-50H VHF 50-kilowatt High Band color TV transmitter combines a solid-state driver with a three-tube design for dependability and reduced tuning requirements.

In a 100 kW High Band configuration for CP* applications, it occupies the same space as most existing 50 kW transmitters. Therefore, converting to CP doesn't require an expensive new transmitter building or complicated RF switching.

The Harris TV-50H uses a Transversal Sideband filter which requires no tuning. All control circuits are solid-state. And all control meters and monitoring circuits are designed for remote control and automatic operation. What's more, the TV-50H provides field-proven superb color performance.

Learn more about the complete line of innovative Harris TV broadcast transmitters which range in power from 1.3 kW to 220 kW. Contact Harris Corporation, Broadcast Products Division, P.O. Box 4290, Quincy, Illinois 62301, (217) 222-8200.

*Circular Polarization

For color performance, Harris TV transmitters are unsurpassed. For example...

VISUAL PERFORMANCE:

- Visual Modulation Capability: \( \leq 1\% \) of sync peak.
- Differential Gain: \( \geq 0.5 \text{ dB} \) or better.
- Differential Phase: \( \leq \pm 1^\circ \) or better.
- Signal-To-Noise Ratio: \( \leq -55 \text{ dB} \) or better (RMS) below sync level.

HARRIS
COMMUNICATION AND INFORMATION PROCESSING

CP* provides the best TV signal.
Harris provides the best CP system.

Visit the Harris TV & Radio Equipment display at 1980 NAB, Las Vegas.
days of their filing.

The NRBA has long supported new rules or policies which expedite and improve the Commission’s regulatory process. The suggested time limit in the Proposed Rulemaking would serve to benefit both the broadcaster and the American public.

However, the NCCB petition requires either grant or denial of all petitions within 180 days, which fails to take into account that in some exceptional cases failure by the Commission to act may be justifiable.

Therefore, the NRBA recommends the FCC have the option to defer action for an additional 180 day period with the requirement that each petitioner whose action is deferred receive a clear explanation of the reasons for the deferral. This requirement would, in effect, place the “burden of proof” on the Commission and the “status check” notices would help put an end to petitions being deferred indefinitely.

Field Strength Data

Seasonal conductivity changes have long been a problem for engineers monitoring field strengths. The FCC adopted some policy changes which allow measurements to fluctuate with seasonal conductivity. The FCC action to adopt the “direct ratio” method of assigning monitoring point limits as well as the decision to curtail the practice of lowering limits based on “partial proofs.”

Special thanks to Harv Rees of Carl T. Jones Associates for his assistance.

The 9kHz Costs

According to Sillman, Moffet and Kowalski, the engineering consulting firm commissioned by the FCC’s 9kHz Task Force. AM broadcasters could pay an estimated $15 million to make the 9kHz switch. Other estimates released by the consulting firm place the cost of converting directional antennas around $10,000. A final report is expected to be released sometime in May.

Region 2 Delegation

Ray Livesay, president of the Daytime Broadcasters Association and NRBA Director at Large, was appointed Chairman of the “Channel Spacing and Bandwidth Task Force” in connection with the Region 2 Administrative Radio Conference meeting to be held in Buenos Aires, March 10-29, 1980.

The appointment was made by Charles H. Bragg chairman. Advisory Committee on “AM” Broadcasting Region 2. Others appointed on the committee from the advisory group were: Ralph E. Green, V.P. Engineering, CBS Radio; J.D. Kearney, Mgr. FCC/EIA Programs General Electric Co.; Harold Kassens, A.D. Ring Associates; and Oscar Leon Cuellar.

Fee refunds

Broadcasters will finally receive fee refunds due them by the FCC. Computer difficulties and miscellaneous red tape which slowed the refund program have now been overcome.

More than 2150 applicants have received more than $1.5 million in fee refunds from the FCC. Estimated turnaround time is six to eight weeks upon making an initial request. Radio stations have until May to apply for a refund.

Price Controls

The Carter Administration’s “voluntary” Price Control Guidelines for fiscal year 1980 follow basically the same structure as last year’s. Many companies who complied with the guidelines the first year will find time-consuming calculations to determine their compliance goals simplified.

NRBA legal counsel, explains that “price guidelines have been tightened, particularly use of the profit margin and gross margin exceptions. The Council on Wage and Price Stability obviously hopes that by permitting us of the same data base for a second year companies that complied last year will do so again.”

FM Listenership Up

FM listenership has increased 10% per year over the past four years, according to a CBS analysis of the RADAR 20 Spring/Fall ’79.

FM is catching up with AM during the morning drive time increasing its share of audience by 46% over the past four years. However, evening listenership continues to be AM’s forte.

Station Sales: Over $1B

High inflation and interest rates failed to discourage investors last year: sales broke the $1 billion dollar mark. Changing hands were 64 TV stations and 581 radio stations for settlements amounting to $1,116,648,000.

Across the board broadcast properties in general, increased in value. FM’s growth, which has recently pushed listenership over 50%, made the biggest gains at the expense of AM.

Despite appearances that revenues are leveling off, AM is still a good investment. This is particularly true in light of the pending Class IV proposal to increase power and the advent of AM stereo which could serve to boost AM’s value.

Regulatory Costs

Administration economists estimate regulatory agencies add at least 1/4 of a point to the nation’s inflation rate. This fiscal year’s administrative costs alone exceed $4.8 billion. Will business spin out before our congressional navigators place regulatory agencies back on their original courses?

President Carter, in an attempt to curb rising regulatory costs, has turned some of his anti-inflation guns on the “regulatory castles” by authorizing the Office of Management and Budget to review all new programs costing more than $100 million.

NRBA Staff

The Board of Directors of NRBA has announced the appointment of John K. Christian to vice president. Membership Development. He was formerly president of Christian & Associates, a marketing consulting firm.

In a related action, Lisa Friede, NRBA Administrative Director, was promoted to Director of Operations.

Other staff changes include the appointment of Linda Busch, formerly with the University of Maryland’s Public Liaison office, to Projects Manager.

Board Additions

Martin Rubenstein, President of the Mutual Broadcasting System, has been elected by the NRBA Board to serve a 2-year term as an NRBA Director at Large.

Ragan Henry, President of Broadcast Enterprises National, Inc. (BENI) and the National Association of Black-Owned Broadcasters (NABOB) has been elected an NRBA Director at Large. Henry owns WAOK-AM in Atlanta, WGV4-AM in Charlotte, WCN-AM in Cincinnati, WTN/WOKF in Clearwater, Florida, WOKY-FM in Hamilton, Ohio, WPQD-AM in Jacksonville and WFYY-FM in Atlantic Beach, Florida.
Harris' 9100 Facilities Control System leads the way to lower operating expense.

From a complete automatic facilities control system to basic remote or local control, the Harris 9100 can be tailored to meet your specific requirements. This microcomputer controlled system provides complete facilities protection and maximizes equipment performance.

It’s available to monitor and control multi-site AM, FM and/or TV operations. It continuously surveys your transmission system and your physical plant and makes minor adjustments within normal operating tolerances. It instantaneously responds to abnormal levels by making automatic corrections and sounding alarms.

The system assures that your equipment operates at legal maximum power and modulation levels without violating FCC regulations. Also, there’s no need for continuous monitoring by station personnel.

If you are going CP* or maintaining horizontal polarization, the 9100 assures the maximum performance of your transmission system. Learn more about the Harris 9100. Contact Harris Corporation, Broadcast Products Division, P.O. Box 4290, Quincy, Illinois 62301, (217) 222-8200.

*Circular Polarization

CP* provides the best TV signal. Harris provides the best CP system.

Visit the Harris TV & Radio Equipment display at 1980 NAB, Las Vegas.
Take 1: Career Guidance—Get a Second Opinion

The bulk of mail that arrives in the office these days, precipitated by the current series of articles in BE, just serves to reinforce our thinking that far too many people get into the wrong career field or get into the right field the wrong way.

For example, one recent letter from a seemingly bright (and articulate) young lady just out of high school tells us that she would like very much to enter this area of TV operations as a camerawoman. Her experience consisted of the school TV workshop and some minimal training as a gofer at one of the local TV stations. It seems that she had read a book by some veteran of the industry explaining that "while an extra plus...a degree in electronics was not at all necessary in order to perform any...of the duties...in the area of TV operations..." Encouraged by this, the young lady had gone to see a personnel supervisor at a local commercial TV broadcast station. This interviewer proceeded to set the record straight by contradicting what the aforementioned book advised. The interviewer told the girl to get into a college, get her degree (EE, Mass -corn, or whatever) and then come back...presumably for another interview. Totally confused at this point by the conflicting advice, she wrote to us. What to do? How could she become a cameraperson and do all the other related jobs that she had heard and read about? We told her what we had written in this column on various occasions. Degree or no degree...that was the question. We can understand what prompts the college advisor to suggest the degree program as the route to a position in the TV operations area...but why a personnel type in a third-rate market area suggests the same thing is beyond us.

A portion of our column that appeared in the July issue of BE, said: "...if an individual plans on getting his apprenticeship in the operations area and then going on to the Plans/Policy/Admin area, college training (with degree) is a club-house advantage...[however] you can become a good (or great) cameraman, tape-editor, lighting-director, TD, etc. without the two or four-year degree."

Is there a PRACTICAL need in the operations area for those subjects (we consider) ancillary to the specific industry-related courses, but are, nevertheless, required for graduation and a degree? We believe not. Of course, should your priorities demand that the inner yearning for culture and a well-rounded education be satisfied, the decision becomes a bit more complex.

Take 2: EJ/ENG as the British see it

Doug Neale (British Guild of TV Cameramen) while writing to Zerb, said: "...The operation of an ENG camera will probably be more like news film camera operation than anything we do. The technique is different (than studio); we would have to sacrifice some of our smoothness and precision. A news editor (a journalist I mean)—the man you're shooting the film for, equivalent to a producer in television terms—wants pictures first and foremost. Smooth artistic camerawork comes second to being in the right place at the right time and preferably before everybody else! "Now I'm saying that we couldn't cope with this, and eventually turn out better stuff than some of that badly framed, jerky news film you see, but it would require a change in our priorities. The news film cameraman already has his priorities clear.

"The engineering arguments are the ones I most often hear in favor of the TV cameraman. But really, anyone capable of understanding film emulsion can understand camera tubes and, after all, what will you need to know? The difference between line and frame faults, between sync and picture faults, between camera and VCR faults: the knowledge of which plug-in module to replace or whether to ask for a new camera or VCR machine will see most crews through virtually all on-location problems. The truth is there are as many TV cameramen who would find difficulty in this—especially in the non-training independent companies—as there are film men."

*NAB Product Directory listings start on page 62.

*Use Broadcast Engineering reader service cards to receive more information on products mentioned.
Our new and exciting co-ax digital remote control system provides dependable, studio-like remote control to ENG/EFP cameras in the field at a fraction of the cost of other systems! It is the most affordable and reliable remote control system available on the market today. Easily interfacing with a full range of professional ENG/EFP video cameras currently in use, such as: Ikegami HL-77 and HL-79A, RCA TK-76B, NEC MNC-71 cameras, and many more.

**Outstanding Features:**

- System consists of mini-CCU, analog-to-digital encoder, and digital-to-analog decoder.
- Permits control of all functions normally required in OB van, including genlock.
- Digital encoder (19" rack-mounted) designed to accommodate two mini-CCUs to control two cameras (each equipped with its own decoder).
- Lightweight, camera-mounted decoder features intercom capability.
- Digitally encoded control data relayed to camera-mounted decoder through a simple, lightweight and reliable coaxial cable.
- Eliminates the need for expensive, bulkier, multi-core or triax camera cable, and reduces to a minimum the risks normally associated with the use of such camera cables.
- Low-cost coaxial cable allows complete remote control and camera set-up functions from greater distances with greater safety and utmost reliability.
- System is ideal for all extended shooting situations such as sports events, live concerts, political rallies, etc.

For full details, call toll-free: 800-421-7486.
Radio/Television

Thomas Horesco has been named administrative chief radio and television engineer for the University of New Haven. The appointment was effective at the beginning of the fall semester.

J. E. Risk has been appointed vice president, engineering for KSDK, St. Louis, and affiliated Pulitzer Broadcast Stations. Risk had previously been director of engineering for KSD and KSD-TV.

Michael L. Douglass, former national sales manager for radio stations KPOL-AM and KZLA-FM, Los Angeles, has been named vice president and general manager of all-news WTOP-AM, Washington, DC.

Don Elliot Heald has announced his intention to retire in 1980 as vice president and general manager of WSB-TV, Atlanta. In June 1980, he will have completed 30 years with the company.

Agencies/Associations

Jerry Greenberg, vice president of advertising, public relations and promotion for Twentieth Century-Fox Television, has been appointed co-chairman of the EMMY Magazine advisory council.

Frank D. Murphy has been named vice president, client relations of Bonneville Broadcast Consultants. Prior to 1973 he served as on-air personality at several radio stations.

Manufacturers/Distributors

Nina Stern has been promoted to the position of public relations manager at James B. Lansing Sound. Prior to joining JBL, Stern held a variety of editorial and public relations positions.

Appointment of Peggy Hughes-Whiting as manager marketing services for RCA Broadcast Systems was announced by James A. Gimbel, marketing director. Previously, she was administrator, sales administration, for RCA Broadcast Systems.

Robert Mueller has been appointed to the position of manager of national market development of Sony Video Products. He was most recently the western regional manager for Sony.

Bob Lowig has been appointed head of the audio transformer sales department at Burns Audiotronics.

Swintek Enterprises has announced that W. R. ‘Terry’ Sheffield is its new vice president of marketing. Previously he had been the district sales manager for Collins Broadcast Products, a division of Rockwell International.

O’Neal Sutton has been appointed engineer, furnish and installation manager for GTE Lenkurt. Sutton, current manager of IF&I Installations, assumed the post by Wayne Leonard, who announced his retirement after 34 years with General Telephone and Electronics.

Filmways Audio Services Group has announced the promotion of one staff member and the addition of two new people to its permanent staff. John Phelan, general manager, has been promoted to vice president/general manager. Joining the staff are Ed Moskowitz and Cari Casteel-Richardson. Moskowitz will take over as field operations manager. Casteel-Richardson will serve as manager of the company’s wireless microphone and 2-way communications equipment rental division.

Times Fiber Communications has announced the appointment of Dr. Douglas A. Pinnow to the post of director of optical fiber research and development.

William Gauteau has been appointed director of manufacturing at Switchcraft. Gautreau joined the company as director of materials control in 1977 after 24 years with Raytheon.

Shelley Brown-Phelan has been appointed manufacturers representative for Filmways Audio Services. She will act as representative for HM Electronics.

Jerry T. Hudspeth has joined the corporate staff of Datatron as director of marketing. Hudspeth most recently served as manager of west coast operations with BTX.

David Riegler has been elected president and chairman of the board of directors of Omega Video.

Larry Seehorn, original developer of the EPIC computerized videotape editor has left Harris Video Systems to devote full attention to his own firm, Control Video Corporation.
Panasonic introduces a whole new line of color monitors with one thing missing: A big price.

Paying less than you expect for something is always a surprise. But getting everything you want is even better. That's why you'll want to take a close look at the only completely new line of color monitors in the video industry. From Panasonic. They range from 7" to 19"—all sizes measured diagonally. And prices start at only $450*.

Every monitor is equipped with important features. Like the Quintrix II™ in-line black matrix picture tube for a picture that's so lifelike, you'll feel you're a part of it. And the Panabrite® dial that lets you adjust contrast, color and brightness. The way you want them.

The 19" CT-1910M and the 13" CT-1310M monitors and the 13" CT-1310V monitor/receiver are equipped with ColorPilot™ which automatically adjusts the color quality to preselected levels.

For an inexpensive way to monitor more than one program source at a time, use several compact 10" CT-100M's. When you're moving from one place to another, there's a 7" portable: the CT-700M. It works on both AC and DC. In DC operation, it automatically adjusts to either a 12- or 24-volt power source. It also comes with a car adapter. And a front-mounted LED indicator lets you know if your battery source is running low.

Whatever your needs are, look to Panasonic. You'll like everything you see and you'll like the prices, too.


*Panasonic recommended price but actual price will be set by dealers.
The 3-tube Saticon* camera you wanted...

A/V executive “I want a camera that makes my department's tapes look good at a price that makes me look good. One that can adapt to our needs as we expand.”

Purchasing agent “I'm naturally looking for maximum value in a video camera. One that delivers a lot of features for the money...from a manufacturer I can trust.”

Field cameraman “A nice compact, lightweight, well-balanced camera. One that delivers clear shots even in near darkness. That's what I need.”

Top management “Higher productivity, more effective training and selling, better communications...if a video camera can help deliver that, I'm for it.”

Studio cameraman “We're ready for the high performance of a sophisticated Saticon camera. And I can certainly do without having to have a separate genlock unit.”

*Registered trademark of Hitachi
"We can turn out needle-sharp pictures with the KY-2000U. And with options like JVC's remote control unit, it's adaptable to just about any field or studio situation."

"The KY-2000U meets all my criteria for performance and price. And I know I can trust JVC, with their reputation for quality."

"This neat little KY-200U is less than 12 lbs with 1.5" viewfinder. Handles nice and easy. And with 52 dB S/N and sensitivity doubling to 12dB, what more could I ask?"

"I can see how the KY-200U can help me get more out of my people whenever communications is involved."

"What a relief! No more separate genlock. And the Saticon tubes really deliver high sensitivity and resolution, and low lag."

JVC's new KY-2000U 3-tube Saticon camera is a real rarity today; an engineering breakthrough that makes economic sense, too. It has all those features mentioned above. Plus horizontal and vertical contour correction, both standard. Built-in variable blanking circuit and VTR trigger mode select. Broadcast-standard Y1.Q. encoder. C-mount lens versatility.

And something else just as important: JVC's reputation for superb quality.

For the name of your nearest dealer, call one of these numbers collect:
East, 212-475-8300;
Midwest, 312-364-9300;
South, 713-741-3741;
West, 213-537-6020.

Send me more facts about your new KY-2000U video camera.

Name
Title
Company
Address
City, State, ZIP
Phone
Type of operation
Gary J. Worth has been named president and chief executive officer of Satellink of America, a new subsidiary formed by the Robert Wold Company. Prior to his appointment, Worth was with Mutual Broadcasting System.

W. Donovan Schutt has been named the new president of IGM. Prior to his appointment, Schutt was with Teletronix.

Loring S. Fisher has been named president of Lomar Associates. Prior to his appointment, Fisher was with Bonneville Broadcast Consultants.

John R. Barton has been appointed executive vice president of McMartin Industries. He will be responsible for management of international projects.

Mark Gander has been appointed applications engineer for James B. Lansing Sound. He will assist JBL professional sound contractors in products applications and will provide technical information on JBL professional products.

Mike D’Amore has joined Ampex as Midwest region sales manager. Prior to his appointment, D’Amore was with Hitachi.

Harold Rabinowitz has joined Sintronic as director of operations. He will be responsible for manufacturing and industrial engineering.

Bob Manahan has been named national sales manager of Compact Video Systems. Prior to his appointment, Manahan was with Sony Corporation.

Telex Communications has announced the promotion of Gregory C. Dzubay to sales manager of its broadcast professional audio products group. Dzubay will be responsible for sales and marketing of the product line.

Audio-Technica U.S. has announced the promotion of three of its executives. Fred W. Nichols, was promoted to senior vice president; Paul A. McGuire, to vice president, sales; and Dean R. Slagle to vice president, operations.

William D. Higgins has joined the corporate staff of Datatron as director of engineering. He will be responsible for product development.

John R. Paulbick has joined Valtec as application engineer. He will be responsible for defining and coordinating the application of the turnkey fiberoptic telecommunications systems to customer requirements.

Don V. Larson has been appointed vice president and chief executive officer of Orange County Electronics International.

David F. Forward has been appointed to vice president of communications for the Applied Technology Group of Arvin Industries. He will be responsible for coordination of policies and direction of advertising, public relations and internal communications.

Hundreds of stations worldwide—in every format—now process with OPTIMOD-AM. An integrated system design makes OPTIMOD-AM ideal for all formats: It guarantees uniform audio quality and uncanny definition on typical AM radios—regardless of uneven operator gain riding or inconsistent source material. And our system standout—the “Smart Clipper”—listens to clipping distortion like a human ear to definitively solve the long-standing conflict between music loudness and voice distortion. Regardless of format, you can adjust the field-proven, stereo-ready OPTIMOD-AM system to give you the sound you’ve always wanted.

Your Orban broadcast dealer has all the details. Call Toll Free (800) 227-4498, In California, (415) 957-1067 for the dealer nearest you.
FULL RANGE PRODUCTION WITH THE AMPEX VPR-2:

Instead of a Different Machine for Every Trick, a Single VTR that Does Everything.

You can spend a lot of time and money recording on a videotape recorder, editing on an editor, and producing slow motion on an Instant Replay system. Or you can do it all on the Ampex VPR-2, far more easily and in far less time.

**Straight Recording in Vibrant High Band Color.**

There isn’t a better recording combination in the world than the Ampex VPR-2 one-inch helical and Ampex professional recording tape. You get playback performance that stands up to a trained eye as well as the most exacting technical analysis. And you get unmatched ease of operation and serviceability because of the VPR-2’s modularity. You’ll also appreciate the way the VPR-2’s compact packaging system provides a full line of configurations from rack mount to console with full monitor bridge to suit your particular needs.

**Built-in Editing for Unlimited Creativity.**

Built-in editing with automatic search-to-cue simplifies and speeds ambitious production work. Tape time accuracy is maintained for frame-accurate entrance and exit edit points, even without the optional time code system. You can visually select edit points “on the fly” because you always see the picture off-tape from stop through fast forward and rewind. The remote control capability of the VPR-2 provides easy interface to external editing controllers. The creative possibilities are unlimited.

**Sports Coverage From a Crawl to a Dash.**

With the optional AST™ automatic tracking system, you’re ready to produce all the effects of Instant Replay. There’s even a slo-mo controller (SMC-60) accessory that gives you joystick command of the VPR-2 for a complete sports coverage system in one convenient package.

Automatic cueing keyed to the tape timer lets you set up for frame-accurate, “look again” in slow motion. And you can punch up slow motion at one-half or one-fifth real time for precise production matching. The Ampex TBC-2 digital time base corrector puts it all on the air, and even produces a picture in high speed shuttle for rapid cueing.

**If the Specs Don’t Convince You, A Demo Will.**

The cost-effective VPR-2 is turning the impossible into the commonplace for users around the world. Because one machine does the work of three, the VPR-2 increases productivity and reduces operating costs. To find out why the VPR-2 is the world’s most popular professional videotape recorder, contact your Ampex representative today.

**AMPEX MAKES IT EXCITING**

Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, CA 94063 (415) 367-2011

Circle (22) on Reply Card

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Wayne Barrington has been appointed sales representative for RCA Broadcast Systems. He will be responsible for the sale of RCA's line of radio and TV studio and transmitting equipment.

Otari Corporation has announced the appointment of Tom Sharples as special projects engineer. Prior to his appointment, Sharples managed Proper Sound.

Max E. Buck has joined Vitt Media International as executive vice president and director of TV network broadcast operations.

Ikegami Electronics has appointed Rupert F. Goodspeed to western regional manager and O.G. Mills to southeastern regional manager.

Sintronic has appointed Joseph Novik as national sales manager. Prior to joining Sintronic, Novik was with Ampro/Scully and Belar Electronics Laboratory.

The Telemet Division of Geotel has announced the appointment of Robert G. Griffiths to vice president of sales. Griffiths was formerly eastern area sales manager.

Perley E. Eppley, vice president, Gray Communications Consultants announced the appointment of Mark Rogers to the position of field systems engineer in the Atlanta Office.

Ed Sherry has joined US JVC as video product manager. He was previously Eastern regional broadcast manager for the Sony Video Products Company.

Charles R. Buzzard has been appointed western regional sales manager for Dynasciences, video products division. He will be based in Albuquerque, NM, and will be responsible for sales and administration of all territory and dealers west of the Mississippi River.

Ferdinand Boyce has been named marketing manager of E-V/Tapco. Boyce joined the company 10 months ago as national sales manager. Boyce has appointed Ric Chinn and Jeff Michka both long time employees of Tapco, as product managers.

The Varian Electron Device Group has named Alexia Vanides as its advertising manager. Vanides will plan, implement and control all media advertising and press relations for EDG.

Barry Goldman has been appointed vice president, sales and marketing, of Teac. Goldman will be responsible for the administration of the company's four franchises—General Audio, Audio Specialist, Multitrack and TASCAM (Professional Products Group.)

Bobby Lawrence and Russell Miller have been appointed field engineers for Convergence. The Field Engineering Department is responsible for sales and marketing support. John G. Campbell, vice president of marketing at Convergence announced the promotion of Frank Logan to communications manager. Logan has been with the company for two years and will be responsible for all internal and external communications.
PORTABLE VIDEOTAPE RECORDING WITH THE AMPEX VPR-20:


Finally, you can videotape remotely without compromising the considerations that apply to studio work. Because Ampex engineers went far beyond the usual definitions of portable acquisition when they designed the VPR-20 one-inch helical.

Confidence Is Paramount.

On location, you have to know that you're capturing good material. So Ampex built a confidence feature into the VPR-20 that actually plays back the picture from the tape into the camera viewfinder during recording. When you see it in the viewfinder, you know it's on the tape. And you can have color playback in the field, thanks to the color stabilizer option, which mounts inside the VPR-20.

Production Flexibility for All Situations.

When the assignment is commercial production in the field, your VPR-20 can backspace itself for a flawless assemble edit. And color framing is standard. The advanced cueing system allows you to go back and look at the last shot, and either go on from there or retake the shot and eliminate unwanted material. Right in the field. As simply as pushing the appropriate button.

The Front End of a Special Effects Production.

Tapes recorded on a VPR-20 are fully compatible with every trick in the VPR-2 special effects book. Once you bring your material back to the studio, you can slow it down, speed it up or stop it on a selected frame with a VPR-2. And if you haven’t seen the quality of VPR-2 special effects yet, you’re in for a surprise.

If You Can Take It, Your VPR-20 Can, Too.

Environmentally, your VPR-20 can take nearly anything that your operator can. It shrugs off dust and sand in the air, tolerates a cloudburst, and stands up to heat and cold. Oblivious to the way it’s held or positioned, the VPR-20 has an amazing resistance to the kind of gyroscopic conditions that go along with field recording. So you can take the VPR-20 for granted.

Enough Power to Finish What You Start.

The VPR-20 battery pack has more than enough capacity to record and rewind a full hour of tape. Then, when you’re ready for more shooting, the quick-change battery pack gives you quick-change power. There’s even a battery/charger system that brings you up to full power again in less than an hour. You’ll really value the VPR-20’s power-down memory. It keeps the tape timer operational during battery or power changes for up to two days if need be. This is portability with a punch.

If The Specs Don’t Convince You, A Demo Will.

Somewhere within reach of your station, the tough, "smart" VPR-20 is turning the impossible into an everyday affair. Call us for the technical information, and then get your hands on a VPR-20. You won’t want to let go.

AMPEX MAKES IT EXCITING

Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, CA 94063 (415) 367-2011

Circle (23) on Reply Card

March 1980 Broadcast Engineering 39
Gambling and spectacular entertainment are now synonymous with Las Vegas and Nevada, but just a century ago adventurous individuals plodded into the Nevada Territory searching for mineral wealth in the hostile terrain. To some the adventure brought crushing disappointment; others fulfilled their wildest dreams. Today, Las Vegas is one of the nation’s fastest growing communities with an assessed value of more than $1.8 billion.

On April 12th, as in bygone days, scores of men and women will again descend on Nevada. This time the individuals will be broadcast engineers and executives searching for information and technology to make their stations number one in the markets they serve. The value of the city again will be raised substantially, if only temporarily, as hundreds of equipment manufacturers make the television and radio engineers’ and executives’ dreams come true.

Throughout the decade of the ’80s broadcast technology will undergo drastic and exciting changes. Satellites, the effect of the 9kHz channel spacing and digital video technology will affect broadcasting and the jobs of engineers and management. The National Association of Broadcasters’ 58th Annual Convention, broadcasting’s number one event, will again give the insight necessary to keep executives and engineering management abreast of the constant change. This year, the convention will offer sessions with emphasis in broadcast engineering, television and radio management.

Broadcast engineering

The technical sessions and workshops are offered in two categories: for radio and for television. Here is just a sample of the lineup awaiting engineers at NAB ’80.

Radio: The FCC began formal pro-
There's More To Dolby FM Than Another “Black Box”

When you decide to broadcast Dolby FM, you get more than the proven technology of the Dolby Model 334 Broadcast Unit. You also get the personal assistance of Tim Prouty, Dolby FM Development Manager. The engineering, service, and marketing support of Dolby Laboratories. And the opportunity to take advantage of probably the best known single name in consumer, professional, and cinema audio.

Dolby FM provides the increased high frequency headroom that makes it possible to reduce limiting without sacrificing level. That can mean a higher quality signal for your sound-conscious listeners and clients. And a higher quality signal can lead to a unique marketplace position audibly above the competition, which can help increase your local sales.

If the prospect of a higher quality signal makes sense to you, call us at (415) 392-0300 to arrange for an on-air trial at no cost. That way you can see and hear for yourself what Dolby FM is really all about.

Learn more about Dolby FM at the NAB Convention: Silver State Room in the Las Vegas Convention Center, April 13-16.
James D. Parker to receive NAB engineering award

James D. Parker, staff consultant, telecommunications, CBS Television Network Engineering and Development Department, will receive the National Association of Broadcasters’ 1980 Engineering Achievement Award. The award will be presented at the NAB engineering conference luncheon on Tuesday, April 15.

Parker joined CBS in 1937 after completing 1 1/2 years of graduate studies in communications engineering at the Massachusetts Institute of Technology where he was an electrical engineering undergraduate student.

Early in his career, he did pioneering design work in what at that time was considered to be complex 3-element directional antenna systems for AM stations. Some systems he designed were installed at WTOP, Washington, DC; WBT, Charlotte, NC; KSTP, Saint Paul, MN, and KFAB, Lincoln, NE.

One of his major contributions to the industry is his key role in implementing the construction of the transportable tracking earth station used by the television networks in relaying, via satellite, the first live color pictures of the Apollo splashdowns.

Senator Goldwater to speak at NAB engineering conference

Senator Barry M. Goldwater (R-AZ), a member of the Senate Communications Subcommittee, will address the Monday (April 14) engineering luncheon during the National Association of Broadcasters 58th annual convention.

Goldwater began his political career in 1940 when he was elected to the Phoenix city council. In 1947 he was elected to his first US Senate term and was re-elected in 1958. He resigned his seat in 1964 to become the Republican Presidential nominee. He was again elected to the Senate in 1968.

The Senator is the owner and operator of amateur radio station K7UGA-K3UIU, a part of the Military Affiliate Radio System.

Jack Anderson to address radio broadcasters

Investigative reporter Jack Anderson will address the Tuesday (April 15) radio luncheon during the National Association of Broadcasters 58th annual convention.

Anderson has been at the bottom of some of the biggest exposés to come out of Washington and during the Watergate era, he broke many of the major stories. He published the grand jury transcripts, which gave the first solid testimony of the Watergate case.

In 1972 he received the Pulitzer prize for proving that President Nixon and Secretary of State Kissinger had lied to the Congress and the public about the United States tilt toward Pakistan in the India-Pakistan conflict.

When Drew Pearson died in 1969, Anderson took over the Washington Post’s Merry-Go-Round column which appears daily in more than 970 newspapers.

Television executives

The number of tough decisions for the television executive have escalated nearly as rapidly as inflation and competition. Television management, like engineering, also must face the challenges of the new decade. The broadcast markets have seen the emergence of satellites, cable and teletext all taking over the TV screen. This new technology is here to stay. How can a station handle the ever-increasing competition?

Promoting the station is fast becoming one of the greatest challenges of the new decade. The executive officer must make his or her station’s name a household word around the market, but bow? These and other provocative questions will be answered by industry experts at this year’s NAB.
If you looked at the lenses on all the color cameras advertised in this magazine, or displayed at NAB, you might think that **FUJINON** is number one.

And you'd be right.
FUJINON's fast new lightweights are easier on your back.

New.
Lightweight 12 x 9 ENG Zoom with built-in 2.2X extender — F1.7
(9mm—108mm; 19.8mm—237.6mm)

New.
Low cost lightweight 12 x 9 ENG Zoom — F1.7 (5mm—108mm)

New.
Improved high quality lightweight 14 x 9.5 EFP zoom with built-in 2X extender—F1.7
(9.5mm—133mm; 19mm—266mm)

And your budget.

For the lighter side of the news and field promotions, Fujinon brings you three fast new lenses that perform better and weigh 20% less. Without costing more.

For proof, FUJINON cut the weight and the cost to create a new 12 x 9 ENG zoom. You get full features and F1.7 speed, but at a new low price. The other lightweight new 12 x 9 ENG zoom includes a built-in 2.2X extender for greater range and performance than 13X lenses. It’s lighter and better than before, but at the same old price.

The same’s true for FUJINON’s new 14X EFP zoom. It still has a built-in 2X extender, but now it’s faster (F1.7, wider 9.5mm) and lighter (20% less). Without increasing the price, FUJINON has created an EFP lens that delivers studio quality results. And you can take it anywhere.

All three new lenses offer such standard Fujinon advantages as:

- Adjustable back focus for faster lens changing
- Exclusive EBC coating for greater contrast, truer color, and sharper definition without flare and ghosting
- The most complete range of optional studio conversion accessories available

In 1980, FUJINON's best-selling ENG and EFP lenses are even better. And so are the prices.
FUJINON invented the ultra high resolution lens. Only FUJINON could make it better.

Now with a built-in 2X extender.

It reads 1300 tv lines to deliver 40% higher resolution. As a result, first generation tapes never looked better. A test pattern projector is built in. Microprocessor equipped cameras have never been easier or faster to set up.

Now, for greater versatility — with the same unmatched performance standards — FUJINON introduces the 14X E.H.R. lenses with built-in 2X extenders.

Consider the advantages and the possibilities:
- Two high performance, high resolution zoom ranges.
- Ultra high resolution performance in the studio and in the field.
- Better than 90% MTF in green, red and blue.
- Compact, built-in 3-lamp diaScope for precise color temperature matching.
- Greater color convergence — taking lens moves with the zoom.
- Constant maximum aperture in all zoom and focus ranges.
- For 1-2" format: P14x16.5 E.H.R. F:2.1 (16.5mm—231mm: 33mm—462mm)
- For 1" format: R14x12.5 E.H.R. F:4.6 (12.5mm—175mm: 25mm—350mm)

FUJINON OPTICAL INC.
672 White Plains Road
Scarsdale, New York 10583
(914) 472-9800

Visit FUJINON at NAB, Booth 1517

Circle (26) on Reply Card
Planning convention strategy

This year's pre-coverage of the Las Vegas NAB '80 convention has been specially designed by Broadcast Engineering to be the most complete information package available. The information has been grouped to avoid as much page flipping and nerve frazzling as possible. The foldout map includes floor plans for the Convention Center, an alphabetical listing of exhibitors, and a handy agenda chart. This will be helpful in scheduling sessions and workshops attendance and planning appointments.

To map out a plan of attack for exhibit booths, check the Product Directory on page 62, for equipment categories to be exhibited. Each category is followed by a list of exhibitors (and their booth numbers) that are showing products in that category.

The next section, Exhibitor Booth Details on page 96, lists each exhibiting company alphabetically, followed by their booth number. Each company's established product line as well as new products designed, and companies are assigned a reader service number for your convenience. If the company is advertising in this issue, that page number is also given for a more complete listing of their product line or emphasis at NAB.

If, after selecting the items of most interest, turn back to the foldout map, mark the companies, and take it to the convention center.

Since NAB plans are still being changed, extra copies of the issue and an updated map will be available at the convention.

"Back to Vegas...Bigger and Better Than Ever."

By Chris Payne, assistant to the vice president for engineering, NAB

In 1978, I authored a short piece for Broadcast Engineering on how engineers could convince management that a trip to Las Vegas for the NAB Convention was a necessary professional investment. I pointed out that while Las Vegas is a fun town it also is one of the best convention sites in the country. Since registration at that convention reached over 20,000, it seems superfluous to belabor the fact that the NAB meeting in Las Vegas is not a three day vacation for engineers. You already know that the NAB Convention probably saves a radio or television station many times over what it costs to send an engineer.

The 58th Annual NAB Convention opens Sunday, April 13, and closes on Wednesday, April 16. The Las Vegas Convention Center houses over 150,000 square feet of electronic equipment—the biggest and best display of broadcast equipment in the world. There are literally acres of transmitters, video and audio recording equipment, satellite gear, and engineering and studio gadgets. If that is not enough, there will be manufacturer representatives ready to explain how to best use the equipment. In short, any licensee who seriously wants to meet the technological challenges of the '80s cannot fail to send at least one person from the engineering department to capitalize on this incredible showcase of technology and talent.

In case you have not already studied the NAB promotional material, let's sample some of the workshop sessions offered for engineers in addition to the equipment.

For radio: Audio Processing for the '80s—experts discuss the future of audio signal processing including loudness, program listener fatigue, receiver and transmitter compatibility, 9KHz channel spacing, AM stereo, FM composite processing; Radio Facilities: Acoustical Treatment and Design; Telephone Talk Shows—interfacing the dial telephone to your station, modifying standard telephone equipment, home brew hybrids, devices designed especially for broadcasters, conferencing; Broadcast Systems Maintenance: Changing Relationships between Manufacturer and Broadcasters; AM Stereo Implementation; Audio Proofs and Test Equipment; AM Directional Antenna Systems: The Skeleton Proof.

For television: Digital 1980s—SMPT-E workshop review application of digital technology to videotape machines, equipment interfacing, production techniques; Earth Station Technology—a real mini-course; Major

Other topics to be discussed for delegates registered with a television executive emphasis are: Your Inclinations and Theirs, how to accommodate political figures wanting time; What's Going On In Washington? (FCC rulings, cable issues and super stations); That Does Not Compute, (understand how to talk to the station's computer in the language you and it understand); plus Cable TV Rules and Royalties; An Eye and Ear in Court; and Libel Insurance: How To Get It And How To Keep It.

Other sessions scheduled for television executives will look at the FCC's report on children's TV; the changing audience. Relationships between Manufacturer and Broadcasters; devices designed especially for professional equipment interfacing, production techniques; including FM composite processing; Radio Facilities: Aural STL and TV microwave, how to organize a frequency coordination committee, how to best share frequencies during the big news event.

Don't forget that those workshops are just a sample. There are many technical sessions. Don't forget the paper presentations. Every engineering conference includes several theses on the hottest broadcasting topics.

In case you are still worried about getting your station's money's worth, your registration fee includes two luncheons. On Monday, Senator Barry Goldwater, (R-AZ) will address the engineering luncheon and James D. Parker, the 1980 Engineering Achievement Award winner, will be recognized on Tuesday.

Not convinced to make the trip yet? What about The Second Annual Ham Radio Operators Reception? On Monday evening, NAB invites all licensed or formerly licensed amateur radio operators to cocktails and snacks. Bring your QSL and business card.

In addition to workshops, luncheons and receptions, a vital part of the NAB Convention is the opportunity to question Federal Communications Commissioners and staff—maybe about a trick you're having trouble interpreting. It could save your station time and money. On Wednesday, the general session features remarks by Chairman Charles D. Ferris and a question and answer period with experts on broadcasting.

In case you want to mix some pleasure with the work, you can bring your spouse at no extra registration fee. NAB has scheduled a special program for spouses to include informational sessions, jogging, gambling tips, and tours. No one will be bored!

If you still have trouble convincing the general manager that he or she can't afford not to send an engineer to NAB's April 13-16 convention, point out that hotel room rates in Las Vegas begin at around $30.00 and the NAB member pre-registration fee—including two working luncheons and a Wednesday entertainment closing lunch—is only $115.00. Pre-registration ended March 1, but on-site registration is only $25.00 more. Forms and additional information available from the NAB Station Services Department, 1771 N Street, NW, Washington, DC 20036.
Datatek has now added the D-4300 series video and audio switching units to its line of routing switchers. With building blocks of 6x1, 16x-, and 20x1, these switching units may be used for:

- Input preselects to production switchers to expand their capacities
- Switching inputs to vectorscopes and monitors
- Adding preview busses to existing switchers
- VTR input selection
- These units may also be stacked to make up small routing switchers at an economical price.

For more information, write or call DATATEK MIAs/CORP 1166 W. CHESTNUT ST. UNION, N.J. 07083 • (201) 964-3656
new dimension in the decade of the '80s with AM stereo, FM quad, satellites and digital recording. NAB '80 will be there with information to assist the radio executive for the coming era. The lineup for the radio executives includes sessions and workshops covering station promotion, sales, and rules and regulations governing the radio broadcast industry.

Specific sessions are titled: Should You Have an Electric Bookkeeper?—designed for stations not currently using business automation in their operation; Is Skywriting Better Than Matchbook Covers?—a workshop on investing promotion dollars in medium and large markets; Selling the New, Wonderful World of AM in the '80s: Operating a Radio Station Group for Fun and Profit - Not Necessarily in that Order, plus many more.

This year there are special sessions and workshops for small market broadcasters including: If Your Signal Doesn't Cover The 'Metro', How Do You Compete with the 50kW's; Stretching, Saving, Bending, and Keeping Operating Bucks, to name only a few.

Registration fee for attendees with a radio executive emphasis includes a luncheon on Tuesday with Mutual's controversial commentator, Jack Anderson. He's also one of the nation's most widely syndicated columnists, and his hard-hitting brand of reporting has made his name a household word.

Special sessions
NAB has lined up the very best in entertainment for all convention delegates with Sunday's opening ceremonies beginning at 2:30. This gala event will open the doors on the broadcasting event of 1980.

Wednesday's general sessions include a special message from Charles Ferris, FCC chairman, as well as lively, give-and-take discussions chaired by some of the foremost experts within and outside the broadcasting industry.

Spouses
Spouses attending the convention are entitled to free spouse badges permitting them to attend general sessions, workshops and the hospitality suites. The only additional charges to spouses are luncheons ($15 each).

The Gathering Place and a full calendar of entertaining events are in store for attending spouses. The Gathering Place is a general meeting area staffed by hostesses from the Las Vegas Tourism Bureau. Spouses can relax there and get information on things to see and do in Las Vegas. It will be open Sunday from 10 AM to 5 PM. Monday and Tuesday from 9 AM to 5 PM and Wednesday from 9 AM to noon.

Special entertainment and informative sessions for the spouses include tours of celebrity homes, the mountains, Hoover Dam, the desert and the strip. A short course on the biggest game in town, gambling, and the strip. A short course on the biggest game in town, gambling, and

For NAB-Las Vegas '80 program details and registration forms, contact: Broadcasting '80, National Association of Broadcasters, 101 Pennsylvania Street NW, Washington, DC 20036, (202) 293-3570.
HBU Invites Comparison

Compare the Recortec High Band U-format recorder with other high band recorders. It’s easy to see our HBU specifications match or exceed those for other broadcast quality one-inch or two-inch recorders. As a fair test, we invite split-screen comparison of picture quality because you’ll have trouble telling the difference! The compact package and built-in editing capability of our Model HBU-2860 provides a convenient system for video production. At 25 pounds, our portable Model HBU-4400 is the lightest high band acquisition unit for your critical recording.

The HBU is a new format using standard U-format cassettes with proven interchangeability. Because the quality persists through multiple generations, it can always be dubbed to other formats.

Since we provide high band recording, lower equipment cost, lower media cost, better audio performance and cassette convenience, there has to be a catch. The HBU-4400 portable acquisition unit has a maximum recording time of 10 minutes, while the HBU-2860 editing unit has a maximum time of 30 minutes. So, if you can trade off recording time per tape for equal performance at a fraction of the price, there’s an HBU for you from Recortec.

Want to know more about how our apple compares with oranges and bananas? Please call Sid McCollum, our National Sales Manager.
That curlicue you see close up at the left is our new Super-Power FM Broadcast Antenna.

Four-hundred percent more powerful than old-time antennas, this copper-based innovation gives broadcasters a lot more range, precision and clarity for their antenna dollars. Good news in these days of inflation.

Helping broadcasters get on the air are many Phelps Dodge products. Including building wire and power cable for electric power, telephone cable for communications, magnet wire for coils, relays and motors, and copper castings and shapes for electronic components.

All in all, each year, we transform about a billion pounds of copper into innovative and useful products for the broadcasting industry and others. That's because people who depend on copper depend on us. Phelps Dodge—the time-tested name in copper.
Station KFIM tower, with a Phelps Dodge Super-Power FM Broadcast Antenna (shown close up below left), overlooking El Paso, Texas.

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The copper people from Phelps Dodge

Circle (29) on Reply Card
Some NAB '80 Convention Highlights

Donald A. Thurston

Thurston to receive distinguished service award

Donald A. Thurston, president of Berkshire Broadcasting Co. in North Adams, MA, has been named recipient of the National Association of Broadcasters’ 1980 Distinguished Service Award—the industry’s highest honor.

Presentation of the award will be made April 13 at the opening session of NAB's 58th annual convention in Las Vegas. The award, established in 1953, is presented to a broadcaster who has made "a significant and lasting contribution to the American system of broadcasting by virtue of a singular achievement or continuing service for or on behalf of the industry."

The selection was made by NAB’s 1980 Convention Committee during the Association’s semi-annual Board of Directors meeting.

Thurston completed two one-year terms as chairman of the NAB 45-member Board of Directors in June, 1979. He now serves as immediate past chairman in an advisory position. A major accomplishment during Thurston’s tenure was the founding of a Minority Broadcasters Investment Fund to aid minorities in purchasing broadcasting facilities. He is a member of the Board of Trustees which directs the Fund.

He began his broadcast career as an engineer in 1949 and has been in management since 1952. He acquired control of Berkshire Broadcasting in 1966 and operates three stations in western Massachusetts—WMNB AM/FM, North Adams, and WSBS, Great Barrington.

Thurston is a past president of the Massachusetts Broadcasters Association, a member of the All-Industry Radio Music License Committee, and has served the broadcast industry in a number of other positions. He has received several broadcasting awards, including the 1975 Abe Lincoln Merit Award from the Southern Baptist Radio Television Commission.

Active in local business and civic affairs, he is president of North Adams Futures, a real estate development company; a director and Trust Committee member of the Berkshire Bank & Trust Co., and chairman of the Administrative Board of the First United Methodist Church. He has served as president of the area Chamber of Commerce and the Industrial Development Corporation.

Thurston, who was a member of the NAB Radio Board of Directors for four years, and its 1976-77 chairman, served two previous Board terms and was Radio Board vice chairman in 1968-69.

Entertainers

Two of the nation’s top entertainers—singer Mac Davis and comedian Bob Newhart—will perform at the NAB’s 58th annual convention in Las Vegas. Davis will open Sunday's (April 13) general assembly and Newhart will appear at Wednesday’s closing luncheon (April 16).

Davis, who has received the Country Music Academy’s Entertainer of the Year award and the People’s Choice Awards’ Favorite Male Entertainer plus numerous gold records, began his career as a songwriter. His songs have been recorded by Kenny Rogers, Sammy Davis, Jr., Andy Williams, O.C. Smith, Lou Rawls, Dolly Parton and Elvis Presley.

From his success as a songwriter, he went on to develop a highly original performing style and soon his own recordings of his songs were eclipsing those of other artists. Million-sellers that he has written and recorded include “Baby Don’t Get Hooked On Me,” “Stop and Smell the Roses,” “One Hell of a Woman,” and the classic “I Believe in Music.”

Davis made his motion picture debut playing the quarterback in “North Dallas Forty” and will soon be seen in “Cheaper to Keep Her.” In addition to his acting and recording, he still is playing concerts and club dates and does two TV specials a year for NBC.

Bob Newhart launched his show business career while employed as an accountant and soon found himself performing before huge TV audiences. He developed his style in a series of club dates at San Francisco’s hungry i, Mr. Kelly’s in Chicago, the Crescendo in Hollywood and Harrah’s in Lake Tahoe. His first album, “The Button Down Mind of Bob Newhart,” was an immediate success with sales topping 1½ million and it set a record as the largest selling talk album in history.

His weekly TV series for the 1961-62 season won an Emmy for the year’s “Outstanding program achievement in the field of humor,” as well as the Peabody Award. He has been on a number of TV talk shows and often hosts “The Tonight Show.” His film credits include “Hot Millions,” “Catch-22” and “Cold Turkey.” He returned to television in 1972 with Suzanne Pleshette in the highly successful series about a practicing psychologist.
If you think their character generator is easy to operate, just go ahead and exawkm.

Before you invest in a top of the line character generator you should know more than just what it can do. That's why the versatile new 3M D-8800 character generator could be just the one for you. You see, all instructions are in English, not in code. And we've put them on a convenient L.E.D. panel above the keyboard for less wasted eye motion. So even a beginner can soon be composing in all kinds of fonts and colors. See your 3M representative right away for the character generator any of your people can run, or call 612-736-1032 for more information. Unless of course, you'd rather exawkm.
This special section provides a directory to the NAB-Vegas '80 Convention exhibitor products. Each exhibitor was asked to complete a comprehensive checklist of products to be shown. The following section is a compilation of the data provided. It shows major equipment headings followed by the exhibitor name and booth number.

This special section will aid you in finding the equipment you especially want to see at the show. But a word of caution. AS BE goes to press, there are still changes being made daily in the exhibitor sign-ups, equipment being displayed, and booth assignments. So, while every attempt has been made for accuracy in this section, double check the final program at NAB to organize your show coverage.

For those not attending NAB-Vegas '80, the June issue of BE will provide a convention replay and will cover both sessions and new products.

A

Amplifiers, pre-amps, DAs
ADM Technology, 1404
AEG-Telefunken, 1403
American Data Corp., 803
Audio & Design Recording, 211
Belar Electronics Laboratory, 134
Blonder-Tongue, 1730
Broadcast Electronics, 304
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Camera Mart, 1406
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Cavox/Tape-Athon, 164
Central Dynamics, 1015
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Bogner Broadcast Equip., 1325
Cablewave Systems, 1323
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Electro Impulse, 931
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Marconi Electronics, 817
Microwave Assoc. Comm., 515
McMartin Industries, 300
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Telex Communications, 311
Why a San Francisco station buys broadcast equipment in Peachtree City, Georgia.

As unlikely as it might seem, one of the country's largest distributors of quality broadcast equipment is headquartered in Peachtree City. It's BCA.

BCA supplies stations all across the country with the top brands, the professional guidance and the optimum value they simply can't find at home. We stock over 70 lines with emphasis on quality brands like Ampex, Auditronics, Moseley and Potomac. And our salesmen are all engineers. With the technical knowledge to analyze RF and Audio System needs in depth. And the practical know-how to get you what you need in a hurry, whether it's a single microphone or a complete microwave system. We're geared up for the arrival of AM Stereo, too.

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March 1980 Broadcast Engineering 63
for THE VERY BEST STEREO SOUND

The Very Best FM Exciter Wilkinson Model FME10

POSITIVE PROOF!
* Frequency response $\pm \frac{1}{4} \text{DB} \quad 15 \text{HZ}-350\text{KHz}
* FM Noise Level — 70 DB below 100% Mod.
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* Requires no oven and is not susceptible to rumble and microphonics.

FCC Type Accepted
- POWER SUPPLY INCLUDED
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The Very Best Stereo Generator Wilkinson Model SG1E

196 TRANSMITTERS USE IT!

POSITIVE PROOF!
* 60 db separation $\quad 50 \text{Hz}-7500 \text{Hz}$
* 55 db separation $\quad 7500 \text{Hz}-10000 \text{Hz}$
* 50 db separation $\quad 10 \text{KHz} \quad 15 \text{KHz}$
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COMES COMPLETE WITH POWER SUPPLY
REQUIRES ONLY 3½" RACK SPACE
ONLY ONE FRONT PANEL ADJUSTMENT
REMOTE STEREO ON/OFF FUNCTION

NO ONE CAN MATCH THIS COMBINATION

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“When I speak out for the rights of retarded people, I know what I’m talking about, because I’m one of them.”

President’s Committee on Employment of the Handicapped Washington, D.C., 20210
The School of Visual Arts Public Advertising System
WEATHERMATION'S
COLOR REMOTE RADAR

The most advanced system for Electronic Weather Gathering

Want to watch a storm brewing off the coast, keep tabs on the eye of a hurricane or show the folks down south how hard it's snowing up north? With WEATHERMATION's Color Remote Radar system, national weather conditions are simply a telephone call away. Just dial up the location you want to see. Our system will instantaneously receive a radar image and display it on your TV screen. In bright, crisp color.

You can see rain, snow, hail and sleet. As it is occurring. And, our computer memory lets you store and recall weather conditions in as many as four locations at the same time.

WEATHERMATION's Color Remote Radar is packed with other special features too. Like instantaneous ranging, built-in map overlays, freeze frame and blink capacity. And they're all standard equipment. Not costly extras.

Installation? It's quick and simple and doesn't require modems, custom computer lines or expensive transmission devices. A system installed in the morning can be working for you by the evening news.

Send for our free brochure. And be sure to stop by booth 1625 at NAB. We'll dial up your home town and show you WEATHERMATION in action. See for yourself why WEATHERMATION's Color Remote Radar is the most accurate and cost-effective system in the industry.
We have a better mousetrap!
To help trap your rising energy costs: Emcee's new 1000 watt UHF translator.

When we designed our new translator, our basic goal was greater operating efficiency. And keeping today's never-ending price hikes in mind, we also designed in a major bonus: this new equipment will help trap your energy costs!

Now that we've been field testing this equipment for over a year, we're pleased to report our goals have been achieved. Based on the results of our field testing, over the next ten years you can expect to save about $25,000 in energy costs with Emcee's new translator — and that's at today's prices. In addition, our extended tube life will reduce your operating costs.

We built these important features into the new Emcee translator for increased reliability and ease of operation:

- A new solid state exciter and driver
- L.E.D. control ladder status panel
- Solid state digital control system
- Optional digital remote control and monitoring system.

To find out how Emcee's better mousetrap can help increase efficiency while reducing energy costs at your station, see us at Booth #1017 at the N.A.B. Show. You can also check out our new UHF solid state 50 watt amplifier — another energy-saver from Emcee.

EMCEE
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NEW Model TRVR

The first truly modular, rack mountable, 12 hour Logging/Recorder. Expandable to 2 Channels plus time code. 4 speeds - 15/16, 1-7/8, 33/4 and 71/2 ips. Uses 1/4" tape.

Model 4.2

The classic recorder for the world of broadcasting, television and cinema. Mono: 15, 71/2, 33/4 ips. Pre-distortion, dis-connectable limiter and automatic level control.

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A mastering stereo recorder for the record industry, broadcasting and cinema. 15, 71/2, 33/4 ips. NAB and Nagramaster, controlled pre-accentuation, pre-distortion limiter.

Model E

Extra sturdy, extra rugged for broadcast reporting and recording needs. Proven for efficient easy use, simple maintenance. Mono: 71/2 ips. Microphone input, dynamic and condenser; with generator for bias and pre-accentuation adjustment.

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Miniature, pocket size portability with space age quality performance. Mono: 3% and 1-7/8 ips. Battery operated. Size 5 1/2"W x 4"L x 1"D.

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NAB-VEGAS '80 Product Directory

B

Battery packs & chargers
Anton/Bauer, 1617
Camera Mart, 1406
Christie Electric, 1002
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Camera Mart, 1406

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68 Broadcast Engineering March 1980
A Single Tube
5 kW UHF
TV Transmitter

Slashes Operating Costs While Increasing Transmitter Performance

The Aerodyne TT-3480U combines the latest in solid state and tetrode technology, to create a new generation of high power, high efficiency TV Transmitters.

This new IF Modulated, low level diplexed unit has many outstanding features for UHF broadcasters including:

- Up to 45% lower energy requirements than a klystron Transmitter
- All solid state high power hybrid-combined driver for the single output tube ... wideband, redundant, long term adjustment-free RF Amplifiers
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- Forced-air cooled operation
- Superior TV signal

The Aerodyne TT-3480U is truly a breakthrough in Transmitter performance, efficiency and operating cost. Contact us today for further information and complete data.

What You Should Know About the New Generation Of UHF Tetrode TV Transmitters

by Nat Ostroff,
Vice President Engineering,
Acrodyne Industries

In this new era of "energy efficiency", the ceramic tetrode Transmitter deserves serious consideration. It reduces energy requirements drastically — up to 45% when compared with the klystron Transmitter.

But this is not the only feature worth your consideration. The tetrode, in conjunction with solid state hybrid-combined RF amplifier circuitry, yields wideband operation and requires no tuning other than in the coaxial cavity output stage.

In addition, the high gain, high efficiency tetrode delivers a superior TV signal ... better than a klystron because of the tube’s inherent linearity. The tetrode UHF TV Transmitter is forced-air cooled to eliminate liquid cooling requirements such as radiators, water pumps, flow meters, switches and the like.

And, not only does the tetrode Transmitter cost less to operate and maintain, but it is also lower in initial cost. It is, in fact, the most cost efficient TV Transmitter offered today.

Tetrode UHF TV Transmitters offer simplified maintenance, can be fully automatic and are adaptable for remote control.

At NAB 1978 Acrodyne introduced the first single tube UHF TV Transmitter, delivering 1000 Watts visual and 100 Watts aural output. In 1980 Acrodyne is delivering single tube UHF TV Transmitters providing 5000 Watts visual and 500 Watts aural output. Combined versions are available for 10,000 Watts visual and 1,000 Watts aural. It's a breakthrough in UHF TV transmission. You should be aware of it.
Advanced Broadcast Equipment
at a price you can afford

CONTEL model CT101R-B
cartridge tape recorder-reproducer

CONTEL model CT101P-B
cartridge tape reproducer

FEATURES
- 100% solid state
- Exceeds NAB specifications
- Built in remote control facilities
- Economically priced
- All silicon transistors

-PREFERRED BY PROFESSIONALS-

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Circle (50) on Reply Card
THE INTERCOM SYSTEM

A closed circuit headset intercom system for small, large, portable or fixed installations. AUDIOCOM, for concerts, stage productions, film or TV studios, sports stadium and race track, industrial, military or public safety applications.

AUDIOCOM, for short or long distance (over five miles), requires only simple wiring and readily interfaces with other sound systems including telephone circuits. Options include tone or light signaling, paging, program feed and rechargeable battery packs in case of power failure.

AUDIOCOM SWITCHBOARD, portable or rack mount, segregates six external intercom lines into three separate non-interfacing circuits; or stage, lighting and sound crews can communicate independently, jointly, or may be mixed. Contains 24 Vdc power supply with optional, rechargeable battery pack. Smaller power supplies also available.

AUDIOCOM INTERCOM STATIONS, belt pack or wall mount, can be "daisy-chained" by the dozens without degradation in signal quality or strength. Listening control and mike switch included. Unused inputs mute automatically to prevent system noise.

AUDIOCOM PAGING SPEAKERS, portable or wall mount, feature volume level switch. Also serves as a paging station.

AUDIOCOM ACCESSORIES. Noise canceling boom mike headsets or hand mike, even for high noise environments. Interface unit adapts to 2, 3 or 4 wire systems with balanced or unbalanced circuitry.

Cables, extension cords and "T" connectors for convenient, virtually limitless system layout.

Quality products for the audio professional

TELEX COMMUNICATIONS INC
9620 ALDRICH AVE. SO., MINNEAPOLIS, MN 55420 U.S.A.
EUROPE: 22 rue de la Legion-d'Honneur, 93200 St. Denis, France

Circle (51) on Reply Card

March 1980 Broadcast Engineering 87
STOP MAKING DIRTY PICTURES

Sigma Video Processing Amplifier (VPA 100) strips the dirty sync pulses and fuzzy color bursts from helical VTRs or whatever source, and reinserts clean pulses and color bursts freshly generated from a genlocking sync generator such as Sigma CSG 300 or one of your own.

VPA 100
- Front Panel Controls: Color phase, sync, burst, pedestal, chroma, video
- Differential Gain: Less than 0.8% (10-90% APL)
- Differential Phase: Less than 0.5° (10-90% APL)

CSG 300
- Genlock Jitter: Less than 1.5° color phase
- Available Options: Variable V&H blanking
- Color black generator

Make ENG the easy way! Get the pair!

SIGMA ELECTRONICS INC.
1830 STATE STREET, EAST PETERSBURG, PA 17520
(717) 569-2681

Circle (53) on Reply Card

88 Broadcast Engineering March 1980
The Superstick wins again!

The Convergence ECS-90 Editor shoots the competition down in flames. Our joystick, a product of American ingenuity, lets you fly circles around those inscrutable pushbutton editors. Our new Convergence Pulse Scan™ variable speed control* delivers continuously variable video tape speed from stall through supersonic, even on your stepped-speed VTR. (Try that with an imported Zero!)

Best of all, it's easy to get into action. Just plug an ECS-90 into the remote connector of your standard VTR's and soar to new heights of editing freedom.

The ECS-90 microprocessor based video tape editing system gives you the maneuverability of a P-40 "Flying Tiger" and the precision accuracy of the Blue Angels—at less than the price of a Piper Cub. ($3,990!)

Give your Convergence dealer the "thumbs up" sign, and you're well on the way towards "Ace" status. Join the ECS-90 Aero Squadron! Ask for a plug-in hands-on demonstration on your own VTR's today.

Contact: Convergence Corporation, 1641 McGaw, Irvine, CA 92714; (714) 549-3146.

Editing means Convergence

*Pat Pending
THE DISCMAKERS

HIGH PERFORMANCE DISC RECORDERS

- 50 db S/N
- UP TO 60 SECONDS RECORDING
- UNDER $40,000.00

STL Offers The Most Complete Selection Of Test Tapes Available Anywhere

STL can serve all your needs with tapes in 2", 1", 1/2", 1/4", cartridges for broadcast and 8-track and cassette sizes. The most accurate reference possible in all popular test formats... Alignment, Sweep, Pink Noise, Level Set, Azimuth, and Flutter and Speed.

Write or phone for fast delivery.
Write for free catalog.

STANDARD TAPE LABORATORY, Inc.
26120 Eden Landing Road = 5 Hayward, CA 94545
(415) 786-3546
Frame Synchronizer
FS-16

Under $14,000—see it at NAB

Nippon Electric Co. Ltd.
Chroma Insert Keyer, Model 7010. A unique comb filter minimizes noise and color-edge crawl from the key signal. It has "zero-H" delay with no installation and retiming problems because the delay is less than 25 nanoseconds. No separate insert keyer or separate RGB switcher is required. Each unit is equipped with remote control and 50 feet of cable.

Color Corrector, Model 5500A. It is the ENG production tool for adjusting color variations after encoding, and enables a broadcaster to balance varying color values from a variety of program sources. Program materials from cameras, tapes, films or network feeds can be color-balanced to each other after tape playback or microwave receiver during live coverage. Available with an optional automatic sensor for telecine use.

Dynamic Presence Equalizer, Model 4500. Enhances broadcast signal presence automatically. Gives program material more punch and improves sound quality. Compensates for lack of presence caused by poor microphone placement, incorrect equalization, misaligned tape heads and unequaled telephone circuits.

FM VOLUMAX® Automatic Peak Controller. Designed especially for the FM broadcaster. Allows maximum signal strength and prevents overmodulation caused by pre-emphasized signals. Full brilliance and dynamic range are maintained without distortion through multi-band processing. Available in monaural or stereo.

Sights and sounds. Thomson-CSF gives them substance. With proven broadcast products that enhance the image, correct the color, ride gain, equalize and distribute the signal. And much more. To put these quality products to work for you, contact your nearest Thomson-CSF distributor.
Audio Distribution Amplifier, Model 1602.
Designed for either stereo or monaural use, this model contains two distribution amplifiers, each with eight balanced outputs from one input, strippable to a 1 x 16 unit. Ideal for distributing program and monitor circuits to studios and control rooms. Features differential, balanced inputs, 40 dB gain, and high output isolation.

Image Enhancer, Mark IV Series.
Improved signal-to-noise ratio means better enhancement. Both horizontal and vertical elements are enhanced to eliminate color softness. In-line, three-tube models are available for NTSC, PAL and PAL-M standards. The Model 8010, with automatic control, maintains picture sharpness and resolution of encoded video, without double enhancement when processing a previously enhanced signal.

VOLUMAX® Automatic Peak Controller, Model 4300.
With patented control action, this AM limiter assures maximum utilization of each watt of carrier power without overmodulating the transmitter, and with minimal signal distortion. Automatic peak phasing insures negative asymmetry and is silently inverted for positive modulation to the maximum allowable limit of 125%.

AUDIMAX® Automatic Level Controller.
Rides gain automatically. Eliminates objectionable swish-up of compressor-type limiters. Features adjustable recovery time. And patented return-to-zero function with low distortion and superb frequency response. Ideal ahead-of-the-limiter for maximum program coverage. Available in mono or stereo.
This special section alphabetically lists the NAB '80 exhibitors, previews products, and illustrates selected new products. Following each exhibitor listing is a number by which the reader service card may be used to provide exhibitor data. Also, if the exhibitor is advertising in this issue, the location of the ad is indicated for additional details about the firm's NAB '80 exhibit/products.

While this section will be a valuable aid in planning NAB '80 activities, caution should be exercised. The listing here is comprehensive as of press time, but changes are still occurring in exhibitor sign-up, products being shown, and booth assignments. Check the final program at NAB to complete your plans. Look for the BE wrap-up of NAB '80 in the June issue.
MARCONI has the proven answer to ‘H’ & ‘V’ Blanking Measurements

See How Easily Timing Measurements Can Now Be Made

- Fast accurate measurements at the touch of a button
- Results from samples taken throughout active field
- Blanking at set-up (+4 IRE) and picture (+20 IRE) measured independently to 10 nsec. resolution
- Vertical Blanking resolved to 1/10 line
- Printout from BCD output on command
- All functions may be remotely controlled for simple system integration
- Manufactured in U.S.A., domestic price $4950

At NAB Visit MARCONI Booth 817
Instrument Section

Marconi Television Interval Timer
Model 2920 measures the following parameters

VERTICAL BLANKING MEASUREMENTS
Total Vertical Blanking Interval
Picture Start
Equalizing Pulse Width
Serrator Width

HORIZONTAL BLANKING MEASUREMENTS
Set Up Blanking (+4 IRE)
Picture Blanking (+20 IRE), (z)
Front Porch, (x)
Sync Width
Sync to Burst Start
Sync to Burst End
Sync to Set-Up, (y)
Burst Length in cycles
Sync Rise Time

REFERENCE MEASUREMENTS
Burst Amplitude in IRE
Sync Amplitude in IRE
Amber Electro Design (Booth 327)

Products: Model 4400A multipurpose audio test set.
New: Model 5500 audio analyzer; model 3500 distortion measurement set.

Featuring...high performance in a miniature low-cost package, the 3500 distortion measurement set offers automatic operation, with performance commensurate with large lab instruments. The unit is small enough to fit in an attache case and sells for as low as half competitive instruments.

Circle (221) on Reply Card

American Sign (Booth 1900)

Products: See at booth.

Circle (226) on Reply Card

Ampex (Booth 805)

Products: 30mm Plumbicon® TV camera tubes—55875 LRGB integral mesh, XQ1023R extended red, XQ1025 LR extended red with IR filter, XQ1025G high resolution green, XQ1410 LRGB high resolution with light bias, XQ1413R extended red, XQ1415R extended red with IR filter; 25mm 1-inch Plumbicon TV camera tubes—XQ1070 LRGB separate mesh, XQ1073R extended red, XQ1075R extended red with IR filter, XQ1080 RGB separate mesh with light bias and anti-comet tail. XQ1085R extended red: 18mm (¾-inch) Plumbicon TV camera tubes—XQ1427 RGB separate mesh.


see ad on pages 84, 85
Circle (227) on Reply Card

Ampex Magnetic Tape Division (Booth 702)

Products: BCC-10 and BCC-14 color cameras; EC2; HPE-1; RES-2; SMC-60; AVR-2, AVR-3, VPR-2 and VPR-20 VTRs; ACR-25; ESS-2 digital recorder; TBC-2; MM-1200; MQS-100; Series 4000 switchers; ATR-100, ATR-124 and ATR-700 audio recorders.

Featuring...the BCC-10 studio color camera with digital remote control of all electronic functions. The 25mm camera, with automatics, has digital memory and digital controls that streamline operations while minimizing operator errors.

see ads on pages 37, 39
Circle (228) on Reply Card

Beaveronics, Inc.

FAVAG

MASTER CLOCK SYSTEMS
MODULAR DESIGN FACILITATES FUTURE EXPANSION

NURIOUS SECONDARY CLOCKS ARE AVAILABLE INCLUDING THOSE WITH SILENT OIL-BATH MOVEMENTS

NUMEROS SECONDARY CLOCKS ARE AVAILABLE INCLUDING THOSE WITH SILENT OIL-BATH MOVEMENTS

Table Top

EXTRA - FLAT SECONDARY CLOCKS
MINUTE - IMPULSED, FOR INDOOR USE SINGLE FACE, FOR WALL MOUNTING

DECORATIVE SECONDARY-CLOCKS

Beaveronics, Inc.

Write or phone for details.
8 Haven Avenue
Port Washington, New York 11050
Tel: (316) 883-4414

Prices and Specifications Subject to Change Without Notice.
FOR REMOTE & SMALL PRODUCTION FACILITIES
MODEL J & D 712
$7,400.00

FOR MODERATE SIZE FACILITIES
MODEL B1-154
15-input, 4-output mix/effects amp with downstream mixer, includes downstream preset & program buses with cut bar, RGB chroma key
$21,795.00

FOR SOPHISTICATED FACILITIES
MODEL B1-156
15-input, 6-bus with two full mix/effects systems & 12 busses, 4 output buses; many options available, DSK, quad, etc.
$21,795.00

STANDARD FEATURES
1. Switcher Models 154 and 156 are of the same basic design and utilize the same electronic sub assemblies. These switches have the same standard basic features, differing only in the number of buses and in the number of mix/effects units. The basic standard features include 32 pattern mix/effects, color black and color matte background generator, and a mix/key unit in the case of the Model 154.
2. Input Amplifiers
   • loop through high impedance input • gain equalization for 1000' cable • 22" sub carrier phase control • clamped inputs (10% to 90% APL) • sync addition on non composite signals if desired.
3. Tallies
   • isolated dry contact relay closure on all inputs (2 amps at 50 V)
4. Mix/Effects Units (Includes Keying Function)
   • One (1) used in Model B1-154
   • Two (2) used in Model B1-156
   Fades (or Superimpose), Key, Keys may be produced. Positioner Joystick for each M/E positions patterns.
   • Pattern Modulation may be accomplished by an internal waveform generator. Modulating sources may be either (1) sine wave, (2) square wave, (3) saw tooth, or (4) an external customer generated source.
   • Mix Key and Wipe Key available.
   • Soft Wipe and Soft Key available with adjustable variations.
   • Push to Preview obtained by depressing knob on clip potentiometers (provides for Soft Wipe and Soft Key available with adjustable variations.
   • Pattern Assignment is made by Depressing "ASSIGN" button. Pattern select feature may be "locked" to pattern matrix by depressing the "ASSIGN" button a second time on the same pattern. Patterns assigned appear on LED display on M/E control panel.
   • Non-Synchronous Inputs. An "NS" indicator is provided. Tearing is prevented by not allowing a non-synchronous signal to be switched except at extreme position of fader handle where a "cut" transition occurs.
   • Key Input Sources may be either (1) "A" bus video for self keying, (2) preview Key bus, (3) chroma key, or (4) an external key source.
   • Key Invert selector provided to accommodate either positive or negative video as a keying source.
   • Key Fill may be either "A" video for self keying or a colorized matte.
   • Mix/Key provided a lieu of second Mix/Effects system for Model B1-154 switching system. Provides for all mix and keying functions of mix/effects system (as previously described) except for the pattern effects.

OPTIONAL FEATURES
May be added at any time (required control panel wiring already installed)
Chrome Keyer (C.K.) $350.00
   • Hue—selects hue of keying color • Gain—adjusts the amplitude • Clip—adjusts the clip level for keying • Camera (4 x 1) input switcher—selects RGB output of any one of 4 cameras to feed C.K.
Down Stream Keyer (DSK) $1,975.00
   • Keys in titles, inserts, or fades to black with or without insert • Color matte background
   • Key sources (1) Mix/Effect, (2) Chroma Key, (3) External • Push to Preview (Monitor)
DSK Border $1,950.00
   • Border—black edge around insert • Shadow—black edge on right side and bottom of insert.
Quad Split $1,900.00
   Providing four (4) variable size quadrants from ten possible sources with variable width border.
Aux Busses (Model 156 only) $2,100.00
   Two remote outputs are available—remote control panel and amps required.

All Beaveronics Switching Equipment Carries a Two Year Warranty

March 1980 Broadcast Engineering 99

8 Haven Avenue • Port Washington, New York, 11050 • Tel: (516) 883-4414
Prices and Specifications Subject to Change Without Notice.

Circle (63) on Reply Card
VACUUM CAPACITORS
BY COMET

Comet Vacuum Capacitors measure up to the highest standards, are completely interchangeable and have been the choice of electronics professionals in 50 countries throughout the world for over a decade.

Comet Vacuum Capacitors are readily available for shipment anywhere in the United States. We maintain a large inventory of the more popular sizes of fixed and variable vacuum capacitors and for your special requirements, our unique component construction allows us to assemble and ship your special order more quickly than you would normally expect.

Every Comet carries the label "Made in Switzerland." We're proud of the precision and craftsmanship that represents; That's why we guarantee our products for a full year. That's why we manufacture our capacitors exclusively of copper and ceramic. That's why you can feel secure when you select Comet Vacuum Capacitors. Next time you need a dependable, precision-built vacuum capacitor... and you need it fast... ASK FOR COMET.

Comet also manufactures one of Europe's most widely used high voltage test units. It operates in continuous or pulsed modes and can be used to test vacuum capacitors or various other electronic components. This testing unit is powerful, portable, accurate and safe.

Manufactured by Comet-Berne
For additional information contact:
Inmark Corporation
38 Brushwood Road
Stamford, Ct. 06903
Tel. 203-322-5272

Angenieux (Booth 409)
Products: Lenses for 1-inch and 1¼-inch cameras including the 15x for studio and 12x for optical quality in the studio, the 42x for studio and van flexibility: high tolerance diameters; the 15x lens system for ⅜-inch cameras; the 9.5-142mm, f/1.8 with front and rear accessories.

Antiope Videotex Systems (Booth 1626A)
Products: Editing console; MUX (station equipment for transmission encoding and data insertion); terminals built with standard components.

Anton/Bauer (Booth 1617)
Products: Silver zinc and NiCad batteries and chargers with a large assortment of quick release mounting brackets.

Antivil Cases (Booth 1626)
Products: EIA rack cases in three designs, light, heavy and extra-heavy-duty shock mount models; special design ENG, EFP and studio camera cases; professional 1-inch VTR cases; character generators, controllers cases; accessory, utility, monitor, tape cases.

Featuring... the introduction of a multi-page decoder with 72-page memory capacity, as well as a soft alphabet enabling users to employ substantially improved graphics. A state-of-the-art multi-lingual captioning system which, among other uses, will provide subtitling for the hearing-impaired.

Anton/Bauer (Booth 1617)
Products: Editing console; MUX (station equipment for transmission encoding and data insertion); terminals built with standard components.

New: Models showing Antiope new display graphic possibilities; decoder microcircuits; software for transmitting closed captions.

Featuring... the introduction of a multi-page decoder with 72-page memory capacity, as well as a soft alphabet enabling users to employ substantially improved graphics. A state-of-the-art multi-lingual captioning system which, among other uses, will provide subtitling for the hearing-impaired.

Anvil Cases (Booth 1626)
Products: EIA rack cases in three designs, light, heavy and extra-heavy-duty shock mount models; special design ENG, EFP and studio camera cases; professional 1-inch VTR cases; character generators, controllers cases; accessory, utility, monitor, tape cases.

Featuring... cases for video cameras that are manufactured to ATA specifications to ensure safe transport of electronic equipment. Exterior construction is of high impact ABS plastic laminated to top grade
INNER VIEW: A closer look at Conrac Monitors

Active Convergence: Registration made simple.
Conrac’s Active Convergence System gives you complete control over color registration adjustments and greatly streamlines convergence checks.
It uses 36 independent controls to individually adjust nine separate areas on the CRT screen—including corners!
You spend less time on convergence checks—and the adjustments you make will be much more accurate.
Conrac’s system uses 24 operational amplifiers to independently control red, green, and blue in each screen area. Vertical and horizontal waveforms are referenced for shaping the signals that excite the convergence yoke assembly. Dynamic blue lateral convergence is achieved with operational amplifiers.

Beam Current Feedback: The Ultimate in Black Level Stability.
Conrac’s unique Beam Current Feedback system automatically maintains black level stability.

Conrac’s Active Convergence system lets you adjust color registration on nine separate areas of the CRT.

Conrac’s exclusive Beam Current Feedback system automatically maintains black level stability.

Conrac Technology: 30 years of leadership.
Conrac’s track record of technical innovation stretches back nearly three decades. And what we’ve learned since then goes into every monitor we make today. That’s important to you. Because the more technology we pack into each monitor, the more performance you’ll receive from it.
Active Convergence and Beam Current Feedback are just two ways Conrac technology can save you time and money.
For the complete inner view of Conrac technology, call or write us today: Conrac Division, Conrac Corporation, 600 North Rimsdale Ave., Covina, CA 91722, Telephone: (213) 966-3511, Telex: 67-0437
At Camera Mart, we've been a leading equipment supplier to broadcasters and producers for years. We're no strangers to the 'instant' needs, unexpected calls, tough standards and difficult operating conditions that are often S.O.P. in this rough-and-tumble business. But you probably know that...at least, when it comes to film.

What you may not know is, for the past few years, we've been quietly doing the same in video! Testing and selecting the leading equipment for performance and reliability. And offering a wide selection of production and post-production components and packages—on rental, lease and purchase plans with our customary flexibility.

But don't take our word for it: talk to our customers. You'll see why so many people the industry depends on, depend on us.

THE NETWORKS' CHOICE.
(AND EVERYONE ELSE'S.)

Camera Mart
THE CAMERA MART, INC.
456 West 55th Street, New York 10019
(212) 757-6977/Telex: 1-2078
Sales • Service • Rental

See Us At NAB Booth 1406
Circle (66) on Reply Card

102 Broadcast Engineering March 1980
At NAB 1980 see

WHAT'S NEW FROM UTAH SCIENTIFIC

Come visit us at Booth No. 1629 in Las Vegas where we'll be showing:

a full line of party-line (coax) control panels including new lever switch desktop and multiple-button models;

our unique test demonstration where you can measure audio and video performance after ten complete passes through the matrix;

new large-matrix components, including a 150-input switcher and three new alpha-numeric control panels that let you address each source by its familiar name with 1600 name/number combinations available;

our SM-100 status monitor that produces ten separate pages of system status information;

a new status display system that automatically mutes the active source name into your monitor feeds.

Booth No. 1629
SEE YOU THERE!

Before you buy anyone's routing switcher

ASK THE PEOPLE WHO OWN THEM

It's one thing to have the industry's best routing switcher specifications and widest variety of controls, but the "proof of the pudding" comes with user satisfaction—both with the product and the company that backs it.

That's why we freely distribute 100% (not 90% or 95%) user lists to our prospective customers.

Please use the coupon below to obtain our current users list. It includes many of the world's most prestigious broadcasters. It also includes many small, low-budget operations.

Talk to our users—any of them. Find out first hand why they bought Utah Scientific and how they feel about us.

Booth No. 1629
SEE YOU THERE!
Watch what we can do for you now...
with our new models and our faster delivery.

As manufacturers of solid state video equipment, Electrohome has gained worldwide acceptance with reliable, high-performance 9”, 11”, 14”, 17”, 23” monochrome, 19” and 25” color monitors. Built to NTSC and PAL standards, these monitors are specifically designed for broadcast, educational, industrial, commercial, medical, security and data applications.

Now, we have added the new 2000 Series to our product range. Developed to meet high standards of the broadcast industry, the 2000 Series color monitor is modular for easy adaptability to RGB/NTSC/PAL encoded signals. Available in 19” case and rack and 25” case, the 2000 Series maintains Electrohome’s high standard of engineering.

In addition to an expanded line, Electrohome has a new west coast distributor network to provide fast delivery. For complete information on all our video equipment, contact Electrohome Limited at one of these offices:

Electro-Visual Corporation of America
3617 West Macarthur Blvd., Suite 508, Santa Ana, Calif. 92704
(714) 545-6991

Electrohome (U. S. A.) Limited
182 Wales Ave., Tonawanda, N.Y. 14150
(716) 694-3332

Electrohome Limited
809 Wellington St. N., Kitchener, Ontario, Canada N2G 4J6
(519) 744-7111
Telex: 069-5449

ELECTROHOME
... an extra degree of excellence in video equipment for every application.

Asaca (Booth 1421)
Products: * Portable color TV camera; color monitors; MPX sound generator; jitter meter; color camera registration meter; test signal generator; distortion meter; portable video switcher; digital pattern generator; envelope delay measuring set; video noise meter; NTSC video sweep generator.

Featuring...the envelope delay measuring set designed to perform adjustments speedily to phase equalizer. The envelope delay and frequency response can be measured across a broad video frequency range and so the instrument can be used in a variety of applications such as the adjustments of filters.

see ad on page 213
Circle (240) on Reply Card

Audi-Cord (Booth 319)
Products: 20 models of the Modu-Cart 100 series.

New: “A” series dual transport record-reproducer; LAP (live assist programmer); “A” series introduced last year in part now available in 18 models.

see ad on page 126
Circle (241) on Reply Card

Audio & Design Recording (Booth 211)
Products: Compex limiter; vocal stresser; SCAMP (standardized audio modular package).

New: Broadcast limiter; Express limiter.

Featuring...the 600L broadcast limiter for use with AM and FM transmitters. The unit will provide extremely high slope ratio above the limit threshold allowing closer operation to the transmitter maximum input. The modular system, with 19-inch rack mount housing, is compatible with the 600F bandwidth restricting filter module for use with

*Typical products marketed. New products not announced by BE press time.
These raster displays show some of the resident capability of the self-contained, microcomputer based QUANTAFONT™ Q-VII.

The Q-VII also includes a 192 row resident memory, two roll and crawl modes, absolute centering, horizontal positioning, insert/delete and open/close editing...the list goes on. Options? Yes. The international accents shown are a resident memory option. Other options such as mini-disc and digital cassette extended memories are available.

This is only part of the story of the total display capability available in the QUANTAFONT™ 'Q' series Teleproduction Graphic Titlers. See the rest at NAB Booth 1117.

TO BE LETTER PERFECT
395 Ironwood Drive
Salt Lake City, Utah 84115
Phone: (801) 486-5833
TWX: 910-925-5684
Circle (69) on Reply Card

March 1980 Broadcast Engineering 105
Here's $3,990.50 worth of great news... from the originators of low cost, high performance microprocessor video editing systems.

Introducing the:

![EA-3x logo]

The EA-3x is not designed to be the least expensive editing system on the market. What it represents, however, is an extremely potent editing system that simply does it all. It works handily with all popular 1/2" and 3/4" VTRs: No modifications necessary.

One example of the advanced microprocessor technology developed by Cezar International, LTD., is Micro-loc.* Micro-loc* totally eliminates the need for SMPTE time code...actually it is an improvement. It doesn't require a $2,000 SMPTE reader. It doesn't tie-up an audio channel. Micro-loc* format already is hard at work in over 150 editing systems.

Compare EA-3x Features

- Variable shuttle arm control of tape speeds
- Edits may be rehearsed, performed and reviewed
- Interchangeable VTR formats
- Independent control of audio and video channels
- High speed search to any specific frame on the tape (That's the potency of Micro-loc*)
- Cruise capability
- Pre-roll cue
- Numeric trim of ins and outs
- Optional fade "up from/down to" black
- Selects in or out points on-the-fly
- No CRT required. Display is totally self contained
- Programmable pre- and post-rolls
- Full VTR remote control
- Auto tag with recall
- Control track (With or without Micro-loc*) plus optional SMPTE

 Optional "Perfect Pitch"...eliminates the Donald Duck effect
 And a little built-in personalized feature we especially appreciate:
 Numeric brightness control (DIM) of all lamps and displays.

*See us at N.A.B. with Videomedia, Booth #1401

Afterthought: Actually, when you consider all the features of the EA-3x ...at $3,990.50, it may indeed be the least expensive editing system around. How about a demo? Contact us or the best distributor in your area. Chances are he's one of ours.

"The Originators"

Cezar International, LTD.

491 Macara Avenue, Sunnyvale, CA 94086 Tel: (408) 733-1436

AM installations, and also additional units still under development.
Circle (242) on Reply Card

Auditronics (Booth 404)
Products: 110 series production and on air consoles.
New: 700 series, broadcast and recording consoles.

see ad on page 203
Circle (243) on Reply Card

Autogram (Booth 415)
Products: IC-10, AC-8, AC-6 audio consoles.
New: RS-512 random select controller.
Circle (244) on Reply Card

Automated-Broadcast Controls (Booth 312)
Products: 1600S jock assist stereo automation programmer, 2000APM, modular control system with logging, tone and generator controls; STA-MAX wideband modulation controller and Audio-mate microphone processor and complete line of broadcast audio consoles, with six to 20 mixers.
New: STA-MAX wideband modulation controller; Audio-mate microphone processor; 2400 RSK random selector for multiple cartridge player.

see ad on page 182
Circle (245) on Reply Card

Automated Business Concepts (Booth 152)
Products: Computer-based broadcast management system including avails, order processing, traffic, scheduling, copy, logs, billing, accounts receivable, accounts payable, asset depreciation and general ledger as well as automation interface; systems for audience data, research and music scheduling.
Circle (246) on Reply Card

Automated Music (Booth 410)
Products: Music service with country sound and inspirational sound equipment sales.
Circle (247) on Reply Card

Automation Electronics/Autotron Systems (Booth 421)
Products: Autotron Star system and Star Plus system; all financial systems, budget reporting, fixed asset depreciation, word processing, music library and logging features and background music billing.
New: Honeywell VIP 7200 CRT

*Typical products marketed. New products not announced by BE press time.
How to check your tape recorder
in ten minutes

Graph-type display with digital readout

If you haven't actually measured the performance of your audio tape recorder lately, there's a better than 50-50 chance it's much poorer than you think. That's what considerable experience shows.

Checking ATR's is now simplicity itself. All you do is connect your recorder to the new Sound Tech computerized Tape Recorder Test System.

Just by pushing panel buttons you can measure:
- Frequency response
- Harmonic distortion
- Wow and flutter
- Noise
- Speed accuracy and drift
- Channel separation
- Head azimuth accuracy (position a head in 10 seconds)

Information-packed display

The display system in the New Model 1500A gives you all the information you want. Frequency response, distortion, noise, flutter, head azimuth, and channel separation are displayed as graphs with the scale values shown in numbers.

Then you have a positionable cursor (vertical dashed trace in photos). At whatever frequency, level, etc., you place it, the measured value will be shown on the screen in numbers.

Just by pushing buttons you can fully test your recorder almost in seconds.

Call now

The Model 1500A is already used by manufacturers. They love it. You will, too. You can clean up your audio a whole lot easier than you ever imagined.

So call Mike Hogue or Larry Maguire at Sound Tech now for our sales literature.

This new computerized test system is popular and you should get informed about it.

Two channel frequency response
Third harmonic distortion vs. level
Flutter: 0.3% shown
Head azimuth accuracy
Noise: two channels; -61 dB shown
Voltage (yes, it's a voltmeter, too)
Of course, it’s Telex/Magnecord

Telex Magnecord broadcast cart machines run cool and steady. So cool no ventilation is required, so steady even voltage or frequency fluctuations will not alter their speed. Thanks to our dc servo flutter-filter drive. Completely immune to RFI and EMI, it meets or exceeds all NAB standards and is suited for local or remote/automated operation.

Standard features at no extra cost.
- An edit pushbutton to add stop cues in playback and omit stop cues in record
- LED indicators show end of tape, status and secondary/tertiary cue tones
- Front panel headphone jack
- VU meters for each channel

Convenient, Flexible
MC-Series is field convertible from mono to stereo, or play to record. Optional remote controls simply plug in.

Four broadcast cart machines to choose from in the Telex/Magnecord MC-Series - all made in U.S.A. and affordable. Write for detailed information.

Quality products for the audio professional
Communications, Inc.
2115 AVENUE X 
BROOKLYN, N. Y. 11235
Telex 235125
Cable Address: CECO TUBES

INDUSTRIAL TUBE TYPES MOST FREQUENTLY USED IN BROADCASTING
RADIO & TELEVISION

WORLD'S LARGEST ESTABLISHED FRANCHISED SUPER
DISTRIBUTOR OF ELECTRONIC TUBES
FOR THE BROADCAST INDUSTRY.
WE ARE NOW SUPPLYING OVER 5,000 SATISFIED STATIONS

<table>
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Contact us on types not listed.

CAMERA TUBES

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EEV Types, Industrial types not listed, CCTV, Industrial and X-Ray Grade available upon request.

SAVE MORE Join our blanket order program. Check with us for latest competitive quantity prices.

CALL COLLECT
212-646-6300
OR TOLL FREE
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RECEIVING TUBES FOR BROADCAST SYSTEMS
MAJOR BRANDS, FACTORY BOXED 75% OFF LIST PRICE

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7 DAYS – 24 HOUR EMERGENCY PHONE SERVICE
Solid State Replacements For Vacuum Tube Rectifiers

All solid-state replacements are the FINEST QUALITY made. Our tremendous buying power allows us to offer these at the LOWEST POSSIBLE PRICES!

<table>
<thead>
<tr>
<th>TYPE</th>
<th>REPLACES</th>
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VIDICONS FOR CCTV

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CONTACT US ON YOUR OTHER CCTV CAMERA AND MONITOR TUBES

INTEGRATED CIRCUITS

WE SUPPLY A BROAD LINE OF LINEAR/DIGITAL/INTEGRATED CIRCUITS, OPERATIONS/DIFFERENTIAL AMPLIFIERS AND MEMORY NETWORKS

AIR SYSTEM SOCKETS

<table>
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CALL AND COMPARE CECO'S LATEST PRICES – WE WILL NOT BE UNDERSOLD

PRICES SUBJECT TO CHANGE

7 DAYS - 24 HOUR EMERGENCY PHONE SERVICE

OFF THE SHELF DELIVERY
Bell Helicopter (Booth 1901)
Products:* Helicopter for ENG operations.
    Circle (254) on Reply Card

Berkey Colortran (Booth 1116)
Products: Fresnels; scoops; cyc strips; channel track lighting control.
New: Color track lighting control - microprocessor-based system.
    see ad on page 16
    Circle (255) on Reply Card

Beaton Electronics (Booth 801)
Products: CG-410 character generator; 410B and 709A automatic light controllers for film.
New: CG-800 character generator; CG-850 video slate board; DP-1000 data-prompter.
    see ad on page 120
    Circle (256) on Reply Card

Bird Electronics (Booth 915)
Products: RF power measurement instruments; RF directional Thruline wattmeters; 2W to 80kW air-cooled and self-contained heat exchanger loads; field replaceable water-cooled loads and air-cooled line terminations; digital calorimeter.
New: Multipurpose digital directional RF wattmeter model 4386 RF power analyst; 80kW self-cooled Moduload termination system; 80kW water-cooled Econoload line termination.
    see ad on page 208
    Circle (257) on Reply Card

Blonder-Tongue (Booth 1730)
New: Addressable decoders as part of BTVision STV systems; STV systems with BTVision encoder/decoder system; decoder and addressable decoder with computer-controlled turn-on-turn-off for up to one million addresses; interfaces for remote STV/TV controls, external speaker output, Hi-Fi speaker system and dual TV viewing.
Products:* Antenna systems and CATV systems.
    Circle (258) on Reply Card

Bonneville Broadcasting (Booth 419)
Products: Complete business automation system featuring broadcast management and sales reports; fully automatic traffic scheduling system; accounting applications integrated with traffic function, including accounts receivable/payable, payroll, depreciation and general ledger; music system and automation interface.
    Circle (259) on Reply Card

Bonneville Broadcast Consultants (Booth 136)
Products:* Live and taped radio programming; computer-assisted music rotation.
    Circle (261) on Reply Card

Bonneville Data Systems (Booth 321)
Products:* Computerized broadcast traffic/accounting system for radio and TV stations.
    Circle (262) on Reply Card

Boston Insulated Wire & Cable (Booth 1011)
Products: TV cable assemblies and connectors.
    Circle (263) on Reply Card

Typical products marketed. New products not announced by BE press time.
When you cover the action from the source...

the source for mobile studios should be Gerstenslager.

In a van or trailer, your most modern, best equipped studio could be your Gerstenslager. It all starts when you tell us what you need. The job to be done. Then we’ll work with your engineers and principal equipment suppliers. Develop the plans. Detail placement of every piece of equipment, generators, wiring, climate control, consoles. Exactly as you want it. Then, build the unit from the frame up. A studio on wheels that is actually a dependable broadcasting station comparable to conventional studio systems.

How we do it with examples of work we have done for others is included in this brochure. It’s yours for the asking. Write or call: (216) 262-2015.

When you cover the action from the source...

How we do it with examples of work we have done for others is included in this brochure. It's yours for the asking. Write or call: (216) 262-2015.

Gerstenslager
The Gerstenslager Company, Wooster, Ohio 44691

Circle (75) on Reply Card

Broadcast Cartridge Service (Booth 325)
Products: Broadcast cartridges—Aristocart, Capitol/Audiopak and Fidelipac; cartridge accessories—storage systems, alignment tools and cartridge reloading service.
Circle (264) on Reply Card

Broadcast Electronics (Booth 304)
Products: Control 16 and Econo-Control 16 program automation systems; series 3000 tape cartridge machines (single deck); series 5300B tape cartridge systems (3-deck); series 5500 tape cartridge systems (5-deck); series 2100 tape cartridge machines (single deck); series 150, 250 and 350 audio control consoles and audio and studio accessories.
Circle (265) on Reply Card

Broadcast Video Systems (Booth 1631)
Products: Electronic visuals EV4040/4020 waveform and vector monitors; BAL video delay lines; COX 203 encoder; BVS SA-100 safe area generator; Telcom SMPTE time code equipment.
New: BVS LS-300 variable line selector; COX 360 rotary effects generator; BAL video filters; COX 339 color balance corrector; BVS PW-200 pulse width measuring set.
Featuring...a new range of low-pass video filters that feature phase equalization, low insertion loss and better than 45dB rejection above the cutoff frequency, with fast roll off. Cutoff frequencies are available from 0.5MHz to 10MHz.
Circle (268) on Reply Card

BTX (Booth 1501)
Products: 4100 SMPTE time code generator; 4200 SMPTE time code digital display; 4300 SMPTE time code video display; 4500 SMPTE time code synchronizer; 4600 SMPTE tape controller.
New: SMPTE generators, readers, in video displays including vertical internal code.
see ad on page 168
Circle (269) on Reply Card

Burns Audiotronics: (Booth 1906)
Products: M500, M69, M88, M130, M260, M111, M112 microphones; DT109, DT108 headphones.
New: MCE-5 electret microphone; condenser microphones.
Featuring...the MCE-5.
Circle (270) on Reply Card

CCA Electronics [Booth 501]
Products:* AM/FM transmitters and related accessories.
Circle (271) on Reply Card

* Typical products marketed. New products not announced by BE press time.
WHY PAY MORE WHEN YOU GET NO MORE...

VALID REASONS WHY CCI SHOULD TURN-KEY YOUR NEXT INSTALLATION

- CCI Transmitters require less floor space than any other manufactured
- CCI provides the highest efficiency Transmitter System available
- CCI provides the most economical transmitter operation available
- CCI provides totally redundant Klystron Amplifier Sub-systems
- CCI provides totally redundant Protection Circuits
- CCI provides IF Modulation with Total Video Control
- Each Amplifier will operate as a stand-alone Emergency Multiplex System
- All transmitter cabinet electrical components are brought to terminal boards for ease of test and maintenance
- Each transmitter cabinet is physically and electrically identical allowing for much faster troubleshooting by means of comparison
- All components used are Standard commercially available
- A complete transmitter cabinet contains only 34 different components - any of which are available within a 24 -hr. delivery period
- CCI outdoor heat exchanger systems eliminate "freeze-ups"
- CCI manufactures or oversees the fabrication of more critical system components than any other manufacturer of "turn-key" Transmitter Systems
- CCI services every product it supplies
- CCI supplies custom engineered Broadcast Television Transmitter Systems from Base Band Video Input to the Antenna Radiation Pattern of your choice
- CCI Transmitters are prewired for remote control operation
- CCI Transmitters are designed for "Hands-off" operation via computer control techniques
- CCI manufactures and supplies complete computerized Remote Control Systems

MANUFACTURING & TEST FACILITY

CTT-U-10 KW
CTT-U-30 KW
CTT-U-55 KW
CTT-U-110 KW

At CCI we are specialists in custom designing the total system to meet your short and long term requirements. Our experienced technical staff has been directly involved in the installation or modification of 200 stations. CCI offers a complete line of UHF transmitters from 10 KW to 200 KW which when complimented with an appropriate antenna, tower, and transmission line system comprise a total turn key capability. CCI also services every product it supplies.

Circle (76) on Reply Card

SEE US AT NAB BOOTH NO. 1315

COMARK COMMUNICATIONS, Inc.
Southwick Industrial Park
Southwick, MA 01077
Phone (413) 569-5939
Intl Telex 95-1012
Unattended Transmitter, Monitor, Alarm & Control

Model 5003
Installed at remote transmitter locations. Direct connection to public telephone network, leased lines, two-way radio or microwave network. Feeds data to Model 5004.

Remote Supervisory Model 5003
Capable of monitoring and controlling up to 5 transmitters at one remote site plus building status. It connects directly to dial-up public telephone, radio, or microwave. Stand by battery power supply is standard.

Central Model 5004
Displays the status of (8 to 48) remote contacts and has the hard copy data logger to provide the permanent record of time of day, date and status.

These two units can be equipped to provide building security with recordings to notify local security forces.

Send for full color, 4-page brochure.

MONROE ELECTRONICS, INC.
100 Housel Avenue, Lyndonville, NY 14098
Phone: (716) 755-2254

Circle (81) on Reply Card

Canadian General Electric
(Booth 1419)
New: TTC-6000 F/L 6kW VHF transmitter; TTC-16000 F/H 16kW VHF transmitter.

Featuring...the model F series. These transmitters, ranging from 250W to 60kW in parallel configurations are conservatively designed, modern transmitters. The single-ended designs, such as the 30kW unit are all solid-state except for the visual and aural final amplifiers. The solid-state visual and aural IPAs require no tuning.

see ad on page 119
Circle (279) on Reply Card

Candex Pacific (Booth 1800)
Products: Custom engineering; computer programming and software services; technical consulting and new product development services.

New: Remote controlled 4-color filter-changer accessory for standard studio lights that allows for random selection of any four filters or any desired combination for color effects; microcomputer encoder-

Typical products marketed. New products not announced by BE press time.

see ad on page 119
Circle (279) on Reply Card
With Maxell videocassettes, you get the result you want.

Because Maxell brings you as close to the original signal as any videotape can.

Here's why.

Only Maxell can give you the exceptional advantages of Epitaxial™ oxide in both VHS and U-Matic formats. With low chroma noise, excellent frequency response and superb stability.

Maxell also makes sure you can get the full benefit of the tape, by putting it into precision-made cassettes for videotape that will stand up to repeated playback.

Stringent quality control assures you the same high performance, the same original-image quality, from one videocassette to another, at all times.

VHS or U-Matic, Maxell shows you how good videotape can be.

Maxell Corporation of America
60 Oxford Drive
Moonachie, New Jersey 07074
decoder remote control units; video and audio distribution amplifiers; microprocessor-based memory lighting control system and lighting dimmer packs.

Circle (280) on Reply Card

Canon USA (Booth 902)

Products: PV25 x 20 lens for 1-inch Plumbicon format; P18x16 and P12 x18 with discscope for microprocessor cameras; J13x9 with built-in 2-time range extender for ENG.

New: 2 lenses for 2/3 format cameras; J20 x 8.5 with built-in range extender for studio and ENG; J25 x 11 with built-in range extender for EFP ½ camera.

see ad on page 161

Circle (281) on Reply Card

Capitol Magnetic Products (Booth 504)

Products:* Audiopak A-2 broadcast cartridge; Audiopak AA-3 stereophased broadcast cartridge.

Circle (282) on Reply Card

Cavox/Tape-athon (Booth 164)

Products: Programmer IV music generator.

see ad on page 151

Circle (285) on Reply Card

Centre (Booth 1832)

Products: Remote TV production vehicle design and construction technology; a graphic display of the company’s facility and design capabilities.

New: Custom production vehicles.

Circle (285) on Reply Card

Central Dynamics (Booth 1015)

Products:* CD 480 video production switchers; VS10 video production switcher; VS14 video production switcher; DK2160 downstream title keyer; EEG 1980—stand-alone extended effects generator; VG2210 digital sync decoder; VA 2034-6B video distributed amplifier; VA2035-3 equalizing video distribution amplifier; VA2051-0 pulse distribution amplifier; VA2035-200 dc coupled distribution amplifier; VTR 2045 video transmission distribution amplifier; AFM-10 audio mixer switcher; MC480 master control switcher; encoded and RGB chroma keyers.

New: MC990 master control switchers; APC 910 40-event memory system; CD480-4 production switcher; computer-assisted production accessory for the CD480 switcher family; EFG 1980-stand-alone extended effects generator.

see ad on page 109, 110

Circle (284) on Reply Card

Century 21 Programming (Booth 313)

Products:* Programming for automated and assisted-live radio.

Circle (287) on Reply Card

Cetec Broadcast Group (Booth 305)

Products: System 7000 microprocessor-based program automation with Level II programming filmware; verified English Logging (VEL) autocue; Audiofile II-A multicart system; Centurion AM and FM audio con-
Take a cute little dish on a trip to the country.

Transportable satellite uplink service is a reality....and available now! Western Tele-Communications, Inc. (WTCI), a Denver based common carrier, is offering transportable uplink service and has been providing this service to the national television networks for news and sports coverage since August of 1978.

**Uplink Capability**

Two, high power amplifiers feeding the 4.5 meter dish can provide, simultaneously, two network quality television signals for delivery to a 10 meter receive station.

The transmitters can also be operated in a hot standby protection mode to provide one, protected uplink. Each uplink is equipped with two audio subcarrier modulators which can also be operated simultaneously, if required.

The station receivers can be operated simultaneously with the uplink to provide two full duplex television channels, if required.

**Transportability**

The station is constructed on a 40 foot trailer pulled by a diesel tractor and can be moved over 750 miles per day.

The unit is designed so that it can travel across country without wide load permits.

The station can be moved to very remote areas, practically anywhere in the United States in just a few days.

A diesel powered generator provides AC power to the station for operation in areas where no commercial power is available.

**Service Availability**

NOW! Call us at 303-771-8200.

We are booking orders and providing uplink service at this time.

The station is authorized for each use by the FCC on a per occasion basis. The FCC requests ten days notice on applications. Special news or other events can be processed sooner, if it is in the public interest.

Frequency coordination also must be accomplished on a per occasion basis and frequently requires blockage to solve potential terrestrial interference problems. We have successfully accomplished the necessary frequency coordination for the use of our transportable uplink on all projects, up to this point.

**Rates and Charges**

The uplink service is ideally suited to save the customer money on situations involving transmission from remote locations, where existing facilities are not currently available and construction would be required. The customer can also reduce his costs on intercity transmission of television signals by utilizing satellite services.

Send for a brochure or call

**Western Tele-Communications, Inc.**
P.O. Box 22595 Wellshire Station Denver, CO 80222 (303) 771-8200

Circle (80) on Reply Card
solos; JSCP and JHCP FM/CP radio transmitting antennas with radomes; model 600B FM transmitter and model 625 FM transmitter; custom-built radio studio and remote broadcast control furniture; “The Spiral” circularly polarized VHF/UHF TV antenna; ring-panel CP/TV directional antenna.

New: Model 690PLL FM exciter; model 2000 audio console (5 mixer) and model 2000 (8 mixer).

Featuring...the 690PLL FM exciter with frequency stability at ±300Hz with ±100Hz typical. Noise and distortion levels are low and the unit accepts signals from monaural programming, composite stereo generators and SCA generators. It is compatible with, and will enhance any audio processing system.

see ad on page 152

Circle (288) on Reply Card

Cetec Vega (Booth 1023A)

Products: Model 77B transmitter; models 58, 63 diversity, and 66 receivers.

New: Models 80 and 81 Dynex handheld mic transmitters; model 77B Dynex transmitter; Dynex models 58, 63 Diversity and 66 Dynex receivers.

Circle (289) on Reply Card

Chase Media (Booth 119)

Products:* Traffic; logging and billing; music format control system.

Circle (290) on Reply Card

Christie Electric (Booth 1002)

Products:* Graphics and titling generating charger and NiCad battery; automatic sequencer for sequential charging of 1-8 reflex-20 batteries.

see ad on page 111

Circle (291) on Reply Card

Chyron (Booth 1407)

Products: Graphics and titling generators; election reporting system; cassette cleaner and evaluator for 3/4-inch VC.

see ad on pages 226, 227

Circle (292) on Reply Card

Cine 60 (Booth 1126)

Products: Nickel-cadmium powerbelt and powerpak batteries, standard and fast charge types, for 4Ah to 14Ah and 7 to 30V; camera and VTR power cables: 12V and 30V Sun-Guns and Sun-Gun kits; quick-release camera Snaplocks; shoulder pods; portable blower-cooled 850W and 1700W 115Vac quartz lights and lighting kits.

New: HMI lights; piggyback onboard NiCad fast charge battery systems for snap-on mounting; NiCad battery dememorizers for dememorizing NiCad batteries; replacement NiCad batteries; 20Ah NiCad battery packs.

Featuring...four Powerbelt versions

*Typical products marketed. New products not announced by BE press time.
Odds are, we'll be talking transmitters.

Have you heard about Canadian General Electric's remarkable new VHF TV transmitters, with solid state IPA's to the final visual/aural tubes and control logic with a unique manual bypass? Whether you have or not, we at CGE's Broadcast Equipment cordially invite you to join us at the 1980 NAB convention in Las Vegas. A lot of exciting things have been happening and we'd like to tell you about them.

For instance, General Electric is now representing us in the U.S. in the sales and service of our wide range of products. And Lew Page, GE's Manager of Broadcast Products, who is well-known in the broadcast industry, is looking forward to meeting with you at the convention to talk about our new VHF TV transmitters and our other outstanding products.

You can meet Lew Page and other Broadcast Equipment friends at Booth 1419. Plan to be there. Let's talk transmitters.

Canadian General Electric Company Limited
Broadcast Equipment
396 Attwell Drive
Rexdale, Ontario, Canada M9W 5C3
Telephone (416) 675-7500
Telex 06-99302

5000 Jean Talon West
Montreal, Quebec, Canada H4P 1X2
Telephone (514) 733-9911
Telex 055-66393

Lew Page, Manager - Broadcast Products
General Electric Company
777 14th St. NW
Washington, D.C.
20005
Telephone (202) 637-4103
Circle (82) on Reply Card
How to get steady telephoto shots of the news action from 300 feet up:

With a device that weighs 5 lbs. and mounts in front of your lens.

The news shot that grabs the viewer is a closeup. Of course. Like any other moving platform, though, the helicopter isn't steady enough for the camera to zoom in tight. Needless to say: at the long end of the lens, vibration is magnified.

You pay good money for that helicopter. You should get high-quality images. The police, the F.A.A. and the pilot all quite rightly want you to keep a safe distance from the action on the ground. But you need close shots. You're paying for the helicopter to make your news operation look good. Shaky pictures don't help.

Get 3 times closer.

Without stabilization, you can't go longer than about the 50mm focal length on your ENG camera. With the Image Stabilizer, depending on air turbulence, you can get smooth shots at 150mm or longer.

No special training needed. It's just another (astounding) accessory.

The Image Stabilizer comes with its own Support Plate and bracket. You mount your camera on the Plate and position the Stabilizer in front of your lens. Switch on the Stabilizer. Switch on the camera. Shoot. Any competent cameraman can use it. It works with any camera and with any prime lens longer than about 35mm. (With zoom lenses, the widest focal length varies slightly.)

At focal lengths wider than 35mm, the Stabilizer vignettes. A small price to pay for getting three times closer. And if you need a panoramic shot, that's easy: Pull the helicopter back.

How it works:

The entering light rays are reflected off a front-surface mirror mounted on two gimbals powered by a battery-driven gyroscope. The mirror is effectively floating in space, as though on two trapezes – one oriented N-S, the other E-W. The image from this mirror is reflected onto another (fixed) mirror and thence into the camera's lens.

Aerospace technology.

A gyro's directional stability makes it resist off-axis movement – such as panning the camera. If you insist, it tumbles in that direction. British Aerospace, the designers, have turned this tendency to advantage. A precession brake causes the gyro to lean with the panning motion, steadily. This is military aerospace technology, ingeniously adapted.

The new Arriflex Image Stabilizer

an important ENG/EFP accessory.
The British Aerospace Steadyscope uses the same stabilization method. Above: surveillance from a NATO army helicopter.

British Aerospace is a company very much involved with high-precision technology. Military missile systems, orbital satellites...

One of their products is the Steadyscope. It uses the same gyro-stabilization as our Image Stabilizer, whose moving parts are also made by British Aerospace.

How well does it work?
In the November 16, 1978 issue of the British magazine NEW SCIENTIST, there’s an article by Guy Parker on stabilized binoculars. Referring to the Steadyscope, Mr. Parker writes:

Anchored in space
“On pressing the uncage button there is an immediate transformation which is both psychological and optical. The impact is of course greater if one is being shaken in a helicopter, but even on land the image appears in an almost uncanny way to anchor itself in space, even if the instrument is deliberately jiggled about!”

Detail resolution
“An optical phenomenon now becomes apparent,” writes Mr. Parker. “After the initial pleasure at the disappearance of jitter, the eye seems to demand needle-sharp resolution, now that the visibility of detail is determined mainly by the quality of the optical design. There is no future for a stabilizer which does not give the highest resolution under all conditions of use!”

To improve a gyroscope’s effectiveness, you can increase either its mass or its RPM. For military purposes, British Aerospace had to make it small, light and efficient.

High speed with low mass requires exact dynamic balance, of course. Eccentricity and bearing friction would impair accuracy and soak up power. One measure of the phenomenal precision of this device: The gyroscope—with its double gimbal and mirror—will run about four hours on a 1.5 volt D cell!

Low mass saves money.
A low mass device is likely to be compact. With this one, you can rent a 5 place helicopter at $300 an hour, and get steady shots from inside. No need to hang out of the open door. And no need, either, for a 7 place helicopter at $400 an hour, or more. The Image Stabilizer, incidentally, rents for about a tenth of that.

Elegant proof of low mass space-hardware sophistication: a gyroscope powered by one flashlight battery.
of the company's portable Sun-Gun kits; 12V models provide 80-minute 100W lighting time; 30V models, 40 minutes. Each kit is equipped complete with 6201A Sun-Gun head, bulb, 6202 swing-away dichroic filter, battery cable, slow charger, powerbelt and carrying case.

Circle (293) on Reply Card

Cinema Products (Booth 1417)
Products: ENG/EFP cameras from NEC; CP-16R reflex 16mm camera system and related accessories and lenses; Steadicam video/film camera stabilizing systems; Universal model II.

New: CP co-ax digital remote control for Ikegami HL-77 and HL-79A cameras; CP co-ax digital remote control for RCA TK-76B cameras; HMI lights from Ryudensha; ENG/EFP cameras from NEC; U/F-16 upright/flatbed 16mm editing console; GSMO state-of-the-art 16mm cassette-load production camera; Bubbelite soft light for motion picture and TV field production; CP camraprompter camera prompting system.

Circle (295) on Reply Card

New SIGNALYST™ Color Bar Generator

Does practically all that NTSC generators do plus a lot more, for a much lower price!

If you thought you had to get NTSC equipment, think again. The new VIZ SIGNALYST, Color Bar Generator, gives you every color TV test signal you need. Use it to service TV sets, video recorders, CATV, MATV, CCTV, etc. Dimensions less than 4 x 8 x 6 in. Fits in your service kit. A price you can easily afford.

Patterns supplied. Superpulse; regular color bars; color bars with luminance; color bars less burst; red, green or blue primary color rasters; color trio; gray quad; hatchdots; dots—all with progressive or interlaced scanning and 4.5 megahertz sound carrier.

Outputs. Video (pos. or neg. polarity) 0-1.7 volts into 75 ohm line. RF and IF continuously adjustable from snow-low 20 microvolts to 200,000 microvolts (enough to drive a whole hotel full of TV sets). All outputs crystal controlled.

Scope triggers. Two separate 3.7 V peak-to-peak pulses for H&V trigger. Comes complete with 75 ohm output cable and 300 ohm snap-on head plus an excellent text on application.

See your local VIZ distributor.

VIZ Mfg. Co., 335 E. Price St., Philadelphia, PA 19144
Over 70 test instruments in the line

Circle (84) on Reply Card

Geometric video/film camera featuring the model

6500 color encoder with image enhancer, automatic balance, automatic differential gamma balance and an optional color comp variable masking system.

see ad on page 192

Circle (296) on Reply Card

Colorado Video (Booth 1031)
Products:* Slow scan TV equipment; video framestore.

Circle (298) on Reply Card

*Typical products marketed. New products not announced by BE press time.
Regardless of whether your programs originate from another city, a local sporting event, or an ENG assignment, your video transmission links have to maintain the same high quality standards. Day in and day out.

No manufacturer of video transmission equipment is more aware of that fact than Farinon Video. That's why we offer the finest lines of microwave radios, receivers, and related video transmission equipment available.

**STL and Intercity Relay Links**
- FV-F Series Heterodyne Microwave Radios provide almost transparent signal transmission in all available spectrum allocations worldwide.
- FV40 Transmission Equipment provides extreme flexibility for conditioning video and audio signals applied to any transmission medium.
- FV43 Audio Transmission Channel System allows simultaneous transmission of high fidelity mono or stereo sound with the video signal.

**Remote Pick-Up Links**
- FV-P Series Portable Microwave Radios offer frequency agility, fingertip tuning and rugged construction.

**ENG Links**
- FV-MP Series Miniature Portable Microwave Radios are extremely lightweight, compact, and completely self-contained.
- FV-MF Series Miniature Microwave Radio Transmitters provide a high degree of flexibility for airborne or vehicular installation.
- FV-CR Series Central Receivers feature synthesized channel selection, unsurpassed dynamic range, superior selectivity, and excellent inherent RFI protection.

To satisfy the particular requirements of your system, we also offer a variety of ancillary equipment, including low-noise preamplifiers, power amplifiers, and portable test units.

You can depend on Farinon Video for transmission links where quality is never missing. For more information, contact Farinon Video today.

Main Office: 1680 Bayport Ave.,
San Carlos, CA 94070
Phone: (415) 595-3500; Telex: 34-8491

Canada: 657 Orly Ave., Dorval, PQ H9P 1G1
Phone: (514) 636-0974; Telex: 05-82-1893;
TWX: 610-422-4122

See our complete product line at the NAB exposition in Las Vegas: Booth 1303
Comark Communications (Booth 1315)
Products: UHF TV transmitters 55kW, 30kW; UHF TV exciters.
see ad on page 113
Circle (297) on Reply Card

Comark Industries (Booth 1315)
Products: Diplexers, filters, couplers, FM antennas, demodulators.
New: Coax switchers: 1-5/8, 3-1/8, 6-1/8; automatic switching systems.
Circle (298) on Reply Card

Compact Video Systems (Booth 1525)
Products: Mobile TV trucks and vans, including the Compact 20, 27 and 40; 55kW and 60kW sound proof generators.
New: Compact 42 portable uplink and ENG vans.
see ad on page 217
Circle (299) on Reply Card

Comprehensive Video Supply (Booth 1817)
Products: Video supplies and accessories including video connectors, cables and adapters.

Computer Concepts (Booth 168)
Products: Broadcast system turnkey computer system with financial and traffic software; word processor that assists in composition of ad copy, news reports and letters.
Circle (301) on Reply Card

Computer Image (Booth 1018)
Products:* Electronic animation; video production; computer-controlled two and three dimensional animation; syndication and promotional animation for radio and television.
Circle (302) on Reply Card

Computer Management Systems (Booth 128)
Products: Broadcast management information system (BMIS) business system covering radio and TV sales, traffic, billing and accounting for stations and groups.
Circle (303) on Reply Card

Comrex (Booth 105)
Products: Low-frequency extenders; ENG cue system; pocket aural monitors; wireless microphone systems.
New: Studio/telephone integrator.
see ad on page 80
Circle (304) on Reply Card

Comsearch (Booth 1604)
Products: Satellite earth station placement; frequency coordination and RFI measurements; CARS band microwave frequency assignment; point-to-point microwave frequency coordination and computer systems software development.
see ad on page 116
Circle (305) on Reply Card

Concept Productions (Booth 326)
Products: Concept 1, contemporary MOR; Concept 2, adult rock; Con-

Typical products marketed. New products not announced by BE press time.
Could You Buy a Better Oscilloscope at Any Price?

WE AT QUALITY MEDIA CORPORATION ARE CONVINCED THAT THE LEADER LBO-515B IS UNSURPASSED AT ANY PRICE. TO PROVE OUR POINT, WE ARE WILLING TO MAKE THIS UNPRECEDENTED OFFER:

Quality Media will ship an LBO-515B Oscilloscope to any TV Chief Engineer in the continental U.S. for a 10-day Free Trial. If you are not convinced that this is an incredible value, you may return the scope, and owe nothing. Call us on our Toll-Free line today.

LEADER LBO-515B
30 MHz DUAL TRACE OSCILLOSCOPE WITH VARIABLE DELAY
$1,530.00

CALL TOLL FREE 1-800-241-7878
IN GEORGIA CALL COLLECT 404/324-1271

Quality Media Corporation
P.O. BOX 7008 • COLUMBUS, GA. 31908
cept 3, album rock; Concept 4, country.

New: Voice/Music synchronizer, microprocessor-based device used to verify that voice and music tapes are synchronized.

Circle (306) on Reply Card

Conrac (Booth 809)

Products: Model 6142 19-inch color master monitor with comb filter separator; model 5742 13-inch color monitor with comb filter for VTR mounting; model 5322 19-inch color monitor for broadcast and teleproduction; model DZB 15-inch b&w monitor for VTR mounting; QQA17 17-inch high resolution b&w monitor; SNA 9-, 14-, 17-, 23-inch b&w monitors.

see ad on page 101
Circle (307) on Reply Card

Consolidated Electronics (Booth 203)

Products: Cuerac cart automation system; tape machines and accessories; computer-assisted program generator; software for music management; stereo cartridge record/replay machine; reel-to-reel stereo reproducers with 25Hz tone detector; computerized control logging package.

Circle (308) on Reply Card

Continental Electronics (Booth 101)

Products: 315F 5kW AM broadcast transmitter; 316F 10kW AM broadcast transmitter.

New: 317C-2 50kW AM broadcast transmitter.

see ad on page 200
Circle (309) on Reply Card

Control Video (Booth 1633-A)

New: Software based, microprocessor control unit that generates, reads and keys SMPTE and also controls two VTRs.

see ad on page 198
Circle (310) on Reply Card

Convergence (Booth 704)

Products: ECS-103A superstick cuts-only cassette editing system; ECS-103B superstick multi-source editing system with switcher effects system and edit decision listing; ARC-100 animation remote control.

New: ECS-90 microprocessor-controlled editing system; ECS-103C superstick multi-source editing system.

Featuring...the ECS-100 editing systems to audiotape recorders and production switchers effects systems.

variable joystick control of tape speeds, preview, perform and replay of edits, interchangeable VTR formats, independent control of audio and video channels and many other features.

see ad on page 89
Circle (311) on Reply Card

Crosspoint Latch (Booth 1833-A)

Products: 6104A portable switching system; 6112 compact production switcher; 6107 Typical products marketed. New products not announced by BE press time.
Facts from Fluke on low-cost DMM's

Our new 4½-digit bench/portable:
You've never seen anything like it.

Take a close look at the face of this instrument. Notice anything new? If you just realized you’ve never seen words on a low-cost DMM display before, you’re on the right track. This is the new 8050A from Fluke, the lowest priced 4½-digit multimeter available that uses microprocessor technology.

The legends on the LCD are clues to what makes the 8050A unique.

dB: You're right. The 8050A delivers direct readouts in dBm, referenced to any of 16 impedances. Use the "REF Z" button to scroll through the memory and locate the zero dBm reference you need, then set it and forget it. No more tedious calculations or conversions.

REL: For relative references in the dB mode or offset measurements in all other functions. Lets you store any input as a zero value against which all others are automatically displayed as the difference. Another timesaving convenience.

HV: Just a reminder when your input is over 40V, so you won't forget about safety while in the dB or relative modes. Of course there's much more to the 8050A. True RMS measurements to 50 kHz. Conductance for measuring resistance to 100,000 Megohms and leakage in capacitors, pcb's, cables and insulators. Diode test, 0.03% basic dc accuracy and full input protection. Plus a large family of accessories. Just $329 U.S.

For all the facts on the versatility and value of the new 8050A, call toll free 800-426-0361; use the coupon below; or contact your Fluke stocking distributor, sales office or representative.
compact self-contained production switcher; 6006 sync generator.

**New:** 6124 12-input switcher; 6118 5-inputs switcher; 7200 auto drive automated controller.

**see ad on page 197**
Circle (312) on Reply Card

**Custom Business System (Booth 115)**

**Products:** Radio broadcast business computer system for small to mid-size stations, to handle program log and all traffic functions, accounts receivable and sales projections general ledger and accounts payable.

Circle (313) on Reply Card

**Bill Daniels (Booth 1717)**

**Products:** Directories; custom dealer catalogues.

Circle (314) on Reply Card

**Data Communications (Booth 1033)**

**Products:** Broadcast system for TV and radio providing automation for sales, traffic, accounting, programming and operations; election reporting system.

Circle (315) on Reply Card

**Datatronics (Booth 1505)**

**Products:** SP-733 time code reader; SP-425-R/G time code reader/generator; SP-465 WWVB timing receiver.

**New:** SP-722-A time code reader/generator/character generator; SP-766 rack mount SMPTE generator; SP-705 battery-operated portable SMPTE generator; SP-780 rack mount SMPTE reader; SP-710 character generator.

**see ad on page 166**
Circle (316) on Reply Card

**Datatek (Booth 1227)**

**Products:** Video and audio routing switches for small, medium and large systems.

**see ad on page 47**
Circle (317) on Reply Card

**Datatron/Video Systems Division (Booth 1205)**

**Products:** Tempo 76, a 3-VTR SMPTE/control track editing system; Datatron 2000, an 8-VTR super editor; various SMPTE code equipment including generators, readers, character inserters, jam-sync generators.

**New:** A completely new editing system targeted at users who need more capability than the Target 76 offers.

Circle (318) on Reply Card

**DB Electronics (Booth 132)**

**New:** Two-deck cartridge tape machines, mono and stereo.

Circle (319) on Reply Card

**Delta Electronics (Booth 400)**

**Products:** AMC-1 amplitude modulation Controller and APC-1 power controller; TCA RF ammeters with easy-to-read scales, temperature stability and minimized modulation effect; digital antenna monitor and analog antenna monitors; DPM digital panel meter; TCT toroidal current transformers to replace sampling loops in directional systems; RG-3 receiver generator; coaxial transfer switches; remote control equipment; operating impedance bridges and meter jacks.

**New:** Automatic modulation controller for FM operation; FM power controller.

Circle (320) on Reply Card

*Typical products marketed. New products not announced by BE press time.
IN A TEST OF ONE-INCH VIDEO TAPES, WE ACED OUT THE COMPETITION.

When we tested the top four brands under strict lab conditions, the overwhelming performance leader was Scotch 479 Master Broadcast Video Tape. In fact, we came out on top in all ten performance categories.

If that isn't reason enough to make us your choice, maybe this is. We're the only one-inch supplier that winds your tape onto a special cushioned flange reel to protect against shipping and handling damage. And we pack and ship our tape in a flame-retardant case to give you even more protection.

We're the people who pioneered the development of video tape 25 years ago. And according to the pros who know video tape best, we're still the best video tape. Give or take an inch.

See us at NAB Booth #815
DeWolfe Music Library (Booth 1618)
**Products:** Production music and S/Fx libraries for use in TV and radio promos, logos, background with full copyright protection.
Circle (321) on Reply Card

Dictaphone (Booth 201)
**Products:** See at booth.
Circle (322) on Reply Card

Digital Video System (Booth 1101)
**Products:** Digital video processors such as time base correctors, synchronizers, frame storage devices, special optical effects.
See ad on page 79
Circle (323) on Reply Card

Di-Tech (Booth 1408)
**Products:** Audio, video and pulse distribution amplifiers; audio/video routing switches; video detectors; touch-tone control system; video DA with clapper and slope equalizer.
New: Pace 1000 computer controller.
Circle (324) on Reply Card

Dielectric Communications (Booth 1507)

Dynacom International (Booth 1034)
**Products:** See at booth.
Circle (329) on Reply Card

Dynair Electronics (Booth 811)
**Products:** System 21 routing switcher; series 10 routing switcher; series 5900 video/pulse/audio distribution equipment.
New: Series 5300 precision video distribution equipment; series 1500 video equalizing and distribution equipment.
Circle (330) on Reply Card

Dynasciences (Booth 1103)
**Products:** 7400 production switchers; 7220 downstream keyer, series

Most people think heart disease happens only in the elderly.

It happens in children as well. Things like rheumatic heart disease and congenital heart defects. Each year, nearly one million Americans of all ages die of heart disease and stroke. And 20,000 of them die from childhood heart diseases.

The American Heart Association is fighting to reduce early death and disability from heart disease and stroke with research, professional and public education, and community service programs.

But more needs to be done.
You can help us save young lives by sending your dollars today to your local Heart Association, listed in your telephone directory.

Put your money where your Heart is.

American Heart Association
WE'RE FIGHTING FOR YOUR LIFE
MR-2/MR-20
1" C Format
New! Half Speed
Capability Option
Features include:
AST, allows the MR-2 to replay at any speed from still frame to normal, manual jogging, shuttle speeds for ease of editing...

Plus:
+ MTBC2 time base corrector
+ Video tape monitoring unit

At Marconi, we constantly strive to excel in bringing significant advances to the broadcast industry. That's why we introduced the MARK IX... a second generation modular camera that can be tailored to your exact requirements. The unique design is centered around two camera heads and a common CCU. The heads offer both automatic and manual features and all the options are compatible and interchangeable. With the Mark IX you are assured of the highest quality... in the studio or the smallest van.

Whether your interest is 1 inch VTR's, cameras, transmitters, or digital standard converters... call MARCONI... our experience is available to you.

Marconi Electronics, Inc.
100 Stonehurst Court  •  Northvale, NJ 07647  •  201-767-7250

Circle (93) on Reply Card
HOT New Products From Foundation Instruments

FI-1500A BROADCAST MIXER
- Compact, belt worn.
- Rugged die-cast aluminum box.
- 3 inputs.
- Selectable output level.
- 8 LED level meter.
- Phantom supply for shotgun mics.
- Low noise.
- Suggested price $95.00.

Contact: Comprehensive Video Supply Corporation
800-526-0242, 201-767-7990

1794 Courtwood Crescent

FI-1300A TIME/DATE GENERATOR
- Plugs into RF module of Sony Betamax, VO-3800, etc.
- Inserts Hr., Min., Sec., Day., Mo., Yr.
- Crystal controlled accuracy.
- Self contained rechargeable batteries.
- Rugged.

Circle (95) on Reply Card

FI-2800R VTR SEQUENCER
- Operates three VTR's.
- Video sensing.
- Internal audio/video switching to output.
- Standby video input.
- Single pass or re-cycle mode.
- May be initiated from internal real-time clock.
- Lots of other features.

Circle (96) on Reply Card

Foundation Electronic Instruments Inc.
Ottawa, Ontario K2C2B5 (613) 226-4000

*Typical products marketed. New products not announced by BE press time.
NEW! Antenna/Transmission Line Systems Catalog

Complete in every detail, total information needed to plan, specify and purchase a complete system or component, plus complete engineering data and more.

TOTAL CAPABILITY

Cablewave offers the Largest Selection of Coaxial Cable FOR ALL your system requirements . . . .

from smooth wall aluminum and corrugated copper coaxial cables in foam and air dielectric . . . to matching connectors for most standard interfaces . . . to hardware and installation accessories. All cables are jacketed for mechanical protection, and you can specify either standard or phase stabilized versions. There's a full line of field assembled matching connectors, or if you desire . . . Cablewave will provide the completed cable assembly manufactured to your specific requirements. Most of your system requirements will be available from stock . . . all are fully tested, conservatively rated and backed by our field service organization.

Whether you require a single component or a complete system, rely on the TOTAL CAPABILITY of Cablewave!

Cablewave Systems, Inc., 60 Dodge Ave., North Haven, Conn. 06473, Phone (203) 239-3311.

In Canada: LeBlanc & Royle Communications Towers Ltd., 514 Chartwell Rd., Oakville, Ontario, Canada L6J 5C5 Phone (416) 844-1242.

Circle (97) on Reply Card
eliminates the source of EMI noise.

"Extreme corrosion of steel guys and electromagnetic interference, due to arcing, were two very severe problems when we purchased WYFR."

"We installed PHILLYSTRAN on all nine broadcast antennas at Hatherly Beach, eliminating the source of EMI noise."

"We were pleasantly surprised by the ease of re-guying and the way PHILLYSTRAN reduced the labor involved to make our non-metallic guying systems competitive—on an installed-cost comparison—to conventional metal guys."

Art Thompson, Station Manager WYFR, The International Voice of Family Radio Scituate, Mass.

PHILLYSTRAN Tower Guys are
- non-conducting
- maintenance-free
- easy-to-install

Please send
- "10 reasons why your best buy for tower guys is PHILLYSTRAN"
- "PHILLYSTRAN offers the advantages of synthetic fibers...plus the strength of steel"

NAME
TITLE
COMPANY
ADDRESS
CITY
STATE ZIP

PHILADELPHIA RESINS CORP.
20 Commerce Drive
Montgomeryville, PA 18936
(215) 855-8450
Telex 84-6342

Circle (98) on Reply Card

Electro Controls (Booth 1411)
Products: Television lighting and control.
Circle (343) on Reply Card

Electro Impulse (Booth 931)
Products: Loads; attenuators; calorimeters; baluns; power meters.
Circle (344) on Reply Card

Electro & Optical Systems (Booth 1620)
Products: Color monitors, color receiver monitors, multi-standard receiver monitors, demodulators from the Barco AVS division; SMPTE/EBU time code generators and readers; portable SMPTE/EBU time code generators and readers; peak program meters; monochrome video monitors.
New: SMPTE/EBU time code machine synchronizers; vertical interval/audio track/cue track SMPTE/EBU time code generators/readers; time code calculator; vectorscope and waveform monitors.
Circle (346) on Reply Card

Emergency Alert Receivers (Booth 1807)
Products: See at booth.
Circle (350) on Reply Card

*Typical products marketed. New products not announced by BE press time.

For more information, use your reader service card.
10 to 30 MHz oscilloscopes with more performance and reliability than you ever thought possible.

The surprising leader.

It's easy to see why LEADER instruments are now specified more than ever. More performance and quality for less cost. Over 100 stocking distributors provide immediate delivery of LEADER oscilloscopes, frequency counters and function generators, plus top-quality professional audio and video instruments.

A full-range of reliable, medium bandwidth oscilloscopes.
LEADER’s oscilloscope line includes 11 models, single and dual trace versions, for bench or field use. All models offer comprehensive triggering controls, TTL compatible Z-axis modulation, front panel trace alignment control and convenient, color-keyed front panel layout. Probes are furnished with every oscilloscope and options include probe pouches, carrying cases, front panel covers and rack mounting adapters.

30 MHz delayed sweep – $1,530.
LBO-515B is a compact, precision oscilloscope at a moderate price. Using a PDA 4-inch CRT with parallax-free internal graticule, it features 5 mV sensitivity and delayed sweep for viewing and measuring complex waveforms. Also has 120 ns signal delay, trigger hold-off and x-y operation at full sensitivity.

30 MHz with signal delay –$1,100.
LBO-520 combines a 11.7 ns rise time with 5 mV sensitivity and 120 ns signal delay lines. Has single shot triggering, X10 sweep magnifier and bright, sharp PDA CRT. Triggers to 50 MHz.

20 MHz dual and single trace –$835., $610.
LBO-508A and LBO-507A give you versatility at a low cost. Rise time is 17.5 ns with 1 MΩ (35 pFd) input impedance. Automatic or external triggering, X5 sweep magnifier, 10 mV/cm sensitivity and add/subtract modes.

10 MHz with 1 mV sensitivity –$645.
LBO-514 has both vertical and horizontal X5 magnifiers. Sensitivity is from 1 mV/cm to 10 V/cm. Sweep speeds from 0.2 s/cm to 0.1 μs/cm. Auto or normal triggering, Z-axis modulation. (Single trace version, LBO-513, $495.)

20 MHz battery/ac portable –$950.
LBO-308S provides lab performance and high reliability in field service applications. Sensitivity is 2 mV with a complete set of triggering controls and 18 sweep ranges to 0.1 μs/div with X5 magnifier. Compact, lightweight with 3-inch rectangular, internal graticule CRT.
(Option 2 hour internal battery pack is recharged during ac operation, $75.00.)

Two-year warranty. Evaluation units.
A history of high reliability permits LEADER to provide a generous 2-year warranty... backed by factory service depots on the East and West Coasts. A free, trial use of LEADER instruments is available to all qualified companies.

Call toll-free (800) 645-5104 to request:
• an evaluation unit
• our 40-page catalog
• the name of your nearest “Select” distributor
• additional information

When Quality Counts
LEADER Instruments Corporation
380 Oser Avenue
Hauppauge, N.Y. 11787. (516) 231-6900
Regional Offices:
Chicago, Los Angeles, Dallas.
Enterprise Electronics (Booth 1820)
Products: Color weather radar equipment.
Circle (351) on Reply Card

Eventide Cockworks (Booths 308 & 511)
Products: BD955 broadcast delay line; RD770 Monostar mono/stereo matrix unit; HR940 Harmonizer audio special effects unit.

New: A device which turns the Apple home computer into a third-octave real-time audio spectrum analyzer.

Featuring...The BPC101 plug-in phaser card, which is interchangeable with the SDC-1 flanger card. The BPC101 uses electronic phase-shift networks to generate cancellations in the audio signal.

Circle (352) on Reply Card

Farinon Video (Booth 1303)
Products: FVMP mini portable microwave; STL/TSI microwave; 2GHz central receiver.

New: FV2.5 central receiver; FV7 central receiver.

see ad on page 123
Circle (353) on Reply Card

Faroudja Labs (Booth 1712)
Products: Comb filters for precise chroma and luminance separation for many models of Barco and Conrac monitors.

New: Record booster and playback booster-enhancer and noise reducer.

Featuring...Playback booster enhancer and noise reducer optimized for ¾-inch playback operations. Using 1 ¼-inch rack height, it provides significant luminance and chroma ringing reduction up to 6dB of chroma noise reduction and H & V enhancement.

Circle (354) on Reply Card

Fartronics (Booth 1902)
Products: See at booth.
Circle (355) on Reply Card

Fernseh Incorporated, the Video Corporation of Bell & Howell and Robert Bosch (Booth 1208)
Products: BCN 50 VTRs; FDL-60 digital telecine; BCN-100 automatic 1-inch multicassette VTR; Composer I character generator; KCK studio cameras; Mach One VTR editing system; TVS-TAS 1000 switcher; TCS-1 machine control and broadcast automation; Bosch Fernseh Broadcast monitors; TCF-3000 film chain telecine; TDF-2 noise filter.

New: TCS-1 machine control and station automation; digital VTRs; fiber optics.

Featuring...TCS-1 machine control system, which controls up to 100 VTRs/film chains and control of each VTR/film chain can be delegated to any one of eight studio control panels or machine control multiplexers.

see ad on page 221
Circle (356) on Reply Card

Fiberbilt Photo Products (Booth 1733)
Products: See at booth.
Circle (357) on Reply Card

Fidelipac (Booth 204)
Products: Audio cartridges; carts and accessory equipment; cartridge labels; wow and flutter meter; audiotape—certified for use in cartridges; on-air and recording warning lights; cartridge storage racks; cartridge splicing tape and blocks: Blank-It hand-held video and audio-tape eraser.

Featuring...the Blank-IT eraser designed to allow immediate reuse of tape without worry of previous program residue or other unwanted program material.

see ad on page 78
Circle (358) on Reply Card

Film/Video Equipment (Booth 1818)
Products: MNC-71-CP broadcast video camera; universal tripods; portable lights.

New: 25AH Schneider battery system in 12, 14, 30V; solar charger for Schneider battery systems.

Typical products marketed. New products not announced by BE press time.
Get the most from your AM signal...

The new MAP II Multiband Audio Processor combines the latest advances in audio technology for optimum modulation of your AM/AM-Stereo program. Yet it costs much less than similar systems.

**Discriminate Compression and Equalization**
Only MAP II offers you 8-band compression. Input level is held constant by a slow, gain-riding A.G.C. Each band has its own compression and equalization controls, so you can tailor your sound while maintaining a high program density. Sound remains smooth, even with considerable compression, because each compressor changes gain in response to inputs to both its own and adjacent bands.

**Inaudible Phase Optimization**
Program phase is silently "rotated"—rather than instantaneously switched—to maintain maximum positive modulation.

**Absolute Peak Control**
MAP II's unique integrated peak controller combines a hard clipper with a low-distortion peak limiter. An adjustable control loop gives you control over clipping depth which then remains constant regardless of program content. For stations with remote transmitters, the integrated peak controller can be unplugged and installed at the transmitter site.

**Convenient Operation & Maintenance**
MAP II has several features to make your audio processing convenient and precise. For precise control over frequency range, select low- and high-pass filters let you choose between three cut-off frequencies at each end. Front-panel meters monitor compression, A.G.C. gain, clipping depth and peak limiting. A "proof" mode defeats all processing at the touch of a button, leaving the signal path intact. There's even a built-in pink noise source for convenient system set-up and maintenance. Circuit boards unplug from the front and contain no "black boxes" or selected components.

Write or call today for technical and cost information on the MAP II. Your program—and your budget—will thank you.

MAP II - $1670.

Inovonics Inc.
503-B Vandell Way
Campbell, CA 95008
Telephone (408) 374-8300

See us at the NAB—Booth 214

March 1980 Broadcast Engineering 137
PRODUCTS

PROGRAM LOGGER
1977 SMPTE, Los Angeles
Extends the cost savings and convenience of your program automation system to your program log, and works with most automation systems.

DIGITAL TELEMETRY ADAPTERS
1978 NAB Las Vegas
Conversion kits for analog remote controls, offering foolproof meter readings and one man meter calibration.

TELEVISION AUDIO SYSTEM
1979 NAB, Dallas
Uncompromising fidelity, in rack-mount modules with easy-to-use audio-follow-video as a standard feature; an expandable system that can grow with your needs.

INTRODUCING
1980
An automatic transmitter logging and control system that can do things your way.

Hallikainen & Friends
101 Suburban Road
San Luis Obispo, CA 93401
(805) 541-0200
Circle (102) on Reply Card

Featuring...Schneider battery belts with sealed lead-acid batteries said to overcome the problems of other battery systems. The belts are constructed of crack-resistant Naugahyde built-in meters and circuit breakers.

Imero Fiorentino Associates
Products: Serving as production, design and/or lighting consultants for the camera demonstration exhibits of: CEI, Harris, Hitachi, IVC, Panasonic, Philips, RCA, Sony, Thompson CSF, Toshiba, Vital.

Flash Technology (Booth 1128)
Products:* High intensity tower lighting.

For-A (Booth 1826)
Products: See at booth.

Frezzolini Electronics (Booth 1608)
Products: Frezzi-Lites; Frezzi-Flex model FR-16 motion picture 16mm single/double system sound camera; chargers for Frezzi battery packs; associated equipment as manufactured for both OEM and for replacement service.

Gardner Communications (Booth 1828)
Products: GCC SR4000 and SR5000 satellite receivers; GCC low noise amplifiers; GCC channel cue—programmable switcher.

Garner Industries (Booth 1100)
Products: High-speed 1/4-inch tape reel-to-reel tape duplicator; high-speed conveyor, endless belt; tape eraser for audiotape and video cassettes.

General Electric (Booth 1104)
Products: 6kW low band and 16kW high band transmitters.

Fuji Magnetic Tape (Booth 1307)
Products: H701E—2-inch mastering/duplicating videotape; H621—1-inch professional Beridox videotape; complete line of Fuji Beridox U-matic tapes.

Fujinon Optical (Booth 1217)
Products: Full line of BCTV lenses for 1-inch and 1 1/4-inch tubes including the high resolution P14X16.5 and a R14X12.5 with built-in extenders; ENG/EFP lenses for 1/2-inch color camera including the A12X9, A14X10, A17X9, A22X12.5 for studio and low light application; complete line of ENG accessories.

New: A12X9 ERM now with 2.2X extender and 20% lighter weight than the previous model; A14X9.5 ERM now with wider angle, faster lens speed F 1.7 and also 20% lighter weight than previous models; B10X11 low-cost lens with lens speed F1.6 and B12X9 low-cost lens.

For-A (Booth 1826) (left) battery packs in less than one hour.

Fuji Magnetic Tape (Booth 1307)
Products: H701E—2-inch mastering/duplicating videotape; H621—1-inch professional Beridox videotape; complete line of Fuji Beridox U-matic tapes.

see ad on page 169
Circle (364) on Reply Card

Gardner Communications (Booth 1828)
Products: GCC SR4000 and SR5000 satellite receivers; GCC low noise amplifiers; GCC channel cue—programmable switcher.

New: GCC 12-foot and 5.6-meter satellite receiver antennas.

Circle (366) on Reply Card

Garrison Industries (Booth 1100)
Products: High-speed 1/4-inch tape reel-to-reel tape duplicator; high-speed conveyor, endless belt; tape eraser for audiotape and video cassettes.

Circle (367) on Reply Card

General Electric (Booth 1104)
Products: 6kW low band and 16kW high band transmitters.

Featuring...the 16kW high channel unit that has only two tubes, one visual and one aural. The IPA for the visual is completely solid-state with a peak power output capacity of 1000W. These amplifiers are

*Typical products marketed. New products not announced by BE press time.

Circle (102) on Reply Card

Broadcast Engineering March 1980
WHY JBL FLATTENS THE COMPETITION.

INTRODUCING THE 4313.
Flat frequency response. It means accuracy, naturalness, reality.
JBL gives it to you without the bigger box that you’d expect along with it, since the 4313 only measures about 23” by 14” x 10”.
This new compact professional monitor produces deep, distortion-free bass. And does it with a newly developed 10” driver.
Its massive magnet structure and voice coil are equivalent to most 12” or 15” speakers. Yet it delivers heavy-duty power handling and a smoother transition to the mid-range than most larger-cone speakers.
The 4313’s edge-wound voice coil midrange accurately reproduces strong, natural vocals and powerful transients.
Up top, a dome radiator provides high acoustic output with extreme clarity and wide dispersion. A large 1” voice coil gives it the ruggedness needed in professional use.
Working together, these precision-matched speakers offer superb stereo imaging, powerful sound levels and wide dynamic range.
Audition the 4313 soon. We think you’ll agree that its combination of flat response, power and moderate size flattens the competition.

Circle (103) on Reply Card
broad band and require no tuning. The transmitter is controlled by logic but a unique feature permits bypassing the logic control manually.

Circle (368) on Reply Card

Glentronix (Booth 1643)
Products: Time code generators; readers; calculators; audio patch panel; side band analyzer; ACR logic analyzer.
Circle (369) on Reply Card

Alan Gordon Enterprises (Booth 1317)
Products: Swintek wireless sound system; CSS-2 crystal sync cassette recorder; Zeppelin windscreen and shock mount system; fishpole microphone boom; Mark IV directors viewfinder; MNC-71CP camera; Elemack cricket dolly.
Circle (370) on Reply Card

Graphic Express (Booth 1908)
Products: See at booth.
Circle (371) on Reply Card

The Grass Valley Group (Booth 1210)
Products: 1600 series production switchers; 1600 series master control switchers; 400 series routing switchers; M200 broadcast automation; video processing and distribution equipment.
New: 300 series production switcher with second generation Mark II digital video effects system; 1600-1X special post-production switcher; audio E-MEM effects memory system; 3241 PAL video processing system; 3260 audio multiplex system; 440 series routing switchers; new sync generator models.
Circle (372) on Reply Card

The Great American Market (Booth 1628)
Products: The Great American Scene Machine; special effects generator; starstrobe; custom projection services.
New: Excaliber cases; RDS HMI lights.
Circle (373) on Reply Card

Gregg Laboratories (Booth 403)
Products: Broadcast audio processing products—compressors and limiters for AM/FM/TV.
Circle (374) on Reply Card

David Green Broadcast Consultants (Booth 160)
Products: Distributor of audio/video equipment, test equipment, transmitters and associated broadcast equipment supplies.
Circle (375) on Reply Card

Groton Computer (Booth 118)
Products: See at booth.
Circle (376) on Reply Card

HM Electronics (Booth 1612)
Products: Dynamic-expanded studio and remote wireless microphone systems 22E, 25E, 22EF, 25EF.

**Typical products marketed. New products not announced by BE press time.**

*See The Industry's most comprehensive range of audio consoles at NAB Booth 402*

**LPB Signature II Series audio consoles are designed and manufactured to provide superb operational capability and outstanding electronic and mechanical reliability. Mono, dual mono or stereo... 5, 8 or 10 mixer configuration. Why look elsewhere?**

LPB Inc.
28 Bacton Hill Road, Frazer, PA 19355 (215) 644-1123

Manufacturers and Distributors of Broadcast Equipment Since 1960

Model S-10 Mixer Stereo

Model S-13C 8 Mixer Stereo/Mono

Model S-20 10 Mixer Dual Stereo
O’Connor Model 150.
Exceptional fluid control for heavy television cameras.

INFINITELY VARIABLE DRAG CONTROL.
Exceptional pan and tilt drag control is made possible with the 150’s unique varying overlap fluid control system. Between the minimum and maximum levels of drag, the drag force is infinitely variable—enabling cameramen to adjust the drag while shooting without jerking the camera in any way.

EXCEPTIONAL COUNTERBALANCE.
The 150 is counter-balanced at all times, including extreme tilt positions, making operation much easier. A 1000 in-lb spring comes standard with an optional 1500 in-lb spring also available so the 150 can handle any TV camera with all the extras up to 150 lbs.

PRECISE DRAG REPEATABILITY.
Separate pan and tilt drag dial indicators are provided to aid the cameraman when precise repeatability of a motion is needed. The dials also aid in matching the tilt and pan drag for exceptionally smooth horizontal shots.

SEAL'ED SYSTEM FOR LOW MAINTENANCE.
Like all O’Connor fluid heads, the Model 150 is fully sealed off from all contaminants. Once the head is properly adjusted and balanced for your camera, it requires virtually no maintenance whatsoever.

EXCEPTIONAL QUALITY THROUGHOUT.
The 150 is built of lightweight aluminum and magnesium castings, weighing only 25 lbs. The pan and tilt locks are fully independent of the pan and tilt drag adjustments. The tilt range is ±45°.

THE EXTRAS COME STANDARD.
The Model 150 comes equipped with an O’Connor adjustable and removable platform with double handles. The 1500 in-lb counterbalance spring is optional. An exceptionally well-constructed carrying case is probably the only accessory your Model 150 will need.
New Tape Head & Pressure Roller Maintenance Kit
Makes Cleaning Easier . . . And More Efficient

Texwipe's new Audio Tape Head Cleaning Kit TX250 contains everything a broadcast maintenance engineer needs to keep heads clean — to ensure peak sound fidelity and low incidence of failure.

Specifically designed cleaning pens, one for pressure rollers, one for heads feature adjustable lint-free absorbent Clean-Wicks that can be cut to exact shape to suit the job.

Complete Kit includes:
- One 7-oz. can Audio Tape Head Cleaner.
- Two aluminum Audio Cleaning Pens, with 6" adjustable Clean-Wicks.
- Ten replacement Clean-Wicks.
- One Clean-Wick Cutter.
- One Space-Saver Rack.
- One Pressure Roller Activator.

Each TX250 kit, which costs only $27.50, contains enough material for more than 900 cleanings! Subsequent cleanings cost less than a penny a piece.

Order your Texwipe kit today and start cleaning your reel-to-reel and tape cartridge machines the professional way.

Or write for literature to Texwipe, Hillsdale, N.J. 07642
201/664-0555

Circle (106) on Reply Card

Hold the pickles!
Hold the lettuce!

Our Custom Audio Series consoles let you have unsurpassed quality & performance your way! Up to 24 inputs plus optional EQ, reverb, monitor amps, digital clocks & timers, all at surprisingly low prices!

CALL COLLECT 713-782-4592

for our unbeatable console specs, plus details on our preamps, monitors, timers & much more.

Logitek Electronic Systems, Inc. 3320 BERING DRIVE, HOUSTON, TEXAS 77057

Circle (107) on Reply Card

142 Broadcast Engineering March 1980
It's unique. It's ADM quality throughout. It's high on our "best seller" list because it solves the troublesome problem of reliable audio distribution for broadcasters. Here are a few outstanding features:

- Each DA16B is a one-input, six-output plug-in card.
- The input and each output is transformer coupled.
- Input levels up to +27 dBv.
- Output levels up to +27 dBm before clipping.
- Each of the six output amplifiers has an individual, front-accessed gain adjustment, as well as a test point.
- Each CH2OB will house up to six DA16B cards, and has a complete set of redundant power supplies with automatic changeover.
- The DA16B/CH2OB system is designed and built to meet ADM's highest quality and performance standards, and carries a five year unconditional warranty.

Contact us today for complete details about the many features the DA16B/CH2OB system offers.
displaying copy for live commercial tags and short PSAs. Also news bulletins can be typed in easily at the last minute on the terminal in the news department and displayed on the screen in the studio for live news inserts.

**Harris Video Systems Operation** (Booth 301)

**Products:** Full line of digital time base correctors.

**New:** 630 digital synchronizer; EPIC computer-assisted editing system.

Circle (380) on Reply Card

**Harrison Systems (Booth 507)**

**Products:** See at booth.

Circle (381) on Reply Card

**Karl Heitz (Booth 1807)**

**Products:** See at booth.

Circle (382) on Reply Card

**Hitachi Denshi America (Booth 1115)**

**Products:** Portable, studio, convertible color cameras; 1-inch helical VTRs (SMPTE C format); editing systems; time base correctors; color and b&w monitors; camera pickup tubes.

**New:** Computer for SK-100; production model of SK-100 camera; ENG camera; TBC for 1-inch TC-200; portable microwave systems; prism studio camera.

Circle (383) on Reply Card

**IGM (Booth 103)**

**Products:** BASIC A broadcast automation system; Instacart; Go-Cart; Information Instacart (static display); Logger.

**New:** Go-Cart II.

**Featuring...** Go-Cart II, with all new electronics, including high-speed cue, digital tone sensing and positive tray positioning.

Circle (384) on Reply Card

**Ikegami Electronics (Booth 927)**

**Products:** HK-312E and HK-357A multicore/triax studio/field production cameras with optional computer setup; HL-79A ENG camera with optional multicore and triax base stations, HL-53 hand-held field production/studio camera with optional computer setup, and ITC-240 hand-held EFP/studio camera.

**New:** HL-790A convertible self-contained ENG/studio production camera; HL-78A self-contained ENG camera and ITC-350 self-contained ENG camera with optional CCU.

**Featuring...** the ITC-350 self-contained ENG camera, which features an optional CCU operating on power supplied from the camera head, a color filter wheel, H&V enhance-

**IGM (Booth 103)**

**Products:** BASIC A broadcast automation system; Instacart; Go-Cart; Information Instacart (static display); Logger.

**New:** Go-Cart II.

**Featuring...** Go-Cart II, with all new electronics, including high-speed cue, digital tone sensing and positive tray positioning.

Circle (384) on Reply Card

**Ikegami Electronics (Booth 927)**

**Products:** HK-312E and HK-357A multicore/triax studio/field production cameras with optional computer setup; HL-79A ENG camera with optional multicore and triax base stations, HL-53 hand-held field production/studio camera with optional computer setup, and ITC-240 hand-held EFP/studio camera.

**New:** HL-790A convertible self-contained ENG/studio production camera; HL-78A self-contained ENG camera and ITC-350 self-contained ENG camera with optional CCU.

**Featuring...** the ITC-350 self-contained ENG camera, which features an optional CCU operating on power supplied from the camera head, a color filter wheel, H&V enhance-

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**TENTEL'S NEW T.U.S.H.* GAGE IS FOR YOUR U-MATIC...**

The people who brought you the TENTELOMETER®

NOW proudly present the

* TENTEL U-MATIC SPINDLE HEIGHT GAGE

The T.U.S.H. Gage is simply inserted into your U-Matic - the indicators are visible through the cassette window. No need to remove the cassette top chamber to read the indicators.

The T.U.S.H. Gage measures the critical tape reel spindle heights. It is a must to prevent tape damage due to binding. Technical as well as non-technical persons can determine if the machine needs adjustment.

The T.U.S.H. Gage comes complete with master gage, instructions, and carrying case. Price $495 complete.

"See us at Booth 1124 at N.A.B., or at the L.A. Video Show in May."

Circle (108) on Reply Card

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**Image Video (Booth 1822)**

**Products:** Routing switchers; routing switcher control panels; master control (on-air switcher) automation system.

**New:** 6010 10X1 self-contained routing switcher; microprocessor-controlled TV on-air master control switcher and automation package.

*Typical products marketed. New products not announced by BE press time.*
The world's been buying Sintronic Transmitters for 15 years.

What does the world know that you don't?

Forty-two countries throughout the world (including, increasingly, the USA) have learned that Sintronic transmitters are built to last. To operate under the most trying conditions in the most remote locations—like Antarctica, South American jungles, and the Sahara Desert. That when Sintronic transmitters do need servicing, Sintronic is there (all our original units are still on the air). And that Sintronic transmitters are available at a remarkably low cost.

The world knows this because Sintronic is owned by one of the largest American export management firms, Singer Products Co., Inc. Naturally, our initial sales efforts were concentrated overseas. But U.S. broadcasters are becoming increasingly aware of the reliability, ease of maintenance, and outstanding value of Sintronic transmitters.

And while long-lasting reliability is at all times our overriding concern—all our units are, for that reason, conservatively designed—Sintronic transmitters are by no means behind the times. They have recently been redesigned incorporating improved circuit design and modern componentry, but retaining our traditional, time proven techniques. Our current line is, essentially, all new. The Sintronic AM line offers such features as 125% positive peak modulation; high level plate modulation; automatic recycling; cutback to any two power levels; audio processing; remote control capability; and our new solid state 1 kW unit features instant start-up, frequency synthesized exciter, and automatic RF drive regulation. The solid state technology of the exciter, RF driver, and audio preamplifier and driver of this unit has been incorporated into all our units.

Important features of our FM line include maintenance-free, zero-bias, grounded-grid power amplifiers that require no neutralization; a 12-pulse, 3-phase power supply that utilizes fewer failure-prone components and eliminates the need for screen-bias and grid-bias power supplies; overload protection; automatic recycling; automatic power output control; and visual monitoring of critical circuits. Our 17.5 and 27.5 kW models have these protective features in the driver cabinet as well as in the power amplifier cabinet, plus cutback to the 3.5 kW driver output in the event of failure of the PA.

For complete information about any or all of our transmitters, visit us at NAB Booth 126. Or write or call Sintronic.

Circle (109) on Reply Card
Industrial Sciences (Booth 1402)
Products: ISI-500 series terminal equipment; ISI-600, 1200 and 2000 series options; ISI-902 video production switcher; ISI-1002 audio console; ISI-2031 matrix wipe generator; ISI-2065 pointer generator; ISI-1200 series video production switcher.

New: ISI-931 10-input master control switcher; ISI-3000 series broadcast closed captioning system equipment, ISI-200-3 multi-channel processing video production switcher.

Featuring...200 series Polykey video production switchers. Each unit is capable of three keys and background transition simultaneously. The units feature rotary wipes, auto transitions, 6-input RGB chroma keyer, flip-flop mixer with downstream edged keyer, master fade-to-black, pointer generator, quad split generator and preview monitor selector.

see ad on page 71
Circle (387) on Reply Card

Information Processing Systems (Booth 1802)
Products: See at booth.
Circle (388) on Reply Card

Innovative Television Equipment (Booth 1405)
Products: Camera support equipment.
Circle (389) on Reply Card

International Microwave (Booth 1633B)
Products: EJ-1013 electronic journalism unit; ICM-1013 XFM.
Circle (391) on Reply Card

International Tapetronics (Booth 303)
Products: Cartridge reproducers; recorder/reproducers; recorder/reproducer/delay units; reel-to-reel machines.

New: Series 99 audiotape cartridge machine; 1K System.
see ad on page 178
Circle (392) on Reply Card

International Video (Booth 1214)
Products: IVC-1010 VTR; IVC-9000 VTR; IVC-7000 camera series.
New: IVC 1-11; IVC 7005/7005P camera.
Circle (393) on Reply Card

JAM Creative Productions (Booth 121)
Products: Station ID jingle packages for all formats.
New: Commercial production library service.

Featuring...The Answer, new commercial production library service, includes commercial campaign concepts, production music, production effects and sound effects.
Circle (394) on Reply Card

Jatex (Booth 1724)
Products: VSEC-42T; VSEC-42TD; VDAPT-N8200 interface adaptor for use with VHS—Industrial ½-inch.
New: VSEC-62 6-digit model with random search SMPTE conversion module; VGEN IV video generator.
Featuring...the VGEN IV video generator that uses Scene-dex time code. This 4-digit code is written as audible tones on an unused sound track of the videotape. The code provides accurate, repeatable identification of every video scene.
Circle (395) on Reply Card

Jefferson Data Systems (Booth 1511)
Products: Complete sales, traffic and general accounting services for radio and television.
New: Complete in-station computer system that runs on an IBM/System 34 computer; feature film inventory system; Electronic News Processing (ENP); computerized station-rep interface.

Featuring...Electronic news processing (ENP) which provides computer automation to broadcast news operations. ENP ties into the new high-speed wire services to speed story composition with the aid of text editing, and also into character generators and teleprompters.
Circle (396) on Reply Card

Jenel Consultants and Engineers (Booth 1606)
Products: General services include: design of complete TV and radio systems; facility and plant planning.

Typical products marketed. New products not announced by BE press time.

NOW, more than ever Allied can supply your equipment needs with our new

Western Connection

In the West
Call Toll Free to our
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800-562-0062
OTHER WESTERN STATES
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Sales Call: 1-800-426-4254
Service Call: 1-800-382-6207
Chicago Area Call: 1-312-786-2094

Circle (110) on Reply Card

146 Broadcast Engineering March 1980
Microtime Introduces Intelligent Products For The 80's

Expanding on many years of digital processing experience and the successful 2525 Video Signal Synchronizer, Microtime has developed new products for the digital decade of the 80's.

These intelligent systems include

- Smart Procamps with Frame Stores
- Digital Video Effects
- Low Cost Synchronizers

The use of microprocessors, a choice of optional features that enhance capabilities, highly human engineered controls provide optimum cost performance ratios...intelligently.

See us at NAB, Las Vegas, Booth 1409.
ENG goes airborne with TEAC

TEAC Airborne Videocassette Tape Recorders (AVTR™) are designed and manufactured by TEAC specifically for rough handling and airborne use.

- 3/4" U-Matic
- Uses 28VDC directly from helicopter power
- Wide temperature range
- Radio interference protected
- Remote-Record control
- Fully tested by the USAF and used extensively in US Army helicopters

TEAC VIDEO

TEAC Corporation of America Industrial Products Division
7733 Telegraph Road
Montebello, CA 90640
(213) 726-8417

Circle (112) on Reply Card

layout and design; post-production and computer editing systems; transmitting facility design; automation systems and interfacing; process control computer systems; cable and master antenna distribution facilities; VHF, UHF and microwave communications.

New: Architectural and interior facilities design services.
Circle (397) on Reply Card

K-B Systems: (Booth 1803)
Products: Magic Slippers for tensioning uneven film reels; custom editor; power rewinders.
Circle (398) on Reply Card

Kalamusic (Booth 215)
Products: Music formats blending traditional favorites with custom recordings aimed at adult 25-49 audience.
Circle (399) on Reply Card

Kahn Communications (Hospitality Suite, Sahara)
New: Lines-plus audio system; Nonsymmetra-MOD modulation enhancement device.
Circle (400) on Reply Card

Kaman Sciences (Booth 124)
Products: Computerized business systems for AM/FM/TV necessary traffic, accounting, news retrieval, general ledger and inventory; cassette and reel-to-reel inventories; demographic avails submission; film library management and inventory; interface to automated switching.
Circle (401) on Reply Card

Kings Electronics (Booth 1026)
Products: Coxial and triaxial RF connectors; modular self normaling video patch panels and accessories.
Circle (402) on Reply Card

Kliegl Brothers (Booth 923)
Products: Key, back and fill lights; KOBOLD HMI daylight fixtures; Kliegpac 9 portable dimmers and controls; PERFORMER memory lighting control console.
New: PERFORMER II memory lighting control console; 575 K HMI fixed focus softlight.
Circle (403) on Reply Card

Knox Video Products (Booth 1030)
Products: Character generators.
Featureing...the KD 128 disc memory system that can hold 350 pages of information. It is programmable and has a single keyboard.
Circle (404) on Reply Card

L-W International (Booth 939)
Products: Athena 4000 and 5000 slo-mo freeze-frame Telecine projectors.
New: Athena 6000.
Featureing...Athenas that offer state-of-the-art digital control CMOS circuitry for complete low-voltage remote control and/or computer control.
Circle (405) on Reply Card

LPB (Booth 402)
Products: Audio consoles; 150W and 300W FM transmitters; modular studio furniture; mono and stereo consoles.
New: Citation series audio consoles, Monogram II series audio consoles, AM transmitters.
Featureing...Signature II audio consoles with output director switch, internal cue system, muting and tally relays, power transformer, modular electronics and dual-line level outputs.
Circle (406) on Reply Card

Laird Telemedia (Booth 901)
Products: Character generators; TU projectors; time/date generators; light controls; optical multiplexers.
Circle (407) on Reply Card

Landy Associates (Booth 1102)
New: Vista 80 character generator by MPB Technologies; radio station automation system for logging and billing by generic broadcast systems; extended font models for the Vista 80.
Circle (408) on Reply Card

Lee-Ray Industries (Booth 1707)
Products: See at booth.
Circle (409) on Reply Card

LeBlanc & Royle Communications Towers (Booth 1319)

Typical products marketed. New products not announced by BE press time.
The choice is yours! Two unique color developers to match the film production pace of your processing lab... Cine Color 400, for 25,000 feet—or more—of 16mm reversal film processing per week... and Cine Color 800, for shorter runs.

CINE COLOR 400, the long-distance runner, is the first two-part, all-liquid concentrate. It offers many advantages to the high volume user. Compared to conventional chemistries, it is easier to handle, reduces mixing time and requires less storage space. In addition, because of its greater strength, it only needs to be replenished at half the nominal rate (e.g., 400 milliliters of color developer for every 100 feet of 16mm film), which saves you money on chemical costs, and reduces effluents for better ecology.

CINE COLOR 800 is a three-part system with two liquid chemistries and one powder component. The developing agent is all liquid, unlike competitive systems which use a toxic powder. It is designed to give optimum economy and convenience to medium volume processors, without sacrificing film quality.

BOTH SYSTEMS are outstanding for: ■ Cleanliness—they help maintain process control while keeping equipment cleaner. ■ Stable pH—avoids major color balance shifts during processing. ■ Tight Quality Control—Hunt manufacturing provides chemically balanced products to assure more consistent film quality.

Now, regardless of how much footage you run through your tanks, it is possible to match your developer to your volume for consistent results and greater convenience and economy. Which is best for you—Cine Color 400 or Cine Color 800? Ask your Hunt Color Specialist to show you how to get the best run for your money!
**INCREDIBLE . . .**

*Natural Enhancement of Broadcast Audio*

**Master-Room XL-305T** with its acoustic chamber sound quality provides the natural type of enhancement needed in radio and television audio. The smooth, transient-free sound can add a warmth, color, and dimension that is unobtainable from other reverberation equipment. See your professional audio supplier for a demonstration of the unique XL-305T Acoustic Chamber Synthesizer.

Hear the XL-305T at the NAB, booth 406

- Totally new design approach
- Exceptionally smooth, natural reverberation
- For on-line or production use
- Superb transient signal response
- Full stereo or mono operation
- Transformer isolation
- Extensive RFI protection
- Self-contained rack mount unit

**Logitech Electronic Systems (Booth 414)**

**Product:** Custom audio series broadcast audio consoles; phono preamps, program timers; 15W and 50W stereo & mono monitor amplifiers; encoder/decoder/receiver.

**New:** Liquid crystal version of T-100 programmable timer, all solid-state stereo delay effects generator, miniature bar-graph LED VU meters, digital remote control transmitters and monitors.

**Featuring . . .** BPA-100, a low-noise, transformerless, balanced-input circuit that allows use of 5-lead professional cartridge/tonearm combination in a balanced mode with all

**Typical products marketed. New products not announced by BE press time.**
the new CD-480-4
another smart switcher from CDL

compact, competitive and powerful

The power of the CD-480-4 plus its compact size and price make it the professional choice for medium size studios, post production suites and mobile vans.

*Powerful:* includes the unique CD-480 SFX amplifier that permits you to control 4 video signals, in any combination, with one fader handle, plus a wide range of powerful CD-480 modular options.

*Compact:* 24" wide panel and 21" of rack electronics.

*Price:* Also compact and competitive... ask us.

The CD-480 gives you the competitive advantage.

Central Dynamics. 10 W. Main St., Elmsford, NY 10523, 914-592-5440

Circle (647) on Reply Card
Now the Cetec 25 kW FM broadcast transmission system is even better than before.

It’s still the same workhorse Model 625 powerplant. The same stable, zero-base, grounded-grid design. It still delivers optimum performance with no need for continuous tuning. There’s still a stand-alone, 2.5 kW backup capability, and automatic power control, and automatic overload recycling.

Now we’ve added a great new component to the 625 transmission system. The Cetec 690PLL exciter, with phase-locked loop technology and IC controllers, delivers terrific audio signals, clean and clear from any audio source. Model 625 boosts it to maximum output easily, with real power efficiency. **See it at NAB!**

Cetec Corporation, 1110 Mark Avenue, Carpinteria, CA 93013 (805) 684-7686

Circle (116) on Reply Card

Circle (418) on Reply Card

Circle (419) on Reply Card

Circle (420) on Reply Card

Circle (421) on Reply Card

Circle (422) on Reply Card

Circle (423) on Reply Card

Typical products marketed. New products not announced by BE press time.
INTRODUCING SUCOSCAN

the “smart” remote control system that thinks and acts for itself.

SUCOSCAN stands for supervisory control and scan. It’s the newest and most sophisticated in TFT’s arsenal of systems that use computer intelligence to boost efficiency and cut costs. Expandable to 64 sites and 96 channels per site, SUCOSCAN can put over 6,000 channels under your control.

The need for a smart system.

Today, it’s becoming increasingly critical to maintain the broadcast signal within the competitive environment. Typical remote control systems do not monitor every channel or warn you of impending problems. All this changes when you have a microprocessor-controlled system like SUCOSCAN. Here is just some of what you get.

— Comprehensive information at your fingertips. This means full display of time, site, channel, data, units and self-test status lights. This makes for ease of operation, even without a CRT or teletype.

— Self-calibration. SUCOSCAN’s advanced software program eliminates the need to recalibrate periodically. It also prevents drift.

— Fast Scan. Quick alarm identification is never more than four seconds away.

— Multiple simultaneous logging. SUCOSCAN can operate two teleypes and one CRT at the studio and one teletype per remote site—all simultaneously!

— Computational ability. Automatic calculation of power, efficiency, and power-to-linear conversion eliminates the need for extra hardware and allows for more reliable facilities operation.

— Failing channel identification. SUCOSCAN is programmed to quickly identify failing channels to permit almost immediate analysis. In the event of a power failure a battery back-up preserves the program for several hours.

— ATS operation provides power and modulation control automatically. SUCOSCAN’s studio and remote computers can be made to interact with each other without ever involving an operator.

Lower operating costs.

You’ll reduce downtime with SUCOSCAN because it’s easier to spot trends and take corrective action before the signal is lost. An alarm can be pinpointed in seconds.

Furthermore, as FCC requirements change, SUCOSCAN’s computer operation will allow unskilled personnel to take over monitoring duties, freeing studio personnel for more productive work.

Don’t get caught with yesterday’s technology. Smart systems are the wave of the future. You owe it to yourself to look at the most advanced system available today—SUCOSCAN.

Call or write for full information.

TIME & FREQUENCY TECHNOLOGY INC.
3090 OAKMEAD VILLAGE DR., SANTA CLARA, CA. 95051
(408) 727-7272 TWX 910-338-0584

Circle (117) on Reply Card
Marconi Electronics (Booth 817)

**Products**: Fully automatic studio and portable cameras; 1-inch C-format videotape recorders; film chain; DICE standards converter.

**Featuring**: the B3564 standards converter, designed to convert 525-line 60-field NTSC signals to 625-line 50-field PAL signals, or vice-versa. The changeover is achieved by a single switch. A SECAM output and/or PAL outputs can be provided.

*see ads on pages 97, 131*

Circle (424) on Reply Card

Matrix Systems (Booth 174)

**Products**: See at booth.

Circle (427) on Reply Card

Matthews Studio Equipment (Booth 1910)

**Products**: Location/stage equipment consisting of stands, dollies, dolly track, overhead light diffusion sets, flags and scrims, mounting equipment and accessories. New products for the video market: the video Mini-Jib camera arm for all camera types and the Crank-O-Vator portable light stand for HMI, quartz, incandescent and arc lights.

Circle (428) on Reply Card

Maxell (Booth 1827)

**Products**: 1/4-inch U-Matic videocassette tapes; VHS and Betamax videocassette tape and audio recording tape.

*see ad on page 115*

Circle (429) on Reply Card

McCurdy Radio Industries (Booth 308)

**Products**: Audio consoles; intercoms; audio distribution assemblies; telephone frequency extenders; turntables; processing EQ.

*see ad on Inside back cover*

Circle (430) on Reply Card

McInnis Skinner & Associates (Booth 1718)

**Products**: See at booth.

Circle (431) on Reply Card

MCI (Booth 104)

**Products**: JH-600 series console; JH-110A-8-HP tape reproducer recorder; JH-45 auto lock.

Quality is the only language we speak!

No matter where you are, performance is the one standard common to professional broadcasters the world over. Ampro/Scully has established a reputation for providing a complete line of professional studio equipment with service and sales outlets locally available.


For detailed product literature, write to us on your letterhead.

Dealer inquiries invited.
25 KW
Air Cooled
Calorimeter-Load

"See us at NAB
Convention Booth #302"

FEATURES:
- Precise Power Measurement
- Exceeds FCC Specifications
- Mobile
- For Multi Use
- Interlock
- Protected
- Nonmeasurable VSWR
- Freq. Range
  D.C.-1.8 GHz

Featuring...the JH-110B series of tape recorder/reproducers featuring transformerless electronics. Mono to 8-track versions are available, all featuring 3-speed (except the 110BC) fully dc servo-controlled transports with variable speed capability and MVC (manual velocity control). Circle (432) on Reply Card

McMartin Industries (Booth 300)
Products: AM/FM transmitters; audio consoles; remote pickup equipment; FM monitors; SCA transmitting and receiving equipment and audio products.
New: FM antennas; stereo audio processor for AM or FM; stereo generators; SCA generator; monaural audio processor for AM, FM, TV or SCA; high-speed tape erasers; TT-12C turntable.
Featuring...three antenna models, MLCP low-power series, MHCP high-power series and the MSHCP superpower series. The MSHCP carries a power rating of 30kW per bay and a total antenna rating of 80kW. Circle (433) on Reply Card

Microprobe Electronics (Booth 408)
Products: Log 2 and Log 4 automation systems and the 100B programmer.
New: The 100B-MP microprocessor-controlled programmer.
Circle (434) on Reply Card

Merlin Engineering Works (Booth 1221)
Products: Refurbished quad VTRs and accessories and refurbishing services.
New: Analogue drop out compensator and a low-cost VTR.
Circle (435) on Reply Card

MICMIX Audio Products (Booth 406)
Products: Reverberation systems.
New: The Master Room XL-305 acoustic chamber synthesizer.

Featuring...the Master Room XL-305 which features transformer isolation, RFI protection and transient signal response.

Circle (438) on Reply Card

Micro Communications (Booth 1009)
Products: Coax switches, diplexers and circular polarized antennas.
New: UNF waveguide switches, motorized SPDT switches, motorized transfer switches and motorized waveguide patch panels.
Circle (437) on Reply Card

Micro Consultants/Quantel (Booth 1207)
Products: Digital effects; frame-store synchronizers/noise reducer; digital standards converter; digital still store library for 700 slides.
New: DPE 5000 plus multiple inputs digital production system; DLS 6000 digital library system for still storage of pictures up to 700 frames with additional capacity available with multiple disc drives.
Circle (439) on Reply Card

Micro Control Associates (Booth 310)
Products: Aural studio-transmitter links; automatic transmitter and receiver switches; sub-carrier generator and sub-carrier receiver; radio and wireline remote control systems, digital and analog.
New: The PTS-10CH Hetrodyne system not yet in production.
Circle (439) on Reply Card

Microdyne (Booth 172)
Products: Frequency synthesized receivers.
New: 1100-FFC[X1](S) frequency synthesized receiver and the PR 23(3) 7 meter antenna.
Featuring...the 1100-FFC[X1] (S) that can be manually tuned without the use of crystals through 24 channels. Other features include dual video outputs and a threshold at 8.0dB C/N.
Circle (440) on Reply Card

Typical products marketed. New products not announced by BE press time.
No matter how complicated your studio operation is, we can unsnarl your signals and send them on their way; with one of our nine off-the-shelf Switcher series.

Our microprocessor-based routing and machine control systems can satisfy your most complex requirements including automation. The variety of controls available plus single co-ax control cables is unequalled in the video industry.

And to minimize system downtime we've designed our Series 20X and 40X Switchers for optimum reliability and capability. And you can replace a channel module without shutting down the entire system.

For audio use, our solid-state Series AX Switchers make the old fashioned patch panel a thing of the past.

All 3M Routing Switchers can be built to nearly any input/output capability, with vertical interval switching and can be operated by many types of controls.

Studio operation is getting more complex every day. You can't fight it, so why not switch? Switch to 3M Routing Systems.

Circle the reader service card number at the back of the book for more information or call (612) 736-1032 for system design assistance.

3M Video Systems. Watch us in action.

Video Products Mincom Division/3M
223-5E, 3M Center
St. Paul, MN 55101
SUPERB

SIGNAL TO NOISE 96dB relative 12mv at 1kHz
THD 0.01% RIAA + .25dB CHANNEL SEPARATION 90dB
MAXIMUM INPUT 350mv MAXIMUM OUTPUT + 27dBm

WIOQ-Philadelphia considered Audio-Metrics® phono preamps because of their outstanding specifications. They bought them for their sound. In their words, "they sparkle."

Helen Leicht - midday personality on WIOQ - Philadelphia: an Outlet Broadcast Station.

Micro-Trak (Booth 508)

Products: L Series and S Series furniture, phono preamplifiers, distribution amplifiers, audio consoles and audio monitors.

New: Direct-drive turntables, M Series furniture and audio consoles for sports remotes.

Featuring...the USA-1 turntable,

which features direct-drive motor and all-metal housing.

Circle (441) on Reply Card

Microwave Associates Communications (Booth 515)

Products: ENG microwave systems [2-, 2.5-, 7- and 13GHz], helicopter ENG systems, studio-to-transmitter field links, intercity point-to-point microwave systems, antenna systems, satellite down link and distribution systems.

New: Portable products for the 2-, 2.5-, 7- and 13GHz broadcast microwave bands, and new satellite transmit and receive earth stations.

Featuring...the USA-1 built to stand up to broadcast station environment. The unit features a direct drive motor, and new forming methods in an all-metal housing.

Circle (442) on Reply Card

Microtime (Booth 1409)

Products: Time base correctors; image processors; automatic video source control system; digital signal processing system.

see ad on page 147

Circle (443) on Reply Card

Modular Devices (Booth 1735)

Products: See at booth.

see ad on page 222

Circle (444) on Reply Card

Mole-Richardson (Booth 1008)

Products: Portable and studio lights, lighting controls and accessories.

Circle (445) on Reply Card

The Money Machine (Booth 314)

Products: Sales/production library services.

Circle (446) on Reply Card

*NAB Product Directory listings start on page 62.

*Use Broadcast Engineering reader service cards to receive more information on products mentioned.
Another Harris First....
FM-25K—25,000 Watt, One-Tube—High Power FM Transmitter.

Introduced at the 1979 NAB show, Harris technology has combined advances in both tube and solid-state designs, bringing to the broadcaster the new FM-25K, 25 kilowatt transmitter, a major step forward in high-powered FM transmitters.

The FM-25K reflects the Harris design philosophy of delivering RF power efficiently, without degrading exciter performance. Dependable solid-state control logic, broadband solid-state IPA, single tube design, and the world’s most advanced FM exciter, the MS-15, combine to provide the highest performance available.

Simple operation is another plus with five wideband FM solid-state IPA modules combined to produce 350 watts of drive power, with plenty of reserve, providing back-up capability for improved reliability and reducing overall transmitter tuning requirements.

In answer to rising energy costs, the new FM-25K, 25 kilowatt FM transmitter requires less power which means low operating costs and longer component life. Its compact size, built-in protection circuits, status lights, automatic power control, and simple remote control interface make the FM-25K the best buy for broadcasters.

Let us tell you more, contact Harris Corporation, Broadcast Products Division, P.O. Box 4290, Quincy, IL 62301. Visit the Harris TV and radio equipment display at the 1980 NAB, Las Vegas.
Circle (447) on Reply Card

Moseley Associates (Booth 505)
Products: Microprocessor remote control system with automatic logger option; digital control system with computer option; digital remote system; telecontrol system; subcarrier main frame; aural studio-transmitter links; automatic transfer panels; isocoupler; stereo generator; SCA generator; FM limiter; aural remote pickup link and earth station remote control.
New: AM limiter, audio gain rider, telemetry return link, telecontrol system and RF power amplifier.
see ad on page 176
Circle (448) on Reply Card

Motorola Communications (Booth 318)
Products: Mobile and base 2-way radios; remote pickup and loud-mobile communications systems.
Circle (449) on Reply Card

Musicworks (Booth 323)
Products: Alive country format;
casual country format; Country '80.
New: Grass roots gold; PAL pop adult lifestyle.
Circle (450) on Reply Card

NEC America (Booth 1301)
Products: Frame switcher; VTRs; routing switchers; production switchers; time base correctors; color cameras; RF equipment; TV and radio transmitters.
see ad on inside front cover
Circle (451) on Reply Card

N. T. I. America (Booth 937)
Products: Signal generators.
Circle (452) on Reply Card

Nady Systems (Booth 1839)
Products: Cordless wireless mic transmission systems; cordless wireless music instrument transmission systems; VHF wireless mic and music instrument transmission systems.
New: Cordless black hand-held mic transmitters.
Featuring...full line of cordless microphone systems.
Circle (453) on Reply Card

Nagra Magnetics Recorders (Booth 510)
Products: Receivers; recorders; weather radar systems.
New: Logging recorders; meteorological chart recorders.
see ad on page 68
Circle (454) on Reply Card

Network Production Music Library (Booth 1615)
Products: Services include source of contemporary music adaptable to commercials, feature films, industrial and educational applications and various multimedia productions. The music library is available on record and tape with each full-version

IF IT'S FROM RUSSCO, IT'S A SOUND INVESTMENT.

RUSSCO is broadcast equipment designed by professional broadcast engineers...Built Rugged, built to work and save downtime. That's Good Investment. When you look over our quick-starting Varispeed turntable and our performance boosting stereo and mono audio mixers, you begin to understand RUSSCO Quality. RUSSCO phono pre-amps, power and distribution amplifiers are the finest state-of-the-art. You'll look good when you buy RUSSCO, and the money you save will Sound Good going into the bank!

Call Barbara Gaudin for Catalog sheets with our great specs.

RUSSCO ELECTRONICS INC. 5690 E. Shields Ave., Fresno Calif. 93727 * Phone (209) 291-5591

DISCO 421 MIXER
STUDIO/MASTER 505 MIXER
MULTI-MATE DI T. AMP.
Call Barbara Gaudin for Catalog sheets with our great specs.

You can Rely on RUSSCO
MEET THE OLYMPIC CHAMPIONS

What does it take to be a champion?
To face the greatest challenges devised by man and come out number one, among the finest competition anywhere. That truly calls for unprecedented abilities.

Perhaps that explains why over 50 Canon lenses were chosen to cover the 1980 Olympic Games. Faster, sharper lenses with a wide variety of zoom ratios. Lenses with superior optical characteristics. Boasting lighter weight, smaller size, far more ruggedness, reliability and flexibility.

Little wonder Canon lenses are superior for every application. Even the latest microprocessor cameras, thanks to our built-in high-performance diascopic with unique illuminating system. Which provides a whole new standard of camera set-up accuracy and picture quality.

Of course, setting new precedents is nothing new for Canon. For years, we've been the number-one choice to cover sports, news, documentaries, specials and more.

Why not put us on your team?

Canon
theme in a 59- and 29-second broadcast length.

Newman/Lustig & Associates (Booth 1837)
Products: See at booth.
Circle (456) on Reply Card

New York Times Information Search Services (Booth 1831)
Products: See special data base search service at booth.
Circle (457) on Reply Card

Nortronics (Booth 401)
Products: Complete line of replacement magnetic heads for real-to-reel cartridge and cassette recorders. Duracore heads provide 10 times normal head life. Also Recorder Care products including head degaussers, bulk tape erasers, head cleaners, 7 splicing blocks to be shown.
Circle (458) on Reply Card

Nurad (Booth 1400)
Products: Quad receive antenna subsystem; MC 3 digital remote control system; Goldenrod series of transmit antennas, other circularly polarized antennas and turnkey installation capability.
New: Supertrack semi-automatic tracking system for airborne ENG/EJ operations; Auto-transmit airborne transmit system; 70PA5 7GHz power amplifier; circularly polarized TV broadcast antenna; Superquad II receive antenna subsystem.
Circle (459) on Reply Card

Nytone Electronics (Booth 1702)
Products: TSC-1 sequential flying spot scanner systems; TSC-2 random access flying spot scanner systems; TSC-3 fade between slides random access flying spot scanner systems.
Circle (33) on Reply Card

Oak Communications (Booth 1517)
Products: Subscription TV systems and services.
Circle (460) on Reply Card

O'Connor Engineering (Booth 1122)
Products: Camera support equipment; fluid pan and tilt camera heads; tripods and accessories.
see ad on page 141
Circle (461) on Reply Card

Orban Associates (Booth 411)
Products: Optimod-AM processors; Optimod-AM transmitter equalizers.
Featuring...Optimod-AM processors that guarantee uniform audio quality and definition on typical AM radios.
see ad on page 36
Circle (466) on Reply Card

Orrox/CMX Systems (Booth 1209)
Products: Videotape editors.
New: Line of small and flexible editing systems for broadcast and industrial post-production.
Circle (467) on Reply Card

Otari (Booth 503)
Products: Professional tape recorders; high-speed tape duplicators.
Featuring...the MX-5050-B professional tape recorder with overall S/N:66dB unweighted at 520 nwb/m (30 Hz to 18kHz audio filter. The unit has three speeds; dc servo ±7%, ¼ track reproduce and many other benefits.
Circle (468) on Reply Card

Oktel (Booth 1715)
Products: Direct color broadcast slow motion and slide file disc recorders.
see ads on pages 86, 88, 90
Circle (462) on Reply Card

Olesen (Booth 819)
Products: See at booth.
Circle (463) on Reply Card

Optek (Booth 1725)
Products: Automatic bulk tape degaussers for videotape and audiotape; duplex wireless PL systems; visual transmitter demodulators.

The TW Intercom System: an innovative new intercom system for teleproduction communications in the studio and field. With Super System Phase III, we've incorporated a number of advances which mark a significant increase in product versatility.
Our new design features the portability of 12 volt battery power and convenience of dry-line operation. The system can be arranged with up to 50 various user stations on line, and may be coupled to existing communications lines with one of our active interlace devices.
Phase III offers impressive capabilities like powerful headphone amplification, two (or more) channel operation, microphone level limiting, and stable sidetone level. The new units are handsomely packaged and completely field serviceable.
For additional information, contact RTS Systems, Inc.

Circle (128) on Reply Card

THE SUPER SYSTEM

1100 West Chestnut Street  Burbank, California 91501  213/843-7022 Telex 194855

*Typical products marketed. New products not announced by BE press time.

162 Broadcast Engineering March 1980
Second Generation

Tini "Q-G" — The New Switchcraft Connector That Has Less Build, Less Weight! And Low Cost! It's designed for today's miniaturized lavaliere microphones and instrumentation. Disconnect is quick and easy!

Take it apart. See Tini "Q-G" quality. Silver-plated pins and contacts for starters. "Non-scoping" plugs and receptacles have recessed pins to protect against accidental damage. They're keyed for proper mating. Tini "Q-G" reflects the proven quality of Switchcraft "Q-G" and "QGP" professional audio connectors.

Choose either three, four, or five pin/contact styles in both cord plugs and receptacles. The cord plug diameter measures a mere .13"...accepts cables up to .115" dia. with flex relief bushing .176" clew without bushing.

Tini "Q-G" receptacles are available with PC terminations and a choice of seven ferrule or crease panel escutcheons for quick, easy certification. The rich metal cord plug housing has a nickel finish that minimizes glare and lighting "hot spots."

Compare. You'll easily see why Tini "Q-G" gives you more. But then it's from Switchcraft...a leader for decades in audio connection design.

Call Ron Larson at 312-732-2700 for full details and Catalog No. NPB-341.

SWITCHCRAFT

A Raytheon Company

556 N. Ellington Avenue, Chicago, Illinois 60636
312-732-2700

Circle (127) on Reply Card
PACE (Booth 1028)
Products: See at booth.
Circle (469) on Reply Card

Pacific Recorders and Engineering
(Booth 511)
Products: Audio control consoles; digital stopwatches; digital time-of-day clock and custom cabinetry.
New: Broadcast cart recorder/players; routing switchers; distribution system and distribution amplifier.
Circle (470) on Reply Card

Packaged Lighting Systems (Booth 1621)
Products: Quartz Tele-packs (studio TV packages); Stage-Master dimming; electrified power and rigging track; Travelier (portable TV lighting kits); quartz cyc strips; modular strip-lights; quartz follow spots (60-to 350-foot throws); light trees and telescopic power bridge; remote electronic dimming systems; minaturized quartz photo floods; special effects controls.
New: Electrical raceway.
Circle (471) on Reply Card

Panasonic, Professional Audio Division (Booth 600)
New: Professional turntables; tone-arms; tonearm systems; consoles; speakers and a direct-drive lathe.
see ad on page 173
Circle (472) on Reply Card

Panasonic, Video Systems Division
(Booth 1521)
Products: 1/2-inch VHS players/recorders; portable and studio cameras (b&w and color); generators; b&w and color monitors and microphones.
New: 34-inch editing system; b&w monitors and portable color cameras.
see ad on page 33
Circle (473) on Reply Card

Packaged Lighting Systems (Booth 1806)
Products: Seamless background curtains and lighting control equipment.
Circle (474) on Reply Card

Penn-Beth Marketing (Booth 426)
Products: See at booth.
Circle (475) on Reply Card

Perrott Engineering Labs (Booth 1023)
Products: Silver zinc, nickel cadmium and lead acid battery packs for ENG cameras; VTRs and portable lighting systems; communication batteries for radios; and the Perrott minicharger for battery packs.
New: A life-extending system for silver zinc batteries and a diagnostic and charging system for nickel cadmium batteries.
Circle (476) on Reply Card

Phelps Dodge Communications
(Booth 112)
Products: Transmission line; FM antennas and associated items.
see ad on pages 58, 59
Circle (477) on Reply Card

Philips Broadcast Equipment (Booth 807)
Products: LDK-14 portable camera for ENG, EFP and studio; LDK-25 multi-conductor studio and field camera; LDK-5 triaxial-cable studio and field camera; LDK-15L portable production color camera; video 80 convertible cameras for ENG, EFP studio and production systems; 1-inch video recorders; UHF/VHF broadcast television transmitters; digital noise reducer; television audio post production tape synchronizer; test and measuring equipment; modulators; demodulators; VITS analyzer and generator; waveform monitor and vectorscope.
New: LDK-14 with triax adapter; Triax repeater for LDK-5; expanded Video 80 line; LDM-3001 fully automatic digital noise reducer; Adams-Smith model 605 tape synchronizer.
see ad on page 195
Circle (478) on Reply Card

Porta-Pattern, Telecommunications
(Booth 1410)
Products: Test charts; chart systems for studio; ENG and EFP applications; test slides; films; spherical transparency illuminator and 8x10 transparencies.
New: 1”x3” ultra-high resolution slide for alignment of video microscope systems; combination reflector/white color balance unit for ENG and EFP use.

Featuring...the model 018-10 video
*Typical products marketed. New products not announced by BE press time.
IF YOU'RE IN VIDEO PRODUCTION OR RADIO SYNDICATION, SONY'S NEW PCM 100 IS THE MOST IMPORTANT REASON FOR GOING TO THE NAB CONVENTION.

To state it bluntly, Digital Audio is the current state of the art in perfect sound reproduction and therefore the future of your business as well.

Which means you can't afford to miss what Sony has to say about their newest Digital Audio product, the PCM 100.

And the person who'll be saying it is Sony's expert, Roger Pryor. He's at the Digital Audio section of Sony NAB booth 1211.
microscope alignment slide which
provides three standard video test
patterns of a size that will allow full
camera alignment without disturbing
the mechanical or optical alignment
of the camera to the microscope.
Circle (479) on Reply Card

Potomac Instruments (Booth 107)

Products: Antenna monitoring equip-
ment; AM field meters; VHF FM/TV
field strength meter; stereo audio
generator and gain set; THD analy-
zer; IMD analyzer; wow and flutter
meter; stereo phase meter; frequency
synthesizer/coherent detector; brass
and stainless steel jack panels; plugs
and patch cords.
New: AM mono/stereo monitor re-
ceiver; automatic modulation and
power controller; directional anten-
na processor; automatic transmis-
sion system.
Featuring...the ATS-11 automatic
transmission system eliminates op-
erating logs, accommodates antenna
arrays of up to 12 towers with three
separate directional patterns and/or
power levels and features built-in
self-test, failsafe circuits and data
verification software.
see ad on page 196
Circle (480) on Reply Card

Procart (Booth 315)

Products: See at booth.
Circle (482) on Reply Card

Protech Audio (Booth 221)

Products: Broadcast consoles; PC
card system; equalizers; compress-
ors; power/monitor amps; power
supplies and accessories.
New: Audio distribution amp; pri-
vate line interphone/intercom; con-
ductive plastic faders and custom
broadcast master control console.
Featuring...the 3000 series broad-
cast consoles which feature 5-, 8-
or 10-channels, mono or stereo; Integra
3 plug-in PC cards throughout; multi-
ple input preselect switching, and 2-way
remote line inputs.
Circle (483) on Reply Card

QEI (Booth 417)

Products:* ATS exciters; stereo
generators; FM, stereo monitors; SCA
monitor.
Circle (484) on Reply Card

QSI Systems (Booth 1603)

Products: Time date generator; aud-
io video logger; video distributor
amplifier; color bar generator split
field.
New: Video countdown generator;
QSI valid system; color bar genera-
tor split field, video source identifi-
cation with voice follow-through.

Featuring...QSI CB-8000 color bar
identifier, a color bar generator
combined with a character genera-
tor and audio signal source, is
designed to originate an identified
TV source.
Circle (485) on Reply Card

Q-TV Telesync (Booth 1005)

Products: Video prompter system;
console transport; conveyor trans-
port; prompter monitor readouts.
New: Micro monitor prompter sys-
tem.
Circle (486) on Reply Card

Quick Set (Booth 1012)

Products:* Camera and instrument
hardware; tripods; pedestals; cam
and fluid head for remote and
studio production. All ENG/EFP
support gear. Also remote controlled
pan/tilt gear for antenna and micro-
wave dish positioning.
Circle (487) on Reply Card

RCA Commercial Communications
(Booth 700)

Products:* Color TV equipment,
cameras, film systems; videotape
recorders; film and tape cartridge
machines; control; switching and
effects equipment; UHF and VHF TV
transmitters; transmission line and
antennas; audio equipment; radio
transmitters; antennas; station auto-
mation equipment; photophone
equipment; TV mobile equipment.
see ad on page 83
Circle (488) on Reply Card

*R typical products marketed. New products not
announced by BE press time.
"Our new 'Tetron' UHF Transmitter series combines peak performance with 3 down-to-earth advantages."

1. Low initial cost
2. Lower operating cost
3. No aural klystron replacement cost

Townsend's engineering group has developed the first UHF transmitter line which combines the high performance of klystrons for visual power, plus the practical use of economical tetrodes for aural amplification. There's no compromise in performance, reliability, or effect on MTBF. In addition to low operational maintenance, there's an approximate 5 percent saving in the cost of operating power.

These results are being proved today in the world's tallest TV tower. Perhaps our hardware and know-how can help you, too.
RCA Electro Optics and Devices (Booth 700)

**Products:** Power tubes for TV and FM; camera tubes for TV broadcast. Saticons, Vistacons, Vistalites, Vidicons.

**New:** Improved Saticon tubes.
Circle (489) on Reply Card

RCA American Communications (Booth 700)

**Products:** Domestic satellite communications services for the US including voice, data, video and related services.
Circle (490) on Reply Card

RF Technology (Booth 1624)

**Products:** 2 and 7GHz microwave systems; 2GHz helicopter package; 15W power amplifier; 950MHz diversity wireless microphone.

**New:** 7GHz microwave system.
Circle (491) on Reply Card

RKO Tape (Booth 150)

**Products:** Complete line of RKO tape: custom label, standard label, unlabeled blank audiocassettes.

Circle (492) on Reply Card

R-Columbia Products Company (Booth 1703)

**Products:** Headphones/microphones, headphone intercom systems.

**New:** Intercom headphone/microphone; 2-way intercom on a single wire; wireless intercom headphone.
Featuring...FM wireless intercom headphone for 2-way intercommunication without wires.
Circle (493) on Reply Card

Radio Advertising Bureau (Booth 123)

**Products:** See at booth.
Circle (494) on Reply Card

Ramko Research (Booth 110)

**Products:** Mono and stereo audio mixing consoles; audio distribution amps; portable mixing consoles; solid-state meters; audio router; turntable preamps; mic/line amps; equalized line amps; monitor amps; turntables; reel-to-reel recorders.

**New:** PhaseMaster stereo cart/cassette recording/duplicating system; PhaseMaster mono and stereo cart and cassette playback units; record units.
Featuring...audio router/amplifier with front panel lighted status displays and lighted remote controls, and each card has dual outputs for simul-feeds and/or stereo operation

*Typical products marketed. New products not announced by BE press time.*
Fuji. When your job depends on it.

Video. You use it to make a point. And a living.
That's why you need Fuji.
Because for networks, independent producers, audiovisual experts and other professionals who depend on us, near-perfect is never good enough.
Whatever the format—2” quad, 1” 3/4” U-matic® or 1/2” VHS or Beta cassettes—Fuji gives you the performance you need to look your best.
That's how we built our reputation for richer, more lifelike color. Clearer, sharper, crisper pictures. Superior consistency and durability. Plus freedom from dropouts, to protect your machines...as well as your reputation.
So, no matter what the job, get the tape that gets the applause. By making you look as good on the hundred-thirty-first playback as you do on the first.
Fuji. The professional tape professionals depend upon.

FUJI TAPE
One brand fits all. Better.

Magnetic Tape Division, Fuji Photo Film U.S.A., Inc.
350 Fifth Avenue, New York, New York 10001 (212) 736-3335
DO YOU THINK YOU COULD SELL A SECOND-RATE WIRELESS MICROPHONE SYSTEM TO THIS MAN?

He's Julius Barnathan, President of Broadcast Operations & Engineering at ABC. And some say he eats electronics salesmen for lunch.

So when he purchased a Sony wireless system for his network's most prestigious event, the 1980 Winter Olympics, you can bet it was second to none.

It had better be.

Mr. Barnathan doesn't like to be disappointed.

SONY
and each may be programmed for mono or stereo or a combination.

S. W. Rasmussen (Booth 424)
Products: See at booth.

Re: DB Company (Booth 1020)
Products:* VTR recording heads.

Recortec (Booth 1200)
Products: Videocassette recorders; videotape timer; videocassette evaluators; videotape addressor.
New: High-band U-format videocassette recorder.

Research Technologies (Booth 1112)
Products: Editing systems; data-film computerized editing system.
New: Self-drive previewer; Quik-Trac speech processor.

Richmond Sound Design (Booth 1027)
Products: Portable broadcast mixing system.
New: Complete line of remote control modular mixing systems and filters with complimentary distribution amplifiers and custom frequency graphic equalizer systems.

Robert Bosch
Products: ARI (Automatic Road Information) alerting system.
Featuring...the ARI alerting system that allows the FM broadcast station to automatically activate circuitry in home and car receivers with the intent of providing road/traffic/emergency information.

Rockwell International (Booth 100)
Products: AM and FM transmitters; exciters; audio consoles; antennas; FM stereo generators.
New: AM transmitter (1kW).

Rohde & Schwartz (Booth 1110)
Products: Precision color studio monitors; multi-std chroma decoders; RF modulators; precision TV demodulators; FM transmitters; FM stereo test generators and decoders; precision video and RF test instruments; monitoring studio loudspeakers.
New: Line of precision color TV studio monitors.

Rosco Laboratories (Booth 1024)
Products: Light control media system.
New: A full range of rear projection screen materials in gray, black, light transparent and twin white.

Ross Video (Booth 1721)
Products:* Video production switchers.

Rupert Neve (Booth 1203)
Products: Small mixers.
New: DL TV sound post-production systems; TV sound production console.

Featuring...sound production systems.

Rusco Electronics Manufacturing (Booth 209)
Products: Series of consoles; rack-

*Typical products marketed. New products not announced by BE press time.
How to get as much switcher as you need without getting switched off by the price.

Switch to Panasonic. Because Panasonic gives you your choice of four versatile switchers' special effects generators (SEG's). So, depending on the size of your studio and your budget, you only have to buy as much switcher as you need.

For broadcast studios and production control centers, there's the AS Series The AS-6000, with seven program inputs, 14 wipe patterns and a fully adjustable colorizer. Lets you add color to your supers or fade to a solid color. And it has many other features that you have to see to believe, especially at such a low price—only $6,000!

You have to see the AS-6100 to believe it. It's the most advanced Panasonic SEG. It features 10 program inputs, two external key inputs, two downstream key inputs, and three auxiliary inputs for film chains and VTR's, 17 inputs in all. Plus a "spotlight," downstream mixing for up to three cameras, and a fully adjustable colorizer. Yet the price is only $7,500.

For creative color production in smaller studios, the

Panasonic WJ-4600A at $2,995" is an excellent choice. And for more versatile special effects, the WJ-5500A at $3,950" is even better. Both units offer important features:

An internal EIA RS-170A sync generator with genlock, color bar generator and vertical interval switching. Plus internal and external keying. And back burst for fades to black.

The WJ-4500A has six program inputs, six wipe patterns in the normal/reverse mode, two effects buses with a fade-wipe lever, and a preview program bus.

The WJ-5500A has even more. Eight program inputs, downstream mixing for three video signals. Nine wipe patterns, a wipe positioner, and your choice of sharp or soft edges. Plus normal, normal/reverse, and reverse modes.

All four switchers are compact, self-contained and have illuminated pushbuttons.

Take a close look at them. And you'll get switched on to Panasonic:


Panasonic recommends prices, but ask all price will be set by dealers.

Panasonic®
just slightly ahead of our time.

Circle (136) on Reply Card
mount audio power amplifiers; phono preamps; broadcast turntables.

**New:** Line of audio distribution amplifiers; Dial-up broadcast remote mixer; broadcast tone arm.

S.W.R. (Booth 1000)

**Products:*** Patchless panels; transmission lines; tuners; antennas; consulting services.

**Featuring...** a patented thermo-controlled coax that eliminates connector heating and prolongs peak performance.

*see ad on pages 186-187

Circle (508) on Reply Card

Saki Magnetics (Booth 331)

**Products:** Long-life ferrite heads for major high-speed duplicators, heads for professional studio recorders.

**New:** Ferrite 24-track replacement heads for minicom machines; 24-track metal heads for Stephens recorders; long-life Ferrite heads for in-cassette duplicators.

Circle (509) on Reply Card

Scientific-Atlanta (Booth 1305)

**Products:*** TV demodulators; MET-SAT earth station for receiving weather data.

Circle (510) on Reply Card

Sescom (Booth 905)

**Products:** Mic-splitters; direct boxes; audio modules; audio transformers; stereo balance boxes; microphone drivers; line level splitters; stereo input balancers; stereo output balances.

**New:** Adjustable active crossovers; 4-channel active audio DA; audio sine wave generators; field mixers; 10-band graphic equalizers; multi box; 3-band parametric equalizers; 4-channel mic mixers; stereo combiners; stereo headphone amplifier and stereo box; 3-band tone equalizers.

*see ad on page 224

Circle (511) on Reply Card

Sharp Electronics (Booth 1216)

**Products:** 3-tube Saticon cameras; monitor receivers; straight receivers; color special effects generators; plug-in color bar generators; color sync generators.

**New:** ENG/EFP cameras.

Circle (512) on Reply Card

Shintron Company (Booth 1107)

**Products:** Switchers; character generators; edit code generators and readers; sync generators; color background/color bar/color black generator.

**New:** Model 375 super switcher.

*Featuring...**the model 318 digital color genlock sync generator that provides broadcast quality composite sync, composite blanking, vertical drive, horizontal drive, burst flag and subcarrier signals.

Circle (513) on Reply Card

Shure Brothers (Booth 200)

**Products:** Microphones, professional broadcast phono cartridges, broadcast mixers, sound systems and related circuitry.

**New:** Studio condenser microphones, professional phono cartridges.

*Featuring...**SC39 series phono cartridges that meet professional requirements of true high fidelity performance, resistance to stylus damage and prolonged record playability.

Circle (514) on Reply Card

Sigma Electronics (Booth 1602)

**Products:** Gen-lock sync generators; video distribution amplifiers; pulse distribution amplifiers; subcarrier distribution amplifiers; audio distribution amplifiers; video processing amplifiers.

**New:** Black burst generators, gen-

*Typical products marketed. New products not announced by BE press time.
If you've despaired of ever owning the legendary AMPEX VR-1200 or VR-2000 because of its price, take hope. Now you can have a previously owned classic AMPEX VTR from AFA for about half of what it originally cost.

An AFA VTR is perfect in every way: VR-1200’s or VR-2000’s that we have fully and lovingly rebuilt. And they’re not just “good as new”... They’re better! We’ve added improvements not available when those models were originally made.

If you operate a TV station, corporate or institutional video center or a production facility, you want the best... Ampex and AFA. Now both can be yours. Call us today for prices, availability, delivery.

A.F. ASSOCIATES, INC. 100 STONEHURST COURT, NORTHVALE, NJ 07647 201-767-1000
2465 E. BAYSHORE, SUITE 301, PALO ALTO, CA 94303 415-856-1060

Circle (138) on Reply Card
lock sync generators, audio distribution amplifiers.

Bill Simms Partners (Booth 430)
Products: See at booth.
Circle (516) on Reply Card

Sintronic (Booth 126)
Products: Solid-state AM transmitters; FM transmitters.
New: 1kW AM transmitters, all solid-state except PA and modulator.
Circle (517) on Reply Card

Skirpan Lighting Control (Booth 1039)
Products: Solid-state dimmers; lighting control systems.
New: K series of dimmers; Cuelog control system.
Circle (518) on Reply Card

Skotel (Booth 1720)
Products: Time and control code generators and readers.
New: Vertical interval time and control code generator.
Circle (519) on Reply Card

Soil (Booth 1109)
Products: Services include design, architecture, construction and installation of complete broadcast facilities; studio; transmitters; antennas; manufacture of custom RF switching systems; consulting and station planning.
New: Computerized remote/local control systems; auto-logging equipment; RF switching equipment.
Circle (520) on Reply Card

Sono-Mag (Booth 309)
Products: Automation systems for radio.
New: Video ESP-1 programmers.
Circle (521) on Reply Card

Sony Corporation of America (Booth 1211)
Products: 1-inch and 3/4-inch VTR equipment; video color cameras; monitors; videotape; digital TBC; PCM audio equipment; computer editing; microphones; related products and services.
Featuring...the PCM-100 digital audio processor and its full line of digital audio and video products. Also expected to be on hand is the model CCD XC-1 color video camera, said to be the first commercial CCD camera to be marketed. The camera featured a 1/3-inch optical system. S/N greater than 43dB (F2, 500 lux) and weighs 2.8 pounds.
Circle (522) on Reply Card

Sound Genesis (Booth 330-332)
Products: Audiotronics; Ampex; Eventide; JBL; Lexicon; Neumann; Orban; Sony; Sound Genesis Products; Technics; UMC/Beaucart; UREI.
New: Audiotronics series 7000 TV/audio production consoles; audio spectrum analyzers; phonos; poweramps; battery-powered headphone amps.
Circle (523) on Reply Card

Sound Technology (Booth 1132)
Products: Line of high-quality audio test equipment including audio generators; distortion analyzers.
New: Tape recorder test system.
Featuring...Model 1500A tape recorder test system that includes...Typical products marketed. New products not announced by BE press time.

From Marconi to Moseley; An Industry of Ideas

When Giuseppe Marconi first sent electrical waves across his father's garden, no one really could have guessed the world would be so dependent on his spark of genius. That's the way it is with innovators. That's the way it is with Moseley, too. We've got a pretty good idea of where the broadcast industry is heading. That's why we developed the new TCS-2A Telecontrol System. It has all the features that have made Moseley a leader in this field and yet is designed for today's broadcaster. In fact, the TCS-2A is the simplest, economical 8-channel remote control system with 8 fully independent command, status and telemetry functions on the market, yet utilizes microprocessor-based technology. The TCS-2A can be used for AM/FM broadcast transmitters, ENG and Brent station remote sites, and industrial applications. Combine it with the new model PCL-585A/C STL system with improved high RF density performance and you've developed an operation that's state-of-the-art.

Of course, Moseley won't stop with just the TCS-2A. That wasn't Marconi's style and it's not ours!


Santa Barbara Research Park
111 Casilian Drive
Goleta, California 93017
805) 968-9621
Telex: 658448 Cable: MOSELEY

See us at NAB Booth 505

MOSELEY ASSOCIATES, INC.
A Price General Company

Circle (139) on Reply Card
THE MICROWAVE RADIO FOR EVERY USE

The Only Microwave Radio of its Kind.

Frequency Agility
The TCM-6 is tunable across each band from 1.7 to 15.35 GHz. Change bands by plug-in RF module replacement.

Fixed Link or Portable
Simplex, duplex and diversity operation in tripod, tower or rack mount configuration.

Proven Operation
Used worldwide from arctic to desert environments by major television and telecommunications administrations.

Full Performance
Color video with FM or digital subcarrier channels, 1800 FDM voice channels, 34 Mb/s digital data or wideband radar video.

Loral Corporation
9020 Balboa Avenue San Diego, CA 92123 U.S.A
Phone: (714) 278-4100 TWX: TERRACOM SDG 910-335-1202
Circle (140) on Reply Card
automatic graphs of frequency response, harmonic distortion vs level, wow and flutter, noise, speed accuracy and drift, head azimuth accuracy.

Spin Physics (Booth 1118)
Products: Hot-pressed ferrite quad video head refurbishing service.
see ad on page 82
Circle (525) on Reply Card

Stainless (Booth 935)
Products: Broadcast, microwave, communication towers.
see ad on page 231
Circle (526) on Reply Card

Stanton Magnetics (Booth 407)
Products: Magnetic cartridges; styli; headphones; Stanton turntables.
see ad on page 107
Circle (524) on Reply Card

New: 310 preamplifier.
see ad on page 211
Circle (527) on Reply Card

Station Business Systems (Booth 509)
Products: BAT systems for computerized sales, traffic scheduling, billing and accounting in radio and television.
New: Computerized newsroom information system; computerized program package and film library system; computerized media and copy inventory system.
Circle (528) on Reply Card

Storeel (Booth 911)
Products: High-density storage systems.
Circle (529) on Reply Card

Strand Century (Booth 1204)
Products: High-quality studio and location lighting and control equipment featuring Quartz-color lanairo's Bambino line of fresnels and HMI spotlights, Micro-Q memory lighting control system and light pallette memory lighting control system.
Circle (530) on Reply Card

Studer Revox America (Booth 602)
Products: Multichannel recorders; SMPTE synchronizing and editing systems; broadcast recorders; broadcast remote/production mixing consoles; high-performance stereo monitor amplifiers; turntables; microphones.
New: Mono/stereo recorder/reproducer; telephone hybrid systems; balancing units; digital monitor FM tuners; news and sports events coverage mixing consoles; master/production recorders.
Featuring...Studer A80RC

Broadcasters' No. 1 Choice
See ITC's complete product line in Booth 303.

To place a no-risk order (30 day guarantee of satisfaction)
Call Toll-Free: 800-447-0414.
In Alaska, Hawaii or Illinois Call Collect: 309-828-1381

© 1979 ITC
INTERNATIONAL TAPETRONICS CORPORATION
2425 South Main Street, Bloomington, Illinois 61701
Marketed exclusively in Canada by McCurdy Radio Industries, Ltd. Toronto
Circle (141) on Reply Card

178 Broadcast Engineering March 1980
With the Dolby system, the sound can match the picture.

A great deal is happening these days to improve the quality of television audio. New distribution methods such as diplexing, new post-production techniques for laying down sound-tracks without having to re-record them repeatedly on VTRs, the reality of stereo TV audio in some countries — these factors and more are combining with the growing audience sensitivity to good sound to put a new emphasis on television sound quality.

However, a major bottleneck remains: noise. The better the rest of the studio and distribution chain becomes, the more the noise from the audio tracks of VTRs limits the ultimate fidelity of television sound. The audio signal-to-noise ratio of 2" quad machines is typically worse than 50 dB, while the specs for the new generation 1" machines are typically 52-56 dB. That kind of performance is not as good as many consumer audio tape recorders, and unless improved, may always keep television sound in second place to the high fidelity color picture.

Various configurations of Dolby audio noise reduction for VTRs are shown. The printed circuit boards plug directly into Sony and Ampex 1" machines. The free standing unit is for general purpose use. All units offer 2 channels of Dolby A-type NR.

Dolby noise reduction is the proven way to break the noise bottleneck, here and now. It provides 10 dB of noise reduction (rising to 15 dB at higher frequencies), without audible degradation of the original signal. It reduces hiss, hum, rumble, the effects of multiple-generation re-recording — all noise not part of the original signal. It reduces print-through, even years later. It can reduce distortion by permitting the use of lower record levels. And Dolby noise reduction is the key to taking full advantage of the wider frequency range now increasingly being provided in the rest of the TV audio chain.

Since its introduction 13 years ago, Dolby noise reduction has become universally accepted for quality audio tape recording, both professional and consumer. It is also regularly used to improve the audio quality of VTRs in several European countries. Just ask any professional audio recording engineer about the benefits of the Dolby system, or contact us for full technical information. Let us help you in your efforts to provide television sound which matches the television picture.

Visit NAB Booth 206 for more information. Hear demonstrations at NAB in the Silver State Room, above the exhibit floor.

Dolby Laboratories Inc

731 Sansome Street
San Francisco CA 94111
Telephone (415) 392-0300
Telex 34409

346 Clapham Road
London SW9
Telephone 01-720 1111
Telex 919109

Circle (142) on Reply Card

March 1980 Broadcast Engineering 179
ional tape recorder with modern ROM technique, fully electronic tape timer including a negative display zero locator.

see ad on page 205
Circle (531) on Reply Card

Swintek Enterprises (Booth 1705)
New: ENG/film dB-S wireless communication system; full duplex communicators and antenna diversity systems.
Circle (532) on Reply Card

Sylvania Lighting Products (Booth 909)
Products:* Incandescent and tungsten halogen lamps for studio, stage and theater lighting.
Circle (533) on Reply Card

System Associates (Booth 1722)
Products: See at booth.
Circle (534) on Reply Card

System Concepts (Booth 1117)
Products: Teleproduction graphic titlers.
Featuring...Quantafont Q-VII Teleproduction Graphic Titer with multiple resident fonts, 20 character size selection, Nanalog character refinement, full borderline edging, full editing functions, roll and crawl modes.

see ad on page 105
Circle (535) on Reply Card

TTF Lighting Consultants (Booth 1639)
Products: See at booth.
Circle (536) on Reply Card

TVNS (Booth 1804)
Products: See at booth.
Circle (537) on Reply Card

Taber Manufacturing and Engineering (Booth 502)
Products:* Audio heads; VTR audio heads; bulk tape eraser; audio record/reproduce electronics.
Circle (538) on Reply Card

Tangent Systems (Booth 125)
Products:* Custom audio/video control systems.
Circle (539) on Reply Card

William B. Tanner (Booth 117)
Products:* Custom commercials; station IDs; syndicated music; production libraries; sales assistance; promotion merchandisers; broadcast equipment.
Circle (540) on Reply Card

Tayburn Electronics (Booth 1708)
Products:* ENG systems; microwave radios; antennas-pedestals; digital control systems.
Circle (541) on Reply Card

Tech Theatre (Booth 1709)
Products: Scenic fabrics; cable ties; safety strap; TV makeup; artificial snow and dream cloud; scenic materials and construction supplies.
New: Bubble board.

*Typical products marketed. New products not announced by BE press time.
All those in favor of patch panels, raise your right hand.

Wrestling with those patch cords is cumbersome, awkward and not very good engineering.

But now there's a way to route audio signals with pushbutton ease. Without the patch cords. Without the separate amps, the noisy pots and the mad scramble to adjust levels every time you switch inputs.

Introducing the "electronic patch panel:"

Meet the incredible new Ramko ARA-1612 Audio Router/Amplifier.

It lets you use front panel and/or remote control pushbuttons to route 16 inputs to any of 12 outputs, simultaneously or individually, with an instant LED display of what signal is going where.

Each balanced input has its own gain adjustment. The balanced outputs are buffered so you can feed a single input to all 12 outputs with no interaction. In addition, each output module contains stereo/mono switches enabling operation in either mode.

And, incredibly, you need only a single shielded twisted pair to make all 16 inputs available at a remote location.

More good news.

The Ramko ARA-1612 system also features solid, broadcast-level performance specs. Expandability up to 45 in and thousands out.

Remote control capability. A dual instant-switchover power supply for 100% on-air reliability. And it's backed by the only two-year warranty in the industry.

Our unique two-week free trial.

Try the Ramko ARA-1612 free for two full weeks (with prior credit approval) so you can pushbutton it through its paces.

Write Ramko Research, 11355 Folsom Boulevard, Rancho Cordova, CA 95670 for the details. Or just call (916) 635-3600 collect—we'll set you free.

See Us at Booth #110
Technics (Booth 600)
Products: Professional amplifiers; pre-amplifiers; equalizers; tuners; meter systems; turntables; reel-to-reel decks and speakers.
New: The R&B and RAMSA Series components.

Featuring...the RS-M95, a quartz phase-locked direct-drive stereo cassette deck with microprocessor tape tension control; HPF 3-head system; metal tape selector; fine bias adjustment and peak/VU FL meters.

Circle (543) on Reply Card

Teletechnics (Booth 1111)
Products: Standard video test signal generators; waveform monitors; vectorscopes; color picture monitors; correctors.
New: ANSWER measurement set; spectrum analyzer; logic analyzer; oscilloscope.

Circle (544) on Reply Card

Technology Service (Booth 907)
Products: * Color weather radar.

Circle (545) on Reply Card

Technology Service (Booth 907)
Products: * Color weather radar.

Circle (544) on Reply Card

Telecommunications Industries (Booth 1410)
Products: See Porta Pattern.
Circle (547) on Reply Card

Theatre Techniques (Booth 1816)
Products: * Background sets and panels; minicomputer studios/stage lighting controls.
Circle (548) on Reply Card

Theater Service and Supply (Booth 1801)
Products: See at Porta Pattern.
Circle (549) on Reply Card

Thermodyne International (Booth 1627)
Products: * Carrying and shipping cases.
Circle (550) on Reply Card

Thomson-CSF Broadcast (Booth 919)
Products: Audio: FM Volumax automatic peak controller; AM Volumax dual audio distribution amplifier; Audimax automatic level controller; and dynamic presence equalizer; Video: hand-held EFP/ENG color television camera; Vidifont character/graphics systems with changeable fonts, font compose, Vidivote.

Circle (551) on Reply Card

*Typical products marketed. New products not announced by BE press time.

Moving?
Please complete the change of address information on the subscription form.

To ensure uninterrupted delivery to new address, answer all questions on the form completely.
Until now, using a wireless microphone system meant sacrificing the quality of the sound in a trade-off for portability. No more.

Sony has engineered wireless microphone systems as portable and versatile as any on the market. But with a very big difference. Excellent sound.

To begin with, Sony offers a wider dynamic range than any other wireless system, a range of 96 dB. This accommodates sound pressure levels up to 130 dB. (While most other wireless systems have limiters which hold their dynamic range to, at most, 75 dB, Sony engineering has produced a system that requires no limiters.) So what goes into the microphone comes out again at the same sound level. And nothing takes away from the thrill of performance.

What's more, audio distortion is less than 0.1% and signal-to-noise ratio is better than 57 dB (both ± 2.4 kHz deviation, at 1 kHz).

And the new Sony systems are virtually drift-free. Frequency stability is an amazing ± 0.005%.

Furthermore, Sony wireless systems are available with up to 14 channels in UHF, which means that interference from other sound sources is much less likely than at lower frequencies.

And while many wireless systems are put together with a mixture of components from several manufacturers, Sony uses only one: Sony. So we've been able to create fully integrated systems that offer you a wide variety of options.

For EFP and ENG, Sony's system includes a tiny lavaliere mike, a transmitter about the size of a cigarette pack and a tuner smaller than a paperback book.

The system also comes with a shoulder-strap antenna and a leather carrying case. Altogether, it's compact and efficient and offers outstanding sound.

For studio and stage use, Sony has a modular rack-mounted system that can be engineered in any combination you want, from single-channel to multi-channel diversity reception.

It can be portable or fixed, and runs from 110 volts AC or 24 volts DC.

For more information, call Sony Professional Audio Products at (212) 371-5800, extension 143 or 145.

You'll find out that no other wireless systems sound as good as Sony's.

Sony
We've never put our name on anything that wasn't the best.
Low Cost
High Performance
Professional Degaussers

- Save Time
- Save Tape and Film
- Save Money

WRE's wide range of degaussers are designed for years of dependable service for clean and simple erasure of magnetic film and tapes in just about any configuration.

Backed by years of proven reliability, these units are the answer to cutting man-hours and reducing material costs by allowing reuse of prerecorded media.

TYPE 9205A Degausser is ideally suited for complete erasure of program and residual noise from video, audio, and data recording tape and magnetic film—in reels, cartridges and cassettes. This unit will bulk erase reels up to 2 inches thick and 17 inches in diameter. Available for 115 or 230 volt operation.

TYPE 642-21 Degausser is similar to the 9205A except it is limited to erasure of 10½ inch reels. This unit is recommended where size and cost are limiting factors.

TYPE 8905 Magnetic Erasing Pencil is an excellent tool for erasing limited, small areas of tape or film and for demagnetizing record/play heads. In program material, words, complete sentences, and even syllables may be erased. This unit is equipped with a press-to-operate switch on the handle.

MODEL 22-323-1 Foot Switch is a companion accessory to the hulk degaussers that allows convenient, "hands free" operation and provides a positive means of turning the degausser off immediately after use. This is a momentary acting switch and can help extend the life of the degausser.

If you're looking for a degausser with proven reliability that will save you time and money, call or write WRE today.

If you're looking for a degausser with proven reliability that will save you time and money, call or write WRE today.

Thomson-CSF Electron Tubes (Booth 512)
Products: 100W UHF triode; 2.2kW UHF 16dB gain tetrode; 5.0kW UHF tetrode 16dB gain; 300kW 30MHz tetrode and 1.0kW UHF cavity.
New: Super noticon 16mm high sensitivity camera tube; and 100W TWT for satellite direct broadcast.
Circle (551) on Reply Card

Thomson-CSF Laboratories (Booth 919)
Products: Portable color TV cameras; character generators; digital noise reducers; with frame synchronizer; color correctors for ENG/Telecine applications; low-power transmitters and transposers.
Circle (553) on Reply Card

Thorn Lighting (Booth 1815)
Products: See at booth.
Circle (554) on Reply Card

3M Magnetic Audio/Video Products Division (Booth 815)
Products: Videotapes.
Featuring...the Scotch Color Plus ¾ U-matic videocassette, which features a proprietary stabilized ferric oxide offering 3dB improvement in color S/N over industry average and 1.5dB improvement in video S/N over industry average.
see ad on page 219
Circle (555) on Reply Card

3M Video Products (Booth 815)
Products: Character generators; routing switches and other microprocessor-based control panels.
New: 1-inch C format NTSC videotape recorder; aided track following; time base corrector; machine control system; random access and disc storage memory.

Featuring...the IT-7000 1-inch high band VTR, which offers an automatic track following feature. Other options are: console with mounted bridge; remote control panel and slo-mo controller.
see ad on page 61
Circle (556) on Reply Card

Telemet (Booth 1010)
Products: Clamping amplifiers; repeaters; modulators; sideband analyzers; test signal generators; chroma keyer; chroma keyer decoder; video cable terminals; RF test equipment; demodulators; group delay measuring equipment; video and pulse distribution amplifiers.
New: 3709 sideband/spectrum analyzer; 3710 broadcast demodulator; 3310 video distribution amplifier; 3315 video distribution amplifier with clamp and equalization; 3320 pulse distribution amplifier; 3325 pulse distribution amplifier with variable delay; 4210 fiber optics transmitter and receiver; 4420 modulator; video isolation amplifier; RF synthesizer; fiber optics with sound; thermal equalizer and routing switcher.

Telescript (Booth 1025)
Products: Monitor prompting systems; transports; external drive 2-1 vidicon cameras with 12.5mm f 1.8 1-inch format lens; and beamplitters with 2nd side l.r. coating.
New: Contrast enhancer and an electronic digital prompting system.
Circle (558) on Reply Card

Typical products marketed. New products not announced by BE press time.
Now You Can Afford To Do A-B Rolls With Your HET VTR'S.

Introducing the Edutron ccd2h-1. Full Time Base Correction For Only $5,800.

The ccd2h-1, when used at your editing station or for post production, can solve many problems while it is correcting and enhancing your heterodyne VTR signal. You will be able to synchronize your VTR, allowing you to use it as a source to do mixing at your switcher. With two ccd2h-1's, you can now do A-B rolls between two VTR's.

By using the latest advancements in charge-coupled-device memory technology, we can give you superior performance at a realistic price. The ccd2h-1 has a signal-to-noise ratio of 58 db, ½° of differential phase, and 1% differential gain. This will give you the best possible reproduction of the video from your VTR.

If you have bad tapes you would like to clean up or good tapes you would like to make look even better, the ccd2h-1 is ready. By using a unique noise coring that gives up to 4 db of noise reduction, all generations of tapes will look better. A horizontal enhancement of up to 200% boost will sharpen your video. All of this is standard in the ccd2h-1 and available at no extra cost.

The two horizontal lines of window correction will handle typical distortions. The automatic steerable advanced sync will make the window appear much wider as it keeps your VTR centered in the window. This will give you maximum correction range and a zero time system delay.

For complete specifications and the name of your nearest Edutron dealer, please write or call us at: EDUTRON INC., 11003 US Highway 19, Roswell, GA 30075. Phone (404) 992-1626.

See us at NAB Booth No. 1714
Compare

Thermo-coupled Inner (No Hot Connector)

Heat flow 3 to 7 times faster than wrist and other Mfg's. Spring gives one contact surface (not friction points like O-rings)

K-line flange

4" O-ring can't be pinched

All copper connector Inner (not silver plated brass)

Heavy wall

Country's Best Coax
It takes good connections to get to the top. But it takes performance and reliability to stay there.

When your income depends on your output, why settle for second best? In all cases where our competition failed we performed. LUCK? NO! Just a far better approach to transmission line design.

Unfortunately it's true. Most of our customers had used other people's coax line prior to using ours. After replacement with S.W.R.'s line, none has had an RF failure since. That's RELIABILITY !!

What you lose in performance is the true cost of transmission line. Most stations repair or replace their systems with the same design that caused problems to begin with. Our patented thermo-controlled coax eliminates connector heating and prolongs peak performance longer than any other line available. It truly keeps you on top.

Remember . . .

SYSTEMS WITH RELIABILITY

Is Our Name!

See us at Booth 1000 in Las Vegas.
Television Engineering (Booth 1201)
Products:* Custom vans for remote productions.

Television Equipment Associates (Booth 1019)
Products: Audio and video delay systems; video filters; headphones; and tape evaluators/cleaners/gauges.
New: Video filters for A/D and D/A converters; BCA interphone system; wireless earphone and VIRS generator.

Television Technology (Booth 1623)
Products: VHF and UHF translators and amplifiers.

Telex Communications (Booth 311)
Products: Reel-to-reel tape recorders; reel-to-reel tape logger; tape transports; NAB cartridge tape recorders; amplifiers; headphones and headsets.

Tentel (Booth 1124)
Products: Tape tension gauges.
New: 4-inch spindle height gauge.

TerraCom (Booth 1043)
Products: Portable microwave radio; microwave antennas and accessories; and satellite earth stations.
New: THP-2T20 program channel multiplexer.

Tiffen Manufacturing (Booth 1810)
Products: Fog filters; diffusion; low contrast; multi-image; polarizer; color-grad; FL-B + FL-D; star effect; vari-color; and center-spot filters.
New: 12-point star effect filters.

Time and Frequency Technology (Booth 111)
Products: TV, AM and FM frequency and modulation monitors; stereo and SCA monitors; EBS and STL equipment; digital remote control systems.

New: Microprocessor remote control equipment.

Toshiba International (Booth 1415)
Products: Automatic computerized studio camera; portable ENG camera; portable field production console.
New: Fully automatic microprocessor-controlled studio camera model PK-40A.

Featuring...the PK-40A color camera with fully automatic setup; triaxial microwave radio. Optional interface formats include the standard T1 interface, AMI, NRZ or bitternary for microwave transmission. Features include modular construction, interchangeable PC boards color coded for error-free positioning and front panel test and monitor points.

TV Studios with inadequate lighting may have a dim future.

Thanks to our experience in dealing with studio lighting, we have designed six standard TV lighting packages that meet normal needs for standard-sized studios. And since these are complete systems already engineered and in stock, ready to ship, they afford substantial savings.

At Kliegl, we have a team of seasoned engineers who can also design custom studio lighting systems to meet more exacting requirements.

So, if you don’t want your viewers to change channels, turn to Kliegl. For complete information on our TV packages, please write or call.

Circle (151) on Reply Card

Kliegl Bros.
32-32 48th Ave.
Long Island City
New York 11101
212/786-7474

Circle (151) on Reply Card

*Typical products marketed. New products not announced by BE press time.
RADIO & TV BROADCAST EQUIPMENT

NEW 250 WATT TRANSMITTER

COME SEE US IN LAS VEGAS
BOOTH 516

RADIO EQUIPMENT
- EXCITERS
- TRANSMITTERS
- TRANSLATORS
- MODULATION MONITORS
- STEREO MONITORS
- SCA MONITORS
- STEREO GENERATORS
- SCA GENERATORS
- AUDIO DA's

TV EQUIPMENT
- VIDEO PROCESSOR
- VHF TV TRANSLATORS
- VHF AURAL EXCITERS

Circle (104) on Reply Card

Versa Count
563 LIVELY BOULEVARD
ELK GROVE VILLAGE
ILLINOIS 60007

Phone 312-593-0208
camera cable; 1-inch diode-gun lead oxide tube; computerized fault indication and maintenance.

Circle (567) on Reply Card

Townsend Associates (Booth 1007)

Products:* TV transmitters; power amplifiers; video demodulators; RF detectors; heat exchangers; TV maintenance service.

Featuring...the Tetron UHF transmitter series that combines the high performance of klystrons for visual power, plus the use of economical tetrodes for aural amplification.

Circle (568) on Reply Card

Trans-American Video (Booth 833)

Products:* Audio/video location productions.

Circle (569) on Reply Card

Tri-Tec Systems (Booth 1503)

Products: See at booth.

Circle (570) on Reply Card

Trompeter Electronics (Booth 1037)

Products:* Audio and video panels; jacks; patch cords and looping plugs; coaxial connectors; cable and accessories.

Circle (571) on Reply Card

Tuesday Productions (Booth 210)

Products:* Producers of custom video packages, music themes, news themes and promotion for TV and radio stations.

Circle (572) on Reply Card

Tweed Audio (Booth 1509)

Products:* Audio mixing consoles and related equipment.

Circle (573) on Reply Card

UMC Electronics (Booth 108)

Products: Beaucart Type 10 cartridge tape machine; Beaucart II Type 40; audio console; motorized azimuth; Beau motors.

New: Monitor II; Beau Pro console.

Circle (574) on Reply Card

Ultra Audio Pixtec (Booth 1819)

Products: Audio mixer amplifiers; battery-powered audio remotes; audio stereo monitor compact amplifiers; video and audio test and measuring equipment.

New: Vectorscopes; portable waveform monitors; ultra-compact multiple audio distribution amplifiers; rack-mount audio monitor amplifier/speakers; battery-powered audio mixers; stage lighting controllers.

Circle (575) on Reply Card

Unarco-Rohn (Booth 1021)

Products:* Towers and accessories for broadcast—material only or complete turnkey installed tower systems.

Circle (576) on Reply Card

United Media (Booth 1711)

Products:. SMPTE time code computer-assisted editors; time code generator with user bits; time code reader with user bits; time code character generators with user bits.

Featuring...the Commander series of computer-controlled electronic video editors with a variety of standard features including uncomplicated keyboards and display, real-time control system for video or audio tape recorder, microprocessor-controlled electronic memory for keeping track of edits.

Circle (577) on Reply Card

*Typical products marketed. New products not announced by BE press time.

FILM/VIDEO EQUIPMENT SERVICE COMPANY

1875 South Pearl Street
Denver, Colorado 80210 - 303-733-1980

Circle (153) on Reply Card

190 Broadcast Engineering March 1980

No Memory

When is "no memory" an advantage? When it's a characteristic of your battery system.

With Schneider Sealed Lead-Acid battery belts and packs there is never a problem with "memory effect." The capacity demanded of the battery in previous cycles has no influence on future delivery levels. Battery life will never be shortened by overcharging—the charger senses when the battery is charged. Plus Schneider power units maintain excellent voltage regulation in cold weather and have an unusually long shelf life.

All this adds up to make Schneider Sealed Lead-Acid Battery Packs and Belts a sensible alternative to problem-ridden ni-cad systems.

Battery packs and belts for all film and video cameras and 30-volt lights.

*NAB Product
Directory listings
start on page 62.
When you need microphones with "reach," reach for these!

CL42S Shotgun System
The CL42S reaches farther and rejects more ambient noise than any other shotgun of its size ever made. Our exclusive line bypass port makes it more directional at low frequencies so you won't have to sacrifice frequency response when you use it on a boom. Diffraction vanes maintain high-frequency directivity to preserve uniform frequency response if the "talent" gets a little off-mike.
Phantom or AB powered, the CL42S comes complete with windscreen, shock mount, carrying case and handle for hand-held applications. And it's rugged.

CH15S Hypercardioid System
The CH15S is actually more directional than a mini shotgun mike - in a package that's only 4 inches long that weighs less than 6 oz. Specially designed for boom and fishpole use in TV and motion picture studios, but equally at home wherever working space is small and you have need for a compact, highly directional microphone.
Compatible with phantom or AB power, the CH15S comes complete with windscreen, shock mount and carrying case. And, this microphone is rugged.

The Electro-Voice Warranty
Electro-Voice backs up these two microphones with the only unconditional warranty in the business: for two years we will replace or repair your CL42S or CH15S microphone, when returned to Electro-Voice for service, at no charge - no matter what caused the damage!
We can do this because we build these microphones to meet our standards for performance, ruggedness and durability. We accept nothing less, and if you're a professional, buying a professional quality microphone, you shouldn't either.

Electro-Voice
600 Cecil Street, Buchanan, Michigan 49107
Circle (154) on Reply Card
United Press International (Booth 903)
Products:* Broadcast Datanews; audio network; broadcast newswire; UNIFAX II, Unislides; electronic editing; GOES FAX (weather satellite facsimile wire).
  Circle (580) on Reply Card

United Research Labs (Booth 405)
Products: Amplifiers, pre-amps, recorders.
  Circle (581) on Reply Card

Uni-Set (Booth 1106)
Products: Studio settings.
  Circle (582) on Reply Card

URSA-Major (Booth 219)
Products: The Space Station model SST-282 digital reverberation system; audio delay lines; sound effect filters; sound effect systems.

Featuring...the Space Station, a multi-tap digital delay algorithm synthesizes convincing reverberation. Key reverberation parameters such as initial delay pattern, decay time, and high and low frequency decay time can be independently adjusted to simulate a variety of spaces.

US JVC (Booth 1519)
Products: Color monitors; color cameras.
New: U-VCR editing systems, color cameras.
  see ad on pages 34, 35
  Circle (584) on Reply Card

U.S. Tape & Label (Booth 202)
Products: Bumper strips, window labels, t-shirts and transfers for the broadcasting industry.
  Circle (585) on Reply Card

Utah Scientific (Booth 1629)
Products:* VAS-1 series routing switchers; CAV-7 line of compact video and audio routing switchers; control panels featuring single coax party line control connection and optional encoding to permit switching by device name, rather than matrix input number.
  see ad on page 103
  Circle (586) on Reply Card

Utility Tower (Booth 500)
Products: Tower sections; lighting equipment; galvanized hardware.
  Circle (587) on Reply Card

V & B Tower Construction (Booth 320)
Products:* Tower construction.
  Circle (588) on Reply Card

Valtec Corporation (Booth 1811)
Featuring...VS-100 fiberoptic baseband video systems that simultaneously transmit studio-quality video, high fidelity audio and data up to 3 km without any repeaters.
  Circle (589) on Reply Card

Thomas Valentino (Booth 412)
Products: Major production music library.
New: Video stockshots

 Featuring... Video Stockshots, more than 28 volumes of stock footage in video.
  Circle (590) on Reply Card

Van Ladder (Booth 1813)
Products:* Van-mounted microwave antenna carrier; van-mounted camera platform.
  Circle (591) on Reply Card

* Typical products marketed. New products not announced by BE press time.

**E N E R G Y.**
We can’t afford to waste it.
Storeel is dedicated to conserving energy.

Yours.

Energy conservation is much in the news these days. Like the weather, many talk about it but few do anything about it. We haven't figured how to change the weather, but we do have several systems specifically engineered for broadcasters that both conserve energy and add efficiency. The very latest (shown installed) is called STOR-MAX™.

Save energy (yours) by converting your overcrowded film and VTR libraries to the new "Instant Access" high-density systems engineered and distributed only by Storeel. Modular Rapid Transit Storage™ maximizes units stored per square foot of floor space, minimizes retrieval time, optimizes energy efficiency.

Our many years of design and engineering pay off in solutions to your storage problems.

Call or write "The Railriders" at Storeel today for free estimate. No obligation, of course.

Illustrated catalog of Storeel's "confusion eliminators" available upon request. Write on your letterhead or telephone for your free copy.

See us at the NAB in Las Vegas, Booth 911.

STOREEL CORP.
The Space-Saving Engineers
2050-C Carroll Avenue • Atlanta, Georgia 30341 • Telephone (404) 458-3280

Circle (156) on Reply Card

March 1980 Broadcast Engineering 193
Varian, EIMAC Division [Booth 306]
Products: Transmitting tubes for broadcast, FM and TV service.
New: FM transmitter cavity.
Circle (592) on Reply Card

Versa-Count [Booth 516]
Products: FM exciters; FM translators; video processing amplifiers.
New: Modulation monitors; power amplifiers; transmitters.
see ad on page 189
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see ad on pages 64, 72, 156
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The 7200 AUTO DRIVE™ is a sophisticated automated drive unit with its own built-in computer. It is plug compatible and mates directly with the 6112 and 6124 production switchers.

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AUTO DRIVE™ controls all functions on the switcher such as hue, saturation, keys, patterns, positioners, etc. It stores 256 events. Each event is the entire status of the control panel, as set and adjusted by the operator while viewing the program signal on a picture monitor. The operator thus determines the exact visual impact of what is being stored. Events may be grouped into sequences. Events or sequences may be randomly accessed. Sequences may be reversed by the simple touch of a button. The operator can manually set up a series of increments, store them, and then have the AUTO DRIVE™ execute the entire sequence smoothly.

AUTO DRIVE™ controls all functions simultaneously. For instance, a bordered circle and diamond can be made to move in different directions across the screen with the border size and hue as well as the overall size of the circle and diamond changing smoothly. At the same time, the inserts within the circle and diamond can be dissolved. AUTO DRIVE™ can even learn and reproduce manual fader handle operations.

In regular programming, attractive intros may be stored and recalled over and over again as required. A disc option which will be available later, enables up to 2,500 events to be stored for future use.

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Model 6112
The 6112 is a rock-stable production switcher with two fully independent mix effects systems and a downstream keyer. It has true double re-entries, dual back porch clamps, and many unique features.

6112 Price $6995
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Case Study:

KTTL's Adventures in Automation

Kenneth Knecht president Kencom Yuma AZ

KTTL-FM went on the air early in 1979 in Yuma, AZ, with new call letters and a new automation system. Formerly, as KALJ, it was disc-jockey operated. With new ownership everything changed.

After KALJ went off the air December 31, 1978, there followed a hectic two weeks of complete remodeling of the building and installation of the new Sono Mag automation system and production studio. As chief engineer, I was responsible for the electronics and had assistance from a local engineer, Richard Nix. KTTL-FM went operational on January 15, 1979.

Of the old studio, only the audio console, turntables, mics, stereo modulation monitor, EBS equipment and transmitter were retained. The transmitter room was enlarged and the old stereo equipment was replaced with Moseley audio processors. The old exciter and stereo generator were replaced with a new Rockwell/Collins unit. (A new Marti digital remote control was added later.) The transmitter was thoroughly cleaned, wired for remote control with a motor-driven rheostat for power adjustment and a few relays added (such as a latching relay for plate on/off).

The Sono Mag automation equipment withstood shipping well and ran correctly right away. It was a simple matter to install the audio output lines, with a switch to select either the production studio or the automation for the air feed. The installation proceeded with only two minor incidents. One afternoon the automation played two tapes at the same time and the computer was reluctant to accept commands from time to time.

In the meantime we developed a production studio that included two Otari tape decks, an Audi-Cord data/program cart recorder with CRT, keyboard and interface for recording logging data on the carts, a line printer for the programs aired, two turntables, the old air studio 6-channel stereo board, stereo announce mics and Realistic cassette recorder/player and a Pioneer tape deck. A second older Audi-Cord cart machine was added later for recording large carts and as a backup unit. We also installed a 24Hz oscillator to put cue tones on real-to-reel tape.

This was quite a project. It takes a lot of wire to assemble a system of this size, and time is needed to chase down ground loops and miscellaneous hums and buzzes. KTTL got on the air on schedule, then the fun began. First, we discovered that a nearby AM station was being picked up in the automation system, and it was loud enough to draw listener complaints. The source was traced to the network line, with RF being picked up on the phone line outside. A repeater coil with bypass caps installed where the line entered the building solved that problem.

Next, for some unknown reason, the automation decided to start two sources at once, and continued to double roll until the cancel button on the switcher was pushed. An extensive effort has gone into solving this problem. A temporary solution has been to remote control the cancel button with the transmitter remote control. We have also added a special phone line and a touch-tone-operated switcher. Thus, we can get out of a double roll from the remote control point or from home.

Our unique remote control set is located at a telephone answering service, with all the employees there first getting provisional licenses, then restricted permits when the FCC rules changed. This has worked well, the staff there having all the required equipment including a stereo modulation monitor and an EBS.

A power failure was the next experience. The computer failed to recover and had to be re-programmed for seven 24-hour days. The gel cells normally supplied were re-
Imagine a SMPTE generator, a SMPTE reader, a VTR controller and a character inserter — all in one software-based unit. With features that will shave hours off production time... Like recording scene and take numbers... a "GO TO" function that will cue tape by those same scene and take numbers, or by time code... And an "AUTO" with a real time clock that programs VTR functions for execution at exact times.

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*Acquired by CVS in 1978 and developed and marketed as the EPIC computer-aided editing system.
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In retrospect

Experience has shown a high degree of reliability built into modern equipment. There have been small annoying problems, but no major ones. However, troubleshooting is now very difficult because the intelligence is scattered throughout the system with signals going back and forth between the computer, switcher and tape equipment. Thus, troubleshooting may be too much for some contract engineers, but better manuals from manufacturers would help.

The KTTI experience points out some things to look for in automating a station.

• The automation system should be an easy-to-program interactive system that tells you what you did wrong when you made a mistake.
• The tape decks and carousels should be only peripherals doing what they are told via standard remote control and with a feedback tally to tell the computer the command was received and accomplished.
• The switcher should only concern itself with switching audio sources on computer command, perhaps with built-in silence sense.
• The program clock should only be used to load the correct time to the computer.
• To simplify troubleshooting, all the intelligence should be put in the computer—not spread around all the peripherals.
• With memory getting cheaper every day, the program should be put in ROM, the events in RAM. Better yet, use bubble memory instead of regular volatile RAM. During a power outage the memory is still there. (Or else build in a mini-floppy disc to hold the events. Then after a power failure the memory could be automatically reloaded.)
• Have a dual redundant switcher, with each switcher operated by a separate computer. Use either computer to change the event list, then record the new event list on disc during a music event.
• If you can buy a hobby computer with 32K of RAM and ROM for $1000 complete with CRT and keyboard you can have redundant computers. They can operate in parallel with easy crossover. A simple audio switcher with silence sense would come in at about $500, two for $998. A mini-floppy disc sells for $400, the controller maybe $100.
Lexicon's new Model 93 "Prime Time" digital delay processor gives recording studios and entertainers an easy-to-use professional quality time delay with special effects and convenient mixing all at a price you can afford. It combines a degree of flexibility and versatility never before offered in equipment of full professional quality.

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Selections can be programmed easily into the computer.

The tape decks would be cheaper because all they would need is playback preamps and remote control. So, not counting racks and tape decks, the controller portion would be about $5000 including power supplies and two separate mini-floppies.

- Use tape decks with enough reliability to stand up under frequent play. Rebuilt Ampex 350 decks should work fine, with new solid-state preamps. The Otaris are excellent too.
- If you can’t use carousels, build a spot tape for the next day on reel-to-reel. Or, use several cart playback machines set up to play in sequence and have the operator load them several breaks ahead.
- Automatic logging? Record the logging data on the cart after the out cue and print after the spot is aired.
- Give the engineer good documentation: Wire list; frame diagram; detailed block diagram of the overall system and mark the schematics with normal voltages under indicated conditions at every terminal of each active device.
- Put a diagnostic program into the computer ROM so the computer can tell the engineer what the problem is and where to look. There are many fast programs available that will test 16K memory in a few minutes and tell which chip is bad.
- Keep in mind that many stations are being kept on the air by contract engineers who don’t have spare time to tinker with the system and read the manuals. Thus, the equipment should help in diagnostics. Build in equipment redundancy if you expect to run 24 hours a day and avoid serious problems.
- Keep the system simple, keep it redundant. You’re not selling any time if you are off the air with a malfunction. All the technology is there, use it!
The 110B on-air mixer gives you up to 18 inputs in either stereo or mono with these standard features:
- Control room monitor
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Circle (166) on Reply Card
Group W's "Evening Magazine" - an evolving technology

By C. G. Perry, vice president broadcast operations and engineering

When word of a new, locally produced, Monday-through-Friday TV magazine series called Evening first began circulating in broadcasting circles during the fall of 1976, the response among industry professionals and pundits ranged from skepticism to outright amusement at the originators' outlandish hopes for success.

After all, how could a single station, Group W's KPIX-TV in San Francisco, expect to compete in the 7:30-8 PM access time period where only game shows, comedy repeats and wildlife adventure series had dominated.

Evening flourished at KPIX, and spawned sister versions at Group W stations in Boston, Philadelphia, Pittsburgh and Baltimore within a year. It then spread to non-Group W stations through a cooperative production and distribution arrangement under the title of PM Magazine in early 1978. Evening/PM Magazine is now cooperatively produced by 51 stations, and besides being a critical and financial success, it is the number one draw in most communities in which it is broadcast.

To truly appreciate the success of this dark horse programming idea, take a look back at the summer of 1976, when a few news-oriented advancements in broadcast engineering technology gave an adventure-some few the means to try something wholly different in locally produced programming.

KPIX was under no pressure to change its 7:30-8 PM Monday-through-Friday fare, which led all local competition. Still, Group W, instrumental in winning the access period from the networks, had grand ideas about the quality of programming its five stations should broadcast in the time segment the FCC designated for local station family programming.

KPIX producers proposed originating a nightly features and information alternative to games and jungle shows, and Group W was willing to back them financially. The concept and methodology was left to the people at KPIX, and they looked to the new production technology designed for ENG.

Reasoning that the ideal bridge between early evening hard news and the entertainment programming lay with something that was part news and part entertainment, the originators of Evening sought to devise a program blending the
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Compare the editing facilities of the A80/RC Mk II with any other master recorder on the market. And the unique Studer real-time (positive and negative) digital tape position indicator and zero-locating feature. Compare the noise level of its electronics. Check out the wide variety of available head configurations, including a pilot tone version with or without resolver for film sync applications. Vari-speed control (±7 musical semitones) is standard, as is a monitor panel with built-in speaker/amplifier which lets you cue the tape right at the machine without tying up your monitor system.

As for servicing ease, the A80/RC Mk II is simply incomparable. All the logic boards have LED status indicators so a failure can be spotted instantly. You can even take apart the entire recorder with the two Allen wrenches supplied. Of course, there aren't any secrets to the incredible rigidity of the die-cast, precision-milled A80 frame and the extraordinary machining tolerances of its stainless steel headblock. Only Willi Studer's characteristic unwillingness to compromise.

Others could make their heads and motors as well, no doubt, they just don't. Servo-controlled reel torque and capstan drive (independent of line frequency or voltage) aren't exactly new concepts. Nor is PROM-logic transport control. But try them all out and see whether you can settle for anything less than the Studer A80/RC Mk II.

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Film production on a five-night-a-week basis was clearly prohibitive in terms of cost and time. ENG-inspired reductions in size of videotape cameras, portable tape recorders and tape editing equipment enabled KPIX producers to launch a new nightly series of both substance and style.

The idea was to produce two 7-minute feature segments, for example, the medieval sport of jousting as currently practiced, or an interview with, say, Burt Reynolds—combined with a 7-minute featurette on health, leisure or out-and-about discoveries, for presentation each weekend.

What set Evening apart from anything done before was its ability to use the world for a set. Using the new technology to best advantage, production was to be done entirely on location.

Three minicamera truck units, self-contained production units on wheels, were introduced in midsummer of 1976, representing an investment of $250,000.

As the show developed, problems appeared, centered on the changes in technology. People experienced in film production now had to learn videotape.

Film was a flexible medium, where one man with one camera could cover an event quickly and efficiently. Tape equipment used in this effort required two operators, one to operate the camera, and a second to carry the videotape recorder.

Familiarity with the film editing equipment did not immediately provide familiarity with videotape editing. A whole new learning process was required.

A third problem was the newness of the equipment and the inevitable maintenance problems that needed to be worked out. Former film editors suffered miserably when their editing systems failed to perform as expected. These systems, themselves, only in existence a matter of months, required constant attention. It seemed that there were only three people on the face of the earth who knew how the machines really worked.

One 7-minute segment often meant seven hours of actual taping and 10 more of editing, and 80-hour workweeks were not uncommon.

But an almost fanatical love for the project developed among the dozen or so people originally involved. They stuck to their goal and produced the marriage of man and machine now evident: the same Evening that took KPIX many months to launch can be aired by a newly participating station in about six weeks.

The success of the Evening experiment is both an echo of Group W’s past and a standard of excellence for the company’s future. In the 60 years since Westinghouse-owned KDKA radio in Pittsburgh broadcast the results of the Harding-Cox election (the first scheduled radio broadcast in history over the first licensed station in the US) the Westinghouse Broadcasting Company has been a pioneer in the industry.

Scientific developments in Westinghouse laboratories in the 1920s helped make both FM and TV broadcasting practical. That spirit is still there today. As stated by Daniel L. Ritchie, Group W’s president and chief executive officer, “Group W will continue to exploit every creative opportunity technology will allow.”

In concert with that philosophy, a recently executed agreement with Western Union will make Westinghouse the first major group capable of providing instant transfer of program material between its own station—and others—by means of a full 2-way satellite communications network. Utilizing this technology for program material such as Evening/PM Magazine will allow Group W to provide a more timely delivery of important information to the viewing audience.

The minicam revolution is still underway. Group W believes it has yet to realize the opportunities offered in other spheres. The success of Evening/PM Magazine is ample evidence that a great new programming technology is in our hands.
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Circle (170) on Reply Card
KTXL-TV expands facilities; beefs up production

Things are hopping at KTXL-TV, the UHF channel 40 in Sacramento, CA, with a new look in expanded facilities and equipment. Robert Nelson, chief engineer, points out that the addition of 10,786 square feet to the existing 11,400 square feet of facilities was necessary to meet KTXL's growth plans. The new design adds a control room dedicated to production, separates the on-air and production work, and adds two 40'x60' production studios equipped with Kleigl lighting packages at $200,000.

KTXL is pleased with its new facilities and excited about new equipment added and on order. Nelson recently attended demonstrations at KSL-TV (Ch. 5) in Salt Lake City, UT, on use of the RCA TK-47 automatic studio color cameras and is ecstatic about the camera's performance. "In the two days we spent experimenting the TK-47s," noted Nelson, "we did things to them you'd normally not do, and they stroked themselves right back into perfect adjustment."

KTXL has three of the TK-47s on order, with delivery scheduled for January. "When they're operational," Nelson continued, "we expect to save four hours a day in camera set-up during our studio productions. And that means more production, more efficient operations."

And that's not all. KTXL has added a new TFT remote control system and has the following equipment on order:

- an Auditionics Grandson II recording/mixing audio control console with 38 inputs
- all new monitoring equipment, including 24 b&w monitors (Conrac 12" units) and two Conrac 5300 series color monitors
- three RCA TK-76 portable cameras to go with the two already in use; and
- two additional RCA TR600 2-inch Quad machines.

Field production at KTXL? "Not yet," says Nelson. "We're waiting until we can go 1-inch all the way."

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Two mike/line inputs and a separate recorder feed are individually assignable to either or both output channels, and all three have selectable low-cut and presence EQ. Four 6-way monitor switches and volume controls give both engineer and commentator the exact signal they need to hear in each ear.

The 069 is Studer’s complete go-anywhere, be-prepared-for-anything answer for broadcast remotes. For a full descriptive brochure, contact Studer Revox directly.

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Circle (174) on Reply Card
Dimming control and consoles

By William F. Schelling, chief lighting director, CBS

Television lighting and dimming systems design has experienced remarkable technological advances over the past 10 years, and it is hard to predict just how much further they will go in the near future. Memory control systems are no longer just spoken about, they are an operational reality in many studios. When the memory design breakthrough occurred, all of the manufacturers in the lighting control field jumped on the bandwagon and started their own memory control research and development programs. Most have come up with not just workable, but fine memory systems.

The above was just to whet the appetite of the many local stations throughout the US that have no dimming control at all or, at best, marginal controls. In today's complex TV industry, every station requires some type of dimming control in its studios. Dimming control is a must. No matter how small the studio, dimming is needed for lighting control and overall picture quality, affording the lighting director the proper tool while he is plying his trade and art form. It allows the lighting director to design imaginative, artistic pictures by shading a face rather than turning a light off, by cross fading a cyc color or pattern instead of switching from one to another. An important scene in a production can be enhanced by selective dimming to create a number of dramatic pictorial compositions.

A common example of the importance of dimming control for the typical local station is on the local portion of the news show, when the newscaster surprises the lighting director by coming on the set wearing a very light colored suit. If the back light (BL) is on a dimmer by itself, then the lighting director has no problem. He takes the dimmer down a point or so, eliminating the glare on the subject's shoulders. The commentator may also be using a new hairdressing that adds an oil base to his hair, and he needs the BL reduced. Once again, having studio dimming capabilities allows the lighting director to take the BL down to where the picture is good and yet the commentator's head doesn't glow as though he uses "that greasy kids' stuff." The lighting director now checks the key light to see if this is at the correct level. Because of the suit reflection, the key may have to come down a point too. So much for lighting dimmer controls in general.

A different concept that many people in the industry are now looking into is called dimmer per outlet. It provides the lighting director with a dimmer control for each and every outlet in his studio. There have been great advances in television camera electronics. Camera technology has produced smaller, more sensitive units. Tape reproduction has been improved to the point where it equals film. Switching consoles and the special video effects that can now be achieved boggle the mind. Lighting has had to keep pace with all the new camera advances. The new memory systems make dimmer per outlet effective.
Stanton - The Professional in The Recording Industry

Application - Stanton monitors the quality of the pressing

Record pressing is one step in the process that delivers sound to you. The process begins when a premeasured amount of pure poly vinyl chloride preheated to 300 degrees is dispensed in the form of a vinyl biscuit (a) which is sandwiched between the two record labels (b). The biscuit is then squeezed between two nickel plated stampers by a hydraulic press (c) spreading the vinyl to form the record, (d) which is then trimmed and stacked for testing and packaging. The average press turns out 8500 records daily. Last year's largest single pressing of a particular album was over 14,000,000 copies.

Stanton plays a vital role in assuring that only the very finest of recordings will ultimately reach the consumer.

Engineers rely on Stanton cartridges for playback of the pressing. Stanton's 881S Professional Calibration Standard Cartridge is the logical choice to evaluate the newly pressed records. The 881S is a low mass pickup that features the patented, expanded contact area Stereohedron® stylus tip for truest fidelity and gentlest possible treatment of the record groove. Each Stanton 881S is individually calibrated with the test results packed in each unit. From disc cutting to disco to home entertainment your choice should be the choice of the Professionals... Stanton cartridges.

For further information contact: Stanton Magnetics Inc., Terminal Drive, Plainview, New York 11803

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The Choice of the Professionals™
The World's 2nd Best Precision Demod

at $6,950

You would have to pay an extra $3,000-$5,000 to get a better precision demod, and even then we are not so sure it's better than our 3710. Compare features and performance for yourself—send for our free data sheet.

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Use the N.O.V.A. Block.
A Sapphire Tape Cleaner.

For all formats.
Attaches to your present VTR.

NOVA Corporation
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See Us at Booth #1722
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outlet the most flexible control system yet.

The entrance into the television arena of memory systems has afforded the lighting director unparalleled control over his studio lights. A requested lighting effect can be achieved, which before would have been the cause for a long pause, and then, because of its complexity, the cancellation of a cue. Along with complexity, the limited dexterity of the control board operator who would calmly say "You think I got seven hands, dummy?" should be mentioned. Today, the operator can deliberately program his board to meet the wildest demands of the lighting director with little effort. These cues are then executed to perfection through the use of electronics memory control and dimmer per outlet.

In addition to the technological advances and operation advantages inherent in memory dimmer per outlet systems, a word about cost effectiveness is in order. Dimmer per outlet eliminates the need for hard wire patching, which is both cumbersome and costly. Doing away with hard wire patching not only eliminates buying a large patch board with heavy gage wire and copper busses, it also eliminates the time-consuming function of patching and the man-hours to do that patching. Now when the lighting director picks up his show and plugs it in, he can actually set his console in a cue mode, so that when he begins his rehearsal he is set up and ready to go. This cuts down on costly set-up time, studio usage time that is becoming very costly, and saves overall studio production labor time. The sooner the show is picked up, the sooner the production can go on camera, thereby reducing the cost of the entire production.

Studios, such as the CBS Studio 52 in New York City, have in operation a memory/dimmer per outlet system like the one described. The system is Strand Century's MMS (Modular Memory System) with 480 outlets. The installation is comprised of 341 2.4-kW dimmers, 141 6-kW dimmers, eight 12-kW dimmers and a total of 130 memories to handle all 480 dimmers. In this system, there is a pin matrix backup that can handle all 480 dimmers and can be patched into 10 sub-masters. This was installed as a safety measure, in case the memory went down (which never has). In fact, the system at CBS was installed in August 1978 and as of January 1979 there has been no loss of memory nor any down time at all.

Strand Century Modular Memory System with 480 outlets.
THE UNCOMPLICATED CONSOLE

Compare the sensible panel layout of these broadcast mixers to the cluttered array of tiny buttons, midget knobs and closely spaced faders on other mixers costing much more. Ours are easier to operate and understand.

Compare the sensible electronic packaging, with only 2 kinds of electronic modules used. That's redundancy! Plus, such standard features as 4 inch log taper slide pots, selectively illuminated VU meters, mono output, electronic audio switching, 2-way remote control and, of course, our furniture quality oiled walnut end panels and armrest.

Three expandable models to choose from: SYSTEM 16 (illustrated) is priced at $8,250 with 8 mixers (expandable to 16) with 3 metered stereo outputs and 1 metered mono output. Additional mixers $365 each. Delivery? Stock to 3 weeks.

GET UNCOMPLICATED!

11355 PYRITES WAY
RANCHO CORDOVA, CA 95670
(916) 635-1048

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NAB Booth 312
The Nation and the world was held spellbound by spectacular athletic achievements at the 1980 Winter Olympics.

The engineering efforts by ABC, which made the telecasts possible, and the sports direction which pulled it all together, deserves special recognition. Our praise goes to Julie Barnathan, president, Broadcast Operations and Engineering, ABC Television, and Roone Arledge, president, ABC News and Sports for their skills and efforts. They and their organization made it possible for the "thrill of victory and agony of defeat" to be experienced by viewers the world over.

Broadcast Engineering congratulates the American Broadcasting Companies for its exceptional Olympics coverage and the manufacturers of equipment that made it possible.

Technicians are shown here at the ABC Sports Production center at the 1980 Winter Olympics in Lake Placid preparing footage for the 50.5 hrs. of Olympics coverage. During the closing ceremonies of the Olympics, a segment showed the telecast preparations, engineering handicaps, and the millions of dollars of equipment needed for this event.
Command Performance!

United Media's new line of SMTE/EBU video editing equipment offers the superior quality, outstanding performance and the prestige that is commanded by today's sophisticated user.

Our stream-lined COMMANDER I & COMMANDER II computer-controlled electronic video editors offer a variety of standard features which inspire confidence in their quality of edits and associated functions by providing continuous reliability and ease of operation.

COMMANDER Series were designed with the creative operator in mind providing:

- Uncomplicated keyboards and display
- Real-time control system for video or audio tape recorder
- Micro-processor controlled with an electronic memory for keeping track of edits.
- Totally complete with features that may only be offered as options by other manufacturers.
- Less technical skill required to set-up, operate and edit with UMI products.

Accessories such as Time Code Readers, Generators and Character Generators were also designed with the user in mind, providing features such as user bits, 24, 25, and 3C frame rate selection, drop frame and non-drop frame selection and much more.

You Control the Performance with the COMMANDERS.

UNITED MEDIA, Inc.

4075 Leaverton Ct. • Anaheim, CA 92807 • 714/630-8020

Circle (176) on Reply Card
Ampex expands Mexican joint venture

Ampex and Aurex, SA de CV announced a $3 million expansion of Aurex's Mexico City facility, a joint venture company that manufactures and markets magnetic tape. Arthur H. Hausman, Ampex president and chief executive officer, and Federico Valdes, Aurex chairman, said the plant expansion is scheduled for completion in early 1981 and will enable the manufacture of video and other precision magnetic tapes. Aurex currently manufactures audio recording tape for industry and consumers.

Burbank Studios impressed with echo cancellers

The ready availability of echo cancellers proved to be the winning factor in RCA Americom's renaissance at the Burbank Studios. On November 26, 1979, two RCA Americom private leased channel satellite circuits began operations out of a total of five circuits the studios use for their everyday telecommunications needs.

Datatron on Nasdaq wire

Datatron has announced that due to increased trading activity in its stock during the past year, its stock transactions have qualified for reporting on the NASD's National Over-the-Counter Nasdaq wire. The company's stock has been listed since 1975 on the Western Over-the-Counter Nasdaq, and was the 20th best performing stock on Nasdaq in calendar 1979.

Ampex expands Golden Reel Awards

To broaden its participation in the worldwide market for audio recording tape, Ampex announced it is expanding its Golden Reel Awards program to all international markets. Since the start of the program in the US three years ago, Ampex Golden Reels have gained acceptance among performing artists and recording studios as a major symbol of success.

Radiotechniques formed

Edward (Ted) Schober has formed a consulting firm primarily aimed at serving radio broadcasters. Services include: station design and construction, equipment design, field studies, sound analysis, management consulting, appraisals, AM antenna broadbanding, and FM transmitter broadbanding. Schober can be contacted at: Radiotechniques, 402 Tenth Avenue, Haddon Heights, NJ 08035, (609) 546-1841.

Data Communications creates new marketing arm

Data Communications, the Memphis-based information processing firm, has realigned the organizational structure of its Broadcast Division, formerly known as BLAS, and made a series of new personnel assignments, it was announced by F. Scott Pierce, president of the division. Bill Boyce has been named manager sales and services. Dewey Hemphill will be the new sales manager and Dorothy Simon has been moved from assistant regional manager to regional manager.

Skip Sawyer has been named director of product development for a newly formed division, the corporate marketing division, which operates under the umbrella of DCC, the corporate head. Sawyer will join Dwight Drinkard, who recently joined DCC as marketing services manager, in the creation of an overall marketing strategy for the DCC diversified products.

Communitronics grand opening

Communitronics has announced the grand opening of their new, larger and completely modernized production facilities. The 20' x 32' studio features the latest broadcast cameras, a professional production switcher, on-line/off-line editing and other modern features.

Other new enlarged areas include equipment demonstration room, conference room, administration and sales offices, plus an updated and newly equipped multi-bay service complex.

Divisions include an Audio Visual Rental department, an enlarged Video & Audiotape duplication facility and video and audiotape sales department.

WCLF installs Microtime equipment

WCLF Channel 22 Television, Clearwater, FL, made history when it became the first religious TV broadcasting station to install two Microtime 2525 video signal synchronizers. WCLF is a new religious TV station operating in temporary facilities until construction of its new permanent facilities is complete. Bill Baird, Microtime's Southeast regional manager, and Dave...
If Your Television Operation is on the Move... Stop Right Here.

Today, after nearly a decade of successful user-oriented experience, Compact is manufacturing and selling mobile location systems designed and engineered to answer your remote production needs for the 1980's.

Compact builds a standard line of mobile location production vehicles and a portable up-link earth station with generator, each ruggedly designed to meet the demanding requirements of location production.

Our Compact 17 and 19 are ENG units that are ready to meet the world on a moment's notice. The Compact 20 is an EFP system containing up to four cameras and up to two one-inch VTR's. Capable of handling a wide range of remote productions, the Compact 27 is designed for maximum economy and flexibility and contains up to six cameras and up to three VTR's. Our Compact 40 has a roomy provision for a production staff of ten and is ideal for sports and intricate entertainment specials. It contains up to eight cameras and four VTR's.

Each unit in our standard line not only represents today's state-of-the-art technology, but each is also wired both electrically and electronically to accommodate orderly expansion as your production requirements change. And delivery is surprisingly prompt.

So, if your television operation is on the move, learn how Compact can help get you there. And prior to the NAB and NCTA conventions one of our experienced broadcast engineers will be glad to call on you with more details. Contact Mr. Oscar Wilson, Sales Division.

Compact Video Systems
Sales Division
West Coast Headquarters
2813 W. Alameda Avenue
Burbank, CA 91505
(213) 843-3232
Telex: 662404

Chicago
625 N. Michigan Avenue, Suite 500
Chicago, IL 60611
(312) 537-5333

New York
122 E. 52nd Street, 17th Floor
New York, NY 10017
(212) 986-2430

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A Step Ahead
"An endless variety of acoustic spaces..."

Our versatile new digital reverb unit is the most useful sound processor that a broadcaster can buy today. The SPACE STATION can give added presence and body to a live announcer's voice, enhance music and speech for more sophisticated in-house commercials, simulate an endless variety of acoustical spaces, and generate unusual special effects. Moreover, the SPACE STATION can add four delays and/or reverberation to each of its two outputs, creating a spacious mono-compatible 'stereo' version of the source that is especially effective for anyone listening in the limited confines of a car.

If you’re already familiar with single-function digital units or bulky unadjustable mechanical systems, we know you’ll be pleasantly surprised by the SPACE STATION—and by its price, only $1,995.

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"I'M SAVING 15c ON EVERY GALLON OF GAS I BUY."

"I’m doing four simple things to save gasoline—and it’s like getting a 15c discount on every gallon!"

"Slowing down from 70 to 55 mph on the highway saves me 6c a gallon. Keeping my car tuned saves 4c a gallon. And I’m saving another nickel a gallon by using radial tires and keeping them correctly inflated."

For a free booklet with more ways to save energy and money, write "Energy," Box 62, Oak Ridge, TN 37830.

ENERGY.
We can’t afford to waste it.
U.S. Department of Energy

Smith of Sun Video, Largo, FL, have assisted SCLF with many of their technical video processing equipment requirements.

Merger

Polyline announced that it has merged with its division, Recording Supply and Pro Audio Specialties. The recording industry supplier manufactures plastic reels and boxes, and through its divisions offers audio and videotape and accessories, and stocks a selected line of Switchcraft brand audio connectors.

Sony predicts strong video growth

A combination of interrelated communications factors will make the professional, industrial and business use of videotape technology a growth industry for the 1980s, according to a top executive at Sony Video Products.

"The overall economic picture for the US and world industrial economies in the next few years may not be particularly bright, but certain industries will prosper from these same down-turn factors by being used as solutions to new and developing business problems. We believe that video is perfectly positioned for the next decade," explained Koichi Tsunoda, president of Sony Video Products Company, a division of Sony Corporation of America.

News/Sports Radio Network purchase Wisconsin Independent Network

The assets and ongoing business of the Wisconsin Independent Network, headquartered in Neenah, WI, have been purchased by News/Sports Radio Network and all operations have been transferred to News/Sports Radio Network's facilities at 9431 W. Beloit Road, Milwaukee, WI 53227.

Ampex and Signal merge

The Signal Companies and Ampex jointly announced that the two companies have entered into an agreement in principle for the merger of Ampex into Signal through an exchange of common stock.

The terms of the agreement in principle call for the exchange of 0.79 Signal common share of stock for each common share of Ampex. Ampex has approximately 11 million common shares outstanding and an additional approximately 1.7 million shares reserved for issuance upon exercise of employee stock options and conversion of convertible debentures. The merger is subject to termination by either party if, anytime up to 10 days before it becomes effective, the average of the closing prices of Signal common stock on the New York Stock Exchange for any consecutive 5-day period shall have exceed $51 per share or been less than $40 per share.

Completion of the merger is also subject to approval by the board of directors and shareholders of each company, a favorable tax ruling and approval of various regulatory agencies. The merger should close in mid-1980.

The agreement was jointly announced by Forrest N. Shumway, Signal chairman and chief executive officer and Arthur H. Hausman, president and chief executive officer of Ampex.

Shumway stated, Ampex is a premier high-technology company, well-respected in its markets. "Ampex meets our investment criteria in that it is non-cyclical and a leading company in a growth industry. It manufactures high-quality products," said Shumway.

Ampex is headquartered in Redwood City, CA. It principally designs, manufactures, and markets worldwide professional audio and video systems, computer memories and data handling products, magnetic tapes and accessories. At the end of its fiscal year ended April 28, 1979 it reported sales of $380 million. It employs 12,000.

The Signal Companies is a worldwide, multi-industry company reporting sales of more than $4 billion. It employs 53,000. Its units include The Garrett Corporation, Mack Trucks, Inc., UOP Inc., Signal Landmark, Inc., and Dunham-Bush, Inc. Signal's investments include Golden West Broadcasters and Nomax Company.

Merger

Radio and TV stations will soon be offered a new and expanded choice of computer-based broadcast management systems as two of the major companies now in the field announced plans for merging their facilities and personnel into a new organization to be known as Broadcast Management Concepts.

An "agreement in principle" has been reached for the merger of the Computer Division of Bloomington Broadcasting, located in Bloomington, IL, and Automated Business Concepts, headquartered in San Diego, CA, according to Timothy R. Ives, president of Bloomington and Thomas G. Haag, president of ABC.
After planning and installing some of the most creative and up-to-date sound systems in top Japanese broadcasting studios, our engineers now know that they can solve any problems... even yours.

Cost performance assured.

**SS-380ST**
PORTABLE MIXER

**Dimensions**
- 16CH stereophonic
- 615(W) x 540(D) x 175(H) mm
- (24-3/32" x 21-9/32" x 6-15/32")

**Weight**
- 27kg (16CH), including power supply
- (59.4 lbs) - metric pound

**SS-402** *(For EFP)*
4-CHANNEL PORTABLE MIXER

**Inputs**
- 4

**Outputs**
- 2 (stereophonic)

**Monitoring**
- (stereophonic)

**Single channel, UMO x 8 (continuous for 4 hours)**

**Dimensions**
- 276(W) x 210(D) x 80(H) mm
- (10-3/32" x 8-11/32" x 3-1/8"")

**Weight**
- 6kg approx.
- (13.2 lbs) - metric pound

**SS-403** *(For ENG)*
3CH ULTRA-COMPACT TYPE MIXER

**Dimensions**
- 3CH Input
- 152(W) x 14(D) x 47(H) mm
- (6-1/2" x 1+1/8" x 1-7/8"")

**Weight**
- 1kg, including battery
- (2.2 lbs) - metric pound

*Agents wanted for our products.

*Also, we can act as your sales agent in Japan.

Sigma Engineering

TOKYO Office: Futura Bldg., 2-57-9, Higashi-Ikebukuro, Toshima-ku, Tokyo, Japan Tel. (03) 983-1208

OSAKA Office: Sanod Bldg., 2-3-5, Tanjiubashi, Kita-ku, Osaka, Japan Tel. (06) 353-3299

Solo Export/Import Agent:

TRANSTEKNE INTERNATIONAL, INC.
405 Palm House, J-20-2, Honmachi, Shibu-ku, Tokyo 161, Japan
Tel. 0232-4401

U.S.A. Agent:

AMERICAN DATA CORPORATION
Research Park, P.O.Box 5278, Huntsville, Alabama 35805 USA
Phone: (205) 837-5000 TWX 910-726-2126

Circle (192) on Reply Card
Headquarters of the new organization will be in San Diego, with a full-service Midwest office in Bloomington, IL. Regional offices in Dallas and New York are planned for March, with additional offices to be added during 1981.

SALES/CONTRACTS

RCA
Channel 4, Sao Paulo, Brazil, will begin broadcasting a circularly polarized TV signal next year with a new RCA transmitter and antenna system valued at more than $1 million, RCA Broadcast Systems announced. The Sao Paulo outlet of the TV Tupi Network will install a 50kW RCA transmitter and a VHF Fan-Vee antenna.

Pye
Pye TVT is equipping and installing Studio 'B' at the new BBC Manchester Network production center. Studio 'B' is the second production studio at the Oxford Road center to be installed and is part of the BBC policy to consolidate production facilities on to one site rather than the existing pattern of nine separate radio and TV studios which make up the BBC Manchester production facility.

Frezzolini Electronics
Frezzolini recently received a contract from Ampex for Frezzolini-design and manufacture of portable power elements for the Ampex videotape recorders that will be used to tape the 1980 Olympics in Moscow. The contract includes Frezzi battery packs for the VTRs and associated equipment including ac-mains-isolated Frezzi-Fast battery chargers.

Harris
WTVK, Knoxville, TN, has awarded the Broadcast products division of Harris a contract for a BT-110U1, 110kW UHF color TV transmitter and an Andrew Antenna.

The broadcast products division of Harris will deliver an outside broadcast van equipped with three TV line color cameras to the University of Chile in Santiago.

Marconi
Southern Television has placed an order with Marconi Communication Systems Limited for three studio cameras and one portable, all from the Marconi Mark IX family of automatic color TV cameras. They are to be used to fit out southern's outside broadcast van.

Datatron
Datatron has announced that it has purchased from Dytek Industries, design, ownership and exclusive manufacturing rights to that company's line of video production switchers, routing switchers and controllers. Included in the acquisition was a new line of production switchers to be marketed for the first time by Datatron.

Neve
George Cook, the BBC's assistant director of engineering has signed a contract with Neve Electronics International for seven new control desks custom designed for BBC Radio. This is the largest single BBC order ever won by Neve.

Robert Bosch
The Moroccan National Broadcasting Organization RTM has placed an order with Robert Bosch GmbH, television systems division, for new color studio equipment including 3 KCP 60 cameras, a type RC 1051 ME studio production switcher and the associated peripheral units.

An order for 49 1-inch BCN VTRs from Radio Television Espanola has been received. Twenty-five of the SMPTE/EBU B-Format recorders are portable BCN 5 cassette machines of BCN 20 reel-to-reel units. Half of the 24 studio BCN 50s are equipped with digital still play and slow motion facilities.

Kansas State Network
Kansas State Network reported record first quarter operating revenues and net earnings. Operating revenues for the first period of KSN's fiscal 1980, ended November 30, 1979, rose 14% to $5,841,000 from $4,137,000 a year earlier.

CVS is Now Harris Video Systems!
See the complete HVS equipment line at the Harris Exhibit, 1980 NAB Convention, North Exhibit Hall, Las Vegas Convention Center.

April 13-16, 1980

ENERGY.
We can't afford to waste it.
The economical VTR system for all applications in broadcast production and news. 1 inch type B format according to SMPTE/EBU. Excellent operational experience since 1975 in all TV standards worldwide. Brief-case sized cassette VTRs, economical production recorders, sophisticated post production systems and an automatic multicassette system - with one format. Digital techniques - slow motion, stills and video effects. The safe 1 inch format with a future.

From Bosch.
new products

Post-production system
Videomedia announce the Z6-E post-production system. In the Z6-E, the edit points are determined by going out of the event as opposed to entering the event, which demands a frame match edit every time an effect is implemented and limits the operator to A/B rolls at best. The Z6-E can perform A/B/C/external rolls plus 2, 3, 4, + way splits.

Circle (617) on Reply Card

International language accents
Eleven international languages are supported in resident memory display by a single optional PROM set in Quantafont Q-VII teleproduction graphic titler from System Concepts.

The international set will call up 79 characters and provides true lower case accents to support Dutch, Danish, English, Finnish, French, German, Italian, Norwegian, Portuguese, Spanish and Swedish.

Circle (618) on Reply Card

VTR editor interface
Dynasciences has available a 1-inch format VTR interface kit to be used with their model 104 post-production editor. The kits are adaptable to most 1-inch VTR models, specifically the Sony BVH-1000.

Circle (619) on Reply Card

Master control switcher
ISI has announced release of a new 931 master control switcher designed for small station operations. The unit features 10 audio follow video inputs with five audio breakaways and audio over/under. Automatic transitions, colorizer, program audio VU meter, and downstream keyer with border edging, four input selector and independent colorizer complete the list of standard features. Options include a time display.

Circle (620) on Reply Card

TK-76B CO-AX remote control
Cinema Products announces a new digital remote control system for RCA TK-76B ENG/EFP cameras. The new CP CO-AX system consists of a mini-CCU, a digital encoder, and a camera-mounted decoder sandwiched between the TK-76B camera door and the camera body. The digital encoder will accommo-

Circle (621) on Reply Card

VIRS generator
Television Equipment Associates announces a new VIRS generator manufactured by D-Lab. This compact generator can be installed at

Circle (622) on Reply Card

For Information: Cinema Products, 2037 Granville Ave., Los Angeles, CA 90025.

Polyline Corp.
312/298-5300
1233 Rand Rd. • Des Plaines, IL 60016

Circle (186) on Reply Card

222 Broadcast Engineering March 1980
Long known for the finest microphones in the professional recording industry, AKG now introduces the high-performance D-300 Series Microphones—setting the pace for the next decade in stage-quality studio sound.

**A WORLD OF DIFFERENCE IN THE WAY YOU SOUND**

For example, the D-330BT features:
- Stainless-steel impact resistant outer grille
- Internal windscreen
- Second windscreen/pop filter
- Internal protective basket
- Hypercardioid dynamic transducer modular system
- Hum rejection coil
- Anti-noise elastomer suspension
- Dynamic handling noise rejecotor

Strong die-cast nickel-plated housing
9 ways to create your sound:
- Three-position switch for high-frequency contour
- Three-position switch for low-frequency contour
- Plug-in transducer system for simple in-field replacement
- Standard three-pin professional connector

See them at your AKG dealer, or write today!

...the mark of professional quality
in microphones, headphones, phonocartridges, reverb units.

© AKG Audio und Kino-Geräte GmbH, Austria

Circle (181) on Reply Card

March 1980 *Broadcast Engineering* 223
The SESCOM "Mi-Series" Audio Transformers are specifically designed for broadcast and recording applications.

**FEATURES**
1. Low distortion < .2% @ 30 Hz
2. Broad frequency response ± 1 db 20-20KHz
3. Electro-static shielding
4. Six power levels: -40, -30, -10, 5, 18 and 30 dBm
5. Various primary and secondary impedances
6. Double and single mu-metal shields
7. Both shielded and open versions.

**SEND FOR YOUR FREE COPY OF OUR NEW CATALOG**

We also manufacture direct boxes, Mic-splitters, snakes and audio modules.

Circle (189) on Reply Card

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**Video filters**

A new range of low-pass video filters is now available from Broadcast Video Systems, Ltd. These passive filters are ideal for installation at the output of character generators to eliminate spurious spikes occurring above the normal video pass band. Features include phase equalization, low insertion loss and better than 45dB rejection above the cutoff frequency, with extremely fast roll off. Cutoff frequencies are available from 0.5MHz to 10MHz.

Circle (622) on Reply Card

**Acoustic chamber synthesizer**

The Master-Room XL-305 acoustic chamber synthesizer, from Micmix, incorporates a new design in compact, self-contained reverberation systems. The XL-305 is a full stereo unit featuring two independent channels, switchable to either mono or stereo imaging of monaural signal. Input and output level controls as well as dry/reverb mix controls are provided for each channel. Each channel also includes a 4-band equalizer that allows the XL-305 to effectively simulate the reverberant sounds of a plate, live chamber or concert hall.

Circle (624) on Reply Card

**Video signal synchronizer**

Microtime has announced shipments of the 2525 video signal synchronizer. The 2525 features RS170A sync generator; field 1, field 2, or frame freeze for digital video effects; auto freeze or black burst selectable on last field of active video; infinite H phase resolution for precise switcher timing control; optimized clean performance with
**soft SMPTE for the '80s**

BTX software based Series 50 offers every SMPTE time code function including: generate, read, digital display, in-video display, jam sync, user bits and optional vertical interval format.

These functions are available individually or in any combination. Series 50 delivers the superb performance, quality and reliability you have come to expect from BTX.

---

**The BTX Corporation**

12 Huron Drive, Natick, Massachusetts 01760, (617) 891-1239

6255 Sunset Boulevard, Hollywood, California 90028, (213) 462-1506

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**We want to take stroke out of the executive suite.**

Having a stroke isn't something you plan. For yourself or for others in the office. But nearly one million Americans each year die of heart disease and stroke. And 200,000 of them die before retirement age.

The American Heart Association is fighting to reduce early death and disability from heart disease and stroke with research, professional and public education, and community service programs.

But more needs to be done. You can help us find the answers by sending your dollars today to your local Heart Association, listed in your telephone directory.

---

**Put your money where your Heart is.**

**American Heart Association**

WE'RE FIGHTING FOR YOUR LIFE

---

March 1980 Broadcast Engineering 225
input source hot switch; line error detection, velcor, DOC and hetrocolor processing.

Circle (625) on Reply Card

VTR monitoring unit
Marconi Electronics has introduced a VTR monitoring unit that combines remote video level TBC controls with monitoring selection in a self-contained 3½-inch high, 19-inch rack-mounting unit. The B4624 is compatible with all Ampex VPR-1 and VPR-2 and Marconi MR1 and MR-2 1-inch VTRs. A choice of either of two sets of interconnection cables can be supplied for operation with either A or C formats. A waveform-on-picture facility shows video, TBC and servo waveforms superimposed on the picture. A 4-way selector switch enables the selection of the three standard audio channels in addition to the operational EBU 4th audio channel that feeds an internal 3-watt audio amp and speaker.

Circle (626) on Reply Card

Editing systems
Convergence has introduced three new ECS-100 series editing systems: the ECS-102A, ECS-103A and ECS-103B. The flexibility of the software-based design of the ECS-100 series allows the editing systems to be fully expandable and upgradeable at any time.

The ECS-102A is an entry level, single-source editing system featuring cruise control, trimmable in/out points, and operates with 3/4- and 1-inch VTRs. This editing system is particularly suitable to ENG editing, animation and automatic dialogue replacement, and is fully upgradable to the multi-source ECS-103B.

The ECS-103B is a single source multiple source, cuts-only video cassette editing system. This system is unique with its capability to employ additional source VTRs with cuts-only editing. Other features include split audio and video edits, 99 scene store and recall, and high-speed search.

The ECS-103B is a single source or a multi-source, on and off-line post-production editing system with A/B roll capability and switcher control for special effects. It works with 1- and 3/4-inch videotape formats. Additional features include sync roll, split audio and video edits, high-speed search, 99 scene store and recall, and status display generator. The unit is capable of producing an industry standard edit decision list with full effect notation. All ECS-100 series systems are capable of operating in control track or SMPTTE time code, drop frame or non-frame and can produce an edit decision list when equipped with the optional EDL-100 edit decision lister.

Circle (627) on Reply Card

Voltage-controlled amplifier
A low distortion, low noise, high bandwidth voltage controlled amplifier has been introduced by dbx. All-discrete design boasts a minimum gain-bandwidth product of 50MHz, resulting in full audio band-
width at 60dB of gain with complete freedom from slew rate related problems. The gain versus control voltage characteristics of the VCA are an exponential function (20dB/volt) allowing the user to accurately program the amplifier gain directly in dB.

Am enhancement
Available from Kahn Communications, the Non-Symmetra-Mod enhancement system allows the AM broadcaster to customize enhance a signal to increase coverage. The NSM unit accomplishes this by producing a more fully modulated signal (125% positive) with a clean, low distortion sound, and with significantly purer sideband structure than produced when clippers are used. This system is compatible with normal audio processors, such as the Kahn Symmetra-Peak device, Dorrough DAP, etc. The NSM-125 directly feeds the AM transmitter, making it the final step in the modular processing system.

Mobile titling system
Chyron Telesystems has developed the compact and ruggedized model RGU-1, which incorporates many of the features of the CHYRON-IV, including 27-nanosecond resolution; a large standard font library compatible and interchangeable with CHYRON-IV standard font library; font storage in groups of four complete fonts at a time; individual character-by-character color with optional colorizer/keyer/edger; controllability from an unlimited number of keyboards; and an unlimited second channel that converts the RGU-1 to a high resolution dual channel system.

Tape reproducer
Ampro/Scully has announced that the Scully 270 Series tape reduction system, that features bi-directional capabilities, will continue to be manufactured. The Scully 270 is designed for use in long-play back-

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See us at NAB Booth #1407
Field strength meter
Rohde & Schwarz announces the ESH-2 test receiver for high-precision measurements of field strength, interference according to CISPR and MIL specifications, and tuned-frequency voltage measurements, and for radio monitoring over a frequency range from 10kHz to 30MHz, and a usable sinewave input signal range from -30dB (uV) to +137dB (uV). This sensitive receiver, with its high overload capacity, accuracy (error for voltage measurements <1dB, for field strength measurements <2dB), wide voltage range (30 nV to 3V), and outstanding rejection of all unwanted signals.

Circle (632) on Reply Card

Audiocom intercom system
Telex has introduced the Audiocom, a closed-circuit headset intercom system. Components may be selected for a single or multiple line intercom, suitable for small or large, indoor or outdoor, portable or permanent installations. Paging, program feed and options such as light/tone signalling are available. Headset intercoms are easily installed with simplex wiring and standard connectors for short or long distances, exceeding five miles.

Circle (633) on Reply Card

Portable monitor
Deliveries of the new BARCO CM-33 battery-operated portable ENG/EFP color monitor have begun by E & O Systems, Ltd. The compact 12-inch monitor, operated by battery or ac power, is designed for mobile broadcast and closed-circuit TV

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Circle (198) on Reply Card

Hands-free intercom

Clear-Com has developed a hands-free intercom speaker station, the KB-124, available in rack-mount and portable versions.

Applications include videotape room, master control, lighting grid, motion picture sound stage, on location film and ENG/EFP; any area where a headset would be restrictive or impractical.

Circle (634) on Reply Card

Equalizer

The Orban 672A is a quasi-parametric equalizer with graphic-type EQ controls. Wide-range high-and low-pass filters with 12dB/octave Butterworth slopes follow the graphic section. The 672A has two outputs, arranged so that these filters can also be used as a full turntable electronic crossover.

Circle (636) on Reply Card

Color monitors

The PCM-500 series of professional color master studio monitors is now available from Lenco. The monitors feature a black shadow mask precision in-line gun cathode ray tube, and a switch-selectable comb filter in the luminance/chrominance separator. Resolution is 625 lines or more. The monitors accept both NTSC and RGB inputs.

Circle (637) on Reply Card
Headsets

The Astrolite series of headsets Racal Acoustics features interchangeable cushions. Ear-enveloping and ventilated foam cushions are available. The headset can be supplied with three different earphones and six different microphones. For most intercom applications, Astrolites are supplied with a coil cord, mic switch and plug.

Circle (638) on Reply Card

Microwave link analyzer

The model 3711/12A microwave link analyzer by Hewlett-Packard covers both the traditional 70MHz and the new broadband 140MHz IF carrier communication systems. Along with dual IF capability, the MLA features sensitivity at -20dBm, a frequency identification system, sweep range adjustable from 0.5MHz to 50MHz at 70MHz and out to 100MHz at the higher IF. Direct readout of the variable marker frequency is displayed on a 5-digit LED counter. Resolution is to 10kHz and accuracy is typically to 20kHz, making it ideal for narrow-band satellite filter testing. The counter also is useful in establishing IF inputs and setting modulator center frequencies.

Circle (641) on Reply Card

Digital TBC

Harris Video Systems has introduced the CVS 520B digital TBC. It features an optional 16 line window. The unit dubs cassette and other non-capstan servo'd heterodyne VTRs to quadruplex and other production machines, converts all heterodyne VTRs to interlaced color, and uses 9-bit four times subcarrier PCM digital sampling to maintain picture quality on multi-generation tapes.

Circle (639) on Reply Card

FM exciter

Cetec has introduced the 690PLL FM transmitter exciter. The unit is a frequency-synthesized phase locked-loop exciter with output power from 3 to 15W. Stability is rated at ±300 Hz (with ±100Hz typical). Frequency range is programmable in 100 KC channel spacing, with a frequency range of 88MHz to 108MHz. Model 690PLL is compatible with all FM transmitters and all available audio processing systems.

Circle (640) on Reply Card

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Broadcast Engineering’s FM Proof-of-Performance Manual includes: All required logging forms for pulling both mono and stereo proofs. A complete chapter of FCC Rules. Dozens of helpful troubleshooting tips and time-saving measurement and logging techniques. Detailed procedures on how to pre-test your station before pulling the Proof. And more.

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232 Broadcast Engineering March 1980
The National Academy of Video Arts & Sciences

The election of officers of the National Academy of Video Arts & Sciences was held November 11, 1979 at the Academy offices in New York City. Officers elected were Ciel Dunne Kabler, Multi Media Productions, president; Alan Rogers, Modern Telecommunications, first vice president; Lee Roy Kaminski, KTK Video, second vice president; Rush Hickman, Convergence, third vice president; David J. Schweitzer, independent director of videography; Col. John J. Whiteside, Committee for the Future, treasurer.

Partial election of the board of judges also took place at the meeting. Judges screening committee includes: Chris Frost, EUE Screen Gems; Michael Little, executive producer, 700 Club, CBN; Rick Quintana, independent producer and consultant; Dick Millais, The Video Tape Company; C.S. Tepfer, C.S. Tepfer Publishing; Herman Schloss, JVC; Peter Caranicas, "Video-graphy;" Elliott Minaker, Knowledge Industries Publications; Tom Naughton, Studio III. Specialists in various non-broadcast video fields will be appointed.

Society of Broadcast Engineers

Chapter 59—Kansas City, MO

The January meeting of Chapter 59 was held at the television facilities of the University of Missouri at Kansas City School of Medicine. Prior to the formal meeting, Robert Mertz, facilities engineer, gave chapter members a tour of UMKC's impressive television facilities designed to train students in medical arts.

The meeting was called to order by Jack McKain, chapter chairman. He introduced the speaker for the session: Don Markley, broadcast consultant of Don Markley & Associates, Peoria, IL, and BE's facilities editor. Markley gave an enlightening presentation on audio proofs for AM/FM systems, and often had the group in laughter by relating some of his field experiences.

CMBA to meet in Chicago

May 8-10

The Concert Music Broadcasters Association annual meeting will be held in Chicago, IL, May 8-10, 1980 at the Sheraton Plaza Hotel.

More than 50 commercial FM and AM radio stations which have adopted classical music as their principal format are members of the association. The officers are: Hal Rosenberg, president (general manager, KFSD, San Diego); John K. Major, executive vice president (director of research and marketing, WFMT, Chicago); Maurice Loewenthal, vice president (general manager, WTMI, Miami); Robert Conrad, secretary (program director, WCLV, Cleveland); Fred Miller, treasurer (general manager, WDCS, Portland, ME).
WESH-TV to construct Harris antenna
WESH-TV, Daytona Beach, FL, one of two TV stations owned by Cowles Broadcasting, recently broke ground for a taller tower that will help increase the station's coverage area. WESH-TV has ordered a Harris circularly polarized TV antenna to further improve signal coverage. Harris will provide WESH-TV with a BTD-501.2, 50kW TV transmitter and a 9100 facility control system. Marvin C. Whatmore, Cowles chairman; John M. Haberlan, Cowles president; and second-grade student Becky Evans, triggered the ground-breaking blast near Orange City, FL, where the 1740-foot tower will be constructed. The tower will be Florida's tallest when completed in about six months.

CN tower houses UHF transmitter
The world's tallest free-standing structure, Toronto's CN tower, houses six TV station transmitters within its 1815-foot height. The most powerful of these is the recently installed transmitter developed by
Townsend Associates, Westfield, MA, for use by station CFMT, Channel 47, Toronto. The TA transmitter provides CFMT with an effective radiating power of 800,000W.

CFMT is the first to use a transmitter which uses a klystron in the visual amplifier, while utilizing tetrodes for aural amplification. The use of tetrodes in the amplifier is a design innovation that results in reduced energy requirements for operation. Also, tetrodes are about 20% of the cost of klystrons, which results in a lower selling price than conventional UHF transmitters.

According to George Townsend, president of Townsend Associates, the new TA transmitter is the first full line of UHF transmitters to employ this new engineering technique.

Regional Administrative MF Broadcasting Conference

The first session of a Regional Administrative MF Broadcasting Conference in Region 2 (the Americas) opened Monday, March 10 in Buenos Aires.

Delegates from 28 Member countries of the International Telecommunication Union (ITU) are taking part in the Conference which will last for three weeks. Three other ITU Member countries will send observers.

The first session of the present Conference concentrates on formulating the technical and operational criteria and the planning methods which will serve as a basis for the preparation by the second session of a frequency assignment plan for the MF broadcasting band in Region 2 (535-1605kHz).

The second session will be held in November 1981.

The agenda of the 1st Session is:

- To establish the basis for the preparation, by the second session of the conference, of a frequency assignment plan for the MF broadcasting band in Region 2 (535-1605kHz), taking into account the following non-exhaustive list of items: definitions; propagation data; modulation standards and channel spacing; protection ratios, including noise levels; required values for the minimum usable field strength, for the usable field strength and for the nominal usable field strength; transmitting antenna characteristics and transmitter powers; planning methods;
- to specify the form in which requirements for inclusion in the frequency assignment plan should be submitted to the Union and to fix the date by which they should be submitted.

That number will surprise a bunch of folks.

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Contact us about the CEI story. We'll provide user names and complete specs . . . or a demo might be in order.

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Labels: Trouble Sources

On two separate occasions we have suffered equipment failures that could have been prevented by the manufacturers. First, a little metal serial number label fell off a power transformer in a 25Hz automation tone generator and shorted out the rectifier diodes. The printed circuit board was also damaged by the arcing and a resistor was destroyed. Then, a metal label inside the top of our AM console fell off and shorted out the monitor amplifier causing the power supply to automatically shut down and put us off the air. An IC was destroyed in this incident.

I would like to suggest to my fellow engineers that equipment be examined to locate metal labels that are stuck on parts or inside the cabinet. These labels should be relocated or removed and placed in the instruction book for future reference. I also urge equipment manufacturers to either locate these labels in a safe place where no damage will result if they fall off when the glue dries out or return to paper or plastic labels.

Harley Drew
Operations Manager

Editor's Note: According to an unofficial announcement of the FCC's action concerning labels received October 3, 1979, the following practice is necessary for manufacturers. Paper nameplates and soluble glue are prohibited. Metal nameplates must have a minimum thickness of 0.020 inches if used. Nameplate data must be permanently affixed and displayed so as to be visible to the purchaser at the time of purchase.

As used here, "permanently affixed" means that the required nameplate data is etched, stamped, indelibly printed or otherwise permanently marked on a permanently attached part of the equipment enclosure. Alternatively, the required information may be permanently marked on a nameplate of metal, plastic, or other material fastened to the equipment enclosure by welding, riveting, etc., or with a permanent adhesive. Such a nameplate must be able to last the expected lifetime of the equipment in the environment in which the equipment will be operated and must not be readily detachable.

The amendment was effective October 29, 1979.

Oops! Emmies missed

Your October issue on the Emmy Award cover story [chart, p. 32] missed the mark and got its ATAS and National ATAS mixed up. In 1978, for example, CBS's invention of the Digital Noise Reducer for color television won National ATAS' Emmy but didn't get into your recap lineup even though BE noted that occurrence on p. 12 of the October 1978 issue.

Sherman Levin
CBS Technology Center

Editor's Note: Our apologies for not listing your 1978 Emmy. This error was not an oversight, but actually part of a more serious problem in dealing with two (competing) academies. However, we did correctly identify the two groups. Unfortunately they each want to be recognized as the official academy while at the same time bestowing identical awards and operating totally independently.

"Live" again

Thanks for the impressive treatment given Live From Lincoln Center by Don Redell in your September, 1979 issue. Judging by the response we've had, your circulation exceeds our Nielsen ratings! The cable layout chart looks dazzling, but some comments might help: O.P. stands for "opposite the prompt side" and is a term for "stage left" handed down from the old Metropolitan Opera House; we do not feed digital video anywhere, PCM in the lower left corner should read PGM or program; cameras 7 & 8 were sitting on Elemenk dollies and had ordinary lenses (not 80 x 24); cameras 2 & 3 had Rank MRL lenses.

For perspective, your readers might be interested in the fact that our shows are now carried, video and stereo, by the PBS satellite network, the stereo being digitally encoded for transmission on PBS' Digital Audio Transmission Equipment (DATE). There was a type that occurred [exception: the picture caption on the bottom of page 104]: my last name is spelled with a "c."

Mark Schubin
technical designer,
Live From
Lincoln Center

Bill Cosby says:
"When you learn CPR, you're ready to save lives—anywhere."

American Red Cross
A Public Service of The Magazine & The Advertising Council
new literature

Microwave catalog
Nurad—A commercial catalog describes the firm’s full line of microwave/ENG products and systems capabilities and features the new Superquad-II, claimed to have increased gain, guaranteed sidelobes.

Circle (642) on Reply Card

Equipment catalog
Harris—The Broadcast Products Division offers “Broadcast Equipment Accessories 79-V.” The 200-page catalog lists thousands of items required by the broadcaster in areas of audio, RF and video. Specifications, photographs, prices and ordering information are included for each item listed.

Circle (643) on Reply Card

Distortion measurement systems
Radiometer Electronics—Completely automatic distortion measurement systems and equipment are presented in a 6-page brochure. The pamphlet describes automatic distortion meter and automatic sweep oscillator forming the basic analyzer unit.

Circle (644) on Reply Card

Capabilities brochure
Loral—TerraCom, a division of Loral, has introduced its new capabilities brochure. The illustrated, 4-color, 12-page brochure describes the firm’s line of tunable microwave and digital multiplexers, production facilities and R&D and quality control programs.

Circle (645) on Reply Card

Solid-state brochure
Cherry Electrical Products—A 14-page brochure contains an introduction to solid-state capacitive keyboards and valuable application data. Specifications, detailed block diagrams and schematic charts give a concise description of these advanced design keyboards.

Video taped training course
Datatron—The availability of a videotaped training course on the operation and maintenance of its Tempo 76 videotape editing system has been announced. Produced in full color, the course is being offered in 3/4-inch format on a series of eight cassettes. The complete set of eight tapes is priced at $1150; individual course segments are priced at $350 per tape.

Short form catalog
Cohu—The 1980 edition of the Short Form Catalog describing their current line of closed-circuit television products is now available by request. Included is the new line of monochrome television monitors as well as environmental and low light level cameras.

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**THE HUMOR CORNER**

Editor’s Note: A few months ago this department was started to acknowledge that the exciting profession of broadcasting has its lighter moments. The reader response to the initial columns of this department was most reassuring, and several contributions were received.

The first contribution below came anonymously from a South Carolina station. Since this literary work was unsigned, we do not know which broadcasting department produced it.

**The broadcaster’s corporate structure**

**General manager**
- Leaps tall buildings in a single bound.
- Is more powerful than a locomotive.
- Is faster than a speeding bullet.
- Walks on water.
- Gives policy to God.

**Full-time announcer**
- Is occasionally addressed by God.

**Program director**
- Leaps short buildings in a single bound.
- Is more powerful than a switch engine.
- Is just as fast as a speeding bullet.
- Walks on water if the sea is calm.
- Talks with God.

**Traffic manager**
- Leaps short buildings with a running jump. (And favorable winds!)
- Is almost as powerful as a switch engine.
- Is faster than a speeding BB.
- Walks on water in an indoor swimming pool.
- Talks with God if special request is approved.

**Sales manager**
- Barely clears a quonset hut.
- Loses tug-of-war with a locomotive.
- Can fire a speeding bullet.
- Swims well.

**Salesman**
- Barely clears a quonset hut.
- Loses tug-of-war with a locomotive.
- Can fire a speeding bullet.

**Part-time announcer**
- Falls over doorsteps when entering buildings.
- Says, “Look at the choo-choo.”
- Wets himself with a water pistol.
- Plays in mud puddles.
- Mumbles to himself.

**Chief engineer**
- Lifts buildings and walks under them.
- Kicks locomotive off the track.
- Catches speeding bullets in his teeth and eats them.
- Freezes water with a single glance.
- ...is God!

**Safety First, Or Last**

There was a young man from Clower
Whose job was to paint our tower.
No safety belt wore he
Said, “I’m agile as can be,”
Now his wife paints his grave with flowers.

Mark Goodson
K-HYM Radio
Gilmer, TX
March 20-21—The Portland Chapter of the American Marketing Association will be co-sponsoring a National Conference encompassing the theme "Electronics Marketing in the '80s—A Decade of Challenge and Opportunity." The fees will be $145 for AMA members and $165 for non-AMA members. Contact on letterhead James L. Mater, Management/Marketing Associates, Bank of California Tower, Portland, OR 97205, (503) 228-9327.

May 3—The topic for the 1980 Midwest Acoustics Conference will be "Microphone Techniques for Recording and Broadcasting." The Conference will be held at Hermann Hall, Illinois Institute of Technology, Chicago, IL. For additional information contact Tony Tutins, Knowles Electronics, 3100 North Mannheim Road, Franklin Park, IL 60131 (312) 455-3600.

May—Peirce Phelps has scheduled its 12th Annual Video Forum to take place in Philadelphia May 6-8 and in Washington, DC May 13-15. There is no charge for admission; requests for invitations or additional information may be sent to Teresa Fuller, 2000 Block North 59th Street, Philadelphia, PA, (215) 879-7175.

June 3-7—The 29th annual convention of American Women in Radio and Television is being held at the Hilton Palacio del Rio and San Antonio Marriott in San Antonio, TX.

September 20-23—The 8th International Broadcasting Convention, IBC 80, will be held at the Metropole Conference and Exhibition Centre, Brighton, United Kingdom. IBC 80 will have over 70% more exhibition space than IBC 78. Further information can be obtained from the IBC Secretariat, the Institution of Electrical Engineers, Savoy Place, London, United Kingdom WC2R OBL.

October 5-8—The International Federation of Television Archives will be holding the 1980 General Assembly in Ottawa, Canada. For further information contact A.W. Ross, Canadian Broadcasting Corporation, P.O. Box 8478, Ottawa, Ontario, K1G 3J5, Canada.

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March 1980 Broadcast Engineering 239
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240 Broadcast Engineering March 1980
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NEW LENCO TERMINAL EQUIPMENT—Fast shipment, 30 brands of new equipment—special prices. We will buy your used TV equipment. To buy or sell, call Toll Free (800) 241-7878, Bill Kitchen or Charles McHan, Quality Media Corporation. In GA call (404) 324-1271.

OLYMPUS HS-100 B SLO MO. Excellent condition, used in studio environment, includes spare disc, Write to Dept. 491, Broadcast Engineering, P.O. Box 12001, Overland Park, KS 66212.

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March 1980 Broadcast Engineering
EQUIPMENT FOR SALE (CONT.)

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(2) PHILIPS LDH-20 COLOR CAMERAS—one with 1:10 zoom, 500 ft. camera cable, CCU, video control unit, daylight filters, 2X teleconverters, HTE tripod, dolly and cam heads—all in excellent condition. (1) Hitachi 1212 and (1) 1000P Color Cameras with zoom lenses, CCU, tripod and dolly—all in excellent condition. Contact Stu Lefkowitz, Video Production Services, 1212 Tenth Street, Berkeley, CA 94710, (415) 526-6741.

1-80-3t

FOR SALE—7 SMC 250 RS carousels, SMC EC-2 encoder, 2-16" turntables, 2-ASP-33 teletype, 3-Revox A-77, 26-13 MHz, 250 watt link transmitter, 2 equipment racks. (304) 259-7311. 3-80-2t

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CABLE L.O. Lost its lease. Following equipment for sale: PLAYBACK, editing, production, used 1/4" tapes, BW movies on tape. More information call (217) 529-1293. 3-80-1t

EQUIPMENT FOR SALE: Microwave Associates MA2A transmitter, receiver, antennas, dishes, 2 watts, 2 Gig. range, one audio channel. Solid state. New Life Communications, (612) 235-6404.

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AMPEX AVR-2 VIDEOTAPE RECORDERS: Three fully loaded nearly new VTRs (two with editors), equipped with dropout comp., Autochroma/velocity comp., auto tracking, and full color monitoring, interfaced to CMX-300 system, plus three spare heads. Contact Rod Hall at (213) 577-3400. 3-80-4t

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T-V PRODUCTION EQUIPMENT: 40 T-V videotaping production truck. Latest network & maintenance equipment. $340,000.00, (213) 985-5562 or 397-5922 Home, Withers. 3-80-11

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Excellent career opportunities are immediately available with the Grass Valley Group, for talented people with television industry experience in these areas:

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These challenging positions combine chances for U.S. travel plus marketing and engineering career opportunities. Individuals with experience designing and/or maintaining television broadcast systems are required to provide after-sales support for our wide variety of complex systems.

TV Systems Engineers

Here's an opportunity to design custom systems for a variety of GVG customers. Candidates should have a strong technical background in television systems with good basic circuit design knowledge.

Project Engineer

This excellent growth opportunity requires an individual with video project experience plus BSEE or equivalent, to assume responsibility for challenging research and development projects.

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This key position requires someone with an excellent technical background in broadcasting. Preference will be given to people with proven sales experience. Excellent company benefits plus sales and commission program are available to the successful candidate.

The Grass Valley Group offers a state-of-the-art technical environment in a serene rural setting. We are located at the foothills of California's Sierra Nevada mountains, where you'll find a relaxed lifestyle and abundant recreational activities.

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Look over our excellent product line at the 1980 NAB in Las Vegas.

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Grass Valley

Grass Valley Group Careers

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These challenging positions combine chances for U.S. travel plus marketing and engineering career opportunities. Individuals with experience designing and/or maintaining television broadcast systems are required to provide after-sales support for our wide variety of complex systems.

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WLRN-TV, 1410 Northeast 2nd Avenue, Miami, MAINTENANCE ENGINEER: SAUDI ARABIA: requirements to the Personnel Director, WSM, tion, WSM AM/FM is seeking an experienced, energetic Radio Engineer to supervise, improve and alicesional studio equipment. Please contact Tim Rounds, WBBM-TV/FM, 3719 Central Av, Fort Myers, Florida 33901; Phone (813) 936-0195. 2-80-21 e.o.e. MAINTENANCE ENGINEER—3 to 5 years experience for a modern, well-equipped northeast large market independent. Good salary and benefits. An Equal Opportunity Employer. Send resume and salary requirements to Broadcast Engineering, Dept. 492, P.O. Box 12901, Overland Park, KS 66212. 3-80-21 CHIEF ENGINEER for major market AM/FM in Pacific Northwest. Must have Chief Engineer experience with strong maintenance/audio transmitter background—enthusiasm and ambition essential. Salary $24K-$28K, depending on experience. Reply with resume to Dept. 495, Broadcast Engineering, P.O. Box 12901, Overland Park, KS 66212. E.O.F. M/F. 3-80-11 S.E. SUNBELT V STATION has opening for a maintenance technician. Must have FCC 1st Class License, three years experience in maintenance experience and strong technical background. Excellent salary and benefit package. Replies treated in confidence. Send resume to Dept. 493. Broadcast Engineering, P.O. Box 12901, Overland Park, KS 66212. We are an EOE. 3-80-11 MAINTENANCE ENGINEER: Excellent opportunity for an ambitious engineer with broadcast experience. Two years experience plus FCC 1st Class License. Send resume to WXXI TV, Production Facilities, Rochester, N.Y. 14601. EOE. 3-80-11 VIDEO ENGINEER: Large international corporation needs experienced engineer to design and operate equipment including Ikema and Sony cameras, 1" - 1/4" VTRs, switching, processing, and audio units (type C in 1980). Applicant should have minimum 3 years color CCTV or broadcast experience. Graduate of a 2.4 year electronics program preferred. Facility located near Chicago. Excellent benefit package provided. Send resume to Dept. 496, Broadcast Engineering, P.O. Box 12901, Overland Park, KS 66212. We are an EOE. 3-80-11 ELECTRONICS ENGINEERS: Sony, the leading company in video, is offering opportunities to ambitious engineers who are aiming at a very promising future. If you have experience in broadcast maintenance with emphasis on digital technology, you may send resume to Mr. Carlo Severo, SONY BROADCAST DIVISION, 47-47 Van Dam Street, Long Island City, N.Y. 11101. We are an equal opportunity employer M/F/H/V 3-80-11 BROADCAST ENGINEER—MOUNT ROYAL COLLEGE requires an experienced VTR and general broadcast engineer for its studios in CALGARY, ALBERTA, CANADA. The system includes: Phillips LDH-1 cameras, Ampex BCC-1 cameras, Ampex VPR-1/TBC-800 VTR's, Sony and Hitachi ENG systems, JVC-8500/RM-85 U-matic editing facilities, Conrac monitoring equipment, and all professional quality support equipment. The successful applicant must have a strong background in digital and analog circuitry, as well as general knowledge in television systems maintenance. Mount Royal College offers excellent employee benefits and competitive salary with the industry. Please submit resume, SPECIAL DELIVERY, prior to March 31, 1980 to: Personnel Office, MOUNT ROYAL COLLEGE, 3710 23rd Street S.W., Calgary, Alberta, Canada T3E 6K8. 3-80-11 RCA/ECCO SMRTE Tape Editing Controllers. Used with RCA TR-81 recorders. Units have been recently overhauled, McDonald's System—Television Department, 2010 E. Higgins Road, Elk Grove, Ill. 60007 (312) 583-3320. 2-80-21 EXECUTIVE SEARCH One of the most misunderstood concepts in Broadcasting today. Let's set the record straight on the three types of firms and what each can do for you (the company or the candidate). 1. The Agency. This type publishes mailing lists and mass mail resumes. Either party can pay the fee. This system is most effective with entry level positions, but it can be impersonal. Since they deal in volume, the personal attention is minimal. 2. Retainer Search. They are pro s, but their system is inefficient. The client pays the fee before they hire and there's no guarantee they get a man. Usually handles multiple in- dustries and one search can take months. No benefit to candidates if you don't fit the one or two searches they currently have. 3. Contingency Search. That's us. James Lloyd Executive Search Companies pay only when they hire. We have people who specialize in each aspect of the industry, so we know who to contact when you're looking. It's all done discreetly with personal attention. We understand your needs since our people came from the industry. (Stations, studios, manufacturers, etc.) We keep up to date by attending trade shows, (we'll be at NAB, of course) studying industry journals, (we get every publication available) and talking with industry leaders. (The people we placed years ago are now Presidents and General Managers.) Since we're the oldest (10 yrs.) our files are extensive. We know who designs, manufactures, sells and services the products We know the companies in production/post-production, the Stations and the CATV systems. We even know about tele text, video discs, fiber optics, narrowcasting, MDS, STV, etc. Of course we're still learning, as you are. So the next time you need advice on recruiting, or your own career development, call us. We'll show you what an EXECUTIVE SEARCH firm is supposed to do.
TELEVISION STUDIO MAINTENANCE ENGINEER: Four years studio maintenance experience required, First Class F.C.C. license preferred. Please send resume and salary requirements to: Jesse Holbrook, Chief of Technical Services, Office of Instructional Resources, 170 Taylor Education Building, University of Kentucky, Lexington, Kentucky 40506, or call (606) 873-5831.

OUR PRODUCTION LOAD is expanding and we need HELP! PTL has openings for the following production positions: Studio Lighting Director, EFP Lighting Director, Lighting Technicians, Engineers, Camera men, Scenic Staging, Prop Construction. A minimum of two years broadcast television experience required. Salaries are competitive. Send resume to Production Unit Manager, PTL Television Network, 7224 Park Road, Charlotte, N.C. 28279. PTL is an Equal Opportunity Employer.

TIRED OF SNOW? PTL has openings in these areas: Videotape, Audio, and Satellite Engineers. Minimum qualifications are 1st class license, 2 years broadcast experience, plus modest maintenance experience. Must be able to work second or third shifts. Salaries are competitive. Send resume to Chief Engineer, PTL Television Network, 7224 Park Road, Charlotte, N.C. 28279. Equal Opportunity Employer.

ENGINEERS (TELEVISION): New television facility in Phila., has immediate openings for personnel qualified in the following areas: STUDIO BASEBAND SYSTEMS, STIL MICROWAVE EQUIPMENT, TECHNICAL WRITING, ENGINEERING. Harry Jenny, RADIO BROADCASTING CO., 3600 Conshohocken Ave., Philadelphia, PA 19131, or call: (215) 879-0900.

TV ENGINEERING/OPERATIONS. Position consists of teaching and television service responsibility. Teach responsibilities in areas of television engineering and operations. Service duties include scheduling campus TV productions, supervising student operation crews, maintaining television equipment. Qualifications: Bachelor's degree, Master's preferred. First-class FCC radio-telephone license required. Salary open, depending on qualifications. Position open July 1980. Send letter of application, resume, with top professionals, on projects which are T.V. ENGINEERING/OPERATIONS. Position consists of teaching and television service responsibility. Teach responsibilities in areas of television engineering and operations. Service duties include scheduling campus TV productions, supervising student operation crews, maintaining television equipment. Qualifications: Bachelor's degree, Master's preferred. First-class FCC radio-telephone license required. Salary open, depending on qualifications. Position open July 1980. Send letter of application, resume, with top professionals, on projects which are

HELP WANTED (CONT.)

MAINTENANCE ENGINEER: Position available for studio maintenance engineer. Experience in the following desired: AMPEX tape, RCA	cameras; and/or digital technology. Salary commensurate with experience. Call or send resume to Jim Doigas, Chief Engineer, KTVK-TV, Box 5068, Phoenix, AZ 85010, (602) 266-5691.

videotelephone equipment. RCA Service Company travel all over the world to install, maintain, and service transmitting systems, television cameras, and/or television tape recording equipment.

TELEVISION VIDEO OPERATOR/ENGINEER for Rocky Mountain area. Familiar with Sony 1100, ACR-25, Ampex 1200, full-time network delay. FCC first. Apply Charles Upton, Pikes Peak Broadcast Center, Box 1457, Colorado Springs, CO 80901, (303) 632-1515. EOE. 3-80-11

TELEVISION CHIEF ENGINEER for growing station in 19th market. Management experience necessary. All fringe benefits, station located in beautiful southern Idaho. An Equal Opportunity Employer. Reply to Dept. 484, Broadcast Engineering, P.O. Box 12901, Overland Park, KS 66212.


MAINTENANCE/OPERATION POSITION open in Washington, D.C.'s top independent UHF station. Non-union shop, with salary up to $29,640 plus O.T. Only those with maintenance experience in all types of digital and analogue equipment will be considered. First Phone required. An operation shift will be necessary, as well as maintenance. Reply, by letter only, to Personnel, WCAC-TV, 520 River Rd., Washington, D.C. 20016. EOE.

STUDIO ENGINEER to replace employee of more than 40 years in three person department. We require a First Phone and experience with maintenance and installing solid state studio equipment. AM Directional and high power FM transmitter experience desirable but not required. We offer a quality conscious shop, competitive wages, and good benefits. Resume and references to: Don Lange, Chief Engineer, WEBB, 23 North Street, Buffalo, New York 14202. WEBB is an equal opportunity employer.

TV ENGINEERING/OPERATIONS. Position consists of teaching and television service responsibility. Teach responsibilities in areas of television engineering and operations. Service duties include scheduling campus TV productions, supervising student operation crews, maintaining television equipment. Qualifications: Bachelor's degree, Master's preferred. First-class FCC radio-telephone license required. Salary open, depending on qualifications. Position open July 1980. Send letter of application, resume, with top professionals, on projects which are...
HELP WANTED (CONT.)

ASSISTANT CHIEF ENGINEER—Hands on maintenance experience with all types of studio and transmitter equipment including digital devices. First Class FCC license is required with supervisory experience or ability. Great advancement potential with top group broadcaster. Send resume to Steve Weber, KFSN-TV, 1777 G Street, Fresno, CA 93706. We are an Equal Opportunity Employer. 3-80-11

TV MAINTENANCE ENGINEERS AND TECHNICIANS—For TV production and sports facility. Maintenance Engineers required for quad tape, W/Time code editing, studio cameras, s-switches, boards and computer, IVC, EDICON video projectors, and much more. Also, Video Engineer for four camera (PC-70) remote truck. Maintenance background preferred. Contact: Bill Denton, MCI Production, #10 Greenway Plaza, Houston, Texas 77046. (713) 627-9270. 3-80-21

MAINTENANCE ENGINEER: Wanted immediately for radio network. Must be experienced with all types of tape machines, consoles, digital control systems and related broadcast equipment. Remote work, microwave and satellite experience helpful, but not a must. Send resume to: William E Wilson CE, UPI Audio Network, 220 East 42nd Street, New York, New York 10017. Cell (212) 682-0400. 3-80-01

V.T.R. BENCH TECHNICIAN. Must have knowledge of small format, helical systems (repair and alignment). Minimum 1 year experience (digital logic systems, knowledge helpful). Salary commensurate with experience. Full benefits program. Send resume or call: Personnel, Columbia Pictures Video cassette Services, 1501 Landmeier Road, Elk Grove Village, Illinois 60007. (312) 640-2350. 3-80-11

LICENSED TV TECHNICIAN experienced in operation and maintenance, NBC Station with heavy local commercial production. Latest equipment, fringe benefits. Write Jerry Merrill, WICS-TV, Springfield, Ill. or call (217) 753-5665. EOE. 3-80-21

OPERATING/MAINTENANCE ENGINEERS. Help operate and maintain WHME-TV's State of the Art Equipment including RCA TR-800's, TK-46, TK-78, TK-28, Video switcher and production switchers. First phone required. Send resume to D. Monesmith, WHME-TV, 61300 S. Ironwood Rd., South Bend, IN 46614 or call (219) 291-8200. E.O.E. 3-80-11

ARE YOU A FIRST CLASS LICENSED TECHNICIAN frustrated with the humdrum waste of your abilities? Would you like to work in a well-equipped three man lab with a crackjack crew? We are a rapidly expanding, sophisticated CATV system—soon 300 miles—and a well-established 5000 watt fulltime AM station. Location: 30 miles west of Philadelphia, in picturesque historic Chester County. Liberal company benefits, profit sharing plan. EOE. Contact: Louis N. Seltzer at 215-384-2100 or write to P.O. Box 231, Coatesville, Pennsylvania 19320. 3-80-11

WANTED (CONT.)

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Los Angeles, CA 90010
Phone (213) 387-0639

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John Ashcraft & Co., 12 Bear St.,
Leicester Square, London, WC2H 7AS, England;
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