

MARCH 1985

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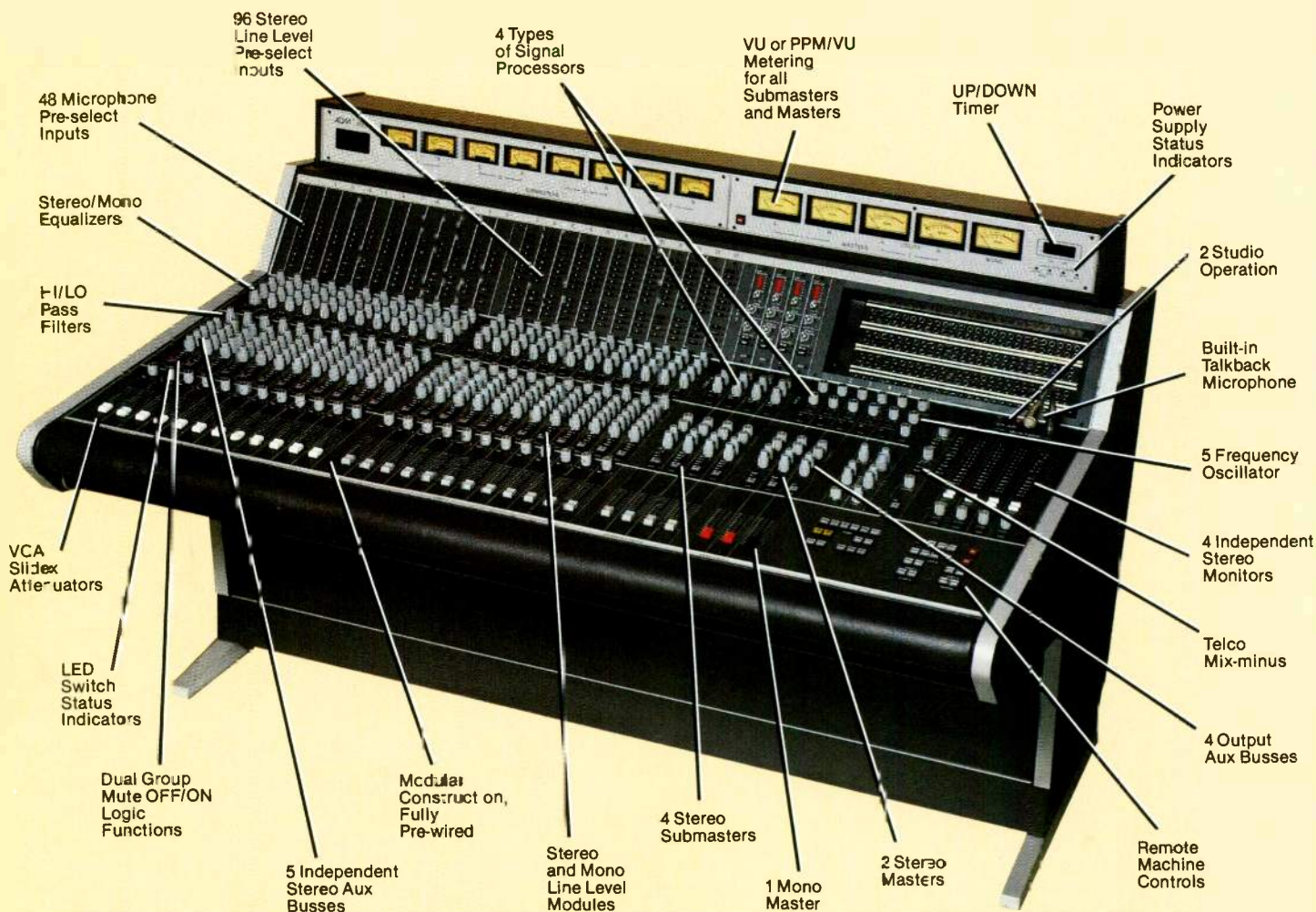
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New Technology for News ■ Terrestrial Microwave ■
Multistation FM Antennas ■ Computer-Aided Circuit Design

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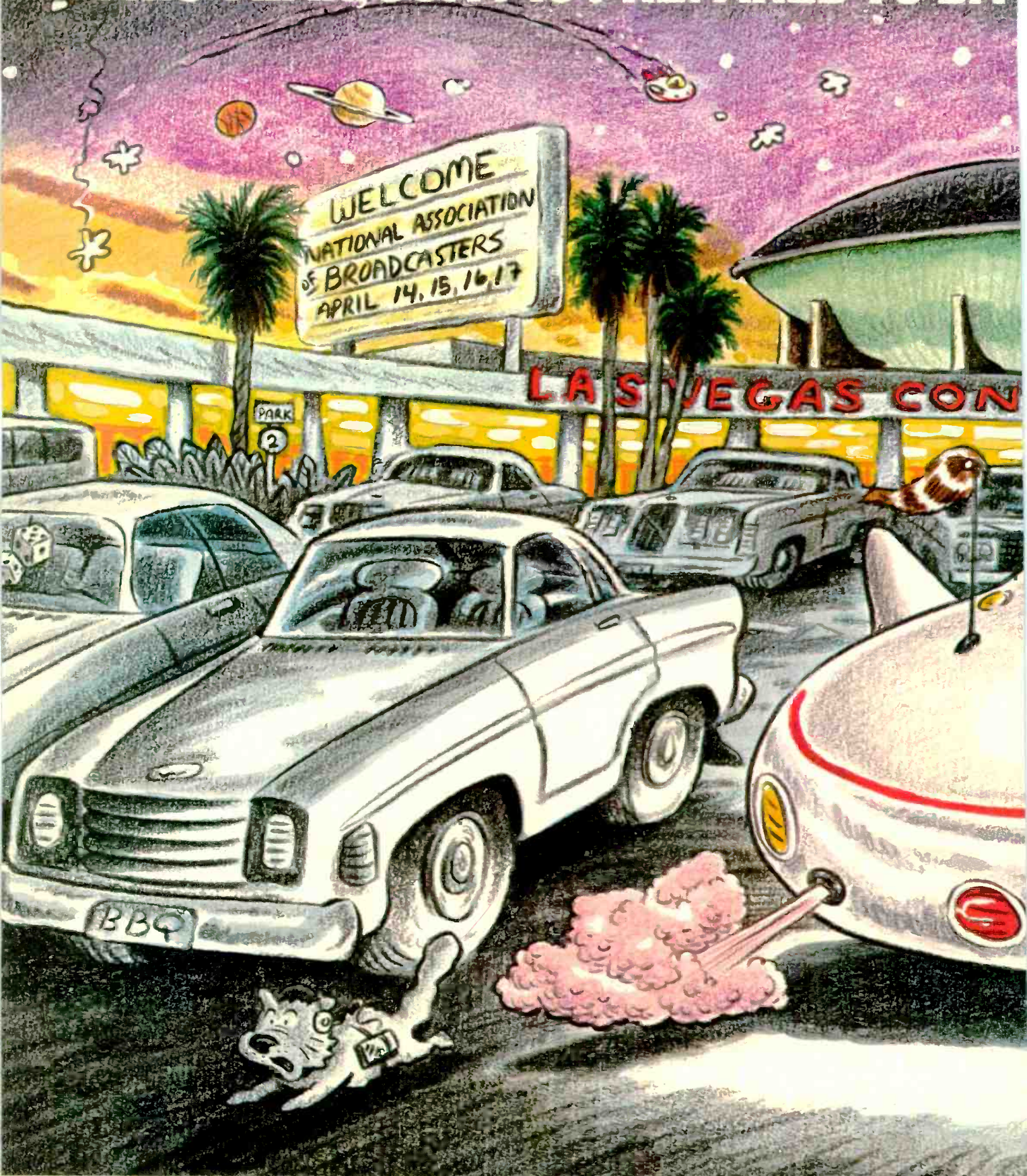
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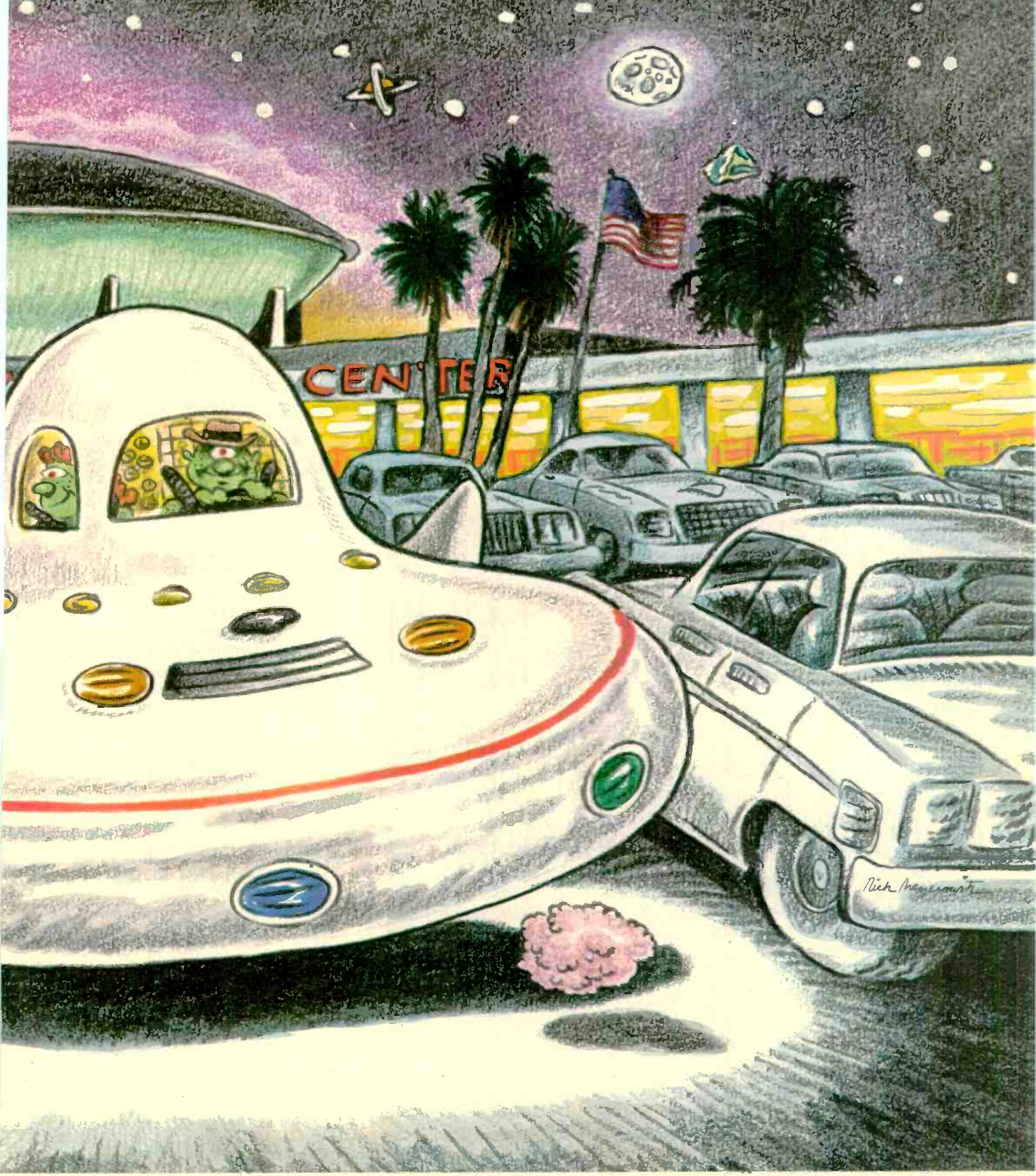
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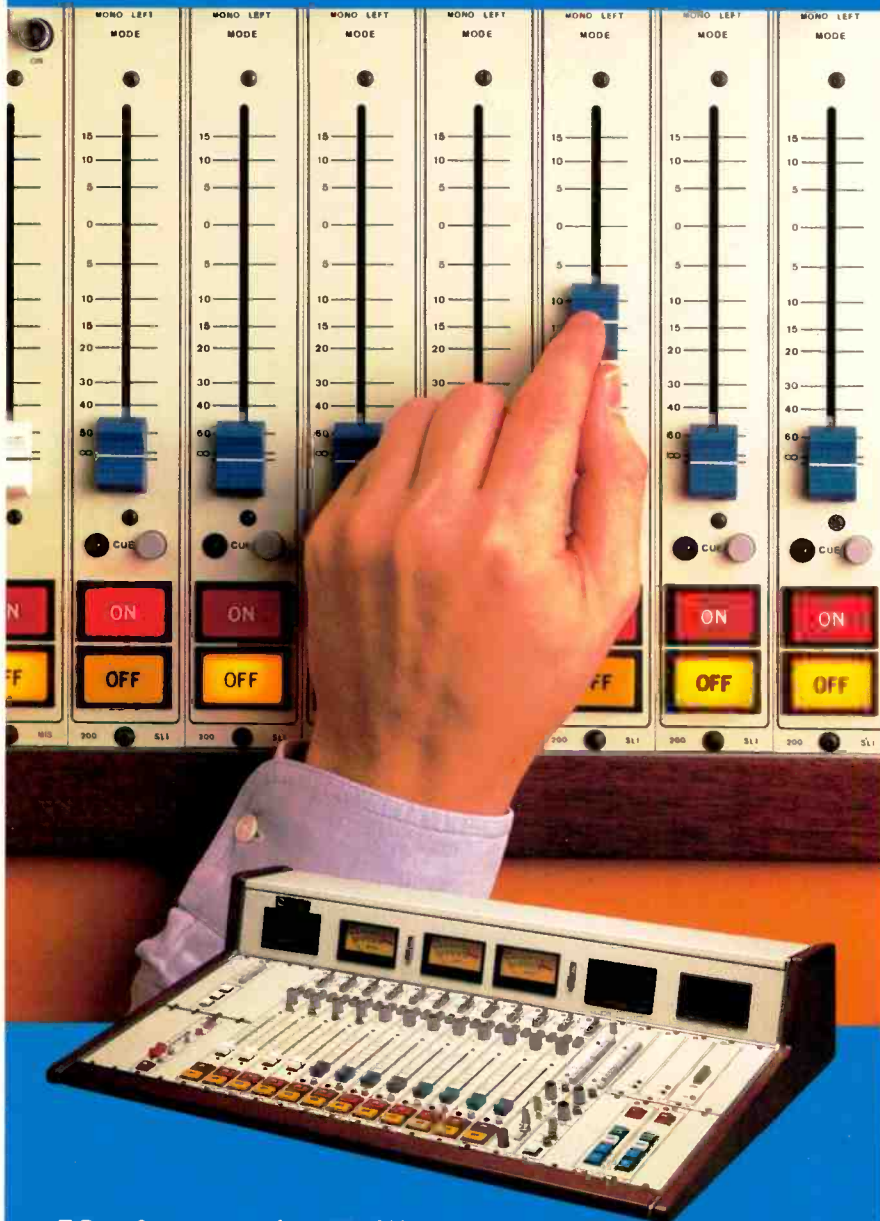
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BROADCAST MANAGEMENT/ENGINEERING

MARCH 1985

VOLUME 21/NUMBER 3

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THE COVER

This month's cover, executed at Robert Bosch Corp. in Salt Lake City on the FGS-4000 graphics system, was created by artist Susan Krauskempt. Poker chips, dice, and lettering were each created as separate 3D solid models, lit from the front, and given specular reflections to simulate plastic. The resulting image was photographed directly onto a 35 mm slide using a Matrix camera system.

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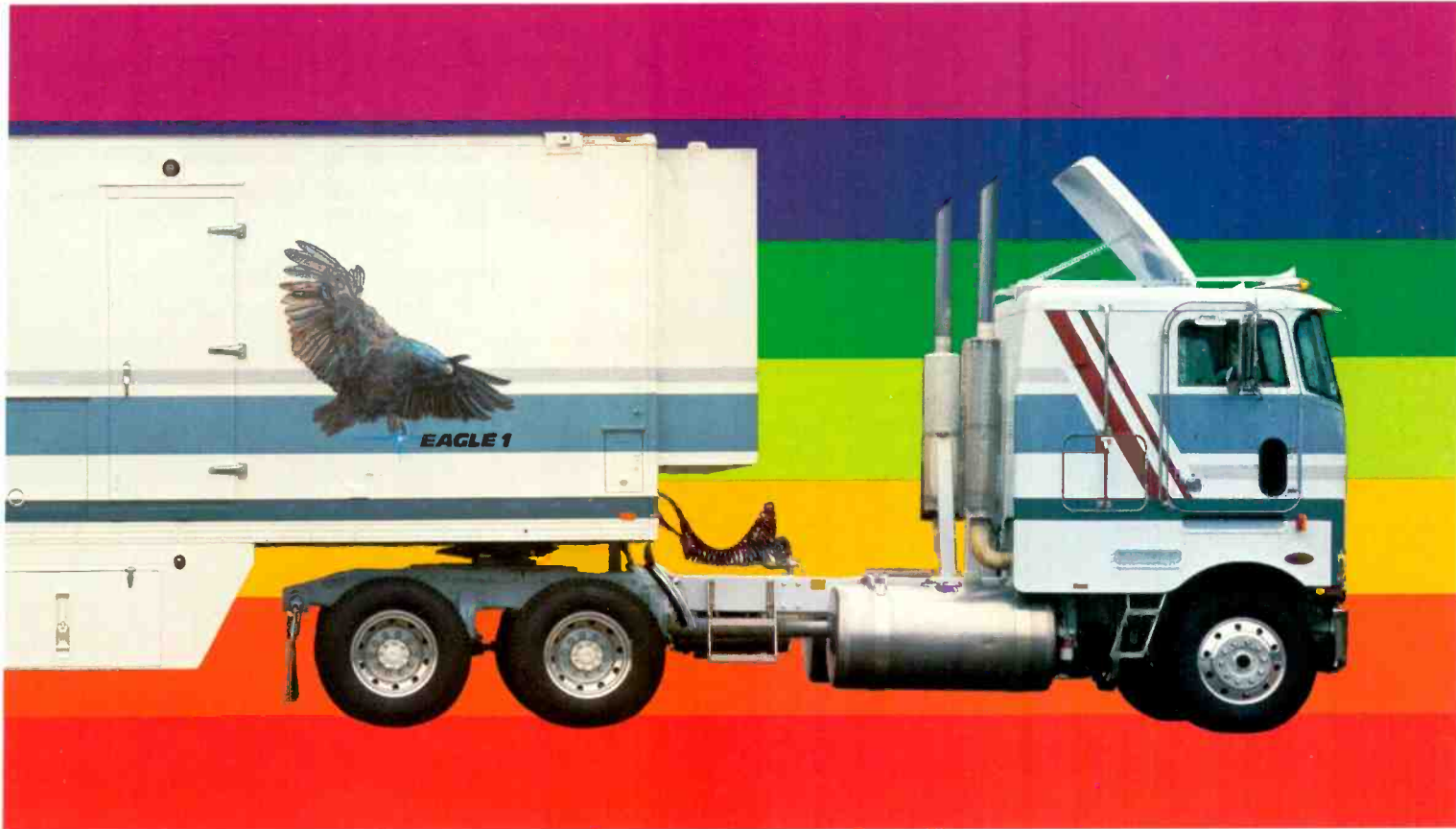
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Bravo Mr. Barnathan!

When interviewed for our January 1985 *Speak Out* story, ABC's Julie Barnathan said that one of "the two things we need most right now are developments and standardization in small-format recorder/cameras, be they half- or quarter-inch." (His other priority is a commercial-quality on-air cart payback system.)

It's little wonder, then, given the urgency which Barnathan attaches to the standardizing of small-format systems, and his known dissatisfaction with SMPTE over its inability to define a half-inch format standard, that he has become outraged over what has happened (or not happened) in SMPTE's quarter-inch deliberations.

The SMPTE working group on quarter-inch was established two years ago, and has been in what most considered the final throes of establishing a working standard for the past 10 months. Having evaluated both the Bosch and Hitachi formats back then, the committee decided it would settle on a modified version of the Hitachi system if it could live up to certain criteria, especially that third-generation quarter-inch would have to equal the quality of first-generation U-matic.

Despite what the industry had hoped, however, the February 14 meeting of the group failed to announce a standard. And Barnathan claims that members of the working group and some SMPTE executives have vested interests in making sure there is no standard — thereby allowing other formats to thrive. Barnathan has complained formally to SMPTE president Harold Eady. And he has begun talking about withdrawing from SMPTE.

BM/E cannot, of course, condone Barnathan's desire to pull out of SMPTE. On the other hand, we think he has a very valid point on the need for quarter-inch standards. SMPTE had several handy excuses when it came to its failure on half-inch issue. But quarter-inch is a different case, and if SMPTE is to be responsive to the needs of broadcasters, it must examine very carefully why the working group did not act, and whether something can be done about the impasse.

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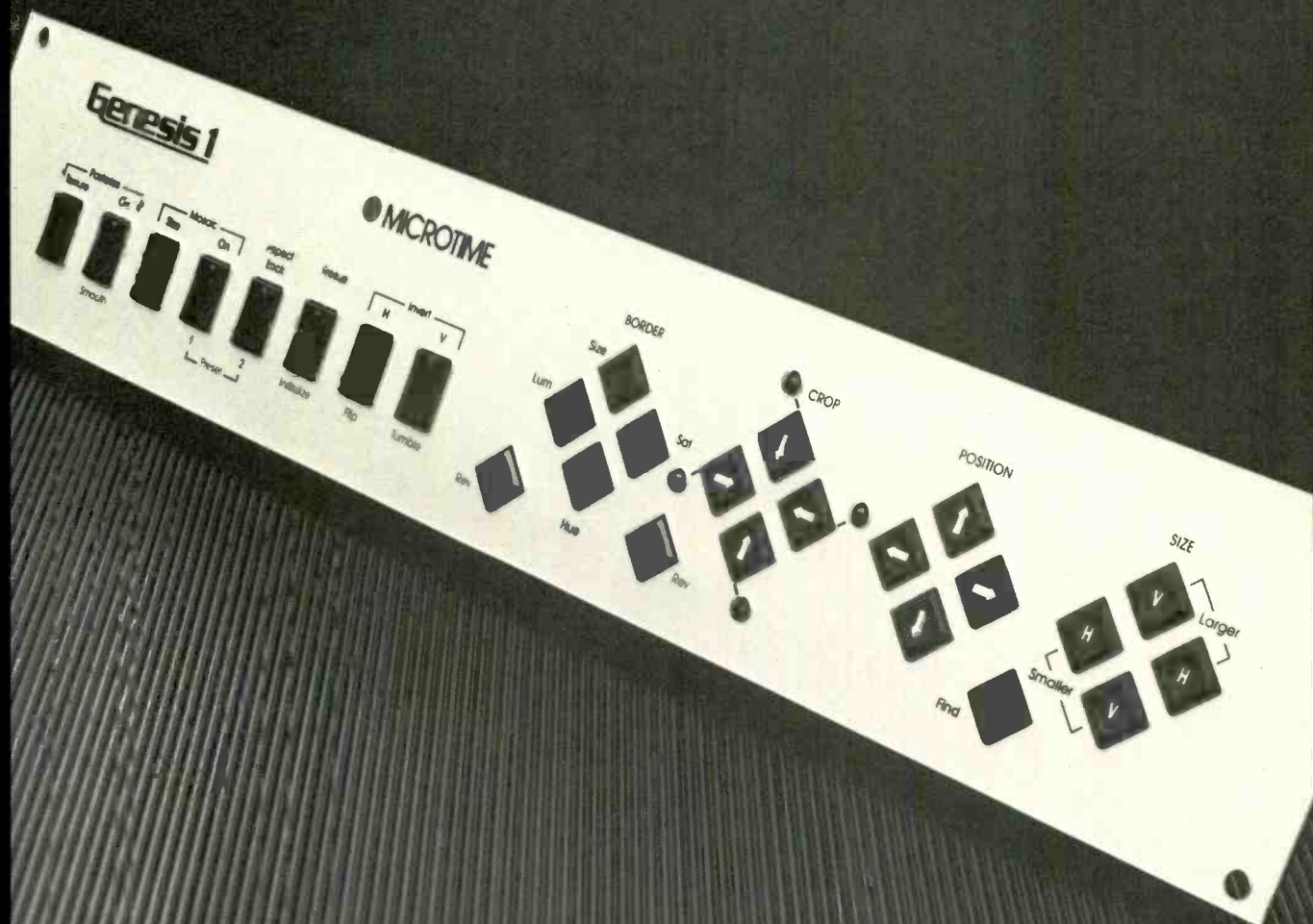
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Taft To Buy 13 Gulf Stations For \$755 M

Taft Broadcasting has signed a definitive agreement to buy all of Gulf Broadcasting's radio and television stations, except KESQ-TV in Palm Springs, for a reported \$755 million in cash. Gulf's board has voted to liquidate the company, while Taft, pending approval by the FCC and Gulf stockholders, will become the first group owner to hit the new 12-station limit for television under the new "rule of 12s" scheduled to take effect April 2.

In separate news, Multimedia has received an offer for a leveraged buyout from top executives, shareholders, and a group of private investors.

Taft says its acquisition of the 13 Gulf stations will increase its coverage of U.S. households from nine to 15 percent, ranking it fifth in the country behind the networks and Metromedia.

The purchase will give Taft a total of 12 television and 20 radio stations, and also create cross-ownership conflicts in Washington, DC, and Tampa, where Taft already owns a television and a radio station, respectively. Gulf has two similar conflicts of its own in Dallas and Houston, which the FCC has given it a year to resolve. A Taft spokesperson said the company expects to receive a similar amount of time in which to divest, although it may ask the Commission for relaxations.

If Gulf shareholders reject the deal, Taft still has an option on KTSP-TV in Phoenix for a reported \$250 million.

Communities Named For 80-90 FM Drop-Ins

In the largest single increase of FM assignments ever, the FCC has allotted 689 new channels in communities throughout the U.S. under its Docket 80-90 FM drop-in action. A filing procedure for applications is due soon from the Commission.

Over 2500 responses were generated by the FCC's original proposal for 684 new FM stations. Two hundred twenty-four channels were added because of interest expressed in them, while others were dropped due to lack of interest. Another 44 are pending. The FCC had listed 3000 communities as possible recipients of new stations.

The FCC's second action, which hadn't been announced at press time, will spell out the procedure for filing applications for these channels. Also, it will address special treatment for daytime AM stations in the license process, as well as filing of new FM petitions to change the Table of Allotments.

NBC and CBS Choose Newsroom Computers

Both NBC and CBS have bought major newsroom computer systems, signaling a new era in broadcasters' attitudes and the biggest development in electronic newsgathering since the advent of ENG and microwave. (For a special look at the subject, see "New Technology For News" in this issue).



KSL, which owns this ColorGraphics NewStar system, is adding another at Bonneville's Washington DC bureau. Seven other stations are also due to install the news computers.

NBC has purchased its system from Basys, Inc., which provided the network's computer setup for convention coverage last year (see *BM/E*, October 1984, p. 42). NBC News is expanding its existing newsroom computer system, which had been leased, to provide 240 ports for terminals, printers, wire-service inputs, and connections to other systems. According to Tom Wolzien, vice president for special productions at NBC News, the new system will connect NBC's radio and television news headquarters in New York with all domestic and permanent overseas news bureaus, which also are being equipped by Basys. The network's five O&O television stations are covered in the current agreement but will receive equipment in addition to News's 240 units. Wolzien told *BM/E*.

At CBS, ColorGraphics Systems has been signed to install its NewStar system at CBS News and the O&O AM stations. One source told this magazine that the AM deal amounts to approximately \$1 million, while the CBS News package has been estimated at nearly the same amount. ColorGraphics reports that the news division system will be installed in New York and Washington, DC this month and joined via a dedicated high-speed link. CBS Radio News and RadioRadio already have NewStar computers, so the AM purchase is expected to help those oper-



The Basys computers NBC leased were used to cover election night, seen here, as well as the conventions. NBC reportedly will keep this system intact for special productions.

ations interact more closely and easily with the network.

CBS plans to use NewStar to assist in several functions besides straight news writing. The newsroom computers will replace about 100 wire service machines, provide an electronic mail service, time newscasts, and, maybe most importantly, interface with Betacart systems, allowing remote control. Terry Kelly, ColorGraphics' president, reports that Sony, CBS, and ColorGraphics are cooperating on this area and expect to announce some developments in the near future.

Kelly also said ColorGraphics is "looking at" digital audio for radio and machine control for television. NewStar already provides control of character generators and teleprompters.

At NBC, installations are also proceeding quickly. As of press time, Radio Net was moving into new facilities that are totally computerized, while WMAQ-TV, NBC's O&O in Chicago, was expecting installation of the Basys system in "several days," according to Paul Beavers, director of news operations, NBC television stations division, who is heading the television O&O stations' computerization from his office at WMAQ.

The number of terminals and other units each station is buying varies according to the number of staff, Beavers said. He estimated that the larger stations will use about 80 terminals and 135 devices total, while medium-sized stations will need approximately 55 to 60 terminals and close to 90 devices.

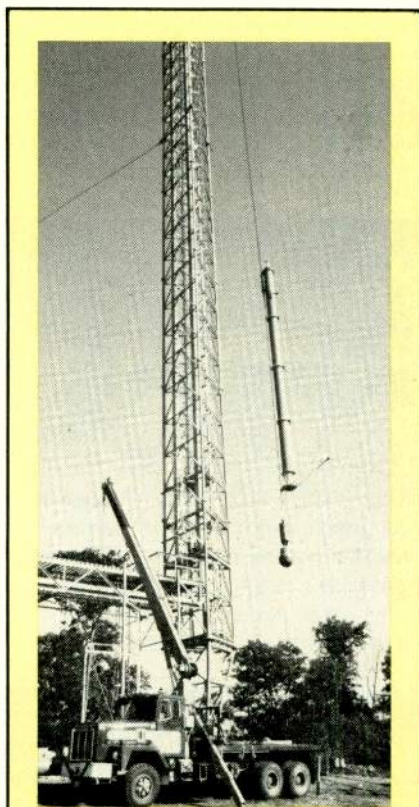
Drive To Ban Alcohol Ads Gains Momentum

Far from dying down, the grass roots drive to ban or limit alcohol advertising has surfaced as a major issue for the cable and broadcast communities, and members of Congress are warning that they cannot actively oppose such legislation if it is introduced on Capitol Hill.

Over \$700 million in advertising on the national and local levels is at stake. At this winter's "Outlook on the Media" conference held by Paine Webber, Doubleday president Gary Stevens observed that radio is especially vulnerable to such bans since it sells itself as a targeted medium, and that the alcohol beverage industry is being hit with both a rise in the drinking age and political pressure to stop advertising to

teenagers. Alcohol ads may be cut out for audiences targeted as heavy users, which would have serious repercussions for radio, he noted. Cable is also concerned since alcohol advertisers account for over three percent of its ad revenues overall, and substantially more on sports channels.

At the recent INTV convention in Los Angeles (see News story MTS in this issue), four Congressmen warned broadcasters that as a "mom and apple pie" issue, anti-alcohol ad legislation could be almost impossible to stop once it gets out of committee.



America's most powerful television signal is now being transmitted by WTIC-TV in Hartford, CT, according to Harris Corp. Using the first omnidirectional Wavestar UHF antenna built by Harris's Broadcast Transmission division, WTIC has reportedly added viewers up to 100 miles away. A Harris TVED-220 220 kW transmitter supplies power using two independent 110 kW transmitters combined by a switchless "Magic T" system. The independent station transmits in stereo using 5 MW visual, 1 MW aural effective radiated power.

Rep. Al Swift (D-WA) of the House Telecommunications Committee predicted, "If it gets to the floor, you're dead." That committee is also the best place for broadcasters to start their work in Congress, Rep. Tom Tauke (R-IA) advised, while another committee member, Rep. Mickey Leland (D-TX), said, "You'd better get started developing your own constituencies." The NAB has begun lobbying heavily on the issue.

In the Senate, the Commerce Committee, formerly headed by Bob Packwood, is now led by Sen. John Danforth (R-MO), who reportedly has supported anti-drunk driving and higher drinking age legislation. Danforth, however, has St. Louis, home of Anheuser-Busch, in his constituency and has recently said he does not favor government intervention. Sen. Paula Hawkins (R-FL) chairs the Alcoholism and Drug Abuse subcommittee and was scheduled at press time to hold hearings on alcohol advertising.

SMART says it will present a petition with one million signatures to Congress this spring, possibly a little behind its original schedule.

ISC Merges With Tek's Grass Valley Group

Interactive Systems Co. of Boulder, CO, a leading manufacturer of video editing systems, has merged with The Grass Valley Group, Inc., of Grass Valley, CA. Terms of the agreement were not disclosed.

The Grass Valley Group, a major manufacturer of production switching and special effects systems, is a wholly owned subsidiary of Tektronix, Inc., of Beaverton, OR.

ISC's president and founder, Dave Bargaen, says his company will move all operations to Grass Valley by June, while the sales and service organizations will be combined in time for the NAB convention next month. (See the NAB Television "What's Hot" report in this issue.) Bargaen reports that ISC, a privately held company, has sold about 125 of its high-end editing systems.

Bargaen will join GVG as senior staff engineer and will play a "key role" in new product and market development, GVG says.

ISC is being incorporated into an existing division, according to a Grass Valley Group executive.

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Upgrade Proceeds Despite CBC Cutbacks

A little more than a year after opening a new, \$28.8 million bilingual broadcast center in Saskatchewan, the Canadian Broadcasting Corporation is staring in the face of some stringent funding cutbacks.

Charles Kirkman, public relations officer for CBC engineering, says the \$85 million cuts approved by the Canadian government will force a reduction in the amount of programming produced. But he added that no one is sure of the precise impact yet.

One plan that will not be affected by the cutbacks, however, is the effort to convert the Saskatchewan facility to half-inch Betacam video production.

The Saskatchewan center, the CBC's newest, is located in the provincial capital of Regina. Both TV and radio studios are shared there by Canada's English and French networks in what Kirkman referred to as "a cooperative effort." Two TV studios of 4200 and 3500 square feet respectively house a total of five Ikegami HK-302 cameras with Canon 15:1 zoom lenses. Production crews share camera heads between the studios to provide as many as four cameras for a single production.

Much of the production equipment in the TV center is Canadian-made, and some of it is custom-designed. The main routing switcher is from Image Video Ltd. There is also a Ross Video multieffects switcher and keyer, a Vista 90 character/graphics generator, a Ward-Beck audio console, and a McCurdy intercom matrix.

When the center was built at the end of 1983, a total of three ENG/editing suites were constructed. In each of these are two ENG camera packs with Sony cameras for field work. Each suite also has a Sony BVU-800 playback and BVU-800 record unit, and a Beta BVW-10 for playback of half-inch tapes.

Jean-Guy Laprise, senior engineer for studio systems, says the CBC has always planned to include half-inch editing capability, but that when the center was built, the Sony BVW-40 Betacam recorder was not yet available. Laprise explains that half-inch tape is currently dubbed up to 3/4-inch machines for editing. But he adds that plans call for the replacement of one BVU-800 in each suite with the



French and English TV networks share news sets and Ikegami HK-302 cameras in the CBC's newest broadcast center in Regina, Saskatchewan.

BVW-40 some time this year. Until the switchover to half-inch editing is completed, however, Laprise says a customized switcher, designed by the CBC but built by Sony, allows the cut-over from Beta to U-matic for editing.

Another plan Kirkman says is proceeding despite the budget cuts is the upgrading of the CBC's main broadcast facilities in Toronto. He explains that a CBC-authorized committee will report

back to the government later this year on the feasibility of combining current TV and radio operations into a single consolidated, upgraded center.

Both radio and TV already are incorporated into the Regina center, which, in addition to the TV production studios, also houses nine radio studios shared by English AM and FM networks and French AM network operations.

"Must Carry" Applies to MTS, Commissioners Assert

If mandatory cable carriage of multichannel television sound comes up for a vote in the Federal Communications Commission, the measure could pass handily. Such was the consensus when commissioners Mimi Dawson, James Quello, and Henry Rivera answered broadcasters' questions at the recent convention of the Association of Independent Television Stations in Los Angeles. The must-carry issue was close to the hearts of independent broadcasters, as indicated by outgoing INTV president Herman Land's assertion that protection of

must-carry would be a major priority for the association.

Just a week later, however, the MTS must-carry issue was sidetracked by FCC chairman Mark Fowler, who removed it from the agenda of a January 18 Commission meeting, with no new date set. Fowler is known to oppose extending must-carry protection to multichannel TV sound, although he stated his action was unrelated to his feelings on the subject.

Responding to the MTS question at the convention, Dawson sparked applause by asserting that if the Commis-

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sion was serious about wanting must-carry, it should do so "up front and through the front door." In her personal view, she said, "If must-carry is real, it shouldn't stop with the state of the art at any particular time."

"Must carry is very essential" to local service, Quello asserted, adding, "I certainly support commissioner Dawson 100 percent in her attitude on must-carry." Rivera stated that he saw

"a consensus" at the Commission to require must-carry protection for multichannel TV sound.

The commissioners seemed reserved on the issue of channel swaps between noncommercial VHF stations and commercial UHF's located in the same market. "All hell's broken loose" since a report of his suggestion was printed, Quello complained, adding, "I've asked the question, but I don't have the

answer." Rivera echoed Quello's concern for finding alternative funding for public broadcasting noting, "I have no objection to considering these [swaps] on an ad hoc basis" at this time. Although she said she found the idea "quite attractive," Dawson cautioned that its effect on diversity of viewpoint would have to be studied.

VHF drop-ins also generated little enthusiasm among the panelists, who cited concerns over diversity and interference. Rivera disappointed attendees by saying he saw no reason to give preference to existing UHF operators.

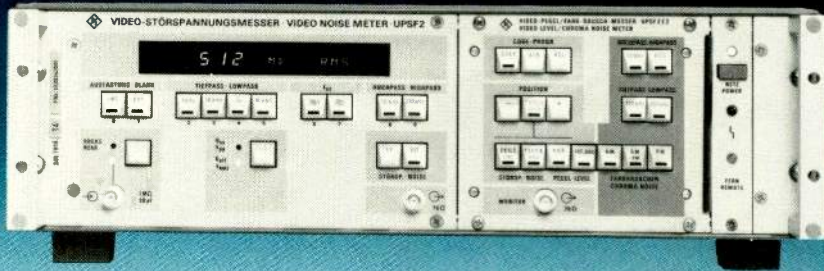
Another area of concern was the possible effect on UHF stations of land mobile pressures for more spectrum. Both Quello and Dawson agreed that land mobile should be encouraged to use the newer spectrum-efficient technologies as a way of filling their requirements without infringing an UHFers' needs. Dawson asserted that any additional UHF spectrum "will definitely lead to more stations," continuing, "We are not the National Broadcast Commission—we are there to manage the spectrum." Rivera added that the real pressure from land mobile is coming from the top 10 markets and asked, "Why should the Commission make a policy just for those markets?" Asked to detail her own top broadcast-related priorities for the coming year, Dawson named "regulatory parity" among video services as number one, followed by assessment of the impact of the 12-station ownership rule, spectrum allocations and sharing, streamlining the comparative authorization process, and concern for the must-carry policy.

Quello termed much closer relations with the Senate and House a major priority; "Don't surprise them," he warned broadcasters, citing issues such as financial interest and the 12-12-12 rule when Congress overruled the FCC. On other broadcast issues, Quello indicated he'd like to see TV deregulation become a reality and radio deregulation be codified by Congress, although he was cautious on the prospects for such action. While he feels broadcasting "should have the same rules as newspapers," he said, "I don't think you're going to get this through Congress."

Commissioner Rivera reiterated a favorite theme, saying he'd be "very concerned" with trying to improve children's programming.

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NEWS

EPA OKs Honolulu RF; No "Immediate Risk"

The Environmental Protection Agency has told the FCC that RF levels at the 21 sites it analyzed in Honolulu pose no "immediate risk" to humans. Measurements in parking lots near two broadcast towers were found to exceed the American National Standards Institute guidelines, which are among the

least strict of various proposed national standards.

Stations in Honolulu, which will not let antennas into its parks, have special problems locating antennas. In a press release asking for EPA adoption of the ANSI guidelines, the president of the Association of Maximum Service Telecasters, Tom Paro, commented, "Nowhere else in the country are so many high-powered broadcast anten-

nas located only a few feet from homes, playgrounds, and hotel rooms like some in Honolulu." Six stations have their antennas on the two towers, which gave window washers working on nearby high-rises RF burns from cables.

Besides these two sites, the EPA found 10 others exceeding at least one of three limits set by various scientific groups. Of the 10, three could cause high exposures.

NAB president Eddie Fritts hailed the report's conclusions about the lack of danger and urged the EPA to adopt the ANSI standards. The NAB noted that even in the special case of Honolulu, the RF levels which people in residential areas are continually exposed to do not exceed ANSI guidelines.

New DBS Applicant May Deliver "Cable"

Acting on the second round of DBS applications, the FCC has granted four organizations, including aerospace manufacturer Hughes, permission to build systems. In other pro-DBS action, a first-round company, Direct Broadcast Satellite Corp. (DBSC), reports that it has signed a contract for the launching of its two satellites.

The four new DBS applicants are Satellite Syndicated Systems, National Christian Network, Advanced Communications Corp., and Hughes Communications Galaxy. Hughes is the major entry since it both "builds satellites for a living," in the words of FCC Mass Media Bureau chief James McKinney, and already delivers cable programming on its Galaxy 1 bird. The proposed Hughes DBS satellite reportedly will be video only, and could allow cable programmers now on the Galaxy satellite to deliver their material to noncabled homes. Hughes thus may have arranged what no other DBS applicant seems to have had at its inception, "cable" programming.

DBSC, a first-round applicant that plans to offer its DBS services as a common carrier, reports that it has signed a contract with Arianespace, the French launching company, for the orbiting of its two satellites in 1987 and 1988. DBSC says it will market six national and 24 spot beam channels to outside programmers using World Communications as its agent.

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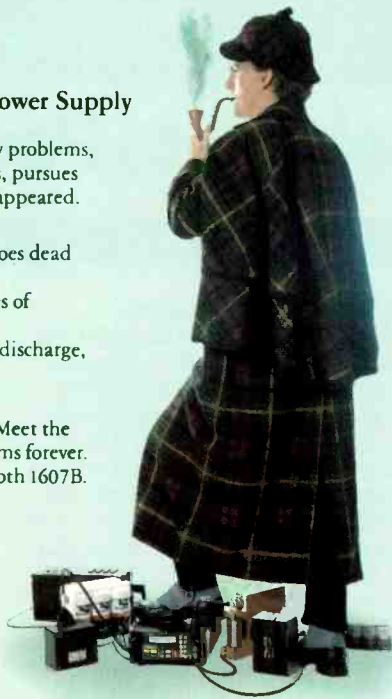
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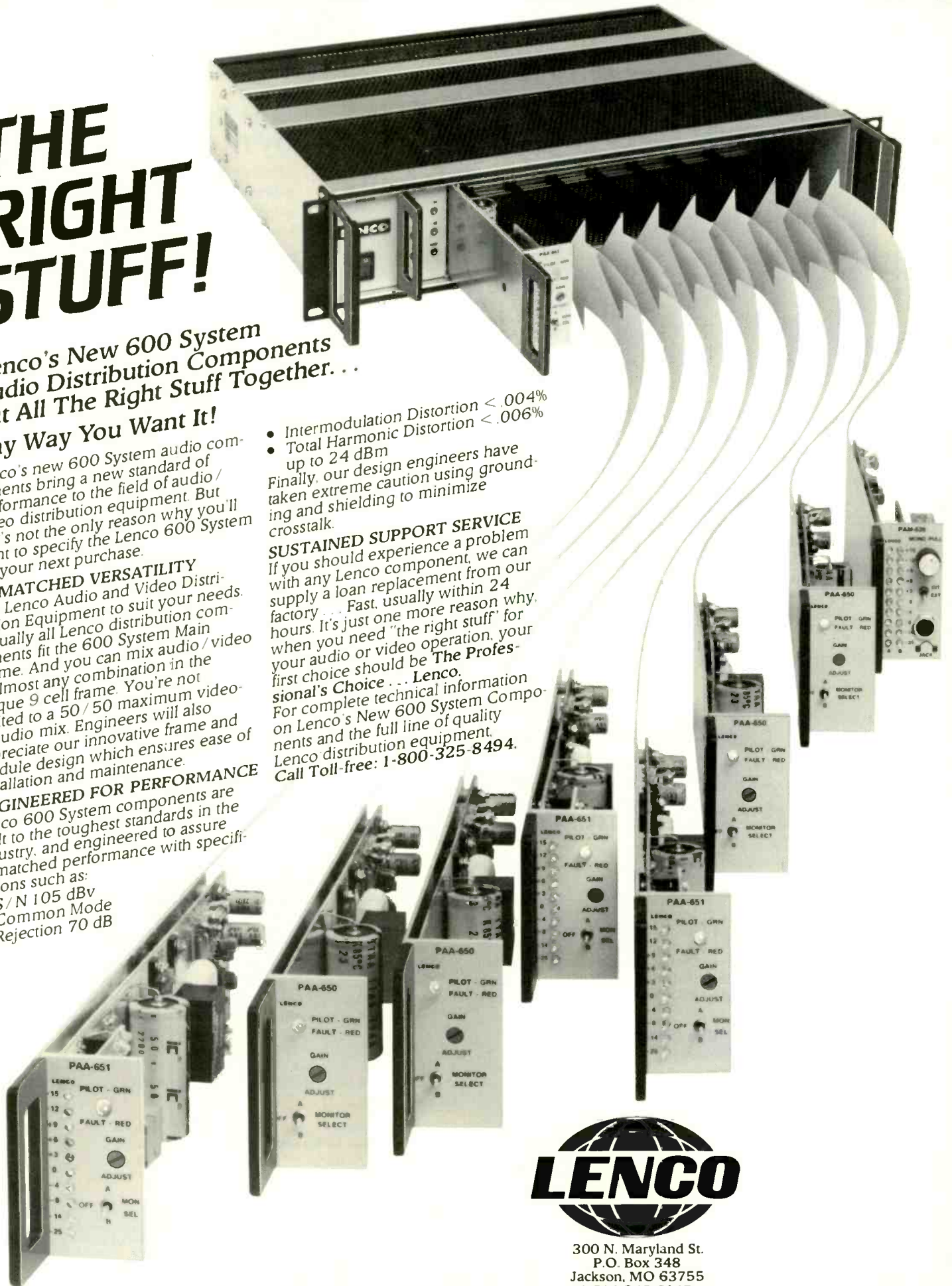
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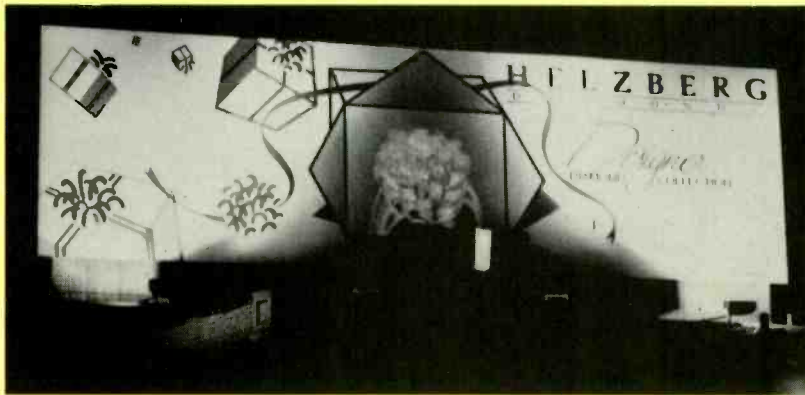
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Video producers may soon be called on to create a new kind of commercial—for billboards. Gannett Outdoor is using a Sony VPH-1020Q projector to air a 20-second spot for Helzberg Diamonds on a billboard in Kansas City. The plain white screen measures approximately eight by 10 feet and is set in a "gift box" art layout. The projector, which is maintained at 75-80 degrees, plays a one-hour tape recorded with 120 repetitions of the commercial from sunset to midnight. A Gannett manager reports that other local advertisers have asked about the new medium, and the company has suggested that its 17 other regional offices investigate the system.

Place your bets now—which will be the first Las Vegas casino to greet NAB attendees with TV commercials on its marquee?

EBU Expects Basic DVTR Format by April

The race for digital video advanced another step as the European Broadcasting Union announced it expects to have ready "the essential format parameters" for digital videotape recording when its Technical Committee meets this April.

Standardization has reportedly been "proceeding at a fast pace," the EBU says. A detailed proposal for mechanical format and cassette design is reportedly near completion, plans for video and audio error protection strategies are "rapidly converging," and the selection of other parameters is under "intensive study."

The European association, which is working in cooperation with SMPTE and concerned companies, says it is eager to have designs for the component recording format ready in time for the next International Radio Consultative Committee (CCIR) plenary assembly this fall.

With our Automatic Remote Control System your transmitter – and your personnel – will operate with increased efficiency

Have you ever wondered if your night operator will remember . . . to switch patterns at sunrise? . . . to periodically check critical levels? . . . the correct transmitter restart sequence? You'll never have to worry if Potomac Instruments' RC16+ is on the job. Because it'll do all these tasks for you. Plus a lot more. Automatically.

With its microprocessor based control logic, the basic RC16+ provides 16 telemetry channels with automatic out-of-tolerance alarms and remote raise/lower controls;

plus 16 status channels. The automatic functions — pattern shift, transmitter restart, power control — are pre-programmed in accordance with station license requirements and controlled with an accurate master clock.

The RC16+ is also expandable. In 16 channel increments, up to a total of 64 channels. With the remote video display option your chief engineer can get a detailed readout of all measured parameters. It's updated every 30 seconds and connects to any standard telephone. The optional plug-in automatic logger provides a permanent record of all transmitter activity. Log intervals, sequence, and alarm flags are user-selectable.

And, best of all, the RC16+ is cost effective. No other unit on the market offers these features and capabilities at this low price.

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ANOTHER BROADCAST INNOVATION FROM MATSUSHITA ELECTRIC

NEWS BRIEFS

Show Light '85, sponsored by the Theatre, Television, and Film Lighting (TTFL) Committee of the Illuminating Engineering Society of North America, will be held at the Sheraton Center Hotel in New York City from March 17 to 20.

Citing "the exorbitantly high cost and annual rate increases of audience measurement" for radio, the NAB has formed a **Radio Audience Measurement Task Force** with the idea of pos-

sibly creating a nonprofit ratings service First place in the 1985 edition of Duncan's Radio Market Guide to U.S. **billings** went to KIIIS-FM of Los Angeles, a Gannett property.

Broadcast employment in 1984 rose 4.6 percent, or 7799, according to FCC tallies of stations employing five or more people. In the top four job categories, minorities increased from 12.8 to 13 percent and women from 26.9 to

27.8 percent, while the categories themselves grew 4.8 percent.

A Rand Corporation study on **group ownership rules** found "little evidence" for economies of scale and no evidence that groups bargain more effectively with networks, advertisers, and program suppliers. Both ideas were major arguments for expanding the 7-7-7 rule.

Frazier, Gross & Kadlec, a Washington, DC consulting firm which recently added a market research division covering broadcasting and cable, predicts that although 1984 was an exceptional year for **independents** both in station prices and profits, many new stations may have trouble making a profit. It estimates that the third UHF commercial indie in a six-station market can expect only a five percent total daytime share after three years, or \$2 million in a \$40 million market The Association of Independent Television Stations reports in its 1984 census that **27 indies** began operations last year, the fourth year that over 20 such stations signed on. 1985 is projected for similar growth since 42 independent CPs are in effect.

Bell Labs has demonstrated a **lightwave multiplexer** which uses 10 lasers to send 200 "high resolution" television channels or 300,000 phone calls through a single fiberoptic strand. Researchers estimate that the 20 billion bps signal could be augmented by up to 22 lasers, each of which produces light of nearly one wavelength KUSA in St. Louis has become the first station to transmit **stereo AM** with Broadcast Electronics' new AX-10 exciter. The C-QUAM exciter reportedly is a second generation design using independent digital IF modulation.

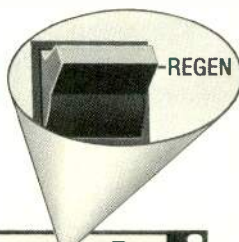
If you need the **exact time**, try calling (900) 410-TIME. The U.S. Naval Observatory's master clock is accurate over long lines to at least a tenth of a second.

The first **Conference on Stereo Television** is being held March 11 and 12 in San Diego by Waters Information Services, Inc. of Binghamton, NY The **Broadcast Financial Management Association's** twenty-fifth convention will take place May 11 to 15 at the Palmer House in Chicago The **North American Television Institute** will conduct video seminars during the NAB show at the Hacienda Hotel.

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ANOTHER BROADCAST INNOVATION

dead issue.



simultaneously. So in the unlikely event that your "on air" transport fails, the MVP-100 can be programmed to switch to the protection copy maintaining broadcast continuity.

What's more, the MVP-100 also eliminates "custom mechanics." Since each removable transport operates independently of each other, individual repairs or maintenance can be done without putting the entire system out of commission.

YIQ Format Delivers 1" Quality from 1/2" Tape

Total, reliable automation of your broadcast day is just one reason to make the MVP-100 an integral

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FROM MATSUSHITA ELECTRIC

Circle 118 on Reader Service Card

LETTERS

WHERE CREDIT IS DUE

To the Editor:

Our thanks to *BM/E* for the December radio production feature, "APR Brings Visual Art To Radio." Translating architecture into sound was no easy task, and we had no scarcity of critics who said it couldn't be done. The many hours of production which resulted in "Architecture for the Future" left us exhausted but proud; your article chronicling our work was an unexpected reward. However, we would be remiss if we failed to acknowledge those who made our experiment possible: Julie Lazar, managing editor of *The Territory of Art* radio series, Richard Koshalek, director of the Museum of Contemporary Art, Los Angeles, and KUSC-FM, the adventurous public radio station which cosponsored the series along with MoCA.

Because KUSC-FM and MoCA believed in the artistic possibilities of a

medium that lives on imagination, *The Territory of Art* brought not only architecture, but also film, video, sculpture, and photography to radio listeners throughout the country. Next we hope to distill these half-hour programs into short modular reports for commercial radio. The real Golden Age of Radio may be yet to come.

Steve Rathe
Senior Producer
The Territory of Art
New York, NY

DIGITAL AUDIO

To the Editor:

Regarding your November 1984 Editorial, "The Digital Audio Dilemma Solved," we at Mitsubishi and Digital Entertainment Corporation certainly appreciate your coverage of the digital audio revolution from a professional

point of view. However, I feel it appropriate to make some comments in setting the record straight.

First of all, Mitsubishi is the only manufacturer currently delivering two-channel Digital Audio Stationary Head recorders for professional use. Over 100 have been delivered around the world over the past three years. The Mitsubishi machine is indeed a digital audio stationary head machine, thus it can be called a DASH machine in the generic sense of the word. However, it is not compatible with the proposed, and yet not implemented, DASH format by Sony and Studer.

Sony and Studer have not yet delivered even one DASH compatible machine. Sony claims that they have delivered DASH machines to Japanese broadcasters. The information I have from Japan is that these are not DASH compatible to the latest proposed DASH standard. Whether the Sony and the Studer two-channel digital DASH

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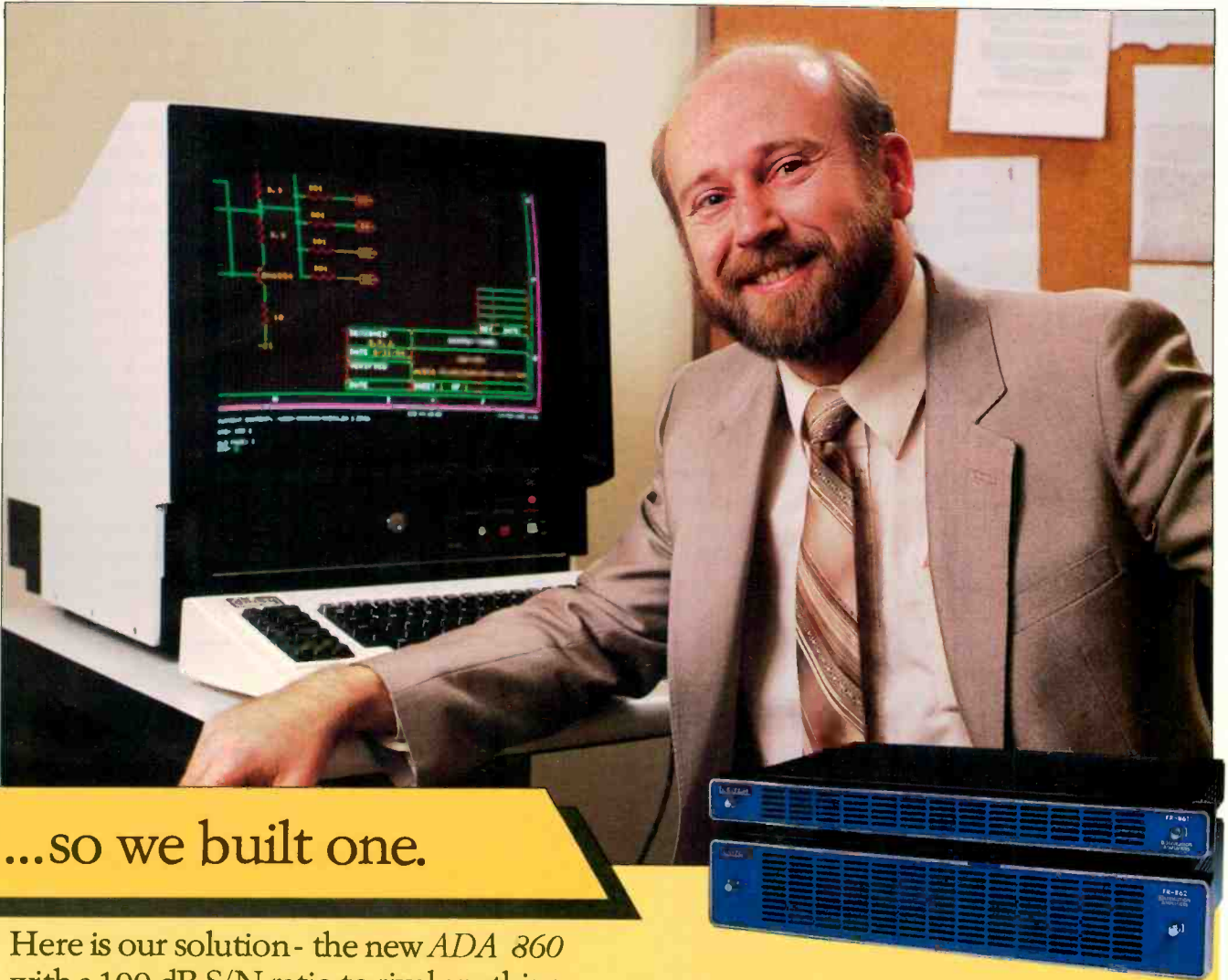
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LETTERS

machines will be compatible in the full sense of the word can only be established once both Sony and Studer have actually delivered machines into the field and tapes have been interchanged to test out the claimed full compatibility.

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Tore B. Nordahl
President
Digital Entertainment Corporation
Danbury, CT

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To the Editor:

Just to set the record straight, WQIC, Meridian, MS, has an arrangement with WSLY in York-Livingston, to supply all its programming from 6:30 p.m. until 6:00 a.m. each day, and we

identify ourselves liberally during that time period with only top of the hour identification for WSLY. In other words, WQIC is broadcasting on FM (99.3) 11.5 hours daily.

Despite being placed in the FM category in your December Best Station and Facility Design Competition, we are licensed as an AM.

Stan Torgerson
President
WQIC-AM
Meridian, MS

ABC RADIO FACILITY

To the Editor:

I would like to add some relevant information to your fine article about the new ABC Radio Network facility which appeared on pages 14-16 of the December issue. Tony Argibay was the project designer on this job for our office. The project was conceived, designed, and executed over a two-year

period through the collaborative efforts of many people. The following organizations and persons played significant roles in this process: Richard Martinez, project manager for ABC Radio Network; Donald Furman and Lenore Lucey, project managers for ABC Real Estate & Construction; Ron Schiller, installation coordinator for ABC Radio Network; Robert A. Hansen, acoustical design; Goldman Sokolow Copeland, electromechanical design; Robert Silman & Associates, structural design; Pisano-Blank Construction Associates, general contractor; London Electric, electrical contractor (power and technical wiring); and Climate Control, Inc., mechanical contractor.

In addition to the above, many others contributed their time, energy, and expertise to the development of this large and complex project. In the fullest sense of the words it was a team effort.

Maurice W. Wasserman, AIA
Architect/Planner
New York, NY

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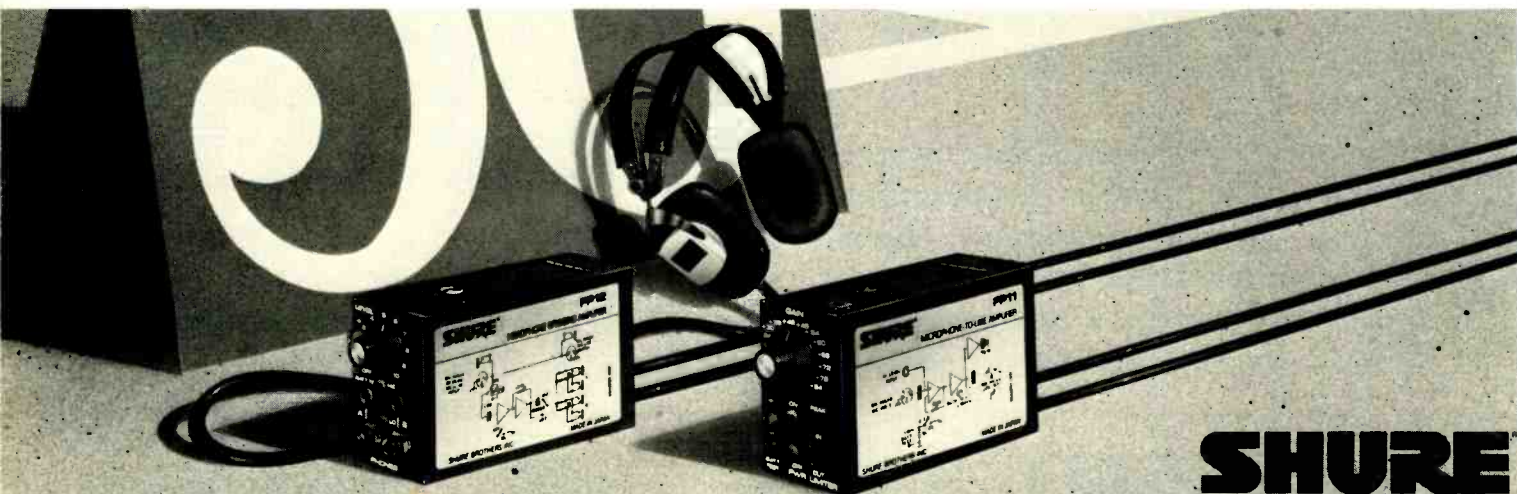
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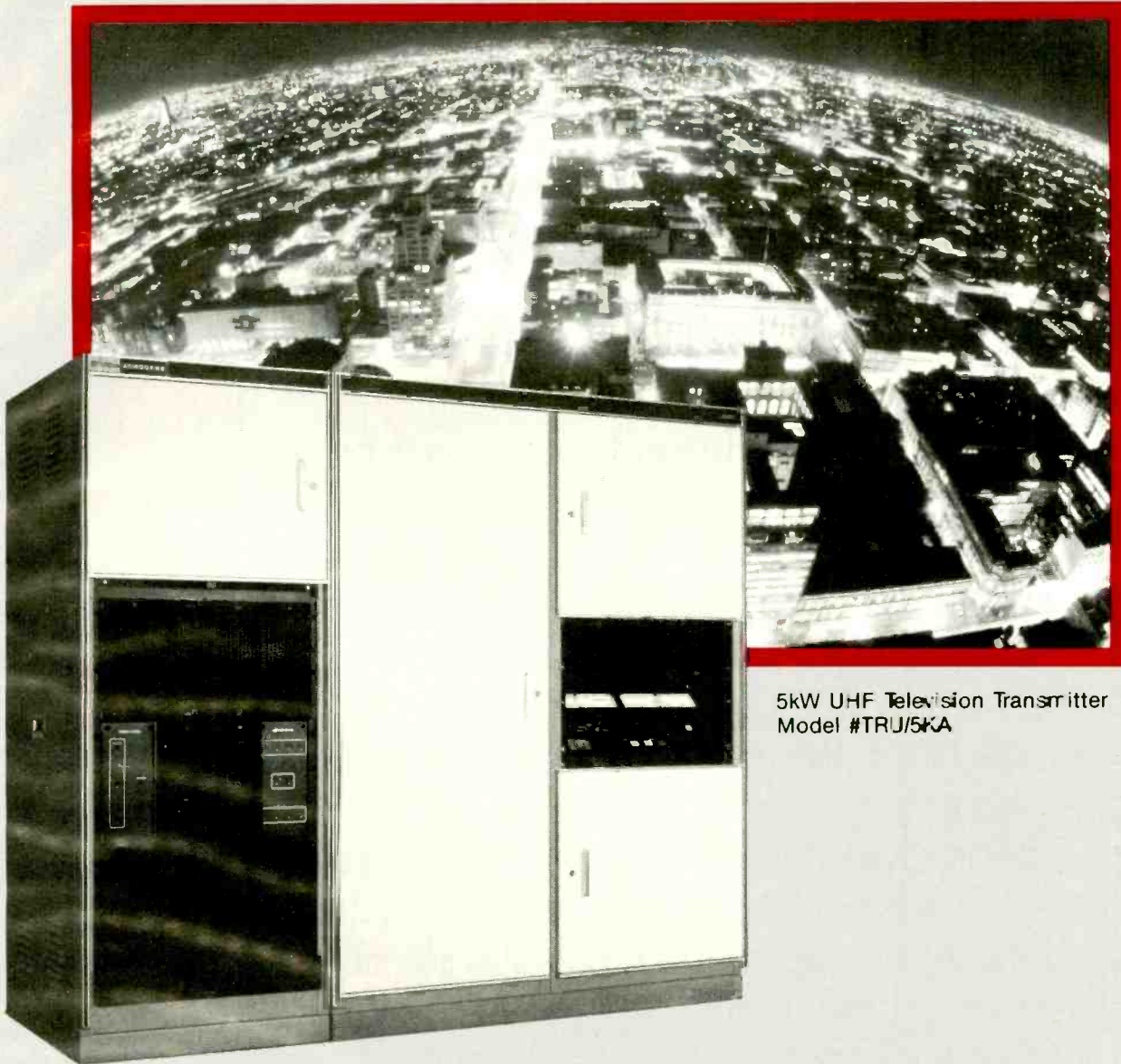
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RADIO

programming & production

Sleepers is a Winner in Dallas

By Judith Gross
Associate Editor

Progressive rock radio is alive and well on the Dallas/Fort Worth airwaves. It has taken form as *Sleepers*, a one-man production of lesser-known music from the past and present, aired each week on public station KNON-FM.

Sleepers is a live, two-hour show which takes its name from those choice gems of music generally shunned by Top 40 and other contemporary radio formats—the so-called “sleepers” of the record industry.

The program is hosted by Dave Johnson, who devised the concept of a revamped version of the “progressive rock” format which found favor on FM stations in the 1970s.

“There’s so much good music out there that you never hear anymore,” Johnson explains.

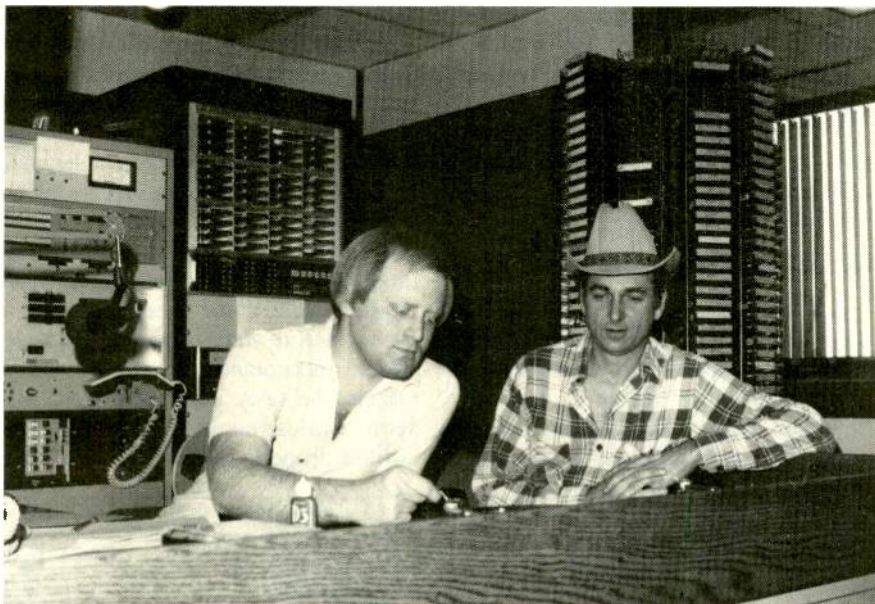
He selects his music from his own playlist, either from his own collection of 3000 albums or from new releases provided by record companies. He then produces the show from start to finish.

Sleepers got its start in 1980 on Dallas station KERA-FM and then moved briefly to KAAM-AM in the same market, where it was eventually bumped for a satellite music format. Ironically, that was precisely the kind of programming decision Johnson had aimed to counter with the program.

What’s wrong with radio programming today? Everything, according to Johnson. “Radio has become boring and predictable, with stations playing the same few records all the time,” he says. “Many of my listeners say that before they heard of *Sleepers*, they had quit listening to radio altogether.”

Alternative programming

Johnson’s solution is to offer an alternative in a program that avoids the likes of the Beatles, the Rolling Stones, and Michael Jackson in favor of songs



Johnson interviews Texas record producer Phil York between taped music segments on the weekly *Sleepers* show.

which have been absent from the airwaves for a decade or more, of cuts which never got much play in the first place, and of current tunes which will probably never see a bullet on the charts (if they make the charts at all).

To his delight, Johnson is finding that his choice of music often sparks a responsive chord with listeners, who have generally been enthusiastic.

“We’ve had no complaints in the time I’ve been doing the program,” Johnson boasts, “except perhaps that the show should be on longer.”

Johnson, who had some on-air DJ time before starting his own computer consulting business, does the program without pay, as his personal labor of love. The lack of financial backing recently led his former cohort, Glen Mitchell, to exit the show for more lucrative pastures.

Johnson supports himself with the consultancy work and by providing taped music to parties and banquets, subsidizing in the process what he calls

his “addiction” for doing the show.

With a modest array of audio equipment already in place in his Arlington, TX apartment, Johnson produces *Sleepers* much the way he might put together a party-music tape, with a lot more attention to quality.

He records the music in sets of five selections, spinning them on his two Technics SL-1200 Mark II turntables, through an AMI mixer which he admits is “not really broadcast quality” but is “better than most discos.” He records two sets of five songs each onto standard audio cassettes on his Technics M224 deck, taking up three cassettes per two-hour show.

Trust in tape

“I put the music on tape because I never trust the styli at any radio station; they generally don’t keep them clean and they are often worn out,” Johnson explains. He has considered using carts to tape the music, but for several reasons he works on cassette instead. For

RADIO PROGRAMMING

one thing, KNON doesn't own any cart machines yet. And, cassettes give Johnson the freedom to work from his home on his own schedule.

"I like to work at night because your senses are more acute then," he maintains.

On Monday evenings, Johnson takes his cassettes to KNON studios where he intros the selections live, often spicing up his comments with trivia from the music world. *Sleepers* has a request line, but since the music is taped, Johnson takes note of his listeners' choices and fulfills requests the following week.

"This gives me a hook to get them to tune in next week," says Johnson, adding that he has rarely been stumped by a song request the he could not fill.

Interview segments

Johnson includes interviews in the program as well. He tapes interviews with singers and record producers with his portable Sony recorder. Recently, he began using a Crown PZM microphone because "it lies on a table like a

fly swatter." He has interviewed musicians from (long-gone) rock groups such as The Byrds, and some such as late-'60s rockers Spirit, who recently got together to record a new album which Johnson feels got the cold shoulder at most radio stations.

Johnson edits the interviews on his Teac X-7R ¼-track stereo reel, working from cassette to reel then back to cassette for airing. He interweaves interviews between music sets and will also occasionally have a live guest on the program. For more elaborate production work, Johnson rents a production studio.

Johnson says that many listeners have commented on the technical quality of the show, but there are problems every now and then. One of his challenges has been to overcome the poor quality of some of the older records. He explains that some were recorded in mono, before stereo received the widespread acceptance it enjoys today. Others, he says, especially those of a semi-bootleg nature, were never recorded properly in the first place. His

solution is generally to increase the graphic equalization, although Johnson finds that an on-air apology for the sound is needed once in a while.

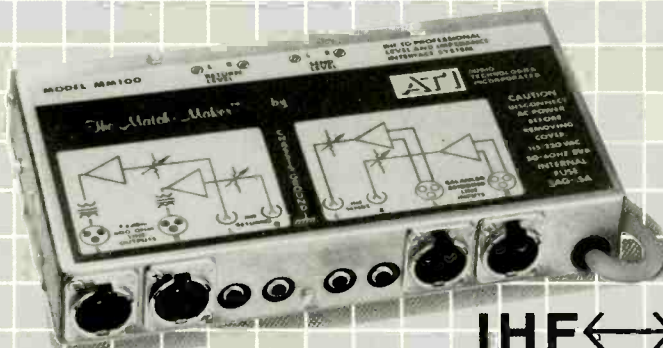
In addition to giving listeners a chance to hear music most radio stations don't play these days, Johnson is dedicated to helping local radio retain an individual identity. He does this by airing local Texas talent on *Sleepers* when time allows, playing tapes sent in by area bands and basement groups.

A friend recently suggested that Johnson record a sounder for the program to give it more of a professionally produced flavor. Although Johnson liked the idea, he is wary of sounding too slick to his laid-back listeners, who he believes are seeking an alternative to just that kind of overly produced sound.

On-air promotion

What Johnson is doing for *Sleepers* right now is on-air promotion through contests and giveaways. He says he finds that record companies are only too happy to supply him with albums as contest prizes, a fact he attributes to his

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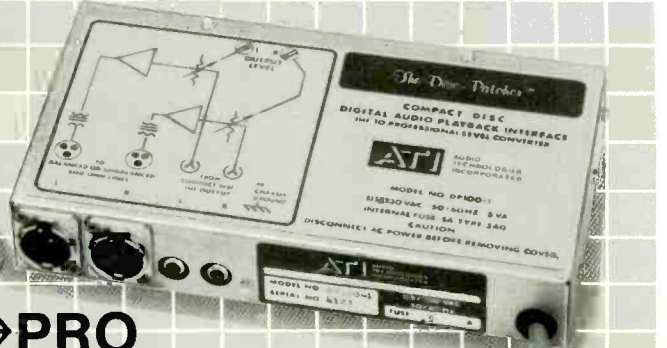
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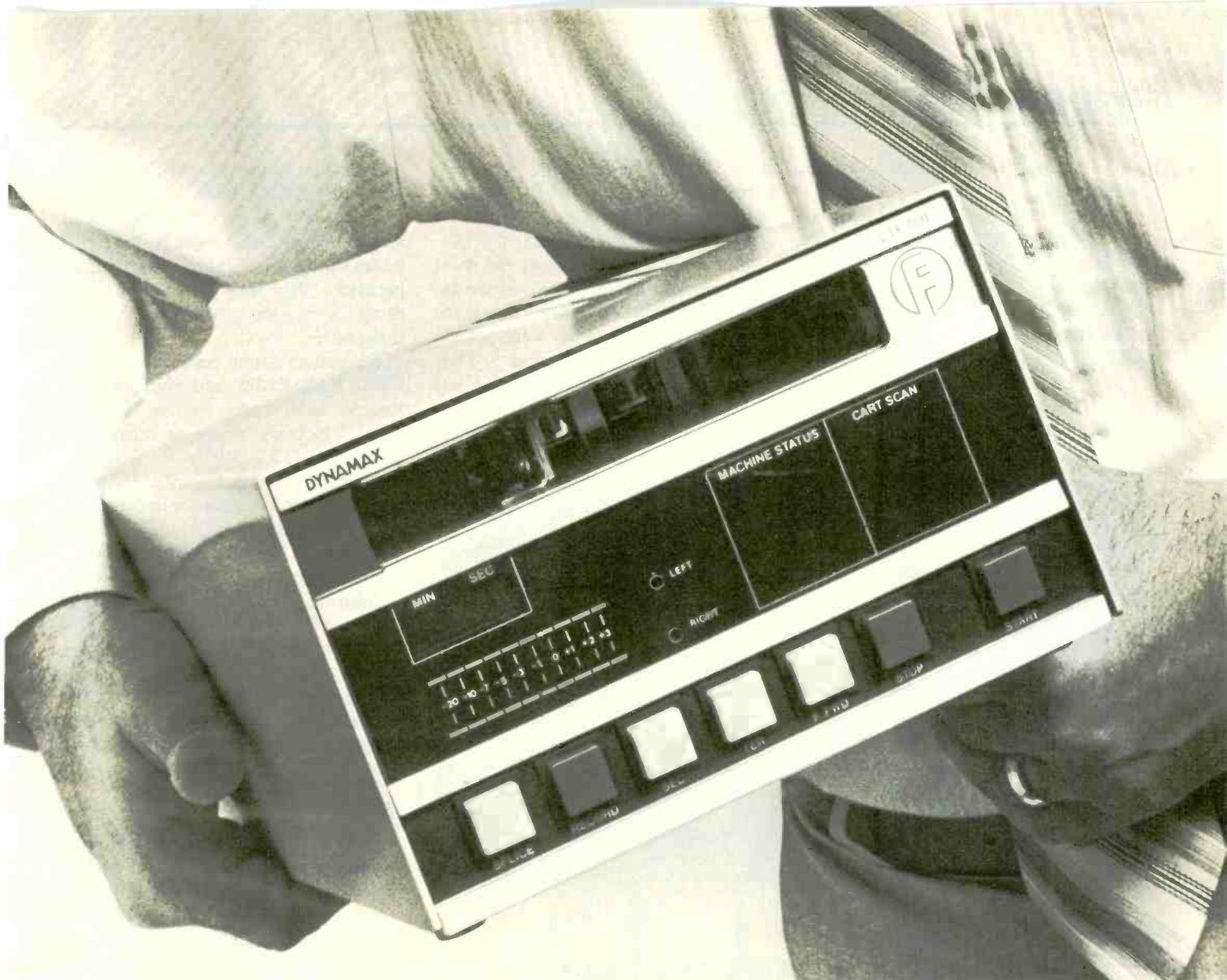
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RADIO PROGRAMMING

attitude about how records finally make it on the air.

"Record companies are treated like dirt by a lot of radio stations," he argues. "The feeling is that the record people need radio more than the stations need the records. But a record company knows that I will play their music if I think it's good."

When it comes to dealing with radio station hierarchy, Johnson has encountered more than a little resistance to his

show. He has been unable, so far, to gain widespread support for *Sleepers* among program directors in spite of a good response from listeners.

Johnson tried to syndicate the show last year, and he did get a positive answer from about 40 stations across the country. But their terms were not exactly what he had in mind. "They wanted the show for free, and I just couldn't do it for that," he says.

Since then he has tried to interest

commercial stations in the Dallas market, but without success.

"I'm not asking to change their whole format. All I want is just a few hours on the air," Johnson says, exasperated. "But they all say the same thing: they don't want to try anything new."

Responses from networks such as CBS RadioRadio and NBC's *The Source* have been similar, Johnson says. "Nobody wants to break new ground."

He has been equally unsuccessful at attracting a major sponsor to the show, although by his estimation the demographics of *Sleepers* read like an advertiser's dream.

Johnson judges that his wide range audience is 18 to 35 years old, divided into 60 percent male, 40 percent female.

Johnson is producing the program virtually on a shoestring each week, spending about \$100 including his own time.

Satellite distribution

"In order to do this show right, syndicated, I would need about \$4000," he adds. If it is ever to be syndicated, Johnson says he would like to distribute it by satellite, so as to retain the live radio nature of the show.

One bright possibility on the horizon for Johnson is that technology will bail the show out in the form of cable radio, once it comes into its own. He says that Satellite Systems of Tulsa is about to launch a cable radio service and has voiced mild interest in the show.

But until this sleeper of a show is discovered by more than just its current loyal following, Johnson contents himself with playing the music he loves, producing for a medium he loves, and providing what he believes is a public service to listeners with somewhat more eclectic tastes in music.

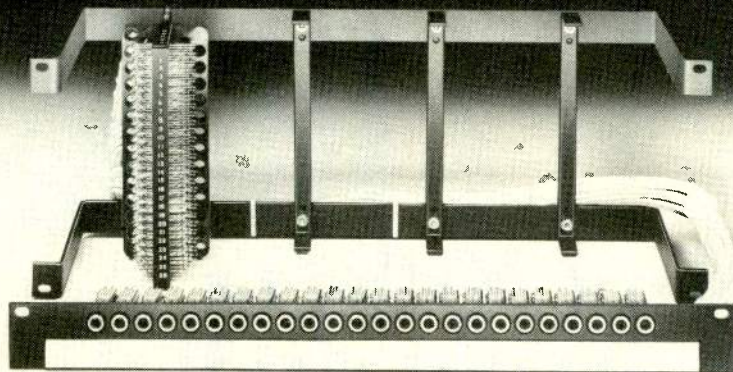
At the same time, he hopes he is throwing contemporary radio the life preserver he feels is sorely needed right now.

"I have never talked to anyone who honestly likes the state in which radio now prevails," Johnson maintains.

"The number one station in Dallas may have a 10.0 share, but of how many total listeners? If radio loses everything and goes all automated, it will destroy itself. I don't want to see that happen."

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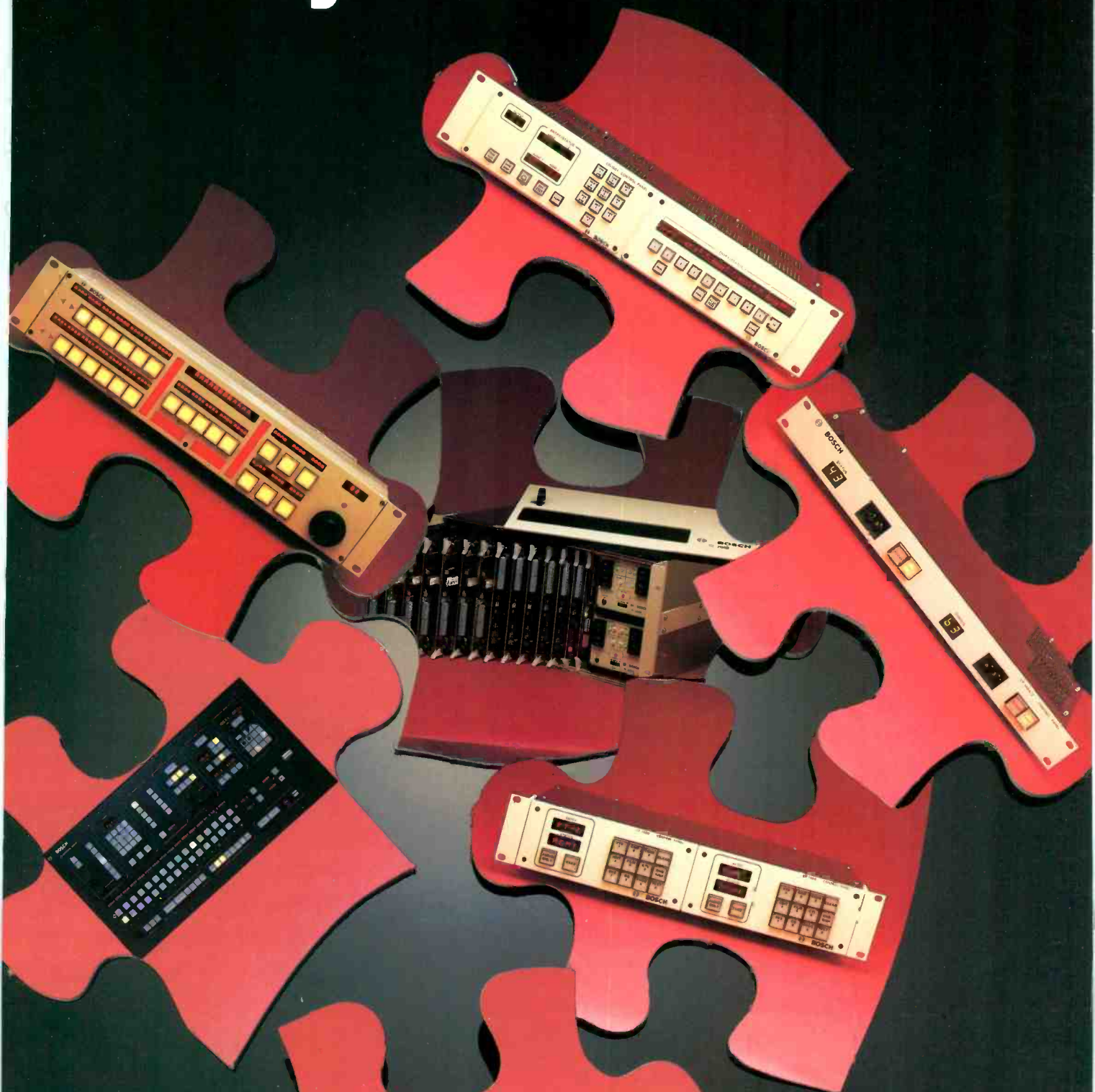
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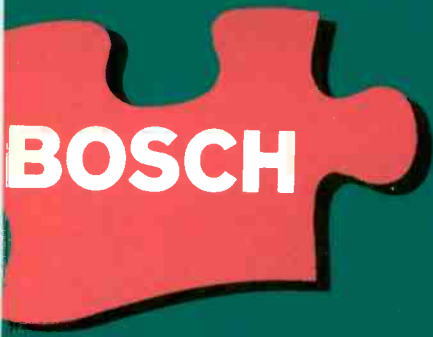
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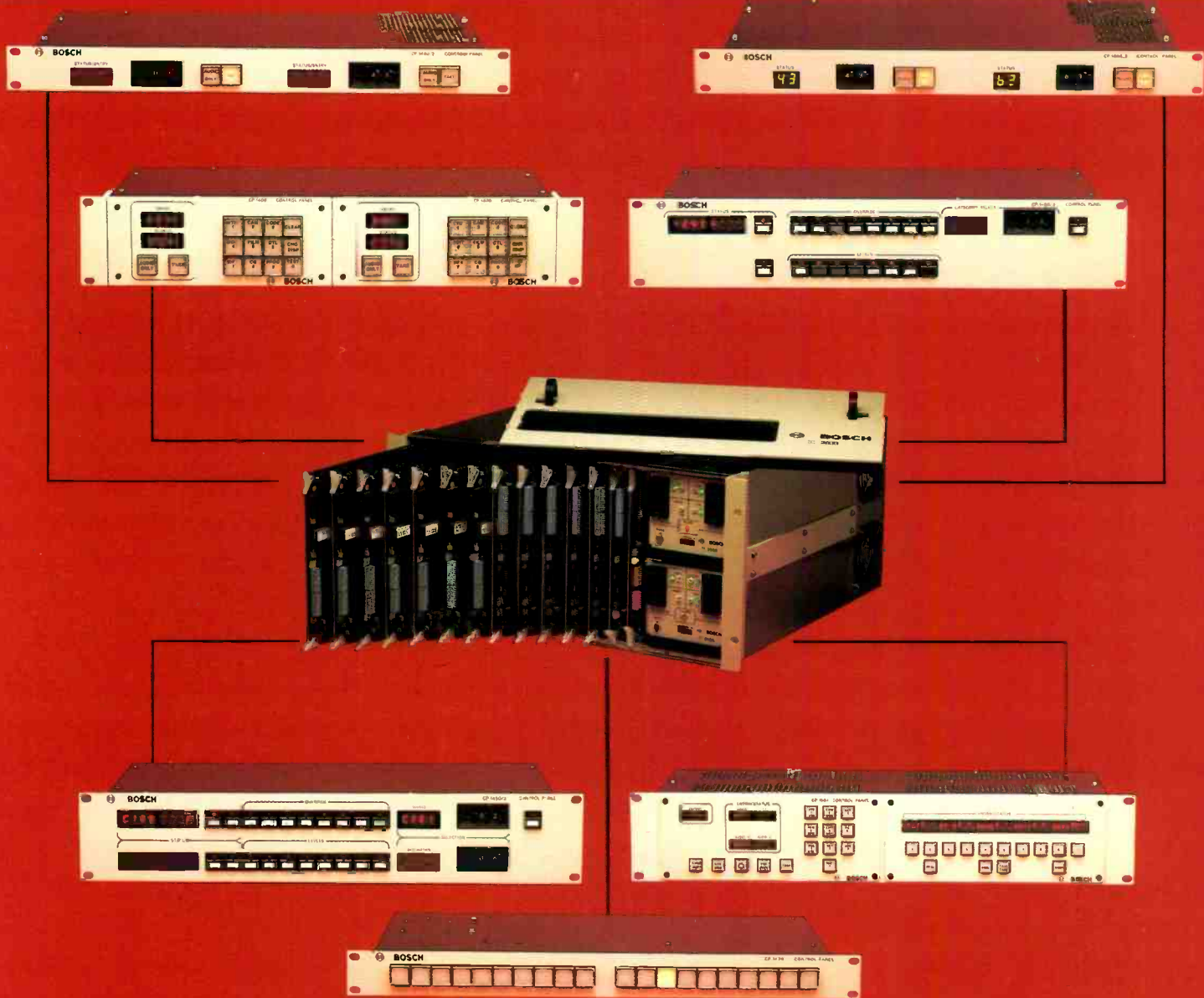
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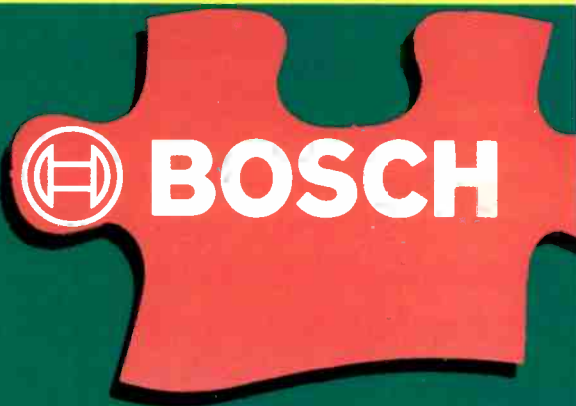


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TELEVISION

programming & production

SCETV Exposes Regional Material To a National Audience

By Robert Rivlin
Editor

Three powerful but relatively unknown short stories by three equally obscure southern writers have been filmed, produced, and packaged by South Carolina Educational Television (SCETV) and will be aired by Public Television stations around the country before the end of the year.

The 120-minute package, called *Tales of the Unknown South*, features some familiar names in the list of credits, including film director Laslo Benedek, who acted as a consultant on this project, and author James Dickey. But you won't see many other familiar names. The talent is mainly regional, and production crews as well as post-production staff and facilities are all courtesy of SCETV. Their work on *Tales of the Unknown South* goes a long way toward proving that there are a tremendous number of talented production people in all parts of the country who have the ability to create first-class, first-run, prime-time programming.

Of course, SCETV has long been a leader in the field of regional public television program production. Many of its production efforts have found their way into the national marketplace. SCETV was also among the first public television facilities to install its own Rank Cintel MK III color telecine. However, *Tales of the Unknown* is, by far, the most ambitious cinematographic project the South Carolina network has undertaken.

The three stories—DuBose Heyward's "The Half Pint Flask," Diane Oliver's "Neighbors," and Julia Peterkin's "Ashes"—represent different periods and views of southern black/white relations. Professor Bernie Dunlap, who produced the acclaimed film series *Cinematic Eye* for PBS and who has more than 150 television writ-



Director of photography Buck Brinson readies camera while director Jim McMahon confers with actress Rosanna Carter and actor Danny Nelson on the set of "Ashes," one segment of SCETV's *Tales of the Unknown South*.

ing credits, was the spark plug for this project. Dunlap, who figured that film treatments of relatively obscure southern writers would not only provide good dramatics but would gain an appreciably wider audience for these and other southern writers, approached SCETV's vice president of production Peter Anderson for a commitment to film the series.

He and Dunlap, who shouldered the responsibility for adapting the stories to film scripts, applied to the National Endowment for the Humanities and received a \$360,000 grant for the project. SCETV and the ETV Endowment of South Carolina made up the remainder of funding for the program.

Local crews

Crews on all three shoots were comprised of SCETV personnel. The per-

sonnel budget money, therefore, was allotted to finding and hiring professional actors. "We invested the better part of our above-the-line budget in talent, and it shows," says SCETV's Randy Brinson, who directed "The Half Pint Flask," which at 41 minutes is the longest of the three films. Narrative wraparounds for each segment are delivered by Dickey, who was filmed at each of the three locations.

Careful planning paid dividends in production values. While South Carolina locations were being scouted, crews for the three-film project were being hammered together from SCETV's staff, no small task considering that people who would serve on film crews also had jobs relating to the operation of the television network. Everett Davis, normally a television director, served as the director of photog-

TELEVISION PROGRAMMING



SCETV crew views a scene from "Ashes" on the Rank Cintel MK III telecine.

raphy. His camera operator was Bill South on "The Half Pint Flask." Davis explains, "We all had to win our jobs by showing footage to Laslo." Following several private huddles, Benedek, Anderson, and Dunlap decided who would do what on each film. In many

instances, the same people filled different roles on each of the three films.

The first film to start shooting was "The Half Pint Flask," adapted from a story by Heyward, best known for his story (and later novel) *Porgy*, upon which George Gershwin based *Porgy*

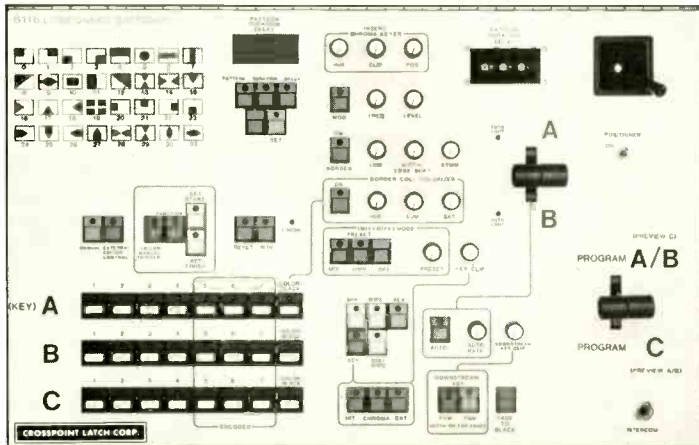
and *Bess*. Except for one interior night scene, the film was shot entirely at practical locations in Georgetown, SC. The night scene was shot in SCETV studios in Columbia, and was the only studio shot in all three films.

"There were location scenes which could have been done in the studio," director Randy Brinson points out. "We tried to do everything we could on location; however, simply because we had the whole company there, we were away from our home base, and given our budget limitations we were trying to get everything done in the shortest amount of time." Principal photography on this segment was completed in only 20 days.

Each film had its own unique challenges. On "The Half Pint Flask," for instance, several scenes were shot inside a church that needed to be repainted. But rather than paint the church white, director of photography Davis and art director Charlie Inglett opted for Pittsburgh Paint's Pussy Willow Gray, which gave a 60 percent reflectance. The gray helped overcome

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TELEVISION PROGRAMMING

contrast problems between walls that were to appear white and the faces of black actors. Explains Brinson: "Dealing with that kind of contrast and knowing that this was ultimately for television release and that we'd be marrying one format to another [film to videotape], the gray-for-white seemed a pretty good approach." Although a certain amount of contrast could be corrected during the telecine transfer, Brinson says he "wanted to keep the odds down, since you always lose some details when you go from one generation to the next." Further, the electronics of television automatically bring hot white down, and that in turn brings the rest of the tonal scale down—including black faces.

Color correction

Color match and correction was done in SCETV's Columbia facilities. The 16 mm color negative was transferred directly to one-inch videotape with the Rank Cintel telecine. "We chose to work from the original negative because we felt that would give us the

closest thing that you can get to a film look on television," says Brinson. "We figured we could save money if we did all the editing on videotape rather than cut the film, then have to send edited film back to the lab for conforming. This telecine has a very safe and smooth drive, so we weren't worried about scratching or otherwise damaging the original negative. We didn't lose a foot of film."

"Neighbors" called for a somewhat different production and posting strategy. With three separate productions in various stages of editing, director Jim Eddins decided to do his daily rough cuts on workprints in a more conventional manner working with an eight-plate Steenbeck. Only the film footage that actually was going to be edited was transferred to one-inch videotape.

"We learned a lot about film-to-tape transfer," Eddins allows. "The Rank telecine gives you a lot of opportunities to balance colors, and to adjust contrast and brightness ratios. We developed some techniques for making sure what we got in the first place survived all the

way through the transfer process and came out looking the way we wanted it to look. One of the reasons why you shoot film for video is that you want its special look. However, it takes some work to translate that look for the video transmission system."

"Neighbors" was the only segment produced with a mix of the medium- and high-speed Eastman color negative films. All exteriors were exposed on 7291, and all interiors and night scenes were on Eastman high-speed color negative film 7294. According to Eddins, "It was a natural to use the 7291 outside, and we had talked about using it on interior shots. But I figured that with the high-speed film [which is rated for a recommended EI of 320] we could shoot right in the middle of the lens. I liked that capability because we wanted to carry very strong depth of field and crisp, sharp images for this story."

Consequently, interiors were filmed at T-stop of 5.6, and night exteriors at T-2.8. Cinematographer Bob Gilbert used an Angenieux 9.5-57 mm zoom lens on an Arri SR camera for principal



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photography. The second unit camera was the Arriflex BL, which was used with an Angenieux 25-250 mm zoom lens. Says Gilbert, "Thanks to the latitude of the high-speed film, we never had to shoot wide open, even on the night exteriors." Furthermore, lighting requirements were minimal, and mainly for effect rather than exposure. In the scene following the bomb explosion, for example, one 4K HMI daylight-

balanced lamp was backed down the street to illuminate through the living room window. That, says lighting director Landry Layson, was sufficient to light the scene inside the living room, and a single tungsten lamp was used for fill light. Just to make sure everything was captured, a third camera—a hand-held Eclair ACL—picked up the living room shots in the aftermath of the explosion. Says art director Sam Glenn,

"We could only trash the living room once; we had to get everything in one go."

There was a slight buildup of grain in some very low-key scenes. However, Eddins was able to compensate by reducing "noise" during the one-inch videotape transfer work. He explains, "The grain buildup was in the shadow areas, which probably would have gone black with a less light-sensitive film." The solution: "We cranked the gamma control on the Rank Cintel telecine way down and just about eliminated any noise in the shadow areas."

With the Rank, relationships between blacks, midrange tones, and highlights can be adjusted separately. "We adjusted the gamma to the black range," says John Rich, post-production supervisor for all three stories, "and tweaked the highlights. As a result, the variety of picture contrast you can get is tremendous—it's very elastic. We think it's a lot better than printing the film and then transferring."

The final segment, "Ashes," was directed by Jim McMahon and filmed by Buck Brinson. This is a story about an old black woman (Maum Hannah, portrayed by Rosanna Carter) who is about to be displaced from her home by an unsympathetic white neighbor. "Ashes" was shot entirely on the medium-speed negative. Brinson explains that some 80 percent of the scenes were daylight exteriors, and interior shots were all contained in small areas. "We shot daylight interiors with 4K HMIs, and night interiors with 2K tungsten lights," he says.

How good can locally produced dramatic television be? "Seeing is believing," answers Davis. "That's a question which your readers can decide for themselves." He adds, however, "I think that this project was a two-way street. For example, Benedek taught us delineating responsibilities, but I also believe we taught him that it's possible to move across predefined lines on a shoot." Perhaps Dunlap has the right idea when he calls SCETV's approach to this project "guerrilla filmmaking."

Call it what you want, the successful production and nationwide airing of *Tales of the Unknown South* proves that there are many untold stories—and many people with the desire and knowledge to translate them into first-run TV programming. **BM/E**

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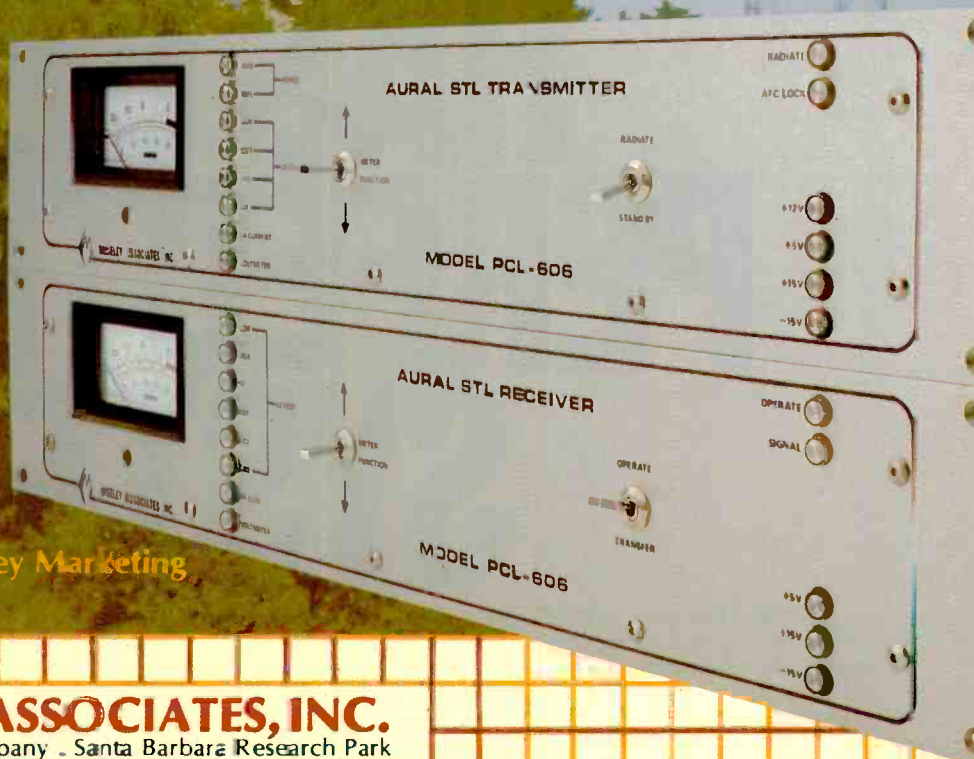
There's a jungle in the Angeles National Forest. Most of the broadcast transmitters for the greater Los Angeles area are at this single site on Mount Wilson. That means intense competition for both bandwidth and audience. The vast majority of Mount Wilson-based broadcasters choose Moseley because the PCL-606 and PCL-606/C Studio-Transmitter Links are tough, proven winners in both respects.

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Over the last three years, Sony's rivals in the combination camera/recorder arena have spent considerable time inventing wonderful things to say about their new formats. But apparently, they've overlooked inventing many wonderful new products to go along with these formats.

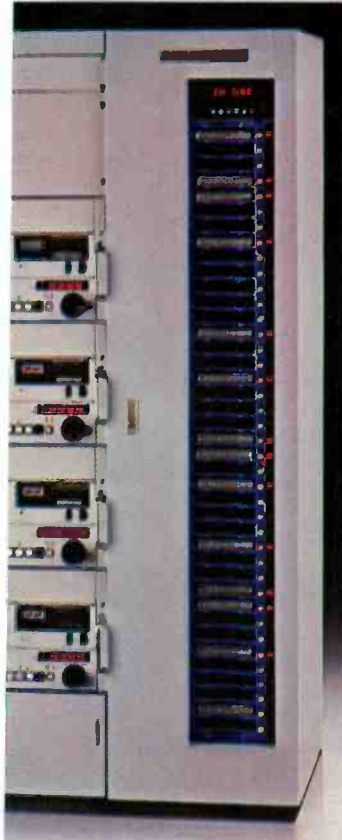
Sony has taken a different course.

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Then, in 1983, Sony expanded the system with the three-tube Betacam, the BVW-40 edit/recorder, and the world's first battery-operated 1/2" field playback unit.

And this year at NAB, Sony announced a major breakthrough in cart machine technology with Betacart.™ A system



that demonstrated the Betacam format's strength beyond the newsroom, beyond the studio, and beyond field production. At the same time, Sony also unveiled the world's lightest camera/recorder, the BVW-2 Newsmaker.™ And a prototype coder/decoder system that will make it possible for Betacam to be transmitted by microwave. Each of these products is the result of Sony's dedication to

the needs of the ENG and EFP industry. Work which has earned the Betacam format widespread acceptance by television stations and production companies around the world. Which only makes sense. After all, in this business you don't win sales on the merits of your arguments. You win them on the merits of your products.

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TAKE PART
TAKE PRIDE

NAB officials want attendees to focus on broadcasting's traditional role in shaping and influencing public opinion, and they are highlighting this theme with the slogan "Take part . . . Take pride."

The key public interest issue the NAB has chosen to rally around is drunk driving, a timely choice in light of the still-raging controversy over wine and beer advertising on radio and TV.

"Drunk Driving: A National Tragedy" will be the topic of the first joint radio and TV opening session on Monday, April 15. It will feature members of Mothers Against Drunk Drivers (MADD), Students Against Driving Drunk (SADD), and the National Federation of Parents for a Drug-Free Youth. The NAB hopes attendees will "take part" by coming up with some local solutions to a national problem.

Other featured workshops and seminars will highlight this year's convention theme by looking at minority employment opportunities, and by urging broadcasters to reach out to the community and work together to meet mutual needs.

There will be the usual assortment of advertising, sales, and promotional "how-to's" on the agenda. Two special discussions will cover successful promotions for all markets, and what advertising will be like in the near, and not-so-near, future.

If station acquisition is your interest, there will be a seminar on that as well.

Legal issues and more for managers

Other events of general interest include a joint Congressional session, where Congressional and FCC representatives will be on hand to answer questions, and "Night Court" evening sessions offering free legal advice on FCC policies.

Some of the management seminars are repeats of last year's; some are brand-new. There will be sessions dealing with "do-it-yourself" small market research, microcomputers in station operations, program distribution via satellite, establishing a new station in a market, libel, and the future of public broadcasting, among other topics of interest.

Every imaginable item of equipment used by broadcasters will be exhibited in what the NAB likes to call "The Electronic Supermarket." This year more than 700 manufacturers will attend along with

their designers, engineers, and salespeople to show their state of the art offerings in broadcast equipment hardware and software.

Engineering sessions

One of the highlights of the NAB's thirty-ninth Engineering conference, which as last year begins on Saturday, the day before the convention officially opens, is a long-awaited report by the NAB's AM Improvement Committee after a year of intensive investigation into AM technology.

In addition, two special sessions will highlight UHF transmission systems and the problems of non-ionizing radiation, an area where federal regulations are being proposed.

Other engineering seminars, for radio, TV, and some for both, will cover radio engineering, RF maintenance, AM/FM allocations, radio subcarriers, radio production, AM stereo, audio processing, electronic graphics, TV satellite systems, spectrum management, and several sessions on conversion to multichannel TV audio. There will also be some informal

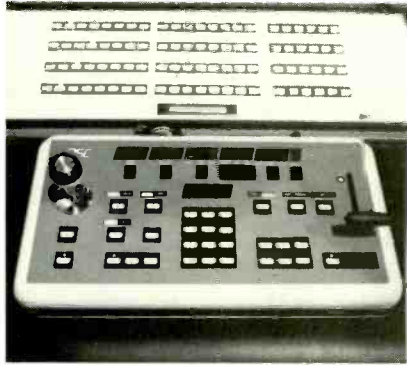
"shirtsleeve" evening workshops, and the ever-popular engineering forum the final morning of the convention. The engineering conference will culminate in the engineering luncheon, where Carl Smith of Smith Electronics will receive the NAB Engineering Achievement Award for his work on AM transmission systems.

Other annual highlights to look forward to are the report on the state of the industry from NAB president Ed Fritts and the traditional closing address by FCC chairman Mark Fowler.

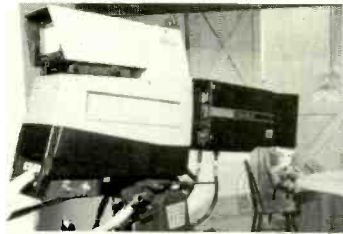
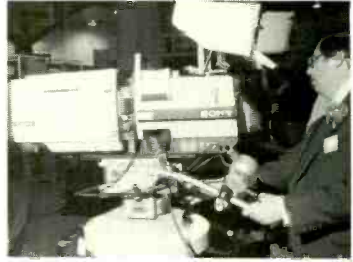
Generating more personal involvement from broadcasters is a lofty convention goal, but with such an extensive lineup, the NAB stands a good chance of at least making a good start towards getting attendees to "Take Part . . . Take Pride."

When you get to this year's big showcase, be sure to get a copy of this year's *BM/E Survival Guide*. It will provide you with a comprehensive map of the exhibit halls, a complete listing of exhibitors alphabetically and by product category, plus late-breaking product information that you won't find anywhere else. It will help you "take part" in the show from beginning to end.

The catchphrase setting the tone for the sixty-third annual NAB convention, which begins April 14 in Las Vegas, is PERSONAL INVOLVEMENT



Exhibitors at NAB '85 will strive to surpass last year's achievements. A guide to the hottest products begins on page 63.



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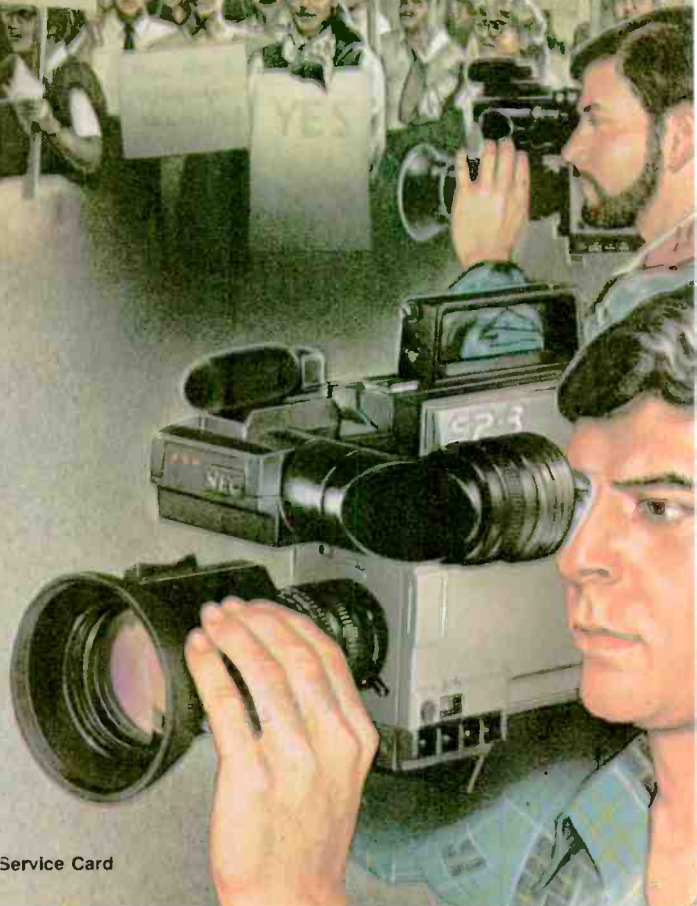
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The Quest Is At Hand

Finally, the quest is at hand. At the NAB show in April, users of the video medium will be able to judge the merits of all that Intergroup is doing and participate in what it will become.

Today, the challenge of the old group's legacy is gladly accepted!



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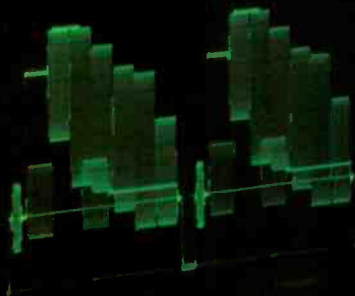
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WHAT'S HOT IN

TV/VIDEO

PRODUCTS

1. CAMERAS

Broadcaster interest in ENG and especially studio/field cameras is at its highest level in several years. The results of *BM/E*'s eleventh annual Survey of Broadcast Industry Needs (see *BM/E*, February 1985, p. 87) showed ENG cameras in first place among TV/teleproduction's most wanted products—up from sixth place last year—and studio/field cameras in sixth place, rocketing up from twenty-second place to their highest level in 10 years.

Despite this, however, NAB '85 looks to be a quiet year for cameras, with few new product introductions. This is certainly not to imply that broadcasters won't find what they're looking for; camera manufacturers will be sure to make their presence known, hawking their latest models.

RCA (1000), which made such a big splash last year with its CCD-1 solid-state ENG camera, will have a sports version this year, the CCD-1S, with a 1/500-second shutter resulting in enhanced slow-mo capability. RCA's recent deal with Nisus Video, whereby Nisus will supply RCA's cameras with its flexible, variable speed shutter, is another interesting development that may be discussed at the show.

The only other broadcast-quality CCD camera yet on the market, NEC's (1415) three-chip SP-3, will also be on view in a new version. The SP-3A claims superior light handling capabilities, increased sensitivity, and S/N of 58 dB.

Other manufacturers will have a variety of established cameras, with a few new models. One of these will be Philips Television Systems' (1500A) new-generation LDK-54 recorder/camera, making its NAB debut in ENG, EFP multicore, and EFP triax versions. Philips will also feature its LDK-6 camera family, including the LDK-6, LDK-26, and LDK-614.

Thomson-CSF's (1001) display this year will feature the TTV-1525C studio camera, the new TTV-1623 Betacam (Saticon version), and the new TTV-1624 automatic Betacam (Plumbicon version). Sony (1200) will also have a new Betacam, the BVP-3A, along with a production model of its new BVP-360 studio/field camera. Sharp (1102) will introduce new color camera lines.

Expect Hitachi (1402) to feature its full line of cameras, including the SR Series ¼-inch recorder/camera combi-

nations, the SK-110 computerized auto-setup studio camera, the SK-970 and SK-97 Computacam computerized ⅜-inch cameras, and the FP Series ENG/EFP cameras. Ikegami (1011, 1013) will also show its full camera line, including the HL-95 Unicam recorder/camera with accessory updates, the HL-79 Series of EFP cameras, the HL-83 ENG camera, the HK-322 full-function automatic studio camera, and the SC-500 industrial studio camera. The NHK-standard HDTV system will also be on view.

Harris (401) will highlight its latest studio camera, the TC-85C, along with its TC-90S ENG/EFP camera. Panasonic (1019) will feature its three-tube ENG/EFP cameras

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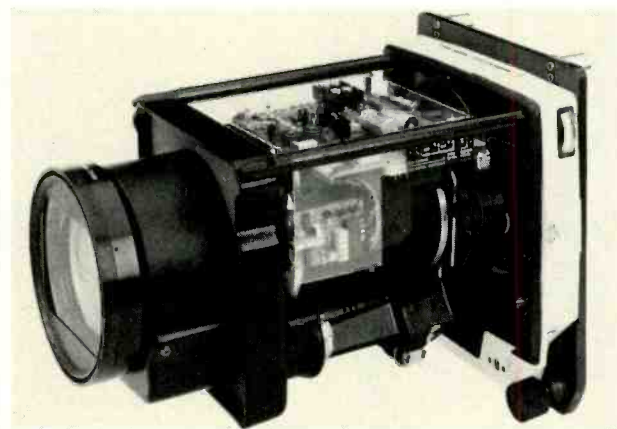
RCA's CCD-1 solid state camera.

and studio systems. On view at the JVC booth (1234) will be the BY-110U and KY-210U three-tube professional video cameras and the KY-320U, KY-900U, and KY-950U ProCams.

2. LENSES

Developments in cameras never occur without corresponding developments in lenses. This year brings a healthy crop of new products from the optics manufacturers.

Canon (1012) will introduce three new lenses: the J45x9.5 BIE OB lens, a compact f/1.7 unit with focal range of 9.5-427 mm; the J14x8 BIE compact f/1.7 ENG/EFP lens; and the J8x6B, a super-wide-angle ENG lens with maximum aperture of f/1.7 and unique inner focusing system.



New Angenieux 15x studio zoom.

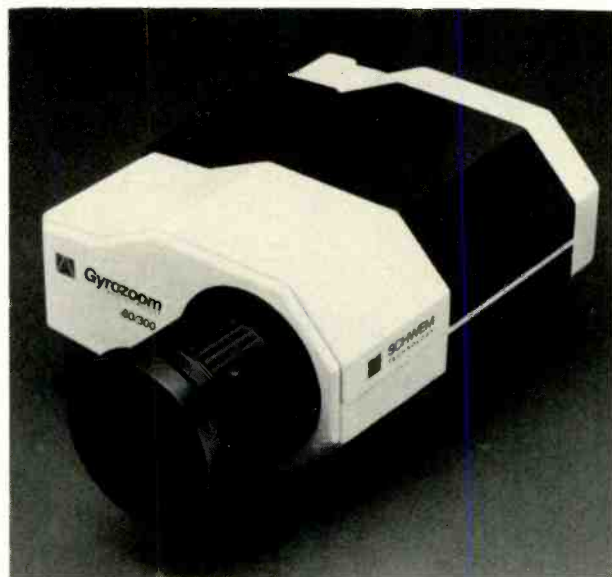
Several new lenses will grace the Fujinon booth (1411), including a compact, lightweight 44X zoom for $\frac{2}{3}$ -inch cameras and the P20x14 extra wide angle studio lens for $1\frac{1}{4}$ -inch cameras. Also new will be an economical 16x9.5 ENG lens with f/1.8 maximum aperture and a number of new hand controls.

Schneider (1403) will introduce a new 14.5X wide-angle studio lens with built-in 2X extender, close minimum focusing distance, superior optical performance in all channels, and optional built-in diascope.

An unusually interesting item will be featured by an NAB newcomer, Schwem Technology (2258). The new

Gyrozoom 60/300 stabilized camera lens is a compact, microprocessor-based unit that stabilizes the image internally to eliminate high frequency vibration from vehicles or platforms, eliminating the need for external stabilizing systems.

New lenses from Angenieux (1201) will include a 14x9 f/1.5 9-126 mm for ENG with 2X range extender, a 25x7.5 EFP lens for CCD cameras; 15x13 HP and 25x10 HP broadcast studio lenses; and new lenses for 30 mm and 25 mm format cameras.



Schwem Technology Gyrozoom.

Century Precision (1781) will introduce the Periscope V16 periscope lens, designed specifically for $\frac{2}{3}$ -inch video cameras and 16 mm film cameras; it features f/3.2 1:1 relay optics, interchangeable camera mounts, and a wide variety of interchangeable lens mounts. Also new will be a wide-angle adapter set.

Film/Video Equipment Service (1153) will introduce a modification of the Cinema Products J-6 zoom control for ENG/EFP and studio broadcast video lenses, allowing increased versatility of zoom rates, zoom feathering, and repeatable zoom rates. Also on display will be the Wide Eye I and II wide angle attachments for ENG/EFP lenses.

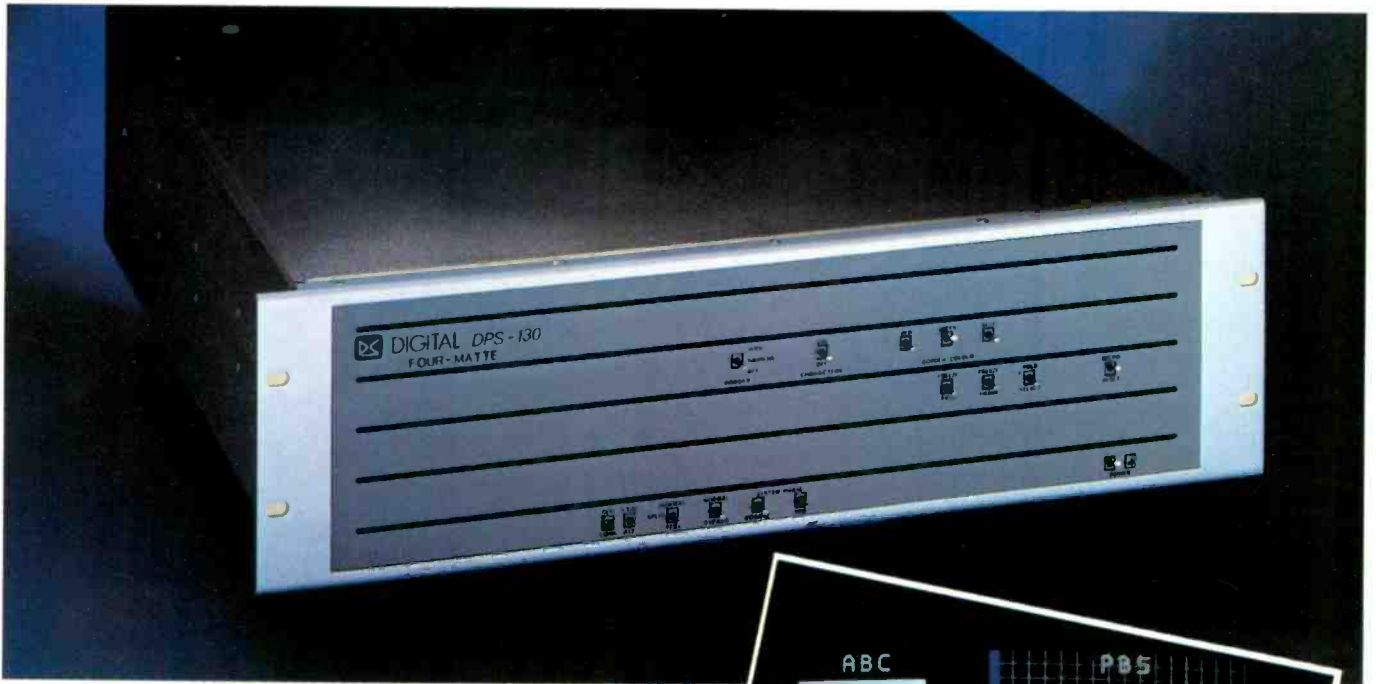
Tamron (1316) will again feature its ENG/EFP lens line. Expect Tiffen (1422) to introduce the MasterControl system for still cameras, featuring magnetic stacking of filters.

The major pickup tube manufacturers will have a variety of new offerings. Amperex (1412) will introduce a half-inch high-stability diode gun Plumbicon, a $\frac{2}{3}$ -inch high-stability diode gun Plumbicon; a $\frac{2}{3}$ -inch mixed field diode gun Plumbicon; and a $\frac{2}{3}$ -inch electrostatic focus Plumbicon. EEV (1335) will premiere a $\frac{2}{3}$ -inch mixed field Leddicon lead-oxide camera pickup tube, designed for such new ENG/EFP cameras as the Sony BVP-30 and BVP-360, as well as a $\frac{2}{3}$ -inch hybrid Leddicon for the JVC KY-320E, Hitachi FP-22, and similar cameras.

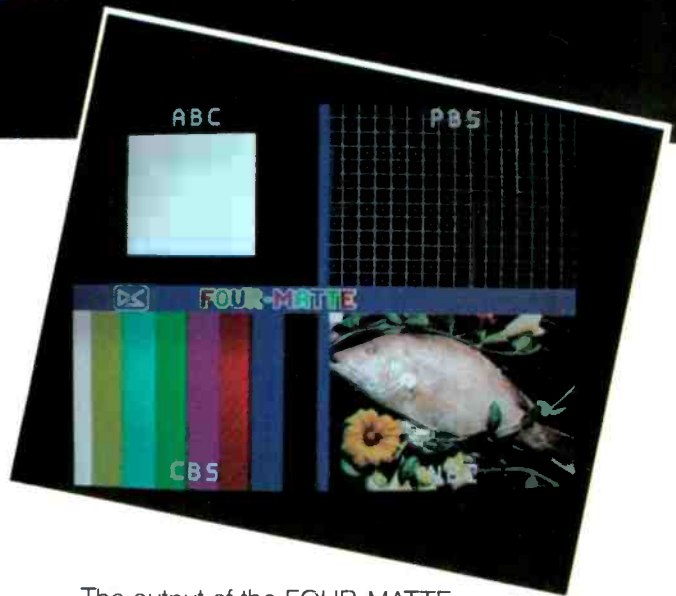
3. VTRs and VCRs

The continuing vitality and importance of the one-inch Type-C VTR for television operations is amply illustrated by a pair of new introductions. RCA (1000) will premiere

DPS-130 FOUR-MATTE



Four channel previewing -at a glance



FOUR-MATTE allows cable system operators and broadcast facilities to view four video signals simultaneously.

Selection of the desired channel can be made without scanning all converter channels available. Further applications include monitoring of several CCTV cameras for security and multi-source viewing in mobiles where space is at a premium.

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Canada M1S 4M6

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The output of the FOUR-MATTE is RS170A, enabling use as a switcher for alternate level of effects.

The freeze frame ability permits stop motion of all frames simultaneously. A border is generated with selectable colouring. There are such features as HØ and BØ controls, internal processing amplifier, and component video processing, as well as an interfacing available for an optional programmable audio switcher and more.

The burst and horizontal timing is front panel adjustable using a series of up/down counters. FOUR-MATTE can also be configured for monochrome only.



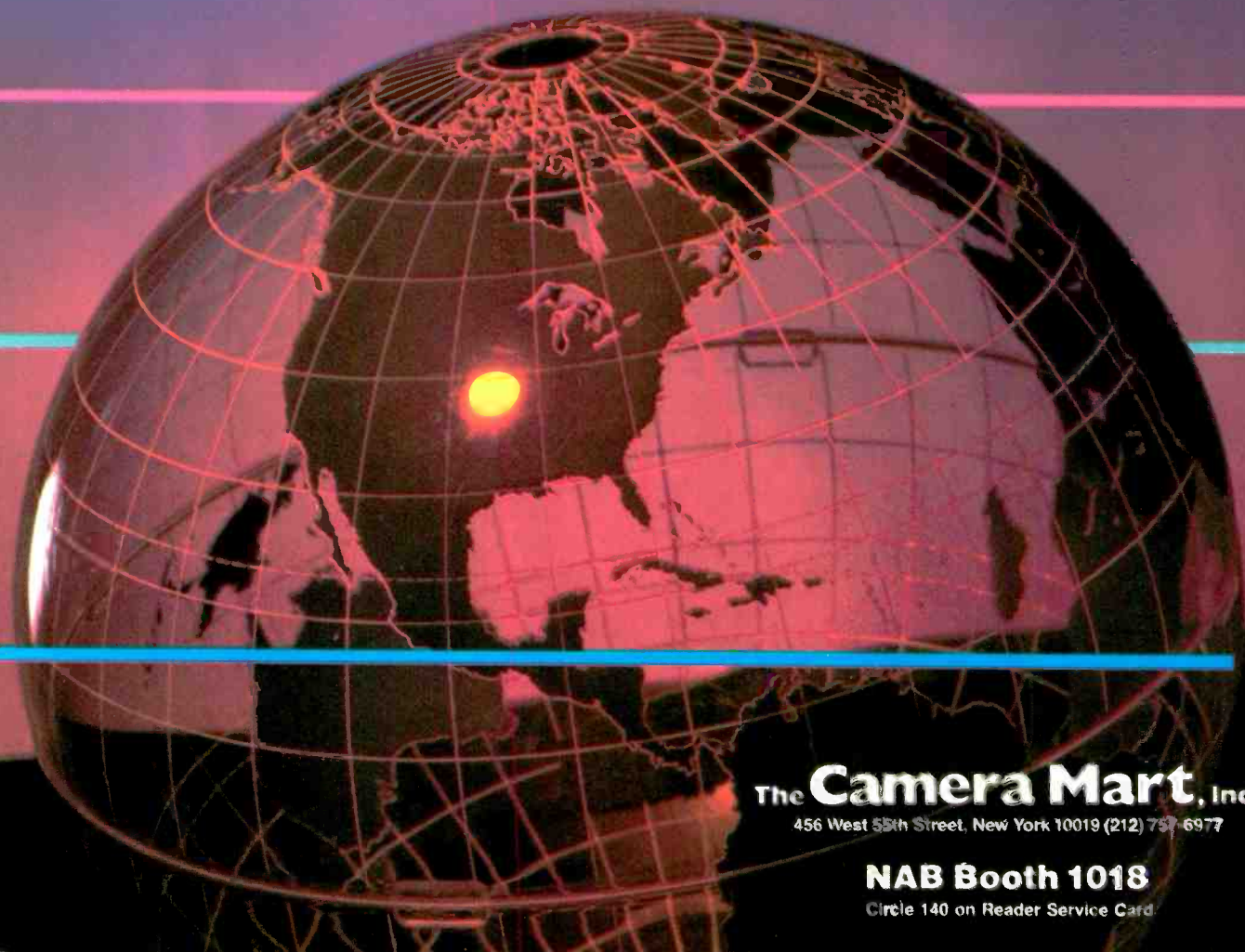
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CR-8250U 3/4-inch VCR from JVC.

the new TH-700 recorder, while Ampex's (1400) new VPR-6 will make its NAB debut. Hitachi (1402) and Sony (1200) will, of course, feature their one-inch VTR lines. Sony's Type C VTRs will be shown interfaced with a complete stereo audio production/post-production system.

Also new from Sony will be the BVW-15 freestanding dynamic tracking player, designed to complement the established BVW-10; and improvements to the high-definition video system, including a new television projection screen. The exhibit will also feature the Super Motion video system and the Betacart multicassette system for station automation.

Merlin (1023) will spotlight its line of wideband VTRs, extended-play conversions for Type-C machines, and modified BCN recorders for HDTV applications.

Alpha Video (1790) plans to unveil a new high-band, direct color conversion recording process that will automatically sense what type of prerecorded tapes are in use. A new time code restripping function with zero offset,



Bosch Quartercam recorder/camera.

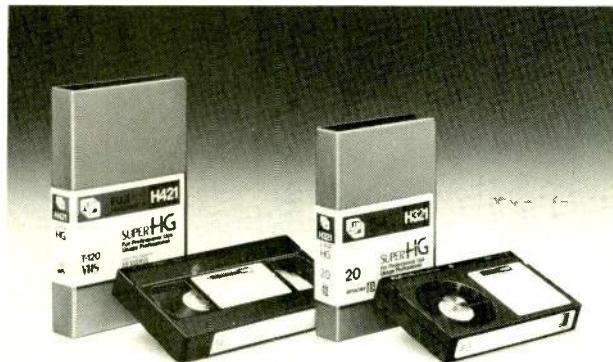
operating with time code from a Sony BVU-800, will also be introduced. Alpha will also feature conversion of Alphatized Type 5 Sony recorders to BVU-800 standards.

JVC (1234) will exhibit its line of VHS and 3/4-inch VCRs. Panasonic (1019) will feature its Recam recorder/cameras, editing system, cart machines, and other M-format components.

There is also growing interest in the broadcast community in the various forms of recording on disks—all types, from the Winchester hard disk (see the description of the Abekas system in the section on Still Stores and Animation), to CD read only memory, to the new generation of recordable videodiscs. 3M (1002) will show several optical data disc products, including prerecorded media in 5.25-inch concentrically recorded and CD formats, a user-recordable and erasable optical data disc, and a write-once, nonerasable optical data disc. The Panasonic (1019) OMDR will also be on display.

Dwight Cavendish Co. (442) will introduce the new Copymaster 250 videocassette duplicator, plus a new remote machine control system for duplicators.

Pinzone Communications (1617) will introduce a vertical interval multichannel audio system that permits stereo operation of any current TCR-100 or ACR-100 machine with no modification to the unit.



Fuji's VHS and Betacam videocassettes.

4. TAPE, FILM, ACCESSORIES

Expect a number of new developments in tape and film. 3M (1002) will introduce a new Betacart cassette for the Sony Betacart system (though it will not say yet if this is the long-awaited 30-minute cassette that the industry has been clamoring for for over a year), plus premium grade 3/4-inch U-Matic cassettes and improved Super High Grade Beta and VHS cassettes for half-inch recorder/camera systems. 3M is also featuring its new anti-static plastic for cassette inner and outer parts, considerably reducing dirt/dropout problems.

Eastman Kodak (1214) will show the new Eastman EB-930 and EP-930 3/4-inch videotapes, featuring increased coercivity (680 oersteds) and retentivity (1300 gauss) characteristics, plus improvements in RF output, luminance, and chrominance S/Ns.

Maxell (1624) will add a new one-inch videotape to its line of HGX professional half-inch and 3/4-inch videocassettes. Agfa-Gevaert (1608) will show several recent additions to the range of videotapes, including 12 new products in the Beta/VHS line and four in the U-Matic line. Fuji Photo Film (1413) will feature its line of one-

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inch videotape, 3/4-inch videocassettes, and half-inch VHS and Beta videocassettes.

Sony Tape (1200) will introduce a new five-minute play length for the Betacam HG Series videocassettes, designed to complement the existing 10- and 20-minute play lengths. Ampex MTD (1400) will feature Ampex professional broadcast one-inch helical videotape and 3/4-inch U-Matic videocassettes.

Tape accessories will also be in attendance. Taber (711) will display its Taberaser 409 and 1500 tape erasers and degaussers, plus its replacement and reconditioned audio heads. Allsop (1177) will introduce the new 62000 and 63000 cleaners for VHS and Beta videotapes, compatible with M-Format and Betacam. The Model 67000 pneumatic cleaner will also be shown.

The Videomax TD-600 bulk tape demagnetizer for one-inch, two-inch, 3/4-inch, and half-inch videotapes will be introduced by CMC (1425). Tapes are assured to have low frequency noise, time code, control track, and audio signals reduced to a level of -70 dB. New from Lipsner-Smith (1626) will be the Vedette II professional film previewer for 16 mm and 35 mm film.



CMC Videomax TD-600 bulk demagnetizer.

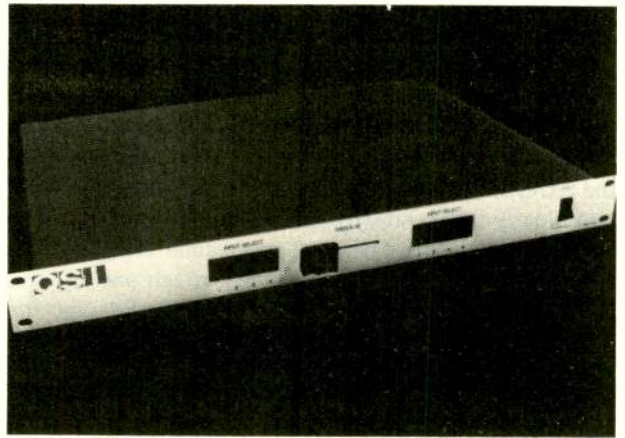
Audico (1343) will have a new cue-tone videotape loader that transfers shorter program segments already multiduplicated on pancakes of full-length cassettes directly into U-Matic, VHS, and Beta cassettes and one-inch reels.

5. PRODUCTION SWITCHERS

There's lots and lots of effort now to develop a new generation of production switchers that can handle the analog component signals that are becoming so popular in TV studios. Grass Valley (1207), for example, is thought to be working on an analog component version of its Model 100 switcher, which will make a truly affordable full-function component switcher available for the first time. Meanwhile, Grass Valley will also show the Models 100 and 1680 video production switchers, and the Model 300/DVE video production system.

Other companies also will address the need for component switchers. One of these is For-A (1306), which will introduce the CVM-500 and TVM-500 component video switchers to work with any component format.

Crosspoint Latch (1321) will have a particularly interesting new product, the Model 6116 component/encoded switcher, with four component inputs and three encoded inputs. The 6116 will work in any conventional component format, or in encoded video, and will not mix



QSI SW-402 production switcher.

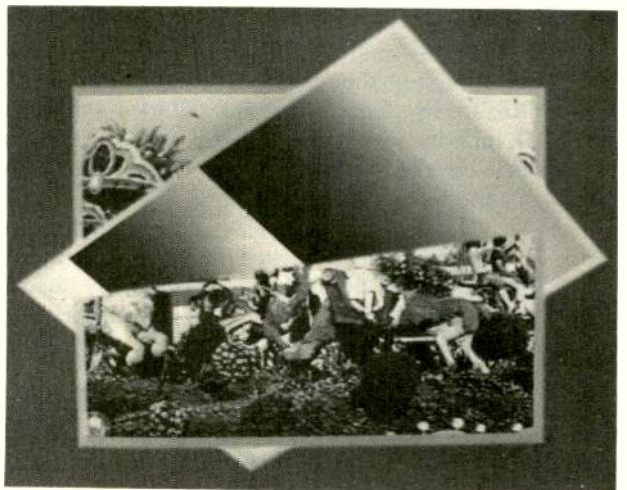
between formats. Also new from Crosspoint Latch will be the Model 6112 Ak, a fully computerized version of the 6112 switcher. Encoded switchers, of course, continue their importance for broadcasters. Central Dynamics (1409) plans to introduce the 80 Series ICK, a new ISO key system with new RGB and encoded chromakeyers. Also new will be the PGM Proc, a new 680 and 1080 Series program processor with analog key borders and soft colored wipe borders.

Ross (1332) will introduce its new RUS-210 video production switcher with the Ross Multilevel Effects system. QSI (1325) will unveil a mini-EFP switcher, a four-input by two-output unit with lap dissolve and camera tally closures.

MPCS (1121) will introduce the Technov line of high-quality, affordable video production equipment, including video and audio DAs, color sync and black burst generators, and portable two-input video switcher. Bosch (1603) will feature the R102 ME, R61 ME, and R51 ME production switchers. Stop by Echolab (1510) to see the SE/3 10-input special effects switcher with built-in memory for 5000 events.

6. SPECIAL EFFECTS

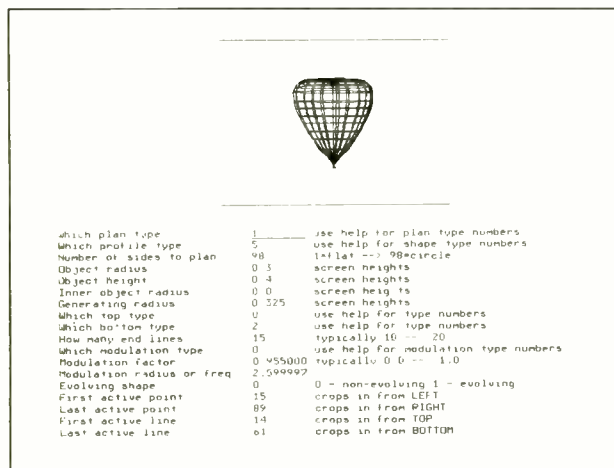
Perhaps the most important developments in special effects at this year's show will come from Ampex (1400). Leading the lineup is the brand-new ADO 2000, a digital effects system designed for live, on-air use. This system features 30 preprogrammed effects loaded from a disk,



New effect for Ampex ADO.

with 10 effects registers capable of single-pushbutton effects positioning (i.e., over left shoulder) for news applications. The basic under-\$75,000 unit is completely modular and can easily be upgraded to a full ADO system. Ampex will also have a spectacular new effect, Dimension, for the ADO, a software and hardware addition to the ADO combiner which allows up to four channels to be completely independently manipulated in any dimension in the same image. The most spectacular effect of all is achieved when image planes slide through one another. Ampex will also have a production model of its Spectra-key color correcting chromakeyer, which keys on any color signal and is fully integrated into the AVC switcher—priced at only \$8000 for the basic keyer, plus \$650 per input module.

Of course, other manufacturers will also have important news in special effects. MCI/Quantel (1631) will introduce Morph, a \$150 software package for the Mirage which allows new shapes to be created and changed even



Morph effect for Quantel Mirage.

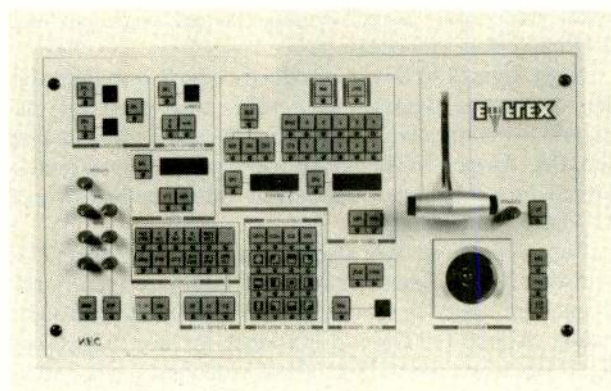
by nonprogrammers. Quantel will also feature the floating viewpoint option for the Mirage and the Encore special effects system.

NEC (1415) will introduce new software upgrades for the E-Flex/Optiflex digital video effects system, including Picture Cropping and Cube Maker. Digital Services Corp. (1302) will premiere a still store option for the Illusion video effects system (see section on still stores). A full Illusion with new effects will also be shown, as will the Flexikey manipulator.

Fortel (1409) will introduce the TBC32DE digital effects unit for high-quality efx from 3/4-inch VTRs, one-inch VTRs, and live feeds. Microtime (1230) will feature the NAB introduction of the Genesis 1 digital effects system first unveiled at SMPTE, plus the original T²E effects system shown at last year's NAB.

Echolab (1510) will introduce two new products: the SE/6, a large front-panel version of the SE/3 special effects generator; and the DSF broadcast-quality digital effects unit. Ultimatte (1642) will feature the Ultimatte 5 component analog unit and the Electrocraft component video switcher.

Among the major previously shown special effect systems will be the Harris (401) dual-channel Harris Digital Effects unit; the Abekas (1228A) effects system; the ADDA (1100) VIP digital video image processor; and the Vital (1212) SqueeZoom.



NEC's E-Flex system.

7. DIGITAL ART/GRAPHICS, WEATHER SYSTEMS, AND CHARACTER GENERATORS

The digital art/graphics system, only a few years ago a toy for just the wealthiest stations and production houses, has evolved into a tool within the reach of most television operations. Now encompassing a range of prices and capabilities, these systems are becoming essential aids to production. Adding to the choices this year will be 3M's (1002) new MFA paint system, a high-resolution graphic arts design station. 3M will also feature the D-5000 and D-8800 character generator and the BFA paint system.

ColorGraphics (1116) will make a splash with its introduction of the ArtStar II graphics production system, combining 16 million color electronic paint system graphics with high-quality character generation and digital still store in one system at a "breakthrough" price. ColorGraphics will also preview a real-time, 3D graphics animation system based on new graphics chip technology. LiveLine IV, a digital paint system for TV broadcast and video production with weather interface, will also be introduced.

Aurora (1312) will unveil the AU/100-QCR—Aurora/Matrix QCR D4-2 interface—for high-resolution film output (2048 or 4096 lines). The company will also show its computer videographic systems for animation, painting, drawing, font generation, and weather graphics.

In a major departure from editing systems, United Media (1300) will introduce the new Image Artist digital image processing system, an art system with electronic stylus and digitizing pad.

Video Associates Lab (1122A) will introduce a high-resolution broadcastable overlay system for the IBM PC that converts to NTSC and has built-in videodisc control. Bosch (1603) will introduce new software for the FGS-4000 graphics system, including an animation editor capable of adding new objects to an existing animation, and smooth shading software to edit and render smooth shaded objects.

Chyron (1610) will enhance its Video Products line with a totally new product, a low-cost paint system featuring high resolution and sophisticated creation capabilities comparable to much costlier units. (Other developments from Chyron are discussed below.)

Cubicomp (235) will show major enhancements to its Polycad/10 solid modeling system for the IBM PC, including new, optimized algorithms that speed image rendering. Symtec (1522) will introduce the Super Color

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Aurora/100 computer graphics system.

1024 graphics unit, based on the 68000 microprocessor, with 512x512 resolution, 1024 colors, and long display screen.

Computer Graphics Lab (1143) will feature the Images II low-cost paint system with a new anti-aliased text and business graphics package with many 3D effects. Beston/McInnis-Skinner (1638) will show new high-resolution 1920 pixel capability for its Weathergraphics digital graphics system.

Among the established graphics systems, don't forget to check out the AVA-3 and ESS-3 from Ampex (1400); the Paint Box and the Cypher character/caption generator from MCI/Quantel (1631); and the Vidifont Graphics V from Thomson-CSF (1001).

Many companies are attempting to get a piece of the lucrative weather graphics and weather reporting business. A brand-new entry here is 3M Stormscope (200), which will feature the new Stormscope thunderstorm mapping device.

Weatherbank (223) will introduce its WeatherCheck satellite-delivered weather information system, available coast-to-coast. WSI (1104) will introduce high-resolution, clouds-only satellite images, transmitted in 31 levels of gray for greater definition, that can be superimposed by users over their own custom base maps.

Accu-Weather (1010A) will introduce a new real-time up-to-the-minute weather database that provides forecasts and data, accessed as needed. Other featured new services will include satellite images showing cloud cover; news, sports, and financial graphics; Nafax, a variety of weather maps and charts normally accessed by fax but now directly accessible by a graphics unit; national weather radar; and early morning graphics.

Alden (1785) will feature the Model C2000D/C color weather radar, developed specifically for the radio industry, which accesses NWS radar via a direct or dial-up telephone line.

Advanced Designs (146) will introduce two new products: the DOPRAD II super high-resolution (768 x 480) Doppler radar display unit with sophisticated graphics features; and the RCD-1000 low-cost remote radar display unit.

Kavouras (1635) will introduce Radac II, an improved version of the company's real-time dial-up weather radar system, with access to all NWS and FAA radar sites. Also

new will be an enhanced animation system and 256-color video frame grab for the Triton X graphics system. R*Scan (1740) will exhibit its lightning tracking system.

The Color Connection system will be the featured new product at Environmental Satellite Data (1509). Based on the IBM PC, this new software package operates over 1000 PC software programs in addition to its weather and graphics capabilities. With the eight-plane graphics option, 256 colors can be displayed simultaneously from a potential 16.7 million.

Among character generator developments, Dubner (1628, 1630), now a Grass Valley Group company and getting into the character generator business (as opposed to background graphics) for the first time, will unveil Texta, a medium-cost character generator with 37 ns resolution, hardware anti-aliasing, font compose, and animation capability; the 10-K, a low-cost character generator with animation capability for the professional video market; and Chroma, a full-color video paint system. The CBG-2 video graphics generator will also have new features, including an automated election system, advanced weather graphics, and a third plane/still store/paint system.

No discussion of character generators would be complete without a mention of Chyron (1610), which will introduce new software for the Chyron IV graphics system, doubling the number of full fonts available at once to 12; a hardware change now allows an additional (third) input. New software will be on hand for the RGU as well, including camera font compose and font scaling, which automatically resizes any Chyron-supplied or customer-created font. The VP-2 will have a new disk expansion unit for up to three drives and a new RGB interface, plus new software features including an increased color palette, increased roll buffer, and other creative and editing-type features. In a major move, Laird Telemedia (1721) will introduce the new 1500 character generator, featuring 35 ns resolution, 65,536 resident colors, a multifont library (up to 70 fonts), dual disk drive system, auto centering, instant italics, proportional spacing, and many options.

Several new items from Quanta (1432) will include logo compose, graphic entry, graphic support, and enhancement modules for the Quantafont Q8 product line, plus a new, powerful Microgen Series character generator with character sizing, multiple fonts, and disk memories.

Knox Video (1511), back in the broadcast market after



Cubicomp Polycad/10 solid modeling system.

"Ikegami's HL-79E gets me through with flying colors—every time."

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The HL-79E camera is adding another dimension to the phrase "The Great Outdoors" as more users discover that the world's best ENG camera is also the best for EFP.

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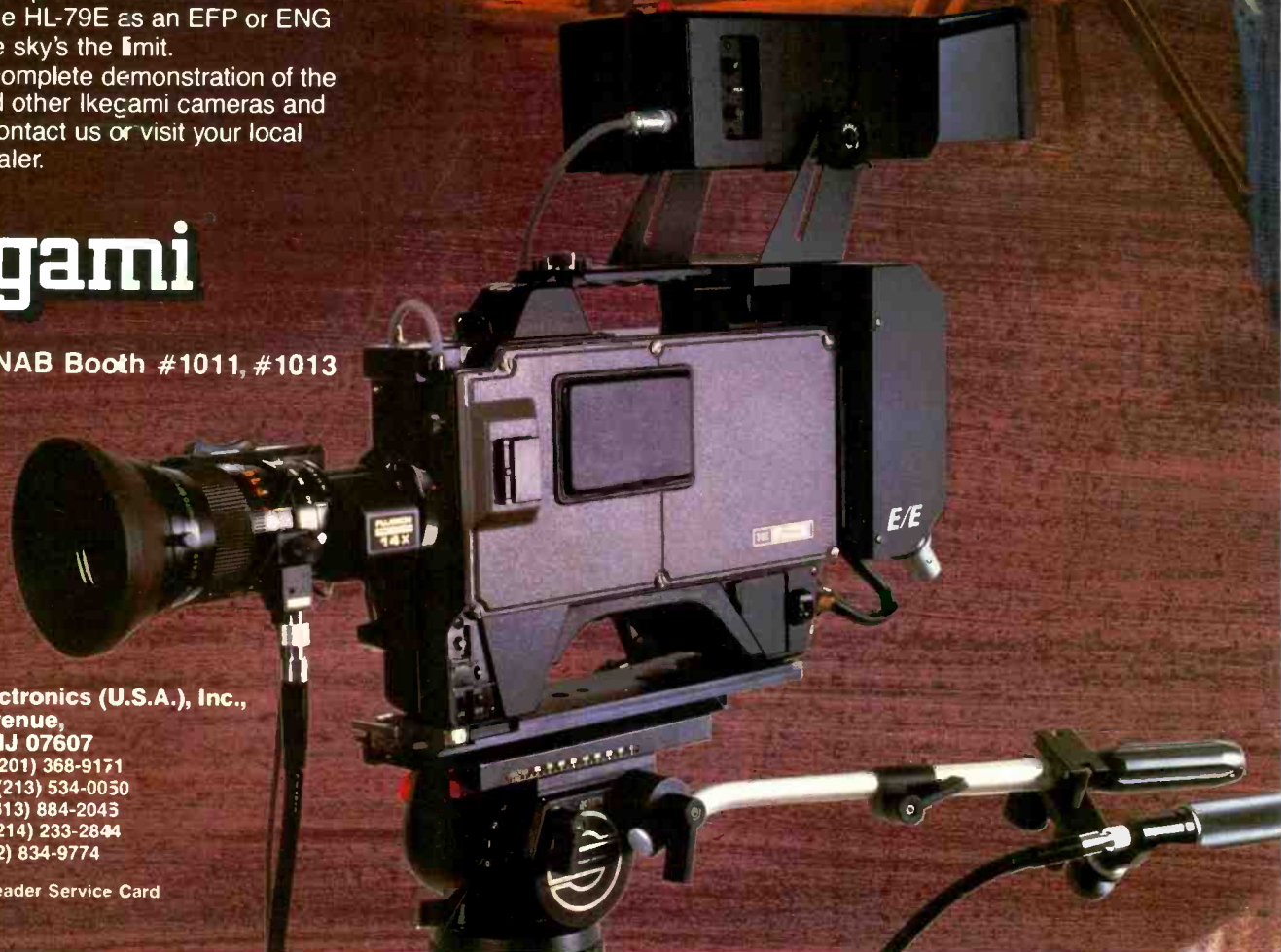
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a period of regrouping and new product development, will introduce the K40, a very low-cost full color character generator.

NTI America (1014D) will introduce the VFCG-2 video filing and character generator, a multipurpose still generator that provides four fields still storage, high-reso-



Laird Telemedia's 1500 CG.

lution character generator, video digitizer, graphic software, sports scoring package, and election package.

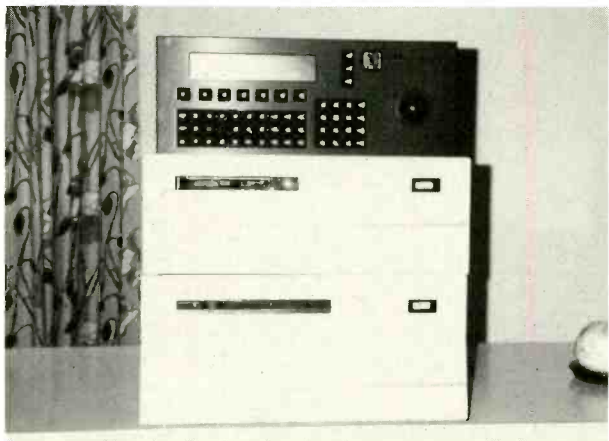
Ameritext (808) will show new editing and frame creation equipment for World System Teletext. The new Taft/SSS Electra teletext service will be on display, along with receivers and ICs for World System Teletext receivers from several manufacturers.

8. STILL STORES, ANIMATION

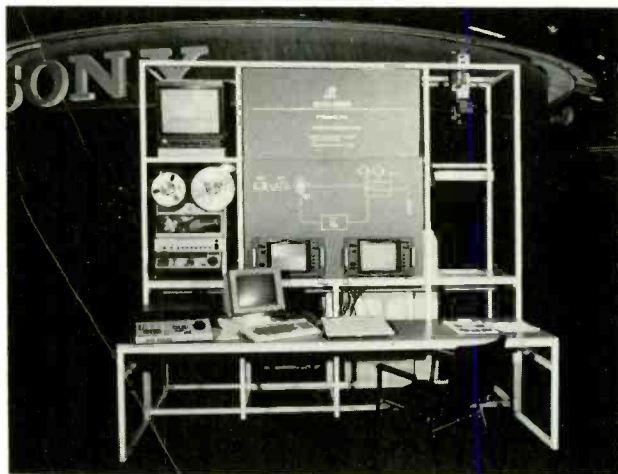
The big news in still stores and animation is the relatively recent appearance of systems that allow random access recording and playback of video frames, enabling the editor to make an internal edit or animation frame playlist without ever once actually editing the tape.

Abekas (1228A) will introduce the A62 digital disk recorder, a compact, Winchester-based real-time digital video recorder with storage capacities of 50 and 100 seconds. It features random access, variable speed playback, and simultaneous record/play capability plus extremely high image quality, and is ideal for single-frame editing applications including videodisc mastering, animation, and complex multilevel matte work.

MCI/Quantel (1631) will unveil a major new product for digital animation and editing—Harry, "son of Henry." A lower-cost (under \$200,000) version of the Henry prototype shown in a suite last year (and again this



A62 digital disk recorder from Abekas.



Sony BVH-2500 still frame recorder.

year), Harry records up to 100 seconds of digital video frames in digital memory, which can then be read out with random access. Harry will have a digital interface with the Paint Box, allowing Paint Box images to be captured directly. Quantel will also show its digital still store line and central lending library.

Harris (401) will feature the dual-channel Harris Digital Effects unit, the IRIS still store system with composition station and camera graphics stand, and the IRIS C compact still store. New from Asaca/ShibaSoku (1017) will be an upgraded version of its still store system. ADDA (1100) will feature its ESP II dual- and single-channel electronic still store.

The Model 525 overhead gantry system, a video/film 3D model animatics system with graphic capability, will be the featured item from Elicon (143). It consists of a five-axis robotic camera manipulator suspended overhead.



Elicon's IPK-200 intelligent keyboard.

9. IMAGE PROCESSING

Nowhere is the move to component video more evident than in image processing systems such as TBCs and synchronizers. For-A (1306) will introduce the FA-450 component TBC, for any format. Also new will be the FA-800 AutoCor frame synchronizer with auto correction circuit, the TGR-3300 VITC generator/reader, and the ENC-110 RGB-to-NTSC encoder.

Editing manufacturer Paltex (1005) will get into the act with Gemini, a low-cost, eight-bit digital video processor whose advanced 4:2:2 component sampling techniques



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A DECADE OF PROGRESS



A DESIGN FOR THE FUTURE

VIDEOTEK INC.

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Circle 144 on Reader Service Card

deliver fully framed, digitally processed, stable color video output from a wide range of inputs including unstable VTR outputs and nonsynchronous feeds.

Shintron (1417) will introduce a new component frame synchronizer. Hotronic (1331B) will introduce the AD51 TBC/frame synchronizer with optional freeze frame/field and pixel-by-pixel dropout compensator, plus the new AE61 TBC with optional color bar generator.

Two new digital TBCs will be introduced by Nova Systems (1345). The Nova 490, at \$5850, features 32-line window, eight-bit 4xsc sampling, adjustable LIC delay, and heterodyne operation for 3/4-inch and half-inch VTRs. The Nova 510, priced at \$7450, offers heterodyne or subcarrier feedback operation.

Switcher manufacturer Crosspoint Latch (1321) will have a new TBC, the Model 8000, which is capable of locking together two source VTRs and therefore makes possible a full broadcast-quality A/B roll editing system with a single TBC.

Broadcast Video Systems (1326) will introduce several new items, including the D-1000 decoder (NTSC in to YIQ, R-Y, B-Y, Y and RGB out); a component video to RGB translator; and the Cox 203 encoder with component



Fortel's TBC³² time base corrector.

video inputs. Applied Digital Technology (1730) will feature its Relecon remote level control for frame-accurate color balance and video processing.

Featured digital video products from Thomson-CSF (1001) will include the 5700 NTSC color processor, the TTV-4400 automatic contrast corrector, the TV-5305 image processor for special effects, and the TTV-7650/7660 D/A-A/D converters.

Video International (1524) will introduce new EBU-standard time base correctors, digital efx generators, frame synchronizers, and noise reduction systems, in addition to its established standards converter.

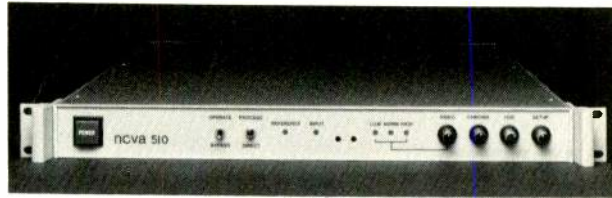
A standards conversion system for PAL, SECAM, and NTSC will be introduced by Asaca/ShibaSoku (1017).

Lenco (1419) will introduce several new products: the PSG-313 RS-170 sync pulse generator with genlock; the PSG-410 RS-170 sync pulse generator with genlock, black burst, and optional color bars; the PCE-4662 genlock option for the PCE-466 NTSC encoder; and the PVS-435 NTSC videoscope for measuring sch phase and system timing, with both LED and video output display.

Harris (401) will feature the Model 540 and 550 TBCs and the Model 632 and 690 frame synchronizers. Fortel (1409) will show its CCD Y/C TBC, the TBC³² and TBC³² HET time base correctors, the Colorex chroma noise reducer, and the Y-688 Total Error Corrector.

A variety of important established products will be shown by several manufacturers. ADDA (1100) will display the AC-20 dual-channel TBC and synchronizer. The Marconi ACE standards converter will be featured by AF Associates (1611). Grass Valley (1207) will have its 3250 Series sync generators and 3200 Series video processing equipment.

MCI/Quantel (1631) will have its digital standards converters and the DFS-1750 frame synchronizer. The



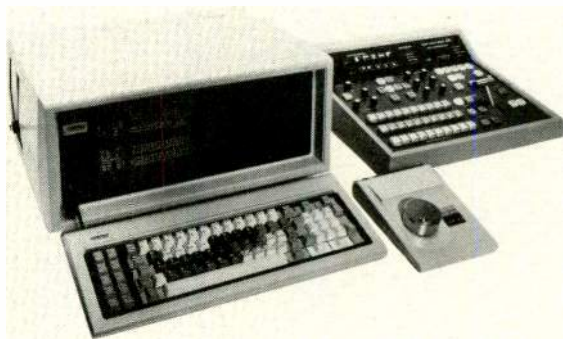
Nova 510 digital TBC.

T220FIT, T120D, and T120 time base correctors and the F230 TBC/frame synchronizer will be featured by Microtime (1230). Visit the NEC booth (1415) to see the FS-19 10-bit frame synchronizer, the FS-18 eight-bit frame synchronizer, and the AS-18 digital audio synchronizer.

10. POST-PRODUCTION

The post-production field, the scene of so much ferment in the past couple of years, shows no sign of calming down in 1985. In fact, the pace seems to have stepped up, with new and improved systems popping up all across the exhibit floor.

Some of the biggest news, however, took place before the show: the acquisition of editing giant Interactive Systems Co. by Grass Valley Group, itself owned by Tektronix. ISC (1167, 1171) will also have an editing announcement—the new top-of-the-line System 51 editor with expanded RS-422 control capabilities as standard equipment, plus additional edit list interchange capabilities and features geared toward simplifying the task of editing. The entire ISC editor line will feature refined RS-422 direct control capabilities, including increased flexibility in interformat applications.



Calaway CED portable video editor.

Ampex (1400) will also have a brand-new editing product: ACE Micro, an off-line editing system fully disk and data compatible with existing editing systems, but designed for five-machine (any serial interface VTR, switcher, etc.) off-line decision making. An unusual offering from Ampex will be a new \$10,000-\$15,000 16-input audio mixer designed specifically for TV post-production applications and driven directly by a switcher. It features full AFV and BREAKAWAY mode, with either two-channel or stereo output.

Graham-Patten (1227A), which has had a popular audio switcher out for several years (it was designed for ABC's Olympics coverage), this year will expand its products with 16- and 20-input versions and a new five-band graphic EQ with a disk memory that can be used to record audio setups in an edit decision list style.

Major news from CMX (1639) will include the 33XL product line, consisting of a new version of the CMX

TV test equipment from the inventors of the Plumbicon[®] tube.

At long last a new, reliable source of TV test equipment. One that offers fast, predictable delivery. One with a name all the world trusts—Philips. Four quick examples:

PM5565 Waveform Monitor

Enjoy the luxury of examining one line and one field at a time. On top of this, there's a convenient front probe input so you can use the monitor as a troubleshooting oscilloscope.

PM5567 Vectorscope

If you want more accurate decoding and the ability to have an external reference from composite video signals, choose our vectorscope.

Both waveform monitor and vectorscope mount side by side, fit all existing hardware and use less power than the competition.

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Take it on a quick trip through your studio or control room and adjust all monitors to the same color temperature in a matter of minutes.

With four different memories, there's no problem in quickly calibrating four different phosphors.

Variable full-scale, from less than set up to more than reference white, allows measurement of color tracking as a function of APL.

PM5534 Color Pattern Generator

Our universal pattern contains all the signals needed to verify overall system operation—directly from the picture. No wonder virtually every set manufacturer uses our pattern for their TV set alignment.

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Philips, of course.

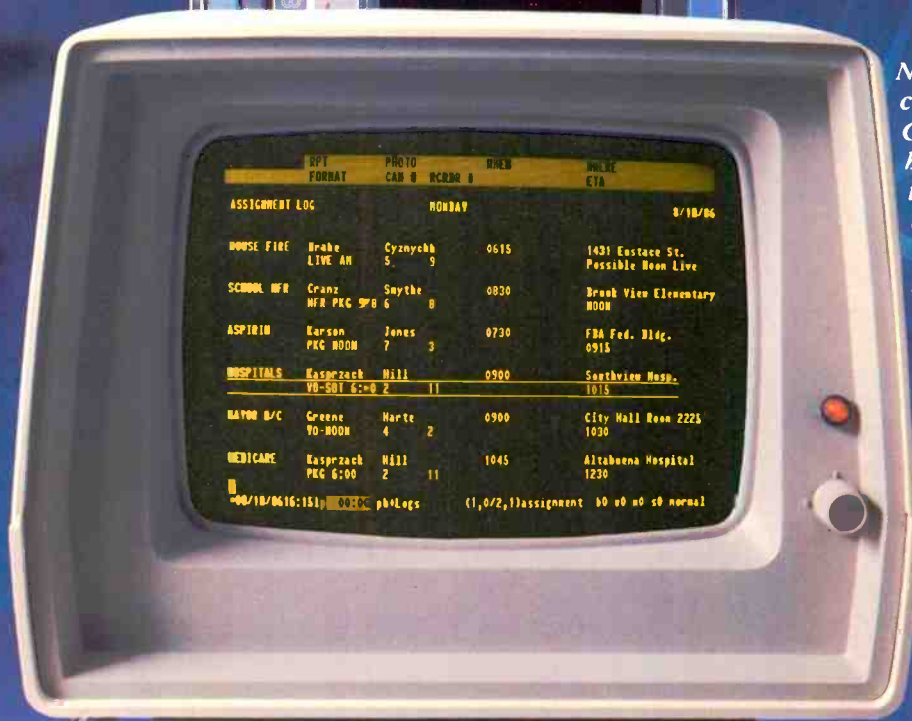


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*Come see why... at NAB (booth 1116)!
NewStar welcomes WBRZ-TV (Baton Rouge)!*



NewStar newsroom computer, a product of ColorGraphics Systems, has swept the market in the past year. Why? It's easy to see: Fast at any size, reliable, and fully featured for radio and television, NewStar has been the clear market choice.

With over four years field-tested experience, in large and small sites, our users tell the story. Make a point to ask them, and see why NewStar is the winner.

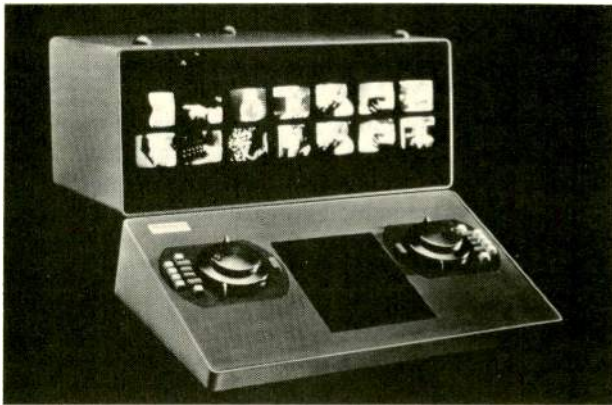
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WRRC Radio, Washington, D.C.



Montage Picture Cutter.

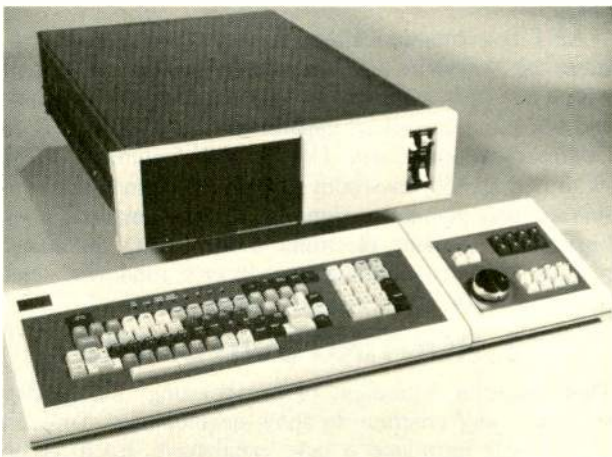
3400 editing system, a new large-scale editing product with super slow motion features, and a Multi-Intelligent Interface, to be shown with three VTRs and one switcher.

The EditDroid film-style computer editing system, which drew swarms of visitors at the Convergence booth last year, will be featured by Convergence/Lucasfilm joint venture DroidWorks, in its own booth (1709) this year for the first time. Last year's other major attention-getter, Montage (1775), will introduce its Picture Cutter. First seen at SMPTE, the Picture Cutter is a turnkey system using standard Montage modules and software identical to the Picture Processor video editing system. The system outputs a negative cutting list as well as an edit decision list and edit decision disk with time code.

Convergence (1430) will introduce the new ECS-205 editor, similar to the ECS-204 introduced last year but with expanded VTR range of up to eight machines with assignable recording. Also new will be the ECS-195 A/B roll editor, plus new peripherals and software updates.

A pair of new editing products will be introduced by Videomedia (1308). The Eagle XR is a low-cost editor fully upgradable to the Eagle I, II, or III and available in cuts only or A/B roll versions. The second new editor is the Magnum, a 250-event A/B roll system with dual eight-inch disks, Vers. 2.00 list management, and CMX list translator. It handles up to six source machines.

An unusual approach to video editing will be taken by Calaway Engineering (1023), which will show two editing systems based on the IBM PC and Compaq computers. The brand-new CED portable editor ("Edits-to-Go"), using the Compaq, will be operating with three Sony

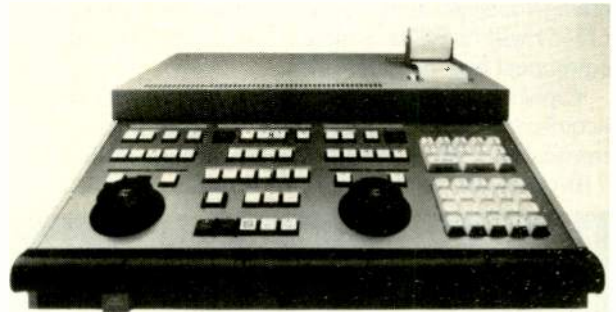


ISC System 61 editing system.

Betacam recorder/players, the Grass Valley Group Model 100 video switcher, and a Graham-Patten Systems 612 audio mixer. All control is via RS-422. The CED off-line editor, using the PC, will be shown with a Sony BVU-800 recorder and three Panasonic AG-6800 playback machines, also with RS-422 control.

United Media's (1300) newest entry is the Mini-Comm A/B roll computerized editor, which allows the user to upgrade progressively from control track to SMPTE time code and from two to three VTRs with switcher control. The Commander II videotape editing system will be shown with new list management as well as several new editing capabilities.

Bosch (1603) will introduce a new field editing unit, the BCF 9/10, for its Quartercam ¼-inch recording system. ADDA (1100) will show its Lightfinger LF2000 A/B roll



Elecon EM-7100 editor from Omicron.

editor and the Sequencer random access program playback system. Laumic's (1771) rental CMX Edge system now offers a Betacam interface.

EECO (1775) will feature the EMMÉ videotape editing system with Video Editing and Cinemagraphic workstations, the IVES three-machine editing system with A/B option, and still-frame audio for interactive videodiscs. PEP (1408) will introduce an alternate VHS edit source with interface for the Sony BVU-800. This "smart system" provides a professional VHS source deck with pushbutton changeover between it and the existing ¾-inch source for direct editing of VHS to ¾-inch.

An interesting new editing-related product will be The Step from Apert-Herzog (1703). The device stores up to 32 frames of video, up to four seconds of audio, and time code for both, displaying 16 consecutive frames of video on a monitor for rapid location of edit points. JVC (1234) will feature its BR-8600U, RM-86U, and VE-93 video editors.

The activity in synchronizers and time code equipment will almost parallel that in editors at NAB. An NAB newcomer, Giese Electronic (327), will introduce to the U.S. market its Giese Lock System 3/2 SMPTE/EBU synchronizer for audio, video, and film studios, incorporating a high-speed time code reader that operates from one-tenth to 50 times nominal speed, forward or reverse.

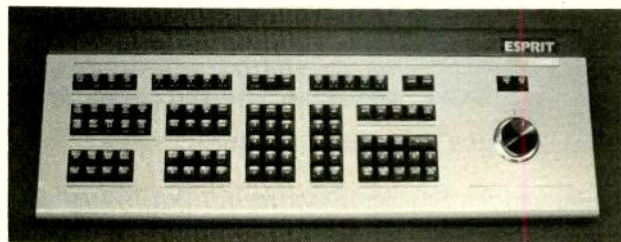
Evertz Microsystems (1745) will introduce a new chase synchronizer/resolver with built-in longitudinal time code, designed to eliminate a variety of other audio and videotape transports. New from Amtel (1745) will be the Chaser, an audio-to-video or video-to-video chase synchronizer, with features including protocol translation for tape machines and edit machines. Amtel's EV-Block modular time code system will make its first NAB appearance with newer modules.

Two new products will be featured by Adams-Smith (1508). The new Model 2600 BPI bi-phase interface, a companion model to the 2600SY tape synchronizer, generates the bi-phase control signals necessary to control the speed of sprocketed film transports. The Model 2600 VRG video reference generator, also new, outputs crystal-referenced NTSC and PAL composite sync signals for studios that do not require a sync pulse generator.

Audio Kinetics (1173) will feature its established Q-Lock audio/video synchronizing system. Digital Entertainment Corp. (1600) will introduce the DEC-VCO synchronizer interface, a self-contained unit to connect the Mitsubishi X-80 Series digital master recorder with BTX and Adams-Smith synchronizer systems.

Among time code makers, Skotel (1126) will have new features in its line of time code readers and generators and character inserters. ESE (1757) will add a new VITC reader/translator to its established line. Gray Engineering (1755) will show its complete line of SMPTE time code equipment and video reticules.

Cipher Digital (1606), which will display the recently acquired BTX synchronizer and time code line, will also introduce the Model 716A time code generator, the Model 710A-100 full-function time code reader, and the Model



Esprit editor from Paltex.

700A time code reader with quad keyer/character inserter. Alpha Video (1790) will introduce a new time code restripping function with zero offset, operating with time code from a Sony BVU-800.

11. TELECINES, COLOR CORRECTORS

The relatively quiet telecine and color correction field will be seasoned with just a few new announcements. Rank Cintel (1219) will have a new option for its telecines—Steadyguide, which reduces picture weave by guiding the film at the point of scan. Also new will be the Shot Change Detector for the Mk IIIC/Amigo, which facilitates film color grading by identifying scene changes and automatically referring corrections entered into the Amigo store during a scene back to the scene's beginning. The MKIIIC flying spot scanner and the ADS-1 on-air telecine will also be featured.

Other established telecine systems at the show will include the Bosch (1603) FDL-60; the Marconi line array telecine, at the AF Associates booth (1611); the L-W International (1602) Athena line; the Ikegami (1011, 1013) TKC-990 in a new full-island configuration; and the well-known RCA (1000) line.

In color correctors, the Dubner (1628, 1630) CCC-12 color correction computer will have a new video signal processor. Corporate Communications Consultants (1161), which will have a surprise product introduction unrelated to color correction, will also introduce the new System BM for color correction of component video and

the System 60XLB3 for flying spot scanners and CCD telecines. Both incorporate time-saving automation.

12. NEWSROOM COMPUTERS

This may well prove to be, at last, the year of the newsroom computer. Two of the three networks have inked major purchase contracts for newsroom systems (see news story this month). Further evidence comes from *BM/E's* 1985 Survey of Industry Needs, reported last month (p. 87), which indicates that this is the year stations—particularly those in major markets—will finally be buying newsroom computers.

There's also a move afoot to make systems more affordable and cost-effective for smaller operations. Basys



ColorGraphics' NewStar 1051 terminal.

(1129) will illustrate this with its introduction of the Basys Basic computer news system for bureaus and small stations, using the IBM PC-AT personal computer to power up to six work stations or devices, giving instant access to wire services and past stories. Other features include split-screen facility and automatic generation of prompter copy.

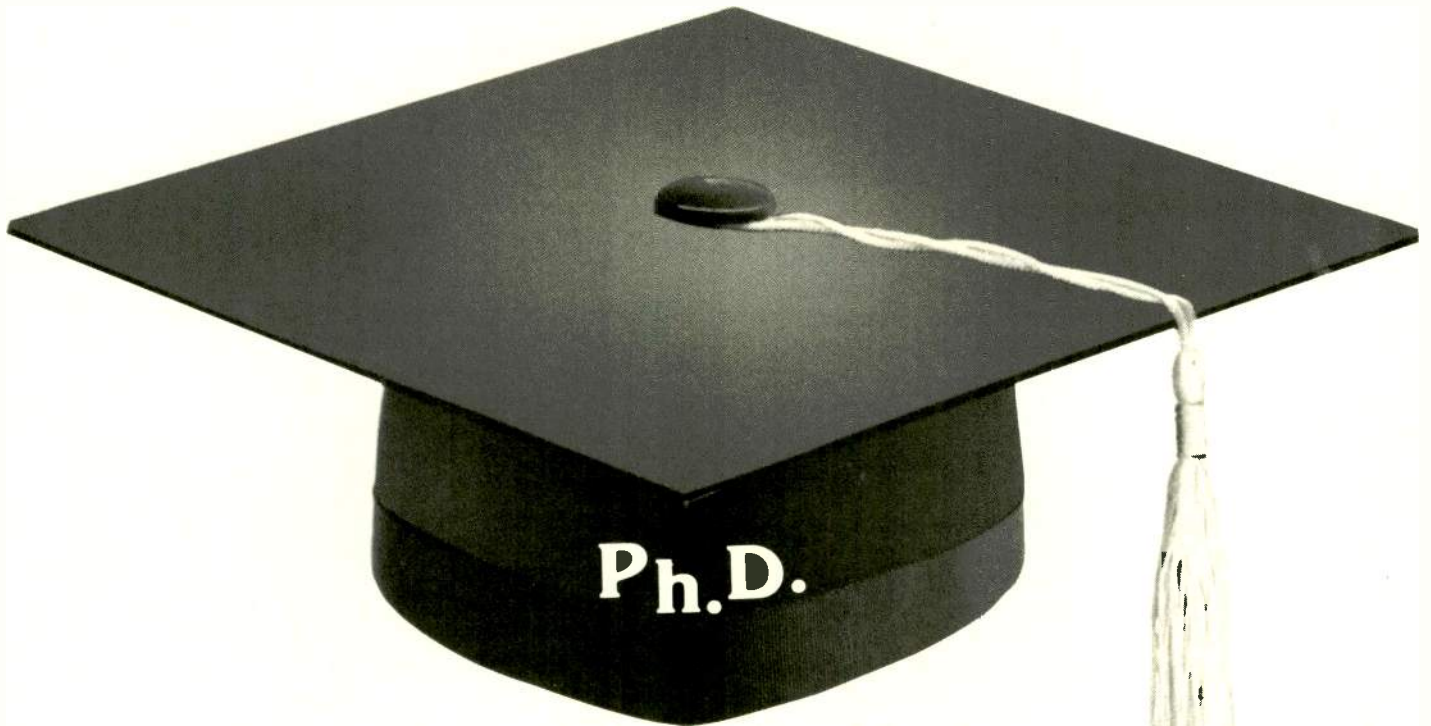
ColorGraphics (1116) will show new developments for its NewStar newsroom computer system, including automated control of tape rolls, character generator, and still store graphics using advanced machine control technology developed by sister company Utah Scientific. Beston/McInnis Skinner (1638) will feature the NewsScan newsroom computer system, along with the weather graphics system, character generator line, and Dataprompter. The Quantanews system will be featured at the Quanta booth (1432).

ANT Telecommunications/Solway (2345) will demonstrate the Newswire 200 computerized newsroom system with a live presentation of its wire-handling, text editing, and telecommunications capabilities and database. Data Communications Corp. (1014) will feature its IBM PC-based BIAS Newsroom system, which includes wire service management, assignment desk automation, story library management, electronic script writing, automatic reading time calculations, producer's rundown, teleprompter input, and news and weather graphics.

13. ROUTING SWITCHERS

That essential ingredient of broadcasting, the routing switcher, will continue to show development. Di-Tech (1221) will introduce a new expandable 40x20 AFV routing switcher with up to three levels of audio per input

**Your engineer already wears many hats.
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he won't need this one.**



Harris VHF transmitters are the simplest to operate and maintain—and they give you the best performance. So you don't need to hire an engineering professor to camp out at your transmitter site. In fact, Harris transmitters are so easy to look after, your engineering staff will have more time to keep up with other duties around the station. *Without additional help.*

Best use of solid-state

For the best TV signals, linearity is critical. Solid-state amplifiers at high power levels are non-linear and distort picture and sound. These distortions can be cancelled only with

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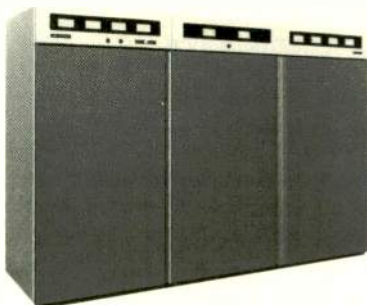
Fail-safe operation

Even in the unlikely event of a correction circuit failure, Harris transmitters allow performance nearly as good as fully corrected competitive models. We'll keep you on the air with a near-perfect picture—with less expensive engineering overtime for emergency maintenance.

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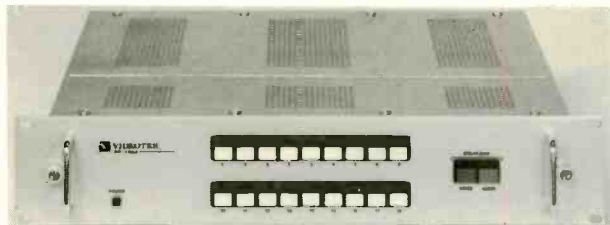
Let's face it. There are times when you need some engineering help. With Harris' 24-hour customer service department, expert advice is a phone call away...any time of the day or night. And in less than 24 hours, we can have that replacement part on your doorstep.

For unparalleled simplicity and uncompromising performance, insist on a Harris VHF-TV transmitter. Contact Harris Corporation, Broadcast Transmission Division, P.O. Box 4290, Quincy, Illinois 62305. 217/222-8200.



For your information, our name is Harris.

and expandable input and output. New items from Utah Scientific (1114) will include the Model AVS-1B programmable routing switcher, with up to eight levels of switching, and a line of alphanumeric reprogrammable control panels.



Videotek RS-183 AFV routing switcher.

Aware of the trend to component video, Image Video (1341) will introduce a component routing switcher, along with a new video/stereo audio routing switcher.

Hedco (1225) will unveil the Hedline Series of self-powered, self-contained audio and video routing switchers and DAs for broadcast applications. Each unit is entirely self-contained in its own enclosure, complete with built-in power supply (115 or 230 V, 50/60 Hz, 10 W max) and attached power cord.

Dynair (1404) will show various new control schemes for its line of routing switchers. Bosch (1603) will introduce new controllers for the TAS/TVS 2000 distribution switcher. 3M (1001) will feature its H Series routing switchers.

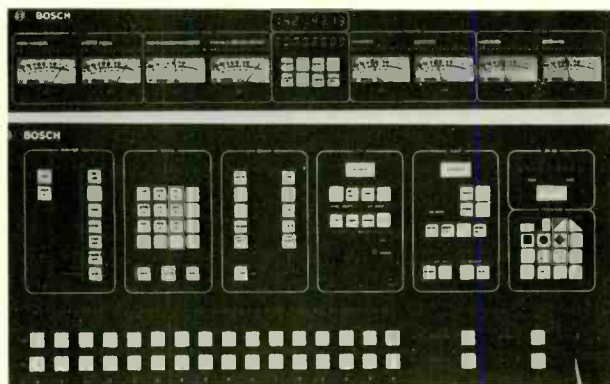
Two new items from Datatek (1428) will be the D-664 video DA, featuring differential input, six outputs, front-

access gain adjustment, and continuously adjustable cable equalization, and the D-525 dual-channel, stereo audio DA, with front-mounted LEDs to indicate signal overload conditions.

Grass Valley (1207) will exhibit its line of switching and distribution equipment, including the Horizon and Ten-X routing switchers, and the line of signal distribution equipment. ADC (1320) will premiere a new modular hybrid jackfield, providing audio and video jackfields in a single chassis.

14. TECHNICAL AUTOMATION, MASTER CONTROL

One area of increasing interest, in all size markets, is the new generation of station automation systems of all sizes and shapes coming onto the market. These range from the



Bosch MCS-2000 master control switcher.



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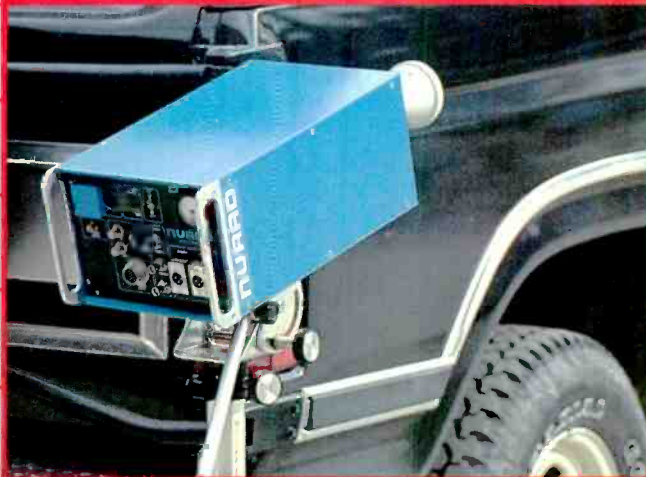
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Does Quanta have the industry's most complete line of quality character generators for any budget, every application?



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highly sophisticated MERPS decks, designed for on-air automation of dozens of videocassettes, to small two- or three-machine controllers for automation of small cable operations.

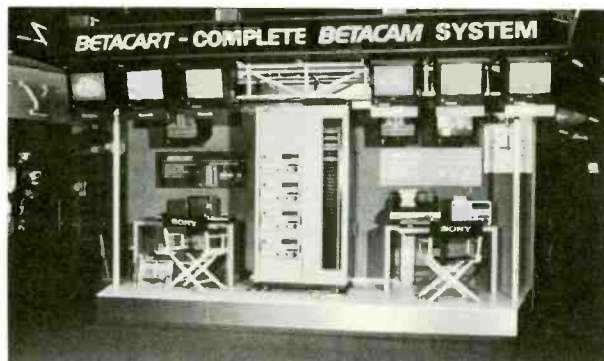
Look for Broadcast Systems (1500) to introduce the News Machine, a multitransport VTR system designed to provide organized playback of individual news stories, openings, closings, intros, sports, and weather summaries. Also new will be the DC-10 automatic videocassette machine, which uses Betacam broadcast transports. Asaca/ShibaSoku (1017) will have an upgraded video cart system holding up to 600 carts.

Lake Systems (1165) will expand its La-Kart video cart automation systems with a new half-inch Beta Series. U-Matic and M-format systems will also be on display, as will a new lost-cost, modular La-Kart for MSO cable operations. AF Associates (1611) will introduce the AFA commercial compilation system, which enables automatic assembly of daily spot, promo, or continuity reels utilizing existing VTRs.

Alamar Electronics (1507B) will introduce the MC-3 sequences automation system, a time code-based system with directories on disk, and the new SC-1000 machine controller with SMPTE reader/generator. Bowen Broadcast Service (1770) will offer a new optical isolator kit for the RCA TCR-100 cartridge machine, designed to isolate remote-control connections from machine wiring and thereby help eliminate operating problems due to crosstalk into remote-control cables.

A new SMPTE-standard machine control system with various control and machine interface panels, automation

interface circuits, and an eight-bit SMPTE controller will be introduced by Utah Scientific (1114). Landy Associates (1747A) will introduce the Interphase M-40, a low-cost machine control system for the small format tape duplicator. Dynair's (1404) SMPTE/EBU-compatible System 23 machine control system will be in operation,



Betacart automation system from Sony.

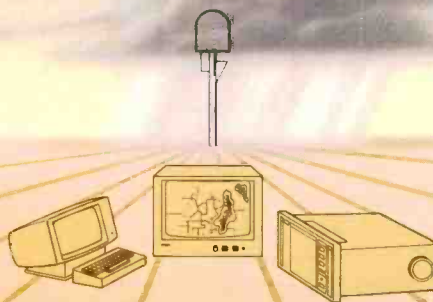
along with a full line of standalone and modular distribution equipment. 3M (1001) will show the new 6600 machine control system with five multifaceted control panels. The established MC/1 machine remote-control system, for use with all types of broadcast and production equipment, will be featured by Auburn Instruments (1711).

Crosspoint Latch (1321) will introduce the Model 6150 BK, a 16-input master control switcher with optional second audio channel for expansion to stereo sound. Vital

New "one-touch" commands simplify control of Doppler radar during critical events.

Our unique, exclusive Command Panel provides simple one-touch control of all Triton Doppler Radar System operations, from antenna and range control to graphics generation and animation. It is deceptively simple to use, yet remarkably complex under the hood.

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- Classical design... one crosspoint for every path.
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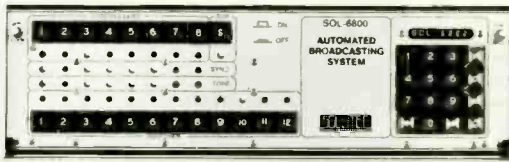


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Booth 1409

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Solutec's SOL-6800 automation system.

(1212) will feature its SAM master control automation system, its stereo audio package for master control switchers, and the line of production and master control switchers. H.A. Solutec (1517) will introduce the SOL-6800 AD.ID/Q generator, which allows insertion of code identification on commercial spots, which can then be recognized during playback by the SOL-6800 automated broadcasting system for commercial inserts, also to be introduced. The 6800 can control one VTR and has an integrated four-input stereo audio video switcher. Also new will be a component switcher for SOL-6800.

Image Video (1341) will introduce a couple of new items, a master control automation system and a stereo master control switcher. Elicon (143) will introduce the IPK-200 intelligent keyboard, a user-programmable human interface designed to upgrade existing studio automation systems.

Bosch (1630) will bring its established MCS-2000 master control switcher, along with the TAS/TVS 2000 distribution switcher and distribution control panels. Other established systems will include the 4S/M200 master control automation system from GVG (1207); the MC 4000

master control switcher from Central Dynamics (1409); and the Sequencer random access program playback system from ADDA (1100).

15. LIGHTING, POWER, AND SUPPORT

Strand Century (1418) will introduce the Shaulea 575 W HMI open-faced fixture, along with a new line of soft lights and a 12K HMI fresnel. Mole-Richardson (1006) will exhibit a number of new lighting products including softlights, par lights, and electronic dimmers. Olesen (1307) will feature its studio lighting packages complete with pipe grid, lighting, dimming distribution, curtains, cycloramas, and track.

Keylite (1220) will introduce the new Modulight range of folding softlights. New from Kliegl (1604) will be a line of newly designed fresnels with a fast, precise focusing mechanism that locks the lamp holder for drift-free performance. Lighting Methods (182) will introduce the RD digital dimming system and the PD portable dimmer packs.

The Great American Market (1147) will introduce ShowPlot, a computer-aided drafting software system for the lighting designer featuring voice command. GTE Lighting (1401) will feature its complete line of lamps for broadcast, stage, theater, and television applications, along with the Roughneck Series of lamps.

New this year from Cool Light (1329) will be the L-13 and L-20 battery belts with built-in chargers. Arriflex (1421) will introduce the new ArriLite 600 portable tung-

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Beginning with the first solid-state portable transmitter in 1964, B-line fixed and portable equipment in 1967, G-line terrestrial radio in 1970 and up to present day with a complete line of ENG equipment, M/A-COM MAC has been the technological innovator. We have delivered the most advanced and reliable equipment spanning both local broadcasters and major networks around the world. To further our role as product innovators, we introduced a new series of portables, a new central receiver and a helicopter skypod system in 1983. In 1984, we introduced the 40 GHz portable system, multiband radios and a state-of-the-art ENG receiver.



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As part of our commitment to total customer satisfaction, we now have two dedicated domestic service and support centers: Eastern region – Massachusetts (800) 343-3006 and Western region – California (714) 538-3772. Plus, for product information, write to me, Duke Brown, M/A-COM MAC, Inc., 63 Third Avenue, Burlington, MA 01803 or call (617) 272-3100, Ext. 4331. See us at the N.A.B. Show in Las Vegas, April 14 to 17, 1985 (Booth 1004)



leading microwave systems supplier to the broadcast industry. One stop shop for portable transmitters, receivers, and antennas to base-band and heterodyne fixed links.



Microwave innovations for a changing world.

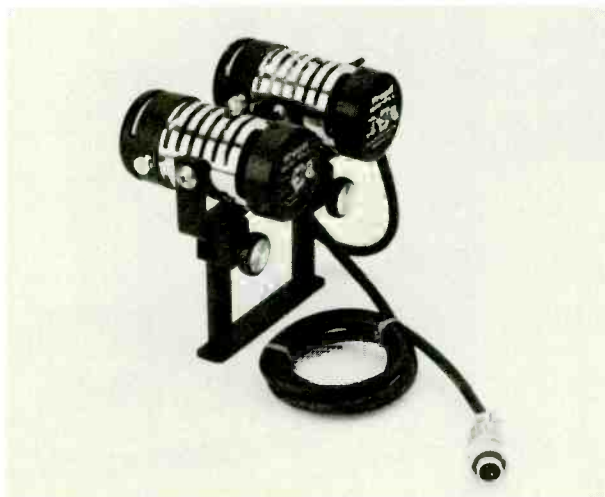
sten light. B-W Lighting Systems (1753) will introduce the 70-DTRS double-track rotary switch for single-switch lighting changes from one cyc track to another. Alan Gordon Enterprises (1726) will introduce a line of new lightweight HMI lamp heads and a new Cinemeter light meter.

AVO Lites (1125) will feature its lighting control systems for TV. Anton/Bauer (1337) will introduce Ultrakit, a complete 12 V self-contained portable lighting kit, and the MSF mobile fast charger, which operates on 10-15 V dc for one-hour fast charge or 16-hour overnight charge.

Theater Service & Supply (1513) will feature its studio cyclorama curtains and track systems, plus its overhead rolling light support systems and light grid components. Uni-Set (1236) will feature its modular studio staging system.

Christie (1403A) will feature the recently introduced CASP automatic battery charger/analyzer/sequencer/power supply for sealed nicad packs and other types of batteries. Frezzolini (1107) will introduce new DMF12 and DMF30 dual Mini-Fill light heads in 12-14.4 and 40 V configurations; new single- and dual-channel ac line eliminators; a new compact series of nicad battery fast chargers; a new dual-channel battery conditioner/charger; new battery/light head mounting brackets for Sony Betacam; and a new line of VB Series low-cost 12 V, 4 Ah nicad battery packs.

Perrott (1729) will bring its line of nicad, silver-zinc, and lead-acid power systems; fast, medium-fast, and overnight Minichargers; lighting systems; and other lighting and power products. PEP (1408) will feature its On-



Frezzi's DMF30 Dual Mini-Fill light.

Cam VTR and playback unit, along with its line of batteries, chargers, reconditioners, and analyzers.

Cine 60 (1423) will premiere an exclusive, modular on-board camera battery as a direct replacement for OEM conventional batteries. Also new will be a Betacam battery providing more than three times the power of the Sony NP-1.

G&M Power Products (339) will show its line of battery packs, belts, and chargers. Paco (2313) will introduce the new KD-220 portable quick charger, and DP-1240 nicad battery pack for ENG cameras and VTRs.

Alexander (1714) will exhibit its line of television

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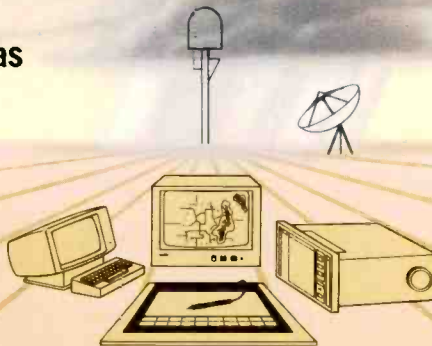
Weatherlink, the Kavouras satellite data communications system, delivers information to you before you know it — always there, whenever you want it. Vast amounts of data are quickly transmitted at an exceptional savings.

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Triton-X is the heart of the system. Unsurpassed internal power lets you generate graphics, overlays or maps; animate history; and display the best on-air graphics available.



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FM Radio Transmitters

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Their excellence is the culmination of 30 years' experience in transmitter production. Their low cost of ownership is the result of simplicity of design, ensuring minimum maintenance, and the high level of parts standardisation which reduces spares holdings.

Six basic transmitters provide from 15 W to 20 kW output power, extendible to 40 kW. The 15 – 100 W drive is also ideally suited to OEM applications. They all meet or exceed the world's most exacting broadcast standards.



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All Pye TVT UHF television transmitters are equipped with the very latest high-efficiency beam control klystrons which ensure significant savings in electrical power consumption while keeping the high gain, reliability and long life for which these tubes are famous.

Reliability comes from the experience of installing over 2000 transmitters worldwide. Economy also results from minimal maintenance and low spares holdings.

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batteries, battery chargers, and tri-analyzers, PAG (1747) will feature its line of power equipment and lights. That household name in support equipment, Innovative Television Equipment (1215) will introduce the new 30 Series and 490 Series low-cost fluid heads, tripods, and dollies for ENG cameras. Also new will be the P1A pneumatic pedestal, the H100 camera head, and the H17 fluid head for ENG/EFP. Lens manufacturer Canon (1012) will enter the support arena with a line of broadcast-quality tripods and dollies.

Other support developments will come from O'Connor (1103), which will introduce the Model 100HD fluid head, a new heavy-duty version of the Model 100C. The recently introduced Model 53 tripod dolly will also be featured. Latest products from Sachtler (1648) will include the Video 20 studio and OB pedestal, intended for use with the Video 20 steerable dolly; the Hot Pod tripod with central locking and self-locking center column; and the Semi Dolly, a lightweight rolling triangle with independent brakes.

TSM/Total Spectrum Mfg. (142) will introduce the HS-100P servo pan/tilt/focus system; the Micro-Controller, a new microprocessor-based control system for the HS-100P; and the Micro-Controller IV, a new four-camera controller that can store 20 special motion memories with up to two minutes of motion record each.



Paco DP-1240 12 V battery packs.

Ultimate Support Systems (651) will introduce the VB12PB boom package, consisting of a large black aluminum tripod with a 12-foot boom in three four-foot sections, plus a 25-pound counterweight.

Matthews Studio Equipment (1209) will introduce a number of new products for camera support, including the Cam-Remote remote-control pan/tilt head in new sports and periscope versions, lighting stands, a single-operator dolly, and new features for the Tulip crane.

Karl Heitz (1737) will introduce the Gitzo 564LM compact, five-section mic fishpole and Gitzo Mono-Tripods, which incorporate a four-section monopod in one of the tripod legs. Also new will be Kinoptik portable mini-collimator for field-testing of video, cine, and photo lenses. A collection of new products from Cinema Products (1301) will include a production model of the Mini-Mote remote-controlled pan and tilt head; a new Camera/Lens Control System for film and video lenses; new CP Co-Ax Digital Remote-Control system for Ikegami HL-79E; the Steadigate film gate conversion for Rank Cintel telecines; the Steadicam adjustable load capacity arm; and Mini-Worral geared head with 360-degree continuous pan.

- over 3 million square feet of broadcast facilities
- over \$1 billion in construction costs
- for over 600 assignments worldwide



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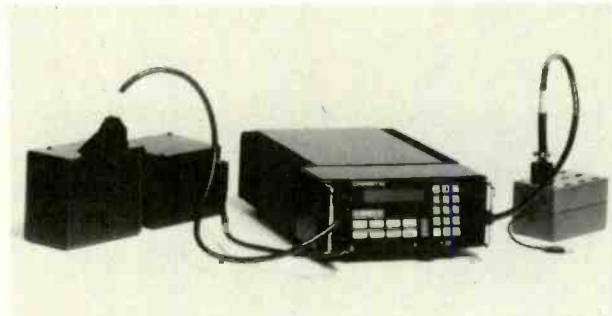
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Christie's CASP charging system.

Bogen Photo (1705) will feature the Mini Clamp, a lightweight, sturdy clamp that opens to 1½ inches for studio and location use.

Manufacturers of cases, too, will have new wares to hawk. William Bal (1614) will introduce a new line of Survivor shipping cases with additional sizes and new styling, plus new sizes in the Silverline case family and a new line of tube cases. Star Case (2040) will introduce new stucco/fiberglass-laminated plywood transport and moving cases to the line of Super Star and Ultra Star shipping cases.

Viking (1731) will exhibit its line of shipping and carrying cases for video equipment, featuring EIA shock-mounted rack cases, ATA-type shipping cases, and Carrylite carrying cases. K&H Products (1746) will introduce a new line of nylon cases for all Betacam systems, plus a new recorder case for the Sony VO-6800. Kangaroo Video Products (1151) will introduce the KVP-1 carrying bag for the Sony BVV-1 Betacam recorder, rain covers for the BVW-3 Betacam recorder/camera and standalone camera, and the KVP-6800 Videopack for the Sony VO-6800 ¾-inch deck.

Fiberbilt (232) will show the 707 Series molded plastic cases featuring a new "hi-tech" design for better moisture protection and greater reliability. Excalibur (1108) will show a new 19-inch rackmount case with the "Stak-Lok" option for modular usage in the field. Calzone (1179) will feature its Escort Proline II and Convoy case lines.

Winsted (1238) will add several new items to its line of videotape editing consoles, storage units, and equipment cabinets. Storeel (1008) will introduce a new high-density Room Stretcher for Sony Betacart storage.

Expect a number of developments in prompting. Listec (1406) will feature a new 19-inch on-camera prompter with ultra wide-angle hood, plus the new ProPrompt Series of portable field prompters. Also introduced will be a new version of the A-2100 Electronic ScriptWriter and a new version of the Vinten MicroSwift digital remote camera control system will also be shown.

Two new prompting products from Telescript (1407) will be a computer prompting program for the Commodore C-64 and Smart Prompter, a computer prompting program for IBM and compatible PCs.

Compu-Prompt (1728) will introduce the CP-2000 color computerized prompter with unlimited text length and ability to edit while scrolling and the CP Jr., a small, lightweight camera-mounted video prompter for ENG cameras. New Products from Q-TV (1401) will include the VPS-500 and VPS-1000 Computerprompter systems, the Mini Q Prompter II, and the Mini Videoprompter system.

TIMELESS SOUND

Quality is the one feature that transcends the passage of time. It is the first—and will ultimately be the final—criterion by which any product or performance will be judged.

Without quality, the most imaginative of creative endeavours will deliver less than its full potential. With it, the possibilities for continuing excellence are endless.

The McCurdy SS8800 Series A

and E Audio Consoles mark the continuing evolution of one of the industry's most successful, critically acclaimed and widely imitated audio broadcasting consoles.

Welcome to a new era of increased capacity, expanded range and control, enhanced convenience and flexibility. The Series E Model features complete solid state switching.

Here is value in the truest

sense of the word. World class audio control products of superior design and manufacture that deliver optimum performance over a lifetime of reliability.

Professionals know that choosing broadcast equipment is a decision you have to live with for a long time! With the McCurdy SS8800 Audio Consoles you get exactly what you pay for. The timeless sound of ongoing quality.



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COMMON GROUND

McCurdy

Volume 2, No. 1, Spring 1985

McCurdy Radio Industries Limited. 108 Carnforth Road, Toronto, Ont. Canada M4A 2L4 Tel: (416) 751-6262 Telex: 06-963533

ABC: Entering the automation age

When ABC Radio decided to move from its old 18,000 square foot home in New York City to a new plant more than double the size, they realized that a manual studio switcher system could not meet the increased needs of the operation. The logical choice was a computer-driven automated switcher system, designed and built by McCurdy.

The heart of the system is a dual processor computer, based on the



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Audio Digital Delay Unit

- Solid state 16 bit A/D conversion full 20kHz bandwidth
- Professional 48kHz sampling rate
- Adjustable delay from 0 to 7 seconds in fine increments
- Auto transparent delay increment mode
- Bar graph signal meter with input/output adjustments

- Microprocessor control
- Remote serial full function control panels available
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- Suitable for "TALK SHOW" delay, satellite audio delay, television audio sync
- Highest broadcast specifications

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Data General Eclipse S/140, with a separate custom programmed traffic system to provide the schedules for each day. Because of the operational requirements of ABC, the computer is capable of switching and monitoring the status of 12 different schedules containing up to five separate audio buses on a real-time basis.

The audio output side of the operation is a 100 input, 30 output switcher system feeding both the digital satellite facility and internal routing buses for online distribution of various incoming feeds. For normal operation this switcher is controlled by the Data General computers.

In case of a problem, operators have the capability of manually controlling the switcher from controls located in each studio. Included in this manual control system is the ability to monitor any of the schedules, with the capability of displaying upcoming events, sorted by network, schedule, or audio source.

ABC Radio entered the automation age with this custom-built system on October 15, 1984 and with the advances afforded by the system, have been able to add to programming with the addition of a second news network schedule.

CFRB Launching into AM Stereo

State of the art has left its mark on the over one million listeners of one of Canada's preeminent radio stations.

Ushering Toronto's CFRB into the advanced world of AM Stereo broadcasting is the McCurdy SS8800 custom console and studio facility—referred to as an "excep-

sound to the airwaves. Since its inception in 1927, the station has stayed one step ahead of changes in the broadcasting industry, with the move to AM Stereo as the latest example. During many of those years McCurdy has felt privileged to play an indirect role in this established tradition.



tional system" by CFRB Vice President of Engineering, Clive Eastwood.

Behind the sleek efficiency of the custom built package lies a story of co-operation and dynamic innovation on the part of McCurdy's systems engineers and Bruce Dingwall the station's Chief Technologist.

"We wrote the specifications but no other company had the ability to adapt to our custom requirements," explained Director of Engineering, Kirk Nesbitt. "Our technicians as well as McCurdy's engineers achieved a very productive blending of ideas."

The finished product looks good. Muted lighting, warm woodwork and advanced acoustic design produce a highly functional but aesthetic studio environment. In a business where every minute counts, the transition period from old to new was relatively short and painless. "It wasn't difficult at all," admitted a veteran operator from his position at the console. "As a matter of fact, I was pleasantly surprised."

With its reputation for adult contemporary music, authoritative news, informative talk show programs, and personalities, CFRB has reaffirmed its commitment to bringing consistently popular

Expanding Sales Horizons

Putting McCurdy products in your hands is our business. With a new and expanding distribution network, exclusive distributors of our products will make it possible for customers to stay in tune with technological innovations.

To anchor the expansion, McCurdy in Toronto will continue to provide the sales and systems experts when your custom orders are received.

Our tradition of personalized and solid customer service will be extended with the exclusive distributorship of Maruno Electronics Ltd. in Ontario and the Maritimes. In Quebec Marketing Marc Vallée, Inc. is the ideal candidate to meet the needs of the broadcasting community. Our Calgary office will continue to serve customers west of Ontario.

In the United States market, RAM Broadcasting Systems Inc. and McCurdy head office can handle all customer inquiry and orders.

We hope this commitment will provide our customers with the finest in products and service.

SMPTE CLOCKS



- Self-contained digital up-down timer
- Compact 4 inch wide module
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- Latest microprocessor technology
- Highest accuracy and stability.

- Compact 4 inch wide clock
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- Fail-safe crystal back-up upon loss of SMPTE code
- Wide input voltage with low current consumption

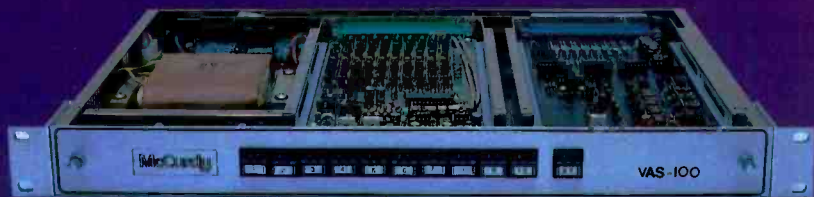
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McCurdy VAS-100 10x1 Switcher

- 10 x 1 switcher video and 2 audio (user specified) • Compact single rack unit housing
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- Serial remote control panel
- Ease of expansion of inputs
- Multiple switchers may be controlled by one panel
- Memory retention feature standard • Loop thru video inputs • Bridging audio inputs
- All electronic solid state switching • Highest broadcast specifications

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Technical notes

Efficiency is our goal when it comes to serving you better. Our new work order form is specially designed to make returning a piece of equipment easier. The improved format lists prices for materials, labour, travel time etc.—all at a glance.

When returning equipment to MRI for service, please include fault description, company name, address, phone number and name of contact person, preferably on company letterhead. To cut down on delays for exchanges, we advise you to enclose a copy of the original bill, purchase order and date of purchase. And please don't forget—let us know who you are!

Improvements to certain products is part of our ongoing commitment to customers. Modifications to the LC1490 turntable logic card substantially reduces the possibility of an out-of-step condition of the turntable. Circle (204) for application note with details.

NAB Showcase

As the first in a series of industry shows the National Association of Broadcaster's Convention in Las Vegas promises to be an exciting event. At the spacious McCurdy exhibit, Booth 207, our sales, and engineering specialists will be on hand to demonstrate the complete line of audio and video products.

Experts from our head office will introduce you to all that's new at McCurdy beginning with our entry into the digital audio age with the advanced Audio Digital Delay Unit (ADU-10). Tried and true products include the enhanced SS8800 E Console, the highly acclaimed CS9400 microprocessor digital intercom and the Century Series Audio/Video Switcher.

With a fresh focus on a growing video market, we'll also be unveiling a new 10 x 1 audio/video switcher, the VAS 100.

McCurdy has been an active participant in the NAB show since 1957 and takes the opportunity again to welcome new and old customers.

We'll also be attending:
WABE, Calgary, May 1985
Montreux, Switzerland, June 1985
CCBE, Ottawa, October 1985

RADIO/AUDIO

PRODUCTS

1. AUDIO CONSOLES—RADIO

No NAB show would be complete without a flurry of new audio consoles, and this year is no exception. New products for on-air, production, and other uses abound. Expect Trident, for example, to introduce its new Series 75 console, a compact unit with 28 inputs plus four echo returns, full 24-track assignment and monitoring, comprehensive integral patch bay, and separate stereo remix bus. It is based on the same input models as the established Series 65 console, which will also be shown, as will the T.I.L. in-line mixer, introduced last year.

Soundcraft Electronics (219) will demonstrate its expertise in both on-air and production consoles with new introductions in each arena: the Series 600, an eight-bus recording console, and the SAC 2000, a stereo on-air radio broadcast console.

Auditronics (505) will demonstrate new features for its 300 Series audio production console, introduced last year, including a drop-in version for custom installations. The 200 Series on-air mixer will also have new accessories. In addition, the company will unveil a new high-quality portable audio mixer for ENG and remote use.

Broadcast Audio Corp. (319) is now offering its modular audio console line with a unique rear-mounted peak overload system that illuminates the red area of the VU meter face with high-intensity focused LEDs. Several models now feature an optional active balanced mic input.

Harris (401), whose Medalist console line has been a staple in the radio industry for several years, is introducing a high-end edition, the Gold Medalist, in a 12-channel version.

Logitek (613), too, is upgrading its Perfectionist Series with the Perfectionist-12 broadcast audio console. The Benchmark Series audio consoles will be shown for the first time at the LPB booth (405).

Pacific Recorders (113) has also enhanced its BMX on-air console. The new model, the Series 3, has three main stereo mix buses, two telephone mix-minus feeds with monitor mix, and monitor facilities for host, cohost, and guest headphone feeds. Another new and innovative product from PR&E is the Newsmixer, a modular, compact, dual-bus mixing, routing, and monitoring system for the radio newsroom.

Broadcast Electronics (303) will have a pair of new audio consoles, the 160 Series and the 260 Series. Other news in on-air consoles comes from Quantum Audio Labs (2323), which will introduce on-air modules for its Model 2205, 2206, 2203, and 2204 broadcast consoles.

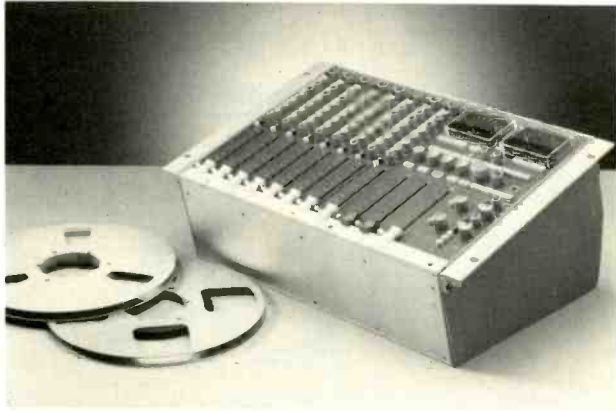
In production consoles, Tascam (1304) plans to introduce the M-300 portable audio mixer for radio and video post-production. Also new will be the Mini Studio portable four-track production system.

Stop by the Electronic Systems Labs booth (406A) to check out the Eela Audio line of production and broadcast consoles and portable stereo mixers. Spotlight will be on the S-20 and S-22 "Reportophones," designed to allow radio reporters to send material to the station over public telephone lines.

Arrakis Systems (211) will have two new audio consoles, the 150 Series and the 1200 Series. Harrison (214, 1324) will introduce several new mixers: the SM-4 live sound stage/monitor mixer, the HM-4 live sound mixer, and the RM-8 mixer series.

Two new portable live audio mixers, the Seck 62 and 122, will be featured at the Connectronics booth (608). Graham-Patten Systems (1227A) will introduce an audio equalizer system for its 612 audio mixer. The system provides 12 equalizers, one for each of the mixer's inputs, with all channels controlled from a single panel with memory provisions.

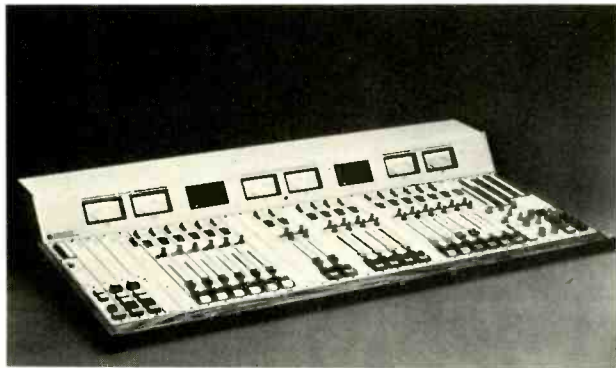
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Calrec M Series portable mixer.



ADM's Post-Pro audio console.



BMX Series 3 on-air board from PR&E.

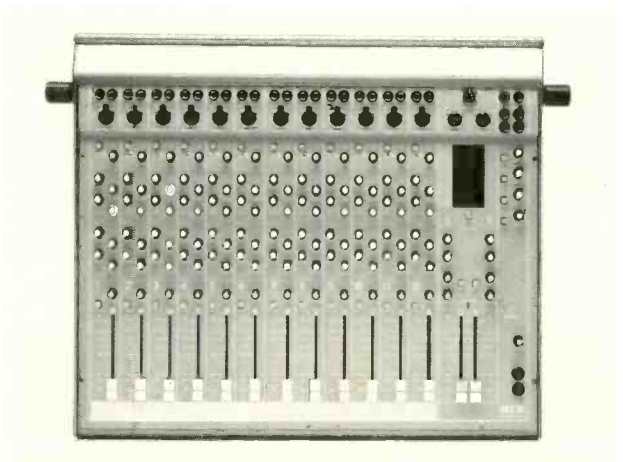
Calrec (402) will show the new M Series rackmount minimixer with up to 16 inputs, plus the new UA8000 production console. Audio-Technica (1141) will have a new six-channel mixer/recorder, the AT-RMX64, with balanced inputs and four-channel record capability.

Teleproduction consoles, too, will see several major developments this year, spurred on by the intense interest in multichannel television sound. For example, Neve's (1410) NECAM 96 moving fader automation system, described but not exhibited at last year's show, will be seen installed in a 51 Series 5116/36 console. NECAM 96 features up to 128 fader position scene sets with automatic or manual crossfade between scene sets; comprehensive muting; and labeling and events function switching.

Solid State Logic (1723) will have a new audio production system, the 5000M Series, designed for mono, stereo, and MTS formats. It is available with 12 to 64 inputs. Also new will be the SSL integral synchronizer and master transport selector (a five-machine synchronizer), and the SSL programmable equalizer, a console-mounted control panel and remote electronic package that interfaces with the SSL studio computer.

In addition to its well-known line of radio consoles, Ward-Beck Systems (1224) will unveil a new audio console, the ST Series, designed for stereo television production. ADM Technology (1223) will introduce two television audio products: a compact audio-for-video editing console, the Post-Pro, available with eight or 12 adjustable line level inputs, three-band EQ, cue, dual monitor buses, and VCA Slidex control; and the S/TV stereo television audio console with 16 or 24 inputs, in-line EQ or preselect, mic and stereo line modules, four-track submastering, and other features.

New from Wheatstone (121) will be the TV-80 audio mixing console, a VCA-based TV production console of-



Seck 122 mixer from Connectronics.



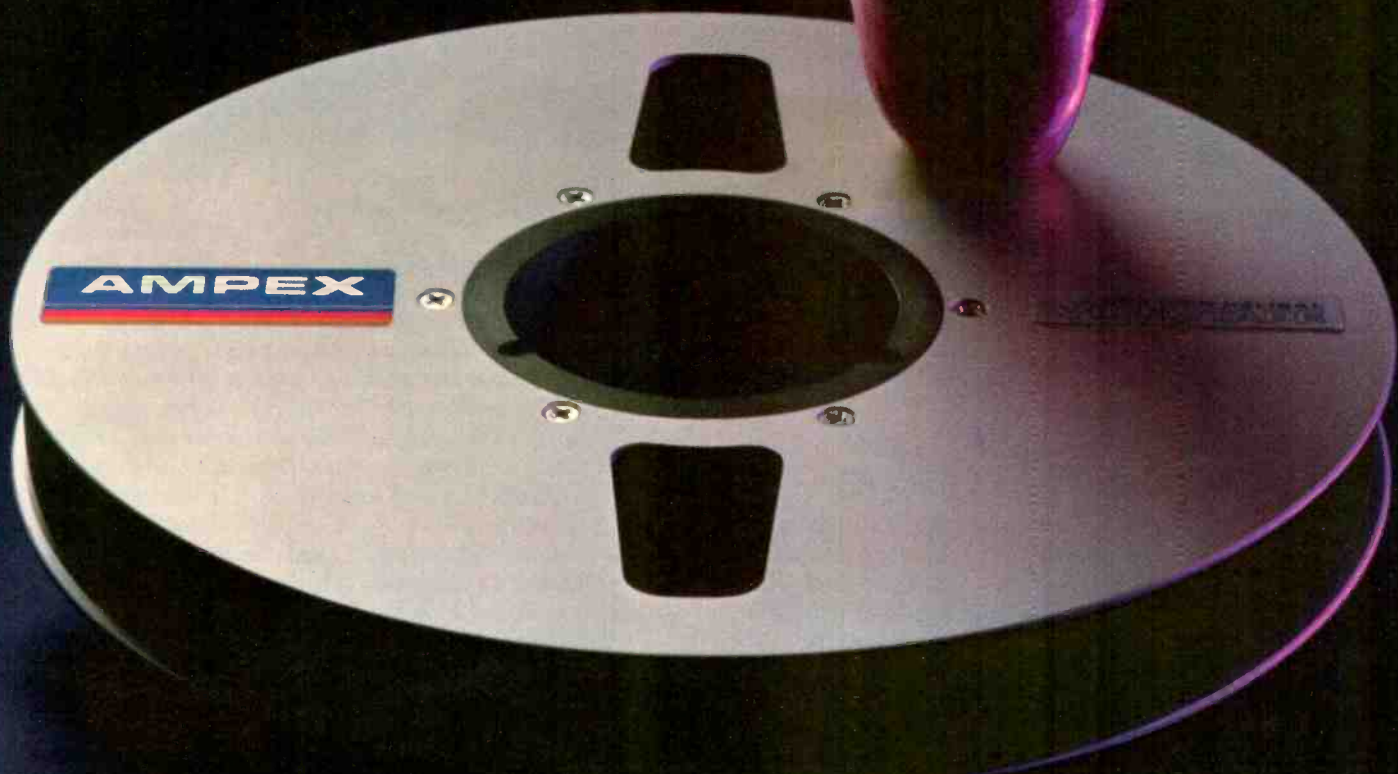
Neve Necam 96 console automation system.

BALANCE

The symmetry gained from the equalization of complementary forces. Symmetry as in the precise blending of sensational chrominance with outstanding signal-to-noise. Symmetry resulting in a video tape of breathtaking balance. Ampex 196.

AMPEX

Ampex Corporation - One of The Signal Companies 



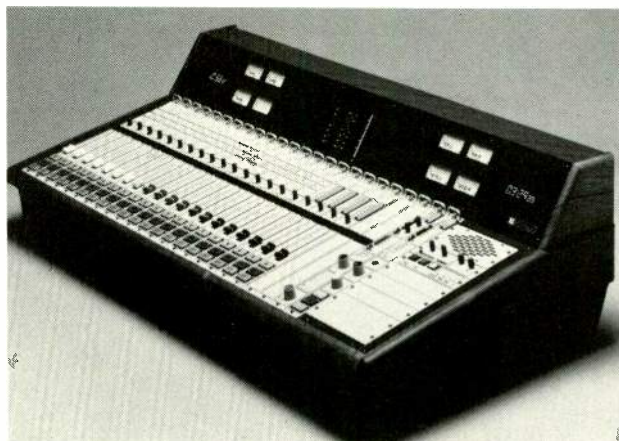
Ampex Corporation, Magnetic Tape Division, 401 Broadway, Redwood City, CA 94063, (415) 367-3809

Circle 158 on Reader Service Card

fering eight to 48 input channels with both discrete and VCA subgrouping features, plus four auxiliary effect buses, routing and control for SAP formats, stereo EQ, optional patch bay and stereo remotes.



SL 5000 M production board from SSL.



Harrison's Air-7 console.

At the Amek booth (1620), look for a new compact ENG or teleproduction mixer, the BCO1 Series 2, with up to 16 VCA stereo inputs and two or four outputs. Amek will also introduce the M1000 Series 2 teleproduction mixer with up to 36 VCA stereo inputs, 10 VCA outputs, eight sends, and eight returns. The new TAC MX broadcast production mixer will be shown in two configurations, a 16 by eight by two and a 24 by 16 by two.

2. NOISE REDUCTION/ PROCESSING/EFFECTS

The audio processing area will see plenty of action at NAB '85. Processing, it seems, is a bit like programming formats: no broadcaster worth his salt is satisfied with yesterday's state of the art. The new and refined products to be presented next month will insure he doesn't have to be.

Always a leader in this field, Eventide (323) will introduce yet another effects unit in its well-known Harmonizer Series. The H969 features cleaner-than-ever pitch change, delays of up to three seconds, delay presets,

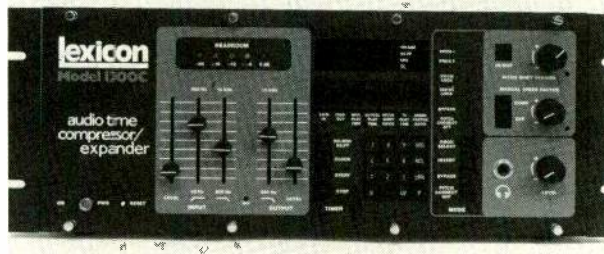
presets for musical intervals, flanging, reverse, and repeat audio. Also new will be Generation II software for the SP2016 efx processor/reverb, providing a wide range of new reverb efx programs including stereo room, loop edit, flanging, and chorusing.

Another leader, Aphex (513), will have several new products as well. They include the Dominator intelligent multiband audio processor for broadcast; the Compellor Model 301 single-channel version of the Compellor; and the Model 9001 Aural Exciter, a modular (dbx rack) version of Aphex's established Aural Exciter.

Lexicon (1139) will introduce a stereo version of its 1200C digital audio time compressor/expander, consisting of two 1200Cs with a factory-checked and calibrated stereo matrix unit. The system automatically controls the speed of playback equipment and preserves broadcast-quality audio, and features improved machine control for on-air applications.



H969 ProPitch Harmonizer from Eventide.



Lexicon 1200C compressor/expander.

Valley People (318) will introduce the Model 440 limiter/compressor/de-esser, a single-channel unit featuring the company's exclusive Linear Integration Detector in the limiter/compressor section, plus a downward expander to compensate for "heavy" compression.

Audio & Design/Calrec (402) will introduce the Scamp four-band compression system. Other new products will be the Scamp Filmex four-band noise reduction system for old movie tracks, the Compex 2 compressor/peak limiter/noise expander/gate, and the F601 music/voice over limiter. The company will also feature its Ambisonic Surround Sound system.

The Studio Division of Harris Broadcast (401) will have two new products in this area, the Phase Fixer audio TBC and the Ultimate 91 tri-band AGC.

Ursa Major (512) will unveil the MSP-126 multitap stereo processor, switchable to accommodate mono or stereo in-line usage. White Instruments (1318C) will in-

Essential in the trench.

THE SOUND TECH 1500 SERIES TEST SYSTEM

With a microprocessor-controlled Sound Tech 1500 Series test set, you can sort out the fiction from the facts—quickly and easily. Audio manufacturers the world over have come to rely on the 1500 Series. As high-tech goes higher and time seems to get shorter, the benefits of having immediate, precise and critical test data gets even greater. And that's where a Sound Tech 1510A comes in—on your bench, or in the trench.

Whether you're a design engineer or you have the technical responsibility for keeping your facilities up and running, the 1510A is designed to perform all the necessary tests for maintenance, troubleshooting and general check-out of any professional audio device like: tape recorders, film machines, mixing consoles, signal processing equipment, turntables—you name it. With the 1510A's exclusive asynchronous I/O, it's practically a mandatory piece of gear for remote location tests for satellite transmission, conventional transmitters or broadcast studio checks.

When a pro needs to know the truth, he can select from over fourteen different test programs that are stored in the 1510A. Because the instrument is modular, you can easily add options like a one-third octave spectral analysis card for noise & flutter measurements, a GPIB IEEE-488 computer communications interface, an MOL level test, and more. Much more.

With the 1510A's built-in CRT, you have easy to read and interpret alphanumeric and graphical data (on applicable tests). If you add our peripheral printer, you can have a hardcopy of anything displayed on the 1510A's CRT display—accurate, verifiable evidence.

Whether you push pencils or faders, there isn't an all-in-one audio test system around that can do everything the 1510A has been designed to do—as fast and as easy.

Contact us now for full technical and applications information. See for yourself why there are more than 1,000 users who already know something you should.

SOUND TECHNOLOGY

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Campbell, California 95008
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*Put The Best
To Test!*

Indispensable on the bench.

roduce a new active 1/3-octave graphic equalizer, the Model 4500.

The Audio Engineering Associates booth (174) will feature the new AEA-MS 38 stereo box with MS stereo, XXY stereo, and dimension variable control. Other new products will include the SMPL low-cost sync system for Synchronous Technologies and the Studio Technologies stereo simulator.

3. ATRS, CART DECKS

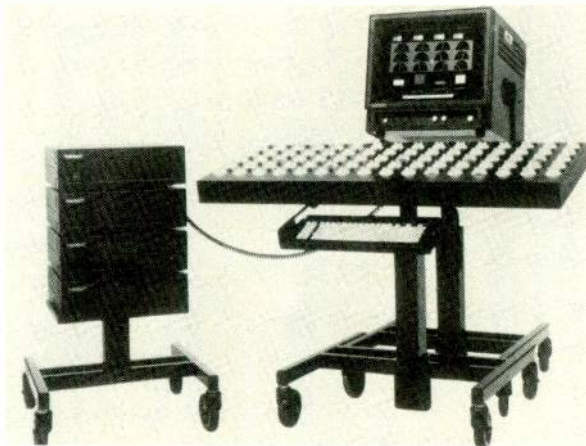
Whatever your audio recording needs, you're bound to find something new at this year's NAB show. Audio recorder manufacturers will bring a wide variety of new cart machines, plus reel-to-reel recorders and digital recorders of various types.



Fidelipac's Dynamax cart decks.



Mitsubishi's X-80 digital ATR.



Compusonics DSP-2000 audio computer.

A good representation of this diversity can be found in a single booth, that of Studer Revox America (201). Studer will be introducing a programmable, software-controlled analog master recorder, the A820, with center-track time code; a DASH-format digital ATR, the D820; a compact disc player, the A725; a video layback recorder for both B and C formats, the A80VU-3-LB; a multitrack (two to 24) ATR, the A80VU MKIV, with updated electronics; a cassette deck, the B215; and the A810 pilot tone film sound recorders.

Cart recorders will be in excellent supply this year. Visit the Fidelipac booth (411) for a look at a production model of the new Dynamax CTR100 Series NAB cart players and recorders, first seen at last year's RCPC. Pacific Recorders (113) will also have a new cart player, the Micromax, with advanced transport design and wide-track tape heads.

Audi-Cord (123) will introduce the E Series cart machine, an upgraded version of its established A Series with extensive redesign. ITC/3M (311), of course, will feature cart machines, most notably the recently introduced Omega and the established 99B. Straight Wire Audio (408) will have the new Stereo Sentinel automatic stereo synthesizer, plus the 3D/RP high-tech playback amp for ITC cart machines. Broadcast Electronics (303) will display its line of single-deck, three-deck, and five-deck cart machines.

Those looking for an alternative to the cart machine should check out the Compusonics DSP-2000 computerized audio system, featured at the Allied Broadcast Equipment booth (639, 645). This system is designed to perform the functions of conventional cart machines with the additional benefits of digital sound quality, random access, and interactive editing.

In reel-to-reel recorders, look to Soundcraft (219) to introduce the Series 20 two-track microprocessor-controlled recorder/reproducer, along with a new, updated SCM Series 760 MKIII 16- and 24-track ATR. Sony Pro Audio (606, 1200) will feature its new APR-5000 Series audio recorders, plus a live demonstration of the professional CD playback system.

Tascam (1304) will introduce a new 16-track portable ATR, the MS-16, while Otari (601) will show the new MX-70 one-inch multichannel ATR. The CB-121 remote controller for the EC-101 synchronizer will also be new. United Research Lab (604) will have a new ASC reel-to-reel recorder and ASC cassette recorder.

The purr-fect alternative to a Tomcat.TM

There probably isn't a radio engineer on the planet who isn't familiar with the outstanding performance of our esteemed Tomcat cart machines. We've built and delivered more than 2,000 "Cat's" since we introduced them in 1981.

For those who want the quality, dependability and sonic performance of a Tomcat (and are willing to give-up a few of it's bells n' whistles), a serious evaluation of our new Micromax is in order.

MICROMAX IS MORE THAN THE "HIGH-TECH" LOOK.

With Micromax, our Maxtrax[®] heads come standard. Maxtrax is now widely accepted as THE performance standard because it delivers a half-track signal without quarter-track noise. With nearly twice as much track width, you get a quantum leap in sound quality, which, by our way of thinking, is the real bottom line. If your library is quarter-track (the NAB standard), no problem. Micromax can be ordered with an optional set of NAB stereo playback heads for immediate library use.

THE MECHANICS: TOUGH, LIKE A TOMCAT.

The D.C.-controlled capstan runs in sealed microfine bearings and is driven by a servo/belt system developed from computer disk drives. The result is superb wow & flutter specs. The conventional pinchroller solenoid was eliminated (and thus the damaging heat), and replaced with a simple, reliable D.C. servomotor which assures optimum, adjustable capstan-to-tape pressure and remarkably rapid starts and

stops. Center-supported by a floating ball bearing race, the pinchroller self-aligns to prevent tape skew.

The cartridge guides guarantee accurate, repeatable positioning. The deckplate is thick aluminum alloy, precision milled and surfaced. Naturally, the heads are fully adjustable and mounted in beefy, precision cast assemblies.

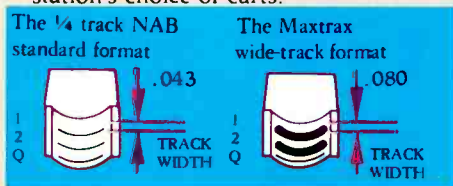
THE ELECTRONICS: ADVANCED, LIKE A TOMCAT.

With Micromax you've got lot's of headroom, better transient response and +24 dBm active, balanced program outputs. We've even designed efficient low-noise CMOS control logic.

Micromax has the standard two auxiliary cue tones and high-speed recue (22.5 ips). You can set a replay inhibit, and assign a machine number to the front panel LED display (which also doubles as the power indicator).

IT SOUNDS AS GOOD AS IT LOOKS.

The superlative specs can't tell you the whole story of Micromax. You have to hear it. Micromax has a red-hot, crystal-clear top-end. And a clean, punchy low-end. Everything in-between jumps right out in front of your ears too. Micromax can instantly put much better sound on-air for you. Now. Regardless of your station's choice of carts.



Maxtrax. The proven, superior format that delivers nearly twice as much track width for better sound.

BUILT RUGGED FOR THE REAL RADIO WORLD.

All of the electronics are contained on three easily accessible circuit boards and the elegantly simple mechanics couldn't be easier to get at for routine inspection and maintenance. Micromax is totally RFI immune, and consumes only 7 watts — running. Because the attractive chassis doesn't require any ventilation slots and screens, there's less outside world that gets into the inside. Because of the compact design, you can get two reproducers side-by-side in a rack with just 3 1/2" required. Of course, Micromax is pin-for-pin connector compatible with the Tomcat.

HCW MUCH?

The Micromax reproducer with Maxtrax heads is only \$1,445.00 FOB Carlsbad, California — where we manufacture it. A recorder version will be available soon and we fully expect it's price to be as affordable as the reproducer-only model (stay tuned).

A Tomcat sits comfortably above the rest of the pack, but the new Micromax could be the purr-fect alternative for you. Either way, you can't lose.

Call us now or circle the bingo. We'll be happy to rush you technical brochures that fill-in all the other details we couldn't cover here.

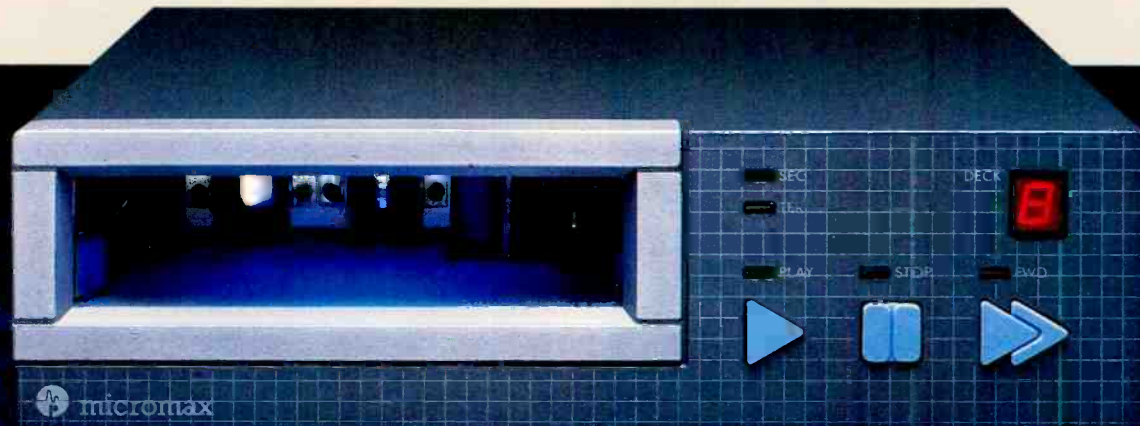


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The Choice for More #1 Stations.

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The New Micromax.



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One **SPIKE** Can Cost **DOWNTIME!**

Overvoltage transients can bring the biggest installation down in a microsecond, or damage it cumulatively.

Surge-Master Heavy Duty Power Line Protectors give complete protection against all transients.

All audio and video transmission equipment is vulnerable to transients on AC power lines caused by heavy motors starting up (even elevators or testing your auxiliary power system), power company load adjustments—and of course, lightning. Even if your equipment operates from batteries charged by a UPS, you're not safe. If lightning knocked out your UPS, how long could you keep going?

The MCG Surge-Master offers two stage protection. The first reacts in nanoseconds to absorb lesser transients and the leading edges of major ones. The second stage absorbs the big ones, and has three modules on each line. So, in the unlikely event that one module should be knocked out, there are still two protecting you. And a system of indicator lights tells you not only when a fault has occurred, but exactly where it is. Modular construction (and the fact that Surge-Master is connected in parallel) makes replacement of damaged modules quick and easy. Initial installation requires minimal power interruption.

Available with capabilities from 100 to 3000 amps; for 120, 240 and 480 VAC; and for single, 3-phase, wye and delta power systems. MCG also manufactures smaller units for protecting individual pieces of equipment. To learn more, contact Department 31017 at 516/586-5133 or at the address below.

Protecting industry since 1967

MCG

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12 Burt Drive
Deer Park, N.Y. 11729



See us at NAB booth #167



TCD 910 cassette deck from Tandberg.

Tandberg of America (2354) will introduce a new professional, microprocessor-controlled, four-head master cassette recorder, the TCD-910, also available in a play-back version, the TCD-911.

Besides Studer, mentioned above, a couple of other companies will have announcements related to digital audio. Digital Entertainment Corp. (1600) will have a new interface to connect the Mitsubishi X-80 digital master recorder to BTX and Adams-Smith synchronizer systems. The X-80 two-channel recorder and X-800 32-channel DATR will also be featured. In a somewhat different vein, Gotham Audio (509A) will introduce the EMT 448 digital audio spot recorder using Winchester removable hard disks as the storage medium, and the Systex digital audio storage system for commercials, news actualities, and music libraries.



A820 ATR from Studer.

THE INTELLIGENT INTERCOM SYSTEM



A Command Performer.

Whether you coordinate scores of cameras, video tapes, remote units—or *hundreds*—you can have control over the rapid-fire decisions so essential to a successful production.

A new concept in intercom systems now makes completely flexible communications an affordable reality.

The Intelligent Intercom System totally integrates point to point, party line and program interrupt (IFB) communications into a *single* powerful system under unified control. This means all crosspoints and key assignments can be changed in a manner of minutes. How? The Intelligent Intercom System is controlled and configured through uniquely versatile software at the master control console.

Each station contains a microcomputer to receive instructions from central. It stores and monitors key assignments, senses external inputs and controls internal utility relays. And, it reports station condition and key status back to central.

We build Intelligent Intercom Systems for the full range of broadcast operations—plant, studio and on location. And, our systems are designed to meet your requirements now and for years to come. They are fully expandable and field upgradeable. Our basic system handles up to thirty-two stations with a 64 x 32 port matrix.

The technology is available from SouthLake. It has proven its advantages in the most pressured of challenges—the 1984 Summer Games.



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4. AUDIO PRODUCTION EQUIPMENT

Microphones remain an essential ingredient in audio production, and this year's NAB promises a new crop of both wired and RF varieties.



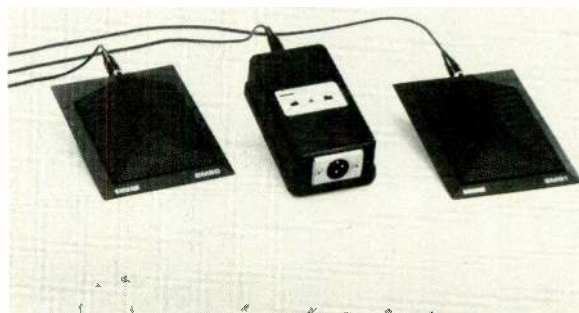
Sampson RF mic products.

In wireless mics, Cetec Vega (1401C) will introduce two handheld transmitters, the T-84 with a Beyer 500 ribbon element and the T-87 with a Shure SM87 condenser element, both featuring the Dynex II audio processor. Nady Systems (1133) will introduce two VHF high-band wireless mic systems, one featuring true diversity reception.

Sennheiser (1137) will introduce several RF mic products, including the Microport wireless handheld and rackmount receivers, the EK2012 UHF body pack receiver, the EM1001 portable ac/dc nondiversity receiver, the EM1036 rackmount six-channel diversity receiver, and the EM2003 semiportable UHF diversity receiver. Also new will be the MD409 dynamic microphone and the MKH40 FET condenser recording mic.

RF Technology (171) will highlight its new TX-100 950 MHz RF mic transmitter with three diversity mating receivers. Telex (600, 1605A) will premiere the FMR-50 wireless microphone system, available in four models starting at \$875.

Micron Audio Products (1122C) will have several new RF mic products, all with the company's CNS (comple-



Shure SM90 and SM90 surface-mount mics.

Simply awesome.

NEW: The RS-1616 Switcher, Router, Amplifier and Mixer.

The most powerful combination of flexibility and performance available today and **with features that won't be found in any other system.** Expandable from 8 in X 2 out to 128 in X 64 out. Stereo & Mono — Individual input amps, gain selectable, mic thru +27dBm — +27dBm headroom —

Programmable "all call" output override — Unlimited input mixing to any outputs — No crosstalk overload — -80dB crosstalk — .0023% distortion — Response, DC-500kHz — -90dB S/N. In addition, the means of control are limited only by your imagination (BCD, 3 wire party line, personal computers, etc.). You can "roll your own" or use one of the many controls from RAMKO.

Three year warranty with suggested list starting as low as \$1249.

Call today, toll free (800) 821-2545 for further information and the name of your nearest dealer or Rep.

NAB Booth #415

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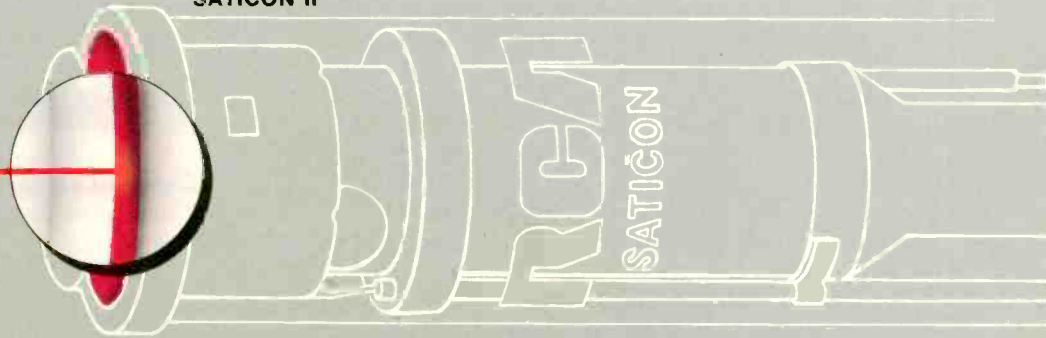


RAMKO RESEARCH

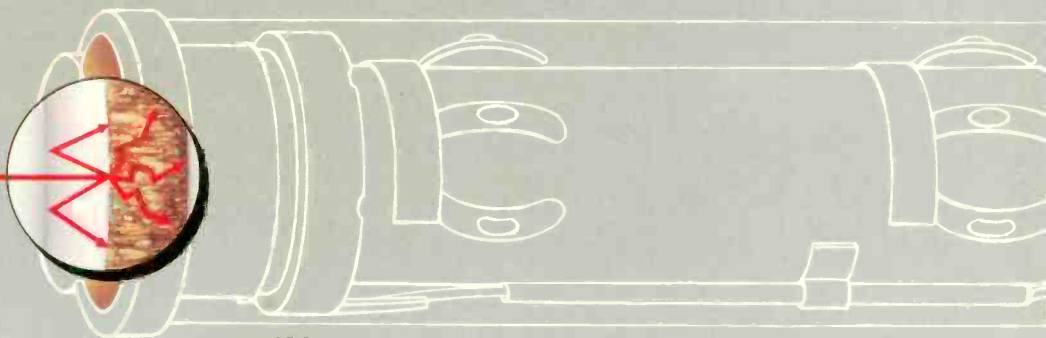
"Anything less is too expensive"

Part of your best work may never get past your camera tube.

SATICON II



PLUMBICON



What you see is not always what you get. The character and quality of your pictures are dependent to a significant degree on the camera tubes you use.



With high performance Saticon* II tubes, you can expect distinctively cleaner, clearer and sharper pictures. The reason lies in Saticon II's newly improved photoconductor. Developed through computer-aided processes, this thin glassy film allows the light to pass through without color diffusion or distortion. The end result is high resolution, distortion-free color, very low lag, high sensitivity and depth of modulation. Highlight memory (without red trail) is also significantly reduced with Saticon II.



With Plumbicon™ tubes, the polycrystalline structure of the photoconductor causes diffusion of incident light. The

*Used by permission of trademark owner.

Plumbicon photoconductor is three times thicker than Saticon II's, which limits its resolution.

Make sure your best work gets past your camera and on the air by specifying high performance Saticon II camera tubes in your original equipment and for tube replacements.

For our guide to camera tube selection, contact your RCA distributor or write to RCA Camera Tube Marketing, New Holland Avenue, Lancaster, PA 17603. Or call (800) 233-0155. In Penna., phone (717) 397-7661. Overseas, contact RCA Brussels, Belgium. Sao Paulo, Brazil. Sunbury-on-Thames, Middlesex, England. Paris, France. Munich, W. Germany. Hong Kong. Mexico 16 DF, Mexico.

RCA

Take out the doubt.

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Cetec Vega 67A diversity receiver.

mentary noise suppression) system. Countryman (1720) will introduce a new microphone for wireless transmitters from Nady, HME, and Vega. New from Samson Music Products (324) will be the TH-1 body pack wireless transmitter. HME (1130), of course, will also be featuring its well-known RF mic systems.

Shure Brothers (1401A) can always be counted on for new microphone products, and this year is no exception. Introductions will include the SM90 omnidirectional low-profile mic, the SM91 unidirectional low-profile mic, the FP11 mic-to-line amp, the FP12 headphone bridging amp, the SM1 single-ear broadcast headset, and the SM2 dual-ear broadcast headset.

Beyer (426) will introduce the HM 560 headset mic, a broadcast-quality ribbon mic with headband that is also available without the headband as the M 560 boom. From Audio-Technica (1141), look for the new ATH-VU open-back mic 250 ohm studio headphone; the ATH-M7



Telex FMR-50 wireless mic receiver.

closed-back mic 250 ohm dynamic studio headphone, and the ATH-M2 150 ohm dynamic studio phone.

Stanton Magnetics (102) will introduce the Dynaphase 30M single-sided headphone in three versions, all available in 100 ohms as well as 600 ohms. New from Swintek (1503) will be the Mark 200 D full duplex headset system for hostile video environments. Electro-Voice (1159) will feature its established microphone line.

Broadcast Electronics (303) will feature its line of studio equipment, including two- and three-speed turntables, tonearms, and preamps.

5. INTERCOMS, TELCO INTERFACE

Times are fairly quiet on the intercom front, but that's not to say there are no significant developments. On the con-

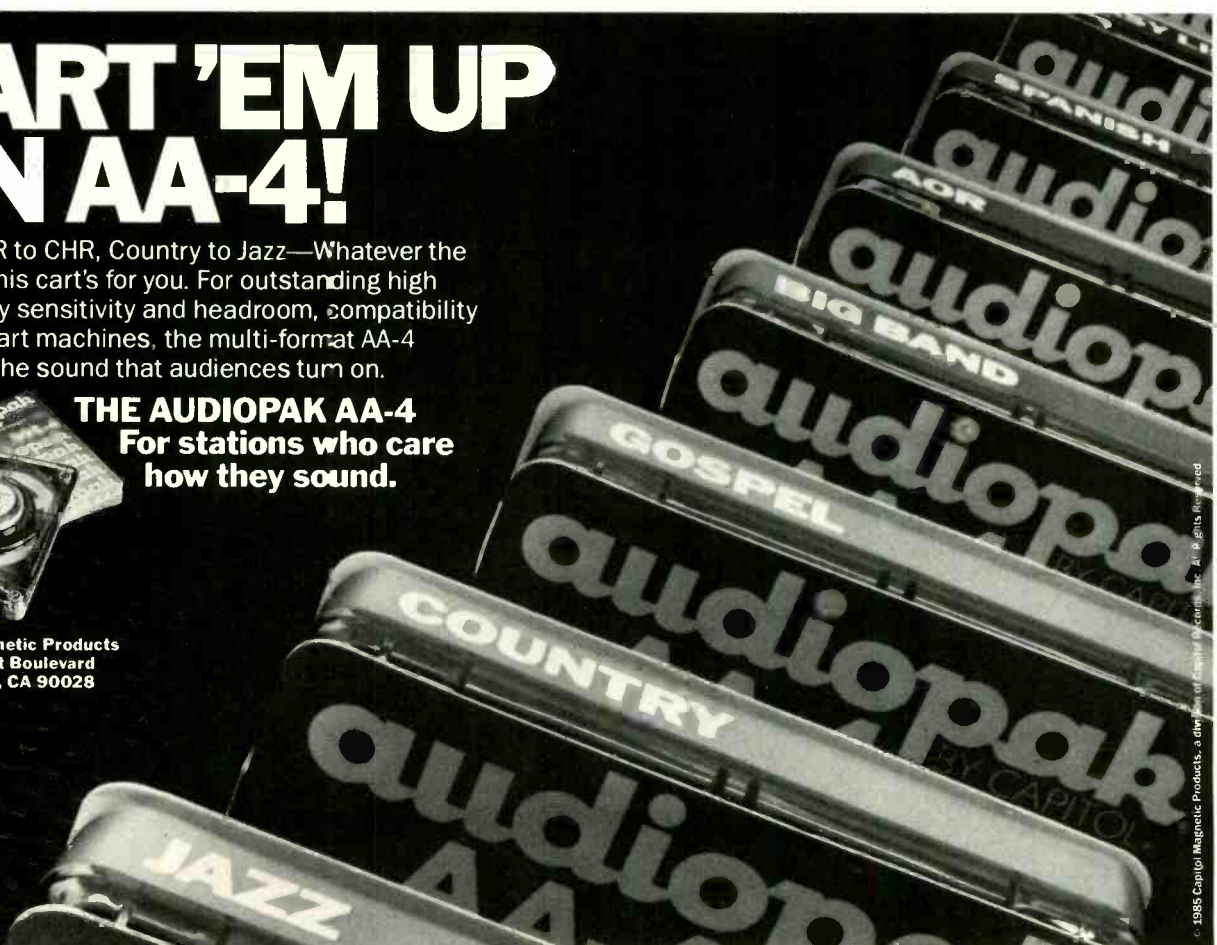
CART 'EM UP ON AA-4!

From AOR to CHR, Country to Jazz—Whatever the format, this cart's for you. For outstanding high frequency sensitivity and headroom, compatibility with all cart machines, the multi-format AA-4 delivers the sound that audiences turn on.

THE AUDIOPAK AA-4
For stations who care
how they sound.

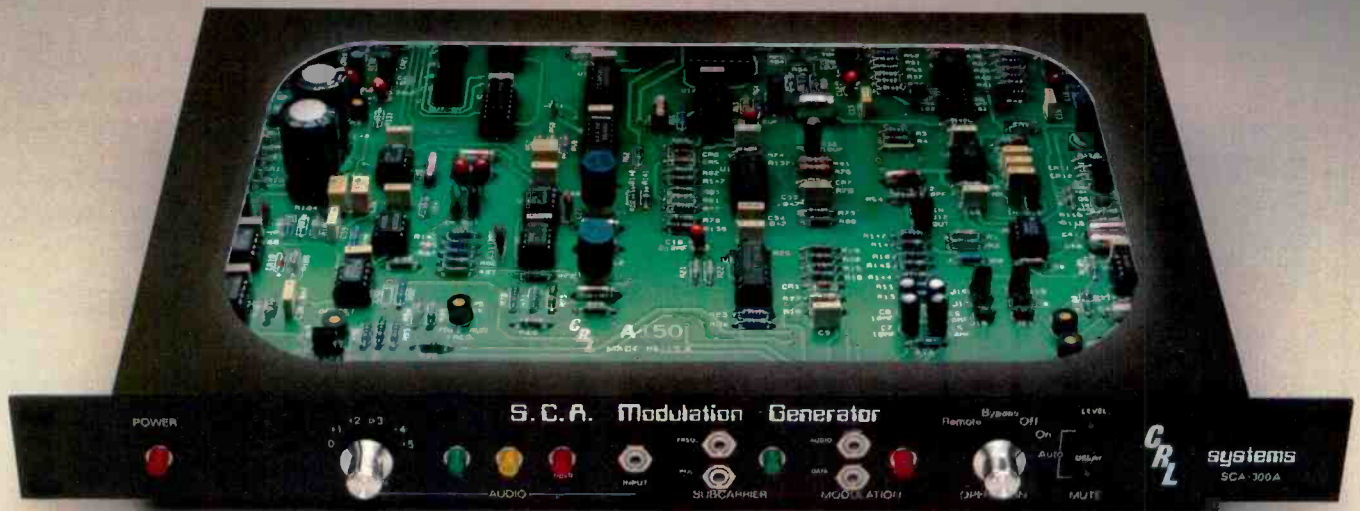


Capitol Magnetic Products
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THE INSIDE STORY



The SCA 300A Subcarrier Generator

✓ CHECK THESE FEATURES:

QUARTZ CONTROLLED, LOW DISTORTION OSCILLATOR. AFC controlled, digitally synthesized carrier. Change frequency by moving internal jumpers. No filter changes required.

USER PROGRAMMABLE DEVIATION. Internal jumpers allow selection of 2, 4, 6, or 8 kHz deviation to suit any application. There is a front panel peak flasher.

OPTIONAL FREQUENCY SHAPING. Internal jumpers allow selection of flat response or roll-off below 100 Hz. Also a small "presence" peak in the 3kHz range may be selected by internal jumper. This improves the sound on typical SCA receivers and pagers.

AUTOMATIC CARRIER MUTING. This circuit will remove carrier in the absence of programming if desired. Adjustable delay from 2 to 30 seconds.

LOW DISTORTION AGC CIRCUIT. The low and high frequency gain reduction circuits are controlled by the program material itself. This reduces distortion in the final clipping filter to allow

maximum loudness with minimum distortion. This improves fringe coverage.

ABSOLUTE MAIN CHANNEL PROTECTION. Patented, non-overshooting, filters provide exceptional main and sub channel protection. 70db minimum.

DATA INPUT PORT. By setting the front panel switch to "bypass", it is possible to feed signals directly to the modulated oscillator through the rear panel BNC or RS 232 connectors.

ADDITIONAL FEATURES:

Optional remote control operation
Input impedance, 600 Ohms or 10k balanced or unbalanced. No audio transformer.
Front panel injection level controls for audio and data with 20 turn pot for precise adjustment
Selectable pre-emphasis to suit any application.
Accepts sub-audible telemetry and audio programming simultaneously.



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trary, Southlake Technologies (1504), formerly Datatronix, will introduce the Intelligent Intercom System, an infinitely expandable central matrix system that is totally software-configured from the master console and combines point-to-point interphone, party-line intercom, and program interrupt (IFB) functions. The system also interfaces with two-way radio, microwave, and outside telco lines.



Comrex PTLX 2X transmitting extender.

Right next door, Clear-Com (1502) will have a new portable remote station, the CP-300, with two channels on a single mic cable; it is switchable between Clear-Com and RTS operation. Also new will be the TW-12, an inter-

face device that allows Clear-Com-type intercom systems to be interfaced to RTS-type intercom systems.

An ENG/IFB "hands-free" telephone with tone or pulse dialing will be the featured new item from R-Columbia (1111). Farrtronics (1505) will introduce a new standalone IFB intercom package. And don't forget to visit RTS (1142) to see the 17 Series portable intercom system. In telco interface equipment, Comrex Corp. (400) will bring a complete new line of FCC-registered telephone couplers for broadcast use, featuring modular connections, plus new-model low frequency extenders with modular telephone interconnectors.

Russo (413) will introduce a new dial-up remote amplifier with two mic channels and one high-level channel, completely powered from the telephone line.

6. PROGRAM AND BUSINESS AUTOMATION

With the astonishing spurt in the case of computers in broadcasting over the last few years, it comes as no surprise that this year's NAB show is chock-full of new and improved software systems for program and business automation, many taking advantage of small personal or business computers.

For example, Custom Business Systems (317) will introduce The System PC, a radio business computer system using exactly the same software with all the capabilities of the successful, larger The System, at a substantially reduced price. Computer Concepts Corp. (404)

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will introduce a brand-new, PC-based traffic, music management, and sales management computer system with a broad range of features.

Generic Computer Systems (308) will introduce IBMlog, a new traffic and billing automation software package for the IBM PC XT, including a wide variety of functions for radio, television, and cable priced at \$3500 complete. Strata Marketing (614) will introduce RadioCalc, a spreadsheet-like computer program for producing radio sales presentations, which computes sophisticated reach and frequency analyses for up to 10 station schedules on IBM PCs and compatibles.

Two new software systems will be unveiled by Columbine Systems (118, 1323). The music system gives radio stations complete control over their music inventory and rotational patterns, while the news management system allows archiving of news items through the use of key words, with immediate access to information on news resources. The Management (612) will introduce the Co-Operator full-size computer coop management system to run on the IBM PC and compatible computers. Tapscan (106) will premiere the Quali-Tap qualitative ratings system and the Infinity hour-by-hour ratings analysis system.

Program automation systems will make news, too. IGM Communications (403) will introduce a new audio switcher/system controller for full or part-time audio control or live assist, using the IBM PC for control. New from Sono-Mag (139) will be the ESP-2 radio automation programmer. And Broadcast Electronics (303) will show its

Control 16X microprocessor control program automation system for radio programming, the SAT-16 for satellite programming, and the Econo-16.

7. RADIO SYNDICATION

PDs still searching for the ultimate format will have some new choices this year as they scan the offerings of a spate of syndicators. American Image Productions (653) will introduce its Airwaves sales/production library, plus new TV promo campaigns for radio and promo campaigns for TV.

DeWolfe Music Library (1734) will have 20 new albums of production music, several new sound effects albums, and a new special request service.

The Music Director (511) will premiere its Safest Oldies libraries for A/C and CHR stations, compiled after extensive testing. The company also has a new five-hour Jim Reeves special and has updated its Christmas programming library.

Omnimusic (185) will introduce the new Fourscore Music Co. album library, along with 40 new production music albums. New from Radio Arts (418) will be a six-hour tribute to Nat King Cole and a seven-hour Bing Crosby tribute.

UPI (430) will introduce customized news services for specific radio formats, including Country, Top 40, and News/Talk. Thomas J. Valentino (1231) will have 12 new releases for its music library.

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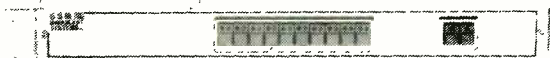
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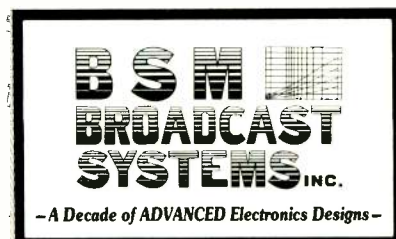


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No. 2 in a Series

Subject: The Convergence Principle

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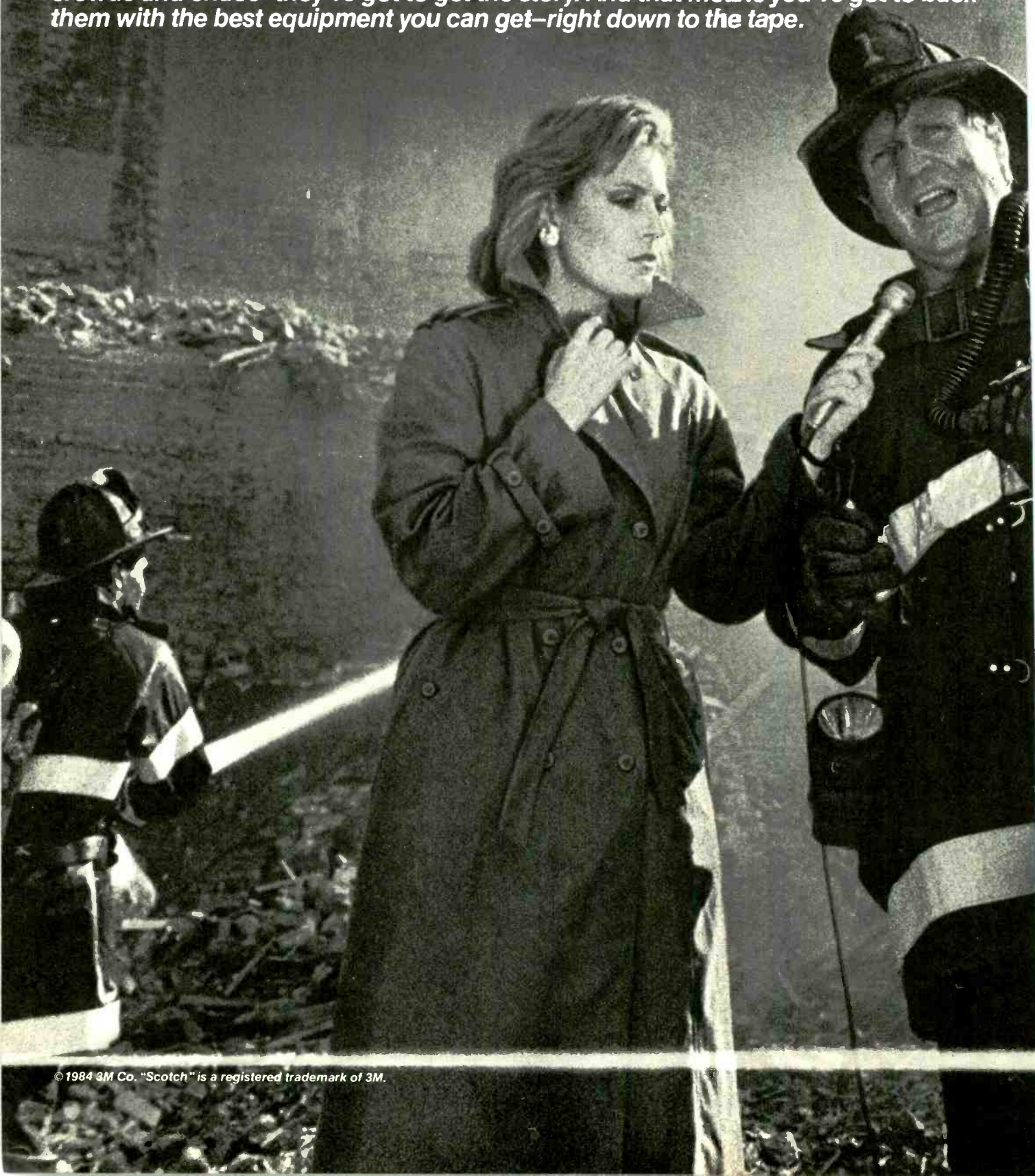
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TRANSMISSION MOBILE UNITS T&M, SATELLITES

1. TRANSMITTING

TV Transmitters:

The interest in UHF transmitters is running high this year, and the NAB has scheduled an engineering session devoted to UHF alone. Still going strong is the interest in LPTV and multichannel sound.

It's not surprising that Comark (1217), now the exclusive U.S. distributor for Marconi RF products, will introduce the complete Marconi Communication Systems RF transmitter line, including VHF, AM, and SW models from 1 to 220 kW, along with the Marconi B7500 high-technology IF TV modulator with advanced precorrection circuitry for ultra-high-efficiency pulsed klystron operation. Comark will also incorporate the Marconi modulator into its S Series of UHF transmitters. Also new from Comark will be the CAM-100S aural IF modulator for TV stereo/SAP retrofits. Recent tests in Columbus, OH at WTTE-TV, in which that station achieved the highest efficiency ever achieved by a TV broadcast klystron in service, are fresh in the minds of Comark execs and will no doubt be emphasized in product descriptions and discussions at their booth this year.

Acrodyne (1228) will feature its line of TV transmitters, both UHF and VHF. In the former category will be their 5 kW UHF, 1 kW UHF LPTV, 100 W UHF translators. In the latter will be their 10kW VHF transmitter, 30W VHF dual TV translators, and 10 W VHF translator.

Harris (401) will introduce the TV-30H 30 kW high-band VHF transmitter; the TVE-60S 60 kW UHF transmitter; and the Challenger microwave receiver. There will be other TV microwave transmitters and receivers from Harris introduced as well.

Both UHF and VHF will be the focus of RCA's (1000)

attention this year. In UHF, RCA will debut its new TTG-60U 60 kW solid-state transmitter. On the VHF front, RCA's New Products Division will introduce a new line of VHF high- and low-band cavities for VHF TV transmitters from 5 to 55 kW.

NEC (1415) promises new TV transmitters, and will also feature the digital video multiplexer, 7 GHz microwave system, and its series of FM transmitters.

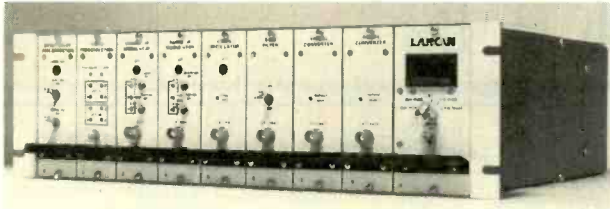
Two UHF transmitters will be introduced by Information Transmission Systems (1734A), the ITS-231 1 kW UHF standby exciter/transmitter and the ITS-235 5 kW UHF standby exciter/transmitter. Larcan (1626A) will unveil a new 30 W FM exciter, the FME-30L, and will also have on display its TEC-1V VHF MTS television exciter, the TTC30LH 30 kW VHF high-band TV transmitter, and the FMT25L 25 kW single-tube, self-contained FM transmitter.

Remote Control, Tubes, Other RF Equipment:

The focus in other transmitting products seems to be in remote control. There are several new tubes ready to be introduced as well.

Cat Systems (1014B) will show its range of earth station and TV transmitter remote-control systems, with new

1. TRANSMITTING	117
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Larcan TEC-IV MTS-compatible VHF exciter.

features including light pen control of all systems, programmed-in instruction manual and HELP function, high-resolution RGF output, and IBM, TI, DEC, or HP computers.

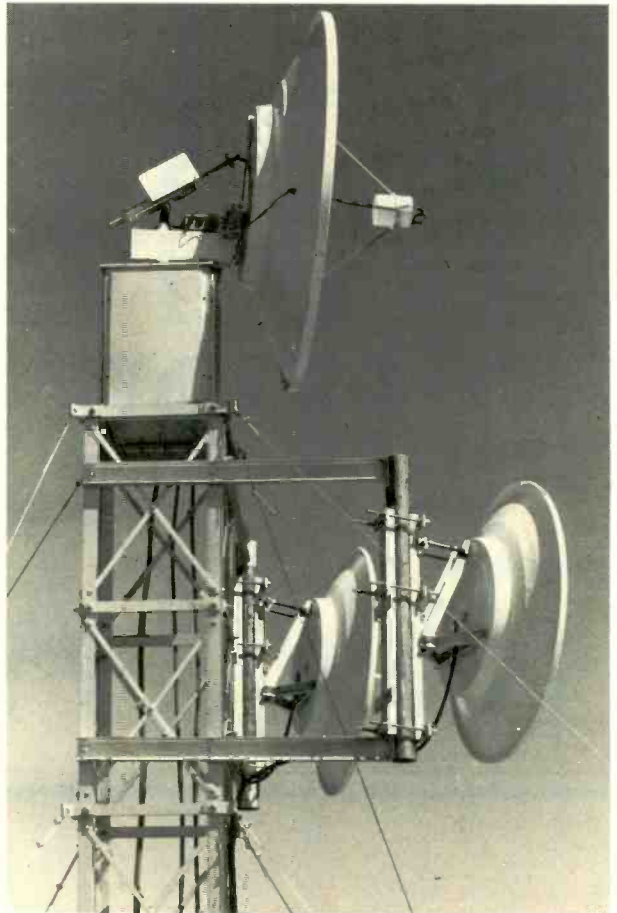
Thomson-CSF's Electron Tube Div. (1003) will introduce two Ku-band TWTs, the 160 W TH-3639 and the 85 W TH-3689, for use in portable satellite ground station HPAs; also slated for introduction are the TH-563 50 kW tetrode for UHF TV stations and the TH-558 500 kW shortwave tetrode.

Always a big name in tubes, Varian Eimac (1605) will introduce a group of new RF power products, including a multiphase cooled tetrode for high power (500 kW and above); 5, 10, 30, and 60 kW FM cavities; high- and low-band TV cavities; the Klystron UHF TV high-efficiency transmitting tube; and several other new power tubes, triodes, tetrodes, and amplifiers.

From Hallikainen & Friends (208) will come several new products to work with the DRC 190 digital transmitter remote-control system, including a disk drive, status panel, RF link, radio subcarrier equipment, and new logging and control software. Harris (401) will introduce new low- and medium-priced remote-control systems for radio and TV.



TH 563 transmitting tube from Thomson.



BMA-4000 automatic tracking dish from BMS.



Artel laser-based fiberoptic system.

Micro Controls (104) will unveil a new TSL in the 450 MHz band, with 2-10 W output and built-in fire and burglar protection. Ceco Communications (313) will show its line of transmitting power tubes. No new product introductions are expected for Hipotronics (1779), but the company will exhibit its automatic voltage regulators for radio and television transmitters.

TV Stereo:

With FCC approval finally granted and a de facto standard agreed upon, TV stereo made its dramatic debut onto the broadcast scene at last year's show. At NAB '85, multichannel sound products will have a strong showing, and will be the highlight of several manufacturers' displays.

One transmitter manufacturer, Townsend Associates (1420), will feature an over-the-air demo of stereo televi-

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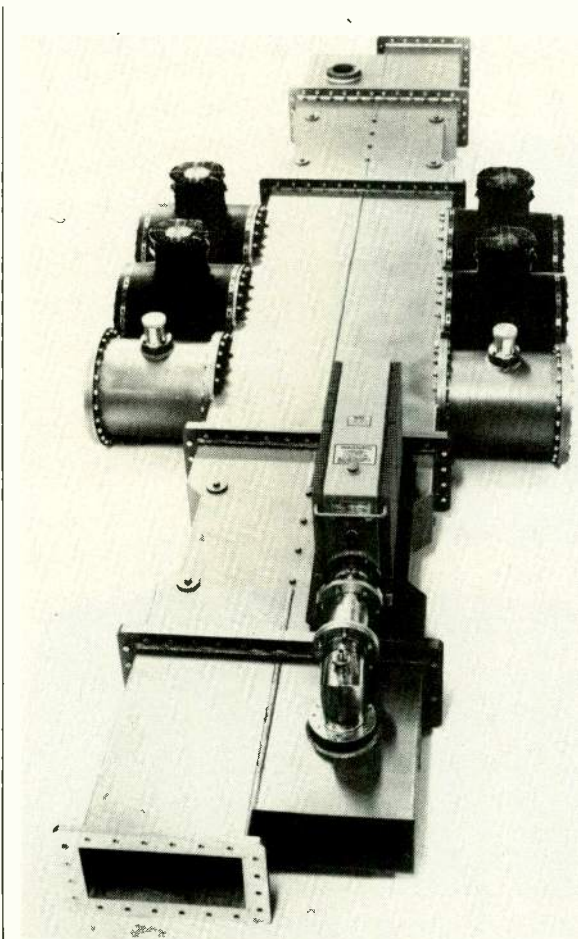
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MTS diplexer from Micro Communications.

sion, in addition to its established TV and LPTV transmitter line.

McMartin Industries (701), which was one of the first in the MTS marketplace with prototype equipment last year, will feature its new TV stereo product line this year. New products will include the BFM-7200 generator, the BFM-7000 SAP generator, the TBM-7500 baseband monitor, and an SAP monitor.

Broadcast Electronics (303) will also have a new TV stereo generator, the TZ-30. Information Transmission Systems (1734A) will debut several multichannel sound products: the ITS-11 low-band aural VHF exciter for MTS retrofit use; the ITS-16 high-band aural VHF exciter for MTS; and the ITS-29 50.25 MHz aural IF exciter, also for MTS.

Not one, but two new broadcast stereo generators will be introduced by Marcom/Inovonics (306), both featuring the "Sinusoid Sample" method of stereo generation for high S/N and separation. Orban Associates (607), another famous name in modulation processing, will have a live display of its brand-new 8182A/SG aural TV stereo generator, designed to work with the Optimod-TV.

TFT (109) will unveil a full line of TV stereo gear, including the 831 TV/SAP generator, the 832 TV/pro channel generator, and the 850 TV stereo modulation monitor.

Belar (203) will introduce new television aural modulation monitors for BTSC multichannel sound, including a baseband monitor, stereo program monitor, SAP monitor, and pro channel monitor.

TV stereo will also be hot at the Modulation Sciences booth (204B) with several new products, including the TSG (STV-784) stereo generator with audio processing and loudness controller; the TSCA-189 TV Sidekick SAP generator with built-in audio processing and dbx NR; the SCA-186 Pro Sidekick pro channel generator with built-in audio processing; and the Data Pro high reliability data distribution for pro channel on television.

dbx (107A), whose noise reduction system is at the heart of the BTSC MTS system, will introduce a new VCA module, BTSC noise reduction encoder and decoder cards, and dynamic processor for audio. Micro Communications (1014A) will introduce new MTS sound duplexers.

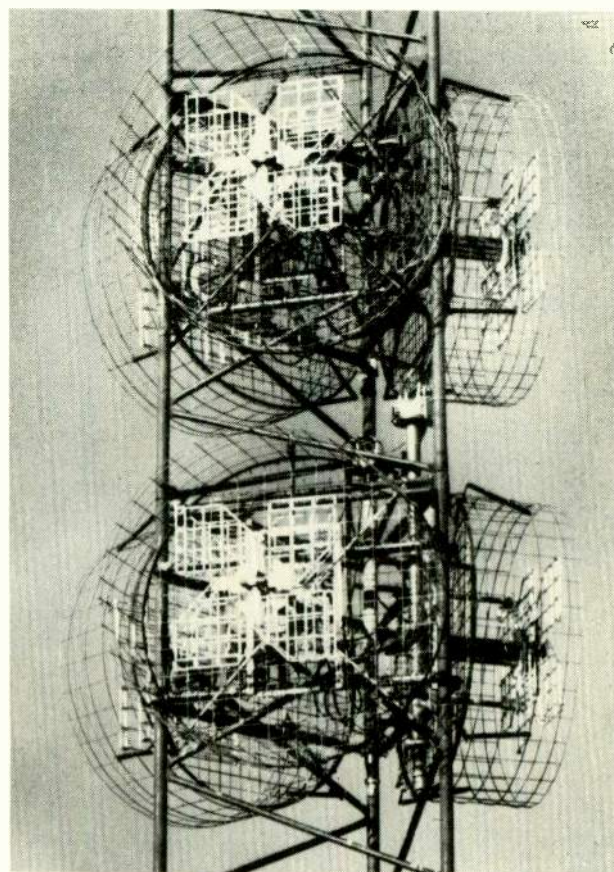
Antennas:

UHF transmission will be highlighted in new antenna offerings as well. And many broadcasters will be looking at exhibits with the 80-90 docket requirements in mind.

A good example of this is the featured new product from Cetec Antennas (509), the Broadcaster CP FM community antenna system, seen in prototype last year. Aimed at FM stations needing to fulfill Docket 80-90 requirements, the antenna has greater than 23 MHz bandwidth and can carry two stations' signals at once. Also new will be an LPTV ring-type CP antenna, and a broadband CP TV highband antenna.

Leblanc & Dick (1149) will introduce new broadband FM antenna systems which are designed to conform to new FCC standards, and new broadband TV antenna systems.

Although there will be few other absolutely new prod-



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ucts, several companies will demonstrate their abilities to fill broadcasters' antenna needs. Andrew Corp. (1201) will feature a variety of products, including Trasar UHF TV transmitting antennas with single, dual, or circular polarization; high-power circular waveguide systems for UHF-TV; rigid coaxial transmission lines; concrete and fiberglass equipment shelters; Heliac coaxial cables and waveguides; microwave STL links; and other program management and field service equipment.

Dielectric Communications (455) will emphasize its capabilities as a complete RF antenna supplier, from transmitter output to antenna top. Tennaplex (1127) will feature its line of TV and FM broadband panel antennas.

On display at Bogner's booth (1319) will be the company's line of high-power antennas, up to 250 kW, including the recently introduced B24U high-gain antenna, plus the line of radio base station antennas for mobile and cellular radio. United Ropeworks (126), formerly known as Philadelphia Resins, will exhibit its Phillystran HPTG electrically transparent tower guys and its specially designed systems for power applications.

Fiberoptic and Other Transmission Systems:

Artel (1163) will demonstrate its SL3000 family of fiberoptic systems for video, audio, and high-speed data transmission. New products in this line will include single-mode laser FM systems and LED-based systems.

New products from Telemet (1202) will include a fiberoptic card file system, a stereo audio demodulator, and a new routing switcher. Grass Valley (1207) will show its Wavelink fiberoptics transmission system.

New from Colorado Video (1222) is the Digital Image Communications System, a color video transmission and storage system based around the IBM PC/XT and video memories manufactured by Colorado Video.

Datum (1708) will unveil the Model 9550-689 video data encoder and Model 9200-401 video data reader, which together provide the capability to insert digital information into a video signal at the maximum capacity while remaining transparent to the video signal.

Microwave:

Nurad (1426) will introduce a number of new microwave products, including the SQ6 Series receive antenna system, a six-foot version of the Superquad II with quad polarization, high gain, and low sidelobes. Other new products will be a variety of microwave transmitters, receivers, antennas, and automatic trackers for all channels.

From Broadcast Microwave Services (1749) comes the GCA-4, a helicopter video transmission system that uses two independently LORAN-controlled high-gain antennas, one receive and one transmit, for lengthy, trouble-free live relays. Also new this year will be a complete family of steerable and autotracker antenna pedestals.

Bird (1625) will have two new items, 15 kW and 25 kW forced-air cooled, dry load resistors, "reject loads" for dual transmitter installations of 96 kW peak. Also exhibited will be the company's line of instruments and components for RF power measurement.

RF Technology (171) will introduce new high-gain, weatherproof RF power amps at 7 GHz; a new design 7 and 13 GHz rackmount fixed link system; rackmount RF power amps at 7 and 13 GHz; a 2.7 GHz weatherproof, frequency-agile 10/2 W switchable remote controllable transmitter for the international market; and a new 7 GHz

portable microwave for ENG.

M/A-COM (1004) will feature its Super microwave transmitter and receiver, the Skypod airborne ENG system, and other microwave systems.

In RPU and STL equipment, Marti Electronics (501) will introduce several new products, including: the AR-10 Series compact mobile repeat receivers for VHF and UHF frequencies, weighing 5.5 pounds and operating on 120 V ac or 12-15 V dc; a 1.7 GC STL for Canada; an STL booster amplifier to retransmit microwave signals on the same frequency in cases where line-of-sight path is not available; the CR-10 Series rackmount RPU receivers with built-in monitor speaker; and a five-foot grid STL dish antenna with 20.5 DBI gain for operation in the 890-900 MHz range.

Micro Controls (104) will unveil a new transmitter-studio link in the 450 MHz band, featuring 2-10 W output with built-in fire and burglar protection. Moseley Associates (103) will show its established line of aural studio-transmitter and multiplexed data links; remote and supervisory control systems; stereo generators and demodulators; telemetry return links; subcarrier generators and demodulators; audio limiters; and microwave and remote-control accessories.

New items from Motorola (309) will include the Dyna-Tac 8000 portable cellular radio, the PCX1000 synthesized portable repeater, and the CCB101 synthesized portable base station.

Radio Transmitters:

There will be some rumblings from the quiet giants of radio broadcasting, as a number of manufacturers debut new transmission products.



Belar FMS-2 stereo FM modulation monitor.

The Harris Broadcast Transmission Division (401) will lead the way with a new transmitter line, the SXA family, consisting of 1, 2.5, and 5 kW mediumwave transmitters. Also new will be the FM-3.5K, a 3.5 kW FM transmitter, and the SignalStar FM antenna.

Elcom Bauer (412) will introduce an entirely new FM transmitter series, dubbed the "All American" line, with models rated at 800 W, 1500 W, 3 kW, 5 kW, 10 kW, and 30 kW. Also new will be the SS-20 FM exciter.

Nautel Maine (216) will introduce what it describes as the world's first totally solid-state, modular 50 kW AM broadcast transmitter, the Ampfet 50.

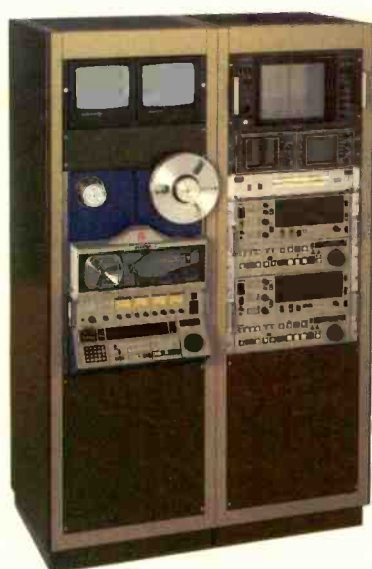
The latest offering from QEI (307) is really six transmitters in one. QEI has combined six 500 W units into its 2.5 kW FM transmitter, a new, all solid-state, super-efficient model that also serves as the driver for the 30 kW amplifier. The aim of the combination design is to achieve a high degree of stability and reliability, and the transmitter will have its debut at the show.

TTC/Wilkinson will have a new line of single-tube FM transmitters, the 8090 Series, plus a new FM exciter. The established radio transmitter line will be on view at the Thomson-CSF booth (1003). Continental (101) will exhibit its full line of AM and FM broadcast transmitters.

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AM Stereo:

Despite its slow start and slow growth, AM stereo continues to make some progress, and several equipment introductions will take place this year.

Broadcast Electronics (303), which has manufactured SCA equipment and MTS exciters for TV in the past, will have a new AM stereo exciter, the AX-10 this year.

Kahn Communications (625), which last year brought a car stereo receiver to the exhibit floor at the last minute, will also introduce an AM stereo exciter, the STR-84, along with the RF-01 RF monitor and the Lines Plus audio extender system.

Delta Electronics (105) is one place to look for new but unannounced products. The company will have its line of AM stereo exciters and modulation monitors, transmitter remote-control systems, and RF instrumentation products.

Modulation Processing (Radio):

Circuit Research Labs (300) will introduce the new SG-800 stereo generator, which will be demonstrated with an oscilloscope. New from Dorrough Electronics (312) will be the 80-B stereo generator for FM.

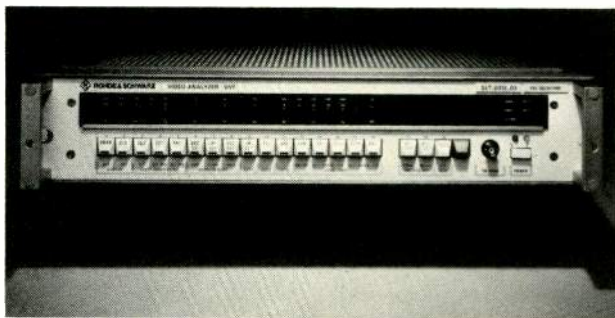
TFT (109) will premiere the new 840 AM stereo exciter and the 841 AM stereo monitor. Established products for FM broadcasting from Modulation Sciences (204B) will include the CD-803 composite processor, the SCA-186 Sidekick SCA generator with audio processing, the CID-2500 composite line driver baseband distribution system, and the Data Sidekick high-speed data system for FM SCAs.

2. TEST & MEASUREMENT, MONITORING

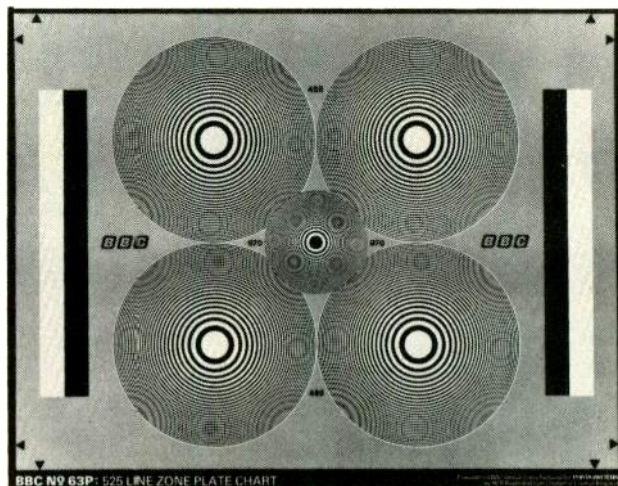
Television/Video:

New products to be introduced by Tektronix (1601) will include the 1710B and 1711B waveform monitors, the TSG-170A digital sync and test signal generator, the 1450-1 television demodulator, the 1450F20 wideband audio upgrade kit, and the 118-F02 video interface for the 118AS audio synchronizer. A prototype of the TSG-300 analog component test signal generator, which generates signals in Beta, RGB, and YUV formats, will also be featured.

Rohde & Schwarz/Polarad (1203) will introduce the UVF video analyzer, a standard insertion test signal measurement set with quasi-analog display, 16 test parameters, and limit monitoring. It is fast, precise, lightweight, and IEEE compatible. Sigma Electronics (1333)



UVF video analyzer from Rohde & Schwarz.



Porta-Pattern 525-line zone plate image.

will introduce the SCH-385 sch phase meter, the VSS-120 video/stereo audio switcher, and the VSD-20 one by six video/stereo audio DA.

Philips T&M (1408A) will introduce the PM 5633 sync pattern generator with component video output, plus the PM 5652 NTSC-7 VITS generator/insertor with external signal input capability. The Marconi (1615) Model 2923 television signal generator and insertor, employing advanced digital technology, will make its U.S. debut at the show, as will the Model 2955 mobile radio communications test set.

Leader Instruments (1349) will premiere the LCG-420 NTSC sync/test pattern generator with plug-in modules; the LBO-5825 digital storage oscilloscope; the LAG-126S low distortion audio oscillator with balanced output; and the LBO-552BH1 stereo oscilloscope.

Leitch (1021) will introduce a number of new products, including the BTG-1010N digital test signal generator, the DFP-3000N digital frame processor, the VPA-331N video processing amplifier, the ADA-860 Series audio DA, the CTG-240N calibrated test signal generator, the CSD-530 master clock driver, and the DCD SMPTE/pulse-driven analog clock.

New from Fortel (1409) will be the Digitest digital test signal generator for audio and video. PESA (1409A) will introduce several new products, including a sync analyzer, a cable tester, and 14-inch and 20-inch broadcast monitors.

Introductions from QSI (1325) will include the PSF-777 battery-powered, split-field color bar generator with field-programmable eight-character SID plus 1 kHz audio tone output; and the DM-171 171-channel direct-access varactor-tuned demodulator with full AFC on all channels.

Holiday Industries (206A) will show its isotropic broadband field strength meters with fiberoptic links.

Porta-Pattern (1427) will premiere several new products, including the BBC zone plate chart, eight by 10-inch BBC zone plate transparencies, 11-step log chip chart and 11-step log gray scale transparency, and various other test charts, transparencies, and slides. Minolta (1113) will highlight the Minolta TV Color Analyzer II, along with the company's luminance meter, illuminance meter, and chroma meter.

A new sch phase meter will make its debut at the Evertz

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Prime transmission sites, by their very nature, frequently pose the most difficult construction problems. This one, atop Slick Rock Mountain near Brevard, North Carolina, was no exception.

To satisfy the requirements of the Asheville-Greenville-Spartanburg market of WHNS-TV, Channel 21, LDC designed, manufactured and erected one of the tallest towers ever placed on top of a mountain and also provided the highest powered CP antenna in North America. The tower has been engineered to an initial height of 1620 ft. above ground, with the capability for extension to 2000 ft. in the future. Antenna performance has been verified through an Atlantic Research field survey as exceeding required specifications.

LeBlanc & Dick is one of only a handful of companies in North America that can meet a challenge of this magnitude. LDC has the worldwide resources and experience to undertake total project management from site analysis and preparation, through design, supply and construction, to final commissioning of the entire system.

Next time you think about turnkey site services talk to LDC, the company that can do it all . . . and do it on time!

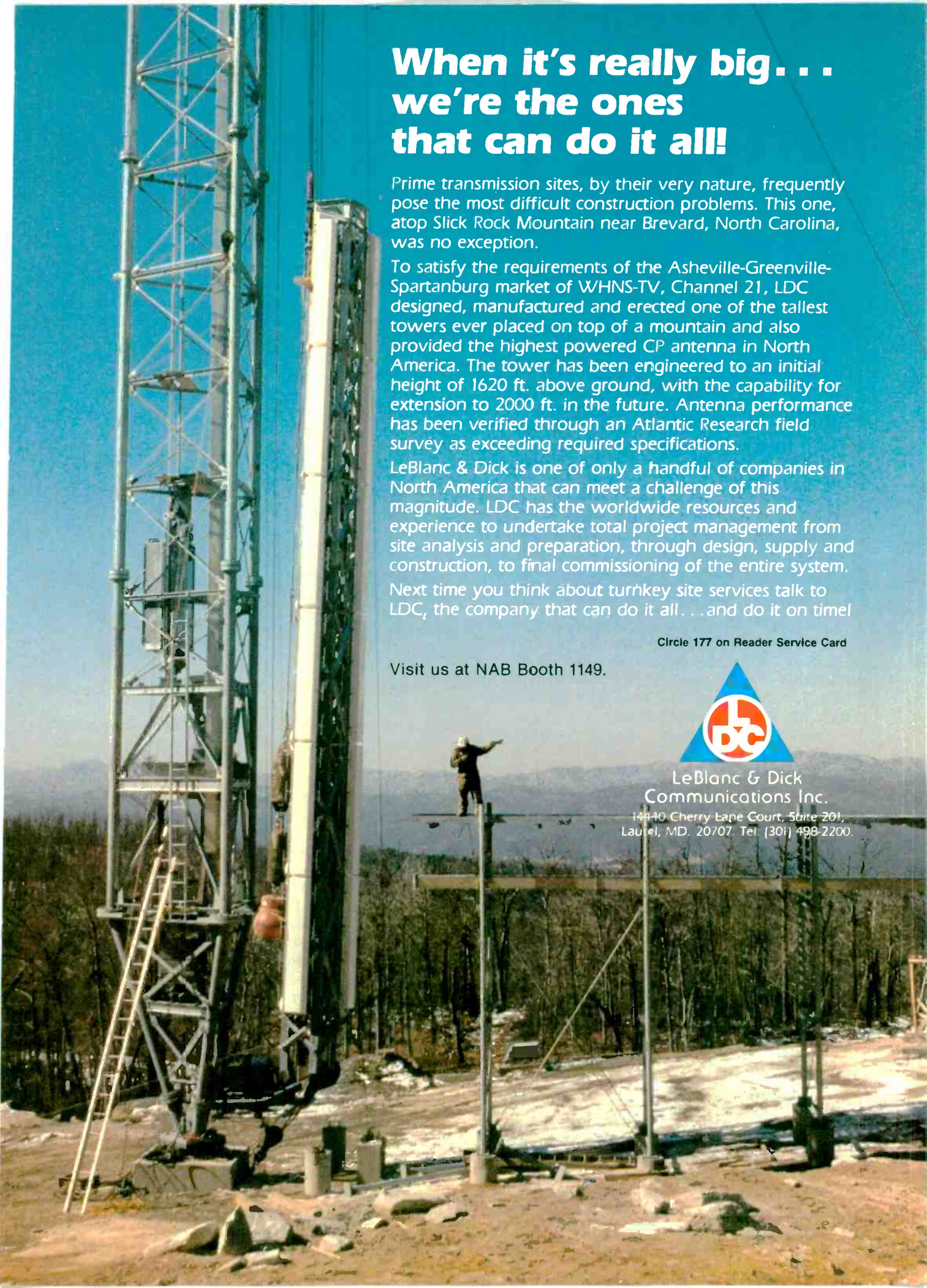
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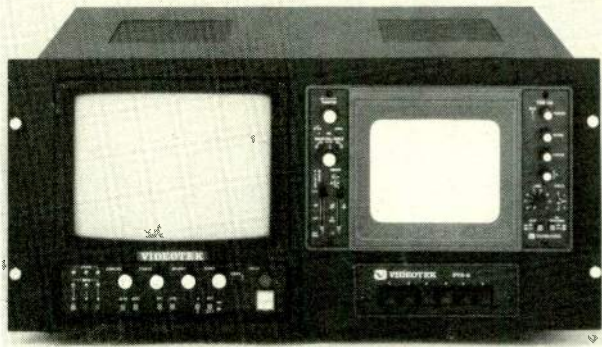
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Videotek's System 8 monitoring package.

Microsystems booth (1745). Videotek (1633) will add several new items, including the HR-130 13-inch high resolution color monitor; an eight-inch color monitor package with TSM-5A waveform monitor and PVS-6 6 by one passive video switcher; the RS-183A 18 by one AFV routing switcher with RS-422 interface; the VIS-1200 12x one video-only routing switcher; the 800 Series precision modular DAs; the VM-17PRO 17-inch professional rackmount color monitor; and the VM-13S 13-inch color video monitor with audio.

Conrac (1401) will introduce the 2600 monochrome monitor line in nine-, 15-, and 20-inch models. New monitors will also be featured by GEC McMichael/Marconi Broadcast (1514), which will introduce PAL and NTSC nine-, 12-, 14-, and 20-inch monochrome and color units. Elector (1707) will unveil a new nine-inch color monitor from Barco. New Matthey products at the Television Equipment Associates booth (1216) will include the MDP525B differentiating filter for measurement of luminance nonlinearity, and the MCL420B low-pass phase-equalized filter for satellite signals.

Tentel (1613) will feature a new video recorder head protrusion and eccentricity gauge for Type-C VTRs that measure tip projection and eccentricity in both microns and ten thousandths of an inch. Torpey (463) will introduce the PC-18 illuminated pulse clock with built-in digital display for TV and radio.

New from True Time Instruments will be a universal clock driver for TV and radio featuring several different analog and digital displays. Beaveronics (1313) will introduce several new timing products from Favag, including the 2QMS-2 dual master clock system with au-



Amber's 5500 programmable test system.

tomatic pulse sensing and changeover and the PR-80 seven-day microprocessor-controlled programmer.

Radio/Audio:

In audio T&M this year there is a flood of new products for performing automatic measurements of key parameters of the signal—like the automated test systems developed a few years ago for the television signal.

One of the most exciting products in this area is the System One from Audio Precision (325), a brand-new company formed by several former Tektronix employees. System One is based on an IBM PC and performs all its multitude of measurements using menu prompts. The PC's screen provides an instant graphical analysis of the test results, which can also be printed out on a dot matrix printer. System One also features the best performance specs in the industry for most of its measurements.

Sound Technology (500) will introduce the 2100 Series programmable, bus-controllable signal generator and the 2200 Series programmable, bus-controllable audio/



BBSM-12 speaker from Westlake Audio.

distortion analyzer, which together allow an engineer to perform a complete audio proof with a remotely located analyzer automatically, without the use of external computers.

Amber (422) will introduce the Model -5500 programmable distortion and noise measurement system, completely automatic and computer-controlled, with fully balanced inputs and outputs with +30 dBm output capability.

Belar (203) will introduce new television aural modulation monitors for BTSC multichannel sound. Component units include baseband monitor, stereo program monitor, SAP monitor, and pro channel monitor.

New from Potomac Instruments (100) will be the QuantAural (QA) 100, which measures technical characteristics of program audio to reveal processing characteristics; and the SMR-11 C-Quam stereo receiver.

Johnson Electronics (229) will unveil the STS-2 synthesized front end test set for antennas. 67 kHz switchable to 92 kHz, plus a new desktop SCA receiver. Mark Electronics (1227) will add a new radio monitoring system and mini master control system to its line of rack equipment.

In speakers, expect Anchor Systems (1618C) to introduce the new Anchor 101 reduced-cost, basic powered monitor. Visit the Studer booth (201) to see the new Studio 3 compact, two-way, close reference monitor speaker. Westlake Audio (2302) will introduce a line of all-new two-way, high-accuracy portable reference monitors with



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THE NEW NAME IN VIDEO WON'T DISTORT THE NEWS.

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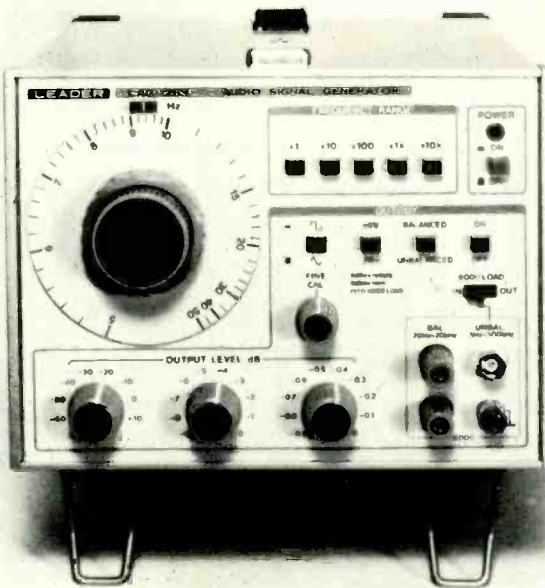
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Leader LAG-1265 audio signal generator.

wide bandwidth, low IM distortion, pinpoint stereo imaging, and coherent wave front.

New from Logitek (613) will be the Monitor-10 line of monitors and meters with up to 10 selectable stereo audio sources. And of course, Electro-Voice will feature its established studio monitor line.

3. MOBILE UNITS

While the all-out tractor-trailers will make their presence known at NAB '85, both inside and outside the Convention Center, it appears that the real news in mobile units will concern their smaller counterparts. Several companies are introducing new concepts in small trucks that should generate more than average interest.

One of these is Centro (1101), which will feature a new ENP (electronic news production) mobile unit developed for NBC News, which may become the model for a new truck line.

A.F. Associates (1611), too, will have a new line of standardized mini-mobile units for ENG and EFP. Wolf Coach (1317) will introduce a fresh concept in satellite newsgathering mobile designed addressing several inherent problems that occur in the field.

Van manufacturer E-N-G Corp. (1022) will introduce a compact portable remote package for mobile ENG work, weighing just under 47 pounds and including a 2 GHz transmitter/receiver, two-color off-air monitor/receiver, audio monitor, four-channel audio mixer, two vertical time four-position audio/video switcher, color bar/SID, and steerable antenna with automatic lock-on features. The total package operates from 12 or 28 V dc or 110 ac.

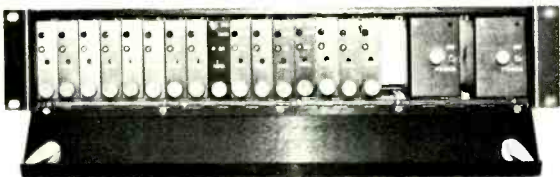
Of course, it won't be possible to ignore the array of larger trucks at the show. Midwest Corp. (1710) will feature a trio of trucks, including a 45-foot sports trailer and two 30-foot production vehicles, one audio and one video. Roscor (1181) will feature the TV-45 remote production vehicle and the Roscor Mini-Ram ENG truck.

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Selected for network coverage of the '84 Winter Games and political conventions on the basis of:

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From training to point-of-purchase videos, from the assembly line to the board room, TASCAM recorder/reproducers and mixers give you the dependability, quality and versatility essential to keeping pace with the rigorous demands of SMPTE production and post-production.

Our 58 recorder/reproducer syncs you into video interlock with a single connector. This rugged 1/2" 8-track gives you the performance capabili-

ties and engineering depth of a 1" machine. But at a fraction of the cost. Full microprocessor 3-motor servo control provides unsurpassed editing speed and precision, taking you rapidly to the point you're after and stopping on the dime.

Our 58's unique Omega Drive ensures smooth tape handling and uniform tape tension. It keeps tape from stretching or bouncing no matter how often you start and stop. And assures clear, clean signal reproduction.

The 58 links superbly to a complete TASCAM system. Our M520 mixer gives you the fast signal routing, logical, easy-to-use board layout, and full creative control vital to your professional video productions.

And when you're ready for layback, our 52 provides exceptional mastering capabilities, with the same dependability, accurate SMPTE control, and precise audio performance as the 58.

For less elaborate productions, our 4-track 44B keeps SMPTE up to speed for fast editing. Or integrate it as a mastering machine for layback from multi-track.

When you've got to balance sophisticated audio capabilities against your

budget constraints: Don't! TASCAM offers the uncompromising audio quality and sturdy reliability of equipment costing much more. At any

price, TASCAM is the professional's total audio system for video interfacing. At this price, what are you waiting for? Your TASCAM dealer has full details or write TASCAM, TEAC Professional Division, 7733 Telegraph Road, Montebello, CA 90640 (213) 726-0303.

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Compatible with any professional system.

TASCAM
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McMichael's satellite newsgathering rig.

can be transported easily by commercial aircraft or Lear jet.

Portable equipment will also be in the news at the Scientific-Atlantic booth (1017), where a new Ku-band portable earth terminal and a portable Ku-band RF terminal will be introduced to S-A's established line of satellite communications equipment.

Andrew Corp. (1201) will unveil new microprocessor-controlled, dual-band, receive-only earth station systems for television and radio broadcasters. Antenna Technology Corp. (N/A) will feature its Simulsat antennas, which can reach all satellites in the 60-degree range from Satcom 1 to Satcom 4.



PCDR(5) SCPC demodulator from Microdyne.

Microdyne (1612) will introduce a frequency-agile, SCPC demodulator, several Ku-band antennas, and an LNC-type satellite receiver for C-band and Ku-band. Modulation Associates (Parking) will introduce the SR-13, a fully synthesized, frequency-agile satellite subcarrier demodulator system for stereo TV sound distribution. Harris (401) will feature its 9134 and 9135 satellite control systems.

Services for satellite users will be the focus of several booths. Compucon (1405D) will describe its communications engineering and marketing research services, including earth station analysis and coordination. Comsearch (1136) will describe its services for systems design and engineering of satellite earth stations, point-to-point microwave, STL, and LPTV systems. Spectrum Planning (510) will feature its capabilities in terrestrial microwave and satellite coordination, RFI measurements, time-sharing utilizing 900 MHz through 40 GHz databases, TV and FM broadcasting services, telephone traffic studies, and software development.

Fancy Footwork... for the champion shots



SHOTOKU camera mounts win hands down. Aim onto your subject, and they glide smoothly and surely with never a slip. No wonder cameramen all over the world put their trust in our wide variety of products and reliable technology. Our products range from mini-cranes for handy cameras, TV studio cranes and camera pedestals, to cam heads, friction heads and many others.



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Professionals demand an uncommon level of picture quality and smooth image reproduction in TV standards conversion. The LT1210 is the world's smallest converter able to handle NTSC, PAL and SECAM, with PAL-M conversion as an option. The image enhancement function ensures a high-definition picture with outstanding image clarity. This converter is also a totally

integrated unit so no adaptor or changing of encoder/decoder modules is required for conversion between NTSC, PAL and SECAM. The cost-performance of the LT1210 is nothing less than outstanding. The LT1210. Check it out. Anywhere.

Oki also produces the high-end LT1015Σ Digital TV Standards Converter.

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Compare focal lengths, maximum relative apertures and features and you'll know why Canon is the right choice for 30mm, 25mm and 2/3" cameras.



PV40x13.5BIE for 30mm and 25mm cameras. The Olympian—proven at the 1984 Olympic Games, its 40X reach is perfect for sports and all outdoor broadcast operations.
Focal length: 13.5-540mm (27-1080mm w/built-in extender)
Max. Relative Aperture*: 1:1.7 through 270mm
*25mm format 1:2.8 at 540mm



P18x15BIE for 30mm and 25mm cameras. The Widest—a very wide 60° angle of view plus incredible edge-to-edge sharpness, fidelity and sensitivity. Supplied with 1.5X and 2X built-in extenders plus pattern projector.
Focal length: 15-270mm (30-540mm w/2X extender)
Max. Relative Aperture*: 1:2.1 through 218mm
*25mm format 1:2.7 at 270mm



J20x8.5BIE for 2/3" cameras. Two Assignments—use a 13X zoom for ENG, use the J20x8.5BIE for studio or outdoor broadcast assignments—with the same 2/3" camera!
Focal length: 8.5-170mm (17-340mm w/2X extender)
Max. Relative Aperture: 1:1.6 through 130mm
1:2.1 at 170mm



J15x8.5BIE for 2/3" cameras. 2/3" Economy—full utility for all studio situations, combining a 15X zoom ratio with an M.O.D. of under two feet, a 54° angle of view and high sensitivity throughout the range.
Focal length: 8.5-128mm (17-256mm w/built-in extender)
Max. Relative Aperture: 1:1.6 at all focal lengths

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needs. Now and in the future.



P12x14BIE for 30mm and 25mm cameras.
Studio Standard—the preferred choice in studios across the country, combining high sensitivity with incredible edge-to-edge sharpness.
 Focal length: 13.5-162mm (27-324mm w/2X extender)
 Max. Relative Aperture*: 1:1.6 throughout the entire zoom range
*25mm format



PV14x12.5BIE High Resolution Lens for 30mm and 25mm cameras.
A Unique Design—featuring extensive use of Fluorite lens elements, this lightweight, compact 14X studio lens provides high sensitivity and critical sharpness at all focal lengths.
 Focal length: 12.5-175mm (1.5X and 2X extenders built-in)
 Max. Relative Aperture*: 1:1.6 at all focal lengths
*25mm format



J25x11.5BIE for 2/3" cameras.
Greater Reach—a 25X zoom lens designed specifically for 2/3" cameras. The power and scope of 1" systems, the economy and efficiency of your 2/3" cameras.
 Focal length: 11.5-288mm (23-576mm w/2X extender)
 Max. Relative Aperture: 1:1.6 through 220mm
 1:2.1 at 288mm



J18x9BIE for 2/3" cameras.
Greater Reach, Lighter Weight—nothing matches the 18X zoom power of this lens—and it weighs less than 4 lbs.! It increases the flexibility of any portable camera.
 Focal length: 9-162mm (18-324mm w/2X extender)
 Max. Relative Aperture: 1:1.7 through 116mm
 1:2.4 at 162mm



J13x9BIE for 2/3" cameras.
The Portable Standard—used by cameramen around the world under all conditions, the J13x9BIE is a proven performer with superior sharpness and sensitivity.
 Focal length: 9-118mm (18-236mm w/2X extender)
 Max. Relative Aperture: 1:1.6 through 99mm
 1:1.9 at 118mm



J15x9.5 for 2/3" cameras.
Quality plus Economy—you can't buy more lens for less money. Lightweight and sensitive, it meets the needs of both cameramen and accountants yet lives up to its Canon name.
 Focal length: 9.5-143mm
 Max. Relative Aperture: 1:1.8 through 112mm
 1:2.3 at 143mm

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See us at NAB Booth #2232

GUIDE TO EXHIBITORS

ABEKAS VIDEO SYSTEMS

1228A

Will introduce the A62 digital disk recorder, a compact, Winchester-based real-time digital video recorder with storage capacities of 50 and 100 seconds. It features random access, variable speed playback, and simultaneous record/play capability plus extremely high image quality, and is ideal for single-frame editing applications including videodisc mastering, animation, and complex multilevel matte work. Also on view will be the A42 digital still store, the A52 digital special effects system, and the A52 digital effects combiner.

See ad pages 139, 141, 143

ACCURATE SOUND CORP.

632

Will introduce the new AS-200 LB high-speed loop bin system for cassette duplicating, with speeds of 120, 240, and 480 ips. Also new will be the Starboard Model 180-RP panner, a remote pan adaptor for mic booms; and the AS-700-DC servo motor, designed to replace the hysteresis motor in professional tape recorders. The established AS-200 reel-to-reel tape duplicating system will also be featured.

ACCU-WEATHER

1010A

Will introduce a new real-time, up-to-the-minute weather database that provides forecasts and data, accessed as needed. Other featured new services will include satellite images showing cloud cover of the whole hemisphere as well as sections of the U.S.; news,

sports, and financial graphics prepared by Accu-Weather's artists and ready for on-air presentation; Nafax, a variety of weather maps and charts normally accessed by fax but now directly accessible by a graphics unit; national weather radar; and early morning graphics, making Accu-Weather graphics now available around the clock and on weekends.

ACQUIS LTD.

1430

In the Convergence Corp. booth, will show two new Convergence editing systems: the ECS-195 low cost three-VTR A/B roll editor with full SMPTE or EBU time code operation; and the ECS-225 eight-VTR editor with assignable and multiple recorder VTRs and full PAL, NTSC, and SECAM capability. Also new is a list management system with "clean" and 409, and a new high-speed disk system for off-line/on-line operation, plus intelligent interfaces to GVG, Cox, and Bosch switchers.

ACRODYNE INDUSTRIES

1228

Will feature its line of transmitters, including the TRU-5KA 5 kW UHF TV transmitter, the TLU-1KAC 1 kW UHF LPTV transmitter, the TLU/100A 100

W UHF TV translator, the TRH-10KA 10 kW VHF TV transmitter, the TLH/30 30 W VHF dual TV translators, and the TLH/10 10 W VHF TV translator.

See ad pages 34-35

ADAMS-SMITH

1508

Will unveil the new Model 2600 BPI bi-phase interface, a companion model to the 2600SY tape synchronizer. It generates the bi-phase control signals necessary to control the speed of sprocketed film transports. The Model 2600 VRG video reference generator, also new, outputs crystal-referenced NTSC and PAL composite sync signals for studios that do not require a sync pulse generator. The recently introduced Event Executive module and companion event/edit controller will also be featured.

ADC MAGNETIC CONTROLS CO.

1320

Will premiere a new modular hybrid jackfield, providing audio and video jackfields in a single chassis. Also new will be the Dense Pack terminal block for audio cabling. Other featured items will include the line of switching coaxial components, humbuckers, pre-wired jackfields, custom interconnect panels, and connectors.

ADDA CORP.

1100

From its established product line, ADDA will display the AC-20 dual-channel TBC and synchronizer, the VW 3 TBC/synchronizer, the ESP II dual and single-channel electronic still store, the VIP digital video image

KEY TO BOOTH NUMBERS

100-999 Radio Hall Exhibits
1000-1999 TV Hall Exhibits
2000-2999 Hilton Pavilion Exhibits

processor, the Lightfinger LF2000 A/B roll editor, and the Sequencer random access program playback system.

ADM TECHNOLOGY 1223

Will introduce the new Post-Pro compact audio-for-video editing console, available with eight or 12 adjustable line level inputs, three-band EQ, cue, dual monitor buses, and VCA Slidex control. Also new will be the S/TV stereo television audio console with 16 or 24 inputs, in-line EQ or preselect, mic and stereo line modules, four-track submastering, and more. ADM will also feature its 9000 computerized stereo console, BCS stereo console, ST radio console, and VP live mix/post-production console.

See ad page C-2

ADVANCED DESIGNS CORP. 146

Will introduce two new products: DOPRAD II super high-resolution (768 x 480) Doppler radar display unit with pan, zoom, and fast frame looping for time lapse animation, plus sophisticated graphics features; and the RCD-1000 low-cost remote radar display unit, featuring six calibrated color rainfall rates, pan and zoom, flashing levels, and automatic time lapse. The DOPRAD I Doppler weather radar system will also be shown.

ADVANCED MUSIC SYSTEMS 1330

Will show its line of digital audio processing equipment, including stereo digital delays, digital reverb systems, and the A/V sync audio delay compensator for video synchronizers.

AEG-TELEFUNKEN 124

Will show its 100W and 500W solid-state transmitters, CCS-100 coaxial changeover unit, and the line of radio equipment.

A.F. ASSOCIATES 1609

New products will include the AFA commercial compilation system, which enables automatic assembly of daily spot, promo, or continuity reels utilizing existing VTRs; a new line of standardized mini-mobile units for ENG and EFP; and the AVS 6500 digital standards converter. The company will also exhibit ADM audio consoles and DAs, the full line of AVS standards converters, the Marconi CCD telecine, and Sharp color cameras and monitors, in addition to featuring its turnkey sys-

tems engineering services for studios, production and post-production facilities, corporate video centers, duplication facilities, and custom mobile units. *See ad page 162-163*

AGFA-GEVAERT 1608

Major new product introduction will be the Broadcast Plus one-inch Type-C videotape available in flame retardant shipper in sizes from 34 to 108 minutes. Will also show several recent additions to the range of videotapes, including 12 new products in the Beta/VHS line and four in the U-Matic line. New half-inch tapes are Beta L750 and VHS T160 packaged cassettes and bulk duplicator tapes T15, T45, T130, T135, T140, T150 and T160 for Beta and L435, L560, and L625 for VHS. The four U-Matic products are packaged KCA5 and KCA20 cassettes and bulk KCA40 and KCA50 tapes. The established line of Broadcast Plus U-Matic videocassettes and professional half-inch tapes will also be featured.

ALAMAR ELECTRONICS 1507B

Will introduce the MC-3 sequencer automation system, a time code-based system with directories on disk. Introduced in conjunction with the new 3000 will be the new SC-1000 machine controller with SMPTE reader/generator. The established MC-1000 tone-control automation system will also be featured.

ALDEN ELECTRONICS 1785

Newest item will be the Model C2000D/C color weather radar, developed specifically for the radio industry, which accesses NWS radars via a direct or dial-up telephone line. Will also show the full line of color weather display systems, including the C2000R system for live pictures from NWS RRWDS radar transmitters, the C2000S satellite/graphics system, and C2000R/S, combining the features of the first two.

See ad page 211

ALEXANDER MFG. 1714

Will exhibit its line of television batteries, battery chargers, and tri-analy-

zers, plus communications batteries for two-way radios.

See ad page 198

ALLEN AVIONICS 1627

Will show its hum coils and eliminators, Gaussian video filters, the MVFL Series filters, and rack-mountable and standard video delay lines.

ALLIED BROADCAST EQUIPMENT 639, 645

Will feature the Compusonics DSP-2000 computerized audio system, based around the DSP-2002 computer audio console for professional radio and television broadcasting. The DSP-2002 is designed to perform the functions of conventional cart machines with the additional benefits of digital sound quality, random access, and interactive editing. Recording time ranges from 30 to 960 minutes in stereo, depending on the number of storage modules.

ALLIED TOWER CO. 409

Will show its line of towers.

ALLSOP 1177

Will introduce the new 62000 and 63000 cleaners for VHS and Beta videotapes, compatible with Recam and Betacam formats. The Model 67000 pneumatic cleaner will also be shown with some new features.

ALPHA AUDIO 210

Will feature Sonex acoustical foam.

See ad page 112

ALPHA VIDEO 1790

Plans to unveil a new high-band, direct color conversion recording process that will automatically sense what type of prerecorded tapes are in use. A new time code restripping function with zero offset, operating with time code from a Sony BVU-800, will definitely be introduced. Will also feature conversion of alphasized Type 5 Sony recorders to BVU-800 standards.

AMBER ELECTRO DESIGN 422

Will introduce the Model 5500 programmable distortion and noise measurement system, completely automatic and computer-controlled, with fully balanced inputs and outputs with +30 dBm output capability. The established 3501 distortion and noise measurement system will also be on view.

FOR MORE INFORMATION
on products advertised in this
issue, use the Reader Service
Card.

The Abekas A42 Video Slide Projector.

We revolutionized the digital still store business in 1983 with our A42 Video Slide Projector. And we let you juggle over a thousand images with cost-effective ease.

But we haven't been standing still when it comes to this system. Now, the A42 offers a new library system with alphanumeric search capability, so you can find what you need even faster.

The A42 system offers an advanced combination of 5¼" Winchester disk drive and full bandwidth video processing. A42 features include: on-line image storage expandable to 1050 frames/2100 fields, adaptive digital signal processing, superb multi-generation capability for graphics composition, off-line storage on ¼" digital tape cartridge, and single- or dual-channel configuration.

If you want a powerful digital still store system at your

fingertips, take hold of our feature-packed Abekas A42. For details contact: Abekas Video Systems, Inc., 353A Vintage Park Drive, Foster City, CA 94404. (415) 571-1711.



Abekas

Video Systems, Inc.

Visit us at NAB Booth 1228A.

Circle 189 on Reader Service Card

IMPROVE YOUR IMAGE JUGGLING ACT



AMCO ENGINEERING CO. 1218

Will introduce the new BDS10 panel-mounted blower with solid-state speed control, which delivers a range of 560 to 700 SCFM with a speech interference level of 58 to 62.5 dB. Also new will be the BRDSPM dual scroll blower with variable speed control. The company's new EMI/RFI test laboratory will be described, along with the full line of electronic enclosure and cooling systems.

AMEK CONSOLES 1620

New consoles to be introduced will include the TAC MX broadcast production mixer in a 16 by 8 by 2 configuration (from \$9500) and a 24 by 16 by 2 model (from \$12,500); the BCO1 2 Series compact ENG or teleproduction mixer with up to 16 VCA stereo inputs and two or four outputs; and the M1000 2 Series teleproduction mixer with up to 36 VCA stereo inputs, 10 VCA outputs, eight sends, and eight returns. Amek will also show its established Angela, M2500, and Matchless teleproduction consoles.

AMERICAN DIVERSIFIED 176

Will introduce a new national paging / distribution / message service, plus data transmission.

AMERICAN IMAGE PRODUCTIONS 653

Will introduce the Airwaves sales/production library; new TV promo campaigns for radio, "Urban Connection" and "We'll Make Your Day"; and new promo campaigns for TV, "We've Got a Feeling" and "This is the Place." Will also show its established sales/production libraries.

AMERITEXT 808

Will show new editing and frame creation equipment for World System Teletext. The new Taft/SSS Electra teletext service will be on display, along with World System Teletext receivers from Sanyo, Zenith, Greendale, and others; IC chips for World System Teletext and Mullard and Signetics; and information on ITT digital teletext chips.

AMPEREX ELECTRONIC CORP. 1412

New tubes will include: XQ4087 half-inch high-stability diode gun Plumbicon; XQ4187 3/8-inch high-stability di-

ode gun Plumbicon; XQ3457 3/8-inch mixed field diode gun Plumbicon; XQ3467 3/8-inch electrostatic focus Plumbicon for low-cost, high-performance cameras; YK1233 and YK1263 high-efficiency klystrons; and 9018/YL1631 tetrode and cavity for TV and AM broadcasting. Will also display the full line of Plumbicon camera tubes, transmitting tubes, and high-efficiency klystrons.

See ad pages 222, 223



Ampex ADO 2000 effects system.

AMPEX CORP., AVSD 1400

Will introduce a brand-new editing product: ACE Micro, an off-line editing system fully disk and data compatible with existing editing systems but designed for five-machine (any serial interface VTR, switcher, etc.) off-line decision making. Also brand-new will be ADO-2000, a digital effects system designed for live, on-air use. It features 30 preprogrammed effects loaded from a disk, with 10 effects registers capable of single-pushbutton effects positioning (i.e., over left shoulder) for news applications. The basic under-\$75,000 system is completely modular, and can be simply upgraded to a full ADO system. ADO-2000 also has a serial interface, allowing it to be controlled by any switcher; but a new "intimate interface" with the AVC switcher line allows it to be controlled directly from the AVC's control panel, using the same joysticks and positioners as for regular effects. The AVC switcher will also receive a brand-new set of effects patterns, many addressable down to the individual pixel level. Outstanding features include extensive bordering capability, including border tracking for proportional borders as the image shrinks and soft borders up to 80 percent of the raster, plus border around an ADO compressed image. Ampex will also have a spectacular new effect, Dimension, for the ADO, a software and hardware addition to the ADO combiner which allows up to four channels to be completely independently manipulated in any dimension in the same image; most spectacular effect of all is achieved when image planes slide through one another. Ampex will also

have a production model of its Spectra-key color correcting chromakeyer, which keys on any color signal and is fully integrated into the AVC switcher—priced at only \$8000 for the basic keyer, plus \$650 per input module. Last but not least, Ampex will introduce a new \$10,000-\$15,000 16-input audio mixer, designed specifically for television post-production audio applications. Driven directly by a switcher, it features full AFV and breakaway mode, with either two-channel or stereo output. Other products will include the NAB premiere of the VPR-6 VTR, plus the AVA-3 and ESS-3.

See ad pages 21, 207

AMPEX CORP., MAGNETIC TAPE DIV. 1400

Will feature Ampex professional broadcast one-inch helical videotape and 3/4-inch U-Matic videocassettes.

See ad page 90

AMP SPECIAL INDUSTRIES 634

New items will include AMP commercial BNC hex crimp connectors, crimpable in standard hex crimp tooling, and cable shielding hardware for ribbon cable and socketed shielded cables. Will also show the line of circular metal shell connectors for power and lighting applications and insulation displacement subminiature D connectors.

AMTEL SYSTEMS 1745

Will introduce the Chaser, an audio-to-video or video-to-video chase synchronizer, with features including protocol translation for tape machines and edit machines. EV-Block, a modular time code system, will make its first NAB appearance with newer modules. The complete line of time code peripherals for longitudinal and vertical interval time code will also be shown.

ANCHOR SYSTEMS 1618C

Will introduce the AN-1000 35 W monitor built for audio editing. Will also introduce the new Anchor 101 reduced-cost, basic power monitor. The 100 and 200 Series power monitors will also be shown.

ANDREW CORP. 1201A

New microprocessor-controlled, dual-band, receive-only earth station systems for television and radio broadcasters will be introduced at the show. Other featured products will include the Trasar UHF TV transmitting antennas with single, dual, or circular polariza-

The Abekas A52 Digital Special Effects System.

Take the controls of our A52 Digital Special Effects System. And let your fancy fly. Your video will be limited only by your own imagination.

The A52 offers a striking combination of simple, yet powerful, programming techniques and effects editing capabilities.

Your A52 can be configured to accommodate up to

four control panels and two channels. Assign any control panel to any channel. A52 features include: extremely high signal transparency, smooth picture movement, a powerful control system for on-air and post-production activities, simplified operation, a wide variety of special effects, and unique DataKey* off-line effects storage.

If you have powerful picture manipulation on your

mind, think of the Abekas A52. For details contact: Abekas Video Systems, Inc., 353A Vintage Park Drive, Foster City, CA 94404. (415) 571-1711.



Abekas

Video Systems, Inc.

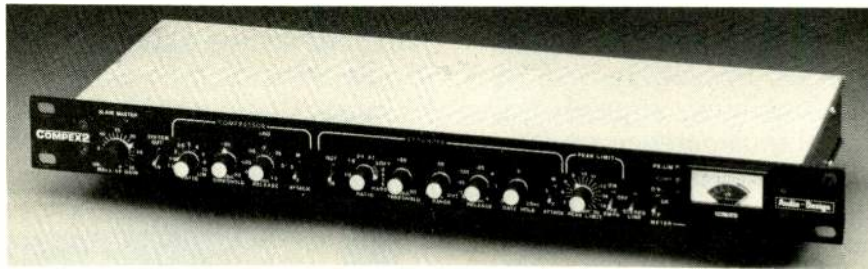
Visit us at NAB Booth 1228A.

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*TM of DATAKEY, Inc.

STRETCH YOUR VIDEO IMAGINATION





Calrec's Compex 2 compressor/expander.

tion; high-power circular waveguide systems for UHF-TV; rigid coaxial transmission lines; complete receive-only and receive/transmit earth station systems; concrete and fiberglass equipment shelters; Helix coaxial cables and waveguides; microwave STL links; and complete program management and field service capabilities.

ANGENIEUX 1201

New lenses will include a 14x9 f/1.6 9-126 mm for ENG with 2X range extender; a 25x7.5 EFP lens for CCD cameras; 15x13 HP and 25x10 HP broadcast studio lenses; and new lenses for 30 mm and 25 mm format cameras.

ANTON/BAUER 1337

Will introduce Ultrakit, a complete 12 V self-contained portable lighting kit; MSF mobile fast charger that operates on 10-15 V dc for one-hour fast charge or 16-hour overnight charge; Micro-Phase adjustable black burst generator that adds genlock to any Anton/Bauer MicroControl unit; and LightLink fiberoptic linking system, sending genlock, intercom, camera control, and video over one lightweight optical cable up to 1 km. Also on view will be the line of Snap-On Nicad and VTR batteries; silver battery systems; ac power supplies; diagnostic battery evaluation unit; universal Black Beauty light head; universal battery belt; MicroControl compact camera control unit; Lifesaver Nicad chargers; and UltraLight portable lighting system.

See ad page 205

ANT TELECOMMUNICATIONS/SOLWAY 2345

Will demonstrate the Newswire 200 computerized newsroom system with a live presentation of its wire-handling, text editing, and telecommunications capabilities and database. ANT's telco switching and audio-routing automation system will also be presented. Also featured will be a live demonstration of

the telcom c4 professional noise reduction system for VTRs, ATRs, satellite, microwave, and live transmissions.

See ad page 202

ANVIL CASES 1112

Will bring rack-mount cases in addition to its complete line of custom and standard cases for video, broadcast, and professional audio equipment.

APERT-HERZOG CORP. 1703

Will introduce The Step, a new device for edit decision assistance that stores up to 32 frames of video, up to four seconds of audio, and time code for both. The monitor displays 16 frames of video at once in a four by four format, allowing rapid location of desired frames. Also on view will be the Models H and H2 TBC/synchronizers, the VBB-1 video line driver, and a one by 24 video DA combining 12 VBB-1 hybrids in a single chassis.

APHEX SYSTEMS 513

Will unveil several new products, including the Dominator intelligent multiband audio processor for broadcast; the Compellor Model 301 single-channel version of the Compellor; the Model 9001 Aural Exciter, a modular (dbx rack) version of the Aural Exciter; the Model 9004 mic preamp, ultra-high quality in a modular format; and the Model 402 self-powered mic preamp in a two-channel, rackmounted package. Established products on view will include the Aphex II Aural Exciter psychoacoustic audio enhancer and the Compellor Model 300 program-controlled compressor / leveller / peak limiter.

APPLIED DIGITAL TECHNOLOGY 1730

Will feature its Relecon remote level control for frame-accurate color balance and video processing.

ARBITRON RATING CO. 802

Will describe its ratings services.

ARRAKIS SYSTEMS 211

Will introduce two new audio consoles, the 150 Series and the 1200 Series. The line of consoles, routing switchers, and studio furniture will also be exhibited.

ARRIFLEX CORP. 1421

Will introduce the new ArriLite 600 portable tungsten light and the final production model of the VAFE videotape editing system for on-camera film use, in addition to the established range of 16 and 35 mm film cameras, camera support, and lighting equipment.

ARTEL COMMUNICATIONS CORP. 1163

Will demonstrate its SL3000 family of fiberoptic systems for video, audio, and high-speed data transmission. New family products will include single-mode laser FM systems and LED-based systems. Also featured will be the established SL2000 LED-based fiberoptic systems.

ASACA/SHIBASOKU 1017

Will unveil a new digital still store system, plus an upgraded video cart system holding up to 600 carts. Also new will be a standards conversion system for PAL, SECAM, and NTSC, a stereo TV sound signal generator, an array of HDTV equipment, plus a variable line rate encoder. The established product line will also be shown, including ShiBaSoku monitors and test equipment.

See ad page 215

ASSOCIATED PRESS 419

Will discuss its various news services.

ASSOCIATED PRODUCTION MUSIC 150

Will feature its line of production music libraries for broadcast, video and A/V production, and cable, with 75 new albums since last year's show.

ATI-AUDIO TECHNOLOGIES 420

Will introduce the MM100 Match-Maker bidirectional IFH to 600 ohm level and impedance matching interface for matching consumer recorders into professional system; and the new DP100 Disc-Patcher, a unidirectional IFH to 600 ohm interface to match compact digital audio disc players into broadcast systems. The line of phono preamps, phono amps, mic amps, line-buffer amps, and audio DAs, LED audio level meters, and the modular audio distribution system will also be featured.

The Abekas A62 Digital Disk Recorder.

Now's the time to put your animation on a smoother, faster track with the Abekas A62 Digital Disk Recorder. Use our new single-frame editor for all the demanding requirements of animation and video disk mastering that even the highest performance videotape recorder can't satisfy.

Our compact A62 offers you fast, simple editing of anything. Simultaneous record/playback and the internal digital matting let you create clean, multi-layered images. The A62's random access capability, plus its ability to be controlled by an editor, makes for fast on-line editing.

Become much more animated fast with the new

Abekas A62 Digital Disk Recorder. For details contact: Abekas Video Systems, 353A Vintage Park Drive, Foster City, CA 94404. (415) 571-1711.

Abekas

Video Systems, Inc.

Visit us at NAB Booth I228A.

Circle 191 on Reader Service Card

BECOME A LOT MORE ANIMATED



AT&T COMMUNICATIONS**407**

Will describe its program distribution, promotion management, teleconferencing, and information management via data services.

AT&T INFORMATION SYSTEMS**1429**

Will discuss its System 85 private branch exchange, an integrated business system with voice, high-speed data, sensor-based energy and security management, office applications, and network capability in a single system. It also comes in an enhanced version with eight times the capacity of the basic version. Also on view will be the Merlin communications system for small businesses, portable entry terminals, and the Horizon communications system.

AUBURN INSTRUMENTS**1711**

Will show its established MC/1 machine remote control system for use with all types of broadcast and production equipment.

AUDICO**1343**

Will show new videocassette labels on pressure-sensitive sheets for U-Matic, VHS, and Beta, suitable for printing, typing, and photocopying, along with a new cue-tone videotape loader that transfers shorter program segments already multiduplicated on pancakes of full-length cassettes directly into U-Matic, VHS, and Beta cassettes and one-inch reels. Other equipment will include the line of videotape loaders, videocassette rewinders, and audiocassette loaders, rewinders, timers, and labels.

AUDI-CORD CORP.**123**

Will introduce the E Series cart machine, an upgraded version of the economical A Series with extensive internal redesign. The S Series mid-priced cart machines and the twin-deck TDS will also be shown.

AUDIO BROADCAST GROUP**637A**

Will feature its human-engineered studio system, featuring contemporary low-profile wood cabinetry and clean, functional styling. System includes an Auditratics 200 console, Technics turntables, Sony dual compact CD player, and Studer recorders.

AUDIO & DESIGN/CALREC**402**

Will show a variety of new products, including, from Calrec, the M Series minimixer, a rackmount model with up to 16 inputs, and UA8000 production mixing console; and from Audio & Design, the Scamp four-band compression system, Scamp Filmex four-band noise reduction system for old movie tracks, Compex 2 compressor/peak limiter/noise expander/gate, F601 music/voice over limiter, and Ambisonic Surround Sound system. Other products on view will include the F769 Stresser, the Soundfield microphone, the Scamp modular processing system for studio production, Scamp DA modules, Calrec condenser mics, Fropak level matching interface, Ampak 8 monitor amp, and TCR 1 portable time code reader.

AUDIO DEVELOPMENTS**1743****AUDIO ENGINEERING ASSOC.****174**

Will introduce the AEA-MS 38 stereo box with MS stereo, XXY stereo, and dimension variable control. Other new products will include the SMPL low-cost sync system from Synchronous Technologies and the Studio Technologies stereo simulator, which folds into mono with no loss of signal quality. Will show its established line of multi-track mixing consoles, tape machines, and audio/video synchronizing equipment from BTX, Otari, and Synchronous Technology, and describe its studio design consulting services.

AUDIO KINETICS**1173**

Will feature the new Timelink electronic gear box, the MasterMix console automation system, and the Q-Lock audio/video synchronizing system.

AUDIO METRICS See RADIO SYSTEMS**AUDIO PRECISION****325**

New company at its first NAB show, will introduce a state of the art PC computer-based automatic audio test system. System One is completely automatic, and allows the user to sample the signal, analyze it, and display the graphed result on the computer's screen using simple menu prompts to set up the test procedure. Test tolerances are said to be extremely precise, and to be the best that are currently available. The system is fast and simple to operate, with menu-driven software that does not require programming. The modular system comes in different configurations for various testing needs and offers modules and options that can be added in the field. A "typical configuration" including high-level balanced generator and measurement modules for level and frequency runs \$5225.

AUDIO-TECHNICA U.S.**1141**

Will introduce the new ATH-V7 open-back mic 250 ohm studio headphone; the ATH-M7 closed-back mic 250 ohm dynamic studio headphone, the ATH-M2 150 ohm dynamic studio phone, and the AT-RMX64 six-channel mixer/recorder, with balanced inputs and four-channel record capability. Established products will include the Unipoint Series, the 800 Series mics, and the full line of tone arms, cart-ridges, and mics.

*See ad page 221***AUDIO VIDEO CONSULTANTS****234****AUDITRONICS****505**

Will demonstrate new features for its 300 Series audio production console (introduced last year), including a drop-in version for custom installations; also new accessories for the 200 Series on-air broadcast control console and 1100 Series audio accessory system, and a new high-quality audio mixer for ENG and remote use. Established products will include the 200 and 300 Series consoles, the 1100 Series audio accessory system, and RTW PPM meters and phase meters.

*See ad page 4***AURORA IMAGING SYSTEMS****1312**

Will unveil the AU/100-QCR—Aurora/Matrix QCR D4-2 interface—for high-resolution film output (2048 or 4096 lines). Will also show its computer videographic systems for anima-

KEY TO BOOTH NUMBERS

100-999 Radio Hall Exhibits

1000-1999 TV Hall Exhibits

2000-2999 Hilton Pavilion Exhibits



Shure's new FP31 Mixer takes a big weight off your shoulders.

Introducing the most innovative field production mixer of its kind. Shure's FP31. You won't find another mixer this small with these features, dependability and ease of operation.

The FP31 measures only 6⁵/₁₆" x 5⁵/₁₆" x 1⁷/₈", and weighs just 2.2 pounds! Incredibly, it offers the same important features as much larger mixers. Plus, a few of its own.

Every channel has a mic/line level and a low-cut filter switch. And to prevent overload distortion, there's a built-in limiter with adjustable threshold.

The FP31 can be powered by two internal 9-volt batteries, or from an external 12-volt source. A green LED flashes to remind you that the mixer is on. Phantom and A-B power are also provided to operate lavalier and shotgun microphones.

A slate tone can be laid

down on the tape for locating specific takes, and there's also a built-in mic for voice slating.

The mixer also has two separate mic/line outputs for 2-camera shoots and a tape output to feed a cassette. For monitoring, there are two stereo headphone jacks—one 1/4-inch and one for miniplugs. The FP31's rugged nylon carrying case allows you easy access to every mixer function and lets you piggyback the mixer on your VCR or other equipment.

For ENG, EFP and film use, Shure's FP31 has everything you need to make your mix a perfect success. Coming from a mixer this small, that's quite an accomplishment.

For more information on Shure's FP31 Mixer, call or write Shure Brothers Inc., 222 Hartrey Ave., Evanston, IL 60204, (312) 866-2553.



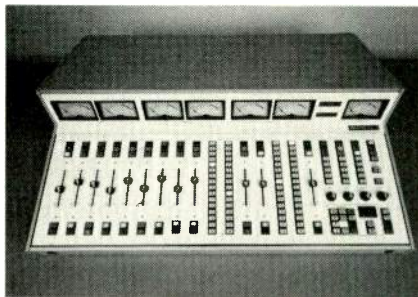
SHURE®

THE SOUND OF THE PROFESSIONALS®...WORLDWIDE

tion, painting, drawing, font generation, and weather graphics, along with two-plane animation, cel animation, hard copy output, and weather/sports display options.

AUTOCUE 1318A

Will show its Model 2000 memory prompter and on-camera prompter with trapezoidal mirror.



Microgram console from Autogram.

AUTOGRAM CORP. 120

Will feature its audio console line, including the AC-6 (six pots, 23 stereo inputs), the AC-8 (eight pots, 26 stereo inputs), the IC-10 (10 pots, 28 stereo inputs), and the Microgram, with up to 64 stereo inputs, three stereo and one mono outputs, fully microprocessor-controlled with a variety of advanced features including automation.

AVANTEK 1742

Will show its AR-2000 earth station video receiver for simultaneous reception of multiple channels. Also the full line of earth stations, LNAs, downconverters, signal distribution components, satellite station receivers, and CATV test equipment.

AVO LITES 1125

Will feature its lighting control systems for TV, computer-controlled lighting consoles, multichannel lighting controls, dimming systems, and multichannel computerized memory motor control systems.

WILLIAM BAL CORP. 1614

Will introduce a new line of Survivor shipping cases with additional sizes and new styling, plus new sizes in the Silverline case family and a new line of tube cases for tripods, etc. Booth will also feature the full line of carrying cases.

BARRETT ASSOCIATES 107

Will feature its line of fully remanufactured used broadcast equipment, along with its turnkey station and studio

construction and appraisal services. Will also show Versacount exciters, STLs, and transmitter remote units; Conex cue/monitor systems, tone generators, and sensors; and Zercom "Maxitel" sports and client remote broadcasting units.

BASYS 1129

Will introduce the Basys Basic computer news system for bureaus and small stations, using the IBM PC-AT personal computer to power up to six work stations or devices, giving instant access to wire services and past stories. Other features include split-screen facility and automatic generation of prompter copy. The company will also show its full line of newsroom and weather computer systems.

See ad pages 193, 267

B&B SYSTEMS 1336

Will introduce the TV industry's first stereo audio phase verification system, which shows on a CRT the relationship between the different audio channels. The AM-3 provides three channels of audio monitoring.



AM-3 audio scope from B&B Systems.

BEAVERONICS 1313

Will introduce several new timing products from Favag, including the ZQMS-Z dual master clock system with automatic pulse sensing and changeover; the PR-80 seven-day microprocessor-controlled programmer with both permanent and temporary memories; the E-80 low-cost master clock; and the BI-3.5F color subcarrier countdown generator for synchronizing Favag clock systems to the rubidium standard. Other featured products will be Beaveronics' Model 154 and 412 video production switching systems; the DSK-4-DL downstream keyer providing multiple keys with matte, border, and outline capabilities; and the line of Favag master clock systems.

BELAR ELECTRONICS 203 LABORATORY

Will introduce new television aural modulation monitors for BTSC multi-

channel sound. Component units include baseband monitor, stereo program monitor, SAP monitor, and pro channel monitor. Other items on view will include the line of AM, FM, and TV frequency monitors and AM, FM, FM stereo, and SCA modulation monitors.

See ad page 260

BELDEN COMMUNICATIONS 1640

Will bring the Modulight convertible softlight for 1 kW to 16 kW operation and the Lee 8 kW HMI, along with the Lee 200 W portable sun gun, the Lee filter line, resin camera filters and polyester photo filters.

BELDEN CO. 166

Will show its lines of audio and video cable.

BESTON/McINNIS-SKINNER 1638

Will show new high-resolution, 1920 pixel capability for its Weathergraphics digital graphics system, first seen at RTNDA. The Newscan newsroom computer system, weather graphics system, character generator line, and Dataprompter will all be featured items.

BEYER DYNAMIC 426

Will introduce the HM 560 headset mic, a broadcast-quality ribbon mic with headband that is also available as the Model M 560 boom without the headband. It is designed for use with the DT 100 and DT 102 single- and double-muff headphones. The full line of condenser and dynamic mics, accessories, and professional headphones will also be shown.

See ad page 259



BGW Model 85 power amp.

BGW SYSTEMS 421

Will pull the wraps from the Model 85 stereo broadcast audio power amp, a single-rack unit that puts out 35 W per channel. Features include toroidal



Team Up With SATICON®— Hitachi's All-Star Lineup

Hitachi pioneered SATICON pickup tubes. In 1975 we were the first to market them, and we've been improving the technology ever since. So it's no wonder that our SATICON team is leading the league as one of the world's most popular brands. To date, we've produced more than 2 million units for broadcasting, professional, and home video use. They provide superior resolution and enhanced color reproduction, whether you shoot with ENG or EFP cameras, portable or studio models.

Unique Features

Hitachi's own techniques yield high-precision evaporation and a doping process that produces a photo-conductive film with only infinitesimal

amounts of impurities. This means decreased highlight sticking and improved after-image characteristics. And the capacitance of this film is just two thirds that of conventional types, yielding better low-lag quality.

Full Range

Hitachi makes a full range of league-leading SATICON tubes with outstanding characteristics. Like the newly developed H4186. It's so advanced that it can be used for high-definition TV. And the H4195, the world's first 5 MHz 2/3 inch, high-resolution tube for home video use. Just consider our line-up:

Application	Broadcasting Use			Professional Use			Home Video Use		
Type No.	H4186	H9387D	H4126	H9324	H4101B	H9382	H4195	H4183	H4130
Diameter (mm)	25	25	18	25	18	13	18	13	11
Overall Length (Max. mm)	163	163	90	162	108	95	114	85	75
Focusing & Deflection Method*	M-M	M-M	M-E	M-M	E-M	E-M	E-M	E-M	E-M
Limiting Resolution (TV lines)	1,600	1,200	1,100	1,000	800	700	400	300	240

*M: Magnetic E: Electrostatic

So for clear, sharp pictures, with realistic color rendition, broadcast with the all-stars ... the Hitachi SATICON team.

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power transformer, discrete circuitry, and front panel mounted magnetic circuit breaker. Also on display will be BGW's five lines of audio power amps.

BIRD ELECTRONICS 1625 CORP.

New items will be 15 kW and 25 kW forced-air cooled, dry load resistors, "reject loads" for dual transmitter installations to 96 kW peak. Exhibit will also feature the line of instruments and components for RF power measurement, including RF directional Thru-line wattmeters; 2 W to 80 kW heat-exchanger loads; field-replaceable water-cooled loads and air-cooled line terminations; digital calorimeters; RF Power Analyst models for TV, FM, and SSB; 1, 10, 25, and 50 kW Calorimetric self-cooled load system; rack-mountable wattmeter panels; and relative field-strength plug-ins for Thru-line wattmeters.

BIW CABLE SYSTEMS 1405

Will feature its line of TV camera, VTR, triax, and fiberoptic cables and assemblies; armored VTR cable assemblies, quick-disconnect cable assemblies, and factory repair of cable.

BLACK'S COMMUNICATIONS CONSULTANTS 657

Will introduce the new Proposal Writer software package, designed to allow video dealers, consultants, and systems designers to price complete equipment systems quickly. *Search and Compare*, the software buyer's guide, will also be featured.

BOGEN PHOTO 1705

Newest items will be the Mini Clamp, a lightweight, sturdy clamp that opens to 1½ inches for studio and location use, and several black anodized-finish tri-



Bogen black-finish tripods.

Pods, including models in the 3211 and 3221 Series. Display will also feature the full line of tripods, fluid heads, dollies, and video accessories including TSE cases, clamps, gaffing equipment, and the Hi-Glide light rail system.

BOGNER BROADCAST EQUIPMENT 1319

Will feature its line of high-power antennas, up to 250 kW, including the recently introduced B24U high-gain antenna, plus the line of radio base station antennas for mobile and cellular radio.

ROBERT BOSCH CORP. 1603

Will introduce the new BCF 9/10 field editing unit for the Quartercam system; new controllers for the TAS/TVS 2000 distribution switcher; and new software for the FGS-4000 graphics system, including a new animation editor capable of adding new objects to an existing animation, and smooth shading software to edit and render smooth shaded objects. Other featured products will include the FDL-60 film transfer unit and FRP-60 color corrector; the KBF-1 Quartercam 1/4-inch recorder/camera;



Bosch FGS-4000 graphics system.

the FGS-4000 computer graphics system; the MCS-2000 master control switcher; the TAS/TVS 2000 distribution switcher and distribution control panels; the MC-BA 51 and 37 color monitors; the R102 ME, R61 ME, and R51 ME production switchers; and the BCN-51 one-inch VTR.

See ad pages 41-44

BOWEN BROADCAST SERVICE 1770

Will offer a new optical isolator kit for the RCA TCR-100 cartridge machine, designed to isolate remote-control connections from machine wiring and thereby help eliminate operating problems due to crosstalk into remote-control cables.

BRADLEY BROADCAST SALES 186

Will introduce the new Telos 10 digital telephone hybrid to its full line of broadcast equipment.

BRETFORD MFG. 183

Will introduce the VTRC90 video security center, a cabinet with open-leg design, adjustable monitor shelf, cord organizer/modesty panel, three-outlet electrical assembly with 20-foot grounded cord, foldback oak laminate doors, and casters. Also on view will be the line of video security centers, TV/VTR cabinet stands, TV wall/ceiling mounts, mobile equipment tables, and adjustable tables and cabinets.

BROADCAST AUDIO CORP. 319

BAC's modular audio console line is now available with a unique rear-mounted peak overload system that illuminates the red area of the VU meter face with high-intensity focused LEDs. Several models now feature an optional active balanced mic input. The line of monitor amplifiers, phono preamps, and distribution amps will also be displayed.

See ad page 252

BROADCAST CARTRIDGE SERVICE 611

BROADCAST ELECTRONICS 303

New products will include the TZ-30 TV stereo generator, the AX-10 AM stereo exciter, the 160 Series audio console, and the 260 Series audio console. Existing BE products on display will include the line of single-deck, three-deck, and five-deck cart machines; the Series 350 vertical attenuator 10 mixer; the Control 16X microprocessor control program automation system for radio programming, SAT-16 for satellite programming, and Econo-16; a full line of FM transmitters, exciters, stereo generators, and SCA generators; and studio equipment including two- and three-speed turntables, tonearms, and preamps.

BROADCAST MICROWAVE SERVICES 1749

Will unveil the GCA-4, a helicopter video transmission system that utilizes two independently LORAN-controlled high-gain antennas, one receive and one transmit, for the longest possible trouble-free live relays. Also new will



STABILITY

With ten years of service and dedication to quality, Centro has provided the production and broadcast industries with the ultimate in television facilities and mobile systems.

Innovative concepts, attention to detail and competitive pricing has identified Centro as the leader in facilities planning, systems integration and project implementation.

Our experienced disciplines can provide you with a single point of contact and responsibility for the design and construction of television facilities and remote units.

Centro's longevity during a time of rapid technological growth is a testimonial to our creative approach to telecommunications facilities.

Our goal for the future is to continue to provide our present and future clients with innovative solutions for tomorrow's challenges.

In order to achieve this goal, we will continue to provide you with our most valuable asset: stability.



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be a complete family of steerable and autotracker antenna pedestals, the BMA 1000, 2000, 3000, and 4000 Series. Will also exhibit the line of established portable and fixed microwave radios and antennas for TV, plus the receive site system.

See ad page 112

BROADCAST MUSIC, INC./BMI 619

Will publicize its music licensing services with an electronic billboard showing music video clips.

BROADCAST SUPPLY WEST 112A

New items will include Prorax compact disc racks (wall racks holding 20 CDs and a two-sided carousel holding 40); Prorax two-sided carousels in four new sizes for 40, 160, 200, and 400 broadcast recording cartridges; and two new sizes of Prorax wall racks, for 300 and 20 carts. Established products will include Probase for Technics SP15, SP25, and SP10 MKIIA turntables; Prorax 100 table or wall rack; Prorax C80 and C120 two-sided mahogany carousel racks, and Proamp stereo phono preamplifier.

BROADCAST SYSTEMS 1500

Will introduce the News Machine, a multitransport VTR system designed to provide organized playback of individual news stories, openings, closings, intros, sports, and weather summaries. It handles segments from five seconds to one hour in length and is available with up to 24 transports. Also new will be the DC-10 automatic video cart machine, which uses Betacam broadcast transports. The DC-8 automatic video cart machine with 3/4-inch transports will also be shown, with several new features, along with the Pro Pak 80 and Pro Pak 20 consoles, BJ Series prewired audio jack panels, and MC Series machine control and interface panels.

BROADCAST VIDEO SYSTEMS 1326

Will introduce several new items, including the D-1000 decoder (NTSC in to YIQ, R-Y, B-Y, Y and RGB out); component video to RGB translator; Cox 203 encoder with component video inputs; rack-mounted video delays with on-board active amplifier; Cox 600 encoded color corrector with time code control and event memory;

VIC-900 for vertical interval transmission of ID, date, time and control signals; and SA-102 portable safe area generator. Other items shown include the Electronic Visuals 4061 waveform monitor/vectorscope; Cox 660 component color corrector; component waveform monitoring; and SA-101 five-channel safe area generator.

BRUEL & KJAER INSTRUMENTS 511A

Will feature its two-channel FFT analyzer and other electroacoustic test equipment, plus microphones now available in matched pairs.

BRYSTON 517

Will introduce a new broadcast preamplifier, available with XLR-type outputs for balanced operation and available in balanced and unbalanced models. Also featured will be the line of amplifiers for studio, broadcast, line amplification, and distribution, as well as specialty products.

See ad page 260

BSM BROADCAST SYSTEMS 637

Will display its line of distribution gear, including the 1 by 10 mono and stereo audio DAs, 2 by 12 and 4 by 24 video DAs, 10x1 mono and stereo audio routing switcher, 10x1 video routing switcher with one or two levels of audio, 10x10 BCD-based audio routing switcher in mono and stereo, and 10x10 microprocessor-based audio routing switcher in mono and stereo.

B-W LIGHTING SYSTEMS 1753

Will introduce the 70-DTRS double-track rotary switch for single-switch lighting changes from one cyc track to another. The line of distribution equipment, lighting grids, cycloramas, lighting controls, luminaires, and gaffer's equipment will also be shown.

CABLEWAVE SYSTEMS 108

Will show its complete range of transmission line systems and STL microwave antennas for the broadcast industry.

CALAWAY ENGINEERING 1023

Will show two editing systems based on the IBM PC and Compaq computers. The brand-new CED portable editor ("Edits-to-Go"), using the Compaq, will be operating with three Sony Betacam recorder/players, the Grass Valley Group Model 100 video switcher, and a Graham-Patten Systems 612 audio mixer. All control is via RS-422. The CED off-line editor, using the PC, will be shown with a Sony BVU-800 recorder and three Panasonic AG-6800 playback machines, also with RS-422 control. Also on view will be the EDL-II and EDL-Express software, the upMM multiple machine interface, the upSC switcher, the upAC audio switcher interface, the upPV preview switcher and sync generator, and the upMC VTR interfaces.

CALVERT ELECTRONICS 125

Will show the RCA Saticon III camera pickup tube as well as Thomson-CSF replacement tubes for TV translators and LPTV. The full range of replacement tubes for broadcast applications, from pickup to transmitting, made by several manufacturers will be on display.

CALZONE CASE CO. 1179

Will feature its Escort Proline II and Convoy case lines.

CAMBRIDGE PRODUCTS CORP. 1328

Will introduce fast-fit, twist-on BNC and TNC right-angle connectors, and a new flush-mounted wall plate in one-, two-, three-, and four-hole versions. The line of BNC, UFH, and RF connectors will also be shown.

CAMERA MART 1018

Will exhibit a broad cross section of video and support equipment.

See ad page 66

CANARE CABLE 1732

Will have two video cables with 75 ohm impedance, plus a line of paired data cable, Model D200 (up to 32 twisted pairs with overall shield), and Model M200 multichannel audio cable, plus the Starquad audio cable.

CANON U.S.A. 1012

Will introduce three new lenses: the J45x9.5 BIE OB lens, a compact f/1.7 unit with focal range of 9.5-427 mm;

KEY TO BOOTH NUMBERS	
100-999	Radio Hall Exhibits
1000-1999	TV Hall Exhibits
2000-2999	Hilton Pavilion Exhibits

THE NEW CHYRON IV MAKES MAGIC



The electronic magic of the new CHYRON IV is at your fingertips: 512 color choices...animation...multi-color characters...independent background graphics...advanced camera font compose...digital drawing tablet...special effects...as well as the widest assortment of font styles and sizes available. And you don't have to be a magician to work the magic. CHYRON IV is still easy to use, totally versatile, and provides unsurpassed resolution. Perhaps best of all, earlier models of CHYRON IV

can be retrofitted to provide all of the features of the new CHYRON IV.

So, isn't it time to bring a little magic into your television production? Call or write for all the details on today's most sophisticated and versatile electronic graphics system. CHYRON IV. The magician's choice.

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the J14x8 BIE compact f/1.7 ENG/EPF lens; and the J8x6B, a super-wide-angle ENG lens with maximum aperture of f/1.7 and unique inner focusing system. Also new will be a line of Canon broadcast-quality tripods and dollies. Established products will include the 18X and 12X Series studio lenses; the 40X, 45X, and 25X Series field lenses; the 18X, 13X, and 15X Series ENG/EPF lenses, and a full line of accessories.

See ad page 134-135

CAT SYSTEMS 1014B

Will show its range of earth station and TV transmitter remote-control systems, with new features including light pen control of all systems, programmed-in instruction manual and HELP function, high resolution RGB output, and IBM, TI, DEC, or HP computers. New systems include the 4200 facility monitoring system, showing system parameters and RF switching schematic in high-resolution color; the 3200 security system showing premises floor plan and alarm points in high-res color, with all alarms announced and logged on printer along with response time; and the 7200 multisite distribution control system, which allows monitoring and control of all sites from multiple control points.

DWIGHT CAVENDISH CO. 442

Will introduce the new Copymaster 250 videocassette duplicator, plus a new remote machine control system for duplicators and new video/audio distribution modules.

CBS RADIO STATIONS 606

Will discuss news services including *Byline* magazine.

CBX 160

Will offer its facilities design and engineering services and mobile vehicle construction.

CECO COMMUNICATIONS 313

Will display its line of transmitting power tubes, high-power broadcast

tubes, camera tubes, color and monochrome CRTs, industrial tubes, semi-conductors, transistors, video and CCTV equipment, and microphones.

CEL ELECTRONICS 1762

The British company will feature its line of digital time base correctors, frame synchronizers, and special effects systems, tied together into a complete production package.

CELWAVE RF 202

Will show its line of FM broadcast antennas and rigid transmission line.

CENTRAL DYNAMICS 1409

Will introduce the 80 Series ICK, a new 80 Series iso key system with new RGB and encoded chromakeyers; the PGM Proc, a new 680 Series and 1080 program processor with analog key borders and soft colored wipe borders; the MC 4000 master control switcher; and the EIFS serial editor interface. Other featured products will include the CD480 and CD680 video production switcher with computer-assisted production; the SDS-2 signal distribution system; the VA 2300 video DA; the 800 VA audio and video DAs; the VS10 and VS14 self-contained production switchers; the VAS 1010 10x1 audio/video utility switcher; the VG 2210 digital sync decoder; the 900 RS routing switcher; and the DSK 2160, DSK 860, and DSK 864 downstream title keyers.

See ad page 86

CENTRO CORP. 1101

Will feature a new ENP (electronic news production) mobile unit developed for NBC News, plus its capabilities for total project coordination and responsibility for turnkey broadcast or production facilities, including facilities use analysis, site preparation or demolition, architectural design, construction, and system design and installation. Will also describe its systems design integration and installation services for broadcast and production facilities, and its mobile production and ENG units.

See ad page 149

CENTURY PRECISION OPTICS 1781

Will introduce the Periscope V16 periscope lens, designed specifically for 2/3-inch video cameras and 16 mm film cameras; it features f/3.2 1:1 relay optics, interchangeable camera mounts, and a wide variety of interchangeable

lens mounts. Also new will be a wide-angle adaptor set consisting of two precision-manufactured elements. If one element is used, wide-angle coverage of your zoom lens will increase by 30 percent; with both elements, coverage increases by 50 percent. The line of telephone lenses for video and lens accessories will also be exhibited.

CENTURY 21 PROGRAMMING 204

Will feature its syndicated radio programming services.

CETEC ANTENNAS 509

Featured new product will be the BROADCASTER CP FM community antenna system, seen in prototype last year. Aimed at FM stations needing to fulfill Docket 80-90 requirements, the antenna has greater than 23 MHz bandwidth and can carry two stations' signals at once. Also new will be an LPTV ring-type CP antenna, and a broadband CP TV highband antenna. Will also show the full antenna line, including CP, TV, and FM ring and panel types.

CETEC VEGA 1401C

Will introduce the T-84 handheld wireless transmitter with Beyer 500 ribbon mic element and the T-87 handheld wireless transmitter with Shure SM87 condenser mic element, both featuring Cetec Vega's Dynex II audio processor, which provides 100 dB or more of usable dynamic range. Established products on view will include the R-42 diversity receiver with Dynex II and new GaAsFET front end; R-41 nondiversity receiver; R-31 receiver; 66A portable receiver; 67A portable diversity receiver with Dynex II; 77 bodypack transmitter; several handheld transmitters with Dynex II; C-466A quad case for 66A receivers; and ZC-177 guitar pickup impedance converter.

See ad page 30

CHANNELMATIC 328

Will show its automation sequencers, audio and video DAs, video cart and cassette automation systems, remote control systems, and digital clocks.

CHESTER CABLE CORP. 1320A

Will bring expanded versions of the Video20 multiconductor 75 ohm video cable and Audio22 audio cable introduced last year, along with its established lines of stock and custom broadcast cable.

FOR MORE INFORMATION
on products advertised in this
issue, use the Reader Service
Card.

FILM-TO-TAPE

FOR OUTSTANDING ENGINEERING & PERFORMANCE

COLOR CORRECTORS

by

CORPORATE COMMUNICATIONS CONSULTANTS, INC.

COLOR CORRECTION

Recipients of

The Academy of Television Arts & Sciences'

*Outstanding Achievement in Engineering Development Award **



NAB BOOTH
#1161

* An award to an individual, a company or an organization for developments in engineering which are either so extensive an improvement on existing methods or so innovative in nature that they materially affect the transmission, recording or reception of television. CITATION TO CORPORATE COMMUNICATIONS CONSULTANTS, INC. for* THE SYSTEM 60XL Color Correction System, a device that improves broadcast quality of film on television.

TAPE-TO-TAPE

CORPORATE COMMUNICATIONS CONSULTANTS, INC.

Manufacturers of

THE SYSTEM EBM, the first Scene-to-Scene Component Video Color Correction System, **THE SYSTEM XL II** for Flying-Spot-Scanners, incorporating X, Y, and ZS curb control, **THE SYSTEM 60XLB2** for CCD Scanners, all with Tape-to-Tape capabilities.

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HOLBROOK, NY 11741

(516) 737-0903

TWX 510-228-7416

COLOR CORRECTION

CHRISTIE ELECTRIC CORP.**1403A**

Will feature the recently introduced CASP battery charger/analyzer/sequencer/power supply for sealed nicad packs and other types of batteries, which can automatically charge, analyze, or recondition up to six intermixed batteries, unattended.

*See ad page 22***CHYRON CORP.****1610**

Will introduce new software for the Chyron IV graphics system, doubling the number of full fonts available at once to 12; a hardware change now allows an additional (third) input. New software for the RGU includes camera font compose and font scaling, which automatically resizes any Chyron-supplied or customer-created font. The Video Products line will be enhanced with a totally new product, a low-cost paint system featuring high resolution and sophisticated creation capabilities comparable to much costlier units. The VP-2 will have a new disk expansion unit for up to three drives and a new RGB interface, plus new software features including an increased color palette, increased roll buffer, and other creative and editing-type features. The VP-1 character generator will also be displayed.

*See ad page 151***CINEMA PRODUCTS CORP.****1301**

New products will include a production model of the Mini-Mote remote-controlled pan and tilt head; new Camera/Lens Control System for film and video lenses; Cinevid Plus image enhancer for film camera video assists; new CP Co-Ax Digital Remote Control system for Ikegami HL-79E cameras; Steadigate film gate conversion for Rank Cintel telecines; CP/Tiltplate for geared and fluid heads; WRC-3A wireless lens control systems; and Steadicam adjustable load capacity arm. Established products on view will be the Steadicam Universal Model III; Camraprompter and Camraprompter L prompting systems; "Film Style" Studio Rig; Mini-Worrall geared head; J-6 joystick zoom control; GSMO 16 mm cine camera; CP Co-Ax Digital Remote Control; RDS/HMI Uni-Focus 200 W lighting system; and Universal matte box systems.

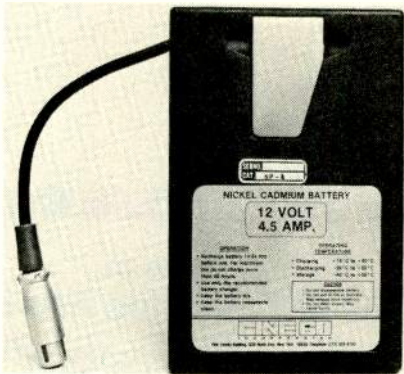
CINEMILLS CORP.**1140**

Will bring its line of lighting equipment

from Daymax, Cine 60, DeSisti, Lee, and others.

CINE 60**1423**

Will premiere an exclusive, modular on-board camera battery as a direct replacement for OEM conventional batteries. Also new will be a Betacam battery providing more than three times



New Betacam battery from Cine 60.

the power of the Sony NP-1. Other products will include switchable battery belts and packs for alternately powering 14 V video equipment or 30 V camera lights; in-line battery voltage reducer; multirate Lifeguard fast charger; 30, 14.4, and 12 V Sun-Guns; miniature 12 V camera lights; pocket-sized dual-channel BP-90 battery overnight chargers; mobile 12 V dc one-hour fast chargers; dual battery pack systems; and improved battery dememorizer.

*See ad page 269***CIPHER DIGITAL****1606**

Will introduce the Model 716A time code generator with continuous/jam momentary sync and selectable +/-30 frame rate; the Model 710A-100 full-function time code reader; and the Model 700A time code reader with quad keyer/character inserter. Established products on view will include the Model 735V time code reader/character inserter, the 735L time code reader with LED display, the 735CD reader with eight-channel event controller/coincidence detector, the 710A full-function time code generator, and the 766 full-function time code generator for use in vertical interval formats. Will also show line of synchronizers including Shadow II. Also featured will be the Softouch editing system and the Shadowmaster software package.

*See ad page 26***CIRCUIT RESEARCH LABS/CRL****300**

Will have some new products for the

audio processing field, along with the new high-quality SG-800 stereo generator, which will be demonstrated with an oscilloscope.

*See ad page 109***CLEAR-COM****1502**

Will introduce the CP-300 portable remote station with two channels on a single mic cable, switchable between Clear-Com and RTS operation; and the



Clear-Com CP-300 intercom station.

TW-12 interface device that allows Clear-Com-type intercom systems to be interfaced to RTS-type intercom systems. Established products on display will include the MS-808 mainframe with up to eight intercom and eight IFB channels.

*See ad page 248***CMC TECHNOLOGY CORP.****1425**

New product will be the Videomax TD-600 bulk tape demagnetizer for all one-inch, two-inch, 3/4-inch, and half-inch videotapes. Tapes are assured to have low frequency noise, time code, control track, and audio signals reduced to a level of -70 dB. The line of replacement video heads for C-format VTRs will also be shown, along with quad video heads, audio heads, and VTR accessories.

CMX SYSTEMS**1639**

Major product announcements from CMX will include the 33XL product line, consisting of a new version of the CMX 3400 editing system, a new large-scale editing product with super slow motion features, and a Multi-Intelligent Interface, to be shown with

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Here's the group:

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- CMX
- CVC
- CONVERGENCE
- EECO
- PALTEX
- SONY
- UNITED MEDIA
- **AND, OF COURSE, US**

Videomedia manufactures the widest range of editing systems and automation equipment in the world. The Z6000 and the EAGLE series of editors embody advanced principles and philosophies literally years ahead of any competition. They are, by far, the fastest, most powerful and effective editing systems that money can buy.

If you are purchasing an editing system based on manufacturer's sales "hype", or because "UNCLE FRED" has one, you could be making a mistake. Demand a side-by-side comparison AT YOUR FACILITY, editing under YOUR conditions. If someone won't give you that demo.....well, maybe that should tell you something.

There are currently more than 800 Videomedia editing systems in operation throughout the world. Oh, incidently, we have NEVER lost a side-by-side demonstration. Call us for details.

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three VTRs and one switcher. Established products on view will be the 340XL product line and the Edge editor with an effects switcher.

COHERENT COMMUNICATIONS 2148

Will introduce a new series of RF mics, including a one rack unit-high frame that holds six receivers; a small single- and dual-channel receiver for field use; and a diversity receiver. On the transmitter end, will introduce a cigarette pack-sized UHF transmitter. Also new will be a time code generator/reader for video slating.

COLORADO VIDEO 1222

Will introduce the Digital Image Communications System, a new color video transmission and storage system based around the IBM PC/XT and video memories manufactured by Colorado Video. It is a freeze-frame system incorporating four-full-frame (512x512x8) NTSC color video memories and an internal Winchester disk for permanent image storage of 40-500 video images.

COLORGRAPHICS SYSTEMS 1116

New developments for the NewStar newsroom computer system will include automated control of tape rolls, character generator, and still store graphics using advanced machine control technology developed by sister company Utah Scientific. Also introduced will be the ArtStar II graphics production system, combining 16 million color electronic paint system graphics with high-quality character generation and digital still store, all in one system at a "breakthrough" price. ColorGraphics will also preview a real-time, 3D graphics animation system based on new graphics chip technology. LiveLine IV, a digital paint system for TV broadcast and video production with weather interface, will also be introduced. The established Artstar, Weather Central, and NewStar systems will all be shown in upgraded versions.

See ad page 78

COLORTRAN 1205

Will bring its line of lighting control consoles, dimmers, and Fresnels.

COLUMBINE SYSTEMS 118, 1323

Will introduce two new software systems. The music system gives radio

stations complete control over their music inventory and rotational patterns, while the news management system allows archiving of news items through the use of key words, with immediate access to information on news resources. Also on display will be the Columbine traffic system, which provides sophisticated spot placement and powerful sales analysis and management reporting.

COMARK COMMUNICATIONS 1217

Will introduce the complete Marconi Communication Systems RF transmitter line, including VHF, AM, and SW models from 1 to 220 kW, along with the Marconi B7500 high-technology IF TV modulator with advanced precorrection circuitry for ultra-high-efficiency pulsed klystron operation. Also new will be Comark's CAM-100S aural IF modulator for TV stereo/SAP retrofits. Comark's CTT-U-60RE fully redundant 60 kW TV transmitter, featuring the Marconi B7500 modulator, will also be on hand.

See ad page 1, 17

COMEX SYSTEMS 1724

Will feature its line of digital audio delay products.

COMMUNICATIONS GRAPHICS 214

COMPREHENSIVE VIDEO SUPPLY 1145

Will introduce four new dealer display racks featuring interface products, computer cable, maintenance supplies, and lighting. The line of lighting equipment, including fixture kits and modular accessory systems, will also be shown, along with demonstrations of CAV software, including the Edit Lister program.

COMPUCON 1405D

Will describe its communications engineering and marketing research services, including earth station analysis and coordination, FCC license application preparation, RFI measurements, allocation studies, channel analysis, interference analysis, site location, market assessment, promotional planning, and others.

COMPU=PROMPT 1728

Will introduce the CP-2000 color computerized prompter with unlimited text length and ability to edit while scroll-

ing; the CP Jr., a small, lightweight camera-mounted video prompter for ENG cameras; the Compu=Prompt Deluxe podium prompter monitor system; and the Compu=Prompt uninterrupted power supply. The line of color computerized prompting systems for video, film, and public speaking will also be featured.

COMPUTER BROADCASTING 624

Will offer its Music Index programming software and programming consulting services.

COMPUTER CONCEPTS CORP. 404

Will introduce a brand-new, PC-based traffic, music management, and sales management computer system with a broad range of features. The previously shown broadcast business computer system will also be exhibited.

COMPUTER GRAPHICS LABS 1143

Will feature the Images II low-cost paint system with a new anti-aliased text and business graphics package with many 3D effects. A variety of additional special applications packages are available.

COMREX CORP. 400

Will bring a complete new line of FCC-registered telephone couplers for broadcast use, featuring modular connections, plus new-model low frequency extenders with modular telephone interconnectors. The 2X two-line frequency extender system, which produces 5 kHz circuits using two dial-up phone lines, will be featured along with the Q System wireless ENG IFB and the telephone talk show system.

COMSEARCH 1136

Will describe its services for systems design and engineering of satellite earth stations, point-to-point microwave, STL, and LPTV systems, including site acquisition; frequency engineering, coordination, and protection; FCC application and FAA notification form preparation; radio and facilities engineering; and project management.

KEY TO BOOTH NUMBERS	
100-999	Radio Hall Exhibits
1000-1999	TV Hall Exhibits
2000-2999	Hilton Pavillion Exhibits



Illusion

Illusion™...the affordable full optical digital video effects system that puts cost in its proper perspective.

This powerful full frame system provides a full range of optical effects including...

- posterization ● mosaics ● rotation about 3 axes. Optional accessories include...
- perspective with variable vanishing points and ● key manipulation.

Illusion has many other unique effects and operating features... ● performs as a dual channel system when in its A/B video switching mode ● bubble memory ● "feedback" effects (upper left monitor shot) are internally generated and do not tie up a switcher M/E.

DSC's 2 year warranty is further assurance that Illusion's stable, fully tested electronics will perform reliably for you.

Call for a demo tape and complete details.

Unretouched monitor photos taken at NAB 1984.



See us at NAB
Booth 1302

Circle 198 on Reader Service Card

Digital Services Corporation, 3622 NE 4th St., Gainesville, FL 32609 904-377-8013. New York: 914-738-6764.
Mid West: 317-738-3219. Minneapolis: 612-447-4453. West Coast: 619-485-1156. Dallas: 214-894-6303. Canada: 416-475-7575.

**COM-TEK 1122B
COMMUNICATION TECH.**

Will bring its wireless communication systems and microphones, including the M-72 and M-82 microphone transmitters, the RD-72-4 simultaneous duplex repeater, and the BR-72 cuing personal receiver. Will also display the M-72BF base station transmitter and M-72L and MR-72 RF mics.

CONCEPT PRODUCTIONS 423

Will display automated radio programming services in different music formats with full service syndication and custom voice-tracking.

CONNECTRONICS CORP. 608

Will introduce the Seck 62 and 122 portable live audio mixers, Star Quad microphone cable, and Sound Wires audio cables. Other featured products will be Accessit low-cost audio signal processors, Musiflex mic wire and cable, Connectronics cable, and Key Technology XLR-type connectors.

CONRAC 1401

Will introduce the 2600 monochrome monitor line in nine-, 15-, and 20-inch models. Also on view will be the 6200 Class 1 in-line monitor, the 7300 1000-line noninterlaced monitor, the 6100 master monitor, and the FMA, QQA, and DZB monochrome monitors.

CONTINENTAL ELECTRONICS 101

Will exhibit the full line of broadcast transmitters, AM from 1 kW to 50 kW and FM from 2.5 kW to 60 kW, including the 802A 50 W exciter. Will also show FM antennas, remote-control equipment, and audio processors.

See ad page 278

CONTROL CONCEPTS CORP. 1751A

Will feature its Islatron "active tracking" filter for protection from spikes, transients, and lighting-induced voltages; the Islatrol ac/dc "active tracking" filter for spike and transient suppression; and the Isafil new generation isolation transformer with the best available active tracking filter on output.

CONVERGENCE CORP. 1430

Will introduce the new ECS-205 editor, similar to the ECS-204 introduced last year but with expanded VTR range of

up to eight machines with assignable recording. Also new will be the ECS-195 A/B roll editor, plus new peripherals and software updates. The established 200 editing line, consisting of the 202 and 203 A/B roll editors and top-of-the-line 204, will also be featured, along with the Super 90 single-source edit system. Editdroid will be shown in a separate Droidworks booth.

See ad page 113

COOL LIGHT 1329

New this year will be the L-13 and L-20 battery belts with built-in chargers, providing 13 and 20 Ah, respectively. The MiniCool head-free light, with a line of accessories including stands and lamps, will also be featured.

CORPORATE COMMUNICATIONS CONSULTANTS 1161

Will introduce a yet undisclosed product unrelated to color correction. New color correction products will include the new System BM for component video, incorporating a new automatic system to reduce time requirements; and the System 60XLB3, also with time-saving automation, for color correction processing for flying spot scanners and CCD telecines.

See ad page 153

COUNTRYMAN ASSOCIATES 1720

Will introduce the TVH microphone, available for wireless transmitters from Nady, HME, and Vega.

CREATIVE TRADE (CTAB) 217A

CROSSPOINT LATCH CORP. 1321

Will introduce the Model 6112 AK, a fully computerized version of the 6112 switcher; the Model 6150 BK, a 16-input master control switcher with optional second audio channel for expansion to stereo sound; and the Model 6116 component/encoded switcher, with four component inputs and three encoded inputs. The 6116 will work in any conventional component format, or in encoded video, and will not mix between formats. Also new will be the Model 8000 time base corrector, which is capable of locking together two source VTRs and therefore makes possible a full broadcast-quality A/B roll editing system with a single TBC. Other products to be shown will include

the 6112, 6139, and 6124 video post-production switchers; the 6109 video production switcher; the 7290, 7239, and 6403 computer controllers for video production switchers; and the 6800 audio mixer.

See ad page 46

CROWN INTL. 428

Will show its full line of PZM mics, including the 180 and 12SP, plus professional broadcast amplifiers, and monitor tuners.

CSI ELECTRONICS 507

Will bring the FM-3000E, T25F, T10A, T5A, and T25A redesigned transmitters, in addition to its AM and FM transmitters, and stereo generators.

CUBICOMP CORP. 235

Will show major enhancements to its Polycad/10 solid modeling system for the IBM PC, including new, optimized algorithms that speed image rendering. Users can now also record animated sequences automatically.

CUSTOM BUSINESS SYSTEMS 317

Will introduce The System PC, a radio business computer system using exactly the same software with all the capabilities of the successful larger The System, at a substantially reduced price. Features include traffic, logging, billing, sales projections, availabilities, co-op, general ledger/accounts payable, payroll, word processing, and multiplan. The System, using the Wang 2200 minicomputer system, will also be shown.

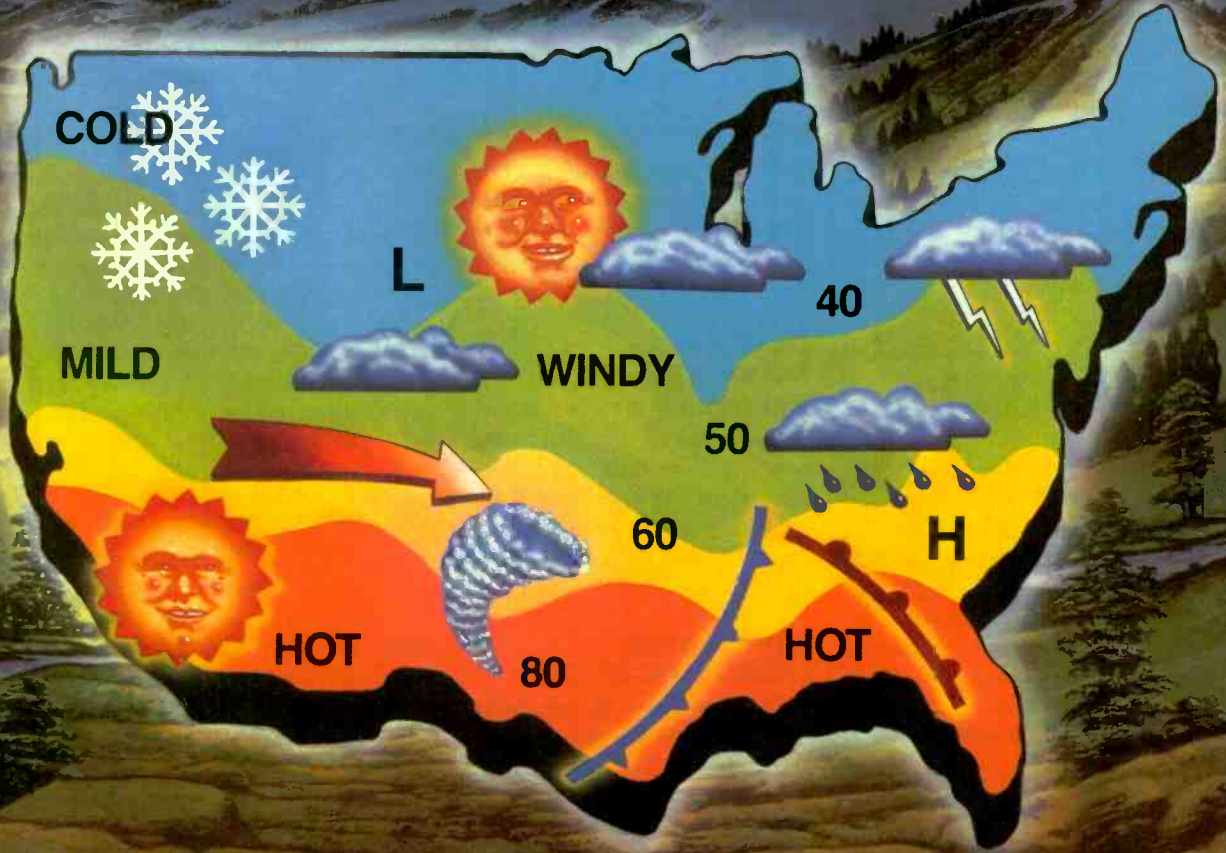
BILL DANIELS CO. 1706

Will display its high-tech purchasing library of dealer catalogs covering video, audio, computer, and broadcast applications.

DATA COMMUNICATIONS CORP. 609, 1014

Will feature BIAS Newsroom, an IBM PC-based system for news directors to control costs and improve journalism. Includes wire service management, assignment desk automation, story library management, electronic script writing, automatic reading time calculations, producer's rundown, teleprompter input, and news and weather graphics. Also shown will be Buylines, an umbrella of automated services for planning, purchasing, scheduling, billing, and paying of the media buy. Other

WEATHERING HEIGHTS



"Personal Touch" Weather Graphics by Dubner

Dubner's "Personal Touch" Weather Graphics System brings you total creativity and flexibility—the competitive edge you need to reach the rating heights.

Ask some of the country's top weather reporters, all Dubner users: Dave Murray, *Good Morning America*; Ned Perne, KATV; Don Noe, WPLG; and Joe Witte, NBC.

They'll agree that a lively, personal style, and colorful, informative graphics make all the difference. And they know that with Dubner, they can program a wide spectrum of eye-catching

effects and animations *shortly* before air time, custom-tailored to their own unique personalities.

Plus, Dubner lets them choose from hundreds of high-quality fonts, interface directly to satellite weather services, replay lengthy sequences automatically, even animate other segments of the news. The best weather graphics system isn't just a weather system.

Find out how Dubner Weather Graphics can improve your image. Call (201) 592-6500 or contact your nearest Grass Valley Group representative.



DUBNER

DUBNER COMPUTER SYSTEMS INC., 158 Linwood Plaza, Fort Lee, New Jersey 07024 (201) 592-6500 Telex: 133184

Circle 199 on Reader Service Card

featured software will include BIAS MCA master control automation; Feature Film categorizing and amortization; Financials including AP/GL, payroll, personnel, and fixed assets; and IBM PC-based products including Extract, SESAMI, and Repline.

DATATEK CORP. 1428

Will introduce the D-664 video DA, featuring differential input, six outputs, front-access gain adjustment, and continuously adjustable cable equalization. Also new will be the D-525 dual-channel, stereo audio DA, with front-mounted LEDs to indicate signal overload conditions. The D-2300 audio/video routing system will also be featured.

DATAWORLD 315

Will demonstrate its accurate and comprehensive FCC database for AM, FM, TV, LPTV, and translators, with 24-hour remote access.

**DATATRONIX
See SOUTHLAKE
TECHNOLOGIES**

DATUM 1708

Will unveil the Model 9550-689 video data encoder and Model 9200-401 video data reader, which together provide the capability to insert digital information into a video signal at the maximum capacity while remaining transparent to the video signal. They can be used for transmitting text information during live broadcast or for



Datum 9200 video data reader.

identification with time and data during production. Also on view will be the line of SMPTE time code generators and readers for both LTC and VITC, SID encoders and decoders, and character generators.

dbx 107A

Will introduce a new VCA module, BTSC noise reduction encoder card, BTSC noise reduction decoder card, and dynamic processor for audio to its established line of audiotape cartridge NR systems, audio NR systems, audio signal processors, satellite transmis-

sion encoders and decoders, voltage-controlled amps and dbx digital audio processors.

DELTA ELECTRONICS 105

New products will be announced at the show. The line of AM stereo exciters and modulation monitors, transmitter remote control systems, and RF instrumentation products including RF ammeter systems, common point impedance bridges, operating impedance bridges, power and modulation controllers, coaxial transfer switches, and receiver/generator units will be on display.

See ad page 161

DESISTI AMERICA 1131

Will show its line of lighting equipment, including CID spots, HMI PAR instruments, HMI softlights, lightweight stands and grips, fresnels, cyscs, and related items.

DeWOLFE MUSIC LIBRARY 1734

Will premiere 20 new albums of production music, recorded in DeWolfe's new London studio, along with several new sound effects albums and a new special request service. The base library of over 1000 albums will also be demonstrated.

DIELECTRIC COMMUNICATIONS 455

Will emphasize its capabilities as a complete RF antenna supplier, from transmitter output to antenna top.

See ad page 216

DIGITAL ENTERTAINMENT CORP. 1600

Will introduce the DEC-VCO synchronizer interface, a self-contained unit to connect the Mitsubishi X-80 Series digital master recorder with BTX and Adams-Smith synchronizer systems. The Mitsubishi X-80 Series two-channel digital audio recorders and X-800 Series 32-channel digital multi-track recorder will also be featured.

DIGITAL SERVICES CORP. 1302

Will premiere a still store option for the Illusion video effects system, an under \$15,000 add-on that allows increasing degrees of storage capacity depending on disk drive configuration. All Illusion effects can be performed on the stored video. The full multichannel Illusion,

with new effects, will also be shown, as will the Flexikey manipulator.

See ad page 157

DIGIVISION 1620

Will display its high-resolution digital video converter, the DRGB-343.

DI-TECH 1221

Will introduce a new expandable 40x20 AFV routing switcher with up to three levels of audio per input and expandable input and output. The line of A/V pulse distribution equipment, audio-only switchers, video equalizers, and telephone tone-controlled systems will also be featured.

DOLBY LABORATORIES 1311

Will show its full range of audio noise reduction products, including the SP Series for multitrack recording, the 360 Series for other outboard applications, and the Cat. No. 221B, Cat. No. 226, Cat. No. 234, and Model 380 NR systems for the Sony and Ampex C-format one-inch VTRs. The Dolby Digital Audio System for broadcast use will also be featured.

See ad page 165

DORROUGH ELECTRONICS 312

Will introduce the new 80-B stereo generator for FM. Other products will include the Model 610 discriminate audio processor for AM, AM stereo, FM, TV, and TV stereo, and the Model 40-A loudness meter.

DROID WORKS 1772

In its own booth this year for the first time, this joint venture of Convergence Corp. and Lucasfilm will feature the EditDroid computer editing system, with several new features. The company will also introduce a totally new digital audio signal processing system called SoundDroid, which combines with EditDroid to form what Droidworks calls the first fully integrated electronic post-production system ever.

DUBNER COMPUTER SYSTEMS 1628

Will unveil Texta, a medium-cost character generator with 37 ns resolution, hardware anti-aliasing, font compose, and animation capability; the 10-K, a low-cost character generator with animation capability for the professional video market; and Chroma, a full-color

AM Stereo Without Compromise



C-QUAM[®] AM Stereo System by Delta Electronics, Inc. FCC Type Accepted

Delta Electronics, Inc. introduces the ASE-1 AM Stereo Exciter and ASM-1 AM Stereo Modulation Monitor: FCC type-accepted C-Quam System transmission equipment for the AM Stereo broadcast market. C-Quam is the *Compatible* Quadrature Amplitude Modulation system developed by Motorola, Inc. C-Quam is the system of choice for more than 200 U.S. stations plus additional Canadian stations. Users range from kilowatt day-timers to full-time network flagships. These stations report enthusiastic response from listeners using multimode and full C-Quam stereo receivers as well as typical monophonic receivers. The key is compatibility without compromise. All listeners, stereo and mono, receive a clear signal with low distortion. Delta's twenty-year leadership in the

field of broadcast instrumentation solidly backs this technological advance.

The proliferation of receivers from GM's Delco Electronics, Inc., MacIntosh Labs, Sherwood Electronics, Chrysler Corporation, Concord Electronics, Samsung Electronics and others not yet announced, is creating a sizeable C-Quam audience. With the outstanding performance of this equipment, you can be sure that the audience will *stay* tuned to your Delta C-Quam AM Stereo transmission system.

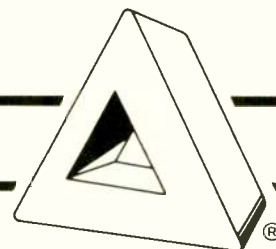
For additional information, contact Bob Bousman at (703) 354-3350.

C-QUAM is a registered trademark of Motorola, Inc. Manufactured under license from Motorola, Inc.

See us at NAB booth 105

DELTA ELECTRONICS

5730 General Washington Drive, Alexandria, Virginia 22312
Telephone: 703-354-3350 • TWX: 710-832-0273 • Telex: 90-1963



NEITHER TIGHT BUDGETS NOR SHORT DEADLINES WILL DETER THE AFA TEAM FROM DELIVERING THE CUSTOM TELEVISION FACILITY OF YOUR DREAMS!



AND YOU CAN BANK ON THAT!



The reasons are simple. We are experts in designing and fabricating video systems of every size and configuration—from mobile units to production studios, one-inch editing suites, insert stages, corporate video systems, etc. This experience has given us the knowledge of not



only how to do it well and expeditiously but also how to do it in the most cost-effective way.

The fact is, in all likelihood, AFA can build a custom-designed television facility for you for less money in less time than you can do it yourself!

But equally important, from the moment you tell us, "It's a go!"—you will know exactly when your new, custom-designed system can start earning money for you. And you can bank on that!



HERE'S WHAT AFA DOES FOR YOU:

- Project conception and consultation
- Project management
- Development of systems specifications
- Coordination with facility architect, contractor or vehicle manufacturer
- Design and engineering of video, audio, communications and control sub-systems
- Specification and procurement of equipment and materials
- Design and fabrication of custom equipment
- Mechanical installation and pre-wiring
- Custom cabinetry and metal work
- Comprehensive documentation, including electronic and systems functionals and schematics, mechanical drawings, cable schedules, floor plans and rack layouts
- Installation of completed systems
- Final systems testing
- Training of customer's personnel

AFA

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Marconi B3410 Telecine

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ADM Audio Consoles
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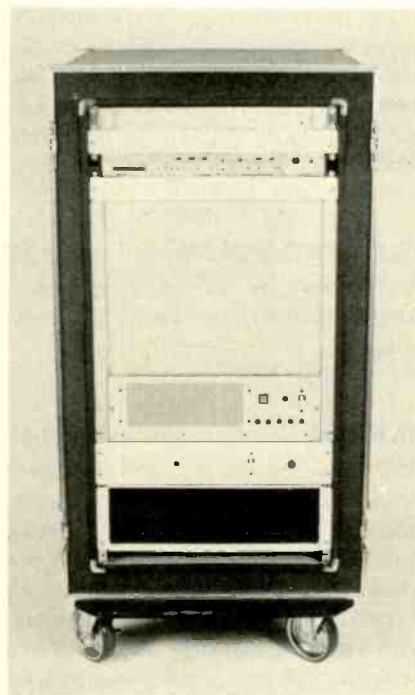
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Dubner's Texta character generator.

video paint system. The CCC-12 color corrector computer, for scene-by-scene control of film-to-tape and tape-to-tape color correction, will have a new video signal processor. The CBG-2 video graphics generator will also have new features, including an automated election system, advanced weather graphics, and a third plane/still store/paint system.

See ad page 159

DX COMMUNICATIONS 465

DYNAIR ELECTRONICS 1404

Various new control schemes will be introduced for Dynair's line of routing switchers. Also exhibited will be routing switchers and DAs with video bandwidths in the 30 MHz region, in a wide variety of configurations from small standalone RGB switchers to large-scale, modular matrix systems. The SMPTE/EBU-compatible System 23 machine control system will be in operation, along with a full line of standalone and modular distribution equipment including cable equalizers.

EASTMAN KODAK CO. 1214

Will show the new Eastman EB-930 and EP-930 3/4-inch videotapes, featuring increased coercivity (680 oersteds) and retentivity (1300 gauss) characteristics, plus improvements in RF output, luminance and chrominance S/Ns. The full line of Eastman professional and

broadcast videotapes and Eastman negative and print films will also be shown.

See ad page 127

ECD INDUSTRIES 230

ECHOLAB 1510

Will introduce two new products: the SE/6, a large front-panel version of the SE/3 special effects generator; and the DSF broadcast-quality digital effects unit. Other products displayed will include the SE/3, with 10 inputs plus black and background and built-in memory for 5000 events, and the SE-1G special effects generator for new low-end gen-lockable cameras.

ECONCO BROADCAST SERVICE 1759

Will show its rebuilt power tubes for AM, FM, and TV transmitters.

EECO 1775

Will feature the EMME videotape editing system with Video Editing and Cinemagraphic workstations; the IVES three-machine editing system with A/B option; and still-frame audio for interactive videodiscs.

EEG ENTERPRISES 1155

Will present its TE-501 teletext video data bridge; the Network Alert System, a vertical interval digital communications system for message transmission between a network and affiliated stations; and the Network Control System for automatic control of network switching functions via the vertical interval. Also will show Line 21 closed captioning encoders, text processing computers, and decoding equipment.

EEV 1335

Will premiere the P8474 3/8-inch mixed field Leddicon lead-oxide camera pickup tube, designed for such new ENG/EFP cameras as the Sony BVP-30 and BVP-360, as well as the P8164 3/8-inch hybrid Leddicon for the JVC KY-320E, Hitachi FP-22, and similar cameras. Booth will also feature the established line of high-efficiency amplifier klystrons for UHF TV transmitters, Leddicon and Vidison pickup tubes for

KEY TO BOOTH NUMBERS

100-999 Radio Hall Exhibits

1000-1999 TV Hall Exhibits

2000-2999 Hilton Pavilion Exhibits

broadcast TV cameras, power tubes for AM and FM transmitters, and liquid crystal displays.

See ad page 181

EG&G 1327

Latest product will be the new SS-125 "Owl" flash head. The SS-122 controller, SS-124 photo cell, and LS-159 antenna beacon will also be shown.

ELCOM BAUER 412

Will introduce an entirely new "All American" series of FM transmitters including the Models 601C (800 W), 6015C (1500 W), 603C (3 kW), 605C (5 kW), 610C (10 kW), and 630C (30 kW), plus a new SS-20 FM exciter. The line of low-power, solid-state AM transmitters will also be displayed.

ELECTOR USA 1707

Will unveil a new nine-inch color monitor from Barco, in addition to the established Barco line of professional color monitors.

ELECTROHOME LTD. 1744

Will display its established monitor line, including the EVM Series high performance monochrome displays with rack, ceiling, and wall mounts; the Tri-Ed color receiver/monitor in 19- and 25- inch sizes; and the ECM 1301 high-resolution color video monitor and interface modules.

ELECTRO IMPULSE LABORATORY 117

Will show the line of dry, forced-air dummy loads, RF calorimeters, wattmeters, and attenuators.

ELECTRONIC RESEARCH 105A

ELECTRONIC SYSTEMS LABS 406A

Will show the line of Eela Audio production and broadcast consoles and portable stereo mixers. Featured items will be the S-20 and S-22 "Reporto-phones," designed to allow radio reporters to send material to the station over public telephone lines. The S-20 is a compact two-input mixer with built-

in electronic hybrid to allow monitoring of the return signal from the studio, filters and compressor for improved audio quality, and built-in dial and buzzers that allow the unit to be a full-function telephone. The S-22 is a two-line version of the S-20.

ELECTRO-VOICE 1159

Will feature its line of microphones, studio monitors, and the ELX-1 audio mixer.

See ad page 243

ELICON 143

Will introduce the IPK-200 intelligent keyboard, a user-programmable human interface designed to upgrade existing studio automation systems, and the Model 525 overhead gantry system, a video/film 3D model animatics system with graphic capability. It consists of a five-axis robotic camera manipulator suspended overhead. Other featured products will be the Model 225 computer-controlled field camera pan/tilt head system for the Ellie II boom arm camera system for video/film 3D model photography with graphics capability.

EMCEE 1621

Will show its lines of 1-1000 W UHF and VHF LPTV transmitters, MDS and multichannel MDS transmitters, and complete RF system installation services.

See ad page 257

E-N-G CORP. 1022

Will introduce what the company describes as the smallest portable remote package, weighing just under 47 pounds and including a 2 GHz transmitter/receiver, two-color off-air monitor/receiver, audio monitor, four-channel audio mixer, two vertical time four-position audio/video switcher, color bar/SID, and steerable antenna with automatic lock-on features. The total package operates from 12 or 28 V dc or 110 ac. E-N-G will also show two of its latest ENG vehicles with the Tri-Tower microwave mast.

ENVIRONMENTAL SATELLITE DATA 1509

Will introduce the Color Connection system, based on the IBM PC, which operates over 1000 PC software programs in addition to its weather and graphics capabilities. The new software package includes 760x480 resolution and a choice of 4096 colors. With the eight-plane graphics option, 256



ESD Color Connection graphics system.

colors can be displayed simultaneously from a potential 16.7 million. Animation and looping capability also increases from nine to 19 frames. Other features include pan and zoom, cut and paste, and complete image generation.

ESE 116, 1757

Will add a new VITC reader/translator to its established line of digital clocks and timers, master clock systems, programmable clocks and timers, time code readers, generators, and comparators, time calculators, hybrid telephone interfaces, audio level indicators, and video DAs.

EURO EQUIPMENT SERVICE 1175

Will have on hand its Euro Automator Plus computer system to retrofit animation stands for computer-assisted motion graphics and a computer-controlled animation stand combining film and video.

EVENTIDE 323

Will introduce a new Harmonizer effects unit, the H969, with cleaner than ever pitch change, delays up to three seconds, delay presets, presets for musical intervals, flanging, reverse, and repeat audio. Also new is the Generation II software for the SP2016 efx processor/reverb, which provides a wide range of new reverb efx programs including stereo room, loop edit, flanging, and chorusing. Established products on view will include the H949 Harmonizer, the SP2016 effects processor/reverb, the BD955 broadcast digital delay line, and the Timesqueeze Jr. time compression system.

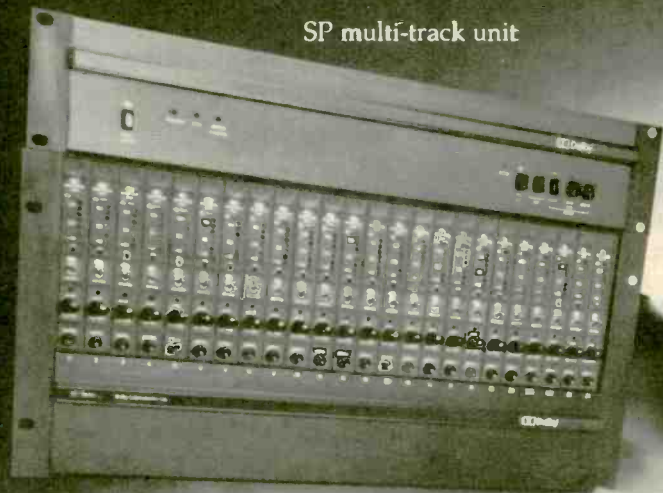
EVERTZ MICROSYSTEMS 1745

Will introduce a new chase synchronizer/resolver with built-in longitudinal time code, designed to eliminate a

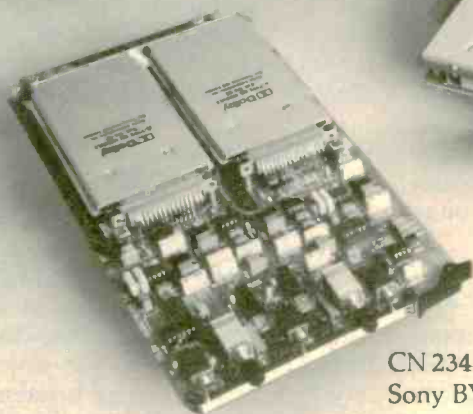
FOR MORE INFORMATION
on products advertised in this
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DOLBY® NOISE REDUCTION FOR THE 1980'S

SP multi-track unit



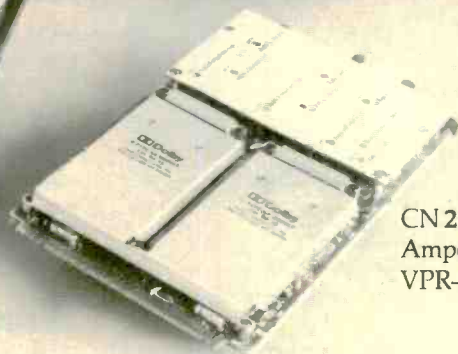
56C single-track units



CN 234 for
Sony BVH 2000



CN 221B for
Sony BVH
1C00/1100



CN 226 for
Ampex
VPR-2

Dolby noise reduction is keeping pace with today's demand for high-quality sound — everywhere. With the introduction of such products as plug-in modules for VTRs and the SP multi-track unit, it is easier than ever before to protect *all* your irreplaceable audio tracks from hiss, hum, and print-through. From broadcasting to music recording, from video sweetening to motion picture dubbing, Dolby A-type NR reliably continues to fulfill its original promise: effective noise reduction combined with complete signal integrity.

Dolby Laboratories Inc., 731 Sansome St., San Francisco, CA 94111,
Telephone 415-392-0300, Telex 34409, 346 Clapham Road, London SW9,
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 **Dolby**®

Circle 202 on Reader Service Card

variety of other audio and videotape transports. A new sch phase meter will also premiere. Exhibit will also feature the EV-Bloc Eurocard modular system, VITC source ID systems, portable VITC generators, and production timers and calculators.

EXCALIBUR INDUSTRIES 1108

Will show a new 19-inch rackmount case with the "Stak-Lok" option for modular usage in the field. The line of shipping cases for cameras, monitors, computers, and electronic equipment will also be on view.

FARRTRONICS 1505

Will introduce a new standalone IFB intercom package. The line of audio consoles and audio and video patch fields will also be featured.
See ad pages 173, 178

FENWAL 196

FIBERBILT CASES 232

Will show the 707 Series molded plastic cases featuring a new "hi-tech" design that integrates the frame and latch



New 707 Series cases from Fiberbilt.

for better moisture protection and greater reliability. The new design will be available in six stock sizes with custom foam interiors.

FICON BROADCAST 202A

Will present its radio business automation software.

FIDELIPAC CORP. 411

Featured item will be a production version of the new Dynamax CTR100 Series NAB cartridge tape recorders and players with SMPTE time code capability, automatic stereo/mono switching, variable speed operation, level agility, and many other features. The line of Fidelipac NAB carts, test and calibration tapes and gauges, cart racks, on-air and recording lights, bulk audio and videotape erasers, and Dyna-



Fortel's CCD Y/C time base corrector.

max 1/4-inch back lubricated recording tape will be on view.
See ad page 39

FILM HOUSE 231

FILM/VIDEO EQUIPMENT SERVICE 1153

Will introduce a modification of the Cinema Products J-6 zoom control for ENG/EFP and studio broadcast video lenses, allowing increased versatility of zoom rates, zoom feathering, and repeatable zoom rates. Also on display will be the Wide Eye I and II wide angle attachments for ENG/EFP lenses and the line of Portable Energy Products sealed lead-acid and Nicad battery systems. The dual-truck remote video production mobile units, available for rental, and sales, service, and equipment rental capabilities will also be described.

FLASH TECHNOLOGY 1619

New this year to the line of high-intensity lighting for tall towers will be the SC-200 monitor display and controller. Will also show the FTB-205A high-intensity beacon, the FTB-301 antenna obstruction beacon, the SC-205 monitor and controller, the OL-205 optical link, and the FTB-319 medium-intensity beacon.

JOHN FLUKE MFG. 227

Will exhibit the 9000 Series microcomputer diagnostic tool featuring Model 9010A with software which allows the system to be programmed with a personal computer.

FOR-A CORP. 1306

Will introduce the CVM-500 and TVM-500 component video switchers to work with any component format, plus the FA-450 component TBC, also for any format. Also new will be the FA-800 AutoCor frame synchronizer with auto correction circuit, the TGR-3300 VITC generator/reader, and the ENC-110 RGB-to-NTSC encoder. The full line of time base correction equipment will be on display, including the FA-460 TBC with digital image enhancement.
See ad page 175

FORTEL 1409B

Will introduce the TBC32DE digital effects unit for high-quality efx from 3/4-inch VTRs, one-inch VTRs, and live feeds. Also new will be the Digitest digital test signal generator for audio and video, and several "surprise packages" to be unveiled at the show. Established products on view will include the CCD Y/C TBC, the TBC 32 and TBC 32 HET time base correctors, the Colorex chroma noise reducer, and the Y-688 Total Error Corrector.
See ad page 247

FORT WORTH TOWER 1010

Will discuss its line of towers and communications equipment booths.

FOSTEX CORP. 1765

Will feature the B-16 16-track half-inch ATR, which can be interlocked with video for post-production; the standard line of multitrack recorders and mixers; and the line of professional and broadcast microphones, featuring the printed ribbon series. Plus headphones, loudspeakers, and loudspeaker components.

FREZZOLINI 1107

Will introduce new DMF12 and DMF30 dual Mini-Fill light heads in 12-14.4 and 40 V configurations; new single- and dual-channel ac line eliminators; new compact series of nicad battery fast chargers; new dual-channel battery conditioner/charger; new battery/light head mounting brackets for Sony Betacam; and a new line of VB Series low-cost 12 V, 4 Ah nicad battery packs. The complete line of ENG/EFP power packs, chargers, multiple battery charging stations, on-board ac power supplies, portable lighting systems, and Mini-Fill light heads will be displayed.

FUJINON 1411

Will introduce a number of new lenses, including a compact, lightweight 44X zoom for 3/8-inch cameras and the P20x14 extra wide angle studio lens for 1 1/4-inch cameras. Also new will be an economical 16x9.5 ENG lens with f/1.8 maximum aperture, a number of new hand controls, and an array of

DYNAMIC DUO



THE DRAKE PROFESSIONALS

Thousands of CATV, SMATV, and broadcast operators everywhere have placed their trust in DRAKE's professional equipment — and for good reason. Our name has been synonymous with excellence and reliability in the communications field for many, many years.

And this proud tradition continues with our professional VM2410 Modulator and ESR2240 Earth Station Receiver. Operated together or separately, the VM2410 and ESR2240 are an unbeatable choice for solid dependability and performance.

The DRAKE VM2410 Modulator

With the Drake VM2410 a single modulator provides 60 channel frequency agility. A simple push of a button will set the VM2410 output to any VHF Broadcast, Mid-Band, Super-Band and Ultra-Band channel up to 400 MHz. The VM2410 also features video low pass and IF SAW filtering for reliable operation in the most crowded systems. A full 57 dBmV output ensures maximum performance.

The DRAKE ESR2240 Earth Station Receiver

A true step ahead in design technology. Some of the ESR2240's outstanding features include fully synthesized transponder and subcarrier selection, block down conversion with our BDC-24 Block Converter or LNB, IF loop-through for easy multiple receiver installation, SAW filtering for maximum interference rejection and adjacent channel performance, full signal metering on front panel — and much more.

When the bottom line is reliability, long-term service, and simple peace of mind — demand a DRAKE!

Call or write us today for more information.

R. L. DRAKE COMPANY



540 Richard St., Miamisburg, Ohio 45342. USA
Phone: (513) 866-2421 • Telex: 288-017

Circle 203 on Reader Service Card

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lenses and controllers for teleconferencing.

See ad page 171

FUJI PHOTO FILM USA 1413

Will feature its line of one-inch videotape, 3/4-inch videocassettes, and half-inch VHS and Beta videocassettes.

GARNER INDUSTRIES 1233

Will show its line of audio, video, and computer tape erasers.



Frezzi's Mini-Fill, BP-90 and LP90.

GEC McMICHAEL/MARCONI BROADCAST 1514

Will feature, in the outdoor exhibit area, live demonstrations (at 11:00 a.m. and 4:00 p.m.) of the Fly-Away unit for satellite newsgathering, which allows a news crew to conduct live, two-way broadcasts via Ku-band satellites. The entire unit weighs 400 pounds total, with no piece weighing more than 85 pounds, and can be transported easily by commercial aircraft or Lear jet. The indoor booth will feature the ACE standards converter; line array telecines; PAL and NTSC VTRs; grade one PAL and NTSC nine-, 12-, 14-, and 20-inch monochrome and color broadcast monitors; 4.5-meter elliptical satellite communications antennas with redundant Ku-band TX/RX systems; and CODECS compression digital video, 1.5 and 8 Mbit/s.

See ad pages 176-177

GENERAL ELECTRIC 1007

Will show its complete line of Quartzline and incandescent lamps for production lighting, including Watt-Miser Quartzline lamps for TV and motion picture production.

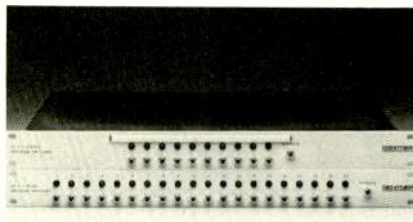
GENERIC COMPUTER SYSTEMS 308

Will introduce IBMlog, a new traffic and billing automation software package for the IBM PC XT, including a

wide variety of functions for radio, television, and cable priced at \$3500 complete. The Applelog traffic and billing system for the Apple IIe or II+ will also be displayed.

GENTNER ENGINEERING CO. 636

New items will be the Models 10x2 stereo and 20x1 mono passive routing switchers for selection of audio and/or



Gentner 10x2 and 20x1 program switchers.

control voltages, and the TC-85 telephone coupler with auto-answer, auto-disconnect, two-to-four wire conversion, data or audio capability, and a wide variety of other features. Will also feature a complete line of prewired audio patch panels including Versapatch chassis-enclosed panel, plus the line of telephone interface systems.

GERSTENSLAGER CO. 1347

Will feature literature on its custom coach-building services.
See ad page 206

GF BUSINESS EQUIP./EMCOR 429

Will feature its line of enclosures for electronic equipment.

GIESE ELECTRONIC 327

Will feature the Giese Lock System 3/2 SMPTE/EBU synchronizer for audio, video, and film studios, incorporating a high-speed time code reader that operates from one-tenth to 50 times nominal speed, forward or reverse.

GLOBAL SYSTEMS 1123

G&M POWER PRODUCTS 339

Will show its line of battery packs, belts, and chargers for film and video.

ALAN GORDON ENTERPRISES 1726

Will introduce new lightweight HMI lamp heads in 575 W, 1.2 kW, and 2.5

kW models, and a new Cinemeter light meter.

GORMAN-REDLICH MFG. CO. 506

Will bring its line of EBS encoders and decoders, NOAA weather receivers, and digital antenna monitors for directional AM arrays.

GOTHAM AUDIO CORP. 509A

Will introduce the EMT 448 digital audio spot recorder, utilizing Winchester removable hard disk technology, and the Systex digital audio storage system for commercial spots, news actualities, and music libraries using host computer control. Also featured will be the line of Neumann condenser microphones, EMT direct-drive turntables and transient limiters for audio signal processing, NTP audio peak level meters, Neutrik audiograph 3300 universal audio/acoustic analysis system, Klein & Hummel self-powered reference monitor speakers, and Gotham audio cable.

GRAHAM-PATTEN SYSTEMS 1227A

Will introduce the Model 652 audio equalizer system, which provides 12 equalizers, one for each input of the company's 612 audio mixer. All channels are controlled from a single panel one rack unit high; system has provisions for remembering several EQ configurations. The Model 612 post-production mixer will also be exhibited, along with the 1231 and 1235 downstream video keyers and the line of video and audio remote control DAs and video DAs.

GRASS VALLEY GROUP 1207

Will exhibit its line of switching and distribution equipment, including the Models 100 and 1680 video production switchers, 300/DVE video production system, Horizon and Ten-X routing switchers, 4S-M200 master control automation, Wavelink fiberoptics transmission system, 3250 Series sync generators, 3200 Series video proces-

KEY TO BOOTH NUMBERS

- 100-999 Radio Hall Exhibits
- 1000-1999 TV Hall Exhibits
- 2000-2999 Hilton Pavilion Exhibits

It's no wonder 5 out of 6 cartridge tapes sound bad. Phase Fixer makes them sound good.

Even the best tape machines... even the finest cartridge tapes fall prey to sound-robbing phase error and flutter. Carts are dropped. Pressure rollers wear. Playback heads get dirty. But now the revolutionary Harris Phase Fixer audio time base corrector virtually eliminates phase error and flutter. The Phase Fixer is a twin pilot tone system employing high quality 16-bit digital audio.

Why mechanical solutions have failed

Extremely critical tolerances are essential to keep phase error in check. Visualize your cart playback head being expanded to 300 feet high—as tall as a football field is long. Even on this greatly exaggerated scale, tape path errors of as little as two inches will cause signal cancellation within the audio passband for the mono listeners of your stereo programming! Obviously, these close tolerances in the tape heads and moving tape paths cannot be maintained mechanically. And a tape cartridge that

is acceptable one day can be made a dud the next... simply by being dropped.

How Phase Fixer works

The Harris Phase Fixer consists of two compact rack-mounted units. The first, a pilot encoder, injects an inaudible pilot signal on the audio as it is recorded onto tape. The second unit is the time base corrector. When an encoded tape is played, the time base corrector is automatically enabled, *electronically* reducing stereo phase error and flutter to insignificant levels. Tapes that are not encoded will play normally.

What's in it for you

The Phase Fixer dramatically cleans up your air sound, eliminates annoying cancellation drop-outs and retrieves missing musical notes. In fact, your source material can sound five to ten times better. And you can use existing cart record and playback equipment—as well as existing carts—*without modification*. Just one Harris Phase Fixer system can accommodate all the tape source machines at your station.

Take charge

Don't accept substandard performance as the inevitable trade-off of cartridge tapes. Eliminate it with a Harris Phase Fixer audio time base corrector. Contact Harris Corporation, Studio Division, P.O. Box 4290, Quincy, Illinois 62305. 217/222-8200.



 HARRIS

For your information, our name is Harris.

Circle 306 on Reader Service Card

sing equipment, and line of signal distribution equipment. The analog component version of the Model 100 production switcher may also be shown.

See ad page 7

GRAY COMMUNICATIONS CONSULTANTS 1618A

Will display a remote ENG van.

GRAY ENGINEERING LABS 1755

Will show its complete line of SMPTE time code equipment and video reticules.

THE GREAT AMERICAN MARKET 1147

Will introduce ShowPlot, a computer-aided drafting software system for the lighting designer featuring voice command. Standard products will include Patterns, Scene Machine, Lighthesizer, Star Strobe, Diamond Light Curtain, Instaset, Colormax, and other special efx equipment for television production.

DAVID GREEN BROADCAST CONSULTANTS 417

Will describe its services as a national dealer in broadcast equipment and supplies, primarily for radio.

GROSH SCENIC STUDIOS 1163A

Will emphasize its capabilities as designers, manufacturers, and installers of Tru-Roll cyc tracks, counterweight systems, winch systems, Tru-Climber, and Tru-Controls.

GRUMMAN AEROSPACE 1631B

Will present its distributed micro-processor-based remote control and status monitoring system, modular and expandable, as well as the 501 sync proc and Rainbow Sound system for encoding audio into the video format for an additional audio channel.

GTE SPACENET 1339

Will discuss its satellite services, especially Ku-band.

GTE LIGHTING PRODUCTS 1401

Will feature its complete line of lamps for broadcast, stage, theater, and television applications, along with the Roughneck series of lamps.

HALLIKAINEN & FRIENDS 208

Will introduce several new products to work with the DRC190 digital transmitter remote control system, including a disk drive, status panel, RF link, radio subcarrier equipment, and new logging and control software. The TVA series of audio mixers and TEL series of digital metering update kits for Moseley analog remote controls will also be displayed.

HARRIS CORP. BROADCAST DIV. 401

From the Studio Division, new products will be the Phase Fixer audio TBC for correcting stereo phase error, wow and flutter on any tape source; the Gold Medalist 12-channel audio console; new low- and medium-priced remote control systems for radio and TV; and the UltiMate 91 tri-band AGC. The Broadcast Transmission Division will introduce the SXA family of 1, 2.5, and 5 kW mediumwave transmitters; the FM-3.5K, a 3.5 kW FM transmitter; the SignalStar FM antenna; the TV-30H 30 kW high band VHF transmitter; the TVE-60S 60 kW UHF transmitter; and the Challenger microwave receiver. Other products from the Studio Division will include the IRIS still store system with composition station and camera graphics stand; the IRIS C compact still store; the HDE Series digital video efx systems; the full line of video frame synchronizers and TBCs, including the Model 540 and 550 TBCs and the Model 632 and 690 frame synchronizers; the TC-85C studio camera and TC-90S ENG/EFP broadcast cameras; the Medalist line of audio consoles; the PX-91 audio pre-amp; the Model 9003 radio program automation system; and 9134 and 9135 satellite control systems; and teletext data bridges for both the NABTS and World System standards. Current models of AM, FM, and TV transmitters and antennas (including the MW-50C 50 kW AM transmitter and Wavestar UHF slotted waveguide transmitting antenna) will be on view, along with an operating TV stereo demonstration and TV microwave transmitters and receivers.

See ad pages 81, 169

HARRISON SYSTEMS 214, 1324

Will introduce the SM-4 live sound stage/monitor mixer, the HM-4 live sound mixer, the RM-8 mixer series,

and a new audio routing switcher. Established products will include the TV-3, TV-4, AIR-7, and PRO-7 audio consoles, and the VSI video switcher/editor interface.

See ad page 11

HEDCO 1225

Will unveil the Hedline series of self-powered audio and video routing switchers and DAs for broadcast applications. Each unit is entirely self-contained in its own enclosure, complete with built-in power supply (115 or 230 V, 50/60 Hz, 10 W max) and attached power cord. They can be installed 10 to an optional three-rack unit or three to an optional one-rack unit, or can stand alone. The line of intermediate and small routing switchers, monitoring switchers, video and audio DAs, and precision terminations will also be on hand.

KARL HEITZ, INC. 1737

Will introduce Gitzo 564LM compact, five-section mic fishpole and Gitzo Mono-Tripods, which incorporate a four-section monopod in one of the tripod legs. Also new will be Kinoptik portable mini-collimator for field-testing of video, cine, and photo lenses. The full line of Gitzo video and photographic tripods, leveling balls, dollies, 100 percent fluid and counterbalanced heads, mic fishpoles, and light stands will also be shown.

HIPOTRONICS 1779

Will display its automatic voltage regulators for radio and television transmitters.

HITACHI DENSHI 1402

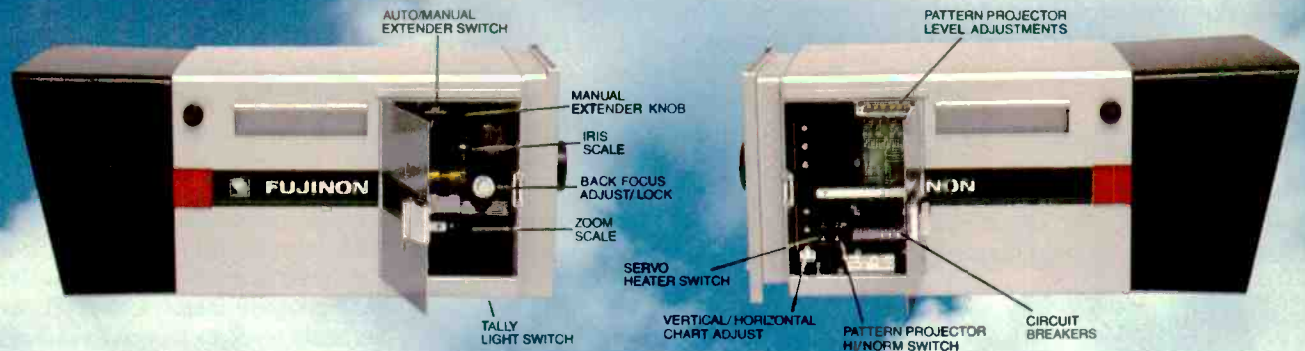
Will feature its full line of cameras, including the SR Series 1/4-inch recorder/camera combinations, the SK-110 computerized auto-setup studio camera, the SK-970 and SK-97 Computacam computerized 2/3-inch cameras, and the FP Series ENG/EFP cameras. The HR-230 and HR-211 Type-C VTRs will also be shown.

See ad pages 71, 183

HM ELECTRONICS 1130

Will show its established RF microphone line, including the System 82 Body Pac system featuring the TX 822 compact transmitter; the System 820 with the Flat Pac battery-operated receiver; and the System 85/850 with the SM85 mic element atop what HME de-

FUJINON'S revolutionary 2-door zoom lens.



It works the way you do.

FUJINON's new 17X studio zoom will permanently change the way you use and feel about a lens. More than refining the studio zoom, FUJINON has revolutionized it to give you greater control, flexibility and efficiency than ever before.

Downtime for adjustments and repair is drastically reduced. And the need to remove a shroud is virtually elimi-

nated. For instant access to all important adjustments, just open one of the two doors.

The new 17X zoom incorporates more "FUJINON firsts" than any lens in our history. For example, you can pre-set limits on the zoom range to match the lens' outstanding ramping characteristics to the lighting levels of every production. (If necessary,

you can still override the limit from the pan bar.) To change the slow/fast zoom speed, you do it on the new pan bar zoom control instead of somewhere inside the lens. You also have the option of adjusting servo focus and zoom control tension—to get the exact "feel" you want.

With the new 17X studio zoom, every major component is modular to

make user servicing a practical reality.

FUJINON's new 17X zoom is the first generation studio lens of the future. And it's here, now.

For more information on the P17X16.5ESM studio zoom lens and other fine FUJINON products, contact the FUJINON office nearest you.

FUJINON INC.
672 White Plains Road
Scarsdale, N.Y. 10583
(914) 472-9800
Telex 6818115

FUJINON INC.
2101 Midway
Suite 350
Carrollton, Texas 75006
(214) 385-8902

FUJINON INC.
118 Savarona Way
Carson, Calif. 90746
(213) 532-2861
Telex 194978



FUJINON

scribes as the smallest handheld transmitter available.

See ad page 208

HOLADAY INDUSTRIES 206A

Will show its isotropic broadhand field strength meters with fiberoptic links.

HOTRONIC 1331B

Will introduce the AD51 TBC/frame synchronizer with optional freeze frame/field and pixel-by-pixel dropout compensator, plus the new AE61 TBC with optional color bar generator.



Series 9000 console from Howe Audio.

HOWE AUDIO 321

Will feature its 9000 Series modular audio consoles, available from eight to 22 channels, with linear faders, membrane switches, TTL machine control, and new three-band EQ. The 7000 Series 12-channel, VCA-design consoles will also be shown.

HUNGERFORD 310

Will feature its accounting services for CPAs, plus the *Broadcast Report*, a radio compilation of market activity, and monthly radio revenue reports.

ICM VIDEO 1766

Will display its VC-2000P video corrector/proc amp/video enhancer/audio-video DA, along with the rest of its line of video processors, DAs, and commercial-grade satellite receivers and accessories.

IGM COMMUNICATIONS 403

Will introduce a new audio switcher/system controller for full or part-time audio control or live assist, using the IBM PC for control. Established products on display will include the Instacart instant access cart playback system and the Go-Cart random access cart playback system. The company's Custom System Design Group, which builds systems to user specifications, will also be described.

IKEGAMI 1011, 1013

Will highlight a new full-island configuration for the TKC-990 telecine system. The full camera line will be on display, including the HL-95 Unicam recorder/camera with accessory updates, along with the HL-79 series of EFP cameras, the HL-83 ENG camera, the HK-322 full-function automatic studio camera, and the SC-500 industrial studio camera. The NHK-standard HDTV system will also be on view. In addition, the final version of the 10 Series delta gun color monitors, in 14- and 20-inch versions, will be shown.

See ad pages 12-13, 73, 185, 227, 233

IMAGE VIDEO 1341

Will unveil several new products, including a master control automation system, a component routing switcher, a stereo master control switcher, and a video/stereo audio routing switcher. Established products will include the line of component video switchers, AFV switchers with built-in power supplies, master control switchers, the VMP-1 voltage monitor, and the 8105 border generator with downstream keyer.

INDUSTRIAL ACOUSTICS CO. 322

Will introduce Vistawall, an acoustic window/wall system fabricated of high-strength aluminum which allows components and glass inserts to form a noise-controlling, thermally efficient, multi-modular see-through barrier for building interiors or exteriors. Will also feature its line of preassembled or custom-designed acoustic structures.

INFORMATION TRANSMISSION SYSTEMS 1734A

Will introduce the ITS-231 1 kW UHF standby exciter/transmitter; the ITS-235 5 kW UHF standby exciter/transmitter; the ITS-11 lowband aural VHF exciter for multichannel sound retrofit use; the ITS-16 highband aural VHF exciter for MTS; and the ITS-29 50.25 MHz aural IF exciter, also for MTS. Other featured products will include the ITS-20 UHF exciter, the ITS-230 1 kW UHF transmitter, the ITS-1610 ITFS/MDS 10 W transmitter, and the ITS-1658 ITFS/MMDS 100 W amplifier

INNOVATIVE TELEVISION EQUIPMENT 1215

Will introduce the new 30 Series and 490 Series low-cost fluid heads, tripods, and dollies for ENG cameras.

Also new will be the P1A pneumatic pedestal, the H100 camera head, and the H17 fluid head for ENG/EFP. The full ITE line of camera support products will also be featured.

INOVONICS 304

Will bring its complete line of mono and stereo audio processing equipment for AM, FM, and TV broadcasting; several models of OEM and replacement magnetic recording/reproducing electronics for tape and film; audio and acoustic measurement and instrumentation equipment, including a real-time and reverberation acoustic analyzer, peak program meter, and TVU device for audio level readout on a video monitor.

INTERACTIVE MOTION CONTROL 138

Will show its modular motion control system for model and motion control photography, as well as computer graphics, computer and traditional animation, and slide production. Full, computer-controlled, repeatable movements on model stages and animation stands.

INTERACTIVE SYSTEMS CO./GRASS VALLEY GROUP 1167

Now merged with Grass Valley Group, ISC will announce a new top-of-the-line System 51 editor with expanded RS-422 control capabilities as standard equipment, plus additional edit list interchange capabilities and features geared toward simplifying the task of editing. The entire ISC editor line will feature refined RS-422 direct control capabilities, including increased flexibility in interformat applications. Several new interfaces will also be shown, for the VPR-6, GVG-100 with E-MEM, BVW-40 editing, and new low-cost RS-232 CMX-compatible interfaces for the newer generation of serial-controlled VTRs.

INTERAND CORP. 1016

Will introduce the Discon 725 compact, modular, integrated teleconferencing system with full-color, high-

KEY TO BOOTH NUMBERS

100-999 Radio Hall Exhibits

1000-1999 TV Hall Exhibits

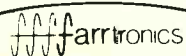
2000-2999 Hilton Pavilion Exhibits

INTERCOM.

FARRTRONICS NEW STANDARD COMMUNICATIONS PACKAGE

- Total communication between
14 stations (expandable)
- 8 IFB Circuits
- 3 Party Lines
- Interface for Two
2-Way Radios
- \$39,700 Complete
- Includes ALL Cable
Connectors and Shipping

FARRTRONICS LTD.
480 DUTTON DR.
WATERLOO, ONTARIO
CANADA N2L 4C6
TEL: (519) 746-6200
TLX: 06-957515



See us at NAB Booth #1505

resolution transceiver capabilities and seven-color annotation. Other products will include the Discon 1000 integrated videographic teleconferencing systems, the FastScan 200 multipoint freeze-frame transceiver and image processor, and the ImageFile II video image storage system.

INTERFACE ELECTRONICS 1705A

Will display the Model 550 and the Model 200B audio monitors.

INTERGROUP VIDEO SYSTEMS 1232

The newly-reorganized Industrial Sciences will come to NAB with two of ISI's better-known products. The Model 903 is a single M/E, 10-input, four-bus switcher designed for mobile van and other smaller installations. It features RS-232 remote control. Model 902 is a two-M/E switcher with 10 inputs on six input buses, preview/program switching, and independent key system for each M/E.

See ad pages 60-61

INTERNATIONAL TAPETRONICS/3M 311

Most recent product is the Omega cart machine, available in mono or stereo playback or mono record versions. All Omega cart machines come with a 150 Hz secondary cue tone as standard. Also featured will be ITC's 99B Series of cart machines with ELSA automatic erase, splice locate, and azimuth adjust feature, plus the Delta cart line, PD-II line of mono recorders and reproducers, ESL-IV cart eraser and splice locator, and ScotchCart broadcast cartridges.

See ad page 229

ISI See INTERGROUP VIDEO SYSTEMS 1232

ITELCO USA 1338

Will show its line of UHF transmitters and translators.

See ad page 275

JBL/UREI 615

Will feature the full line of UREI broadcast mixers and JBL broadcast control monitors.

FOR MORE INFORMATION on products advertised in this issue, use the Reader Service Card.

JEFFERSON PILOT DATA SYSTEMS 1629

Will introduce the JDS 2000 broadcast tracking system, plus a new line of products for the IBM PC including a radio sales system, radio demo system, radio music rotation, and electronic news processing. The JDS 2000 financial management system, programmed management system, and sales and traffic business system will also be displayed.

JENSEN TOOLS 1747B

Will introduce the new JTK-22 and JTK-43 telecommunications tool kits, a new installer's tool kit, and the JTK-47 site master kit to the line of shipping cases, logic comparators, and test kits.

THE JINGLE MACHINE 200A

Will introduce a new TV advertising theme, "We're Your Team," plus a new radio format. The established line of radio and TV ID packages and jingles will also be shown.

JOHNSON ELECTRONICS 229

Will introduce the STS-2 synthesized front-end test set for antennas, 67 kHz switchable to 92 kHz, plus a new desktop SCA receiver. The line of tuners and tuner amps will also be on view.

JVC CO. OF AMERICA 1234

Featured products will include the DAS 900 digital mastering system; BY-110U and KY-210U three-tube professional video cameras; KY-320U, KY-900U, and KY-950U ProCams; VHS and ¾-inch VCRs AX-901 integrated audio amplifier; QL-G901 turntable; BR-8600U, RM-86U, and VE-93 video editors; and BR-7000UR hi-fi duplicator.

See ad page 187

KAHN COMMUNICATIONS 625

Will introduce the new STR-84 stereo exciter, the RF-01 RF monitor, and the Lines Plus audio extender system. The AM stereo transmission system will also be demonstrated.

KAMAN SCIENCES/KBS 1607

Will demonstrate two new computer systems for the broadcast industry. Designed for the IBM System 38, these programs are a complete film programming, amortization, and payables sys-

tem, plus a complete demographics avail proposal system. Both interface directly with the traffic and accounting systems currently available. Also featured will be the complete line of broadcast computer software, including traffic, billing, accounting, automation interface, films, and demographics.

See ad page 231

KANGAROO VIDEO PRODUCTS 1151

Will introduce the KVP-1 carrying bag for the Sony BVV-1 Betacam recorder, rain covers for the BVW-3 Betacam recorder/camera and standalone camera, and the KVP-6800 Videopack for the Sony VO-6800 ¾-inch deck. The Super Tough camera case will also be shown, along with the Domke photographer's jacket and an underwater camera housing for the Betacam.

KAVOURAS 1635

Will introduce Radac II, an improved version of the company's real-time dial-up weather radar system, with access to all NWS and FAA radar sites. Also new will be an enhanced animation system and 256-color video frame grab for the Triton X graphics system. The Triton X, Radac color weather radar system, RAM weather and database products and services, 64-level GOES satellite image display and animation, and Triton Doppler radar system will also be shown.

See ad pages 85, 87, 89

KAY INDUSTRIES 122

Will introduce the new Mini-Phase 3 electronic converter to its line of phase converters and power supplies.

KEY VIDEO 463

Will show its line of audio and video routing switchers.

KEYLITE PRODUCTION SERVICES 1220

Will introduce the new Modulight range of folding softlights. Also featured will be blowout photos from the Space Shuttle.

K&H PRODUCTS 1746

Will introduce a new line of nylon cases for all Betacam systems, plus a new recorder case for the Sony VO-6800. The line of recorder and camera cases for ENG/EFP work, plus general-purpose ENG/EFP cases, will also be featured.

See ad page 234

FOR-A's TBC Workhorse Team

To complement its popular price-performance leader, the FA-410 Digital TBC Workhorse, FOR-A has introduced a new and outstanding Digital Time Base Correction System.

The new FA-400 now offers the professional a choice of features without compromising performance, quality or reliability... at a price that sets another trend in high technology products offered at a low cost... just \$5,950.

More than just a TBC, the FA-400 features a full-color frame memory used for synchronization as well as automatic or manual frame and field freeze. Designed for professional post-production editing, the full frame correction will handle all composite $\frac{3}{4}$ " and $\frac{1}{2}$ " VTR formats.

Control of video and chroma level, chroma phase and set-up is provided by a full procamp with presets. A built-in RS-170A sync generator with genlock and phasing controls makes the FA-400 totally versatile in any system.

In addition, FOR-A offers yet another team workhorse — the FA-420 which features all the capabilities of the FA-400 plus VTR SC operation and Dropout Compensation.

Arrange for your FOR-A representative to show you our team of thoroughbred workhorses by calling the nearest FOR-A Sales Office.

FOR-A[®]

INNOVATIONS IN VIDEO

FOR-A CORPORATION OF AMERICA
49 Lexington St., Newton, MA 02165
East Coast: (617) 244-3223
West Coast: (213) 402-5391

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See us at NAB Booth #1306

GEC McMICHAEL

BROADCAST NEWS

ADVANCED ANTENNA DESIGN/VIDEO COMPRESSION CREATES BREAKTHROUGH

New Portable Uplink Small Enough To Go Anywhere For Live Reports.

Covering news events from "any" location in the world used to be an impossibility. Now it's a reality.

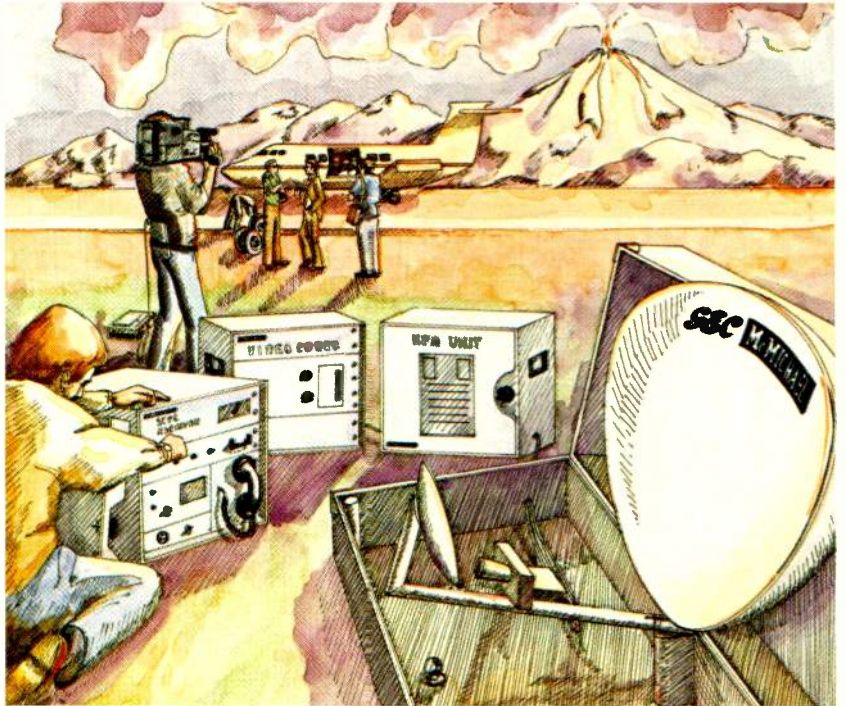
With GEC McMichael's unique Satellite News Gathering (SNG) FLY-AWAY, news events that previously could not be captured by existing television transmission systems can easily be covered "live," regardless of their location.

The entire FLY-AWAY system is compact and lightweight enough to be flown to remote locations in a private plane as well as by regularly scheduled airlines. Once on location, the SNG terminal can be quickly set up by as few as two men in 1/2 hour and powered by a hand-carried portable generator.

The entire FLY-AWAY system is compact and lightweight enough to be flown to remote locations in a private plane as well as by regularly scheduled airlines.

The SNG terminal equipment is packaged in three shock-mounted aircraft enclosures. The majority of which weigh no more than 80 pounds. Since the weight and size of the system are so attractive, it can easily fit into an econoline-type van, allowing rapid deployment for live satellite coverage of local events.

Designed for portability and quick, efficient set-up, the FLY-AWAY is composed of GEC-McMichael's unique elliptical Ku band antenna, uplink Ku band electronics and McMichael's own video compression bandwidth electronics.



Each of the three shock-mounted containers which make up the SNG system measures 27" x 24" x 21". The total system including uplink/receive electronics, antenna and portable generator weigh no more than 500 pounds total. The one-piece offset gregorian-fed antenna measures 2 x 1 x .5 meters and weighs 90 lbs packaged. In order to ensure quick set-up time and retain critical surface tolerance enroute and during operation, the antenna reflector will remain in one piece.

The McMichael Ku band antenna is the heart of the FLY-AWAY system since it allows real-time transmission from anywhere in the world.

In the event of signal loss due to severe weather conditions or poor footprint locations, the GEC McMichael CODEC makes it possible for the operator to reduce the bandwidth. As a result, the system permits live video transmissions from any global location under practically any weather conditions.

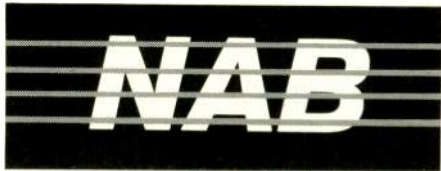
GEC McMichael, a leader in Ku band satellite transportable technology in the United Kingdom and Europe for over 6 years, just recently introduced its line of broadcast products to the United States. The development of the portable SNG system resulted from the company's

expertise in Ku band transportable terminals, ACE standards conversion equipment and video bandwidth compression teleconferencing equipment.

To date, there is absolutely no better way to beat the competition to the scene than with the new FLY-AWAY Satellite News/Data Gathering System. For more information about this exciting live/remote transmission breakthrough, please contact GEC McMichael 8260 East Raintree Drive, Scottsdale, Arizona 85260. Phone: 602/948-7255 TLX: 6502246202

GEC McMICHAEL

NOBODY DOES MORE WITH LESS SPACE



SNG UNIT TO BE DEMONSTRATED LIVE AT NAB LAS VEGAS SHOW.

DATE: Sunday, April 14th
– Thursday April 17th

EVENT: Live demonstration of SNG Portable Uplink

LOCATION: Outdoor Satellite exhibit area.

TIME: Daily 11 A.M. and 4 P.M.

For more information, visit the GEC McMichael's indoor booth, No. 1514.



Circle 208 on Reader Service Card

KINEMATRICS/TRUE 1134C TIME

Will feature the NBS synchronized master and remote timing systems as well as its line of frequency and time receiving measurement equipment.

KING ELECTRONICS 1623

Will show the line of RF coaxial and triaxial connectors, video patch cords, and patch panels.

GEORGE KLEINKNECHT, INC. 1769

Will describe its broadcast consulting and installation services.

KLIEGL BROS. 1604

Will introduce newly designed fresnels with a fast, precise focusing mechanism that locks the lamp holder for drift-free performance. Other products will include the Entertainer, Performer III, and Command Performance memory lighting control systems; K96 SCR digital dimmer banks; Kliegpac 12 portable digital dimmer banks; 1550 Klieglight ellipsoidal pattern projectors; and scoop floodlights.

KNOX VIDEO 1511

Will introduce the K40, a very low-cost full color character generator. Also featured will be the K100 Chromafont Option B and C high-resolution, multi-size, multifont character generators.

LAIRD TELEMEDIA 1721

Will introduce the new 1500 character generator, featuring 35 ns resolution, 65,536 resident colors, a multifont library (up to 70 fonts), dual disk drive system, auto centering, instant italics, proportional spacing, and many options. Also on display will be the 5300 multiplexer, 5116+35 multiplexer, 4320 dual drum slide projector, 5400 multiplexer, 6000 racks, and 3300, 3600, and 7200 character generators.

See ad page 119

LAKE SYSTEMS CORP. 1165

Will expand the La-Kart video cart automation systems with a new half-inch Beta series. U-Matic and M-format

systems will also be on display, as will a new low-cost, modular La-Kart for MSO cable operations.

See ad page 191

LANDY ASSOCIATES 1747A

Will introduce the Interphase M-40, a low-cost machine control system for the small format tape duplicator. The system uses a serial communication bus for interconnection with from one to 10 VTRs. The status of each machine is displayed on CRT. Will also bring the line of Ikegami HL-79EAL and HL-95 cameras, Ikegami monitors, Quantum audio consoles, Anton/Bauer lights and batteries, and Interphase countdown/safe area generator and switchers.

LANG VIDEO SYSTEMS CORP. 1780

Will show the 60825 video recording measurement generator and the 60821E source ID with memory recall. The Lang line of video and audio routing switchers will also be exhibited.

LARCAN COMMUNICATIONS EQUIP. 1626A

Will unveil a new 30 W FM exciter, the FME-30L, in addition to the established TEC-1V VHF MTS television exciter, the TTC30LH 30 kW VHF high-band TV transmitter, and the FMT25L 25 kW single-tube, self-contained FM transmitter.

LAUMIC CO. 1771

Will feature its rental CMX Edge video editing system, now with Betacam interface, and the VES Benchmark tape editing evaluation system.

LEADYNATECH 302

Will bring its Perfect Power Source, a combination surge eliminator, RFI/EMI filter, and voltage regulator of power lines for transmitters, studio equipment, etc. Also will have its CPS continuous power source line, from 250 VA to 5000 VA. Other products will include its line of surge eliminators; Klean Line filters; guy-charged chokes; transient eliminators for telephone, video, control, and digital lines, and current loops; and dissipation arrays for the prevention of lightning strikes.

See ad page 130

LEADER INSTRUMENTS CORP. 1349

Will premiere the LCG-420 NTSC sync/test pattern generator with plug-in

KEY TO BOOTH NUMBERS

100-999 Radio Hall Exhibits
1000-1999 TV Hall Exhibits
2000-2999 Hilton Pavilion Exhibits

modules; the LBO-5825 digital storage oscilloscope; the LAG-126S low distortion audio oscillator with balanced output; and the LBO-552BH1 stereo oscilloscope. The line of NTSC and PAL waveform monitors and vectorscopes; NTSC, PAL, and SECAM sync/test generators; oscilloscopes; audio generators; wow and flutter meters; millivoltmeters; audio analyzers; and RF signal generators will also be shown.

LEBLANC & DICK COMMUNICATIONS 1149

Will introduce new broadband FM antenna systems, designed to conform to new FCC standards, and new broadband TV antenna systems. The full line of antennas and tower systems will also be on display.

See ad page 125

LEITCH VIDEO LTD. 1021

Will introduce a number of new products, including the BTG-1010N digital test signal generator, the DFP-3000N digital frame processor, the VPA-331N video processing amplifier, the ADA-860 Series audio DA, the CTG-240N

calibrated test signal generator, the CSD-530 master clock driver, and the DCD SMPTE/pulse-driven analog clock. Also featured will be the line of NTSC and PAL sync pulse generators, subcarrier monitors, and VPAs; video, equalizing, clamping, pulse, and switchable delay distribution amps; and NTSC digital and analog multiple test signal generators, encoded color bar generators, video source IDs, and master clock systems.

See ad page 31

LEMO USA 1334

Will bring its line of miniature coaxial connectors for audio applications and large connectors for TV broadcast applications.

LENCO 1419

Will introduce several new products: the PSG-313 RS-170 sync pulse generator with genlock; PSG-410 RS-170 sync pulse generator with genlock, black burst, and optional color bars; PCE-4662 genlock option for the PCE-466 NTSC encoder; and PVS-435 NTSC videoscope for measuring sch phase and system timing, with both

LED and video output display. Other products will include the PMA-670 for audio impedance matching of dual low-level, high-impedance inputs, and the PPA-100 100 W per channel audio amplifier.

See ad page 23

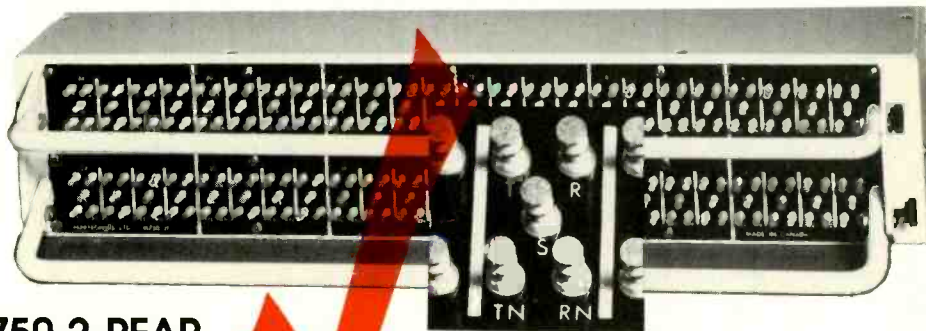
LEXICON 1139

Will feature a new stereo upgrade for the Model 1200C digital audio time compressor/expander, consisting of two 1200Cs with a factory-checked and calibrated stereo matrix unit. The system will fit syndicated shows, movies, commercials, etc. into time slots for broadcast and post-production. It automatically controls the speed of playback equipment and preserves broadcast-quality audio, and features improved machine control for on-air applications. Also on exhibit will be the Model 1300M and 1300S digital audio delay synchronizers, the Model 200 stereo programmable digital reverberator, and the Model 224XL digital reverberator/effects processor.

LIGHTING METHODS 182

Will introduce the RD digital dimming

FARRTRONICS PRE-WIRED AUDIO PATCHFIELDS



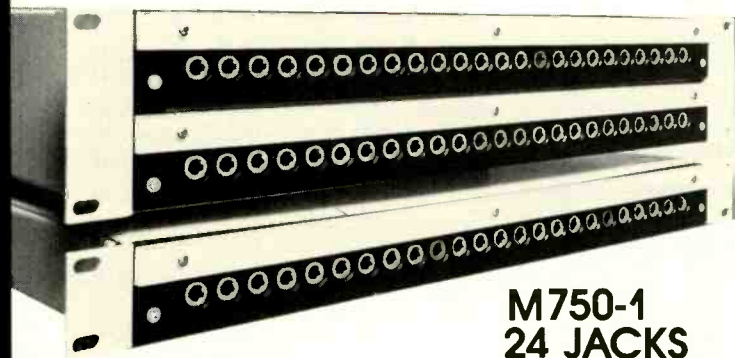
M750-2 REAR

**M750-2
48 JACKS**

- NEAT, SIMPLE
- NO NONSENSE—
SOLDERED THROUGHOUT



TIRESOME!



**M750-1
24 JACKS**

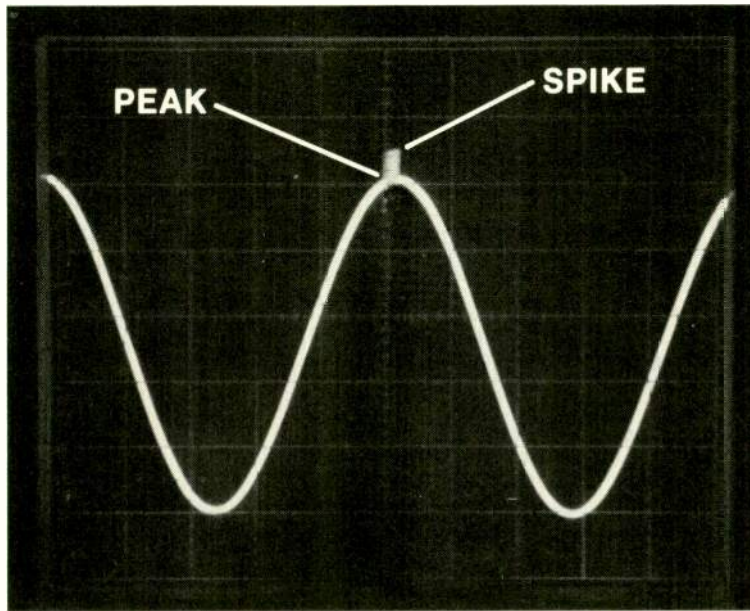
See us at NAB Booth #1505

FAST DELIVERY
1-800-265-2713
OR TELEX 06-957515 USA

Circle 209 on Reader Service Card

FARRTRONICS LIMITED, 480 DUTTON DR., WATERLOO, ONT. CANADA N2L 4C6 519-746-6200

Can Your FM Modulation Monitor Tell a Peak from a Spike?



See it Live
in
Booth 109

TFT's new FM/Stereo and SCA monitors make modulation uncertainty a thing of the past. Based on more than 14 years of experience with over 5,000 monitors, these new instruments have an exclusive (pat. pending) Peak Differentiator that separates true modulation peaks from the spikes generated by noise, overshoot and multipath distortion.

With the Model 844 FM/Stereo monitor and the Model 845 SCA monitor, you can modulate your transmitter at the absolute legal limit, with absolute confidence, to achieve maximum coverage.

Both new monitors have a built-in frequency-synthesized FM modulation calibrator—another TFT first. Merely push a button on the front panel to get a modulation accuracy better than 1 percent—year after year—without any additional instruments.

Other important features include automatic bandwidth selection when you change be-

tween remote and on-site monitoring, and a multipath detector to minimize distortion in off-the-air applications.

In addition, the Model 845 SCA monitor allows you to select up to three SCA frequencies. And, using the digitally programmable pre-selector in the Model 844, you can monitor your competition off-air to get a fast, precise fix on how your loudness measures up.

So, to take the guesswork out of modulation and get all the coverage you're entitled to, get your monitor from TFT. For detailed specifications, and a demonstration, call or write.



Committed to keeping you, on the air!
3090 Oakmead Village Dr., Santa Clara, CA 95051 • (408) 727-7272 • TWX 910-338-0584

system, a new line of dimmer modules to work with existing digital electronics, designed especially for studio use; and the PD portable packs, a new series of module dimmer packs using RD dimmer modules and single plug-in control card. Other products on view will include the CH200 Series electronic manual control consoles, the Designer Series electronic manual control consoles with level patch and tape storage, the Idea memory console, and the Concept 250 memory console.

LIPSNER-SMITH CO. 1626

Will introduce the Vedette II professional film previewer for 16 mm and 35 mm film. The established CF-200 and CF-190 ultrasonic film cleaning machines will also be featured.

LISTEC TELEVISION EQUIPMENT CORP. 1406

Will feature a new 19-inch on-camera prompter with ultra wide-angle hood, plus the new ProPrompt Series portable field prompters. Also introduced will be a new version of the A-2100 Electronic ScriptWriter with increased buffer capacity, rapid disk access, ability to view simultaneously on-air story and story editing, and the addition of reverse video, black on white, white on black, with 20 characters per row and 6000 rows per disk. A new version of the Vinten MicroSwift digital remote camera control system will also be shown, featuring individual remote control of pedestals and/or heads by means of a newly designed, compact operator console. Also shown will be the line of Vinten camera mounting equipment including jib arms, pedestals, and fluid heads.

See ad page 50

LOGITEK 613

New items will include the BPA-200 balanced-input phono preamps; the Perfectionist-12 12-channel broadcast audio console; and the Monitor-10 line of monitors and meters with up to 10 selectable stereo audio sources. Also featured will be the line of Custom Audio Series consoles, Audiorack audio consoles, audio DAs and power amps, LED audio level displays, speakers, presettable timers, and audio preselectors.

PAM LONTOS, INC. 120A

Will introduce a new broadcast sales training series, *The Basics of Broadcast Selling*, in 30 individual sales meetings

on VHS cassettes. Will also show the eight-hour audio course, *Tune into Broadcast Selling*, a helpful supplement to the video course.

LOWEL-LIGHT MFG. 1309

Will bring a full line of lighting equipment for film, video, and still photography.

LPB 405

Will show for the first time its Benchmark Series of audio consoles. The Signature II and Citation audio consoles, PSRA/PSSA transmitters, and studio furniture line will also be shown.

LTM CORP. OF AMERICA 1518

Will feature the Cinepar 200, a 200 W HMI; Pepper Packs, portable, professional lighting kits using fresnels; a line of studio incandescent fresnel fixtures from 1000 W to 10 kW; the A230 six-channel sound mixer; and a 12 kW Luxarc focusing fresnel HMI light. The company will also show its large selection of HMIs and its Pepper miniature quartz-halogen lights.

L-W INTERNATIONAL 1602

Will present its multimedia film/video telecine systems, 16 mm film digitizer, 16 mm telecine systems, and 16 mm motion picture analyzers.

LYON LAMB VIDEO ANIMATION 1632

Will show its line of video animation controllers, including the Model VAS IV-Delta for the Sony BVH-2500 single-frame VTR and the VAS IV, a low-coast, rack-mounted version of the VAS IV-Delta.

3M BROADCASTING AND RELATED PRODUCTS DIV. 1002

Will show the new 6600 control system with five multifaceted control panels and the new MFA paint system, a high-resolution graphic arts design station. Other products to be featured will include the H Series routing switchers, D-5000 and D-8800 character generators, and BFA paint system.

See ad page 131

KEY TO BOOTH NUMBERS	
100-999	Radio Hall Exhibits
1000-1999	TV Hall Exhibits
2000-2999	Hilton Pavilion Exhibits

3M MAGNETIC AUDIO/ VIDEO PRODUCTS DIV. 1002

Will introduce a new Betacart cassette for the Sony Betacart system, plus premium grade 3/4-inch U-Matic cassettes and improved Super High Grade Beta and VHS cassettes for half-inch recorder/camera systems. Will feature new anti-static plastic for cassette inner and outer parts, considerably reducing dirt/dropout problems. Also on view will be 480 one-inch videotape, 3M brand cassettes, and 226/250 audiotape.

See ad pages 114-115

3M OPTICAL RECORDING PROJECT 1002

Will show several optical data disc products, including OROM prerecorded media, 5.25-inch diameter, 2500 Mbytes, concentrically recorded; CD ROM, prerecorded media, 4.72-inch diameter, 350-600 Mbytes, recorded by standard CD format; Erasable optical data disc, user recordable media, can be recorded, updated, and erased, 5.25-inch diameter, 250-500 Mbytes; and write-once optical data disc, user-recordable in 5.25- and 12-inch sizes, nonerasable. 3M Scotch laser videodisc and user applications will also be featured.

3M STORMSCOPE 200

Will feature the new Stormscope thunderstorm mapping device.

See ad page 235

M/A-COM MAC 1004

Will feature its line of microwave equipment, including the Super 2MR receiver, Super 2MX transmitter, Sky-pod airborne ENG system, 23CC transmitter receiver system, 40 GHz camera systems, and MRC central receiver.

See ad page 84

MACROTEL 1702

MAGNASYNC/ MOVIOLA 1331A

Will feature its Videola V-1000 film-to-tape transfer system.

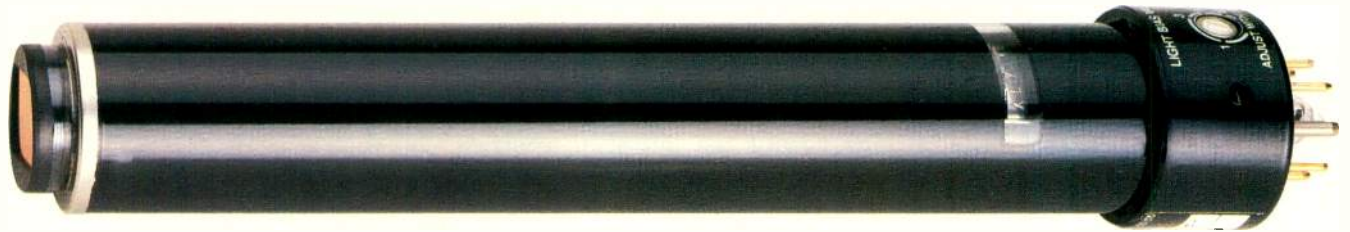
MAGNUM TOWERS 119

Will introduce a new line of radio and TV towers.

THE MANAGEMENT 612

Will introduce the Co-Operator full-size computer coop management system to run on the IBM PC and compatible computers, in addition to the established line of computer business systems for broadcasters.

The definition of the best color camera tubes in the world.



No matter how you define your color camera needs, you will want to be certain you have chosen the best tube for the job. And no technical appraisal can be complete without EEV Leddicons.

Take lag or smearing. Because Leddicons incorporate a unique light bias arrangement, shading is minimal. So is differential lag. The result is that a football in flight will always look like a football — not a flying saucer!

As for color imagery, you simply cannot improve on Leddicons. Extended reds have a precisely-engineered response with an infra-red filter providing cut-off exactly where you want it.

Or compare the highlight image performance of Leddicons with other tubes. The difference is that the retention effect is minimised by a unique target manufacturing process — even in the very difficult extended red channel where other tubes are simply unable to cope.

You'll certainly want to avoid blemishes. That's why all Leddicons must satisfy the most exacting manufacturing, testing and quality control standards. And it shows — in the fact

that Leddicons average less spotting than other tubes!

Then there's geometry. The optimised electron optical design of Leddicons ensures the best possible geometry. Registration too is equally distortion free — we can, in fact, supply



computer-matched sets for all three channels.

And what about microphony? With EEV's unique anti-microphonic mesh assembly, Leddicons provide the cleanest pictures — even from cameras

operating in areas of high ambient acoustic noise.

As for choice, there's simply none better than Leddicons. That's because the range covers fully-interchangeable sizes and types to suit virtually every type of studio, EFP and ENG camera used in the world today.

When you add up all the facts about Leddicons, there is only one conclusion — namely, the definition of the best tubes for your camera.

But don't leave it at that.

Next time specify Leddicons for your new equipment and as replacements and find out what that definition really means in practice.

LEDDICONS

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EEV Camera Tubes 

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EEV Canada Ltd, 67 Westmore Drive, Rexdale, Ontario M9V 3Y6. Tel: 416 745 9494. Telex: 06 989 363.
EEV, Waterhouse Lane, Chelmsford, Essex CM1 2QU, England. Tel: 0245 261777. Telex: 99103.

See us at NAB Booth #1335

Circle 204 on Reader Service Card

MARCOM/INOVONICS 306

Will introduce a pair of new broadcast television stereo generators, both featuring the "Sinusoid Sample" method of stereo generation for high S/N and separation. Model 710 accepts composite video or composite sync for pilot reference, while the 720 utilizes an internal 19 kHz reference. The C.N. Rood bandwidth extender will also be featured.

**MARCONI ELECTRONICS
See GEC/McMICHAEL****MARCONI INSTRUMENTS 1615**

The Marconi Model 2923 television signal generator and inserter, employing advanced digital technology, will make its U.S. debut at the show, as will the Model 2955 mobile radio communications test set. Other products to be displayed are the Model S1100 audio transmission test set; the Model 2914A insertion signal analyzer, now featuring measurement of pedestal and modulation depth; the Model 2920 TV interval timer; the Model 2305 AM/FM modulation meter; and the Model 6960 RF power meter.

MARK ELECTRONICS 1227

Will add a new radio monitoring system and mini master control system to its line of rack equipment.

MARTI ELECTRONICS 501

Will introduce several new products, including: the AR-10 Series of compact mobile repeat receivers for VHF and UHF frequencies, weighing 5.5 pounds and operating on 120 V ac or 12-15 V dc; a 1.7 GC STL for Canada; an STL booster amplifier to retransmit microwave signals on the same frequency in cases where line-of-sight path is not available; the CR-10 Series rackmount RPU receivers with built-in monitor speaker; and a five-foot grid STL dish antenna with 20.5 DBI gain for operation in the 890-900 MHz range. Will also show the line of STLs and intercity relays for AM and FM stereo or AM mono, remote pickup broadcast systems, mobile and fixed repeater stations, telemetry links, compressor/limiters, SCA equipment, rack-mounted amplifiers, civil defense communication systems, and accessories.

MATTHEWS STUDIO EQUIPMENT 1209

Will unveil a raft of new products:

Doorway Dolly with single-operator seat, Car Mount, Side Mount, scrim bags, grid clamp, Matth gag, Matth quad, Cam-Remote sports version, Cam-Remote one-operator console, Cam-Remote snorkel, Turtle stand, collapsible C-stand, focus track, Tulip cowl and seats, point of ladder pin, Matth poles, Stage Stands, Flex-Clamp, adaptor kit, collapsible stand extension, and heat resistor umbrella. Also on view will be the complete line of cranes, dollies, track, stands, lighting control and diffusion, mounting and grip equipment, and remote camera heads and controls.

MAXELL CORP. OF AMERICA 1624

Will add a new one-inch videotape to its line of HGX professional half-inch tape, 3/4-inch videocassettes, and hi-fi videocassettes.

See ad page 197

McCURDY RADIO 207

Will exhibit its line of audio mixing consoles, audio/video routing switchers, audio digital delay units, SMPTE clocks, master control automation systems, and enhanced, microprocessor-based intercom systems, with new products in each category. McCurdy's studio packages for on-air and production applications will also be featured.

See ad pages 40, 93-96



MCG Surge-Master power-line protector.

MCG ELECTRONICS 167

Will feature the Surge-Master line of ac power line protectors, designed to protect sensitive broadcast equipment from transient overvoltages by limiting spikes to safe levels.

See ad page 104

MCI/QUANTEL 1631

Will unveil a major new product for digital animation and editing—Harry, "son of Henry." A lower-cost (under \$200,000) version of the Henry prototype shown in a suite last year (and again this year), Harry records up to 100 seconds of digital video frames in digital memory, which can then be read out with random access. The product, deliverable in the third quarter of 1985, is targeted at animation applications. Harry will have a digital interface with the Paint Box, allowing Paint Box images to be captured directly. Quantel will also introduce Morph, a \$150 software package for the Mirage that allows new shapes to be created and changed even by nonprogrammers. Quantel will also feature the floating viewpoint option for the Mirage; the Paint Box; the Encore digital effects system; Cypher character/caption generator; the DLS digital still store line and central lending library; digital standards converters; and the DFS-1750 frame synchronizer.

See ad page 116

McGRAW-EDISON 124A

Will exhibit its communications and control system that utilizes the AM SCA to send low-data-rate messages and also system timing to reduce power consumption at peaks and provide full supply at valleys; other applications include controlling equipment, paging, emergency alert, intrusion alarm, and traffic light control.

McMARTIN INDUSTRIES 701

Will introduce a new TV stereo product line, including the BFM-7200 generator, the BFM-7000 SAP generator, the TBM-7500 baseband monitor, and an SAP monitor. Will also feature the NP channel receiver.

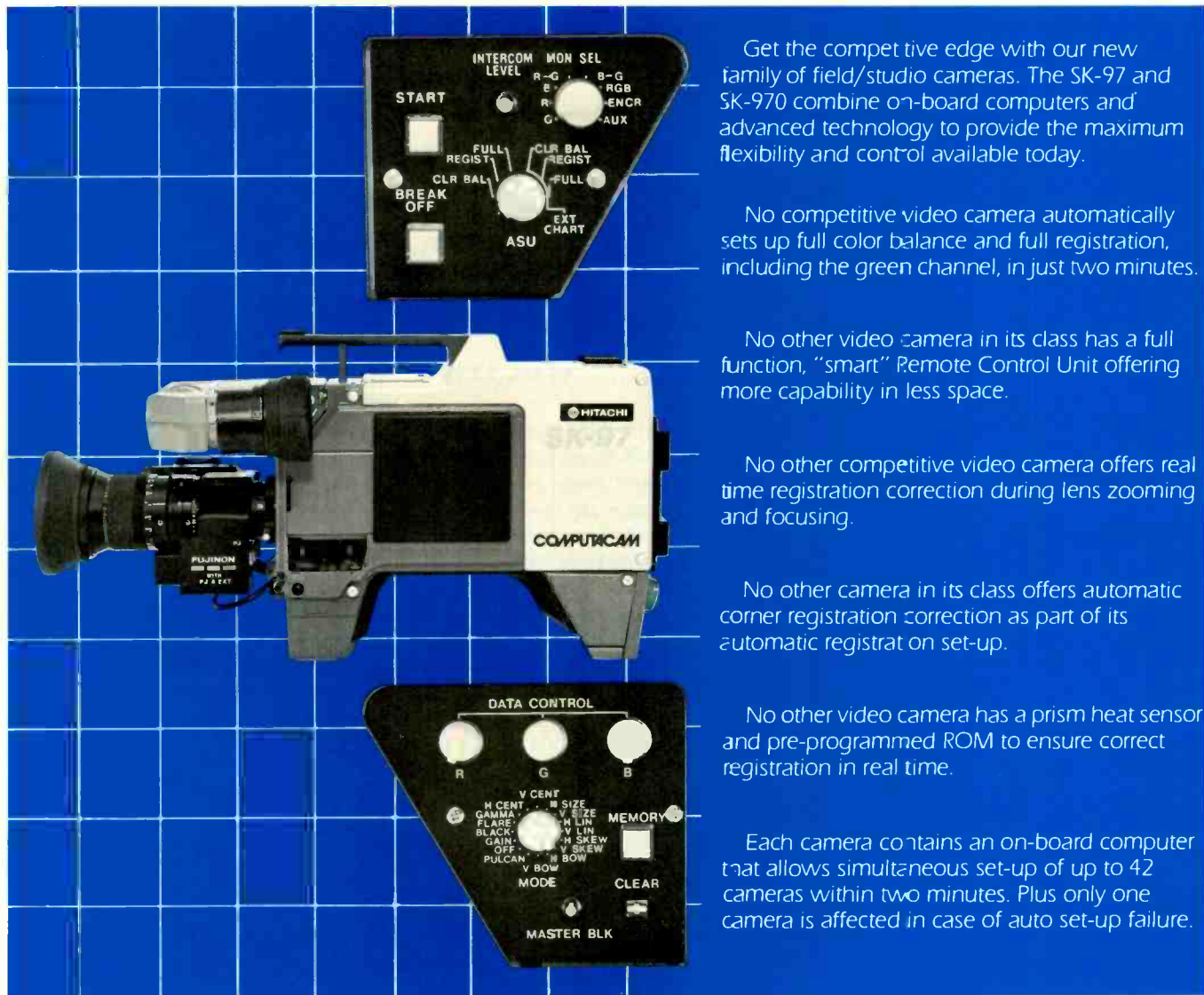
**McMICHAEL, LTD.
See GEC McMICHAEL****MEDIA GENERAL BROADCAST SERVICE 410**

Will feature its line of production music, station IDs, and TV commercials, including "Live and Let Live," an anti-drunk driving PSA that will be given away free to TV stations.

MERLIN ENGINEERING WORKS 1023

Will spotlight its line of wideband VTRs, extended-play conversions for

We designed-in features the competition couldn't.



Get the competitive edge with our new family of field/studio cameras. The SK-97 and SK-970 combine on-board computers and advanced technology to provide the maximum flexibility and control available today.

No competitive video camera automatically sets up full color balance and full registration, including the green channel, in just two minutes.

No other video camera in its class has a full function, "smart" Remote Control Unit offering more capability in less space.

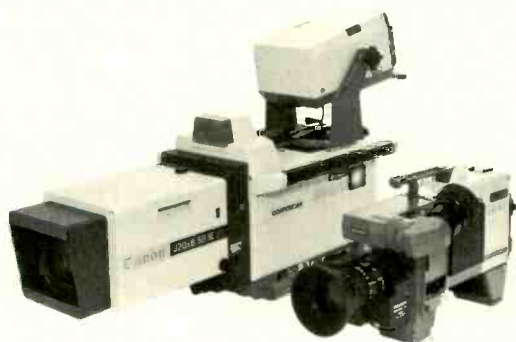
No other competitive video camera offers real time registration correction during lens zooming and focusing.

No other camera in its class offers automatic corner registration correction as part of its automatic registration set-up.

No other video camera has a prism heat sensor and pre-programmed ROM to ensure correct registration in real time.

Each camera contains an on-board computer that allows simultaneous set-up of up to 42 cameras within two minutes. Plus only one camera is affected in case of auto set-up failure.

Hitachi's SK-970 and SK-97 Computacams.



Our SK-970 and SK-97 Computacams offer superior noise-free video (59 dB signal-to-noise-ratio!)

Combine all this with other advanced features such as 700 horizontal lines of resolution, high gain in 3 dB steps from 0-21 dB, completely interchangeable boards, and built-in auto diagnostics, and you can see why our SK-970 and SK-97 Computacams stand alone!

Get the features the competition couldn't design in. For descriptive literature, technical information, or a personal demonstration, contact Jack Breitenbucher, National Sales Manager, Hitachi Denshi America Ltd., Broadcast and Professional Division, 175 Crossways Park West, Woodbury, N.Y. 11797 (516) 921-7200 or (800) 645-7510.

 **HITACHI**

See us at NAB Booth #1402

Circle 212 on Reader Service Card

Type-C machines, and modified BCN recorders for HDTV applications.

See ad page 246

MICRO COMMUNICATIONS 1014A

Will introduce new MTS multichannel stereo sound duplexers. Other featured products will be MDS/ITFS multichannel combiners, MDS/ITFS duplexers, ITFS antennas, waveguide transmission line (circular and rectangular), FM antennas, RF components, and ENG antennas.

MICRO CONTROLS 104

Will unveil a new transmitter-studio link in the 450 MHz band, featuring 2-10 W output with built-in fire and burglar protection. Will also show the line of STLs, remote-control equipment, subcarrier equipment, and subcarrier paging equipment.

MICRODYNE CORP. 1612

Will introduce the 1100 PCDR(5) frequency agile, format-selectable SCPC demodulator; the PR-4 1.2 m Ku-band satellite antenna; the PR-6 1.8 m Ku-band antenna; the PR-8 2.5 m Ku-band antenna; and the 1100 LNC-type satellite receiver for C-band and Ku-band, full and half-transponder operation. Also featured will be the MAPS III motorized polar mount drive system for Microdyne three-, 3.66-, five-, and seven-meter antennas.

See ad page 195



Micron transmitter, diversity system.

MICRON AUDIO PRODUCTS 1122C

New products this year will be the CTR-501 wireless microphone system with CNS (complementary noise suppression) for ENG and film applications; the TX-502 handheld transmitter with CNS; the MDR-530 mobile space diversity receiver with CNS; the MDR-540 modular space diversity receiver with CNS; and the REM-1 remote display assembly. Other products on view

will include Tram miniature lavalier mics and Mini-Max fishpoles.

See ad page 82

MICROPROBE ELECTRONICS/MEI 331

Will introduce the new Satmaster satellite programmer, plus a new digital mastering controller and tone generator.

MICROTIME 1230

Featured products will include two digital efx systems, the Genesis 1 and the T² A/B roll system; the T220FIT, T120D, and T120 time base correctors; and the F230 TBC/frame synchronizer.

See ad page 14

MIDWEST CORP. 1710, 1710A

Booth will feature three mobile production units. The 45-footer is designed for coverage of major sports events, while the two 30-footers are designed to be operated as standalone production vehicles, one audio and one video, or to be linked together to create one comprehensive unit.

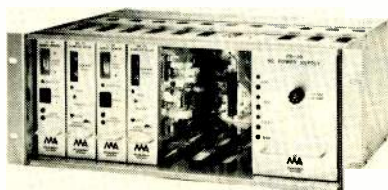
See ad pages 8-9, 47

MINOLTA CORP. 1113

Exhibition will highlight the Minolta TV Color Analyzer II, along with the company's luminance meter, illuminance meter, and chroma meter.

MITOMO CO. 1509

Will feature three models of random access disc changers for automated disc operations. Also featuring a portable audio mixer designed for ENG, a rapid battery charger for field use, and videocassette winder with eraser.



Modulation Associates subcarrier system.

MODULATION ASSOCIATES Parking

Will introduce the SR-13, a fully synthesized, frequency-agile satellite subcarrier demodulator system for stereo TV sound distribution or data transmission above video; and E-SAT, and

economical SCPC satellite receiver designed to minimize costs without sacrificing performance. The complete family of SCPC satellite receivers, along with the SU-10 all solid-state uplink, will also be displayed.

Sharing the booth will be IDB Communications, which is offering free uplinking of audio or data to anyone at the NAB. IDB has uplinked *The Larry King Show* in the past.

See ad page 240

MODULATION SCIENCES 204B

Will introduce the TSG (STV-784) stereo generator for television with audio processing and loudness controller. Other new products will include the TSCA-189 TV Sidekick second audio program generator with audio processing and dbx NR built in; the SCA-186 Pro Sidekick pro channel generator with built-in audio processing; and the Data Pro high reliability data distribution for pro channel on television. Established products for FM broadcasting will include the CD-803 composite processor, the SCA-186 Sidekick SCA generator with audio processing, the CID-2500 composite line driver baseband distribution system, and the Data Sidekick high-speed data system for FM SCAs.

MOLE-RICHARDSON CO. 1006

New products will include the 4271 Moleremote Molepar, the 2981 mini softlite, the 5321 2.5K dc Molelectronic dimmer, the 5361 ac to dc Molelectronic dimmer, the 2901 two-inch Tiny-Mole Solarspot, the 6281A 6000 W HMI Mole Solar-Arc, and the 4811 baby size low compact lightweight stand. Will also exhibit the full line of dimmers, fresnels, HMI fixtures, Solarspots, softlights, lighting kits, cyc strips, quartz lights, and grip equipment.

MONTAGE COMPUTER CORP. 1775

Will introduce the Montage Picture Cutter (shown at SMPTE), a turnkey system using standard Montage modules and software identical to the Montage Picture Processor video editing system. The system outputs a negative cutting list as well as an edit decision list and edit decision disk with time code. The Picture Cutter will also provide the editor with a conformed workprint.

The HK-322 gives us great studio performance—first time and every time!

Jeanine Fox, Technical Manager ABC-TV, Hollywood, California

Rarely does a product stand the test of time, consistently outperforming those that would take its place.

Such a product is the HK-322 broadcast color television camera, ideal for studio or field use. And it is no small tribute to Ikegami's engineering foresight and technological superiority that today, their HK-322 is still playing to standing ovations.

The HK-322, equipped with 30 mm or 25 mm Plumbicon® tubes, features: standard diode gun or ACT pick-up tubes, advanced operational automatics including auto pedestal control and auto highlight compression, complete set-up automatics, diagnostics and a wide range of special features.

The HK-322 can be furnished with mini camera cable (up to 600 meters) or optional triax for lengths up to 1500 meters. Two types of camera control systems are available with an optional control panel configuration to suit user preference.

Forget the imitators. For rave reviews, it's the HK-322.

For a complete demonstration of the HK-322 and other Ikegami cameras and monitors, contact us or visit your local Ikegami dealer.

See us at NAB Booth #1011, #1013

Ikegami

Ikegami Electronics (U.S.A.), Inc.,

37 Brook Avenue,
Maywood, NJ 07607

- East Coast: (201) 368-9171
- West Coast: (213) 534-0050
- Southeast: (813) 884-2046
- Southwest: (214) 233-2844
- Midwest: (312) 834-9774

*Plumbicon® is a registered trademark of N.V. Philips.

Circle 213 on Reader Service Card

MOSELEY ASSOCIATES**103**

Will show its established line of aural studio-transmitter and multiplexed data links; remote and supervisory control systems; stereo generators and demodulators; telemetry return links; subcarrier generators and demodulators; audio limiters; and microwave and remote-control accessories.

See ad pages 5, 51

MOTOROLA**309**

New items will include the Dyna-Tac 8000 portable cellular radio, the PCX1000 synthesized portable repeater, and the CCB101 synthesized portable base station. Also on view will be the SRI studio RF intercom system, Tachcal field equipment for ENG, paging and cuing receivers, tone remote consoles, synthesized high power base and repeater stations, and a full line of test equipment, along with Motorola's AM stereo exciter, modulation monitor, and AM stereo receiver.

See ad page 36

MPCS VIDEO INDUSTRIES**1121**

Will introduce the Technov line of high-quality, affordable video production equipment, including video and audio DAs, color sync and black burst generators, and portable two-input video switcher. Will also feature its capabilities as a distributor of television equipment.

MULTI-TRACK MAGNETICS**1712**

Will show the 106-DCS-10 high-speed sound follower for any telecine projector, along with the Audio Arts broadcast console and the film-to-video interface system.

MUSIC DIRECTOR**511**

Will introduce the new Safest Oldies libraries for A/C and CHR radio stations, compiled after extensive testing. A/C package includes 641 songs on 26 reels; Top 40/CHR package includes 300 songs on 13 reels. Also new will be a five-hour Jim Reeves special hosted by Eddie Arnold and featuring over 40 country artists. The company's Christmas programming library has just been updated on 10.5-inch reels, featuring 163 hits and traditional Christmas music on five reels, complete with a rotation plan. The complete line of Joel Whitburn's Record Research books will be one sale at the booth, along with

Country Gold Oldies library, Pop Oldies library, plus A/C playlist and music supply service.

MUSICWORKS**209**

Will feature radio programming, as well as existing shows designed for all formats, live assist or automated operations.



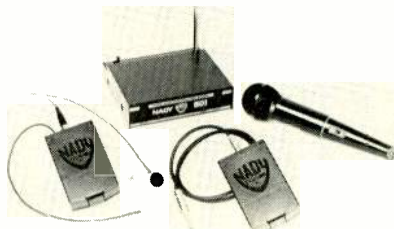
Mycro-Tek Supra Two character generator.

MYCRO-TEK**1752**

Display will feature the entire Mycro-Vision video display information system, including Ernie, Max, single-channel Supra, and dual-channel SupraTwo character generators.

MZB & ASSOCIATES**1507A**

Will feature a four by four ENG Jimmy and a 12-foot three- or four-camera production vehicle on an Iveco chassis.



Nady 501 VHF mic system.

NADY SYSTEMS**1133**

Will introduce two VHF high-band wireless microphone systems, the 501 VHF and the 601/701 VHF. The 701 features true diversity reception. Other products will include 49 MHz communicators headsets, the ICX-1-3 wireless base station for interface with hardwired intercoms, and 49 MHz wireless microphone systems.

NAGRA MAGNETIC RECORDERS**1213**

Will show the T-Audio portable studio recorder with detachable control console, designed for time code applications, plus the full line of Nagra field

recorders and the Nagrafax facsimile meteorological chart receiver.

NALPACK SALES**1124**

Will feature Tripak and ATA high impact professional video equipment cases. Also the Tripod II case for holding tripods, and Accu-Chart test charts for broadcast applications. Other equipment on display will be cables for video and audio, and a small earpiece for communications.

NAUTEL MAINE**216**

Will introduce Ampfet 50, described as the world's first totally solid-state, modular 50 kW AM broadcast transmitter, featuring better than 75 percent overall efficiency, dual power supplies and exciters, on-air module replacement, and more. The Ampfet series of totally solid state, modular AM transmitters in 400 W, 1 kW, 2.5 kW, 5 kW, and 10 kW models will also be displayed.

NEC AMERICA BROADCAST EQUIPMENT DIV.**1415**

Will introduce new software upgrades for the E-Flex/Optiflex digital video effects system, including Picture Cropping and Cube Maker; the SP-3A, a new version of NEC's three-chip broadcast CCD camera with superior light handling capabilities, increased sensitivity, and S/N of 58 dB; and new TV transmitters. Booth will also feature the FS-19 10-bit frame synchronizer, the FS-18 eight-bit frame synchronizer, the AS-18 digital audio synchronizer, the TVL-800-6F 7 GHz microwave system, the DV-10 digital video multiplexer, and the FBN-9000 Series FM transmitters.

See ad pages 59, 258

NETCOM INTERNATIONAL**1516**

Will describe its services as a satellite and microwave network facilitator.

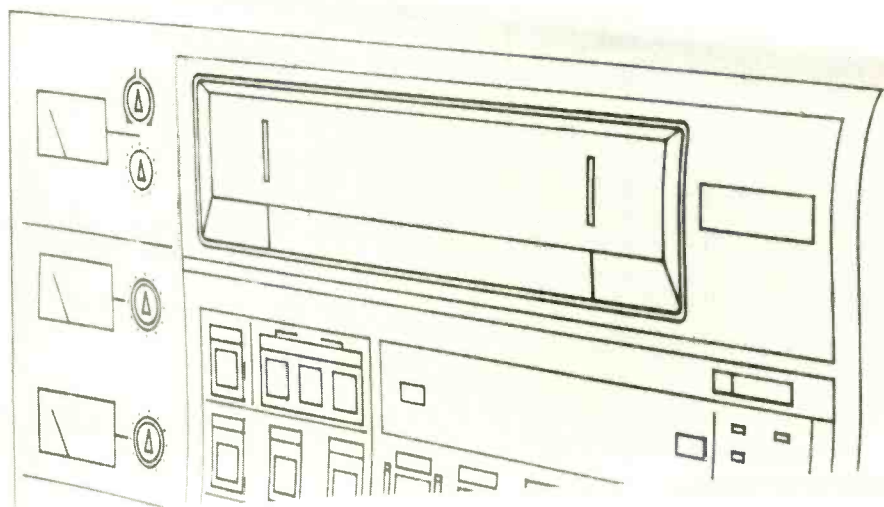
NETWORK PRODUCTION MUSIC**1138**

Showing sound effects library containing over 3000 stereo effects and a theme-oriented music library.

RUPERT NEVE, INC.**1410**

Will feature the NECAM 96 moving fader automation system for production and post-production, fitted to a 51 Series 5116/36 console. NECAM 96 features include up to 128 fader posi-

JVC is planning something new



FOR U!

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JVC COMPANY OF AMERICA
Professional Video Communications Division

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Circle 214 on Reader Service Card

tion scene sets with automatic or manual crossfade between scene sets; comprehensive muting; and labeling and events function switching. In addition, a full range of stereo production, post-production, and mobile consoles will be displayed and demonstrated, including models from the 51 Series, 8128 Series, and 542 Series. DAs and limiter/compressors will also be displayed.

See ad pages 238-239

NISUS

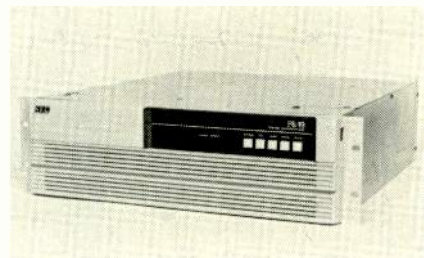
2205

Now under contract to supply high-speed shutter system for RCA CCD camera, Nisus will also show its shutter system for the Ikegami HL-79E. Shutter is adjustable to 1/250-second, allowing slow-motion photography with specially modified camera.

NORDIC SOFTWARE

622

Will feature Media Master radio business automation software.



FS-19 frame synchronizer from NEC.

NOVA SYSTEMS

1345

Will introduce two new digital TBCs. The Nova 490, at \$5850, features 32-line window, eight-bit, 4xsc sampling, adjustable LIC delay, and heterodyne operation for 3/4-inch and half-inch VTRs. The Nova 510, priced at \$7450, offers heterodyne or subcarrier feedback operation. The Nova 500 full bandwidth digital TBC will also be shown.

N.T.I. AMERICA

1014D

Will introduce the VFCG-2 video filing and character generator, a multipurpose still generator that provides four fields still storage, high-resolution character generator, video digitizer, graphic software, sports scoring package, and election package. The system's disk is selectable either 160 M or 470 M, and maximum on-line storage is 5640 frames (11280 fields), which can be accessed simultaneously from four remote locations.

NURAD

1426

Will introduce several new products, including the SQ6 Series receive antenna system, a six-foot version of the Superquad II with quad polarization, high gain, and low sidelobes; the 130CT1 compact 22-channel 13 GHz transmitter; the 130OR1 14.5+ compact parabolic antenna; the 20CT1 compact transmitter and 20PA15(A) mast-mounted power amp, both for 2 GHz applications; the Logic Track helicopter automatic tracking receive system, which automatically steers the receive antenna to the correct bearing; the 20CA1 compact antenna; the Supertrack automatic tracking system, available in 2.5 and 2 GHz models; the AT Series rack-mounted frequency-agile transmitters in 2, 2.5, 6, 7, and 13 GHz; the 130AR2 13 GHz frequency-agile rack-mounted receiver; and the AP2 Series central ENG/EJ receivers with improved audio S/N and adjacent channel rejection. Will also feature its established line of Superquad II, Silhouette, and quad receive antenna systems; Silhouette remote transmit systems and the PT and RX Series portable transmitters and receivers; the Super Pod airborne microwave system; plus STL/ICR systems with antennas, FT2 Series transmitters, FR2 Series receivers, and H/S Series hot standby units.

See ad page 83

O'CONNOR ENGINEERING LABS

1103

Will introduce the Model 100HD fluid head, a new heavy-duty version of the Model 100C, available with a choice of three factory-set springs counterbalanced for the entire range of studio-style cameras. The recently introduced Model 53 tripod dolly will also be featured, along with the full line of O'Connor camera support systems.

See ad page 210

OKI ELECTRIC

1505

Will feature its LT 1210 portable digital TV standards converter.

See ad page 133

OLESEN

1307

Will feature its studio lighting packages complete with pipe grid, lighting, dimming distribution, curtains, cycloramas, and track, along with a complete line of expendables.

OMICRON VIDEO

1748

New this year will be the Model 516

production switcher, a one M/E unit with title key and DSK digitally generated wipe pattern; the Elepac-90 battery, a direct replacement for the Sony BP-90; and the Elecon/Eiden Model 465 stereo TV modulator, a baseband composite audio signal modulator for the Zenith MTS system. The Elecon EM 7100 Series VTR editing system will have several new options including control of up to four playback VTRs, slow-mo editing for A/B roll, switcher fader LEARN mode up to 27 minutes, and GPI (four-channel 512 events). Other featured products will be the 200/210 video DA, 240/250 audio DA, 522/533 AFV switcher, 506 Edit Master switcher, and UVAS 5500 audio/video synchronizer.

OMNIMUSIC

185

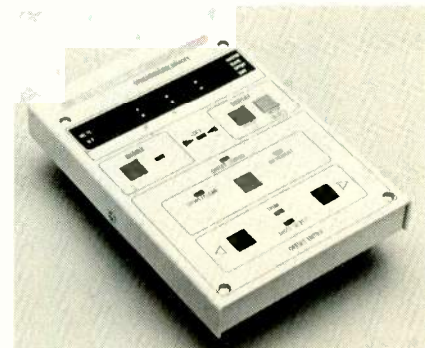
Will introduce the new Fourscore Music Co. album library, along with 40 new production music albums.

ORBAN ASSOCIATES

607

Will introduce the 8182A/SG aural TV stereo generator to work with the 8182A Optimod-TV, featuring live display. Also new is a line of security covers to fit all standard EIA rackmount units. The booth will also feature Orban's 9100A Optimod-AM in mono or stereo; 8100A Optimod-FM with six-band limiter; 8100A/XT; Model 700 loudness meter; 245F stereo synthesizer, which converts mono audio to pseudo-stereo; and the line of production compressor/limiters, EQ's, de-essers, and reverb equipment.

See ad pages 199, 256, 261



Otari CB-121 synchronizer remote control.

KEY TO BOOTH NUMBERS

100-999 Radio Hall Exhibits

1000-1999 TV Hall Exhibits

2000-2999 Hilton Pavilion Exhibits

▲ C ▲ M ▲ M ▲ U ▲ N ▲ I ▲ C ▲ A ▲ T ▲ E ▲



In the past, nomads used the stars to guide them. Today, the modern world is guided by satellite communications.

GEC McMichael is at the forefront of this new technology, with products to meet all needs: transportable transmit/receive satellite earth terminals, elliptical (29 - 25 log Ø), offset fed antennas; incredibly compact satellite news gathering, incorporating unique video compression techniques and TV receive-only terminals.

All this in addition to a total capability in broadcast, studio equipment, and studio system areas. Contact the address below for more information.

GEC McMICHAEL GEC McMichael Limited
Sefton Park, Bells Hill,
Stoke Poges, Slough, England SL2 4HD
Telephone: (02816) 2777 Telex: 849212

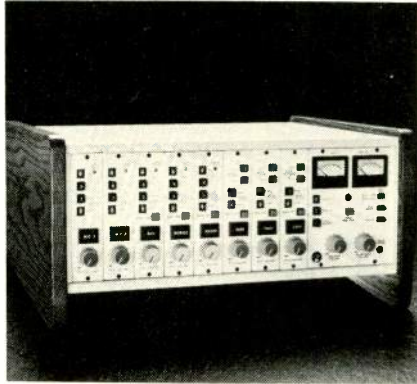
US Representative:
8260 East Raintree Drive, Scottsdale, Arizona 85260.
Telephone: (602) 9487255 Telex: 650 2246202.

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OTARI CORP.**601**

New this year will be the CB-121 remote controller for the EC-101 synchronizer, and the MX-70 one-inch multichannel ATR. Established products on view will include the EC-101 edit-code synchronizer for the MTR-90 multichannel ATR; the MTR Series master recorders; the 5050 Series recorders; the DP Series high-speed tape duplication equipment; and the MX-70 one-inch 16/eight-channel recorder.

See ad page 19



Pacific Recorders Newsmixer.

PACIFIC RECORDERS & 113 ENGINEERING

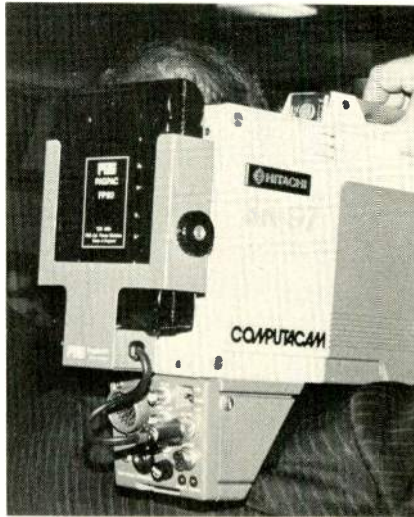
Will introduce several new products, including the Newsmixer, a modular, compact dual-bus mixing, routing, and monitoring system for radio newsrooms; the BMX 3 Series on-air radio console with three main stereo mix buses, two telephone mix-minus feeds with a monitor mix, and monitor facilities for host, cohost, and guest telephone feeds; and the Micromax cart reproducer with an advanced transport design and Mantrax wide-track tape-head format. Also on view will be the AMX and ABX production consoles, Tomcat cart recorder and reproducer, Cartcue cart eraser and splice finder, SDA20/XB200 central distribution system and switchers, RS-16 routing switcher system, NTP-512 switching system and remote controls, LSM10 line selector, meter/monitor, LS10 and LS4 line selectors, IS12 insert switcher, SDA8 and SDA8A stereo DAs, MDA-8E mono DA with EQ, and TX-990 phono preamp.

See ad page 103

PACO ELECTRONICS 2313

Will introduce the new KD-220 portable quick charger and DP-1240 nicad battery pack for ENG cameras and VTRs.

See ad page 244



Pag's Pagclip 90 battery holder.

PAG AMERICA 1747

Will feature its line of power equipment, including the PAG Speedcharge 6000, Sequencer 6000, and Master-charger battery chargers, Pagclip 90 battery clips, and the range of batteries, belts, lights, and lighting kits.



Paltex Gemini digital video processor.

PALTEX 1005

Featured new products will be Esprit and Gemini. Esprit is a five-VTR edit controller with up to 1400 lines of edit list memory, featuring Backtrac EDL tracing, editing, animation, 10 user definable keys, sort/clean/find/match, and HELP. Gemini is an eight-bit digital video processor featuring advanced 4:2:2 component sampling techniques delivering fully framed, digitally processed, stable color video output from a wide range of inputs including unstable VTR outputs and nonsynchronous feeds. The Edit-Star four-VTR edit controller will be shown with upgraded list management capabilities, and the ABR-1A A/B roll three-VTR edit controller will have additional interfaces.

See ad page 110

PANASONIC 1019

Will feature its line of Recam recorder/cameras, editing systems, cart machines, and other M-format components, plus three-tube ENG/EFP cameras and studio systems, optical

memory disc recorder/players, video monitors, tape recorders, and tape.

See ad pages 25, 27, 28-29

PATCH BAY DESIGNATION CO. 1773

Will feature its custom labeling for patch bays, control panels, and racks.

PEERLESS SALES 1618B

Newest item will be the Model 4004-050 false ceiling small camera mount. Will also bring the line of TV, AV, VCR, and CCTV accessories, including security hardware, stands, mounts, carts, and brackets for desk, wall, and ceiling.

PENNY & GILES 436

Will feature its line of rotary and slide attenuators.

PEP 1408

Will introduce the Model AS64/800 alternate VHS edit source with interface for the Sony BVU-800, a "smart system" providing a professional VHS source deck with pushbutton change-over between it and the existing 3/4-inch source for direct editing of VHS to 3/4 inch. Will also show direct editing of VHS to 3/4-inch with Sony edit controllers for its On-Cam VHS-C VTR system. The Model OCI On-Cam VTR and playback unit for TC20 VHS cassettes will also be displayed, along with the full line of batteries, chargers, reconditioners, and analyzers.

PERROTT ENGINEERING LABS 1729

New products will be announced at the show. Will bring the line of nicad, silver-zinc, and lead-acid power systems; fast, medium-fast, and overnight Mini-chargers; lighting systems; Cam/Light Maxi-Power belt with built-in fast charger; silver-zinc BP-90 pack for VTR/camera; Nicad universal clipons with built-in chargers; and Gemini silver-zinc and nicad combo packs.

See ad page 274

PESA AMERICA 1409A

New product introductions will include a sync analyzer, a cable tester, 14-inch and 20-inch broadcast monitors, and exciters. Will also show the established product line, including VHF and UHF transmitters, distribution equipment, audio and video equalizing, sync generators, mobile van design and installation, video encoders/decoders, exciters, and wired and RF intercoms.

MEET THE CHAMP ...

LA-KART[®]



THE VIDEO CART CHAMP

- Stereo Systems
- Choice of Formats
- Program Delay Systems
- 1000 Event Programming
- Frame Accurate SMPTE Time Code
- Exclusive Broadcast Software
- Random Access & Eject Modes
- Component Switching & Processing
- Print Out for Verification
- Custom TV Station Automation Systems
- Formats Include: 3/4", 1/2" Type M & Beta
- Reliable 68000 Computer & Disc Drive

Get a good look at the champ at NAB... watch it go through its workouts. See why the competition won't get in the ring with the champ.

KNOCKOUT PRICE STARTING AT \$79,900

Enter our drawing at NAB for two tickets to the Hagler/Hearns championship fight. Just drop your business card in our official entry box in our booth #1165. The drawing will be held at 2 p.m., April 15th in our booth (the day of the fight). Details regarding the drawing will be posted in our booth.

LAKE

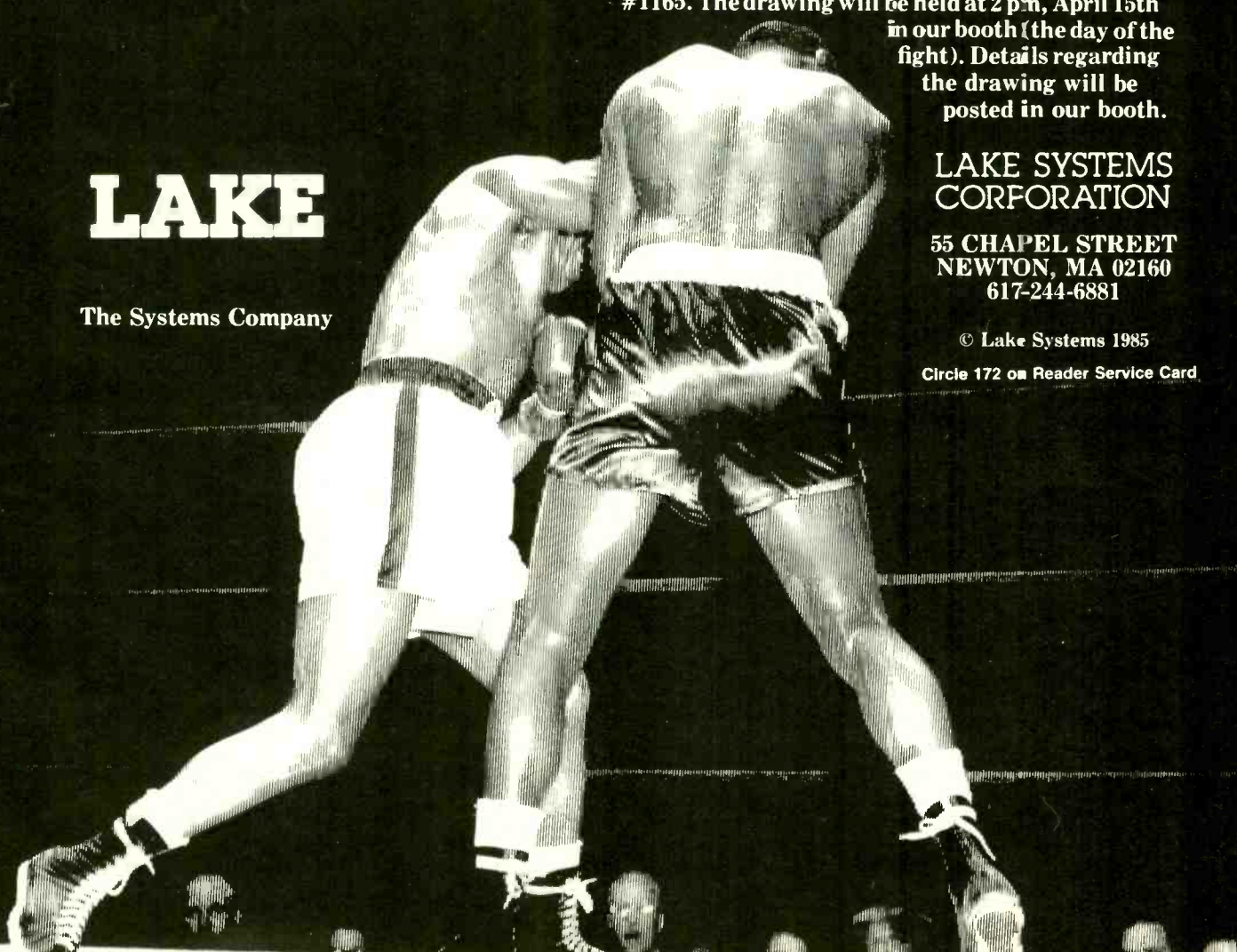
The Systems Company

**LAKE SYSTEMS
CORPORATION**

**55 CHAPEL STREET
NEWTON, MA 02160
617-244-6881**

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PHILADELPHIA RESINGS CORP. See UNITED ROPEWORKS

PHILIPS 707, 1500A TELEVISION SYSTEMS

Newest addition to the Philips camera line will be the new generation LDK-54 portable recorder/camera in ENG. EFP multicor, and EFP triax versions. The Pye TVT dual-channel component video effects system will be introduced to the U.S. market for the first time. Also new will be the LDK-7020 monitor, a 20-inch model featuring a new high-resolution CRT at an economical price. In transmission, Philips will premiere the LDM-1791, a new 60 kW high-efficiency klystron UHF TV transmitter featuring excellent performance and compact size. The LDM-1791 features the latest version of the LDM-1170 IF modulation exciter with SAW sideband filter, solid-state logic with provision for local or remote control, and integral super pulser system for high efficiency. The full range of Pye modular FM radio transmitters will be displayed, including 15-100 W, 300 W, 500 W, and 1 kW equipment, all suitable for dual-channel sound and unattended operation. Another new production introduction will be the CVE component video effects system from PYE/TVT. System includes all standard digital effects, plus additional effects in dual-channel system with integral digital switcher for real-time effects. Another digital product from PYE/TVT will be the LDM-3003 digital comb filter decoder.

KEY TO BOOTH NUMBERS

100-999 Radio Hall Exhibits
1000-1999 TV Hall Exhibits
2000-2999 Hilton Pavilion Exhibits

PHILIPS TEST & MEASUREMENT 1408A

Will introduce the PM 5633 sync pattern generator with component video output, plus the PM 5652 NTSC-7 VITS generator/insertor with external signal input capability. Will also show its complete line of studio sync/pattern generators with IEEE bus capability, and professional TV modulators, waveform monitors, vectorscopes, color analyzers, and VITS insertor/generators.

See ad page 77

PHOEBUS MFG. 1331C

Will feature the Ultra Arc Series II. Will also exhibit full range of lighting instruments and quartz followspots that are color temperature balanced.

PINZONE COMMUNICATIONS PRODUCTS 1617

Will introduce a vertical interval multi-channel audio system that permits stereo operation of any current TCR-100 or ACR-100 machine with no modification to the unit. Also featured will be the RCD-100 computer diagnostic system for the RCA TCR-100, a five-meter Comtech polar-mounted, programmable satellite turnkey package, the 8250 all-format satellite receiver, and the TCR-100 rebuild service.

PLASTIC REEL CORP. 170

Will feature anti-static videotape reel and its line of videocassette containers, and Beta, VHS, and 3/4-inch videotape.

POLAROID CORP. 173

Will feature its line of professional videotape.

PORTA-PATTERN 1427

Will premiere several new products, including the 001-30 and 001-31 BBC zone plate chart in 525- and 625-line versions; the 006-30 and 006-31 eight by 10-inch BBC zone plate transparencies; 001-44 11-step log chip chart and 006-44 11-step log gray scale transparency; 001-45 depth-of-modulation chart and 006-45P depth-of-modulation transparency; 050 Series bantam test chart systems; and 030 Series 18 by 24-inch test charts and test chart systems. The established line of test charts, test systems, telecine test slides and films, spherical transparency illuminators and test transparencies, medical TV test patterns, and specialized optical test media will also be shown.

POTOMAC INSTRUMENTS 100

Will introduce two new products, the QuantAural (QA) 100, which measures technical characteristics of program audio to reveal processing characteristics, and the SMR-11 C-QUAM stereo receiver. Also featured will be its line of remote-control systems, modulation and power controllers, UHF field test systems, and other broadcast instrumentation products.

See ad page 24

PRISMAGRAPHICS 110A

Will display presentation folders and media kits in a wide variety of styles and sizes.

PROCART 112

New additions to the line of cart storage equipment will include four new carousel cart racks, two new wall cart racks, and a pair of compact disc racks.

PROCOMMOTION 434

Will introduce the new High Rev computerized travelling game show for promotion, in addition to its glass-enclosed "Money Chamber," seen last year.

QEI CORP. 307

New for 1985 is an all-solid-state, super-efficient 2.5 kW FM transmitter that also serves as the driver for the 30 kW amplifier. Six 500 W units are combined to achieve a high degree of stability and reliability. Also highlighted will be the Model 691 FM modulation monitor, low power emergency FM transmitters, the single-tube 30 kW FM amp, and the Model 695 Transparent Plus FM exciter.

QSC AUDIO PRODUCTS 626

Will feature the Series 3 line of power amps, including Models 3200, 3350, 3500, and 3800, plus its line of module accessories for amplifiers.

QSI SYSTEMS 1325

Will introduce several new products, including the PSF-777 battery-powered, split-field color bar generator with field-programmable eight-character SID plus 1 kHz audio tone output; the SW-402 mini-EFP switcher, a four-input by two-output unit with lap dissolve and camera tally closures; and the DM-171 171-channel direct-access varactor-tuned demodulator with full AFC on all channels. Other products will include the CB-1680 16-character SID, the AF-1000 autophasing black burst generator, the PCID-864 battery-operated eight-character video SID, and the VT-7 10-second video leader countdown generator.

See ad page 269

Q-TV 1401D

New products at the show will include the VPS-500 and VPS-1000 Computer-prompter systems, the Mini Q Prompter II, and the Mini Videoprompter system. Established products will include

HOW DO YOU JUDGE A COMPUTER NEWS SYSTEM DOWN UNDER?

2GB, SYDNEY • 2WL, WOLLONGONG
AMV4-TV, ALBURY • 3AW, MELBOURNE
4AY, TOWNSVILLE • 2CA, CANBERRA
3AW, MELBOURNE • 4BH, BRISBANE
2GB, SYDNEY • 2WL, WOLLONGONG
RVN2-TV, WAGGA WAGGA • AMV4-TV
BTO-TV, BRISBANE • 5DN, ADELAIDE

BY THE COMPANIES IT KEEPS.

Basys, the world's leading computer news system, has just become the favorite down under. **MacQuarie Broadcasting Network** selected Basys to link its seven radio stations into Australia's first computer news network. Also in Australia, **RVN2-TV** and **AMV4-TV** chose Basys to bring big city news coverage to Riverina. **BTQ-TV** stays on top in Brisbane with Basys. On the other side of the globe, **NBC News** (USA) is computerizing its worldwide radio and television news network with Basys. **CNN** (USA) produces 24 hours of news every 24 hours with Basys. **ITN, Independent Television News** (Britain) stays the independent alternative and ahead of the competition with Basys. **RAI, Radiotelevisione Italiana** (Italy) operates the world's largest computer news facility with Basys. **WOR-AM Radio** (New York) looks to Basys to help compete in the land of the network flagships. **BBC-Radio** (Britain) chose Basys for all its nationwide radio news. **KTUL-, KATV-, WDBJ-TV; WKQX-, KIMN-, WBT-, WBCY-, WKNE-, WNBX-, KYGO-, KSAN-Radio** and **CBS Extravision** chose Basys software for their Basys and Jefferson Pilot Data System IBM-PC computers. They and **The MacNeil/Lehrer NewsHour, Business Times, KRON-TV, WFAA-TV, KRLD-TV** all in the United States and **Channel Four News, Anglia Television** and **TV-AM**, Britain's breakfast show, make Basys the world standard in computer news systems. **Basys, the hard news software.**

See us at NAB
Booth #1129

The logo for Basys, featuring the word "BASYS" in a stylized, blue, sans-serif font. The letters are interconnected, with the 'A' and 'S' having unique shapes.

Basys Inc., 2685 Marine Way, Mountain View, California, 94043.
Tel: 415 969 9810, Telex 171604

Circle 217 on Reader Service Card

the VPS-100 and VPS-300 Videoprompters and the lightweight on-camera Videoprompter.

QUANTA CORP. 1432

Will introduce several Q8 graphics options including logo compose, graphic entry, graphic support, and enhancement modules for the Quantafont Q8 product line, plus a new, powerful Microgen Series character generator with character sizing, multiple fonts, and disk memories. Other featured products will be the dual- and single-channel Quantafont R8 graphic titlers, the Quantafont Select 7 mid-range titler, the Microgen low-cost teleproduction titlers in a broad range of models, and the Quantanews broadcast newsroom computer system.

See ad page 88

QUANTUM AUDIO LABS 2323

Will premiere several on-air modules for audio consoles Models 2205, 2206, 2203, and 2204. Also on view will be the Model 22 broadcast console, available in eight- or 14-input configurations.

QUICKSCAN SYSTEMS 1405B

Will introduce a computer interface for access of machine-readable VITC Quickscan-indexed publications, such as recordable and erasable videodiscs. The company will also feature its still frame electronic publishing systems.

QUICKSET 1105

Will introduce a new bidirectional antenna positioner with pushbutton control, variable speed, LCD azimuth elevation readout, and transmission over twisted pair. The company will also show its remote antenna positioners with wireless control, along with the line of camera support equipment including tripods, dollies, pedestals, and heads.

RADIO ARTS 418

New programs will include "Unforgettable," a six-hour tribute to Nat King Cole, co-hosted by Johnny Mathis and Natalie Cole, and "Bing," a seven-hour tribute to Bing Crosby, co-hosted by Bob Hope and Rosemary Clooney. A variety of other formats and features will be demonstrated.

RADIO SYSTEMS 213

Will introduce new studio products including the DM-2 LED meter with peak and average response and 38 bright LED segments and the MA-5 low noise, five-channel mic preamp. The PA-1 stereo phono preamp, DA-8 and DA-16 distribution amps, and TM-1 timer have also been released under the Radio Systems trademark. Also on view will be Radio Systems ESA-10 audio console, a 10-channel unit that accepts 30 stereo inputs and provides dual outputs, each with mono mix-down.

RAMKO RESEARCH 415

Will introduce a new audio and routing switching system, in addition to its line of audio amps, consoles, mixers, and cart equipment.

See ad page 106

RAMSA/PANASONIC 437

Will feature the line of audio mixers, microphones, and accessories.

RANK CINTEL 1219

Will introduce the Steadyguide option for Rank telecines, which reduces picture weave by guiding the film at the point of scan, and the Shot Change Detector for the Mk IIIC/Amigo, which facilitates film color grading by identifying scene changes and automatically referring corrections entered into the Amigo store during a scene back to the scene's beginning. The Mk IIIC flying spot scanner and Amigo programmer will be featured, along with the ADS 1 16/35 mm solid-state on-air telecine.

RCA BROADCAST SYSTEMS DIV. 1000

Will introduce the CCD-1S, a sports version of the CCD-1 solid-state camera, with a 1/500-second shutter resulting in enhanced slow-mo capability. Also new will be the TH-700 one-inch Type-C videotape recorder and the TTG-60U 60 kW solid-state UHG transmitter. Established products in RCA's booth will include the TK-48 automatic studio camera; the CCD-1 camera with a range of accessories including triax, multicore, and studio viewfinder; the TK-29 and TKS-100 telecine systems; the TH-400 and TH-900 Type-C VTRs; the HR-2A studio half-inch ChromaTrak recording system; the complete G-Line of transmitters for VHF and UHF; the complete antenna line; and the Opto SX hot standby transmitter switcher.

**HANDS-FREE
ENG/IFB/TELEPHONE**

- Operates From Any Modular Telephone Jack.
- Single or 2-Line Models.
- Tone or Pulse Dialing.
- 1 Ounce Headphone/Mic.

Exclusive features for ENG/IFB use include a mic mute switch, control for adjusting incoming volume, 3 mic inputs, 3 headphone outputs, ringer circuit for alerting user to incoming calls.

A 1 ounce headphone/mic (with or without headband) is available for "hands-free" telephone operation. Full size circumaural headphones with noise cancelling mics are also available for use in high ambients. Telephone is small, approx. 2" x 4" x 1" and has a clip for attaching to user's belt. Tone or pulse dialing. Single or switchable 2-line models available. Request bulletin 2Y.



Try It At NAB Booth 1111

R-COLUMBIA PRODUCTS

2008 St., Johns Ave., Highland Park, IL. 60035-2499 • (312) 432-7915 TWX: 910-692-2160

"We wanted a satellite radio network system that would be reliable and give us the flexibility and quality we needed. Microdyne gave us all that, and more"

Bob Poe, General Manager
Florida Network



"We're a regional radio network distributing news, sports and information to nearly sixty affiliates throughout Florida.

"We switched to satellite distribution for the same reasons so many others have: It costs less, is more reliable, and provides higher quality than land lines.

The Microdyne equipment sold itself

"When it came time to buy the hardware, we chose Microdyne over all the others because they understood our problems and offered the best solutions. Their equipment sold itself, really. It's the most flexible system available. The downlink demodulator can accommodate any transmission format currently in use.



The Florida Network's permanent uplink in Orlando distributes programming via two SCPC carriers on Westar III.

"That's a big plus to us, and to our affiliates, because it means greater programming flexibility.

Turn-key system put us on the air in less than three months

"Another point in Microdyne's favor was their ability to provide a complete turn-key system in a minimum amount of time. They had us on the air in less than three months. Some of the other companies were giving us lead times of 180 days and more.

Engineers praise the system

"Of course our engineers were heavily involved in the decision to buy. They're aware of Microdyne's reputation and they highly recommended the system. And I guess the true test is that after nearly a year of hard use, they still praise the equipment.

Expands our broadcasting opportunities

"As I said, we went to satellite distribution for the cost, reliability and quality. But we've found that it has really expanded our opportunities as well. The transportable uplink was intended to serve just as a backup, but it has been kept in constant use uplinking special events over our

second transponder channel. We get inquiries from broadcasters all over the country who want to lease it from us. That's providing extra income.

"And that's just one example. We can serve as a carrier for almost any kind of information. So there are many more possibilities open to us beyond the traditional role of broadcasters. And Microdyne has the ability to help us explore these new areas, too."



The Network's transportable uplink, also from Microdyne, is in constant use carrying sports and special events over a second channel.

To find out more about Microdyne satellite radio systems and downlink components, call our sales department at (904) 687-4633.

Microdyne Corp. P.O. Box 7213,
Ocala, FL. 32672 • (904) 687-4633
TWX: 810-858-0307

Microdyne  Corporation

RCA NEW PRODUCTS 1000 DIV.

Will introduce a new line of VHF high- and low-band cavities for VHF TV transmitters from 5 to 55 kW. Other featured products will include a complete line of broadcast camera tubes including Saticons, Vidicons, and lead-oxide pickups: a complete line of VHF TV power tubes for power levels from 5 to 50 kW, with matching final amplifier cavities; a line of FM power tubes and cavities for power levels 5 to 60 kW; and a cost-effective 1 kW UHF TV translator and LPTV tube and matching amplifier cavities.

See ad page 107

R-COLUMBIA PRODUCTS 1111

Will introduce an ENG/IFB "hands-free" telephone with tone or pulse dialing. The compact unit clips to the user's belt and offers three mic inputs, three headphone outputs, volume control, mic mute switch, ringer circuit for incoming calls, and a one-ounce headphone/mic for hands-free operation. The line of headphones/microphones, wired intercom systems, and RF intercoms will also be shown.

See ad page 194

REAL WORLD TECHNOLOGIES 341

Will show its Univiewer and the Monster mono/stereo coherence evaluator, and describe its facilities design and construction services.

RECORTEC 1416

Will feature videotape evaluator with three-hour reels, capable of handling both B and C formats. Will also display its established line of tape cleaners and evaluators and audio and videocassettes.

REES ASSOCIATES 1727

Will detail its comprehensive architectural and engineering services for broadcast facilities, including master planning and project management.

See ad page 92

REGISTER DATA SYSTEMS 128

Will feature its IMS computer systems and traffic and logging systems for the IBM PC.

RF TECHNOLOGY 171

Will offer several new products, including the TX-100 950 MHz wireless microphone transmitter with three diversity mating receivers; high gain weatherproof RF power amps at 7 GHz;

new design 7 and 13 GHz rackmount fixed link system; rackmount RF power amps at 7 and 13 GHz; 2.7 GHz weatherproof, frequency-agile 10/2 W switchable remote controllable transmitter for the international market; and a new 7 GHz portable microwave for ENG. Will also show its wireless camera links at 2 and 2.5 GHz; low power TV transmitters; ENG antenna systems, including demountable 18/21 dB gain arrays; PowerPac transmitters for ENG; central receivers; and emergency restoration microwave systems.

RIVIERA BROADCAST LEASING 1784

Will feature commercial finance plans for equipment leasing and term lending to broadcast personnel.

ROCKWELL INTERNATIONAL 1767

Will feature a weather radar system with elimination of ground clutter and display of air turbulence. Also on hand will be the standard line of video transmission systems.

ROH CORP. 1634

Will introduce the 190 Series Line monitors with VU and/or PPM metering; the 2010 Series mainframe systems, prewired and fully equipped; the 200 Series audio DAs; a portable, self-powered speaker station; and a two-channel ECM/PL station with speaker and power supply. The line of audio amplifiers and intercom systems will also be shown.

See ad page 130

ROHDE & SCHWARZ/POLARAD 1203

Will introduce the UVF video analyzer, a standard insertion test signal measurement set with quasi-analog display, 16 test parameters, and limit monitoring. It is fast, precise, lightweight, and IEEE compatible. Other products will include the RS002 satellite receiving system, the SBKF CATV monitor, the OPF TV oscilloscope, the UPSF-2 video noise meter, the SPF2 signal generator, the EKF2D TV demodulator, the UPF video distortion analyzer, solid-state FM transmitters, TV transmitters, and the LFM-2 group delay measurement set.

See ad page 20

ROHN 103

Will add a new rugged, prefabricated fiberglass equipment shelter to its line of towers, tower accessories, antenna supports, and tower obstruction lighting systems.

EXPERIENCE LIFE BEYOND LIFE

LIFE+®

You may never need to purchase another magnetic head again when you choose LIFE+®.

*LIFE+® heads last up to ten times longer than other metal faced long-life heads.

EXPERIENCE QUALITY OF LIFE

LIFE+®

You may never want to choose another magnetic head when you try LIFE+®.

*LIFE+® heads offer outstanding electrical performance characteristics compared to conventional heads.

The key difference between a LIFE+® head and a conventional head is the patented structure of our core.

*1½ mil stress free laminations uniquely bonded to give superior LIFE+® wear and electrical performance.

*Specially processed during fabrication to restore ideal magnetic properties found only in unhandled virgin magnetic materials.

A HEAD OF THE TIMES

LIFE+®



MINNEAPOLIS MAGNETICS, INC.
9969 Valley View Road
Eden Prairie, MN 55344

(612) 944-7660
A Subsidiary of
Magnetic Technologies, Inc.

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There's
675,800 sq. ft.
of floor space
at NAB.
But only 1 inch
you've got to see.



Introducing Maxell Master Broadcast 1" Videotape.

Come to Booth 1624 and win big!

First prize: A pair of tickets to the big fight.

Second prize: Videotape of GONE WITH THE WIND®
as released by MGM/UA. Drawings twice daily.

maxell®

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**ROSCO
LABORATORIES**

1135

Will exhibit range of precise chromakey and Ultimatte paints. Also showing color and diffusion filters for light, patterns, and specialized TV paints and scenic materials.

ROSCOR CORP.

1181

Highlights of the display will be the Roscor TV-45 remote production vehicle and the Roscor Mini-Ram ENG truck, plus a selection of the company's engineered video rentals, including Ikegami cameras. The company will

also describe its capabilities in design, engineering, fabrication, and installation of custom turnkey video and audio systems and mobile units and as distributors of broadcast products.

See ad page 264

**ROSS-AMERICAN
LOGIC SYSTEMS**

1332

Will display its line of electronic lighting displays and control systems for television and theatrical use.

ROSS VIDEO

Will introduce the new RUS-210 video

production switcher with the Ross Multi-Level Effects system. The RUS-508, a 24-input production switcher with two separate Multi-Level Effects systems, will also be displayed.

R*SCAN

1740

Will exhibit its lightning tracking system.

RTI

See LIPSNER-SMITH

RTS SYSTEMS

1142

Will feature the 17 Series portable, single-channel conference line intercom system with telephone-type modular plugs, and the 2500 Series amp system, which houses eight circuit cards in three rack units of space and includes a one by six DA, quad line amp, buffer amp, and tone signal generator.

See ad page 217

**RUSSCO
ELECTRONICS MFG.**

413

Will introduce a new dial-up remote amplifier with two mic channels and one high-level channel, completely powered from the telephone line, plus a new six-channel console. Items from the standard line will include direct- and rim-drive turntables, tone arms, phono preamps, five-channel consoles, audio DAs, and telephone interface/coupling equipment.

**SACHTLER CORP.
OF AMERICA**

1648

Latest products on display will be the Video 20 studio and OB pedestal with pneumatically supported center column, light weight, and high stability, intended for use with the Video 20 steerable dolly; the Hot Pod tripod with central locking and self-locking center column; and the Semi Dolly, a light-weight rolling triangle with independent brakes. Other camera support equipment on view will include the Panorama, the Video 20, the Video 25, and Video 30 heads.

See ad page 209

SAKI MAGNETICS

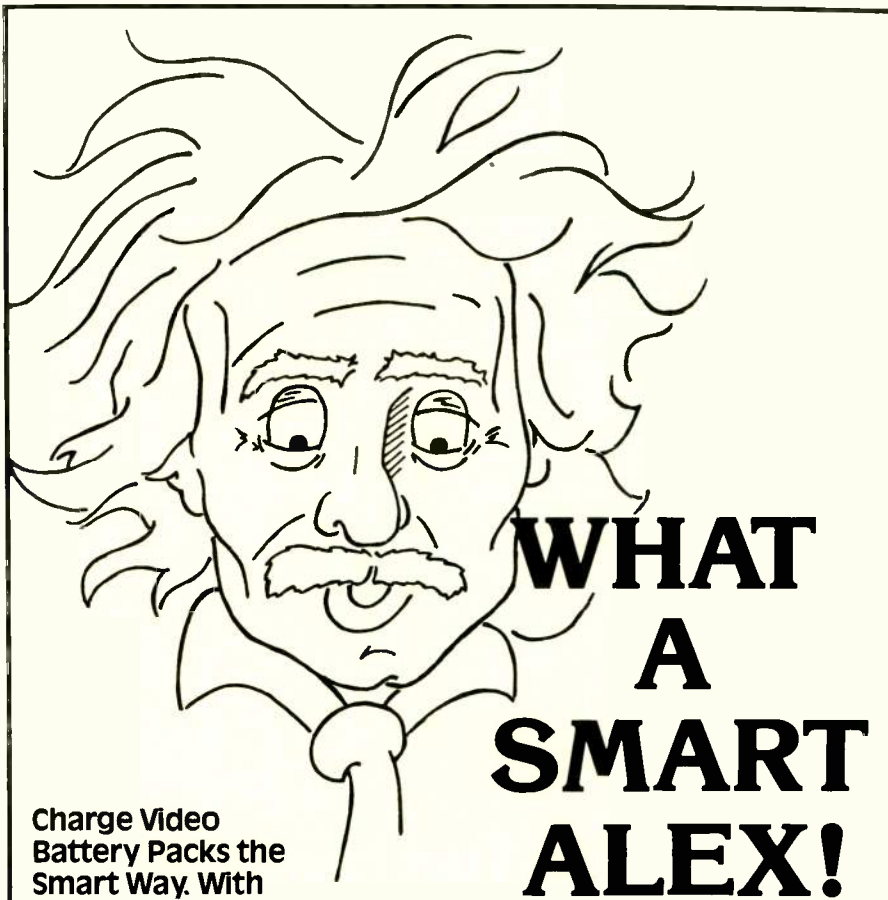
416

Will bring a newly developed complete base plate assembly for ATR-100 machines, for both two-track 1/4-inch and half-inch heads. The complete line of long-life ferrite replacement audio heads will also be featured.

**SAMSON MUSIC
PRODUCTS**

324

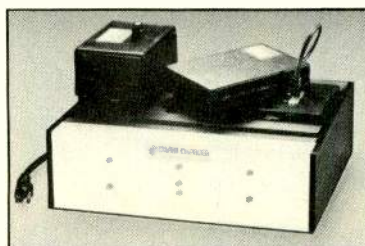
Will unveil the TH-1 body pack wireless transmitter for lavalier mics and



**Charge Video
Battery Packs the
Smart Way. With
the Alexander
Smart Charger**

How smart is it? This smart. The Alexander Smart Charger utilizes a unique micro-processor to sense the full charge point of a nickel-cadmium battery. Then it goes to trickle. Ordinary chargers operate on a timer and continue to charge even when the job is done. And that's dumb.

The Alexander Triplex Smart Charger will work with up to three packs in the 12-14.4 volt range. Each pack is brought to full charge in less than two hours. Automatically. Without monitoring. And that's smart.



ASK FOR THE NAME OF YOUR
ALEXANDER BATTERY DISTRIBUTOR



Alexander Mfg. Co., Box 1645, Mason City, IA 50401
515-423-8955

See us at NAB Booth #1714

Circle 307 on Reader Service Card



Which twin has Upgrade #2?

When Optimod-FM (Model 8100A) was designed, we kept the future of your investment in mind. As formats and competition change, the processing needs of radio programmers change.

Last year we introduced the "XT" Six-band Limiter Accessory Chassis to create high energy processing for high-energy, mass-appeal formats. Followed by Upgrade #1. As a result of our continuing research into processing technology for such formats, we now introduce Upgrade #2. (Both Upgrades affect only the "XT". The industry-standard basic processor remains unchanged.)*

You can't tell which Optimod-FM system above has Upgrade #2 just by looking—but you certainly can tell by listening. Upgrade #2 makes the system louder, and gives it a new sense of "air", brilliance and clarity. The bass is tighter and has more "punch". And all the XT's positive qualities are preserved: excellent consistency in texture and tonal balance from source-to-source, a remarkable freedom from pumping and other processing side-effects, superbly clean voice quality, and tight modulation control for maximum loudness.

If you're buying a new "XT" Accessory Chassis, you get the Upgrade *for free*—there's no price increase. You can tell if the upgrade is there by the code M03 on the Serial Label and "Upgrade #2" marked on the carton.

If you already own an "XT", you can get this Upgrade *for free* just by filling out the coupon. (We can serve you better if you write, not call.) However, if the M03 code is on your Serial Label, you already have it. The Upgrade consists of several resistors which can be installed by the station engineer.

Why is this FREE?

Because we don't feel that you should have to replace an expensive processor every few years as competitive pressures develop or when some other manufacturer wants to get you for \$6000 to achieve only a marginal improvement. With the "XT", you get much more than 'marginal' for only \$2295.†

If we can upgrade Optimod-FM economically, we'll continue to do so to protect your investment. The Optimod-FM system is designed to be the superior choice now and for years to come.

A NOTE

The basic Optimod-FM is a *very* loud and *very* clean processor. It should be used alone where your audience prefers a less-processed sound, truer to the original texture and tonal balance of the record. When more density or consistency is needed, the "XT" chassis supplies it—and it can be added at any time simply by plugging it in to the connector provided in the back of the basic processor.

*Upgrade #1 has already been provided to all early owners and has been incorporated in all units. For reference, it is outlined with the instructions for Upgrade #2.

†(Suggested List.)

Orban Associates Inc.

645 Bryant Street, San Francisco, CA 94107
(415) 957-1067, Telex: 17-1480

orban
ORBAN PROCESSING KEEPS YOU COMPETITIVE

Circle 302 on Reader Service Card

Serial # _____
State _____
Zip _____
City _____
Address _____
Name _____
Call Letters _____

instruments. Also displayed will be Samson's Broadcast Series VHF digitally synthesized true diversity wireless systems and the Concert Series VHF single-channel, crystal-controlled wireless systems, both available in handheld mics, lavaliers, and instrument systems; plus the line of mic stands and lavalier mics.

SCHAFFER WORLD COMMUNICATIONS

509

Will feature portable, mono & stereo studio consoles. Will also be exhibiting computer automation controllers, auto-

matic satellite switchers, complete program automation systems, automatic time/weather announcers. Also random select & instant access machines.

SCHNEIDER CORP. OF AMERICA **1403**

Will introduce a new 14.5X wide-angle studio lens with built-in 2X extender, close minimum focusing distance, superior optical performance in all channels, and optional built-in diascope. The full line of Schneider TV zoom lenses for ENG/EFP, studio, and field applications will be shown, featuring

the TV 44/45 Series of 14X ENG/EFP zooms and super-telephoto 30X zoom lenses for sale or rent for 3/8-inch cameras.

See ad page 218

SCHWEM TECHNOLOGY **2258**

Will present the new Gyrozoom 60/300 stabilized camera lens, a compact, microprocessor-based unit that stabilizes the image internally to eliminate high frequency vibration from vehicles or platforms, eliminating the need for external stabilizing systems.

See ad page 48

SCIENTIFIC-ATLANTA **1017**

Will introduce a new Ku-band portable earth terminal, plus a portable Ku-band RF terminal. The line of satellite communications equipment, including antennas, receivers, exciters, and controllers, will also be displayed.

SENNHEISER **1137**

Will introduce several new microphone products, including the Microport wireless handheld and rackmount receivers (SK2012 body pack and SK4031 handheld transmitter); the EK2012 UHF body pack receiver; the EM1001 portable ac/dc nondiversity receiver; the EM1036 rackmount six-channel diversity receiver in VHF and UHF; the MD409 dynamic microphone; the MKH40 FET condenser recording mic; and the EM2003 semi-portable UHF diversity receiver. The established line of microphones will also be displayed.

See ad page 214

SESCOM **1616**

Will bring a completely new line of audio interfacing devices, the Portables, with over 20 different units, ac- or battery-powered, including preamps for mics, phonos, and line-type devices.

SHARP ELECTRONICS CORP. **1102**

Will introduce new lines of color camera systems and high-resolution moni-

VIDEO TRUCKS FOR IMMEDIATE SALE

CHEVY VAN with 2 Philips LDK14 Cameras, SEG, Tektronix monitoring and more! Only \$60,000



DODGE HI-CUBE VAN with 3 Philips LDK14 Cameras, Grass Valley 1600 SEG, Onan 6.5KW Generator. \$105,000

35 FT GMC TRUCK Completely Refurbished with new consoles—ready to be equipped. \$35,000



These trucks are all available with or without equipment—just call Andy Maisner at (213) 823-8622.

KEY TO BOOTH NUMBERS

- 100-999 Radio Hall Exhibits
- 1000-1999 TV Hall Exhibits
- 2000-2999 Hilton Pavilion Exhibits

"AFTER SCOUTING THE PROSPECTS, WE CHOSE THE CAMERA WITH THE BEST SHOOTING RECORD."

ROB DALTON, PRESIDENT AND GENERAL MANAGER, KAKE-TV, WICHITA



© 1984 Sharp Electronics Corp.

"At KAKE in Wichita, we're as demanding as they come. But let's face it. When you're Wichita's number one metro station, an ABC affiliate, and have a schedule as hectic as ours, you have to be.

And when it came to buying new cameras last year, we made no exceptions.

To satisfy us, the units had to meet network standards and be Triax compatible. Plus they had to be able to take the abuse of being hauled in and out of our remote van, from the studio to the field, and still deliver brilliant quality shots. That's why we went with Sharp®.

From our four years of experience working with their XC-700 and XC-800 Saticon® cameras, we knew that Sharp cameras could take the punishment.

But what really sold us were the results we got when we tested out Sharp's Diode-Gun Plumbicon® XC-900D at a number of those 49 basketball games we produced last year. Of course Sharp's competitive price was an added incentive. But we would have bought the XC-900D anyway.

Now if your situation involves buying a new Plumbicon camera, I'd suggest the Sharp XC-900D. From what I've seen, it will go one on one with any camera on the market. And come out on top every time."

For a demonstration or more information, contact your local dealer or write Sharp Electronics Corporation, Broadcast Group, 10 Sharp Plaza, Paramus, NJ 07652. (201) 265-5548.

Saticon® is a registered trademark of NHK (Japan Broadcast Corp.) Plumbicon® is a registered trademark of N. V. Philips.



**FROM SHARP MINDS
COME SHARP PRODUCTS**

A/V EQUIPMENT, AUDIO, BANKING SYSTEMS, CALCULATORS, CASH REGISTERS, COMPUTERS, COPIERS, ELECTRONIC TYPEWRITERS, FACSIMILE EQUIPMENT, MICROWAVE OVENS, PROFESSIONAL/VIDEO CAMERAS & MONITORS, TELEVISIONS, VIDEO TAPE RECORDERS.

See us at NAB Booth #1102

Circle 303 on Reader Service Card

tors at the show, in addition to the established lines of color cameras, high-resolution monitors, and triax control systems.

See ad pages 201, 203

SHINTRON 1417

Will introduce a new component frame synchronizer to the line of switchers and matrix converters.

SHIVELY LABS 623

Will introduce the 2530 balanced band-pass filter combiner system, which takes up to 10 40 kW inputs and fea-

tures superior frequency response, isolation, VSWR, and group delay specifications. Also shown will be the line of FM and TV broadcast antennas plus related items such as rigid coaxial transmission line, RF patch panels, FM and TV combiners AM/FM isolators, harmonic filters, directional couplers, hybrid combiners, pressurization equipment, and pattern studies.

SHOOK ELECTRONIC ENTERPRISES 1310

Will feature the new Omega van with a 42-foot mast, featuring a removeable

housing that saves over 80 percent of chassis replacement costs. The Omega van comes complete with mast, 6.5 kW generator, ample storage, racks, cabinets, and custom-built roof deck and ladder. It is available with or without electronic equipment. The complete Shook line of custom, cost-effective TV production vehicles and systems from ENG vans to 45-foot trailers will be described, along with consultation, design, engineering, and equipment installation services.

SHURE BROS. 1401A

New products will include the FP11 mic-to-line amp, the FP12 headphone bridging amp, the SM90 omnidirectional low-profile mic, the FP16 one by six DA, the SM1 single-ear broadcast headset, and the SM2 dual-ear broadcast headset. The company will also feature its line of mics, amps, headsets, and mixers.

See ad pages 32, 145

SIGMA ELECTRONICS 1333

Will introduce the SCH-385 subcarrier/horizontal phase meter; the VSS-120 video/stereo audio switcher; the VSD-20 one by six video/stereo audio DA; and the Keyfex special effects software for GCC-100. A complete line of RS-170A color sync generators, video processing amps, and audio and video distribution packages will be shown.

See ad page 277

SKOTEL CORP. 1126

Will have new features in its line of time code readers and generators and character inserters.

WARREN R. SMITH CO. 1106

Will feature its snorkel and telecine lenses, animation stands, servo slide positioners, and title positioners.

SMPTE 1632

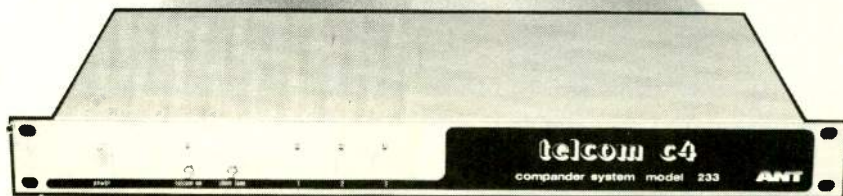
SOLID STATE LOGIC 1723

Will unveil the 5000M Series audio production system for mono, stereo, and MTS formats with 12 to 64 inputs. Also new will be the SSL integral synchronizer and master transport selector (a five-machine synchronizer), and the SSL programmable equalizer, a console-mounted control panel and remote electronic package that interfaces with the SSL studio computer. Also featured will be the 4000E Series master studio system multitrack recording and mix-

"David Smith of Editel, NY states in an intercompany Telcom C4 Testreport: "The results are nothing short of amazing but the numbers will best speak for themselves." Signal to noise on Ampex VPR-2 improved from 51dB to 77dB and on a Sony BVH 2000 from 52dB to 80dB using Telcom C4"



Most of today's 1" type B VTRs are equipped with telcom c4



Users already selected telcom c4 as the most suitable NR System for type C VTRs. The new telcom c4 units are now designed to improve the sound of type C VTRs. telcom c4 creates lower distortion from tape, better crosstalk attenuation, improved headroom plus a 25 dB gain in dynamic range. No line-up procedures. telcom c4 units for VTRs

are available for 1, 2 (stereo) and 3 channels, for simultaneous encode/decode and automatic switching. Furthermore, telcom c4 is used in connection with ATRs, line and satellite transmission. Don't you also need super sound for stereo or copying? Just contact us for further information.

Contact:

Solway Inc., P.O. Box 7647, Hollywood, FL 33081 Phone (305) 962-8650, Telex 467257



Telecommunications
ANT Nachrichtentechnik GmbH
Lindener Str. 15 D-3340 Wolfenbüttel
Phone (05331) 83-0 Telex 95651 ant d

Sharp® took a look at the best high resolution monitors around and found room for improvement. The Price.



When Sharp got through looking at the competition, we had a clear picture of the features you want in a color monitor. Features like:

- 0.31 mm dot pitch
- over 600 lines of resolution
- U.S. standard controlled phosphors
- switchable comb or notch filter
- cross pulse display
- normal or under-scanned picture mode

So Sharp combined all those features with the quality you expect in a broadcast grade monitor, and came up with one incredible unit, the XM-1300, Sharp's new 13" High Resolution Monitor. Then we topped it all with an unbeatable price, only \$2,995. But don't take our word for it, come in and see it for yourself. Because with this monitor—one picture is worth a couple of thousand dollars.

For more information, contact your local dealer or write: Sharp Electronics Corporation, Professional Products Division, 10 Sharp Plaza, Paramus, NJ 07652 (201) 265-5548.

*Manufacturer's suggested retail price.



FROM SHARP MINDS
COME SHARP PRODUCTS

See us at NAB Booth #1102

Circle 305 on Reader Service Card

ing console with a variety of features including eight dedicated VCA control group masters, four stereo echo returns, and stereo program compressor; and the 6000E stereo video system.

See ad pages 250-251

H.W. SOLUTEC LTD. 1517

Will introduce the SOL-6800 AD. ID/Q generator, which allows insertion of code identification on commercial spots, which can then be recognized during playback by the SOL-6800 automated broadcasting system for com-

mercial inserts, also to be introduced. The SOL-6800 can control one VTR and has an integrated four-input stereo audio video switcher. It can be triggered by satellite cue tones and can drive a printer. Also new will be the SOL component switcher for SOL-6800, which allows switching of two or three levels of component video. Established products will include the eight-VTR SOL-6800, the four-VTR mini SOL-6800, the four-VTR mini SOL-6800, and the SOL-8200 cochannel filter.

SONO-MAG CORP. 139

Will add the new ESP-2 programmer for radio to its full line of automation equipment.

SONY PRO AUDIO DIV. 606, 1200

Will introduce the new APR-5000 Series of audio recorders. The booth will feature a live demonstration of the professional compact disc playback system, along with displays of the full range of Pro Audio products.

SONY BROADCAST PRODUCTS 1200

Will unveil the new BVP-3A Betacam camera, along with a production model of the new BVP-360 camera. Also new will be the BVW-15 freestanding dynamic tracking player, designed to complement the established BVW-10; and improvements to the high-definition video system, including a new television projection screen. Live product demonstrations will include the stereo audio production/post-production system interfaced with broadcast one-inch Type-C machines; the BVH-2500 Delta time lapse VTR for still frame animation and videodisc applications; the BVH-2700 and BVP-3000 Super Motion video system; and the high-definition video system. The exhibit will also feature the Betacart multicasette system for station automation.

See ad pages 2-3, 52-53

SONY VIDEO COMMUNICATIONS 1200

Will feature new additions to Sony's line of intelligent video systems.

SONY TAPE SALES CO. 1200

Will introduce a new five-minute play length for the Betacam HG Series videocassettes, signed to complement the existing 10- and 20-minute play lengths. The full line of V16 one-inch videotape, K-Series U-Matic videocassettes, and duplicator videotape in Beta, VHS, and U-formats will also be shown.

See ad page 33

SOPER SOUND MUSIC LIBRARY 1620B

Will feature three contemporary sound music programming series totalling seven albums. Also showing MusicSelector software for Apple II personal computers for locating, sorting, and selecting music from the sound library.



What Happens When A Handful of Hot Pro Audio People Get Together?

They acquire a company that for years had pioneered major developments in the electronic signal processing industry.

They combine their knowledge and experience and use their expertise in engineering, marketing and manufacturing.

They select the best products and make them even better.

They develop a company that's on target with prompt products for today's professional audio needs.

A commitment to quality, reliability and affordability in high technology without compromise.

Applied Research & Technology Inc.
215 Tremont Street
Rochester, New York 14608
(716) 436-2720

- 191 01A DIGITAL REVERB
- 190 1500 DIGITAL DELAY
- 172 1/3 OCTAVE EQUALIZER
- 171 DUAL 2/3 OCTAVE EQUALIZER
- PRO PITCH TRANSPOSER PACKAGE

antonbauer Lifesaver®



**Ready
when you are.
Always.**

Lifesaver 8 Hour Quad (above) charging a Pro Pac® 13 and 14, and two Pro Pac 90s. Also accepts Pro Pac 60 and Super D batteries.

Lifesaver 8 Hour Single.

Lifesaver Fast Charger. One hour charge for Pro Pac 13, 14, Pro Pac 90 or 30/13 Battery Belt.

**See us at NAB
Booth 1337**

- Lifesaver logic circuit* safely maintains fully charged NiCad batteries until you are ready to use them...batteries are kept on Lifesaver chargers for weeks or even months with no self-discharge or damaging heat build-up.
- Lifesaver increases battery life...only Lifesaver with its unique third stage pulse process maintains a fully charged battery without the destructive effects of a conventional maintenance trickle charge.
- Lifesaver chargers automatically cycle through **three charge routines**...quick or fast, equalizing and Lifesaver Maintenance modes.
- Lifesaver 8 Hour Quad is **four chargers in one**... up to four batteries can be charged simultaneously and independently in any combination... LED charge display at each position. * Patent Pending

Call or write for our illustrated Lifesaver brochure and the name of your local dealer.

*The quality standard
of the video industry.*

antonbauer

SOUNDCRAFT ELECTRONICS

New product introductions will include the 600 Series eight-bus recording console; the 20 Series two-track micro-processor-controlled recorder/reproducer; and the SAC 2000 stereo on-air radio broadcast console. A new, updated SCM Series 760 MKIII 16- and 24-track multitrack recorder/reproducer will be shown, along with the 1600 Series post-production recording console and 200 Series rack-mountable stereo audio console.

219 SOUND IDEAS 1620C

Will add new musical effects to its production sound effects library.

SOUND TECHNOLOGY 500

Will introduce the 2100 Series programmable, bus-controllable signal generator and the 2200 Series programmable, bus-controllable audio/distortion analyzer, which together allow an engineer to perform a complete audio proof with a remotely located analyzer automatically, without the use of computers. Other products will include the

1500 Series tape test systems, the 1710A distortion measurement system, the 170 audio filter set, and the SCC 401 and SCC 402 test tapes.

See ad page 101

SOUTHLAKE TECHNOLOGIES 1504

Formerly known as Datatronix, Southlake will introduce the Intelligent Intercom System, an infinitely expandable central matrix system that is totally software-configured from the master console and features instant changes from floppy disk memory with automatic relabeling of LED displays on user stations. Combining point-to-point interphone, party-line intercom, and program interrupt (IFB) functions, the system also interfaces with two-way radio, microwave, and outside telco lines. Also featured will be the Model 8318 audio DA system and the complete line of audio amp and signal processing modules, including the Model 550A equalizer.

SPECTRUM PLANNING 510

Will describe its services, including terrestrial microwave and satellite coordination, RFI measurements, time-sharing utilizing 900 MHz through 40 GHz databases, TV and FM broadcasting services, telephone traffic studies, and software development.

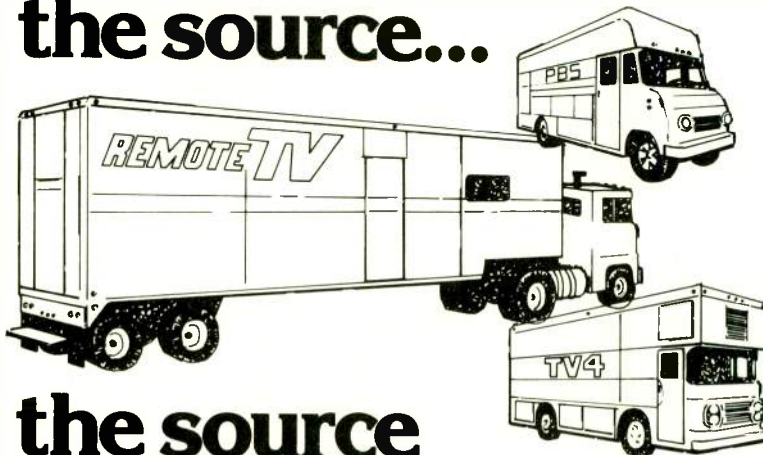
SPENCER BROADCAST 406

Newest products will be the Audio-Path Assoc. ATK-1 stereo phono preamps and SO-2 stereo separation optimizer, the Technics SLP-15 CD player with magazine loading and EPA 250 tone arm for SP-15 and SP-10 turntables, and a new series of QSC audio amps. Other products will include the Cart-Align turntable cartridge alignment tool, EFI electrical filters for power line protection, and an assortment of audio equipment and broadcast accessories.

SPRAGUE MAGNETICS 705

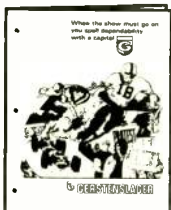
Will introduce new replacement audio for video heads for the Sony BVH-1000 and 2000 VTRs: new long-life film heads for Magnasync, MTM, Quad Eight/Westrex, and Steenbeck; long-life duplicator heads for Cetec Gauss and Electro Sound; long-life replacement cart heads; and time code heads. In addition, the full line of replacement

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.



GERSTENSLAGER

The Gerstenslager Company, Wooster, Ohio 44691

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ADO.

At NAB, you'll see the new creative dimensions offered by ADO. You'll see effects you might have thought impossible. Or some you never imagined.

What's the secret? Simply more technical innovation from Ampex. Where creativity are constantly being expanded. limits to your ADO owner.

If you are an ADO owner, you will be delighted. If you are not an ADO owner, you will want to be one soon. **See us at Booth 1400.**

AMPEX

Ampex Corporation • One of The Signal Companies 

audiotape heads and recorder parts, Nortronics recorder accessories, and MRL and STL alignment tape will be shown, and the head refurbishing facility will be described.

STAGE LIGHTING DIST. 1128

Will introduce new Opti-Mist and Maxi-Mist fog and smoke machines, in addition to the established line of lighting and dimming control equipment.

STAINLESS 1315

Will feature Verda, a distributed light-

ning deterrent. Also showing the complete line of AM, FM, and TV towers.

STANTON MAGNETICS 102

Will introduce the Dynaphase 30M single-sided headphone in three versions: with boom mic and headband, headband only, and shoulder rest (no headband), all available in 100 ohms as well as 600 ohms. The complete line of professional cartridges and styli for recording and broadcast, the 310 professional phono preamp/equalizer, the PBR announcer earphone, and a line of record care products will also be displayed.

STANTRON 1132

Will introduce new RFI cabinets to its line of dubbing racks, computer cabinets, and equipment consoles.

See ad page 123

STAR CASE MFG. CO. 2040

Will introduce new stucco/fiberglass-laminated plywood transport and moving cases to the line of Super Star and Ultra Star shipping cases.

STEENBECK 1424

Will introduce the ST 201V Video Reporter, which combines a videocassette machine with an electronic control and synchronizing system. The ST 1B 35 mm film-to-tape transfer unit will also be exhibited.

STOREEL CORP. 1008

A new high-density Room Stretcher for Sony Betacart storage will be shown for the first time. Other products will include instant access and modular rapid transmit storage systems for videotape, cassettes, half-inch VHS tape, or film; Room Stretcher high-density storage for RCA carts and Ampex cassettes; high-density audio cart storage; and setup trucks for transporting tape or film.

See ad page 236

STRAIGHT WIRE AUDIO 408

Will introduce the Stereo Sentinel automatic stereo synthesizer and the 3D/RP high-tech playback amplifier for ITC machines. Will also feature UA-Z universal DAs and units, MTX encode/decode amps and units, PH-UP ultra low-noise preamps, and PHZB upgraded low-noise preamps.

STRAND CENTURY 1418

Will introduce the Shaulea 575 W HMI open-faced fixture, along with a new line of soft lights and a 12K HMI fresnel. Also on view will be the complete line of dimming and control systems and fixtures, HMI solid-state ballasts, and Par lights.

STRATA MARKETING 614

Will introduce RadioCalc, a spreadsheet-like computer program for producing radio sales presentations, which computes sophisticated reach and frequency analyses for up to 10 station schedules on IBM PCs and compatibles. Will also feature the Super-Ranker microcomputer program for

The Wireless Intercom by HME.

Now You can COMMUNICATE

- CONTINUOUSLY** — Up to five stations in hands-free, continuous full-duplex mode
- CONVENIENTLY** — Ultra-compact, 10 ounce all metal belt-pack transceivers
- CLEARLY** — HME Dynamic Expansion gives full 80dB dynamic range
- COMPLETELY** — Built-in interface and controls for hard-wired systems
- CONFIDENTLY** — Loop-around sidetone verifies completion of the communications link

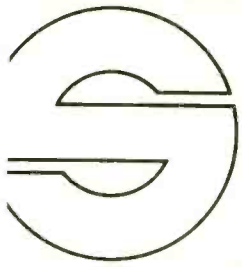


h m e

150E Series Wireless Intercom System

HM Electronics, Inc. 9675 Business Park Ave., San Diego, CA 92131 (619) 578-8300 TELEX:350-771

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THE PERFECT HEADLINE

for your ENG- or EFP-camera

sachtler
camera supporting systems
offering

Dial-in – up to seven – steps of drag,
independently adjustable for pan and tilt,

Built-in compensation for center of
gravity displacements,

camera-adequate or dynamic counter-
balancing, adjustable on the spot
for all your possible requirements,

extreme positive, operational locks,
not effecting camera orientation
when operated,

A leak-proof by design fluid system
with guaranteed (for years) trouble free
operation,

An all-in-one piece unit for easy handling
and transport,

What is available when and where you need it
worldwide.

As the Sachtler headline offering all
these features, don't ask for less!

Call on your nearest Sachtler dealer

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a subsidiary of Sachtler GmbH
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D-8046 Garching/München
Phone (89) 320 4041, Telex 5 215 340

Circle 225 on Reader Service Card

Panorama



Video 20



Video 25



Video 30



producing detailed station rankings of Arbitron radio ratings, and the Recall program directors' program for audience flow analysis and time spent listening information.

STUDER REVOX AMERICA

201

New products from Studer will include: the A820 analog master recorder, with software-controlled audio and transport control parameters, over 40 programmable functions, 14-inch reel capacity, and optional center track time code; the D820 DASH-format digital audio re-

recorder, with 14-inch reel capacity, 44.1 and 48 kHz sampling frequencies, electronic and tapecut editing, digital and analog inputs and outputs; the A725 compact disc player with rapid cuing, fully programmable, oversized control buttons, time remaining display, oversampling, and digital filtering; the A80VU-3-LB video layback recorder, which easily converts between B and C format videotapes; the A80VU MKIV audio recorder featuring updated electronics and transport control and available in two- to 24-track versions; the B215 cassette deck with automatic

alignment and level setting, real-time counter, and autolocate; the A810 pilot tone film sound recorders; and the Studio 3 compact, two-way close reference monitor speakers. Other featured items will be 900 Series mixing consoles, A800 multitrack audio recorders, 169/269 portable mixing consoles, TLS 4000 SMPTE synchronizing systems, PR99 MKII and B77 MKII compact professional recorders, telephone interfacing systems, monitor speakers, power amplifiers, and broadcast automation reproducers.

See ad page 121

SWINTEK ENTERPRISES

1503

Will introduce the Mark 200D full duplex headset system for use in hostile video environments, using high-band VHF technology and compatible with all standard headsets. Also featured will be the Mark QDC mini-VHF receiver, plus the line of radio microphones and antennas with video camera interfaces.

SWITCHCRAFT

427

Will add new XLR-type audio connectors to the line of phono jacks and plugs, molded cable assemblies, and audio jackfields.

See ad page 237

SWR

1644

Will introduce a new coax switch in manual and motorized versions that will fit existing coax patch panels. The range of transmission line products will also be featured.

SYMETRIX

616

Will introduce the Model 105, a new multiline telephone system for broadcast. In addition, the complete line of audio signal processing devices will be on display.

SYMTEC

1522

Will introduce the Super Color 1024 graphics unit, based on the 68000 microprocessor, with 512x512 resolution, 1024 colors, and long display screen. Also featured will be the PGS 3 graphics generator for broadcast, based on the IBM PC or XT computer and offering complete paint system, color cycling animation, and A/D converter.

SYSTEM ASSOCIATES

1331E

Will describe its used equipment brokerage services.

A SURE CURE FOR FLASHOVER

electrically
transparent

Phillystran
TOWER GUYS

Phillystran is now protecting more than a thousand broadcast towers preventing white-noise arcing across ceramic insulators (they aren't required) eliminating problems with on-off cycling due to static discharge on steel guys.

With Phillystran HPTG, tower-guy maintenance and costly re-guying are problems of the past.

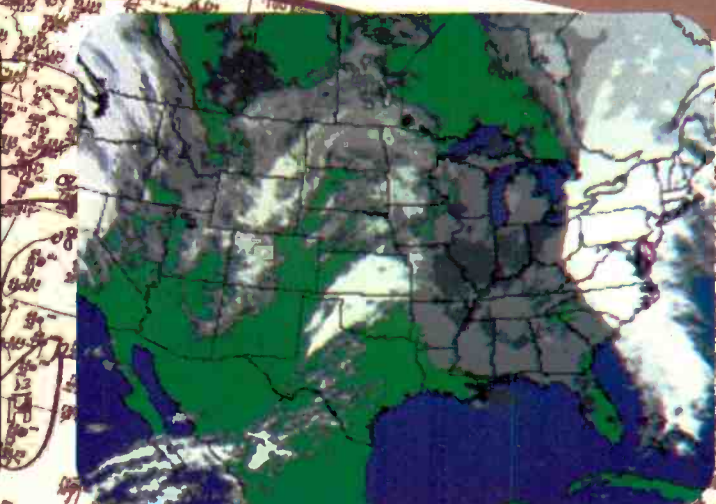
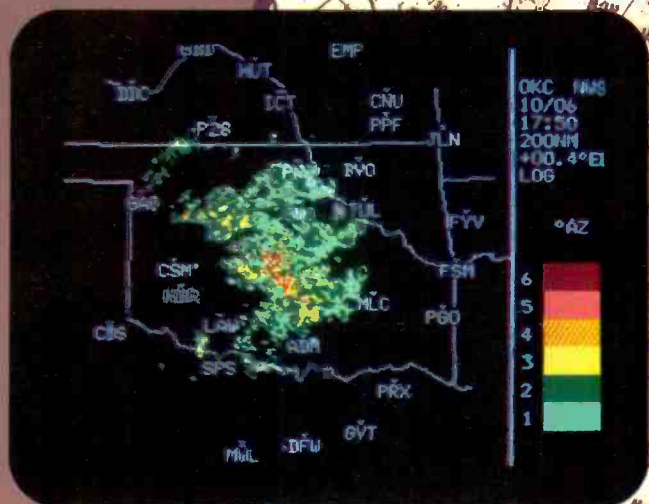
For all the Facts—including "Electrical and Mechanical Analysis of Synthetic Tower Guys"—call/write

Phillystran

PHILADELPHIA RESINS CORP., P.O. Box 454, Montgomeryville, PA 18936
(215) 855-8450

Circle 289 on Reader Service Card

FROM THE PEOPLE WHO BRING YOU THE CHARTS...



**LIVE RRWDS
COLOR WEATHER RADAR**

**PLUS COLOR SATELLITE
AND WEATHER GRAPHICS**

You already know Alden as the first name in facsimile weather chart systems. In fact, you probably already use one of our chart recorders.

Now Alden introduces a new family of systems to add live color radar and satellite/weather graphics to your information sources.

LIVE RADAR. Alden's C2000R system brings you live weather radar information via a new network of National Weather Service radar transmitters, called RRWDS. The C2000R accesses these radar sites easily and cost-effectively using standard voice-grade telephone lines on either a direct line or dial-up basis.

Display different precipitation levels in up to 6 colors, with level flashing for easy identification, or store multiple-region and time-lapse pictures. Numerous other features make its low price a pleasant surprise.

GRAPHICS. Alden's C2000S is a low-cost, high-performance unit for displaying weather information from private and government data bases. Color satellite pictures, surface weather, temperature contours and hourly NWS pictures are available, with 16 selectable colors, zoom, flash and loop capability.

BOTH. Alden's C2000R/S offers the combined capability in one system. Our "building-block" design permits field conversion of the stand-alone C2000R or the C2000S into the C2000R/S model at any time. All systems offer the flexibility to acquire not only today's data, but the data of the future.

Call or write us for complete information. Alden Electronics,
118B Washington Street, Westborough, MA 01581.
Telephone 617/366-8851

Name _____
 Company _____
 Address _____
 City _____ State _____ Zip _____
 Phone _____

ALDEN ELECTRONICS

The First Name in Weather

Circle 227 on Reader Service Card

"For a live demonstration see us in Booth #1785"

TABER MFG. & ENG. CO. 711

Will display its Taberaser 409 and 1500 tape erasers and degaussers, plus its replacement and reconditioned audio heads.

TAMRON INDUSTRIES 1316

Will feature its line of ENG/EFP lenses.

TANDBERG OF AMERICA 2354

Will introduce the TCD-910 professional four-head master cassette re-

recorder, incorporating eight-bit 32K EPROM microprocessor, RS-232 computer interface port, full autolocator system, varispool, real-time/mode counter, and many other features. Also new will be a playback version, the TCD-911. Established products will include the TK-20A-L logger, the TD-20A-SE reel-to-reel tape recorder, and the TCCR-530 computer-controlled cassette recorder.

See ad page 57

TAPSCAN 106

Will premiere the Quali-Tap qualitative

ratings system and the Infinity hour-by-hour ratings analysis system. Also featured will be the Music Scan computerized ratings systems with 3D color graphics and color pictorial graphics.

TASCAM PRODUCTION PRODUCTS 1304

Will introduce the MS-16 portable 16-track recorder/reproducer; the M-300 portable audio mixer for radio and video post-production; and the Mini Studio portable four-track production system. The line of four-, eight-, and 16-track audio production systems will also be exhibited.

See ad page 129

TEATRONICS 1786

Will feature its line of studio and stage lighting equipment, including lighting control boards and dimmer packs.

TEKTRONIX 1601

New products to be introduced will include the 1710B and 1711B waveform monitors, the TSG-170A digital sync and test signal generator, the 1450-1 television demodulator, the 1450F20 wideband audio upgrade kit, and the 118-F02 video interface for the 118AS audio synchronizer. A prototype of the TSG-300 analog component test signal generator, which generates signals in Beta, RGB, and YUV formats, will also be featured. Established products on view will include the 1980 ANSWER automatic video measurement set, the 1740 Series NTSC and PAL waveform/vector monitors, the 1750 Series NTSC and PAL waveform/vector monitors with sch phase capability, the 110-S NTSC video synchronizer, and the 118-AS audio synchronizer.

See ad page 62

TELEMET, DIV. GEOTEL 1202

Will introduce a new fiberoptic card file system, a stereo audio demodulator, and a new routing switcher. Also on display will be the line of broadcast demodulators, sideband analyzers, envelope delay test sets, test signal generators, modulators, thermal equalizers, isolation amplifiers, chroma keyers and decoders, video and pulse DAs, wideband equalizers, and clampers.

TELEPAK SAN DIEGO 192**TELESCRIPT 1407**

Two new prompting products will be a

O'Connor
CAMERA SUPPORT SYSTEMS

Powerful Support with the O'Connor Fluid Feel

The New O'Connor Model 100-HD provides balanced support for a wide range of studio and field production video cameras. A choice of three dynamic spring settings match the 100-HD to your video camera, even with a prompter.

The 100-HD includes: the unique O'Connor side-loading platform with extended balance adjustment, dual handles — extendable out to 26 inches — and a choice of mounting bases including: Super Claw Ball, Mitchell and Vinten four bolt mount.

For optimum ready-to-shoot performance, O'Connor offers the System 105-HD which includes the 100-HD Fluid Head, Super Claw Ball Tripod with and internal adjustable spreader.

Contact your authorized O'Connor dealer for complete details. Experience The O'Connor Fluid Feel, the result of over 30 years of leadership and innovation.

See the Model 100-HD in action at NAB booth #1103.

O'CONNOR ENGINEERING LABORATORIES, INC.
100 Kalmus Drive
Costa Mesa, California 92626
Telephone: (714) 979-3993, (213) 627-4057
Cable Address: OCELINC, Telex: 685-641

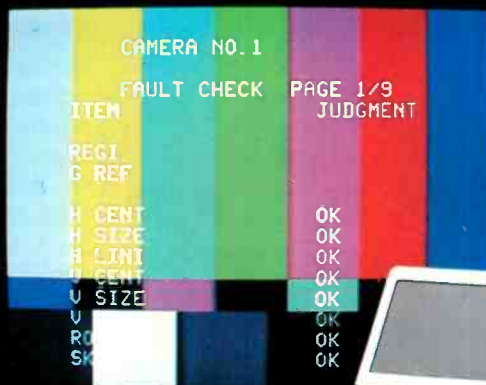
O'CONNOR ENGINEERING LIMITED
14 AV. INDUSTRIELLE
1227 Carouge
Geneva, Switzerland
Tele: (022) 42 79 38, Telex: 421349

TOSHIBA Color TV Camera PK-41

Our PK-41 is a microprocessor-controlled fully automatic color camera with digital circuit reliability.

Controlled by a microprocessor with a non-volatile memory and over 100 controllable items, the fully automatic PK-41 can do practically everything for you. It also holds a data filing function for over 400 items.

The thinking PK-41 not only offers a fully automatic setup, it also displays the control and diagnostic data of the camera operating conditions on the picture monitor. Experience our incomparable 58dB high broadcast quality pictures.



**See Us
at NAB
Booth No. 1631A**

A name that communicates.

TOSHIBA

TOSHIBA CORPORATION

1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO, 105, JAPAN
TELEX: J22587 TOSHIBA CABLE: TOSHIBA TOKYO

Circle 290 on Reader Service Card

computer prompting program for the Commodore C-64 including ROM cartridge, support disk, 10-pushbutton remote controller, and accessories; and Smart Prompter, a computer prompting program for IBM and compatible PCs, with infinitely variable speed scrolling, pushbutton font sizes, underline, upper and lower case, and highlighting. The line of lightweight monitor prompting systems, Telecue and Telescriptor script transports, camera support equipment, and public speaking systems will also be shown.

TELEVISION ENGINEERING CORP. 1700

Will feature its latest design in mobile vehicles.

TELEVISION EQUIPMENT ASSOCIATES 1216

New products from Matthey will include the MDP525B differentiating filter for measurement of luminance non-linearity, and the MCL420B low-pass phase-equalized filter for satellite signals. The Racal Freedom I headset for TV intercom and telephone applica-

tions is also new. Established products will include the line of Elcon videotape cleaner/profilers, Matthey video and pulse delays and video filters, Link video, pulse, and audio DAs, Racal automatic telephone and field phone systems, and the IRT color monitor comparator.

TELEVISION INFORMATION OFFICE 812

TELEX COMMUNICATIONS 600, 1605A

Will premiere the FMR-50 wireless microphone system, available in four models starting at \$875. The FMR-50 receiver is available with a condenser or dynamic handheld mic/transmitter, with an electret lavalier mic and belt-pack transmitter, or with an electret head-worn mic and belt-pack transmitter. Other featured products will include the line of wireless and wired microphone systems, Audiocom closed circuit intercom systems, headsets, open-reel and NAB cartridge ATRs and loggers, high-speed tape duplicating systems and high-speed cassette copiers, Insta-Load 16 mm motion picture projectors, silent and sound filmstrip projectors, and 35 mm slide projectors including front and rear screen combinations with built-in audio cassette player/recorder and dissolve controls.

TENNAPLEX 1127

Will feature its line of TV and FM broadband panel antennas.

TENTEL CORP. 1613

Newest item is a video recorder head protrusion and eccentricity gauge for Type-C VTRs that measures tip projection and eccentricity in both microns and ten thousandths of an inch. The Tentelometer tape tension gauges and TSH line of spindle height gauges will also be featured.

TFT 109

Featured new product will be the Spike Stopper, a VLSI-based digital logic circuit, a "window" that can be adjusted to separate spikes caused by overshots, multipath, noise interference, etc. from true modulation peaks. User-installed in TFT modulation monitors. Other new products will include the 831 TV/SAP generator, the 832 TV/pro channel generator, the 850 TV stereo modulation monitor, the 8500 TV/microwave composite subcarrier generator, the 8501 TV/microwave composite

THIS IS NO TIME TO CHANGE BATTERIES IN YOUR WIRELESS MICROPHONE.



You've been there.

The once-in-a-lifetime shot missed because of a dead battery. The shoot with the half-day setup, botched by dropouts. Critical takes whose reshoots took you over budget. All in all, wireless often did a lot more to you than for you.

But that was before Sennheiser.

Now, the name you trust most in condenser and dynamic microphones is the one to count on for wireless. With a new family of subminiature body pac UHF and VHF transmitters and receivers.

Like all Sennheisers, they're technologically in a class by themselves. With sophisticated circuitry including a DC-to-DC converter for longer, more consistent performance on standard AAA cells. So

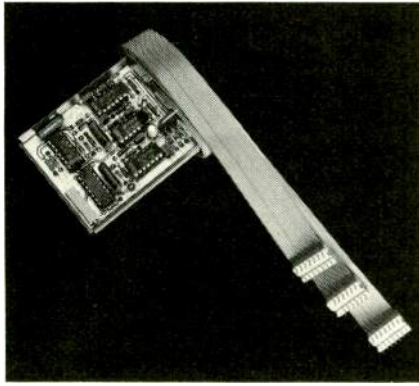
you change batteries less often, while you enjoy cleaner, crisper, dropout-free performance.

But there's a lot more. Sennheisers are the smallest transmitters—and receivers—on the market. They're incredibly easy to use. They combine light weight with outstanding ruggedness (in fact, you can stand on them without breaking them). And that's still only the beginning.

But don't take our word for it. Bring your eyes and ears to a Sennheiser dealer for a demonstration. Or contact us for more information. You owe it to your reputation.



Sennheiser Electronic Corporation (N.Y.)
48 West 38th Street • New York, NY 10018 • (212) 944-9440
Manufacturing Plant: D-3002 Wedemark, West Germany
© 1985, Sennheiser Electronic Corporation (N.Y.)



TFT FM and AM monitor spike stopper.

subcarrier demodulator, the 840 AM stereo exciter, and the 841 AM stereo monitor. The full line of studio-transmitter links, remote-control equipment, and broadcast monitors will also be featured.

See ad page 179

THEATRE SERVICE & SUPPLY CORP. 1513

Will feature its studio cyclorama curtains and track systems for television and photography, its overhead rolling light support systems and light grid components, and its studio light dimming equipment and electrical distribution equipment.

THEATRE VISION 1318

Will show curtain tracks and grids, lighting systems, power distribution for field lighting situations, and complete production setups.

THERMODYNE INTERNATIONAL 1637

Will feature its line of equipment transportation cases.

JAMES THOMAS ENGINEERING 1625

Will feature the line of spun aluminum lighting fixtures and support systems, prerigged truss with casters, and lighting barrels, prewired with fixtures.

THOMSON-CSF BROADCAST 1001

This year's display will feature the company's camera lines, including the TTV-1525C studio camera, the new TTV-1623 Betacam (Saticon version), and the new TTV-1624 automatic Betacam (Plumbicon version). Featured digital video products will include the 5700 NTSC color processor, the TTV-8400 computer-aided test system, the TTV-4400 automatic contrast corrector, the TV-5305 image processor

for special effects, and the TTV-7650/7660 D/A-A/D converters. Will also display 1 kW and 2.5 kW FM transmitters, the Vidifont graphics system, and a range of audio products including the 4101 (mono) and 4111 (stereo) FM Volumax peak controllers, 4300 AM Volumax peak controller, 4440A Audimax level controller, and 1602 dual audio DA.

See ad page C-3

THOMSON-CSF ELECTRON TUBE DIV. 1003

Will introduce two Ku-band TWTs, the 160 W TH-3639 and the 85 W TH-3689, for use in portable satellite ground station HPAs; the TH-563 50 kW tetrode for UHF TV stations; and the TH-558 500 kW shortwave tetrode. Other established power tubes will include the TH-298 (1 kW) and TH-371 (20 kW) VHF tetrodes; the TH-327 (50 W), TH-347 (1 kW), and TH-582 (10 kW) UHF tetrodes; and the TH-374 (30 kW) FM tetrode.

See ad page 245

TIFFEN MFG. CO. 1422

Will introduce the MasterControl sys-

tem for still cameras, featuring magnetic stacking of filters. The line of special effects filters, lens shades, closeup lenses, and lens adaptor rings will also be shown.

TORPEY CONTROLS & ENGINEERING 463

Will introduce the PC-18 illuminated pulse clock with built-in digital display for TV and radio. The line of analog and digital master clock systems and time and temperature systems will also be shown.

TOSHIBA 1631A

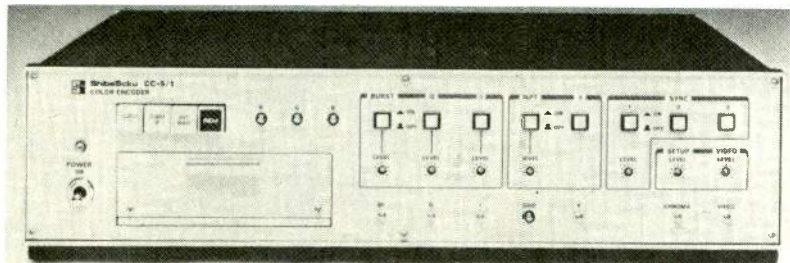
Will show a complete range of cameras, highlighted by the computer-controlled PK-41, along with the PK-70 and PK-61 ENG/EFP color cameras and the PK-60 ENG camera. Also on view will be the WG-V wipe pattern generator, the DKG soft chromakey signal generator, plus a digital switcher and a complete series of PA amplifiers.

See ad page 213

TOWNSEND ASSOCIATES 1420

Will feature an over-the-air demonstra-

THE TRUE MEASURE OF PERFORMANCE



ASACA/SHIBASOKU • CC-5 Color Encoder

The CC-5 is the new world standard color encoder for use with all character generators, chroma keyers and computer graphics systems.

- 2 RGB inputs plus 3 composite video outputs. Additional outputs include R-Y, B-Y, chroma, Y, I and Q.
- Split field color bars generated internally.
- Aperture correction.
- Phase of output signal may be varied from 0°-360°.
- Remote controllable.
- Available in NTSC; PAL B, M, N; and SECAM Systems.

Measure your performance with the best.

ASACA/SHIBASOKU CC-5. From RGB to a clean, accurate, composite color signal.



ASACA/SHIBASOKU CORP. OF AMERICA
12509 Beatrice Street, Los Angeles, California 90066
Sales, Service: (800) 423-6347 • (213) 827-7144

tion of stereo television, in addition to its established TV transmitters including the TA 60 (60 kW UHF) and TA 30 TTH (30 kW VHF), plus the line of LPTV transmitters.

TRIDENT

633

Will introduce the new 75 Series console, based on the 65 Series input modules but providing full 24-track assignment and monitoring plus extra facilities such as fader reverse on monitors and a comprehensive integral patch bay using "bantam"-type Mosses & Mitchell jacks. The compact console has 28 inputs plus four echo returns, with 24-track monitoring and separate stereo remix bus. The 65 Series console, designed for four-, eight-, and 16-track configurations, will be shown in a new color scheme. The recently introduced T.I.L. Series in-line mixer, with up to 36 input/output modules and integral patch bay, will also be shown.

TROMPETER ELECTRONICS

1211

Will feature its line of patch panels, patch cords, and coax connectors, plus

component TV system (three spectrum bands).

TRUE TIME INSTRUMENTS

1134C

Will introduce a new universal clock driver for TV and radio featuring several different analog and digital displays, in addition to the established line of synchronized clocks.

TSM/TOTAL SPECTRUM MFG.

142

Will introduce the HS-100P servo pan/tilt/focus system; the Micro-Controller, a new microprocessor-based control system for the HS-100P; and the Micro-Controller IV, a new four-camera controller that can store 20 special motion memories with up to two minutes of motion record each. Also on display will be the VS-200M economical motorized pan/tilt system; the FCS-20 font compose/title stand; a line of ENG accessories; and the broadcast optics service for camera lenses.

See ad page 49

TTC/WILKINSON

305

Will introduce the new 8090 Series sin-

gle-tube FM transmitters, along with a new FM exciter. Established products will include the audiovisual exciter, XL-1000 1 kW TV transmitter, XL20 20 W UHF translator, MATVF-10 10 W VHF transmitter, S1A Series surge protectors, LA2C audio processor, AC and LC audio consoles, 280B reel-to-reel tape recorders, and CT Series cart machines.

ULTIMATE SUPPORT SYSTEMS

651

Will introduce the VB12PB boom package, consisting of a large black aluminum tripod with a 12-foot boom in three four-foot sections, plus a 25-pound counterweight. The HT33PB lighting stand will also be shown in a black anodized version.

ULTIMATTE CORP.

1642

Will feature the Ultimatte 5 component analog unit and the Electrocraft component video switcher.

See ad page 277

UNION CONNECTOR

1783

Will feature its recently developed uni-

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Dielectric Communications expands your broadcasting horizons with a complete line of broadcast components—known worldwide for their reliability.

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SERIES 2500 AMPLIFIER SYSTEM

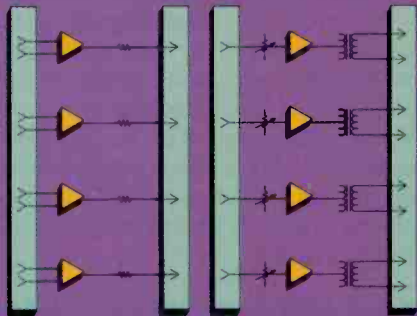
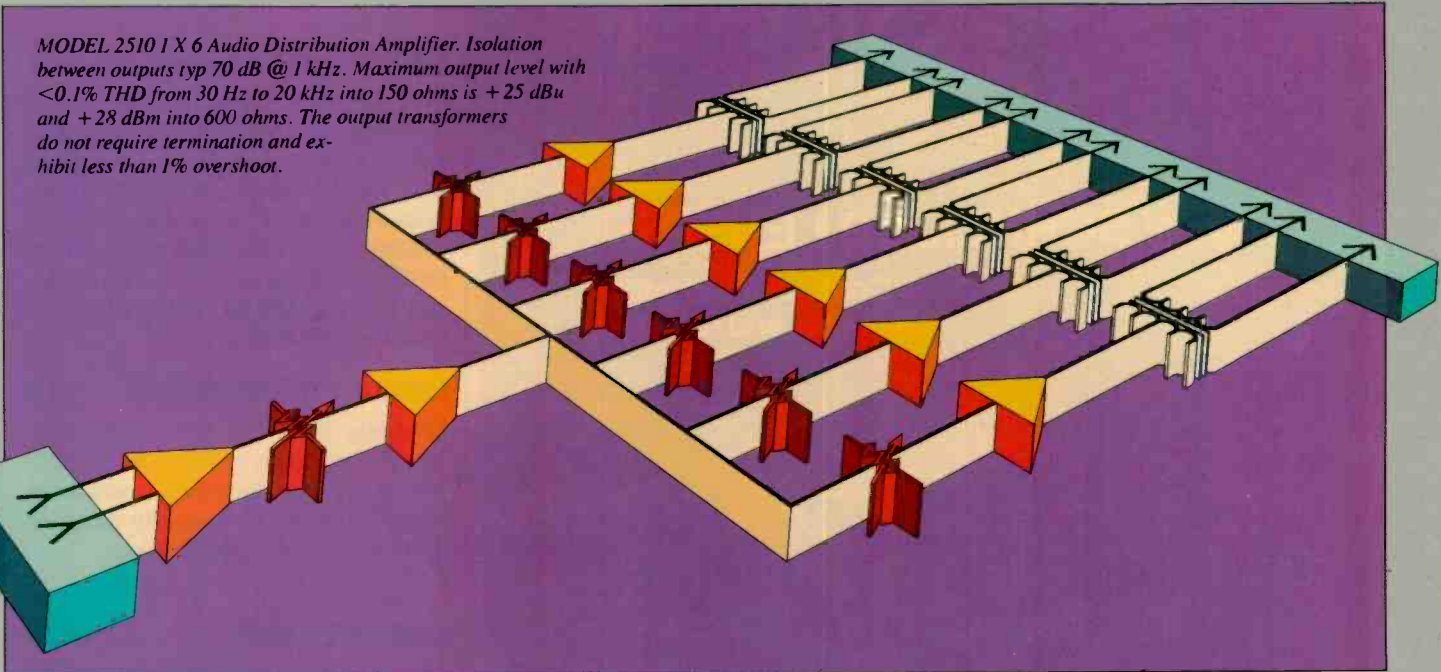
Introducing a series of super high-performance audio amplifiers designed to be part of a versatile three rack-unit card-frame system. The Series 2500 will offer a variety of 20 plug-in amplifiers. The first four are featured in this bulletin.

Thorough circuit design coupled with industrial high-grade components assure unconditional stability and long-term reliability. A full-frame steel housing surrounds each amplifier for structural support and electrical shielding.

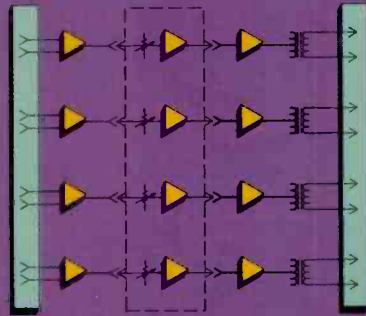
Some of the exceptional specifications common to 2500 Amplifiers are: +28 dBm into 600 ohm loads from 30 Hz to 20 kHz all outputs driven; +32 dBV max input level; SNR > 100 dB; input CMRR typ 75 dB @ 50 Hz; 4 μ s rise time; max phase shift +22.5° @ 20 Hz, -22.5° @ 20 kHz; output source impedances of 80 ohms or less.

Interconnection to external equipment is simple and reliable via .025 square post terminations. This universally accepted technology is inexpensive and easy to install or modify.

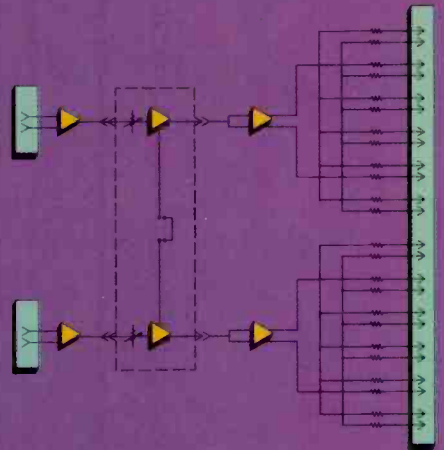
MODEL 2510 1 X 6 Audio Distribution Amplifier. Isolation between outputs typ 70 dB @ 1 kHz. Maximum output level with <0.1% THD from 30 Hz to 20 kHz into 150 ohms is +25 dBu and +28 dBm into 600 ohms. The output transformers do not require termination and exhibit less than 1% overshoot.



MODEL 2516 Quad Buffer Amplifier is primarily designed to interface unbalanced -10 dBV IHF level equipment to balanced +4/+8 dBm professional equipment.



MODEL 2514 Quad Line Amplifier can be used as four discrete amplifiers or two stereo pairs. Optional remote-gain VCA circuitry is available.



MODEL 2512 Stereo 1 X 6 Audio Distribution Amplifier can be used as a single 1 X 12 or a dual 1 X 6 distribution amplifier. Optional remote-gain VCA circuitry is available.

versal PC and Commodore computer interfaces, programming, and system components for control of Unitrol dimmers. The line of electric wiring devices and electric distribution equipment will also be on view.

UNITED MEDIA 1300

Will introduce the new Image Artist digital image processing system, an art system with electronic stylus and digitizing pad. Newest addition to the line of video post-production products is the

Mini-Comm A/B roll computerized editor, which allows the user to upgrade progressively from control track to SMPTE time code and from two to three VTRs with switcher control. The Commander II videotape editing system will be shown with new list management as well as several new editing capabilities. Other featured products will be the full line of time code generators, readers, and keyers; the Model 425 audio router/dissolver with Commander II interface; the Model 500 sequencer, a real-time or time code com-

parator module capable of controlling up to 16 devices; and the Director and Translator for video ADR, with two-VTR control, cue point storage and list editing for up to six actors, and generation of visual and aural cues.

UNITED PRESS INTERNATIONAL 430

Will introduce custom news service for specific radio formats, including Country, Top 40, and News/Talk. Also featured will be the high-speed customized news service; the UPI 1 broadcast computer system to automate news, traffic, and billing; and the UPI Radio Network.

UNITED RESEARCH LAB 604

Will introduce a new ASC reel-to-reel recorder and ASC cassette recorder. Other products and services described will include Autotech recorders; replacement parts for professional recorders; MLG pinch roller coatings for professional recorders and cart decks; and products and service for a range of audio equipment.

UNITED ROPEWORKS 126

Formerly known as Philadelphia Resins, this company will exhibit its Phillystran HPTG electrically transparent tower guys and its specially designed systems for power applications. *See ad page 212*

UNI-SET CORP. 1236

Will feature its modular studio staging system.

URSA MAJOR 512

Will introduce the MSP-126 multitap stereo processor, featuring 20 kHz bandwidth, stereo in and out, eight processing modes, and switchable input mode to accommodate mono or stereo in-line usage. Also featured will be the 8X32-Mk II digital reverberation system, the SpaceStation SST-282 digital reverb and efx system, and the StarGate 323 reverb.

U.S. TAPE AND LABEL 602

Will feature bumper sticker strips and window labels for broadcast promotions.

UTAH SCIENTIFIC 1114

New items will include the Model AVS-1B programmable routing switcher, with up to eight levels of switching; a line of alphanumeric reprogrammable



NEW SCHNEIDER LENSES...

...Continuing a tradition of quality and reliability.



The Schneider tradition continues with two lenses that excel in their specific environments.

One is ideal for the studio, the new Schneider 14.5X wide-angle lens. It combines excellent color correction, minimum distortion and overall superior optical performance.

The other, the 14X ENG/EFP lens, has earned its well-deserved reputation as a superb performer in electronic news gathering and field production. It is available with an add-on super-wide aspheric attachment and a full selection of EFP accessories.

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Circle 291 on Reader Service Card

control panels; and a new SMPTE-standard machine control system with various control and machine interface panels, automation interface circuits, and an eight-bit SMPTE controller. Will also show its enhanced station automation system for data entry, storage, and master control interface.

See ad pages 262-263

UTILITY TOWER CO. 703

Will feature actual tower sections, lighting equipment, and base insulators for use in AM, FM, TV, and LPTV installations.

THOMAS J. VALENTINO, INC. 1231

Will feature 12 new releases to the music library and three new releases to its sound effects series. In addition, the company will be announcing brand-new agreement plans for the use of both libraries in professional broadcast productions.

VALLEY PEOPLE 318

Will introduce the Model 440 limiter/compressor/de-esser, a single-channel unit featuring Valley People's exclusive Linear Integration Detector in the limiter/compressor section, plus a downward expander to eliminate objectionable noise level recovery when "heavy" compression is employed. Other featured products will include the 800 Series and 400 Series lines of signal processing equipment and the Model 610 dual compressor/expander with two independent channels.

VARIAN EIMAC 1605

Will introduce a group of new RF power products, including a multiphase cooled tetrode for high power (500 kW and above); 5, 10, 30, and 60 kW FM cavities; high- and low-band TV cavities; the Klystrode UHF TV high-efficiency transmitting tube; and several other new power tubes, triodes, tetrodes, and amplifiers.

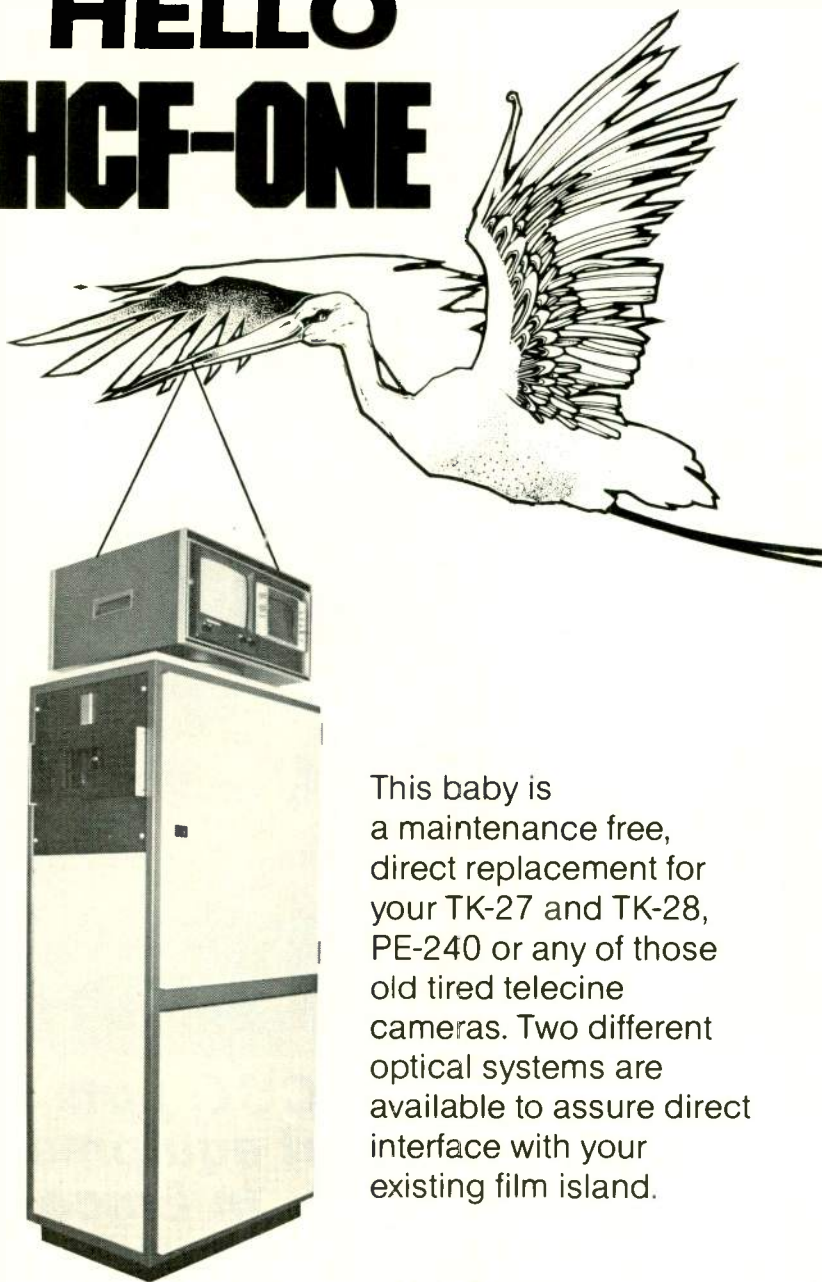
VECTOR TECHNOLOGY 440

VIDEO ASSOCIATES LABS 1122A

Will introduce a high-resolution broadcastable overlay system for the IBM PC that converts to NTSC and has built-in videodisc control. The line of PC and Apple products giving NTSC output from the computer will also be exhibited.

GOODBYE TK27

HELLO HCF-ONE



This baby is a maintenance free, direct replacement for your TK-27 and TK-28, PE-240 or any of those old tired telecine cameras. Two different optical systems are available to assure direct interface with your existing film island.

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VIDEO INTERNATIONAL 1524

Will introduce new EBU-standard time base correctors, digital efx generators, frame synchronizers, and noise reduction systems, in addition to its established standards converter.

VIDEO MAGNETICS 1109

Will describe its quad video head refurbishing service.

VIDEOMEDIA 1308

Will introduce two new editing prod-

ucts: the Eagle XR, a low-cost, editor fully upgradeable to the Eagle I, II, or III and available in cuts-only or A/B roll versions; and the Magnum editor, a 250-event A/B roll system with dual eight-inch disks, Vers. 2.00 list management, and CMX list translator. It handles up to six source machines. Also featured will be the Eagle editing systems, the Z6000 Series of editing systems, the Q-Star commercial insertion system the VMC-200 station automation system, and the VMC-202 traffic control and logging system.

See ad page 155

VIDEOTEK 1633

Will add several items to the line of professional rackmount color monitors, color receiver/monitors, waveform monitors, vectorscopes, routing switchers, audio program monitors, demodulators, and DAs. New products will be the HR-130 13-inch high resolution color monitor; an eight-inch color monitor package with TSM-5A waveform monitor and PVS-6 6x1 passive video switcher; the RS-183A 18x1 AFV routing switcher with RS-422 interface; the VIS-1200 12x1 video-only routing switcher; the 800 Series precision modular DAs; the VM-17PRO 17-inch professional rackmount color monitor; and the VM-13S 13-inch color video monitor with audio.

See ad page 75

VIKING CASES 1731

Will exhibit its line of shipping and carrying cases for video equipment, featuring EIA shockmounted rack cases, ATA-type shipping cases, and Carrylite carrying cases.

VITAL INDUSTRIES 1212

Will feature its SAM master control automation system, its stereo audio package for master control switchers, the line of production and master control switchers, and the SqueeZoom video effects system.

WARD-BECK SYSTEMS 1224

Will introduce a new audio console, the ST Series, for stereo television production. Also featured will be the line of radio consoles with refined module design, and the Microcomp microprocessor-based communication system.

See ad page C-4

WEATHERBANK 223

Will introduce its WeatherCheck satellite-delivered weather information system, available coast to coast.

WEGENER COMMUNICATIONS 515

Will feature its line of audio and data transmission equipment for satellite and terrestrial microwave systems, including the Panda II audio noise reduction system and the Wegener Digital Audio System. Other featured items will include the line of cue and control products, stereo synthesizers, audio switchers, cable data demodulators, teletext products, data modems, and network control systems.



WCCO puts its state-of-the-art equipment in Emcor's state-of-the-art enclosures.

WCCO-TV in Minneapolis/St. Paul has been a leader in broadcasting for many years and its new broadcast center is one of the finest in the industry. When it came to housing their equipment, the WCCO engineers chose Emcor enclosures.

Emcor is also a leader in its field, meeting the needs of broadcasters with high quality enclosures. Choose from six distinct product lines and more than 9,000 standard items. For those who need it fast, Instant Emcor is ready to ship in five working days. In addition to standard products, we manufacture modified designs for special needs.

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EMCOR

WESTLAKE AUDIO 2302

Will introduce a line of all-new two-way, high-accuracy portable reference monitors with wide bandwidth, low IM distortion, pinpoint stereo imaging, and coherent wave front. The complete line of near field reference monitors will also be featured.

WHEATSTONE BROADCAST GROUP 121

New this year will be the TV-80 audio mixing console, a VCA-based TV production console offering eight to 48 input channels with both discrete and VCA subgrouping features, plus four auxiliary effect buses, routing and control for SAP formats, stereo EQ, optional patch bay and stereo remotes. Also new will be the DA-80 and DA-160 audio DAs with differential balanced inputs and electronically balanced outputs. Established items will include the A500 on-air broadcast console and the SP-5 stereo production console, the latter shown in a special live TV production version, plus the 1201 and 1202 mono and stereo compressor/limiters and Model 2700 1/3-octave graphic equalizer.

See ad page 68

WHIRLWIND 329

Will show its interface cables for audio and video, as well as matching transformer systems and multipair cables.

WHITE INSTRUMENTS 1318C

Will add the new Model 4500 active 1/3-octave graphic equalizer to the line of active and passive graphic equalizers, audio real-time analyzers, crossover networks, and filters for audio applications.

WINSTED CORP. 1238

Will add several new items to its line of videotape editing consoles, storage units, equipment cabinets, including: a tape truck equipment cabinet for Betacam/Betacart; a Paint Box system console; electronic newsroom consoles; designer editing consoles with oak trim and color panels; and a mobile rollout cart for audio/video equipment.

See ad page 128

WIREWORKS CORP. 1701

Will introduce the MSJ/MSC Series multipin input mic splitters; the MYJ/MYC Series prism components; the MMB Series mini stage boxes; the

V502 Series audio/video multipin disconnect components; and the VK Series (trunks), VT Series (tails) and VC Series (chassis mount audio/video multipins). Also new will be the TE-3 mic cable tester. The line of multibox and multitrack input units, transformer-isolated mic splitters, main and extension cables, and connectors will also be shown.

WOLD COMMUNICATIONS 1515

Will exhibit material relating to radio and TV satellite transmission services, as well as mobile microwave and mobile uplink services and the SSTS systems.

WOLF COACH 1317

Will introduce a fresh concept in satellite newsgathering mobile design addressing several inherent problems that occur in the field. The established VC-201N conversion system, based on a Ford E350 Supervan, will also be featured.

FRANK WOOLEY 1405C

Will feature the MotionMaster video animation system.

WORLD TOWER CO. 519

Will show its line of antenna towers.

WSI 1104

Will introduce high-resolution, clouds-only satellite images, transmitted in 31 levels of gray for greater definition, that can be superimposed by users over their own custom base maps. Also featured will be the all-in-one real-time weather information system, FAXbrief dial-up maps, and SuperSports sports information system.

YAMAHA INTERNATIONAL 1304

Will feature the REV1 digital reverbator using proprietary LSIs and software to create up to 40 early reflections and provide up to 99 seconds of subsequent reverberation. Also showing full line of audio consoles including the PM 2000, 2408, and 1608, as well as the M1500 Series and EMX Series. Power amplifiers and a wide range of audio processing equipment will be on hand.

KEY TO BOOTH NUMBERS

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1000-1999 TV Hall Exhibits
2000-2999 Hilton Pavilion Exhibits

BROADCAST ENGINEER PLUS STAFF ENGINEER

Needed for Washington, D.C. operation of growing Satellite Co.

BROADCAST ENGINEER must have BSEE or equivalent plus three (3) years experience in TV Broadcast Engineering, working knowledge in Satellite Communications; terrestrial microwave operation and maintenance experience; proven ability to understand technical schematics and provide quality technical services; assure effective working relationship with supervisor and others with whom must interface; ability to compile effective oral and written reports and maintain accurate records of operating and maintenance activities; General Class Radio Telephone License required. Management experience desirable.

STAFF ENGINEER must have Associate Degree in electronics plus two (2) years electronic technician experience (or equivalent) with one of the two years in:

- 1) In maintenance of typically utilized technical equipment:
 - a) Eng U-Matic tape recorders
 - b) Eng television cameras
 - c) Micro-wave STL equipment
 - d) Audio follow video routing switching equipment
 - e) Associated audio support equipment

-or-

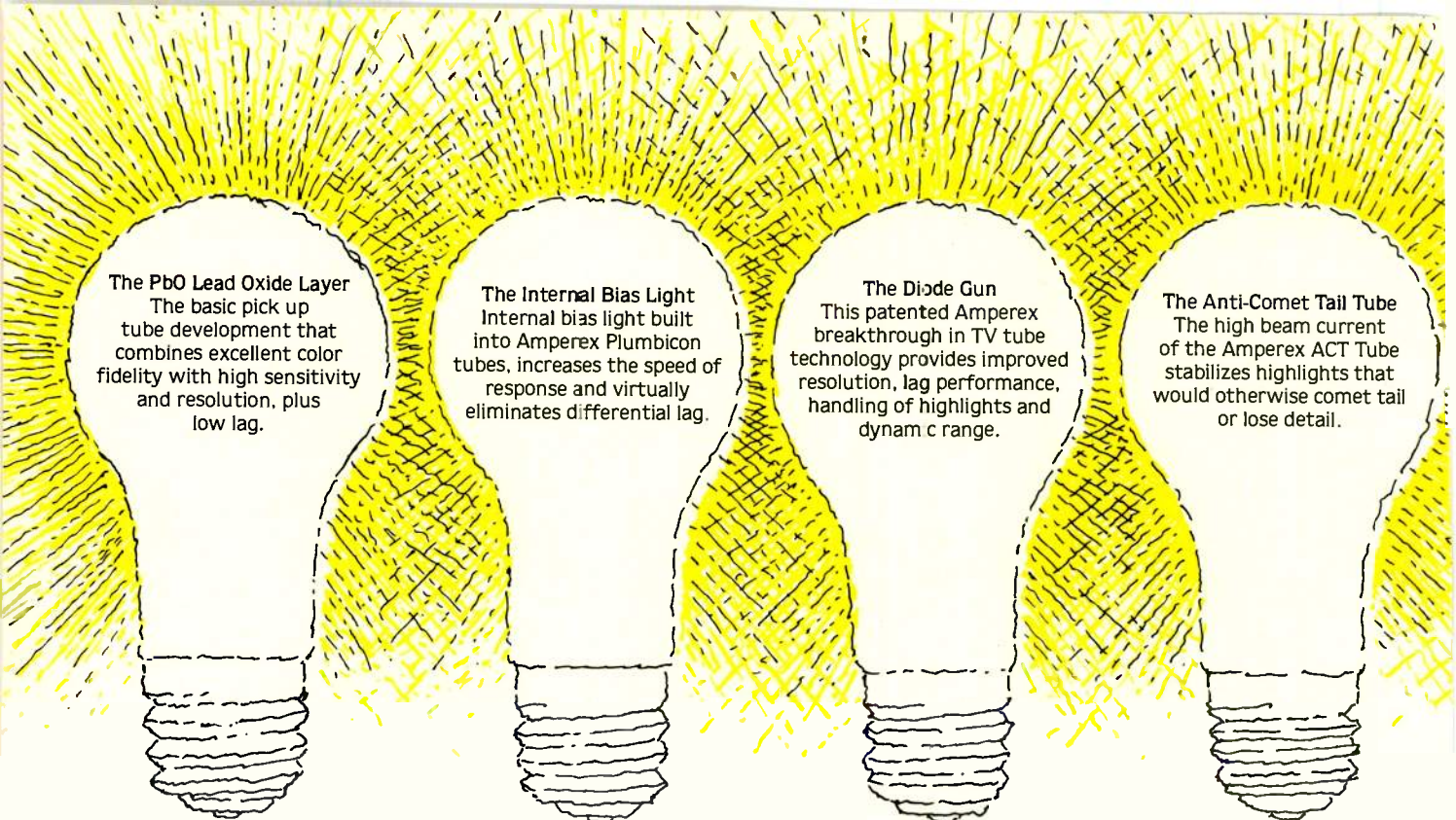
- 2) In electronic circuit design with emphasis in micro-wave and TV broadcasting equipment.

Demonstrated ability to properly use electronic test equipment and interpret electronic schematics and block diagrams; normal color vision and hearing; General Class Radio and Telephone License required.

Work hours will include evenings and some weekends. Have proven ability to work effectively with others.

CALL COLLECT to BIC Personnel Department for Employment Application Form. (801) 575-7508

AN EQUAL OPPORTUNITY EMPLOYER



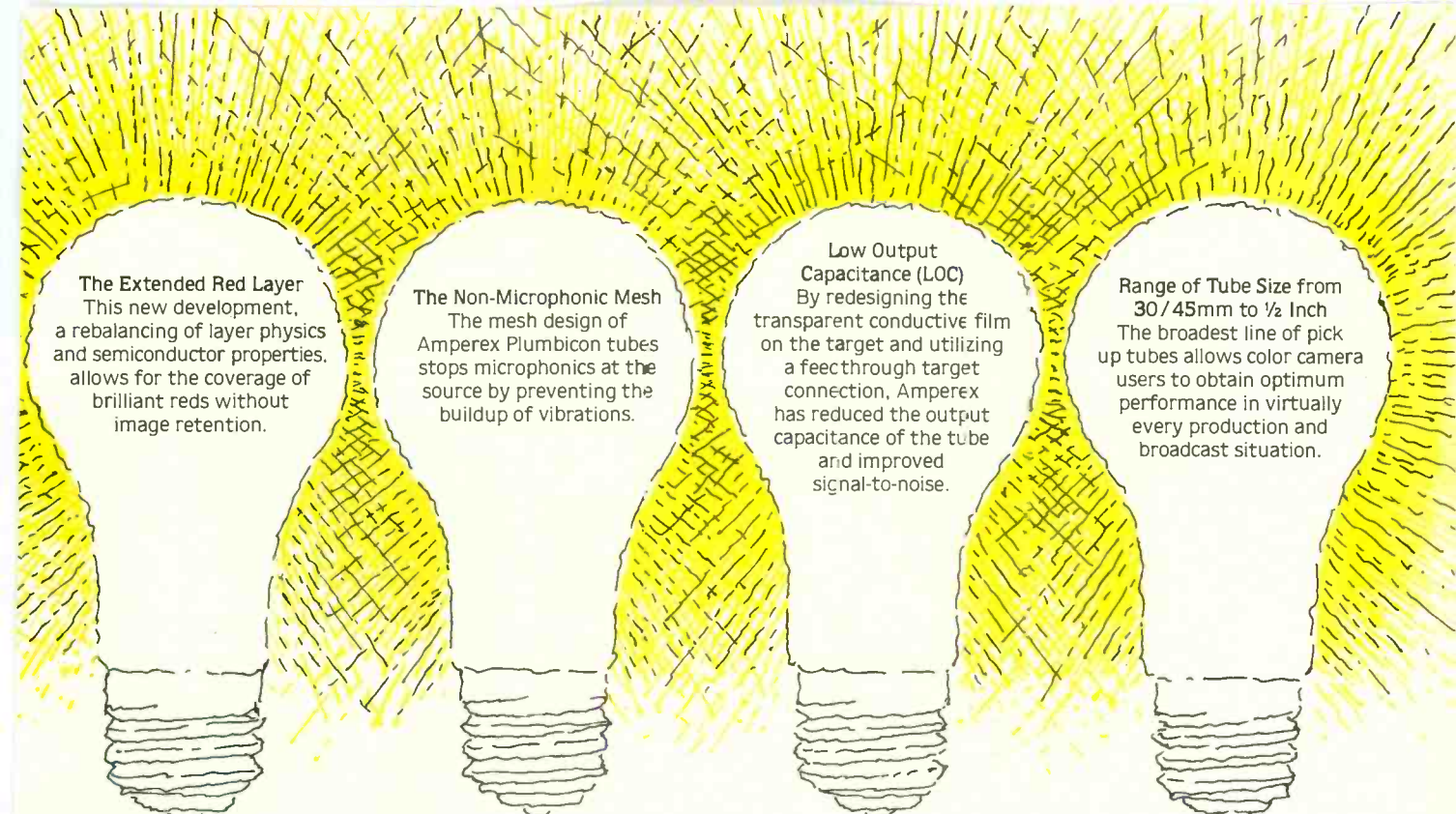
The PbO Lead Oxide Layer
The basic pick up tube development that combines excellent color fidelity with high sensitivity and resolution, plus low lag.

The Internal Bias Light
Internal bias light built into AmpereX Plumbicon tubes, increases the speed of response and virtually eliminates differential lag.

The Diode Gun
This patented AmpereX breakthrough in TV tube technology provides improved resolution, lag performance, handling of highlights and dynamic range.

The Anti-Comet Tail Tube
The high beam current of the AmpereX ACT Tube stabilizes highlights that would otherwise comet tail or lose detail.

Eight brilliant ideas in TV



The Extended Red Layer
This new development, a rebalancing of layer physics and semiconductor properties, allows for the coverage of brilliant reds without image retention.

The Non-Microphonic Mesh
The mesh design of Amperex Plumbicon tubes stops microphonics at the source by preventing the buildup of vibrations.

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By redesigning the transparent conductive film on the target and utilizing a feedthrough target connection, Amperex has reduced the output capacitance of the tube and improved signal-to-noise.

Range of Tube Size from 30/45mm to 1/2 Inch
The broadest line of pick up tubes allows color camera users to obtain optimum performance in virtually every production and broadcast situation.

technology and what they mean to you.



The current high state-of-the-art of TV color cameras owes a great deal to the ideas and insights generated by Amperex and Philips. In fact, our corporate family has developed more innovations and refinements in pick up tube technology than anyone else.

Behind each flash of brilliance is a deep understanding of the broadcasting industry. We know, for example, how competitive pressures have created a need for cameras that deliver increasingly better performance in a variety of difficult situations.

We've responded... with one innovation after another until today, we offer the broadest line of extended performance Plumbicon tubes. No matter what cameras you use—domestic or imported—we have the tube that can optimize their performance. Which makes the specifying of Amperex Plumbicon tubes a pretty bright idea in itself.

For more information call or write Amperex Electronic Corporation, Slatersville Division, Slatersville, Rhode Island 02876. (401) 762-3800. Made in Rhode Island, U.S.A. Delivered to you in twenty-four hours or less.

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Circle 228 on Reader Service Card

See us at NAB Booth #1412

New Technology For News: Newsroom Computers

A distinguished panel of newsmen talk with *BM/E* about the role of newsroom computers in their operations, describing the benefits and savings as well as the pitfalls. Part I of a two-part story to be continued next month.

At the San Antonio RTNDA conference, *BM/E* brought together several of the world's most respected news organizations for the first in a series of discussions about the role being played by new technology in newsgathering, focusing on newsroom computers and news automation.

Seated around the table during the three-hour, no-holds-barred meeting were representatives from each of the networks, the BBC and ITN from London, plus several local broadcasters who have now or will shortly be installing newsroom computer systems.

The panelists included:

- Mel Martin, VP news, WJXT-TV, Jacksonville, FL.
- Rob Barnes, director of the corporate information system at Turner Broadcasting in Atlanta.
- Sheldon Hoffman, managing director of news production systems, NBC News.
- John Griffin, director of computer operations, NBC News.
- Jerry Rosholt, an editor with NBC News.
- John Williams, assistant editor for news and current affairs, BBC Radio News, London.
- Spencer Kinard, news director, KSL, Salt Lake City, UT.

- Rob Sunde, news director, ABC Information Radio Network.
- Paul McKee, ITN, London.
- Ian Morrison, Atlantic Television System and Atlantic Satellite Network.
- Larry Cooper, news director and executive producer, CBS Radio.
- Mike Ferring, news director, KRON-TV, San Francisco.
- Bernard Gershon, WOR Radio, New York City.
- Robert Rivlin, editor, *BM/E*.

Their comments during the discussion have been edited together here as a reference for any station planning to install or expand a newsroom computer system. The story is divided into two parts. In Part I, below, panelists appraise the merits of newsroom computer systems in general, how to sell them to management, what the technology has to offer the industry, and so forth. In Part II, to appear next month, the discussion concludes with an analysis of problems with newsroom computers, the role of the traditional engineering department in regard to newsroom computer systems, custom modifying software to suit individual users, automated news productions using newsroom computers, and several other topics.



RIVLIN: What is the role of technology, specifically newsroom computer technology, in the production of news?

HOFFMAN: Technology is only a tool. If we didn't have typewriters, we'd be using pencils. Typewriters help speed the process up. And computers are just another tool that helps speed the process of reporting, of gathering information, disseminating it, and making it available to everyone who's concerned with the information. It just acts as oil in the machine.

We've operated for 50 years without it. Now we'll operate better with it. It will increase productivity, allow us to do more things either more quickly or more easily than you could do them without it. And so it almost provides an incentive to do more, because it makes doing more easier to accomplish.



Panelists at BM/E-organized roundtable on new technology for news: newsroom computers.





Mel Martin, WJXT-TV

BARNES: I always say that if a pencil is a tool for the mind, then the computer is a power tool for the mind. We have to keep remembering the maxim that the computer is incredibly fast, accurate, and stupid, whereas man is slow, error-prone, and brilliant. So the computer can't do anything humans can't do, but it can do some things a lot faster.

COOPER: The computer will become part of the newsroom operation just as the typewriter is now, although I thought newsroom computers were going to be a more prevalent part of this industry a long time ago. Now, in the past two years, maybe only in the past year, the technology really seems to have taken off. I think it's definitely here to stay, and I think that as the companies who developed these systems come up with ideas that are more affordable for a smaller newsroom, you'll find just as many computers out there taking care of operations for small newsrooms as larger operations.

RIVLIN: Is cost and the availability of cost-effective systems what's held

Rob Barnes, Turner Broadcasting



MARTIN: "I think it's very hard to convince management to spend money when they ask, 'How much will we save?' And you say you don't know. And they ask, 'Will it save us any bodies?' And you say you don't think so. And they ask, 'Will the viewers know?' And you say, 'Well, not exactly.'"

back the industry for so long? Why has it taken so many years for this technology to get going?

COOPER: It's always difficult to justify computer system cost effectiveness. When you bring a computer into a newsroom you don't generally replace any personnel, and when you're dealing with corporations and boards of directors they want to see how you're going to save money by bringing this device into the newsroom. So though you improve efficiency and the amount of information at your fingertips, you seldom improve cost effectiveness in your newsroom.

I think that's been the major problem that has kept computers out of the newsroom until this point. But there's another problem, too—the technology keeps improving. And I think a lot of people have been unwilling to step forward and buy a piece of equipment they suspect will be obsolete within a year. It may still be usable within their operation, but it won't have all the bells and whistles that the latest system will have.

BARNES: At CNN, we've never been on the air a day without a computer, and most people assume it would be impossible to run a 24-hour-a-day news operation without one. But even in the beginning when we were setting up the system, there was no way to cost justify it. There was no one with any experience on such a large system—we have a 120-terminal Basys system with eight on-line bureaus around the country. The only parallel was newspapers—but

they have a whole different set of considerations such as pagination, alphabetization of classified ads, and so forth.

Now, in retrospect, we can say "yes, it does save time." When we take the computer down once a week for backup and maintenance and compression of data, everyone who works in the newsroom during that period comes in an hour earlier, because it takes that much longer to do their jobs. And if you multiply the staff and their hourly wage, times 24 hours a day, that's how much we're saving.

McKEE: We were in a similar situation when planning our massive 200-terminal Basys system for the ITN headquarters in London. With our expansion, we put several new programs on the air. And we couldn't have done it in the same amount of time with the same number of people if it weren't for the newsroom computer system—we would have needed at least 10 percent more staff.

When you're starting from the beginning—putting a news system into an existing operation—it's different. The improvements are qualitative rather than quantitative—the computer gives you the ability to take on extra work—we can add an extra bulletin here or there with minimal staff expense, and things like that. But it's very hard to demonstrate quantitative savings when you're beginning at square one.

We helped justify our new system by looking at the imbalance we had cre-

BARNES: "I always say that if a pencil is a tool for the mind, then the computer is a power tool for the mind. We have to keep remembering the maxim that the computer is incredibly fast, accurate, and stupid, whereas man is slow, error-prone, and brilliant. So the computer can't do anything humans can't do, but it can do some things a lot faster."

Our Ikegami Telecine Cameras give us so much and require so little."

T. Arthur Bone, V.P. Engineering Knight-Ridder Broadcasting, East Providence, Rhode Island

You can't help but be impressed with Ikegami's TKC-970 high quality and TKC-990 fully automated Telecine Cameras. In fact, Mr. Bone was so impressed with the first one he bought, he purchased three more for other Knight-Ridder stations and had this to say about them:

"We set them up every month whether they need it or not. They usually don't."

Ikegami's TKC-970 is a professional color Telecine camera using photo-conductive 1 inch Vidicon tubes (Saticons® are optional). Suitable for "on-line" applications such as local viewing or direct on-air broadcast and off-line applications where the video signal is recorded, the TKC-970 provides top quality pictures and high reliability.

The TKC-990 is a fully automated high performance telecine camera using the same optics and pick-up tubes as the TKC-970. Consistent, highest quality performance is achieved by automatic set-up of the camera operating parameters, as well as automatic set-up of registration, level, shading and detail correction for up to three input projectors.

Both the TKC-970 and TKC-990 utilize a built-in large image field lens, neutral density disc for automatic light control and automatic color balance circuitry. A six vector color corrector option is available for each camera.

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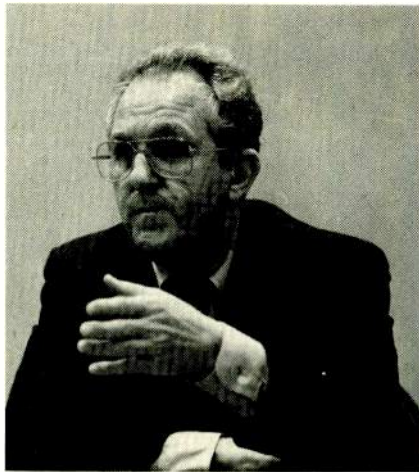
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Sheldon Hoffman, NBC News

ated between our capital investments in ENG and studios and news production equipment and our investment in the newsroom itself. We were looking at investing about £100 per journalist, whereas we had thousands invested in the production equipment. We also saw that all our other investments had really paid off—in a better screen impact or greater productivity, and we had the same feeling about newsroom computers—which we could put in for a relatively modest investment.

MARTIN: Another problem that's held the industry back is that this technology is invisible on the air. Once you tell the GM that the computer isn't going to replace anyone in the newsroom, the next thing they want to know is "How will we see it on the air?" When you make an equal capital investment in ENG microwave capability, for example, there's an instant, obvious, promotable difference on the air. But though the differences when a news-

John Williams, BBC Radio News



HOFFMAN: "When you just think of a wire service printer going all day with probably 95 percent of the paper going right in the trash can, you may as well just take the box of paper and throw it out and save the ribbons."

room system goes in are very real, they're very internalized and very hard to quantify.

RIVLIN: Isn't there a definite cost savings on paper, and on the space needed to store all the wire service material and scripts? Surely that can be directly justified to management?

MARTIN: At WJXT, our 12-terminal Newstar system saves us about 50 percent on script paper alone, because scripts can go through six or seven versions before the final printouts.

FERRING: You also eliminate a huge amount of Xerox costs—rundowns and memos and things like that which are distributed throughout the building. Our photocopy use dropped from about 75,000 per month to 10,000 per month when we put our 75-terminal Basys system in.

HOFFMAN: When you just think of a wire service printer going all day with probably 95 percent of the paper going right in the trash can, you may as well just take the box of paper and throw it out and save the ribbons.

COOPER: At CBS, the 22-terminal Newstar system showed up in the radio newsroom partly because the wire service operation had not been updated for years. The 20 teletypes would crank out 10 copies each of a story very easily, but they couldn't be maintained easily anymore, and we were looking at having to replace them with machines that can produce only three readable copies each. That meant replacing each teletype with three new machines to get our 10 copies.

So we went with the newsroom computer system. First of all, there was a tremendous savings in space in a very crowded newsroom. But it also meant

an immediate cost savings. We were renting the old machines at \$15 a week and were threatened with having to replace each with three new machines that would cost \$30 each a week to rent. That's how I got the system in the door.

But when people start talking about paper savings with computers, they have to be aware that when the computer first comes in the door, they'll probably burn up more paper than they used to—because until people learn to trust the computer they want to print things out and be able to keep them at their sides. They don't want to trust losing things in the computer because they don't know how to get the story out or they pushed the wrong button. So initial paper savings aren't as great as you might think.

BARNES: Before we went on-line, we used to hear about "the paperless newsroom." But I'm the one that went out and rented typewriters—just in case. The paperless newsroom will probably never exist, because of one fact: any machine that runs 24 hours a day, seven days a week is going to break. And even if you have a backup computer, one day there's going to be a power failure or something else, and you need a security blanket for the director and the anchor people so you can always have at least a few hard copies at air time.

FERRING: There's still a lot of things that work better and can be read better and used better when they're on paper as well.

RIVLIN: What's being done now to promote newsroom computer systems at the stations?

HOFFMAN: I don't know that that's a legitimate item for promotion.

WILLIAMS: "We keep a great deal of details on all our correspondents and bureaus abroad—where they are at any particular time. If we need to get a visa for one of them, we have instant access to information on their passport number and other vital statistics. We also keep track of people's movements through the system."

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Paul McKee, ITN

It would be like saying "NBC has switched from manual typewriters to electric ones so we can type faster." It's really a journalistic tool. And actually the results are self-promoting; the results appear in a better newscast.

BARNES: We mustn't minimize the importance of the people who are using the tool, or imply that the computer has suddenly made them superhuman. This is the same all over the computer industry, because where you've got high-tech you must also have "high touch," meaning that people have to be able to touch the computer and use it and not feel alienated from it. That's why video games are so successful but the wonder of electronic mail is falling flat on its face. So with the newsroom computers, as great as the machines are, we've got to give the public the impression that it's the people sitting behind them that make them work.

MARTIN: The other thing is that most of your viewers have at least as

Larry Cooper, CBS News



McKEE: "We helped justify our new system by looking at the imbalance we had created between our capital investments in ENG and studios and news production equipment and our investment in the newsroom itself."

much exposure to computers as your staff, so you can hardly say "We have computers" and expect the public to be impressed when the viewer's nine-year-old kid probably has one in his bedroom.

RIVLIN: Besides what you've already described—greater depth for stories, wire service management, scripting, and so forth—what are some of the other benefits to working with a newsroom computer system?

BARNES: We had a kind of unusual case. When we first went on the air, everybody else had been planning their coverage of the first Space Shuttle launch for a long time. The three networks had their buildings at the Kennedy Space Center ready to go, and they had placed their orders for phone circuits for wire services far in advance. We took one terminal and a modem to the site, dialed up Atlanta, and had wire services at our terminal instantly, without any of the additional costs.

GERSHON: In addition to its regular tasks, we also use our 11-terminal Basys system as a Rolodex. If you walk into most newsrooms, you find they have nine or 10 Rolodex files filled with names of people who have long since died or left their positions. And updating card files like that is a task. With our computer system, everybody is listed by title, key word, and topic. . . .

HOFFMAN: . . . (laughing) of people who died 20 years ago.

GERSHON: That's right. You just ask it to give you a list of everyone who died 20 years ago.

The other thing we're using it for is

payroll and scheduling. Before, every time someone called in sick, you'd have to change the schedule and copy it. Now we just log it into the computer.

WILLIAMS: We're doing much the same thing with our 30-terminal Basys system for BBC news. We keep a great deal of detail on all our correspondents and bureaus abroad—where they are at any particular time. If we need to get a visa for one of them, we have instant access to information on their passport number and other vital statistics. We also keep track of people's movements through the system.

HOFFMAN: It definitely encourages people to update material. It's normally an onerous task to update. But with the computer system, you just update it when the material becomes available—just as word processing encourages writers to rewrite and refine, because they don't have to think "If I have to type that over again, forget it." It removes the task of having to do this horrible, huge job which you know you're going to have to do again in a few months.

GRIFFIN: On network shows we have a very involved script approval process, and one of our correspondents in Washington, who now sends in his scripts with a Radio Shack TRS 100, says that he feels that the script approval process has gotten easier with the computer.

HOFFMAN: Some of that may be due to the fact that he is rewriting his copy more times before he sends it in. The first time the editor sees it, it's in an almost finished form.

GRIFFIN: Also, a good part of our operation is now run from bureaus, or

COOPER: "It's always difficult to justify computer system cost effectiveness. When you bring a computer into a newsroom you don't generally replace any personnel, and when you're dealing with corporations and boards of directors they want to see how you're going to save money by bringing this device into the newsroom."

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Mike Ferring, KRON-TV, San Francisco

correspondents on location, and we have several of our bureau chiefs who have computers at home. They are actually able to be home on a weekend and dial in if they hear something is up, and are able to reroute a crew, or make a decision to cover something without having to come in.

ROSHOLT: I remember one time where there had been a prison break in West Virginia at 2:00 a.m. The bureau chief got a call from his assignment desk, and was able to use his home computer to tie in with our computer in New York, read the wires, and be as up to date as anybody in the country. He called the station back, dispatched a crew, and was back in bed within an hour.

GRIFFIN: We have some correspondents who are beginning to use small portables to write and file stories. When they call the story in, our Basys computer display at *Nightly News* automatically flashes that a story has been received. It's all done completely automatically.

MARTIN: WJXT pay 50 percent of the cost of a home computer—up to

Bernard Gershon, WOR Radio



FERRING: "You can eliminate a huge amount of Xerox costs—rundowns and memos and things like that which are distributed throughout the building. Our photocopy use dropped from about 75,000 per month to 10,000 per month."

\$1000—for any of our 40-person staff who wants to buy one for home. So I have 26 people with home computers.

We're finding that reporters are generally spending a lot more time reading the wires now—either in the newsroom or at home. In a lot of operations, the wires are in the back room with some production assistant worrying over them, and a reporter can get through the day without reading a wire. But we're finding now that reporters will leave messages at the assignment desk about stories they've read about on the wire at home. And they are also sending story ideas into the system from home, which we think is a very good idea.

The system has also saved us money in legal fees, because every time we talk with our law firm the meter is running. Now we can send them a copy of the script and give them a chance to read it before we call them on the telephone and start talking.

Still another benefit is that we find we can get new employees familiar with what is going on a lot more quickly. They can get a review of what we have already done by just asking the system to search for key words. They print the file out on a dot matrix printer and can then read it over at their leisure.

Also, when many different people are working on the same story, or a story is put away for a time and different people work on it later, they all have access to the same information so they can see what each of them is doing.

FERRING: One of the benefits that we find is that the computer is an information bank—a place where you can go find out whatever you need to about what's going on in the newsroom. Be-

cause regardless of how many copies of the wire you print out, you can never find a copy when you need it. And you don't know where your reporters are, and you don't know what their schedule is, and you don't know where that story is going to run in the show, etc. But all of this information is now available to anyone who has a terminal—whether someone sitting at a desk in your newsroom, or someone at one of your bureaus. People have access to information without needing to run around screaming and yelling at people to get it.

McKEE: These are all the intangible benefits of owning a computer—that you have a common and consistent and accurate and up-to-date information spine from which everybody can draw.

COOPER: It puts everything in one basket—everything you used to have on pieces of paper tacked on the wall. It will even time stories and shows for you. Plus it puts everyone in touch, and you don't have to go through the strata of personnel to get information like you had to before.

McKEE: The other advantage, which most people don't mention, is how quiet the computers are. Normally when you walk into a newsroom you can tell exactly where you are because of the volume of the typewriters and everyone trying to talk above them. But now it's as if you can feel people thinking. It has reduced the whole tempo of aggravation which surrounds this job.

RIVLIN: Listening to you all sing the praises of newsroom automation, I wonder why it has taken so long for this technology to penetrate the marketplace. Surely there must also be some problems with newsroom computers

GERSHON: "We also use our system as a Rolodex. If you walk into most newsrooms, you find they have nine or 10 files filled with names of people who have long since died or left their positions. And updating card files like that is a task. With our computer system, everybody is listed by title, key word, and topic."

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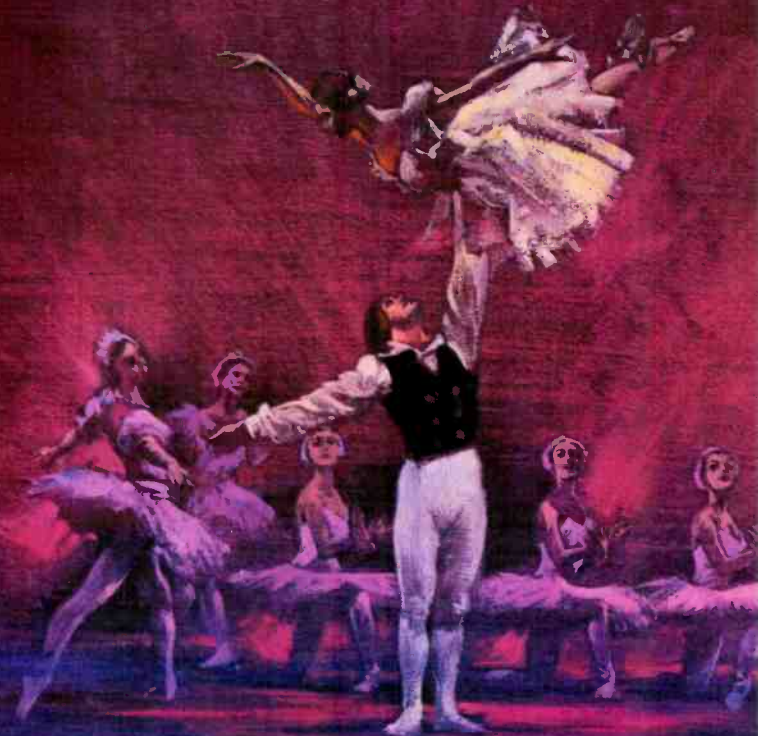
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Ian Morrison, Atlantic Television System

which have held them back from general acceptance?

HOFFMAN: Everybody will eventually have one. But the availability of viable systems—there are only four or five—is scarce, and it's taking a while for the information to filter down to most of the users. And they not only have to make up their own minds but then they have to sell the idea to their managements.

MARTIN: There's been a failure to market these systems properly. Every time we would have a demonstration of the two or three systems we consider viable, they would break down during the demo. And when we would ask about costs, nobody would have a realistic answer.

I also think it's still very hard to convince management to spend money when they ask, "How much will we save?" And you say you don't know. And they ask, "Will it save us any bodies?" And you say you don't think so. And they ask, "Will the viewers know?" And you say, "Well, not exactly."

Plus there's the calculator effect—people who expect the price will come down as dramatically as it did for pocket calculators. Since we've had our system in, we've probably had 40 people through our newsroom thinking about installing one in their own operation. But they all say they're going to wait for the price to come down, because if the system costs \$300,000 today, perhaps next week it will be down to 85 cents.

COOPER: Well, the costs have come down. When we first tried to con-

vince CBS to put a system in, they explored doing it on their own rather than buying it off the shelf. That would have cost in the neighborhood of \$750,000. A short time later, when we had people in from the two leading newsroom companies, they were talking of systems that would cost only \$100,000, and that included five terminals. Today, for the same \$100,000, you can get 10 terminals and a couple of printers. I think prices have leveled off now, so all the newer developments are just



Rob Sunde, ABC Information Radio Network

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increased memory size and additional bells and whistles. But there's still reluctance to invest.

And the problem isn't only price. Unfortunately, newsroom computer salesmen are like computer salesmen in general. You ask them if it will do something you want, and if it won't they tell you the company is working on it and it will be available in a couple of months—which usually doesn't turn out to be the case. So you have a lot of disappointed people waiting for the system features that they want before

making their purchases, but those features may never come.

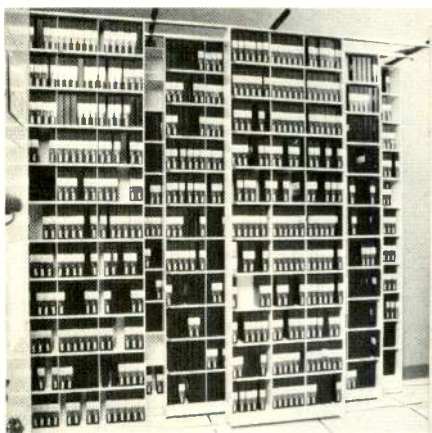
BARNES: It's also true that you can get the wrong system, and people are afraid to make the wrong decision. With an ENG camera, you turn it on and it either makes acceptable pictures or it doesn't. But with newsroom automation, if you get the wrong system and it doesn't meet your organization's needs, the computer can work fine but it will be useless to you.

KINARD: Having been through the famous KSL computer crash, when we



Jerry Rosholt, NBC News

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Robert Rivlin, BM/E

went to our Station Business Systems computer to get the news out and found the whole system had locked up and we had to postpone the newscast and move our next program up a half hour, I can tell you that I think computers are a mixed blessing. Now we have an extensive ColorGraphics system for both radio and TV, and I've come to trust it again. But you're trading a rather simple technology that is relatively easy to maintain for high technologies that are difficult to maintain. So I think the weakest links in the system today are the high-speed printers, which often do not work and are extremely expensive to maintain. **BM/E**

Note: In Part II of this story, which will appear next month, the discussion continues about problems with newsroom computer systems. Other topics include the role of the traditional engineering department in regard to newsroom computer systems; custom modifying software to suit individual users; automated news production using newsroom computers; and several other topics.—Ed.

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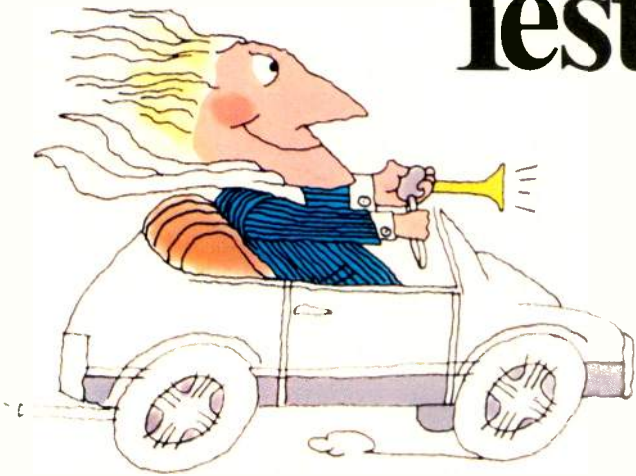
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On October 15, 1984 at KTLA’s Mt. Wilson transmitter site, Ira Goldstone performed the final acceptance checks on the Modulation Sciences TV. Stereo Generator.

PRODUCTION FACILITY REPORT

VCA/TELETRONICS

State of the art equipment and good people—in that order—are the secrets for the enduring success of this 16-year-old New York City teleproduction facility.

By Michael Greenhouse
Associate Editor

In New York, a business can come and go in seemingly less time than it takes to sing the key line from "New York, New York"—"If I can make it there, I'll make it anywhere"

This is one reason VCA/Teletronics is such a remarkable facility. Founded about 16 years ago, this New York company has grown and prospered consistently. Today it is an elite facility in probably the most competitive market in the world, and there's every indication it's going to stay at this level for a long time to come.

There are quite a few factors that have contributed to Teletronics' enduring success. But Will Roth, Teletronics' senior VP, sales and marketing, boils it down to the company's "state of the art equipment that works consistently, and good people—in that order."

In a sense, the success formula has been that simple. Achieving it certainly wasn't. Founded in 1968 by George Gould, the company was originally called Teletronics International and was located in a four-story building on 51 Street on Manhattan's East Side. Physically, it was about half the size of the present facility, which is located on 55 Street; about 10-15 people work there.

According to Tom Demayer, the facility's executive VP, Teletronics grew slowly from '68 to about '77. One two-inch edit room was added each year, sometimes every other year. But the growth rate accelerated in 1980 when the company, which had relocated to its current seven-story building in 1975,



Art director Maureen Nappi in the Teletronics Quantel Paint Box room.

converted to one-inch tape machines. Virtually every room and every piece of gear now in the facility has been added since 1980.

Engineering at the core

When the company took over its 35,000-square-foot plant, it really didn't have a "master design plan," says Eric Steinberg, manager of engineering. The heart of the plant—the major technical facilities—were placed, and still remain, on the third and fourth floors. In a sense, the facility evolved outwardly from these two floors.

The third floor houses the company's central tape room; two one-inch edit rooms and a space for a third ("which may be coming next year," says Steinberg); Palette I, one of the company's two negative telecine transfer

color-correction rooms; and an animatics area. The fourth floor has a sound studio, Palette II, a one-inch room, a 3/4-inch room, and a maintenance shop.

The tape room, which houses Sony BVH-2000 and 1100A one-inch machines, feeds the editing rooms. "Historically," says Steinberg, "the original two Palette rooms were on the third floor also. Palette I ended up in the space where the first two had been. Palette II was put on the fourth floor because there was room for it there."

The rest of the facility is laid out to maximize efficiency. The first floor, directly behind the lobby area, has a duplication center and a quality-control area for the duplication operation, a tape library, and a shipping area. The second floor has operations, a kitchen,



Dino Regas (right) and Michael Leighton in Palette I, one of Teletronics' two negative telecine transfer color-correction rooms.



Engineer Don Wershba mixes the audio for a Culture Club music video in the company's sophisticated audio suite.

and the new Montage Picture Processor room. (Teletronics had the first Montage in New York.) Administration is on the fifth floor. The sixth floor, which was once a satellite broadcast center, is now used for graphics and one-inch editing. The seventh floor houses sales and accounting.

Company "firsts"

Clearly, the company's capabilities (which also include production services and a stage) are considerable. But they don't necessarily distinguish Teletronics from some of the other facilities in town with similar setups. The company's several innovations and "firsts" do.

One of the most impressive is that Teletronics holds the original patent on scene-by-scene color correction, and the current Palette system is a third-generation development by the people

who originally invented it. The Palette I and II rooms use Rank Cintel telecines coupled to two Sony BVH-1100As. But the real center of the room, says Steinberg, is a color-correction system designed by Steinberg himself.

"It's actually a full control system," he says. "It allows a full complement of controls for color parameters; complete control of the switcher for complex titling sequences; and scene-by-scene, frame-accurate blowup and repositions. It also allows mixes and scannings to be stored on disk; you can edit directly from the Rank on the VTRs; you can do A/B rolls; and it gives you list management similar to a CMX system."

Another major Teletronics innovation is the "very intelligent interface" (VI²), developed by Dean Winkler and Robert Lund to allow switchers (both audio and video) to be interfaced with

other pieces of digitally-controlled equipment, such as editors (see "Trouble at the Digital Interface," *BM/E*, November 1983, p. 48).

Winkler, who is director of computer graphics and optical services, but who used to be senior design engineer, says the VI²s provide more flexibility than the CMX I's (Teletronics uses CMX systems in its suites). Steinberg says the interface "allows you to control any mix/effects deck—although CMX can now do that with its new generation of I's." The VI² also "has room in it to add things like dialog for serial control of a Chyron or Quantel or ADO," says Steinberg. Also, the interface provides status lights on edits and previews.

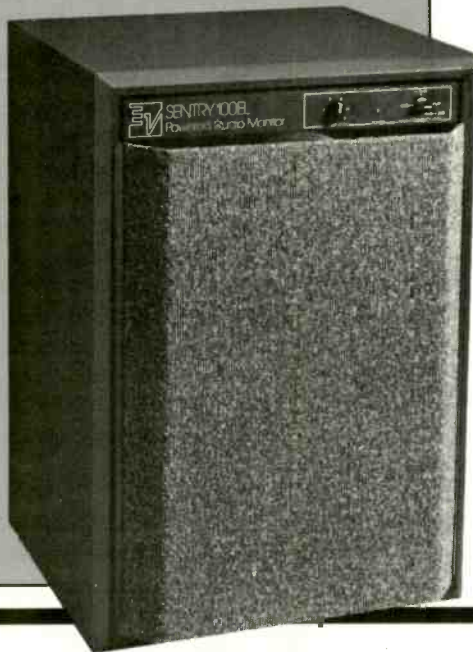
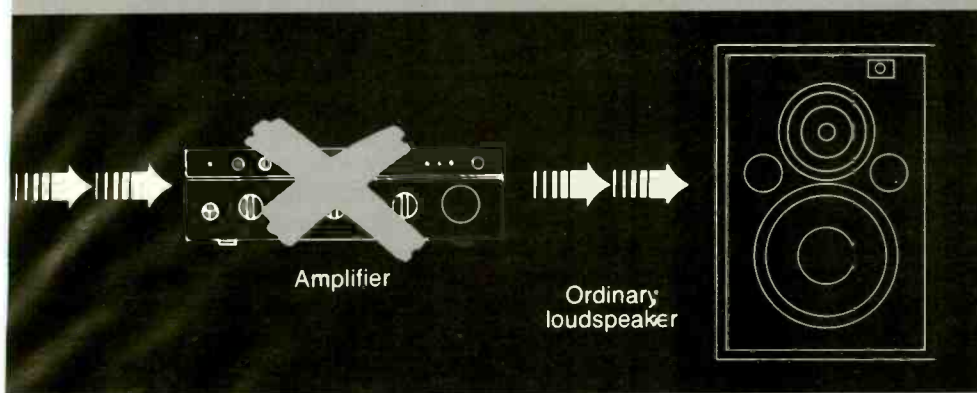
Teletronics also does a good deal of software programming. Steinberg says "We completely developed, in-house, the software for our color-correction systems, and we do minor software support for the CMXs—file maintenance, bookkeeping, housekeeping, the occasional patch." Teletronics has a source license from CMX in order to make the software modifications.

Generally, though, the company tries to avoid modification and customization if it can. Only if something is unavailable and management knows exactly what it wants will someone build it themselves. As Winkler says, "Anything that we can buy off the shelf we will. There's no reason to duplicate other people's efforts. No matter how expensive an off-the-shelf product is, it's cheaper than doing it yourself."

"Star" personnel

"Star" personnel at facilities are always major drawing cards, and Winkler, who is noted for his work at Teletronics and also for his directorial work on avant-garde video art tapes such as *Act III*, shown at last year's SIGGRAPH conference, is certainly one of Teletronics' stars. Winkler's role is basically to develop processes and techniques in the graphics and digital effects area. He oversees the graphics setup on the sixth floor, which consists of a Paint Box, a Sony DXC-M3 camera, an Abekas A52 digital effects device that is used as a digital input, plus support gear—a CMX 340X editor, three Sony one-inch machines, and a Grass Valley 300 switcher.

Immediately after the NAB the company will be adding to the setup the first Abekas A62 real-time digital disk recorder (50 seconds of video are recorded on a Winchester disk with



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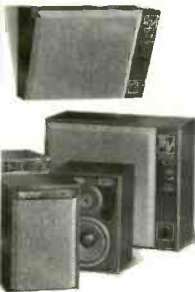
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real-time random access to any frame—see “Is Videotape the Right Medium?” in January’s SMPTE Show-in-Print). It will be used for a new service, says Winkler: “We will be able to offer film-quality slow-motion and speed changes on the A62, because it’s all digital.”

According to Winkler, the graphics operation on the sixth floor is quite flexible. “We either start with images which have had some work done on them, or start from scratch. We do all the graphics work, outputting it frame by frame onto tape. Then we bring it all down to editing where it’s combined with ADO and Quantel DPE-5000 Plus.”

Digital effects and graphics devices at Teletronics speak to each other using a GPI system—“unfortunately,” says Winkler. “If you look in the edit rooms there’s a big routing switcher matrix with 32 dip switches and LEDs. That’s a GPI routing switcher system I built. It takes the eight CMX GPI lines and multiplexes them in any order to 32 devices. So you can have all 32 devices hanging on one GPI line, or you can instantly reassign them. Because eight just isn’t enough. Plus it gives you a test

function. Position nine on the system lets you trigger something manually to see if your GPIs are correct.”

Winkler will get directly involved in a very high-end optical job. A recent spot for Johnson Controls (see *BM/E*, January 1984, p. 16) is an example. The Videomattening used in the spot is a matting technique developed by Winkler as an alternative to chroma-keying. In this case, the client had some videotape of a hot-air balloon which could not be chroma-keyed.

“First we went through and made preoptical edits,” explains Winkler. “We fed the image into the Paint Box, and used its stenciling capability to generate mattes around the balloon one frame at a time. We then did some image processing to the mattes. And we were then able to take the balloon and fly it wherever we wanted—around an office building and an airplane. That could not possibly have been done with a key. And even if you could do it with a key, it would probably look ratty.”

Winkler, in his earlier role as senior design engineer, designed Teletronics’ edit suites. As Steinberg explains, “Originally, our rooms tended to have consoles that were built into corners

and formed a wraparound. This proves to be a disadvantage, since when you’re looking at anything on the wraparound, you’re looking away from the monitors.” Also, although it might seem that a wraparound would make things very accessible, in fact it tends to work a lot more easily with a straight-line design.

Major edit room changes

“We went into a great deal of study and research into human engineering of the studio,” explains Steinberg. “We actually built mockups of the monitor wall to check for height and position of sight lines. Also, a lot of work went into acoustic design of the room. They have symmetrical, not parallel, walls and ceilings. They’ve been tailored using a real-time analyzer.”

Another design feature of the rooms is a large client desk “that allows a good workspace and proper viewing distance from the monitor, as well as forming an area right behind the editor for things like patch bays and room dimmers,” says Steinberg.

The equipment in the on-line edit rooms consists of CMX 3400 systems (which control up to eight tape ma-

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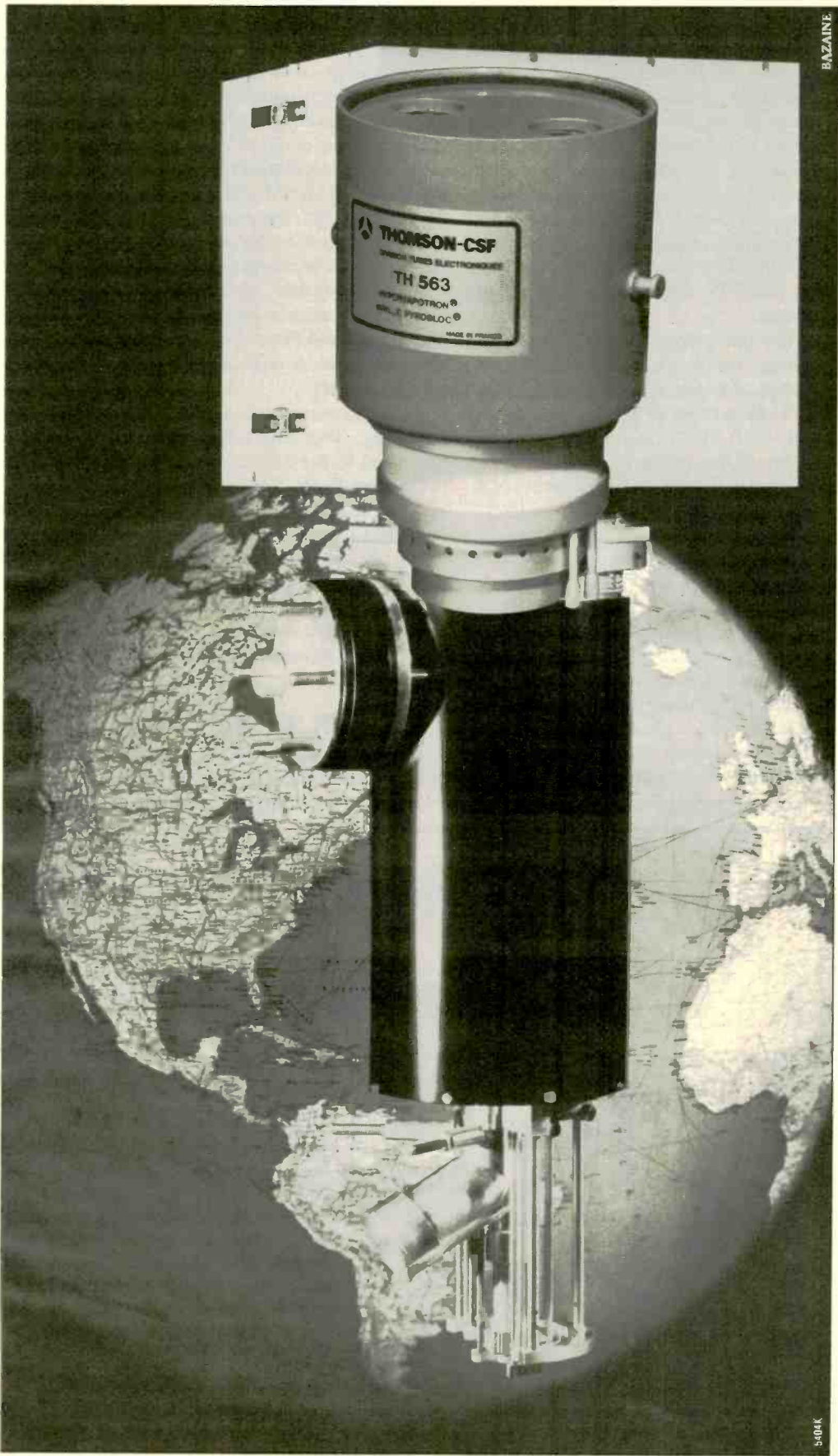
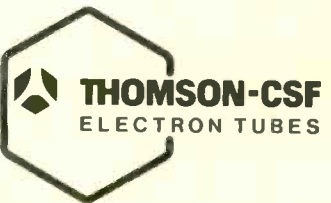
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chines), Grass Valley 300 switchers, Chyron IV-B character generators, Cohn title cameras, Neve custom audio consoles, Studer ATRs, ADDA VW-1 frame synchronizers, Quantel DPE-5000 Plus, and ADO with Digimatte. The off-line room has a CMX 3400, three BVU-200 3/4-inch machines, a Neve eight-channel audio board, an ADDA VW-1 frame sync, a Grass Valley 1600-IX switcher, and a titling camera.

The company also has interformat editing, which is essentially a rack on wheels. On the rack are three Sony BVU-800s (with a monitoring package and VFs), which can be rolled around to any of the one-inch rooms.

Animatics at the facility consists of a Warren Smith stand, which is interfaced through GPI contacts to two of the one-inch suites. There is, of course, a camera for the stand, a Sony DXC-M3, which is tied with RGB to the chromakeyers on two of the Grass Valley 300 switchers.

Audio is taken very seriously at Teletronics. Many of its clients are large record companies, and next to broadcast shows and commercials, Teletronics does more editorial com-

pletion and sweetening work on music videos than on anything else.

The facility is completely stereo capable, with Dolby A noise reduction, and uses Neve audio DAs. It also features a very sophisticated audio room based around an SSL 6000E 32-input, 24-output fully automated console. Other equipment includes a number of Studer recorders, an Adams-Smith synchronization system, and a host of out-board gear such as a Lexicon 224XL digital echo and Prime Time II DDL, a Quantec room simulator, and Pultec tube equalizers.

"Usually we mix to picture," says Steinberg. "We have a BVU-800 synchronized to the SSL console through the Adams-Smith synchronizer. Actually, up to five different machines can be locked together, and you can select which one you want to be the master—have the 3/4-inch VCR, or the 24-track, or something else depending on the kind of mix you are doing. Whichever machine is the master, the others will follow it."

Production operation

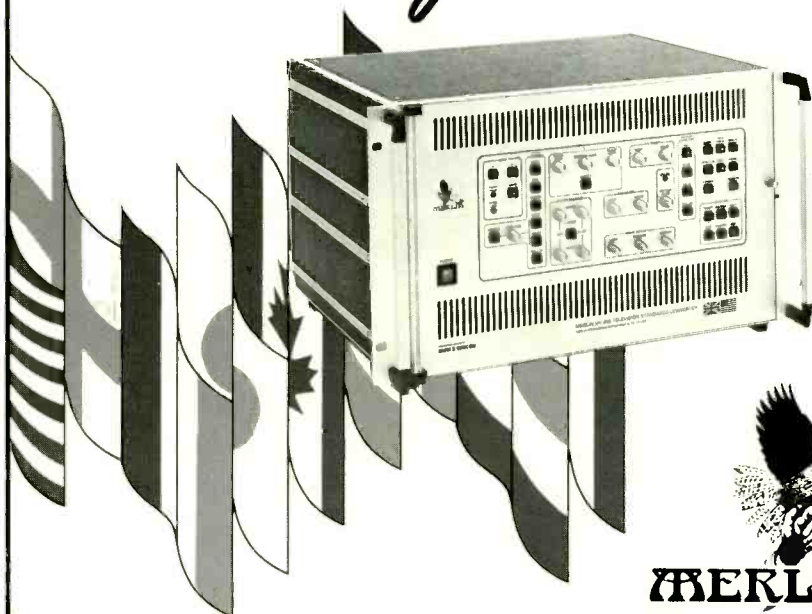
VCA-Teletronics has been in the production business since its inception.

In fact, it was founded as a production, not post-production, company. About four years ago, the company was leaving one of the stages it has used over the years and was looking for a new one just when MTV was starting up and was in need of a stage to tape its daily show. Teletronics took over a space on West 33 Street, and in about 75 days built a facility to MTV's specifications. MTV became the only client at Center Stage, and remained there for about three years.

This association coincided with a number of other arrangements the facility established in anticipation of what Roth thought would be "the next big bonanza" in New York: cable. Showtime and the Cable Health Network both moved into the sixth floor, and Teletronics built a broadcast center and duplication facility for Showtime, and a broadcast facility—including a microwave and uplink—for Cable Health.

As it turned out, cable was not the next big bonanza in New York. Teletronics now finds other uses for much of its cable facilities on the sixth floor (much of it has been turned over to the graphics operation), though it still

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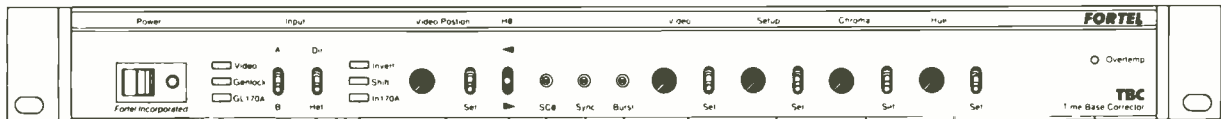
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The VAC SatCenter editing suite.

The all-Sony machine room has a BVU-800, a BVH-2000 (used for roll-ins), two RVH-500s (which are portable and also used for remote work the company does), and two BVH-1100As. All have Dolby A stereo.

Behind the machine room is the audio room with a Neve 24-input, eight-track board, and Dahlquist near-field audio monitors.

A major facility such as Teletronics can never rest on its laurels. The competition in New York is too intense for any company to stop or even slow the flow of capital. That's why the company is always at least evaluating hardware additions and/or modifications. Tops on Teletronics' list is the digital VTR, followed by component half-inch. The company's interformat rack setup even has room on it for half-inch decks; Steinberg says routing in the plant will be changed to accommodate it.

But beyond hardware, Demayer says Teletronics will be working to develop a better client services organization. Hardware is one thing, but without assistance and support, the facility's services are not enough. In this town, every little edge counts. **BM/E**

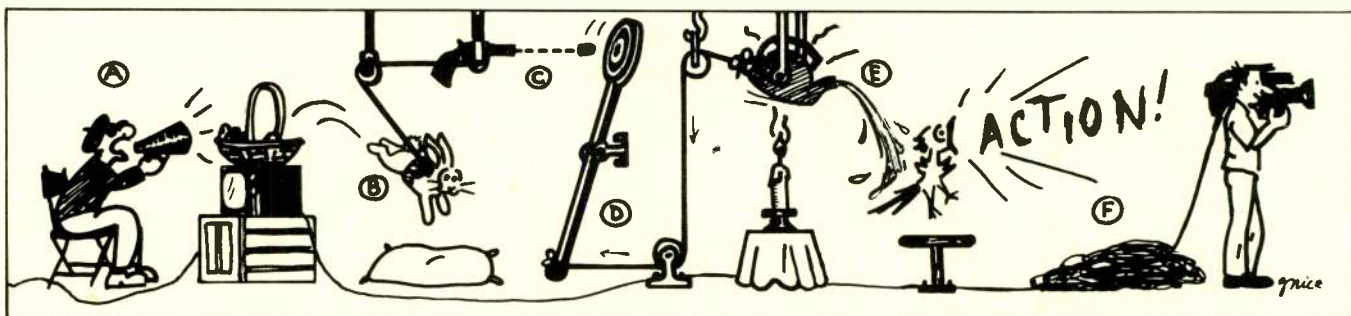
does some work for *Lifetime* and for Showtime. And the gap at Center Stage left by MTV (which moved to a larger space) is being filled by a range of clients: film, commercial production, cable shows, industrials, and music videos.

Lou Herman, the production manager at Center Stage, describes the three-floor facility as a three-camera wraparound news-style studio. The cameras are Ikegami HK-312s with

Vinten pedestals and Fujinon zoom lenses. The studio itself is 60 by 50 feet. It has a Mole Richardson lighting package, and a Strand Century Mantrix light board. The studio also features a 75-foot wraparound cyc.

The control room has a Vital dual mix-effects switcher, with a Grass Valley as a backup, RTS intercoms, Ultimatte (matting is a Center Stage specialty), a Chyron IV-B character generator, and a CBS color-corrector.

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There's more to than meets

Producing effective multichannel sound isn't easy. Though the procedures borrow heavily from recording studio and film sound techniques, audio for video is a specialist art with a unique set of requirements.

As its early practitioners have discovered, the inherently complex process of stereo teleproduction and post-production can be made even more difficult by cobbling together a collection of modified equipment in the hope of serving these advanced needs.

While makeshift arrangements may satisfy the technical minimums of the task, they introduce tradeoffs in operational flexibility and efficiency which can ultimately affect both production quality and costs.

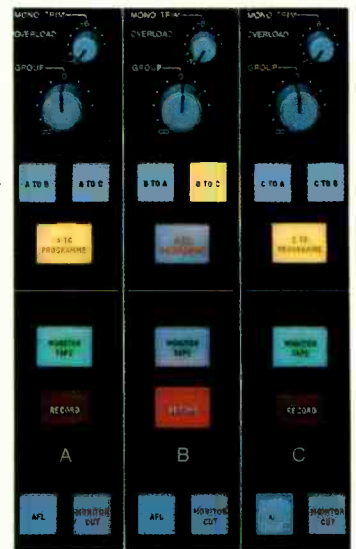
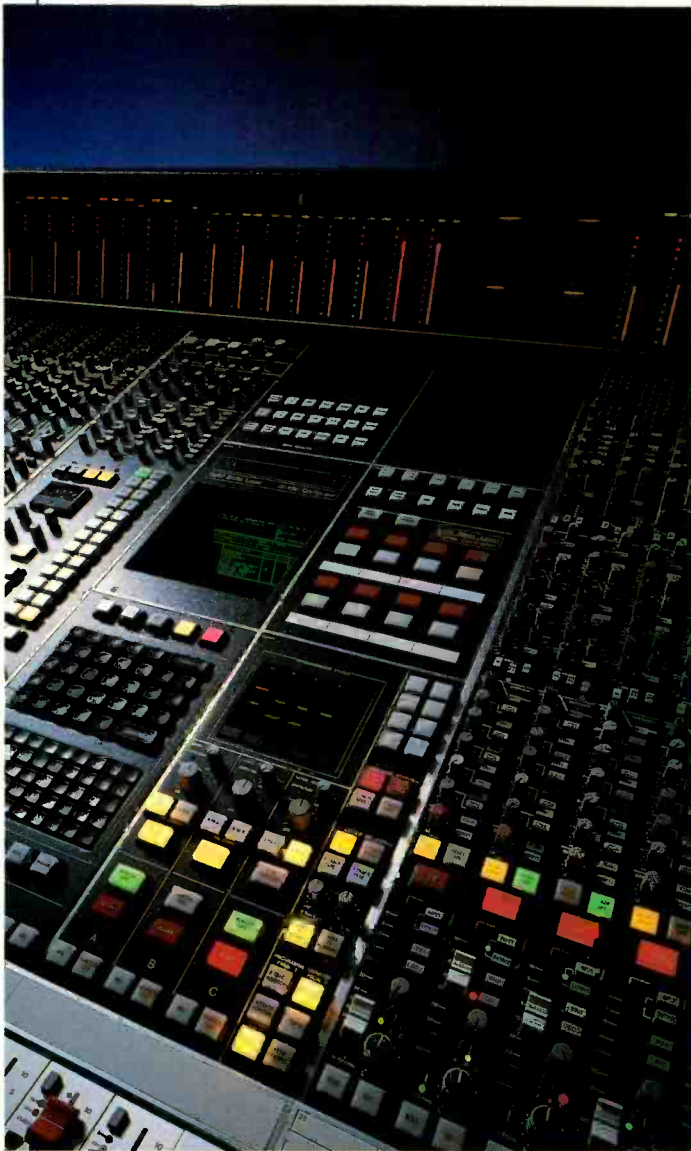
Fortunately there is an alternative, developed for the leading post-production houses and refined in collaboration with major broadcast organizations throughout the world: The SL 6000 E Series Stereo Video System from Solid State Logic.

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The SL 6000 E Series is a thoroughly integrated system designed specifically for the stereo video environment. Combining the most advanced aspects of multitrack, motion picture and broadcast audio technology, it provides extensive signal processing, routing and mixing capabilities as well as comprehensive machine control and communications — all commanded by a single operator at a logical, unified control panel.

SSL's multichannel mix matrix allows separate stereo music, effects and dialogue mixes to be created at the same time as the stereo program mix. In live production, multiple stereo splits or mix-minuses can be structured at the touch of a button. Mono composites of each mix are always available, and a mono programme feed is provided. Advanced formats such as stereo plus a secondary audio programme or centre-channel dialogue are also supported.

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The SSL Stereo Video System also provides the operator with central control of up to five synchronised audio, video and film transports. Cue points are stored and called by timecode, foot/frames or key words.

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Dynamic Mixing Automation

The machine control functions are integrated with SSL's audio mixing software to provide powerful, versatile and efficient assistance. Engineers can retain their existing mixing methods, or supplement them with simple yet powerful new routines that allow unlimited frame-accurate mix revisions to be performed with outstanding results and uncanny speed.

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As you can see, there is a lot more to producing stereo television than meets the eye. To help you get the full picture, Solid State Logic has published a forty-page colour booklet which thoroughly explains the functions, applications and operation of the SL 6000 E. If you are involved in television production, outside broadcast, video post-production or music video, we'd like to send you a copy. Just drop us a line or give us a call.

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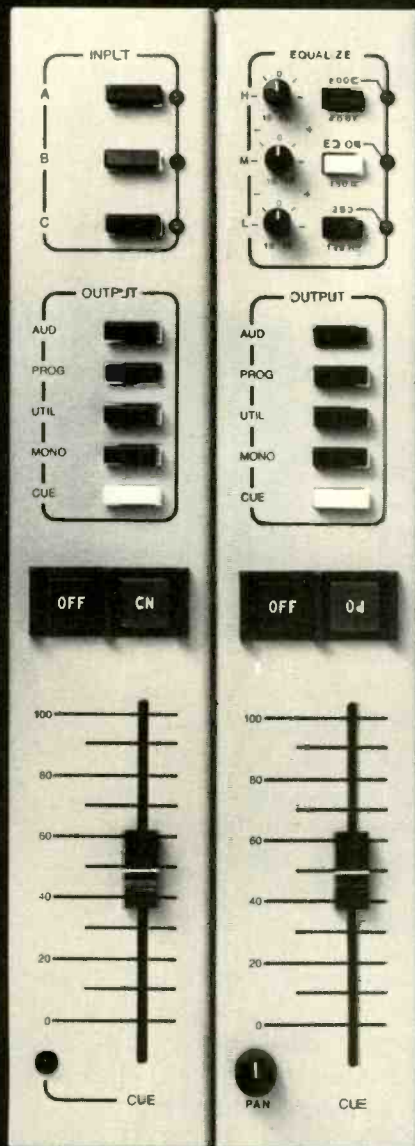
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Broadcasting in a Bypass Environment

While satellites may be sexy and helicopters chic, the real news for 1985 in remote broadcast production/transmission technology will be found closer to the ground—in terrestrial microwave.

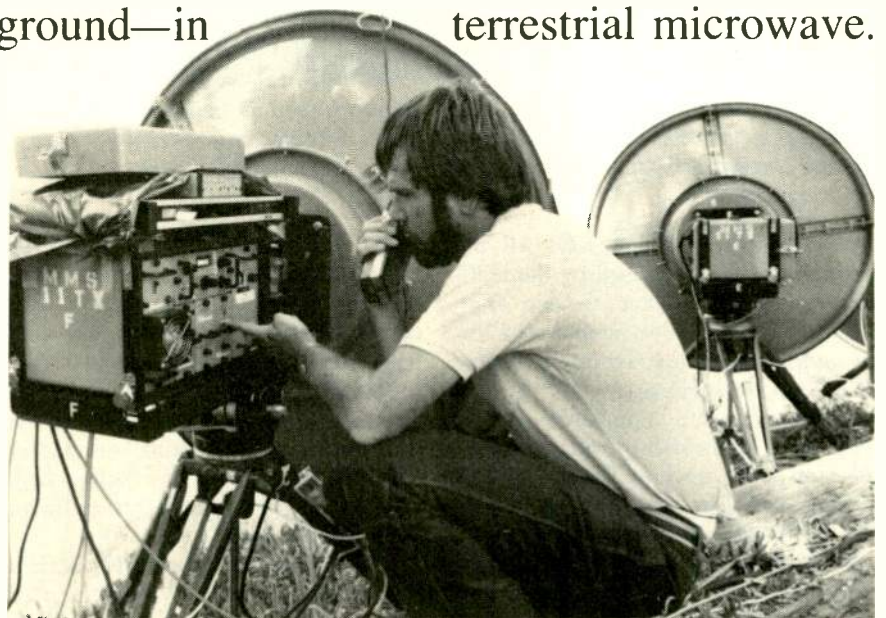
By Ruth Macy

Long a standby of the broadcast industry, terrestrial microwave is once again making news. What's new, however, is not the technology itself, but rather the environment in which it's provided: the post-divestiture environment. And the increased competition fostered by this new environment is bringing stations lower transmission costs and response times that can be measured in hours and minutes, rather than days, weeks, and sometimes even months.

Prior to the AT&T divestiture, Ma Bell and GTE were the main providers of terrestrial microwave transmission facilities for broadcasters. These facilities routinely have been employed to relay back to the station live news, sports, and entertainment feeds from around the region. In recent years, terrestrial microwave has served stations most often as the crucial first/last mile link to and from satellite uplinks and downlinks, enabling live program feeds from anywhere in the country or even the world.

But along with the live pictures have come the high price tags and not infrequent service delays that have turned many an efficient and mild-mannered operations or engineering manager into a disgruntled, nervous wreck.

And since the AT&T divestiture, things have gotten worse. For despite



An MMS technician aligns terrestrial microwave equipment used during the 1984 Olympics. The company constructed a total of 19 temporary microwave paths for CNN, Gannett, Nippon TV, 7 Network Australia, and the German ZDF Network.

its surcharges for faster-than-normal service and its surprise, always-higher-than-you-expected charges for "special construction," AT&T did, for the most part, provide reliable service.

But the local telephone companies that have taken over AT&T's local circuits in the wake of the divestiture just don't measure up to the parent. As many station operations and engineering personnel have found, the local telcos may lack AT&T's experience and expertise, and confusion often abounds over who's responsible for what when a single transmission path must transverse the jurisdictional

boundaries of more than one local phone company.

Filling the gap

Foreseeing the opportunity to compete successfully with the local telcos in providing terrestrial microwave facilities and services to broadcasters, several new companies have been busy installing both permanent and temporary microwave links throughout the country. Among these are Microwave Mobile Systems of Huntington Beach, CA; Midwestern Relay of Milwaukee, WI; Telehop of Fresno, CA; Marcus Telecommunications of Bethel, CT;



This hotel room near the Los Angeles Coliseum served as Gannett's home base during the 1984 Summer Olympic Games. A temporary microwave path carried the signal from the hotel to a VideoStar Connections uplink at the Burbank airport.

and Telecam of Golden, CO. All are common carriers licensed by the FCC to provide microwave service anywhere in the U.S. (See sidebar for a list of some companies providing terrestrial microwave services.)

Along with these companies are the larger and better known satellite transmission firms, such as World Communications of Los Angeles; Bonneville Telecommunications of Salt Lake City; and RCA and Western Union. While terrestrial microwave transmission is not their main business, these companies, too, intend to compete head-to-head with the local phone companies in providing terrestrial microwave facilities and services.

As it almost always does, the increase in competition has driven down prices. According to David W. Anderson, president of Microwave Mobile Systems, the company is usually able to provide service for one-half to two-thirds the price charged by a local telephone company.

Thirteen million dollars is what ABC saved in its Olympics coverage costs as a direct result of the increased competition brought about by the AT&T divestiture, states William Hynes, director of telecommunications for ABC. Until the divestiture, says Hynes, Bell had very little competition from other companies providing television transmission ser-

vices. For example, during the 1980 Winter Olympic Games in Lake Placid, ABC used "about three" outside telecommunications companies. By contrast, in Los Angeles in 1984, ABC used more than 20 such companies. The network found it economical to bypass the local telephone companies with nontelco microwave paths, nontelco transportable satellite uplinks, and nontelco optical fiber.

Lower costs are not the only benefit provided by the new bypass competitors. Perhaps even more important to TV station personnel—from news directors to engineers—is the dramatic improvement in response times that the new environment has brought. What engineer hasn't gone through the frustration of trying to set up a live news feed—while the news was still news—only to be told by the phone company that service was still four hours away?

But all this is changing. Today, in several major cities, permanent microwave paths installed by some of the new "upstarts" interconnect major news and sports origination venues with key satellite and terrestrial transmission facilities throughout the city, thus reducing the time it takes to complete an ad hoc local network. In Los Angeles, for instance, Wold, Bonneville, and MMS all crisscross the city with an abundance of strategically

placed microwave beams, and a live feed usually can be set up within an hour or two.

Complementing these fixed facilities throughout the country is an ever-growing fleet of nontelco mobile microwave transmission vehicles. While some carry only the main necessities for signal transmission, others are custom-designed for remote broadcast production. Complete with everything from ENG cameras to stereo audio recording equipment, these vehicles require that the station provide only the on-air talent.

Joining the ABC Television Network in taking advantage of these telephone company bypass alternatives are dozens of stations around the country, plus Cable News Network, ON-TV Los Angeles, and numerous foreign broadcasting organizations with U.S. bureaus. Last June 5, for example, the day of the California primary, CNN chose to bypass the local phone company in favor of MMS in setting up its live feeds from the Los Angeles hotel headquarters of Mondale, Hart, and Jackson. The various campaign staffs didn't select hotels until just two days prior to the primary, and the phone company was unable to respond in time.

First triumphs

Though scarcely a year old, the bypass industry has already undergone—and emerged victorious from—what may be its greatest challenge for all time: back-to-back TV transmission of the Democratic National Convention in San Francisco and the Summer Olympic Games in Los Angeles.

It would not be an exaggeration to state that without terrestrial microwave there would have been no nationwide, much less worldwide, live TV coverage of either event. In San Francisco, tall buildings, hilly terrain, and congested satellite transmission frequencies made it impossible to operate transportable C-band uplinks directly at the Moscone Convention Center. This, at an event that was covered in person by more stations than any event before, all seeking to take advantage of the never-lower cost and ratings-edge immediacy of satellite transmission.

While some stations did receive live convention coverage via Ku-band transportable uplinks parked directly at Moscone, the overwhelming majority—more than 200—were dependent on the terrestrial microwave paths that linked the convention center to C-band transportable uplinks located miles

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Aligned with microwave transmitters atop San Francisco's Moscone Convention Center 13 miles away, these antennas relayed live TV coverage of the Democratic National Convention to TV stations across the country via three Bonneville Communications transportable satellite uplinks.

away. MMS, for example, provided the microwave paths that enabled all of Gannett's stations to interconnect with Bonneville's transportable uplinks 13 miles away, in El Cerrito, CA. Wold Communications constructed its own microwave paths between Moscone

The Democratic convention, however, was only a trial heat for the Olympics. With competition venues scattered over hundreds of miles, with Mt. San Bruno, about seven miles away and the site of its transportable uplinks.

fixed L.A.-area uplinks already booked with normal, everyday traffic, and with hundreds of domestic and international broadcasting organizations on hand to interview their hometown athletes, it was terrestrial microwave transmission coupled with remotely located transportable uplinks that again made it all possible.

Representative of many of the broadcasters was Gannett. From both its "home base"—a hotel room complete with videotape playback and editing facilities near the Los Angeles Coliseum—and from a portable cart stationed outside the Coliseum, the Gannett Broadcasting Group was able to transmit its live and taped Olympics coverage via microwave to a VideoStar Connections transportable uplink at the Burbank airport.

Remote, nontelco microwave transmission/production vehicles were also much in evidence during the Olympics. On July 21, prior to the start of the games, the Nippon Television Network used an MMS remote unit for a four-hour live shoot from in front of the Coliseum. Interviewers in Japan spoke live with many of the Japanese athletes. And during both the men's and wom-



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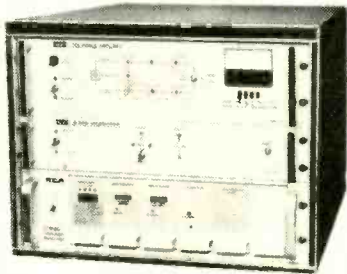
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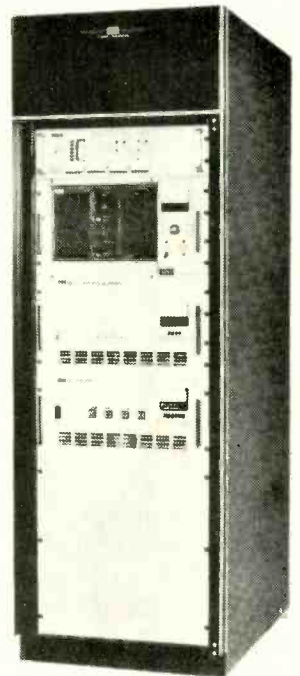
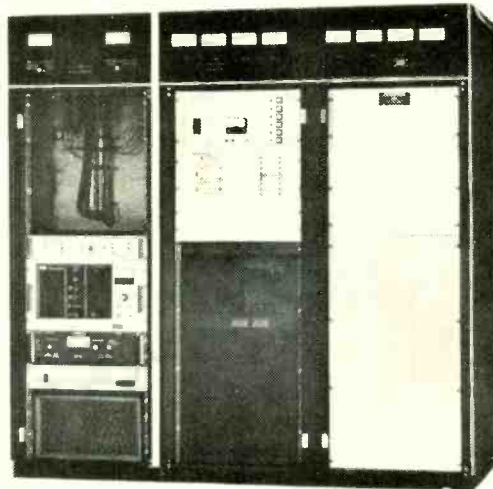
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en's marathons, 7 Network Australia used a remote unit to do several live feeds from along the route.

Great expectations

As they had just a couple of weeks earlier for the Democratic convention, scores of stations from around the country sent crews to cover the Olympics from a local angle. The low and ever-declining cost of satellite transmission time coupled with the proliferation of TVROs at stations in even the smallest markets encouraged both news and sports directors to send crews on the road. As audiences grow accustomed to seeing their favorite local station's reporters live via satellite—and indeed come to expect it—this practice can be expected not only to continue but to grow. And fortunately, what was once often the most expensive part of the live remote satellite origination, the first mile to the uplink, is now dramatically lower in cost because of the newly competitive environment in terrestrial microwave transmission.

Stations will also be able to benefit from the new microwave environment when covering events closer to home, in the limbo just beyond ENG range

where tape driven back to the station usually has had to suffice. In addition to lower costs, stations can now count on dramatically shorter response times and service that is, in general, more suited to the needs of broadcasters.

This should come as particularly good news to sports directors, who, in 1985, will have an opportunity to broadcast more local and regional college football games in light of the Supreme Court's decision against the NCAA. Not only will more local stations have an opportunity to go after the rights to these games, they also will be able to transmit them at far lower costs. Similarly, the new microwave environment will reduce the cost of transmitting away games for all sports, and will enable more stations to do live pre- and post-game interviews from sports facilities throughout the country. Already during the past year, dozens of sports facilities around the country have been linked permanently, via non-telco microwave, to nearby satellite uplinks. Because these transmission paths are among the most lucrative for the bypass industry, the number of sports facilities interconnected to uplinks can be expected to increase quickly.

A recent directory of terrestrial microwave transmission companies lists fewer than 20 in the country that are independent of telephone companies. Some of these are highly localized operations, serving only one city. Others are more regional in the scope of their service area, and a few can provide service readily throughout the U.S., or even abroad.

Telco challenge?

But if some telephone companies have their way, the fledgling terrestrial microwave bypass industry will cease to exist. Miffed at having to compete for what they had assumed would be their exclusive business, the telcos have launched major efforts at various state public utility commissions, at the FCC, and in the Congress to make it more difficult for the bypass microwave operators to compete. According to ABC's Hynes, if any of these efforts were to succeed, many phone company competitors would be put out of business, which would defeat the purpose of divestiture.

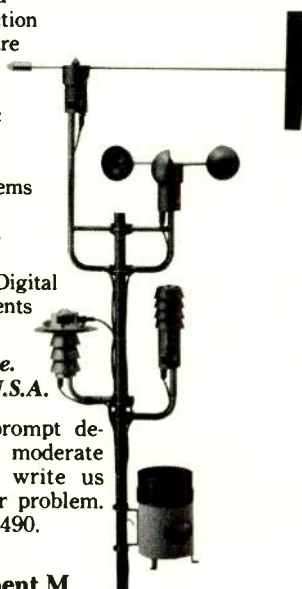
It is extremely doubtful, however, that this will happen. More likely, the microwave bypass industry will contin-

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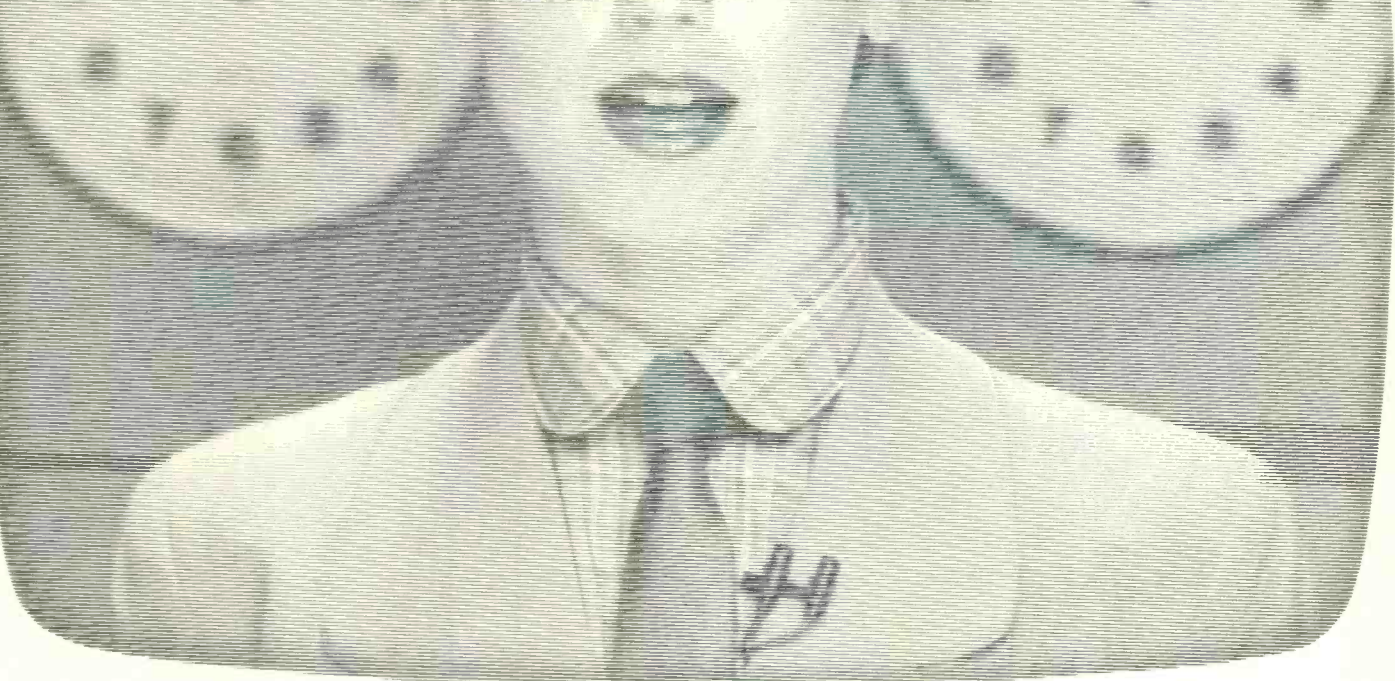
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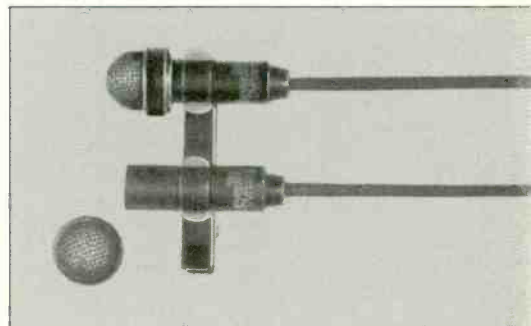
In broadcast, Beyer's concept of "accuracy" means the difference between a microphone that can focus in on a specific voice and produce a totally realistic, professionally acceptable performance, and a mic that simulates a performance by only capturing the bare outline or "silhouette" of an announcer's voice. We've dedicated the most complex and sophisticated technology in existence to reinforce the truth of this basic premise.

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- Western Telecommunications, Inc.
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- Wold Communications
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(213) 474-3500

ue to grow and to flourish, with broadcasters occupying the dual positions of primary users and primary beneficiaries. For all of the reasons cited above—increasing numbers of stations with access to a TVRO; lower satellite and terrestrial microwave transmission costs; heightened audience expectations for live remote coverage of news and special events; congestion in the C-band uplinking frequencies directly at the site of major events; and easier, cheaper access out of key college and professional sports facilities—the coming year will afford both broadcasters and bypassers alike unparalleled opportunities for growth. **BM/E**

Ruth Macy is founder and president of TeleWords, a Santa Monica, CA-based editorial consulting firm serving the communications industry.



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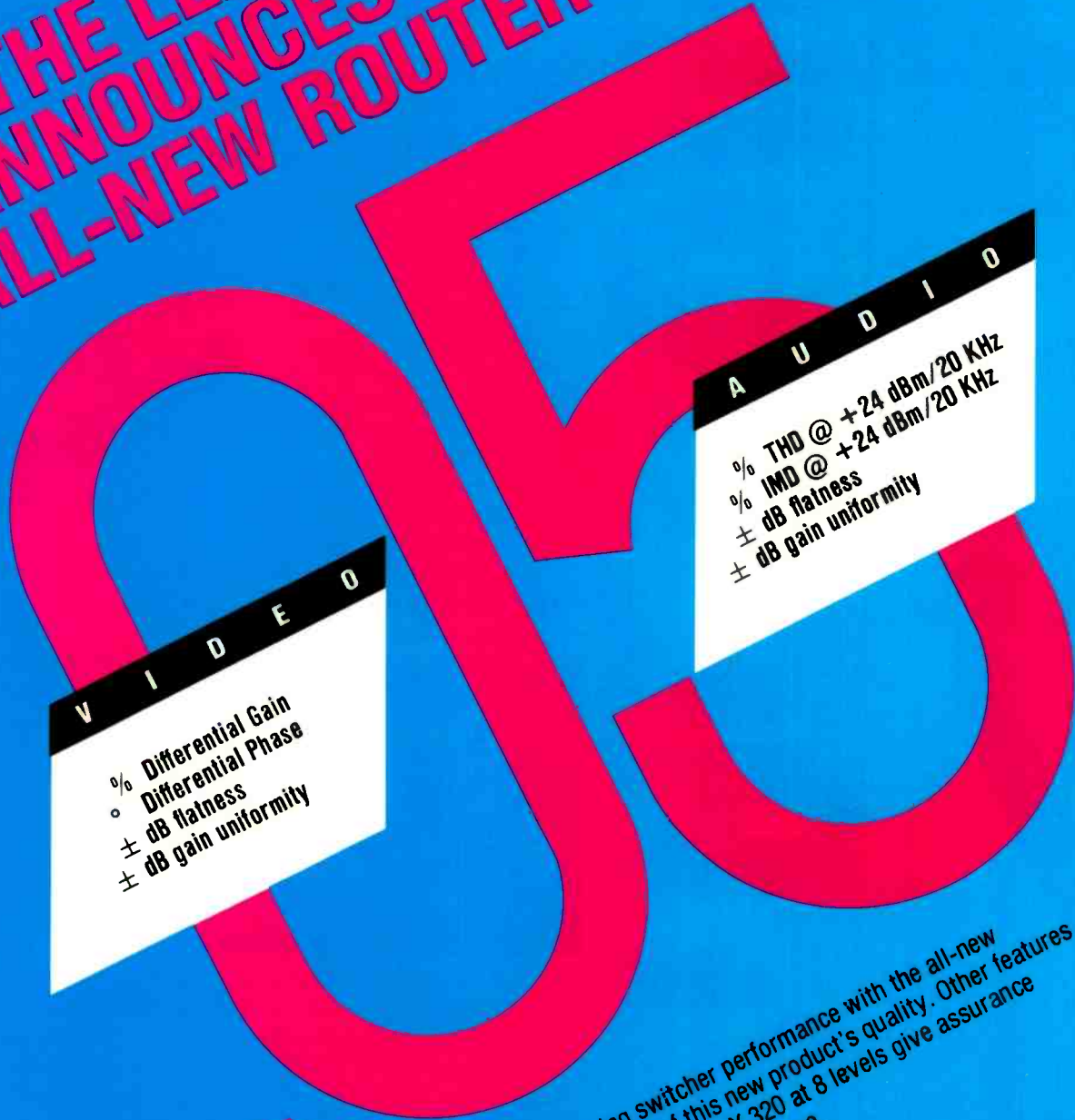
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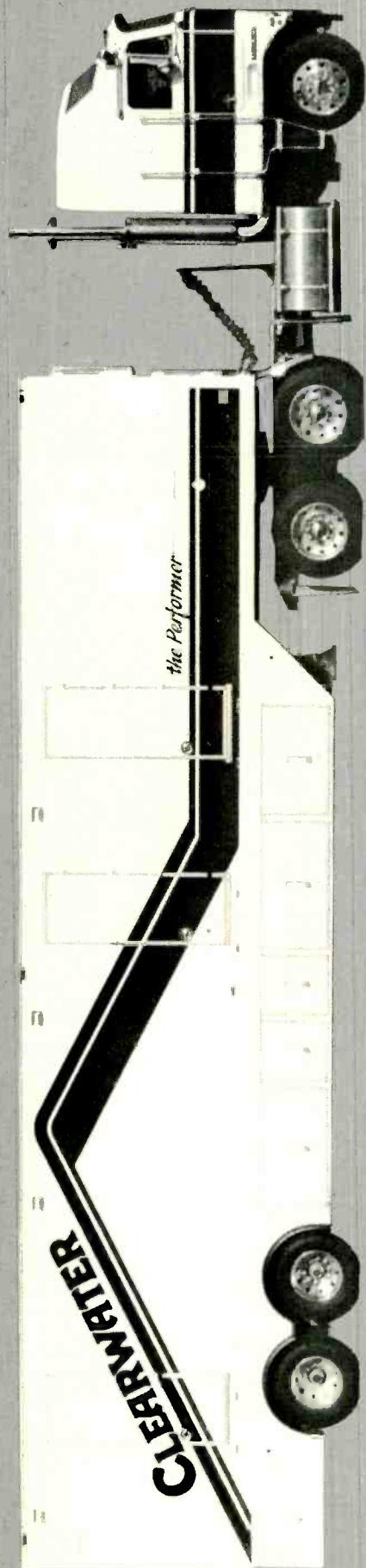
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Designing Multistation FM Antenna Systems

With the advent of Docket 80-90, many FM operators face heavy expenses to bring their stations up to full power. Sharing an antenna system with another station can slice the costs.

By Bryan D. Boyle
Contributing Editor

FM stations facing FCC-mandated upgrades under Docket 80-90 also find themselves facing the large expense of rebuilding their antenna systems. One solution, the multistation antenna system, has been around for a while, but has often been thought of as the province of the "big guns" in FM broadcasting. Now, however, advances in antenna design are making the multistation FM antenna system a cost-effective solution to the problem of colocating two or more stations on the same tower.

To more fully understand the design criteria for a multiplexed antenna system, it is useful first to look closely at single-station antennas.

Single-station antennas

At this juncture, most FM stations licensed and on the air use the circular polarization method of transmission. This technique provides better coverage over the license area and allows for a wider variation in the receiving antennas' orientation in the plane(s) of polarization versus the transmitted signal. In addition, the design of parasitic elements, for those stations that need directional control to protect adjacent channel transmissions and optimize coverage for remote sited transmitters, can easily be obtained without the complex designs needed in a dual mode (horizontal/vertical) system.

A good example of circularly polarized FM antennas is Dielectric Com-

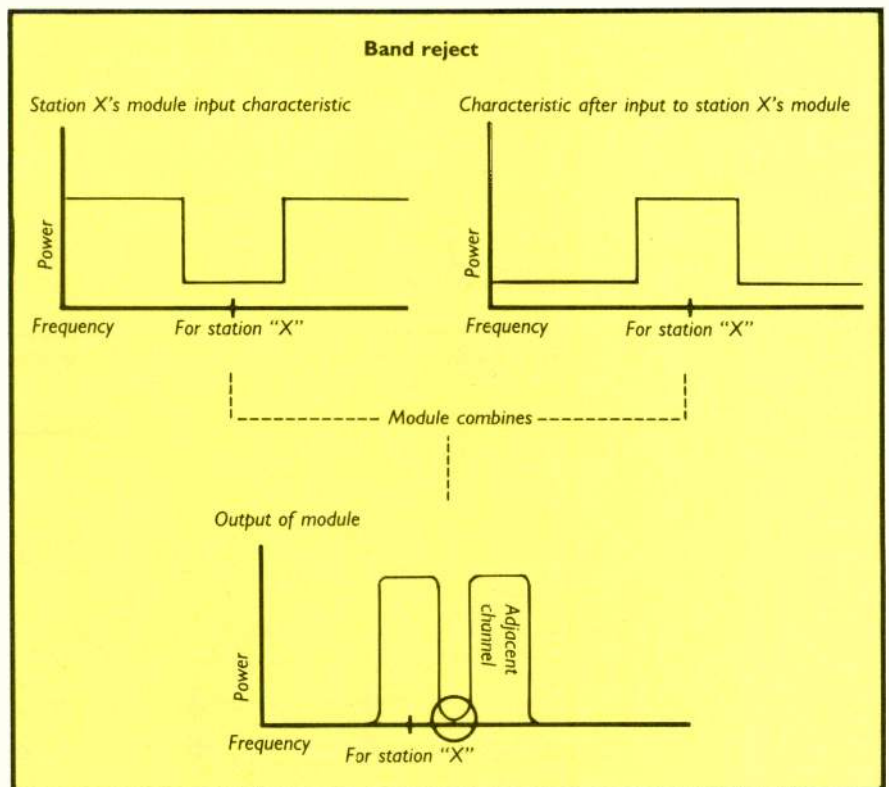


Fig. 1. The band reject system for multiplex antennas results in good adjacent channel skirt attenuation.

munication's DCR Series, which is constructed so that a wide range of power levels can be handled, depending on the number of ring elements in the system. They are designed for top mounting on a pole to allow for maximum circularity of the pattern, and, thus, the freestanding contour can be easily predicted through the use of 1/4 scale models of the proposed system. Dielectric strives to make the model as

close a copy of the station's tower as possible. This reduces the chances that the completed installation at the job site will require extensive modifications to meet the original spec.

In a multistation setup, ring antennas are not the ideal answer because of the inherent bandwidth limitations of the design. This is not to say that closely spaced stations (in terms of frequency) cannot be handled, but optimum results

are better achieved through other techniques. The only limitation on this type of antenna is the gain/bandwidth, but, for the single station operation, optimum results can be obtained through careful design and construction.

The panel antenna design came

about because of the difficulties of maintaining a good circular pattern where the antenna has to be mounted on the side, rather than the top, of the tower. When a ring antenna is mounted on the side, the structure itself may become a parasitic element, and steps

have to be taken in designing the proper system to keep the pattern as close to circular as possible. In addition, side-mounting of ring antennas tends to upset the axial ratio (power of vertical component relative to the horizontal component) of the system. Inherent in the design of all omnidirectional antennas is the requirement that the RMS gain of the vertical component of the signal must be less than or equal to the RMS gain of the horizontal component. Side-mounting disturbs this balance, and the effects of the tower must be factored into the design.

On a typical tower (triangular cross section), a panel antenna can overcome most of these design problems. Typically, panels are mounted on each face of the tower. Since the horizontal beam angle can be optimized for the tower, a good circular (radial) pattern can be obtained if there are equal numbers of panels on each face. Using this technique, directional patterns can easily be accommodated by varying the number of panels on each panel, the amount of power on each panel, and the phase of the feeds, along with other electrical characteristics. This gives active control of the pattern, rather than relying on parasitic elements to accomplish this task.

Also, the panel design exhibits greater bandwidth than a ring design. Because of this, it is possible to multiplex a number of stations' signals together

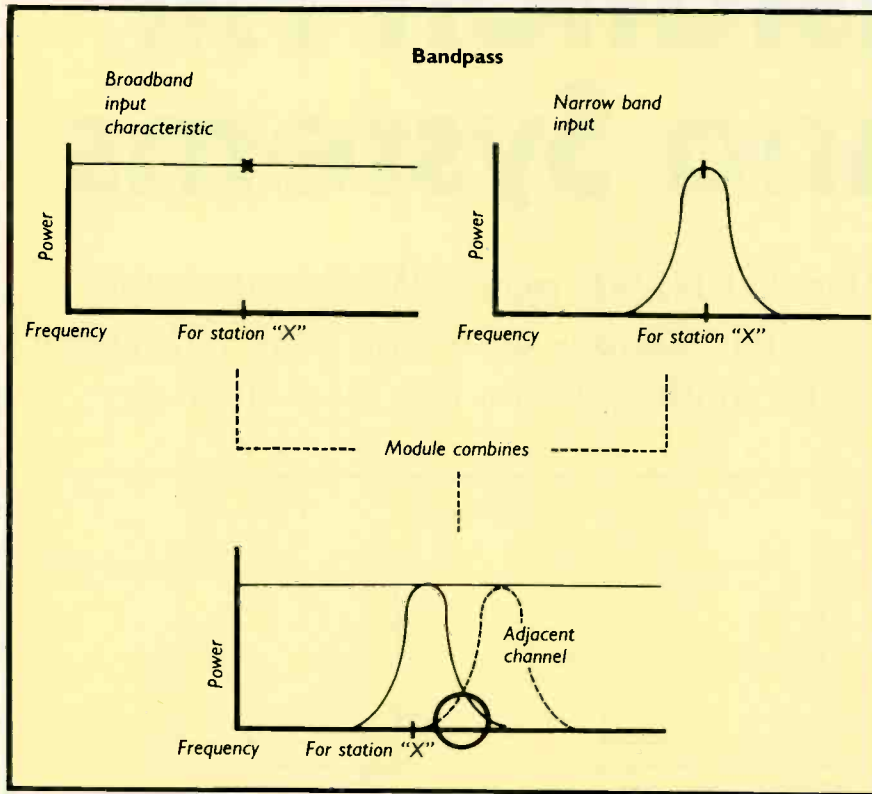
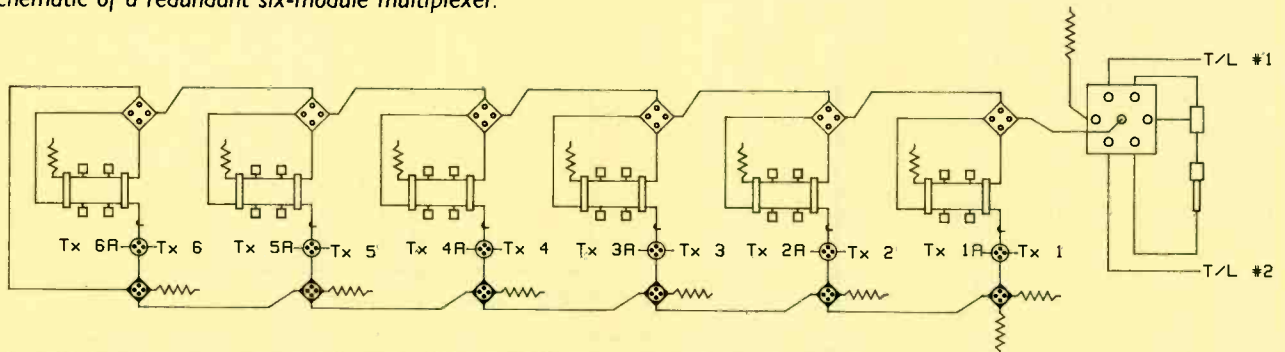
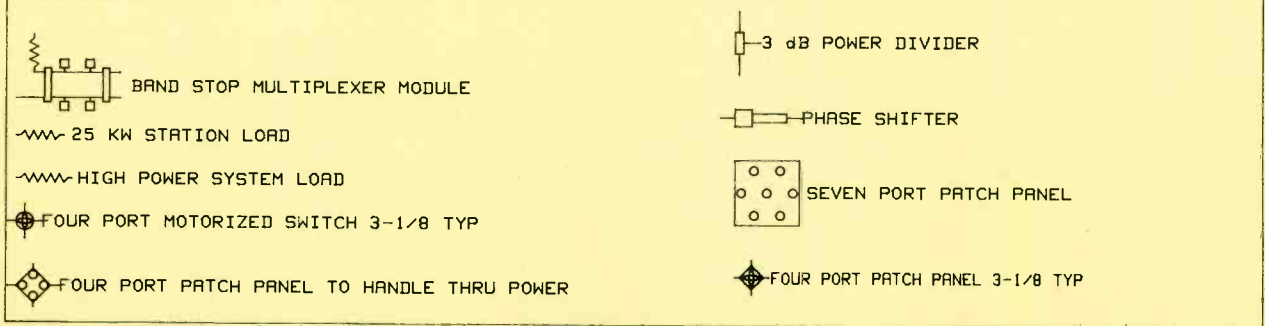


Fig. 2. With the bandpass system, adjacent channel attenuation is not as sharp as with the band reject design.

Schematic of a redundant six-module multiplexer.



LEGEND



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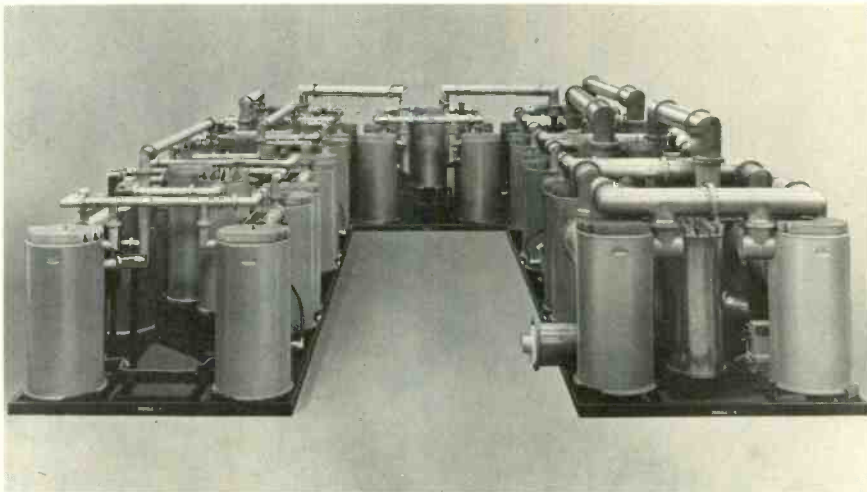
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Nine-channel multistation combiner, built by Dielectric, is installed at the Senior Road tower project in Houston, TX.

and use one radiating system for the entire group. The first attempt at this by Dielectric was in the 1960s on the Empire State Building in New York; a dual-frequency unit by WCBS-FM on 101.1 MHz and WABC-FM (now WPLJ-FM) on 95.5 MHz was placed in operation and served both stations' service areas for a number of years.

Multiplex antenna systems

Since the number of panels in a multiplexed antenna system is dependent on the power levels that the system has to accommodate, such a system is, by necessity, more complicated than a single-station system would be. The typical system would require somewhere between four to 12 layers of panels on a tower, the average being eight layers. These panels are prepared as broadband elements, and the design has the flexibility to allow for a single coax feed, or a multiline feed to both the top and bottom halves, which allows for reduced power operation should there be a problem with either section of the system.

But how do you combine a number of stations into (for the sake of this discussion) one coax feed to a single antenna system?

Dielectric uses two different types of multiplex systems, the *band reject* and the *bandpass* systems. The end result of these two systems is the same, but how they get the collocated stations there differs in method.

In a band reject system, each station's multiplex module exhibits the characteristics of both a notch filter after the input, and a bandpass filter for the station input to the system (Figure 1). The module itself combines these two characteristic signals into an even-

ly distributed, wideband signal.

In a bandpass system (Figure 2), hybrid techniques are used to combine the individual signals into one signal, and pass that broadband information to the antenna. Each port is constructed to allow a signal wider than 200 kHz to enter the system. The tradeoff on this system is that, allowing for 800 kHz spacing of input signals, a less efficient (and narrower output range) system is developed based on the inherent limitations of the bandpass circuit design. In fact, the main reason for choosing the band reject over the bandpass system is that in the bandpass system, assuming the same number of cavities, the rejection skirts of the signal are not sharp enough to provide adequate attenuation of the adjacent frequencies.

Dielectric's design allows for maximum flexibility, especially when using the band-reject system. Each station's entry into the antenna system is based on a module constructed for both the power level and frequency of that station. These modules are located at the individual transmitter locations, and the coax that ties the system together is begun at the lowest frequency station and daisy-chained through the plant. One of the side benefits of using the band-reject system is that the design is modular and each station's module is mechanically identical, resulting in a spare broadband input port that can be tied, through a switching scheme, to any of the stations in the line on an emergency basis. This flexibility allows each station to bypass its input module (one at a time, of course) should problems develop with its individual multiplexer modules.

Another important consideration in the design of multiplexer systems is the

question of group delay across each channel. Dielectric has been able to minimize the variations of delay in the system through careful design and construction. Why is this important? If the group delay variation at the input frequency is high, distortion in the transmitted signal will be increased. This will lead to "fringing" effects at the higher audio frequencies, degrading the perceived quality of the transmitted signal.

But why?

With deregulation, and the FCC's 80-90 docket requiring the upgrading of class C FM facilities, many stations, regardless of their competitive stance, are looking at very large expenses to bring their facilities up to full capabilities by mid- to late 1987. This means, in many cases, upgrading their transmitter plants, antenna systems, and so on to meet the new standards in that docket. If you throw in the cost of a new tower, the economics of the situation dictate that every possible alternative must be considered for a cost-effective decision to be made. Let's remember, what we are dealing with is the antenna system for your station, which is, in many cases, the most important part of your operation.

In planning for a multistation antenna system, many of the high costs incurred in erecting an antenna for a single station can be shared by a group. Consider an arbitrary example: figure a tower at \$500K, an antenna (with coax and mounting costs) at \$100K, and various construction costs at another \$150K. This gives a total in the neighborhood of \$750K for a new plant. Quite a load for one station to manage, wouldn't you say? On the other hand, if at least one other station in the market wants to upgrade at the same time, you can divide the total construction costs among the participating stations. Even if you factor in the added costs for the additional stations, each station's contribution to the project would be a fraction of what it would cost to go solo.

Just from a standpoint of economics, such a plan makes sense. Real estate costs are skyrocketing, and design and construction of a good transmission system isn't cheap, either. With the added burden of deregulation, each station is forced to conform to the marketplace theory of operation, and whether a station succeeds or fails at that is due to many factors besides the type of transmitter plant and associated hardware.

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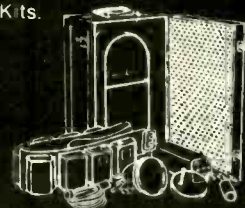
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GREAT IDEA NOTEBOOK

Turntable Remote Control

By Charles H. Benner, Jr.,
 Assistant CE, WFIL-FM,
 Philadelphia, PA

The circuit shown here was designed out of the need to remotely start and stop the console tables and to keep the ac out of the console. This was a rather easy task since we designed and built our own consoles, but I'm sure this is not the normal situation at most stations.

For those of you who do not have remote starts and would like to add them to the console itself or outboard a separate control box, this circuit should come in handy. It is pretty basic in its design and is inexpensive. The whole thing could easily fit on a 4x6 PC board or standard wirewrap board. Most of the components are readily available. The opto-isolator is a Clairex CLM-8000 available from D.F. Associates in Mt. Laurel, NJ. Of course, with minor modifications an isolator of your own choice could be used. The triac can easily be cross-referenced to an ECG type with no circuit changes needed. We

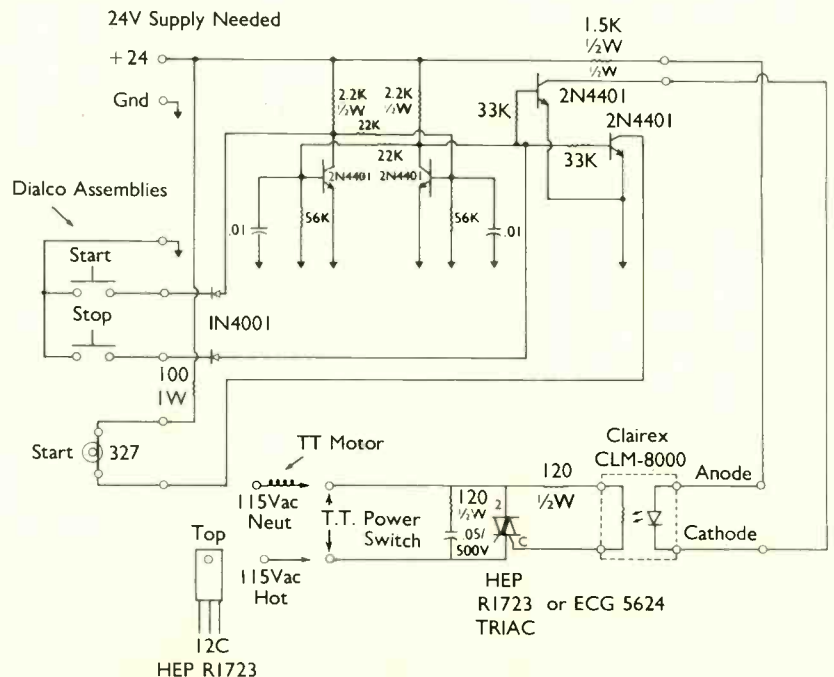
chose an illuminated button assembly, to avoid any confusion as to whether the tables were running or not. The triac must be used with a heat sink to avoid any problems.

Functionally the circuit is very straightforward. A momentary closure of the START button will sink the supply common to the cathode of the isolator and the 327 lamp used in the START button. This in turn lowers the resistance of the load side of the isolator and turns on the triac, which switches the hot side of the ac to the turntable motor. A closure of the STOP button releases the latch, turns off the triac, and extinguishes the lamp.

The whole thing is very reliable; in fact, the only failure I've ever had is one of the buttons going bad. Our tables are Russco Studio Pros, but I don't see why most tables could not be controlled this way with the exception of direct drive tables. We use a pair of Technics SP-15s in one of our studios and I would gladly pass on to you an extremely easy way of remoting them also.

BM/E

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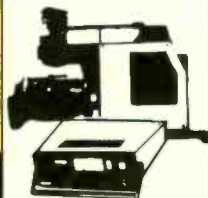
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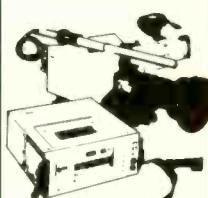
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Companies from Austria, Belgium, Canada, Denmark, England, France, Germany, The Netherlands, Sweden, Switzerland, The United States and, of course, Japan have exhibited in the past.

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interpreting the FCC rules & regulations

Odds and Ends

By Harry Cole, FCC Counsel

This month we will deal with a number of odds and ends which have concerned the Commission over the last few months. While none of these issues warrant in-depth treatment, all of them are likely to be of at least some interest to large segments of the broadcasting industry.

Unnecessary filing

Now, you may think that there is nothing left in the Commission's rules to deregulate. This is not the case, and the Commission proved it in January when it proposed the elimination of its longstanding requirement that stations file with the Commission copies of their network affiliation agreements. That rule dates back to a time when the Commission was somewhat suspicious of the power wielded by the networks. In order to assure itself of the ability to monitor network influence, it required that all affiliation agreements be submitted routinely. Early on these filings formed the basis of a variety of studies undertaken by the Commission. In the last several years, however, the contracts have done little more than take up file space in the Commission's offices.

The Commission now believes that this kind of routine filing is unnecessary. It is probably right in that regard. As most broadcasters know, today's affiliation agreements are pretty much boilerplate documents which do not vary substantially from station to station, from year to year, or even from network to network. It doesn't make sense for the government to accumulate copy upon copy of documents which are, in effect, identical. This is especially true if no one at the Commission even bothers to review those documents once they are filed.

In proposing to eliminate the general filing requirement, the Commission in a sense glossed over one aspect of the existing system. When network contracts are submitted to the Commission, they become available for public inspection at the Commission's headquarters. Thus, even if the Commission has no interest in poring over the documents for any particular purpose, members of the public (including academic researchers, public interest groups, competitors, and the like) can now get free access to a centralized collection of affiliation agreements. If the filing requirement is lifted, that current, centralized, governmentally sponsored collection will cease to exist. The Commission, of course, would probably argue that that is something which the miracle of the marketplace can handle perfectly well: that is, if there really is a need, a demand, for that kind of resource, one or more private parties can and will respond to the demand by offering to provide the service on a profitmaking basis. It is also conceivable that some interested groups—the NAB springs immediately to mind—might be able to in-

clude the centralized compilation of network agreements among the programs offered to its members on a no-cost basis.

Finally, you should note that the Commission appears to suggest in its proposal that licensees will still have to include copies of their affiliation agreements in their local public records files, for inspection by members of the general public. In proposing the elimination of the requirement that such contracts be filed routinely with the Commission, the FCC has indicated that the public will still be able to review the contracts in the stations' public files. This provides an excellent opportunity to remind all AM, FM, and TV licensees that the Commission has maintained—and is likely to maintain for the foreseeable future—the local public file rules. With that in mind, you may wish to review your station's public file to make sure that it contains all the documents it is supposed to. Also, you should probably review your internal office procedures for dealing with a request to inspect the public file.

New SCA channel

All FM licensees will undoubtedly recall the Commission's 1983 overhaul of its rules governing subsidiary communications authorizations (SCAs). That action opened the door for a wide variety of previously impermissible uses of SCAs, and thus created new profit-generating avenues for the FM industry. Further, the Commission effectively doubled each FM station's ability to take advantage of those new avenues when it also authorized FM licensees to utilize all of the FM baseband up to 99 kHz for SCA activities.

Not everyone was able to benefit from this expanded baseband, however. Because of international agreements, stations within 200 miles of Mexico were not permitted to use the so-called 92 kHz SCA channel until the FCC completed negotiations with the Mexican government. (AM licensees who have been waiting for the completion of such negotiations relative to expanded nighttime service know what that waiting game is like.) But those southern FM licensees need wait no more: the FCC wrapped up its negotiations late in 1984 and, effective January 1, 1985, all FM licensees in the U.S. could take advantage of the expanded baseband.

Tie-breaker lotteries

In this column in the February 1984 issue of *BM/E* we predicted that 1984 could well be the year that lottery procedures might first be applied to applications for full-service broadcast stations. As we noted, Congress had authorized use of lotteries in certain circumstances—including low-power television—and the Commission seemed to be increasingly comfortable with the idea of handing out construction permits based on the luck of the

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FCC RULES & REGULATIONS

draw. We suggested that that increasing comfort, when combined with the likely discomfort of seeing large backlogs forming in, say, FM construction permit applications, would inspire the Commission to adopt a lottery mechanism to be used for full-service permits. Well, sure enough, the Commission did end up starting in that direction by December 1984, although it still has a way to go.

In December, in connection with its reconsideration of a number of matters relating to existing lottery procedures for other services, the Commission had occasion to give some thought to full-service broadcast lotteries. In particular, several parties had suggested to the Commission that it adopt a "tie-breaker" lottery for full-service broadcast proceedings that are otherwise too close to call under the standard comparative factors. The FCC liked and adopted the idea.

Comparative hearings

For those of you somewhat unfamiliar with the comparative hearing process, a brief primer may be in order. When the Commission receives mutually exclusive applications, it must hold a hearing to determine which of the applicants is most qualified to receive the construction permit. The Commission has developed a number of standard factors which it will consider in making this decision. Among the various factors the FCC takes into account, the two primary factors are diversification of media ownership and integration of ownership and management of the station. The first of these—diversification—looks to the nature and extent of media interests already held by the various applicants or their principals. Generally, the applicant which has the fewest other media interests is accorded a preference over the others, since the Commission has decided that it is best to "share the wealth" by spreading ownership of broadcast properties among as many different groups as possible.

The second comparative factor—integration—is a little trickier. The FCC prefers to have the owners of broadcast properties involved in the day-to-day management of those properties. Thus, all else being equal, if one applicant proposes to have all of its owners working at the proposed station in full-time management positions, that applicant will be accorded a preference over any competitor which proposes to have only some, or none, of its principals working at the station. But the integration criterion has two separate aspects. First there is the "quantitative" aspect, which looks to the total amount of ownership which will be working in full-time management positions. For example, an individual applicant proposing to work full-time as general manager gets 100 percent quantitative integration credit; by contrast, if only two stockholders each holding 25 percent voting interests in a corporate applicant are proposed to be "integrated," that applicant gets only 50 percent quantitative integration credit. The second aspect of the integration criterion is the "qualitative" factor. Those principals who are going to be integrated into the station's management are entitled to claim "enhancement" credit for being minorities, women, residents of the proposed station's service area, civically active in that service area, and the like.

Once all these factors have been set forth on the record, the Commission (or, in the first instance, one of its admin-

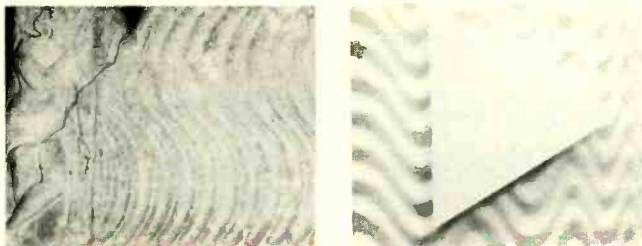
istrative law judges) then adds up all the various pluses and minuses and decides which applicant is, on balance, the best qualified. In theory this process works well. In practice, however, it's a different story. As competition for new stations has increased, applicants have become much more sophisticated in the structuring of a "winning" application. Thus, for example, it is often suggested that the "best" possible applicant is an individual minority female with broadcast experience, local to and civically active in the proposed service area, with no other media interests, and a willingness to work full-time at the station. By covering all possible bases for "enhancement," an applicant can assure itself of at least a strong position, if not a winning one.

Equally qualified applicants

But it does not take a scholar to see that, at some point, some proceedings are bound to feature two or more applicants who, when all the weighing is done, are equally qualified. And it is that type of "tie" situation which the Commission is attempting to address through the lottery mechanism. The idea is that, when a tie is declared, the Commission may then proceed to use a lottery to pick a winner from among the tied applicants. This would seem a reasonable step, whether or not it ultimately leads to lotteries for all full-service broadcast applications.

While the tie-breaker scheme looks good in theory, consider for a moment one possible practical result of its use. The Commission, in processing competing applications for the various Docket No. 80-90 FM channels, could stage a threshold hearing at which it would weed out those applicants who, on paper, don't make the grade under the standard comparative issues. The remaining applicants would then be placed in a lottery. But this two-step process would very likely exclude any existing licensees (under the diversification criterion) and, in many instances, nonminority applicants (under the integration criterion), since those types of applicants would pretty much always be on the lower rungs of the comparative ladder. This exclusionary effect seems somehow unfair, at least in comparison with the lottery process used for low-power television permits. In the low-power television process, all applicants are entitled to at least some chance in the lottery. Each applicant's chances are weighted, based on whether it has other media interests and whether it is minority-controlled—in that way the Commission is able to place its finger on the balance in favor of minority-controlled applicants and applicants who don't already own any mass media interests. But irrespective of this stacking of the odds, even an applicant which would be a sure loser in a full comparative hearing gets a chance in a low-power television lottery. The same would not be true in a "tie-breaker" lottery in a full-service proceeding.

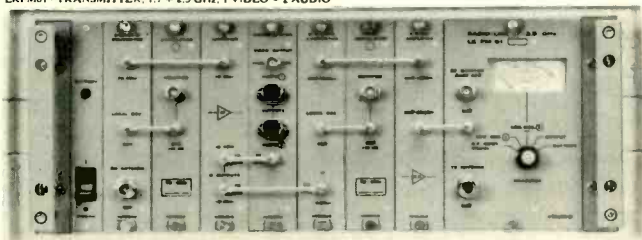
Under this view the "tie-breaker" lottery may not look so good, since it would tend to exclude certain applicants. In any event, it might not provide any significant economies for anyone, since the Commission would still have to conduct at least a threshold hearing to eliminate the clear losers. It remains to be seen how, if at all, these considerations may affect the Commission's developing attitude toward decision-making by lottery. **BM/E**



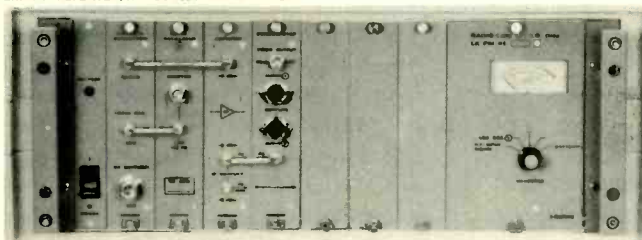
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Graphics Workstation from Integrated Technologies

Integrated Technologies has introduced a line of computer graphics systems which allow any IBM PC to produce broadcast quality weather graphics. Paint and animation features are also a part of the package.

The Whirlwind PC Series comes in three models; PC, XT and AT. The PC is an add-on software package for existing IBM PCs. The XT is a complete turnkey workstation with an IBM PC/XT computer and 10 megabyte hard disk included. Storage capacity on the XT is between 200 and 500 NTSC graphics frames. The AT is a complete system as well, but with twice as much extra storage capacity and increased animation speed of the IBM PC/AT computer on which it is based.

All three systems meet RS-170A video specs and can be genlocked to in-house video switching systems.

The systems' main features are geared towards artists, not computer programmers. There are 512 colors



CIRCLE READER SERVICE #270

available and typical "paint" functions such as cut-and-paste, airbrush and rotatable fonts. A Paintpad program included with each unit offers a "mouse" for the selection of drawing functions from a store of pictures displayed on the screen.

All Whirlwind systems can receive and display weather images and data from databases such as WSI, ESD, Accu-Weather, Weather Central and Zephyr. A "hands-off" receive mode allows the weather-

caster to receive images and data without constant attention to the machines.

The Paintpad can draw weather maps which can be merged with images from weather databases, such as WSI's clouds-only satellite pictures.

Whirlwind systems also include animation commands capable of programming 3-D or 2-D animation effects such as rotation, squeeze and zoom, among others. And Whirlwind accomplishes all of its graphics origination, even weather images, without interfering with traditional IBM PC functions.

Options for the Whirlwind systems include color NTSC frame grabber, 35 mm slide generator, color paper printer, remote graphics workstations, and radar dial-up. The basic price range of the system is from \$17,000 for the add-on model to \$25,000 for the more elaborate AT system.

Denon Intros New Audio/Video Control Center



CIRCLE READER SERVICE #271

Denon's new AVC-500 Audio/Video control center takes on signal processing for audio and video. It features the company's Ambience Recovery system, a proprietary circuit which makes use of phase information in the recording to restore natural ambience.

The AVC-500 has a stereo synthesizer for mono signals, and offers a wide variety of other audio processing functions. A five-band graphic equalizer is designed just for the audio portion of video signals and can deal with poor bass response and unintelligible voice tracks. The

new model's equalizer only operates in the presence of an actual audio signal, however, and is not supposed to accentuate background noise during quiet segments.

The controller features three sets of video and four sets of audio input and output terminals. It has an automatic copying circuit which activates input selectors and features video copying between three decks. With a built-in 22W/channel amplifier, the controller can also be used just to amplify the audio portion of video programs. Its suggested retail price is \$375.

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Garner Develops New Tape Erasers

Two new videotape degaussers with a promised erasure level of -90 dB have been introduced by Garner Industries. The Model 1200 is for one-inch reels up to 10.5 inches in diameter and the 1400 for one-inch reels up to 14 inches in diameter.

Garner's degaussers make use of a coil which concentrates generated flux into a high-intensity field which the tape passes through. A single ON button simplifies the process, and the company promises total erasure of C-format tapes in less than 15 seconds.

The company guarantees durability and offers a two-year warranty on both machines.

CIRCLE READER SERVICE #272

New Half-inch Lenses from Fujinon

Fujinon has added a new series of zoom lenses for half-inch cameras to its line.



CIRCLE READER SERVICE #273

The new S14x6ERM is the lens Fujinon refers to as "a high quality ENG lens." It stays at its f1.4 aperture when zooming from 6.6 mm to 87 mm. The 14X lens weighs less than 1.5 kg and has its own built-in 2X range extender. The basic range is from 6.6 mm to 92 mm with a minimum object distance of .08mm. Fujinon is also offering optional front wide angle and tele adapters for conversion from ENG to studio use.

In addition to the 14X lens, Fujinon has introduced two 12x6.6 zooms as well. The S12x6.6ERM has a built-in 2X range extender, the S12x6.6RM does not.

Multicamera Effects from Echolab

Echolab is offering a low-cost special effects generator that will accept inputs from up to five sources, including a video recorder.

The new SE-1G has been designed for the new generation of low-cost genlock cameras. It will genlock to one camera or input with a built-in blackburst generator and allow up to four additional cameras to be synchronized. To save on the cost, the subcarrier phase shifters have been removed from the generator, letting the camera supply this signal. The blackburst generator is all that is needed to synchronize the inputs.

The SE-1G can provide six special color effects in all, and is a successor to the company's SE-1C generator. Through the use of large-scale integrated circuits, Echolab engineers have kept the size to a minimum, and it can be packaged in a desktop or rack mount box.

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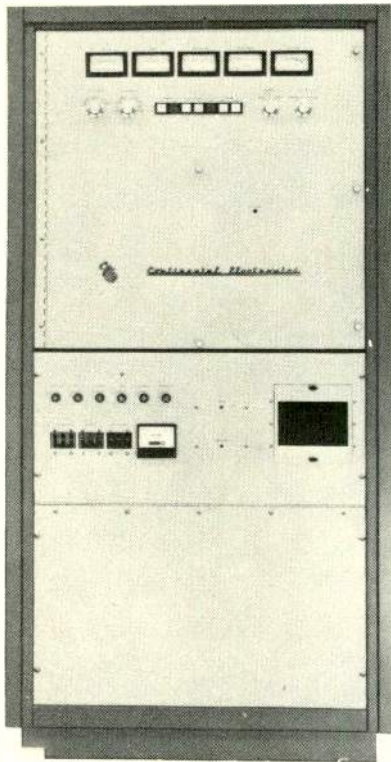
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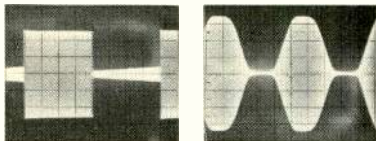
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Left: Photo shows excellent dynamic response of Continental's 5 kW AM transmitter at 20Hz modulation. Right: photo of modulation wave form shows effect of Instantaneous Peak Limiter

For a copy of our brochure on the 315R 5 kW AM Power Rock, call (214) 381-7161. Continental Electronics Mfg. Co. Box 270879 Dallas, TX 75227.

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BROADCAST EQUIPMENT

Shure Adds Mic-to-Line Amp

ENG and EFP applications sometimes require long cable runs or calls for signals to be sent over phone lines. Shure has designed a mic-to-line amplifier which provides up to 84 dB of gain for such situations.

The FP11 amp allows mics and auxiliary devices to be boosted to

line levels. It can also be the interface between equipment with different signal levels.

The FP11 has the ability to control gain in 6 dB increments with a precision rotary switch. Thus several such amps can be set to the same gain setting.

Two features of the FP11 are a selectable peak limiter and a peak LED indicator. The LED indicates the onset of limiting when the limiter is on, or 6 dB below clipping with the limiter off.

Other features include XLR input and output connectors, aux-level phone jack input, and line output spring clips. The amp is powered by a single nine-volt battery and test jacks for checking the battery are included.

The FP11 weighs just over a pound and measures 3³/₁₆ by 5²⁹/₃₂ by 2³/₁₆ inches. User net price is \$175.



CIRCLE READER SERVICE #275

Digital Stereo Synthesis from Ursa Major

Ursa Major is introducing a new, completely software-driven stereo processor, the MSP-126 Multitap Stereo Processor.

The MSP-126 uses PCM digital technology and delivers uncolored response over a 20 kHz bandwidth. Two of its features are stereo synthesis from mono sources and ambience simulation.

The processor has eight preprogrammed modes, each of which can be adjusted with two 16-position controls. The built-in modes are multitap processing, for stereo synthesis; comb filter processing with L + R compatibility; pan pot, for placement of the source anywhere in the stereo field using time delay; binaural manipulation to add front-to-back depth; "room" for adding realistic ambience; delay cluster which generates signal repeats in clusters; single repeats; and scale.

The MSP-126 has an alphanumeric readout, a switch for mono or stereo inputs and a bypass switch. Separate input and output level controls are also provided.

CIRCLE READER SERVICE #276

JBL Offers Mic Mixer with Remote

Live mic feed output levels can be controlled remotely for mixing thanks to a new mixer from JBL.

The new 5330 VCA-controlled Microphone Mixer controls output through the system's voltage-controlled output amplifiers.



CIRCLE READER SERVICE #277

The 5330 has two outputs to use for main and monitor or to feed two separate zones. The VCA allows for the "ganging" or gain controls of multiple units. Another feature is priority muting of channels by channel one through remote dc control.

Several trim control options are possible with the JBL 5330. One is for the control range to levels suited for unskilled users. Another allows for the presetting of maximum gains at mic/line inputs and both outputs.

**FOR MORE INFORMATION
on these products, use the
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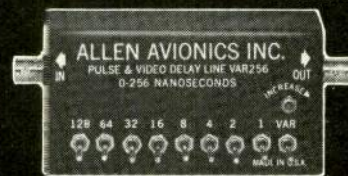
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