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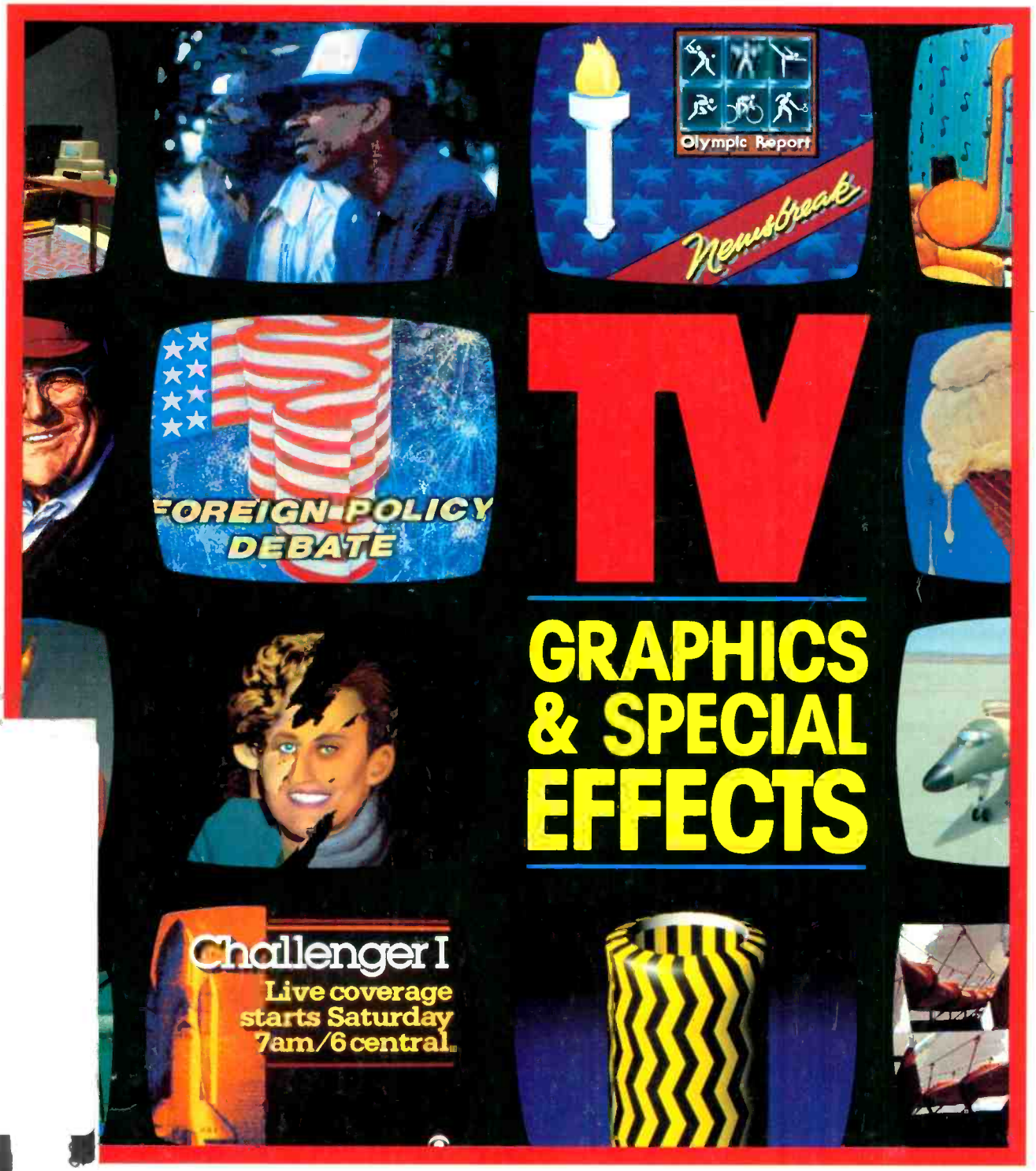

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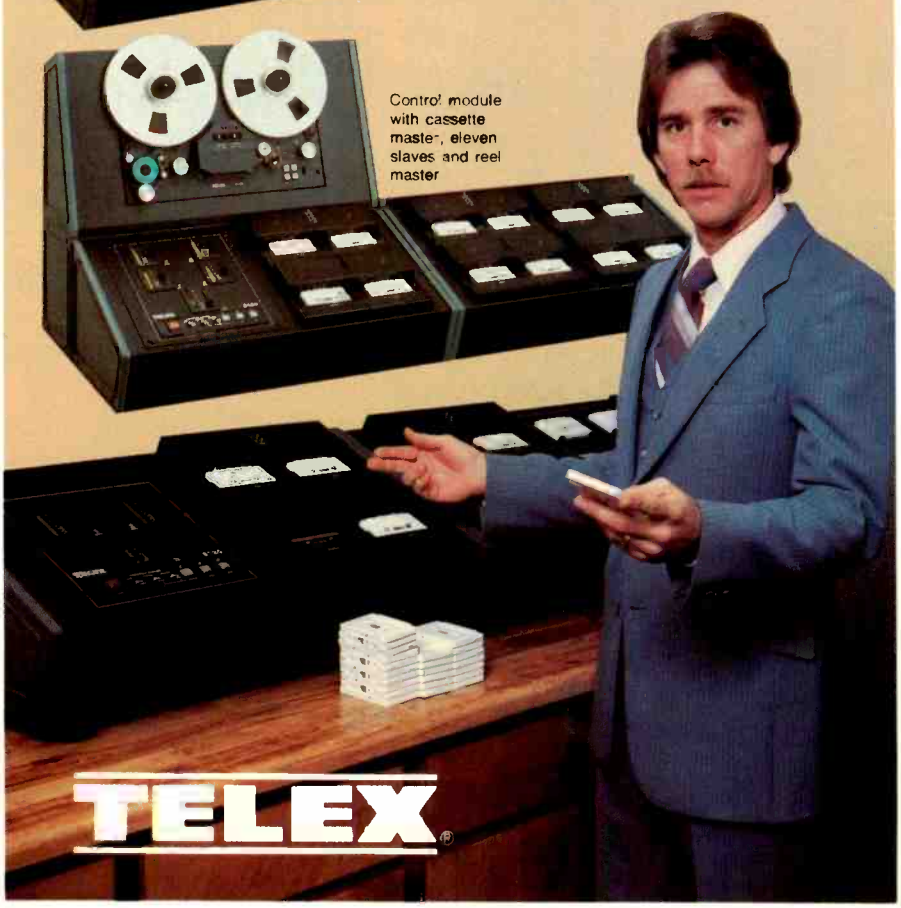

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- USER-DEFINABLE ALARMS
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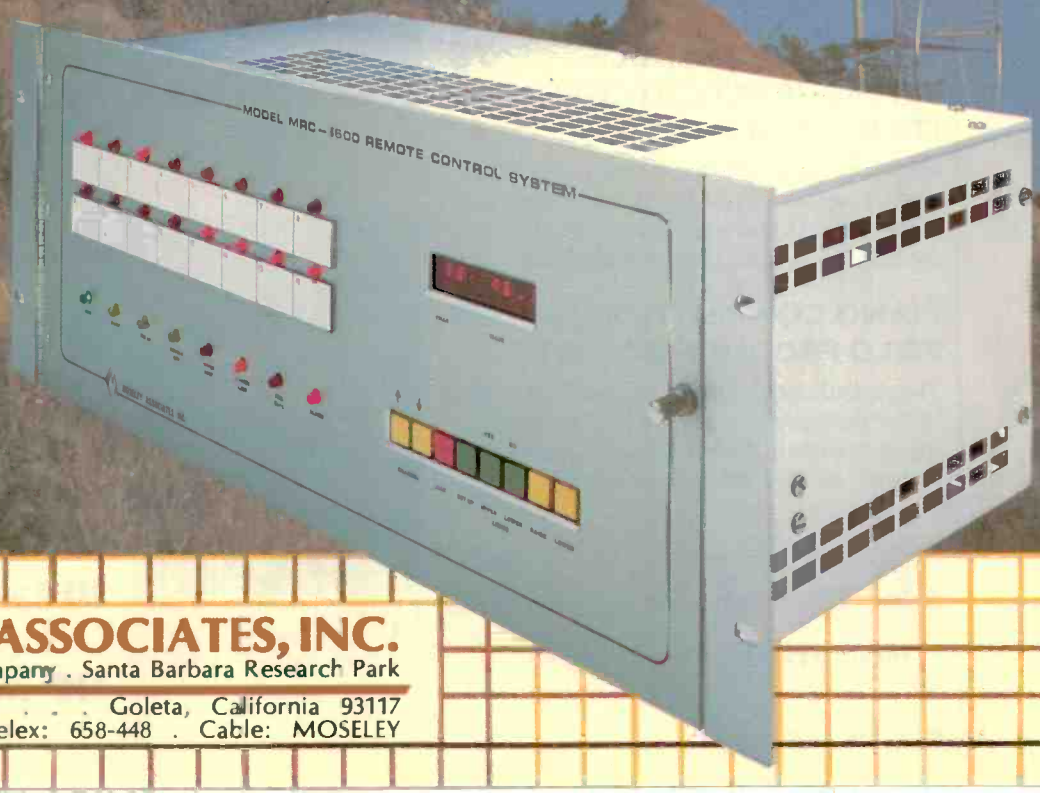

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MAY 1985 VOLUME 21/NUMBER 5

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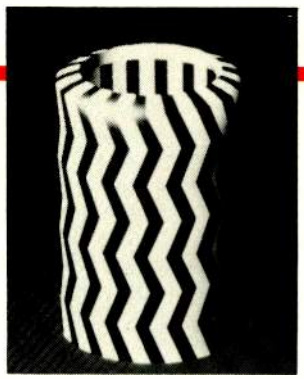

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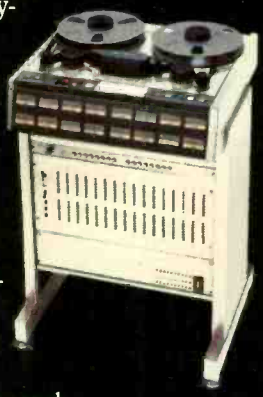
OUR NEW BABY

Announcing the arrival of the MTR-90's little brother; Otari's one inch, 16 channel MX-70. A multitrack mastering recorder that lets you do virtually anything you want to do in audio, affordably.



The MX-70, specifically designed for multitrack recording, derives its features from our experience with MTR-90 customers and their applications. For example, the "70's" microprocessor controlled constant tension transport is ideal for use with SMPTE time code-based video editing systems, machine controllers, and synchronizers. Its "3-way" design (1 inch 16 track; 1 inch 8 track, and ½ inch 8 track) allows conversion right in the studio, so if need be, each session could be done on a different format. And as your needs change, this machine will stay with you all the way up to 16 tracks—you won't be left behind as your business grows.

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EDITORIAL

Government by Consent?

With some broadcasters relieved and others apprehensive, the industry has watched the FCC slowly slip from its once-powerful role as guardian of the "public interest, convenience, and necessity" to that of an often ineffective watchdog committee. Only five members strong, and with a considerably weakened technical section, its main role as of late appears to have been defining what it should not be doing—limiting station ownership, enforcing blanking width and other technical standards, pursuing fairness doctrine cases, regulating advertising or PSA guidelines, and so forth.

And then, suddenly, the FCC swings into action. On an item of major concern to broadcasters? No—to establish a fee structure designed to generate a large percentage of the Commission's operating revenues. The latest version of the proposal, which requires Congressional approval, would yield $46.6 million, equal to 50 percent of the FCC's budget request for 1986. Over 40 percent of this figure, or roughly a quarter of the Commission's budget, is expected to come from broadcasters in the form of stiff new fees to obtain construction permits for new or expanded facilities.

The effect of such a license fee on retarding new station growth cannot yet be estimated. But perhaps more importantly, it illustrates the deteriorating relationship between the industry and the Commission. It's one thing to support five well-paid commissioners with public tax dollars, when their role is to police the broadcast industry on the public's behalf. But it is another matter altogether when broadcasters themselves are forced to pay large licensing fees to support a Commission that is not even close to serving the industry's needs.

The Reaganomics plan of a self-sustaining government bureaucracy has merit in principle. But so, too, does one of the most fundamental concepts of democracy, that government should exist through the consent of the governed. And broadcasters, governed and now taxed by the FCC, must ask themselves whether the current FCC structure is what best serves the industry. If money is to be spent, what about financing a national broadcast standards-setting and enforcement body? Or committees to look into the question of TV and radio freedom of the press? Or the possibility of an elected FCC, to be voted on by broadcasters themselves?

The FCC must be made aware, in short, that if it intends to tax the industry it must serve the industry. The public pays dog licensing fees to support animal shelters. In the U.K., TV and radio set fees go towards providing the broadcast services themselves. But what will U.S. broadcasters get for their fees? An even laxer FCC?

Is the Commission serving your needs? We urge you to make your feelings known by participating in our Straw Poll "FCC Vote of Confidence" on this page.

_BM/E_ STRAW POLL
"FCC VOTE OF CONFIDENCE"

YES

The FCC is doing an adequate job for the industry, and should be allowed to levy its proposed new tax on CPs.

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NO

The current FCC does not adequately represent the needs of the industry and should not be allowed to support its activities with a tax on CPs.

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1:1.9 at 118mm

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1:2.3 at 143mm

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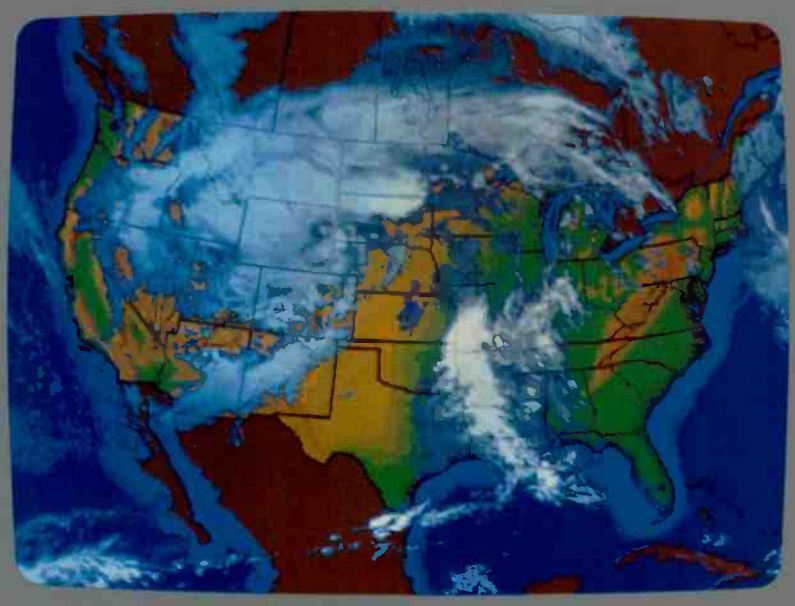

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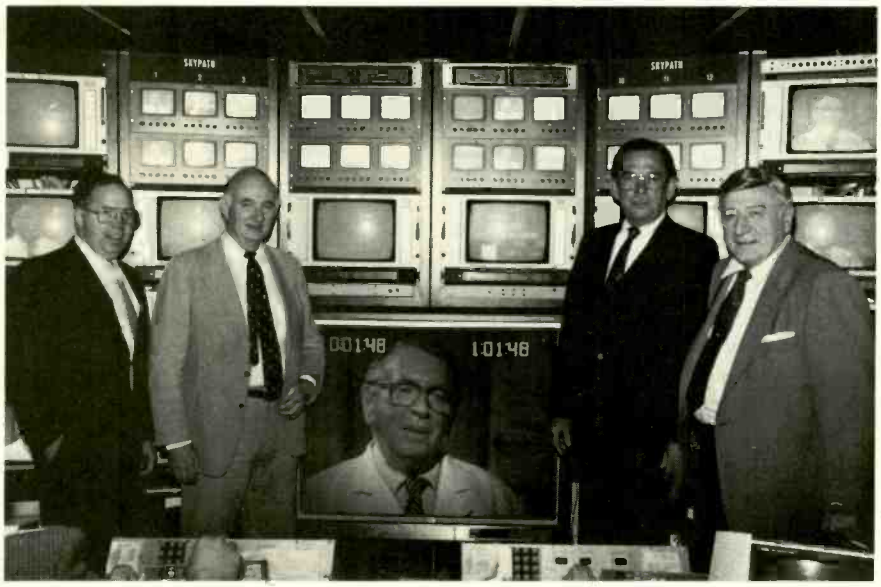
NBC Switches to All-Satellite Distribution

NBC has become the first network to switch to all-satellite distribution of its programs to affiliates. It is also the only network using Ku-band satellite distribution.

The official cutover from AT&T phone lines to the satellite was made at 3 a.m. on April 10. NBC has been steadily adding affiliates to the satellite system for over a year. Earth stations have been added at many network affiliates which were not set up for Ku-band reception.

Of the 206 NBC affiliates in the U.S., 162 were on satellite at the time the switchover was made. Another 10 will be on the system by fall. The remaining stations either have microwave reception or are "satellites" of other stations which pass programming down the line to them.



On hand for NBC's switchover to Ku-band satellite distribution were (left to right) Michael J. Sherlock, executive VP for NBC-TV's Operations and Technical Services, Jack Weir, VP of Broadcast Operations, William Mayo, president of Comsat General, and Robert Butler, chief engineer of NBC Satellite Systems.

Emmy-Winning Editor Gets New Facility from AFA

Cine-Vid Post Production, Inc., recently started by Emmy-winning editor Victor Gonzalez, has received its one-inch edit facility which was designed and installed by A.F. Associates Inc. of Northvale, NJ. The facility, located in New York City, features an Ampex ADO, Chryon IV dual-channel character generator, and ISC Super Edit 51, Grass Valley 300-3A switcher, Ampex VPR-3 one-inch Type-C recorders, and an ADM 1600 Series audio system. Gonzalez reports that the facility's design manages to both reflect his experience as producer/director/editor and his sensitivity to clients' needs.

RCA Americom Offers Radio Distribution on Satcom I-R

RCA Americom has started offering single-channel-per-carrier (SCPC) distribution over Satcom I-R to regional or specialized radio networks.

The service provides 7.5 and 15 kHz signals and RCA Americom's digital audio transmission service (DATS), plus the advantages of radio networking satellite Satcom I-R.

The SCPC radio service will make use of an existing network of receive-only antennas located throughout the country, and networks which sign up for the service can gain access to new and existing affiliates simply by directing their uplink antennas at Satcom I-R.

RCA Americom is hoping to sell music, sports, seasonal, regional and other specialized radio networks on the idea of consolidating onto one satellite that can be easily accessed from most locations. Monthly space-segment rates based on a two-year contract, for three of the most popular SCPC channels are: $10,375 for 19 dBw at 200 kHz (15 kHz audio); $6087.50 for 16.5 dBw at 200 kHz (15 kHz audio); and $1750 for 10 dBw at 50 kHz (7.5 kHz audio).

Local Producers Get Their First NATPE

The first International Production Conference of the National Association of Television Program Executives has proved to be a big success, drawing over 600 attendees to New Orleans to polish up their production skills for use at the local level. NATPE says the good reaction has assured another show next year. Scheduling is to be announced soon.

The 14 sessions and workshops were both crowded and well-received. Topics provided a wide choice of production subjects ranging from lighting and post-production techniques to cost-effective producing and management techniques for PMs. Don Ohlmeyer and Joseph A. Flaherty gave keynote speeches, in which Flaherty predicted a digital tape standard in one year with all-digital sets not far behind, while Ohlmeyer noted that new hardware combined with general viewer dissatisfaction is opening the programming game up to anyone with the imagination to reassess audiences, funding, and distribution.

NATPE also unveiled a new local production Hall of Fame and awarded its first crop of Irises to programs and people who started locally and went on to national prominence. *PM Magazine*, developed by KPIX of San Francisco; *The Mike Douglas Show*, which originated at KYW-TV, then in Cleveland; *At the Movies*, started by WTTW, Chicago; and *The Phil Donahue Show*, first produced by WLWD, Dayton, made up this year's winners.

Mutual Joins Growing SCA Service Market

The Mutual Broadcasting System is swelling the rapidly expanding ranks of companies offering transmission services for FM subcarriers. Other new offerings include a financial market package and a multilevel English-language tutoring system.

Mutual's Multicomm service is slated to begin on July 1, with the aim of becoming a full national service, according to Gene Swanzy, senior VP of broadcast communication services. Multicomm is being offered through Mutual's newly-created Satellite Services division.

Swanzy says the service can accommodate data and voice, either printing the information out as text or recording it onto audio cassette, depending on the type of receiver used at the end location.

Mutual plans to sign up corporations interested in transmitting information point-to-multipoint. SCA receivers and printers will either be sold to clients at $300 per receiver or $500 per receiver/printer combination, or more likely, the equipment will be leased to them at $20 per month with a three-year contract, Swanzy said. There are also nontext receivers which have an audio cassette recorder built-in, but Swanzy explains that the receiver and recorder will be separate units in the future. According to Swanzy, the receivers were designed

Mutual broadcasting's Multicomm subcarrier receivers will be sold or leased to corporate clients of a new transmission service.

by Mutual engineers and assembled by the Computer Module Co. with consulting from Electronic Publishing Systems.

The corporate client will send its transmission over phone lines through dedicated modems to Mutual's uplink in either Washington, DC or Los Angeles. It will beam up to Westar IV, and then back down to an FM station's downlink where it will be transmitted out to addressable receivers. Each client will have a digital address and the signal will be compressed and scrambled if a client so desires. Mutual will make its profit by charging customers for the amount of transmission capacity used each day.

Swanzy says Mutual is spending "millions of dollars a year" to lease FM subcarriers from radio stations all over the country, starting with the top ADIs. He said the criteria is audience numbers, and that while Mutual affiliates will be considered first, "the bottom line is we're going to get the best stations we can get." He added that negotiations are underway with stations in the top 100 markets, and that he has seven or eight firm commitments.

Mutual also has at least one corporate customer signed up for the service. UPI is starting a sports data service as of August 1, and will become the first user of the subcarrier transmission service. Swanzy says there are firm agreements with five other companies as well.

Cable Programming to Start Via Microwave

Under the catchy title "wireless cable," Microband Corp. of America says it will roll out a premium television service this spring in New York City, Milwaukee, and the lower San Francisco Bay area, distributed by multichannel microwave. If all goes as planned, the scrambled microwave channels will deliver HBO and other programming usually found on cable, although as of press time Microband reported it had signed only HBO.

Microband, a New York-based subsidiary of McDonnell Douglas, is somewhat behind its original schedule (see *BM/E*, April 1984, p. 16) and is focusing on just these three cities for the startup.

The company has corralled bandwidth from the Multipoint Distribution Service and the Instructional Television Fixed Service in partnership with local companies and institutions. These companies will receive programming by satellite and broadcast it with Microband-owned transmitters to subscribers, who will use two antennas to pull the scrambled channels into an addressable set-top receiver, which for the New York and San Francisco systems will be manufactured by M/A Com.

The receiver will handle VHF and UHF signals as well as the separate microwave transmissions.

Microband's chairman, Mark Foster, said the company plans to carry both basic and premium cable-type programming, but he could name only HBO as a definite supplier. Microband already delivers HBO to homes and hotels via single-channel MDS systems. Foster also "firmly believes" pay-per-

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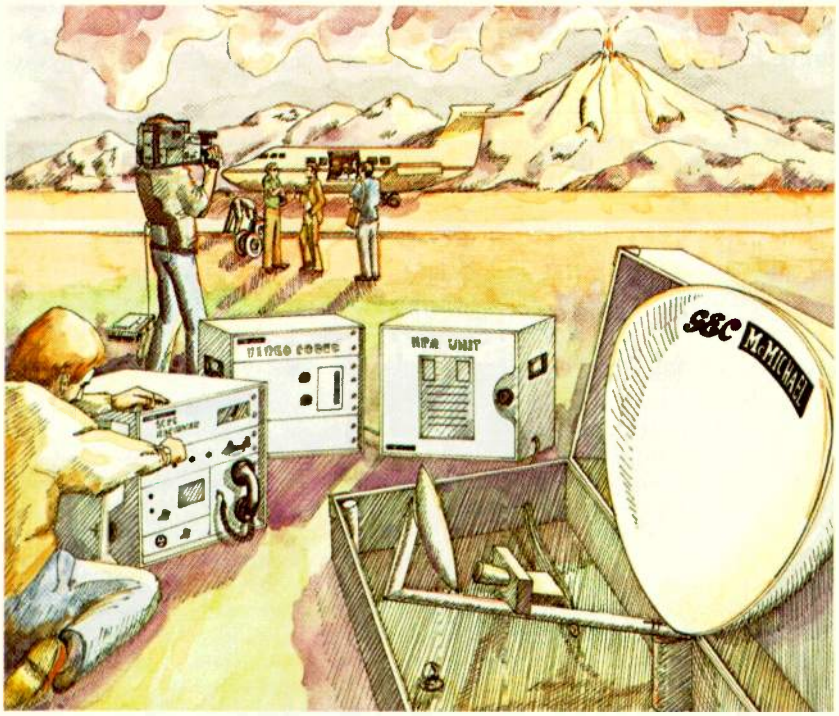
The entire FLY-AWAY system is compact and lightweight enough to be flown to remote locations in a private plane as well as by regularly scheduled airlines. Once on location, the SNG terminal can be quickly set up by as few as two men in ½ hour and powered by a hand-carried portable generator.

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

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view will grow in importance.

Despite the "wireless cable" tag, Foster maintained that Microband will not be competitive with cable since audiences will primarily be in rural and highly urban areas which may never be cabled. Last year, however, he had stated that "Most people would not switch from cable to us, but if you do not have cable, we will be competitive."

Maximum Blanking Standards Eliminated

As part of its ongoing burnoff of "regulatory underbrush," including selected technical standards, the FCC has eliminated its rules for television's maximum vertical and horizontal blanking. These regulations had already been suspended for the past five years, and the Commission says a marketplace approach can now replace them entirely.

For years, broadcast signal waveforms had created problems when they exceeded the maximum values, creating black borders on the screen's top and left-hand sides.

By 1979, however, the NAB was able to suggest that the FCC allow broadcasters to police themselves for five years. This was intended to let the broadcast industry and equipment manufacturers investigate blanking interval timing problems on their own.

Now, the Commission feels the marketplace can take care of the situation. Vertical and horizontal blanking mistakes do not interfere with other channels, it notes, so "on-channel quality" is the only potential issue, and the Commission says it has no indication of viewer dissatisfaction.

AM Daytimers Given Weight for 80-90 FMs

AM daytime-only licensees will receive preference equal to minorities in the distribution of 689 new FM stations, the FCC has ruled, subject to certain conditions, most notably that they divest their AM operations in three years. A filing procedure has also been spelled out.

Other conditions are that a daytimer must have owned and helped manage the AM station for three years, and must propose to be part of the FM's operation.

Applications will be processed by randomly assigning numbers to the 80 FM channels (221 to 300 MHz), which will then determine the order in which each channel's filing window will be open.

The Commission is also reopening the FM Table of Allotments for amendment.

The NAB hailed the FCC for its recognition of "the existing daytimers' record of service and community involvement," but disapproved of the attached conditions. Commissioner Henry Rivera dissented, saying that the "fundamental reason for creating new FM stations in Docket 80-90 was to enhance diversity and competition." Rivera also pointed out that the decision will create AM-FM combinations for three years.

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The new 14X offers more than size, weight and range advantages (a 2X range extender is built in). Its F1.7 maximum aperture remains absolutely flat from 9mm to 103mm. In addition, corner resolution has been increased while longitudinal chromatic aberration has been reduced. And with its weatherized features, the new 14X is the ideal lens to take into the field.

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NEWS BRIEFS

Two-thirds of television **news directors** responding to a recent RTNDA survey said their departments made money last year, about 20 percent report they came out even, and 11 percent were in the red. For radio, almost half of the departments made money, 37 percent came out even, and 19 percent said they lost money.

NBC and 14 affiliates in Texas have set up a **regional news exchange** by microwaving stories from five cities to Dallas and then having them uplinked. Western Union is supplying the transmission facilities, except for each station's downlink . . . . In the top 50 markets, the television station with the **most senior news team** pulled the top late night ratings in 39 cases, according to a study by Talentbank Ltd., a Fairfax, VA company that operates a news personnel and information database. In coanchor situations, tenure and audience acceptance of the dominant anchor was the most important factor.

Local television advertising rose 17 percent last year over 1983 revenues, says the Television Advertising Bureau. Advertising by medical and dental services increased 51 percent, auto dealers increased 49 percent, and educational services 39 percent.

The FCC has proposed allowing broadcasters to record **telephone conversations** before consent to broadcast is obtained. The Commission also asked for comments on whether it should reimpose the beep tone requirement for that situation.

Unitel Video condensed four days' footage to five hours for Trans World International's "The Superstars." The 120-hour edit required six machines and heavy ADO usage . . . . **One Pass' Mobile One** provided seven Ikegami cameras and other facilities for a five-day shoot with live audience of the San Francisco Ballet's "Cinderella," coproduced by KQED and WNET . . . . **Pacific Video** posted the eighth of Dick Clark Company's *All-Time Greatest TV Censored Bloopers*.

The FCC and NTIA are sponsoring a **"Minority Ownership of New Broadcast Stations"** seminar on May 17 in Miami. To register, call (202) 254-7674 . . . . The World Institute of Black Communications is taking entries for the **1985 CEBA Awards program.** The television categories have been expanded to include single feature segments, interview/studio and interview/on location. Call (212) 586-1771 . . . . **WNYC-AM** has won a Peabody for its children's program *Small Things Considered*. The station also won a Peabody in 1944 for Mayor Fiorello LaGuardia's innovative use of radio, such as reading the Sunday comics during a newspaper strike.

The first annual **International Computer Image Contest** is being held by Raster Technologies, Inc. and The Computer Museum. The entry deadline is May 30. Ask for Majie Zeller at (617) 426-2800.

The fifth annual **WOSU Broadcast Engineering Conference** will take place in Columbus, OH on July 23 to 25. Call John Battison at (614) 422-9678.

Dr. David Bond, an economist, has replaced Ernest Steele as president of the Canadian Association of Broadcasters.

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Winners of Best Station & Facility Design Competition Honored At NAB

Marking a decade of excellence, *BM/E's* Tenth Annual Best Station and Facility Design Competition reached its festive climax at the award presentation ceremony on April 15 at NAB. As part of the competition's tenth birthday, a Special Award was presented to KSL of Salt Lake City, whose many-faceted facility received its own category in *BM/E's* December issue.

The other winners as chosen by *BM/E's* readers were KPEL, Lafayette, LA in the AM category and WLOL of Minneapolis, MN for FM stations. Among the television entries, Outlet Communication's WCPX-TV in Orlando, FL was voted number one, while VideoWorks of New York, NY took first place in the hotly-contested teleproduction facility category.

If you too are especially proud of your station or facility and think it would look good in print like those featured each year in the industry's only forum for design excellence, let us know. Send a postcard listing your calls or company name, address, phone number, and a person to contact. You'll receive an application package later this year.

Soundstage B, one of KSL-TV's production studios, is used in conjunction with Video West.

KSL Radio's newsroom is equipped with the ColorGraphics Newstar newsroom automation system.

Edit 3, the largest of Video West's three post rooms, features CMX 340X computer editor, Grass Valley 300 switcher, and ADO.

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Winning Stations and Facilities

The videotape area features Sony and Ampex VTRs at WCPX-TV.

Station manager Carol Ross at the Broadcast Audio System 14 console in KPEL's control room. Sitting on top is the Heath-Zenith weather computer.

VideoWorks' Edit Room One features a CDL-480-8 switcher, ADO and NEC digital effects, and a Yamaha mixing console.

WLOL promotion director Tom Gowan. In addition to the ADM console and twin Otari MTR-10 ATRs, the room is equipped with a four-track Otari MX-5050BQ.

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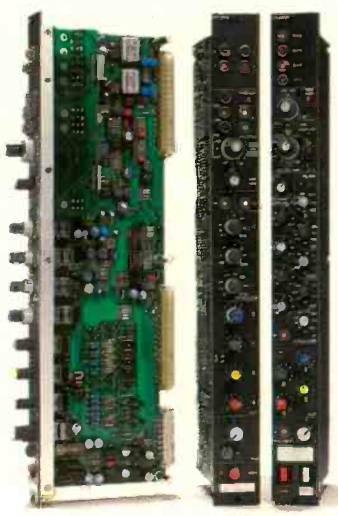
prices. Choose from 10 different metering modules, 3 multi-track monitor options (including separate monitor EQ), mono or stereo faders, audio subgroups, automation compatible VCA groups, video switcher interfaces, subgroup reassignment modules, up to 3 solo systems, multi-function test generator, input selectors, limiters, compressors, patchbays with bantam or ¼" systems, and up to 10 auxiliary busses.



Basic input modules feature 3 or 4 band EQ, microphone/line inputs, 5 pre/post-fade auxiliary sends, and channel overload indicators. Options include transformerless mic preamps on a subcard, separate transformerless TAPE input for remix, stereo input modules, stereo EQ, internal stereo X-Y/MS active matrix, stereo blend control, dual line inputs, variable HP and LP filters, user defined panel switches, and the list goes on.

Listen to the quiet. The entire 900 console frame design is consistent with the advanced module design. A completely independent signal reference ground system assures preservation of individual circuit CMRR figures. The result is overall noise performance compatible with digital recording.

As time goes by. All 900 consoles adhere to strict Studer standards for precision and reliability. The frame is built on a rigid channel and brace structure, and each module uses pin-and-socket Eurocard connectors. Frame connectors are mounted on longitudinal master boards with solid support from horizontal and vertical frame members. All components, switches and pots are commercial/industrial grade from the best U.S. and European manufacturers. In sum, a 900 is built to last as long as a Studer recorder.

The Swiss alternative. If you have been considering a high quality mixing console from any American or English manufacturer, you should also look closely at the Swiss-made Studer 900. For quality, flexibility, and reliability, it ranks among the world's finest. Also, you may find the pricing surprisingly competitive.

For more information on Studer consoles, call or write: Studer Revox America, Inc., 1425 Elm Hill Pike, Nashville, TN 37210; (615) 254-5651.

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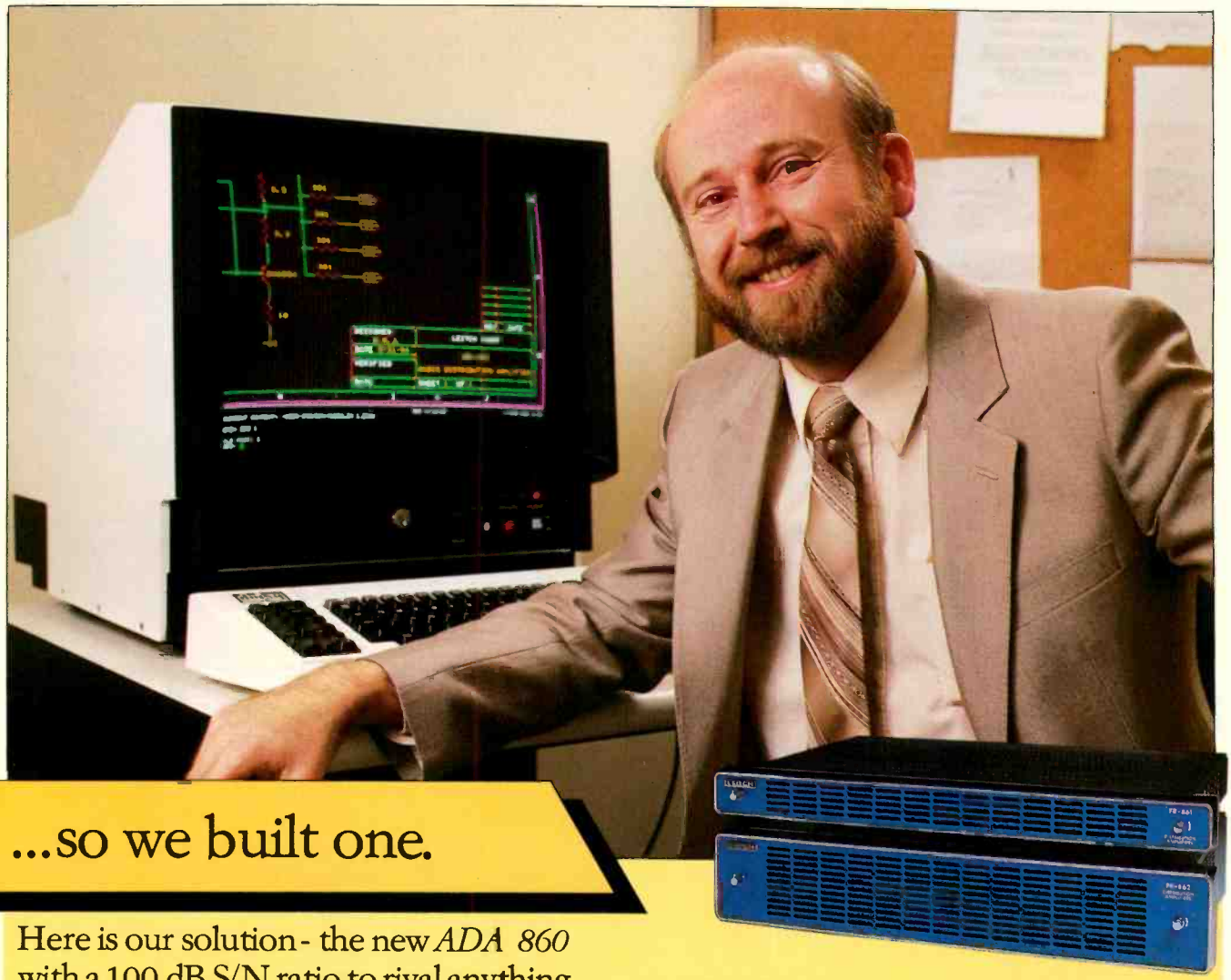

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ARI Gives Radio Traffic a "Boost"

By Judith Gross

A motorist is driving down the interstate, unaware of the traffic jam beyond the next exit. Although he's tuned to the local radio station, an 18-wheeler rumbling by drowns out the traffic alert broadcast by the station. Or perhaps he's daydreaming, not really paying attention to the report. Or, he could be listening to his favorite cassette tape instead.

If, however, the above scene takes place in West Germany, or the motorist is tuned to one of 24 stations in eight metro areas, the driver will still be able to find an alternate route in time. Because while tuned to those stations, even if a cassette tape is playing, the radio station's traffic alert will get a boost in volume, over the noise of the 18-wheeler or the distraction of a daydream, or the radio will automatically interrupt a cassette and switch itself back to the local station for the traffic report.

It sounds like a radio station's dream, getting listeners to tune in no matter what else they are doing, but in fact, this futuristic solution is the result of a cooperative effort on the part of a German manufacturer, FM stations, and the latest in subcarrier technology.

A two-year-old network

The Blaupunkt Division of West Germany's Robert Bosch Corp. decided to launch the ARI Traffic network on the U.S. in April of 1983, after it had become a fact of life along the Autobahn and other highways in that country. ARI stands for Automatic Radio Information, and after a dazzling launch in the New York-New Jersey Metro which included a satellite announcement at the 1983 NAB show, ARI reports can now be heard in 24 cities covering eight radio markets, with some seven more areas set for launch before the end of the year.

The ARI system uses an FM station's subcarrier to activate special Blaupunkt ARI receivers. At the station's transmitter, an encoder connects into the stereo generator and FM exciter, according to Jerry LeBow, Blaupunkt's technical consultant. The encoder's function is to activate the signal, which will boost the radio station's volume or break into a cassette and switch the station back on. LeBow says the subcarrier is broadcast at 57 kHz, which is three times the 19 kHz signal of the stereo pilot. "If you don't lock your subcarrier into the stereo signal, you run the risk of too much noise," LeBow explains.

Retailer Andy George holds a contest box while WPST-FM nighttime announcer Tom Cunningham tells his Trenton, NJ listeners how they can win a Blaupunkt ARI radio during a station promotion of the ARI subcarrier-activated traffic system. Behind them is an ad for the ARI system showing how reports give motorists an "edge."

The message signal, or activating signal, is also a multiple of the stereo pilot; it is sent out at 142.5 Hz. There is one additional signal broadcast which displays the number code for the traffic zone where the radio station is located. According to LeBow this, too, is a multiple of the stereo pilot. There are 10 possible frequency positions for the zone code display, ranging from 20.07 to 122.5 Hz. The numbers zero through nine could be used as zone designations, but LeBow says not all are used. The number "one" is not used at all because "every station wanted to be number one," LeBow explains. And most markets only have six or seven zones, because the numbers can be repeated if the stations are far enough away from each other.

Sending and receiving

ARI stations activate the message signal by pushing a special button in the control room just prior to broadcasting a traffic report. They then broadcast the report as any station would. Those with ARI receivers will hear the boosted volume or have the cassette interrupted. Those without ARI radios will hear the report at a normal volume. In order to insure listener comfort, the boosted volume for ARI reports is preset by the customer upon purchasing an ARI receiver.

Right now Blaupunkt makes and markets the only ARI receivers around. There are eight models, ranging in price from $179 to $679, depending on features. All are car receivers and are sold in dealerships across the country.

LeBow says Blaupunkt has kept the rollout of new ARI markets gradual, so listeners and stations can adapt to the newness of the technology, and so receivers will be available. Dallas was the latest market to become an ARI area, joining stations in New York, New Jersey, Westchester County (NY) Connecticut, Philadelphia, Delaware,

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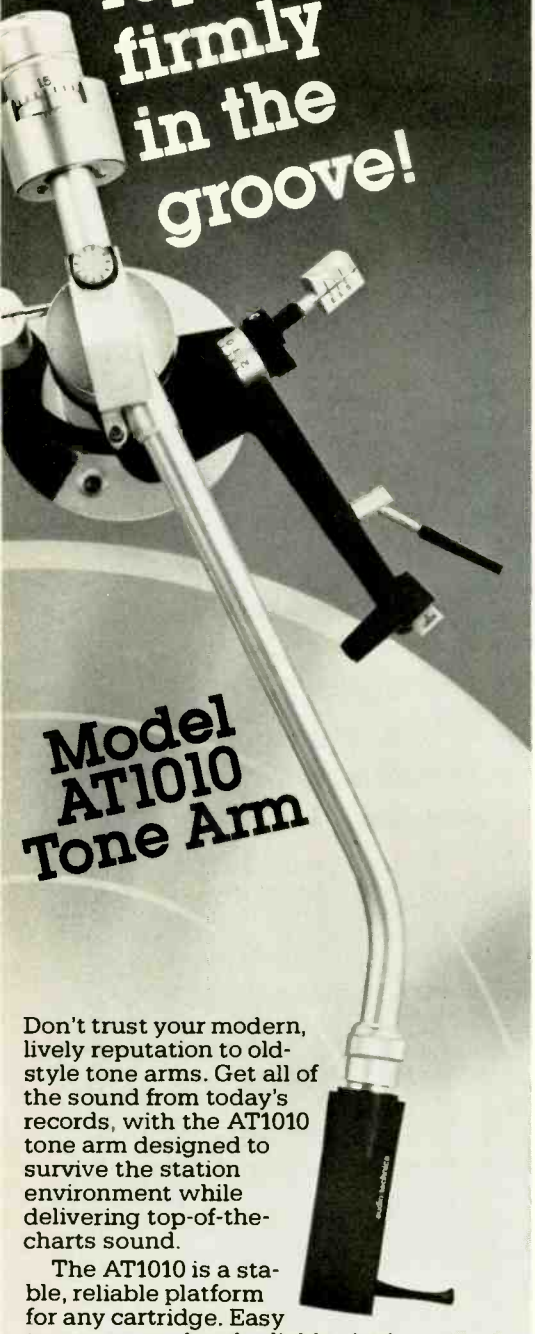

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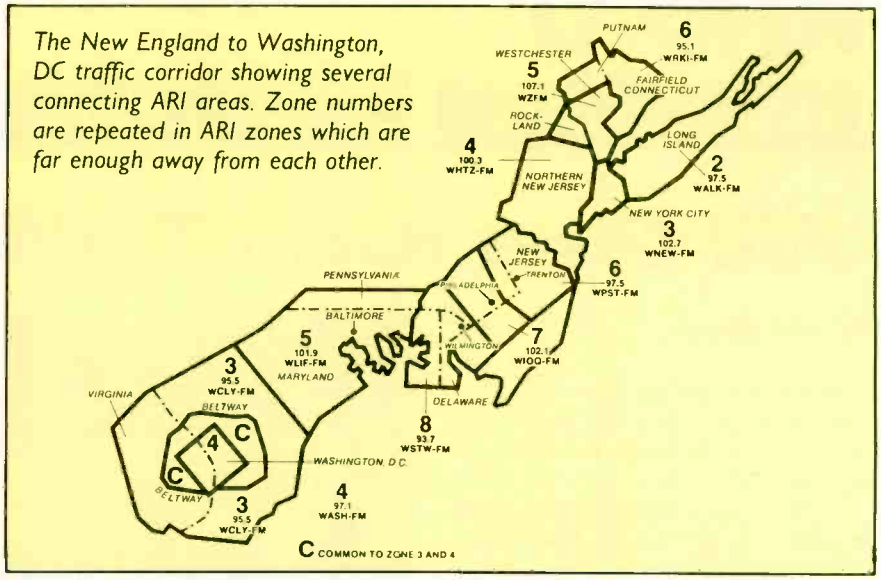

The New England to Washington, DC traffic corridor showing several connecting ARI areas. Zone numbers are repeated in ARI zones which are far enough away from each other.

Baltimore, Washington DC, Detroit, and parts of California including Los Angeles, San Bernadino, San Clemente and San Diego. Some areas are in overlapping traffic corridors, and there are also ARI areas in Canada. There are currently plans to introduce Chicago, Hartford-Providence-Boston, San Francisco-Monterey, Atlanta, Miami, Houston and St. Louis into the ARI system by the end of this year.

Choosing carefully

New markets where ARI is to begin are chosen after careful research of traffic and radio listening patterns, LeBow says. For traffic flow, Blaupunkt consults census statistics and more up-to-date driving information. For listening habits, Arbitron ratings are consulted.

Blaupunkt first looks at audience numbers and signal strength, then demographics, with a target audience of males 25 to 49 years old. LeBow says studies show this to be the type of listener most interested in detailed traffic information. The third factor is the station's willingness to broadcast and highlight in-depth traffic reports to listeners.

Once a station is chosen, Blaupunkt spares no expense in promoting the ARI system. The company buys spots to explain the system to listeners, but does not insist that its commercials air during or directly before or after the traffic reports, although LeBow concedes it would be an ideal time for them.

There is also an enhanced co-op program with Blaupunkt ARI receiver dealers who buy advertising or participate in station promotions and giveaways.

Long-term promotion

LeBow says that Blaupunkt is spending millions of dollars in setting up the ARI system and promoting it among dealers and radio stations. The stations are charged a mere $1 per year rental for the ARI equipment, hardly a profit margin for the West German manufacturer. But LeBow explains that Blaupunkt and parent company Robert Bosch are committed to the ARI system for the long haul, and not for a quick dollar. To be sure, if ARI radio sales begin to soar, Blaupunkt would profit. But Bosch is a publicly-owned company in its home country, and profits are generally distributed into areas of public good, so the venture into ARI is not as unusual as it might seem if the company's main concern was a larger bottom line.

ARI stations have been eager and creative in promoting the traffic system to listeners, and have had to overcome the ignorance that surrounds subcarrier technology. As one station manager pointed out, "ARI is even difficult to say clearly on the air."

But most participating stations seem to feel that ARI lends an air of prestige, and may give them a competitive edge when Arbitron time comes around.

"To be affiliated with ARI, a radio station is saying it is looking toward the future, exploring new ideas for its listeners," says John Piccirillo, VP and general manager of one-year-old WCLS-FM in Detroit.

"The impression we are getting from listeners is that they feel this is better

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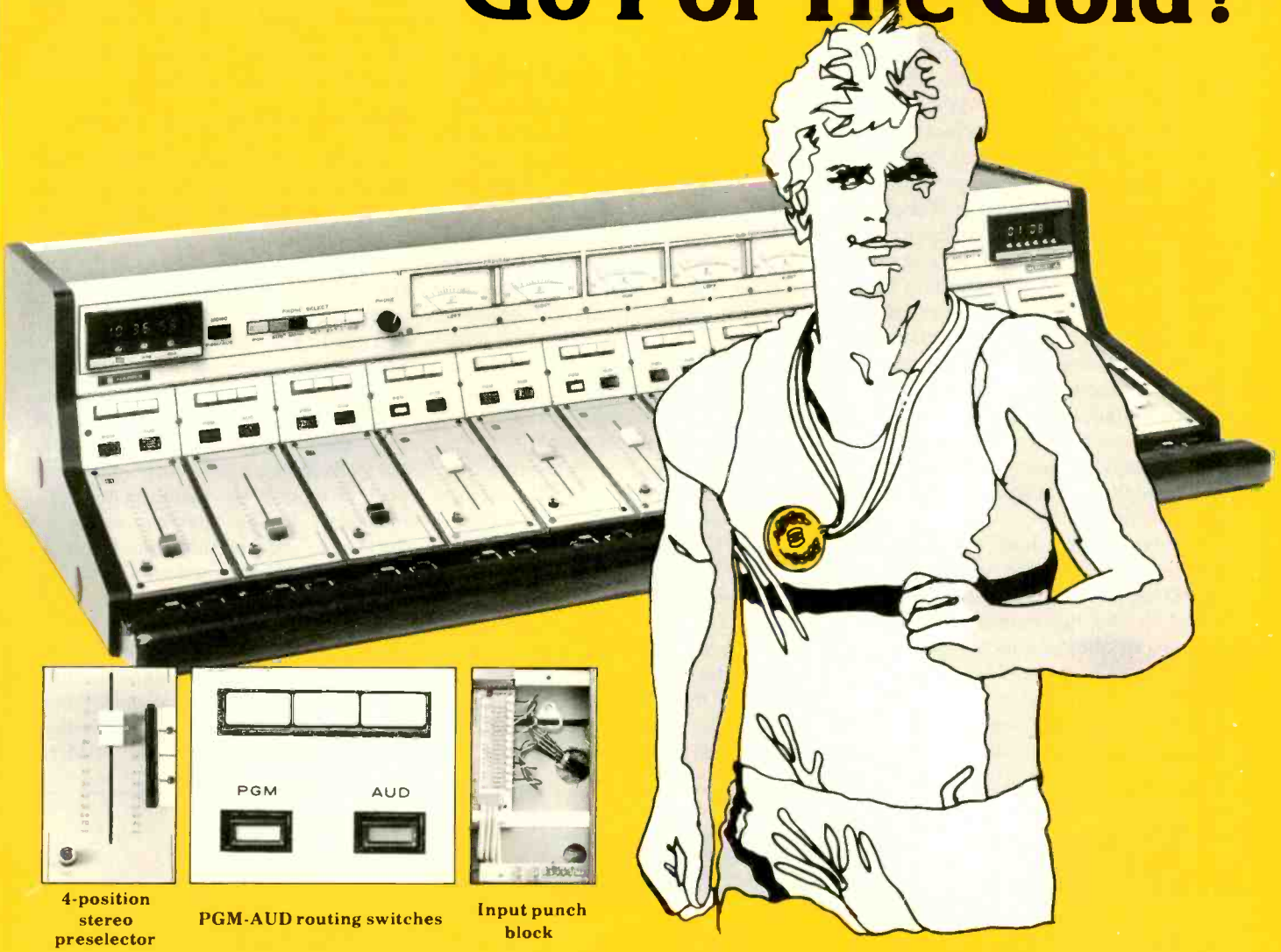

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traffic reporting. We've gotten more serious about our own traffic information as a result," Piccirillo explains.

Like the other ARI stations, WCLS uses its regular traffic service to provide the traffic information. Although the normally heavy volume of morning and afternoon drive traffic reports continues much as it might if ARI were not around, stations are much more likely to use ARI to break in with reports of emergencies, either traffic-related, or sometimes involving tornadoes or other weather emergencies. Such is the case with Philadelphia's WIOQ, where a three-year construction project on the much-traveled Schuylkill Expressway is causing nightmares for motorists at rush hours.

News director Juan Varleta says the station will break in with emergency ARI reports if the situation warrants, and WIOQ has published a booklet showing alternate routes which also publicizes the ARI system and Blaupunkt ARI radios.

WIOQ also launched one of the most colorful on-air promotions for the ARI system with a giveaway of a late-model 1950s fire-engine red MGA Roadster outfitted with a Blaupunkt ARI radio. Such cooperative efforts between radio dealers, car dealers, Blaupunkt and the stations are becoming more plentiful in ARI areas.

WPST-FM in Trenton, NJ, gave away a $4000 Blaupunkt sound system to the winner of a road rally they and their advertisers sponsored. Promotion manager Hal Stein says that in addition to Blaupunkt prizes, the station regularly gives away mugs, key chains, T-shirts and other items with the ARI name featured prominently.

KGGI-FM, in San Bernadino, recently held a mini-family Olympics to give away Blaupunkt equipment. But WHTZ-FM, New York-New Jersey's Z-100, which is currently enjoying the prestige of being the nation's top-rated radio station, promotes its ARI reports in on-going big-city style. Each Friday, a station listener is chosen as the "ARI buttonpusher of the week," and is driven in a chauffered limousine to the studios where he or she actually gets to activate the ARI system by pushing the control button.

Present and future impact

WCLS, WIOQ and WPST all believe that traffic reporting has improved as a result of the ARI system, and it would also be hard to ignore the selling potential of the ARI system, or the extra dollars it's brought in for promotion.

Then there is the sweet satisfaction of being able to break into motorists' daydreams or favorite cassette tapes and get them to listen when the station wants them to. For radio stations which get a certain smug thrill out of that prospect, Blaupunkt has the ultimate radio manager's fantasy already waiting in the wings. The ARI subcarrier technology has already spawned a radio receiver which will turn itself on even after a listener has turned it off. Or better still, we might soon see a radio that lets the station switch you from another station back to its own. That model should become very popular with stations during ratings months. **BM/E**

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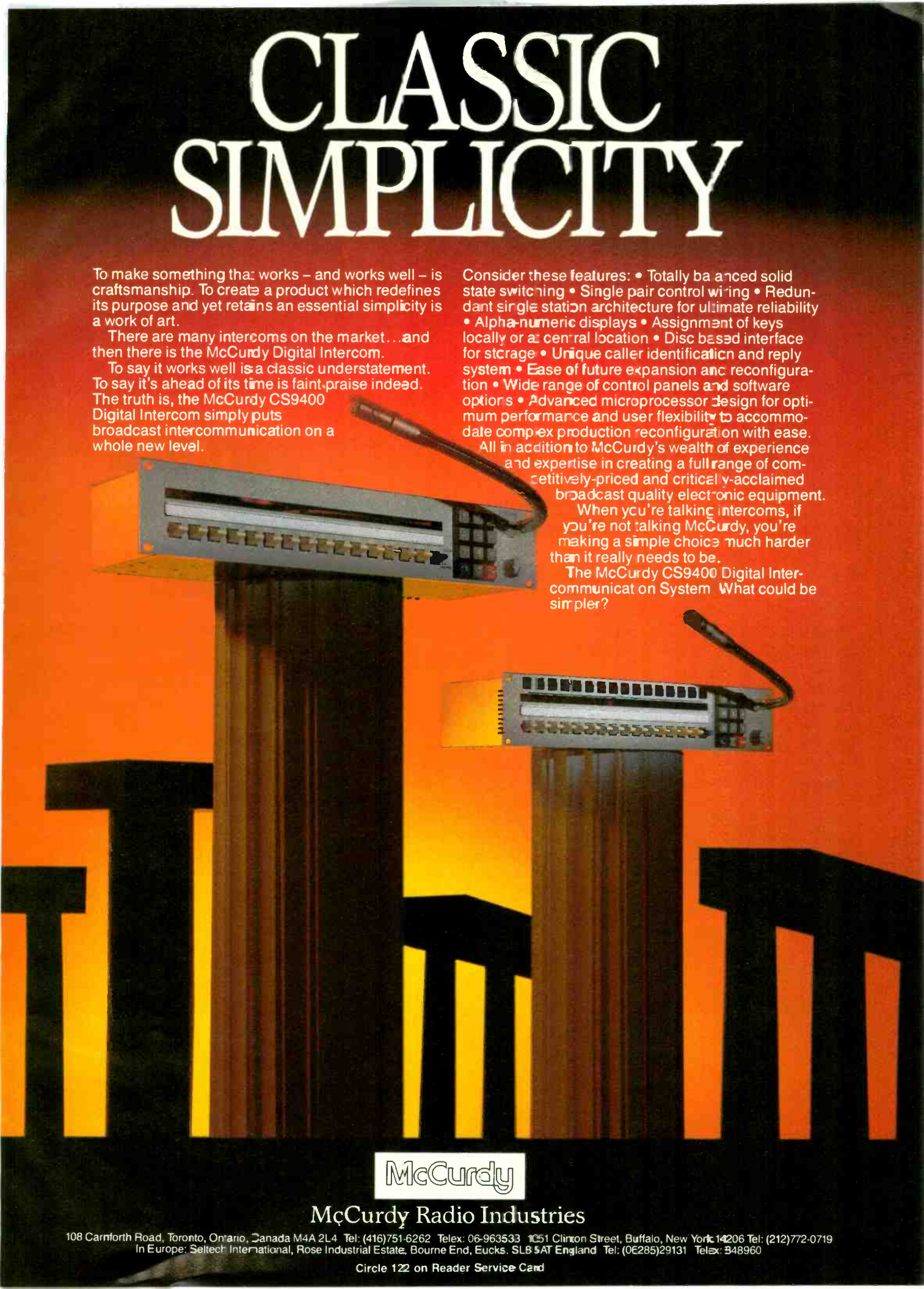

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New Orleans U Automates for Network Quality

By Eva J. Blinder
Senior Editor

While many in station management consider it wise to leave engineering to the engineers, Hal Protter sees it otherwise. Protter, president of UHF independent WNOL-TV, New Orleans, hasn't let his sales background stop him from taking an active and innovative role in the technical side of operations. The result has been a station willing to succeed by doing things a little bit differently.

From the outset, Protter recognized that to be competitive, the station would need two things: a network-quality on-air image and a budget-conscious operation. New Orleans, the thirty-fourth market, already had a full complement of network affiliates, plus a successful, aggressive UHF independent. He therefore selected as his quality standard 35 mm film, used by the networks and the pay cable services to present the movies that would become the backbone of WNOL's programming.

The question then became how to achieve 35 mm image quality within the financial limits of a fledgling independent station in a medium market. Protter's answer combined two new technologies increasingly moving into television: half-inch component video and computer automation. His aim was a mass delivery system that would air all program material and commercials with the aid of a single unskilled operator.

Mass delivery

Because half-inch tape was to be WNOL's primary broadcast medium, Protter felt that currently available MERPS systems produced by Sony and Matsushita didn't offer the capacity the station needed. First of all, WNOL required an automation system that would control approximately 20 tape machines. Secondly, the system had to accommodate 30-minute tapes in order to be economical of media and storage space. Third, the entire system had to be installed and ready for WNOL's March 25, 1984, air date.

3M's introduction of a 30-minute M-format tape almost tipped the balance in favor of M-format; but fast action by Sony coupled with Protter's discovery that consumer L-750 tapes would run 32 minutes in the Betacam format sealed the deal for Sony.

To create the automation system, Sony ventured outside standard broadcast channels to Connolly Systems Ltd. of Odiham, England, a computer company run by one William Connolly (no relation to the Sony president of the same name). The system Connolly designed uses 16 BVW-10 Betacam decks and two Sony BVH-2000 one-inch Type-C VTRs, and has an auxiliary input for live programming. It has a capacity for 200 events, although vice president and director of engineering Dirk Freeman says the station holds it at 150 events to make room for any last-minute changes. Only a single operator is needed to run it, and it has eliminated the need for a master control switcher.

Because the system is entirely time code based, the master control operator can load tapes randomly. Each event is identified using the SMPTE time code user bits. The Connolly PMC-5000 computer is programmed with the desired sequency of events; it then reads the user bit of each tape, searches for the in cue, and commands the machine to park at that point until the correct time.

At this time, an IBM PC is used as the loading mechanism for the Connolly computer, with the master control operator working from the log compiled by the station's BIAS traffic system. In the future, Freeman hopes to achieve a "one-keystroke" system in which the BIAS computer will command the library system to look up the time codes of all scheduled events and offload this information onto a PC disk, allowing the PC in turn to offload the information into the automation system. By saving a step, Freeman hopes to minimize the chances for operator error, always a possibility when time codes have to be typed in by hand.

WNOL transfers material to be broadcast to half-inch tape at these dubbing stations, equipped with Lexicon 1200 audio time compressors and Sony BVW-40 recorders. Rank Cintel ADS-1 telecine is at right.

The mass delivery system has greatly streamlined operations at WNOL and has operated smoothly almost since installation. This, despite a shipping delay that held up delivery so the system arrived "literally the day we went on air," according to Freeman. "The first

month was very rough" because of minor software problems expected with any custom-designed computer systems. "Connolly has been very responsive in continuing to work them out," Freeman adds. "We still have about 12 outstanding software problems, but none affect our on-air operation and some are the results of solutions to earlier problems. The system is now better than 98 percent fully performing."

As a side note, the station swears by its use of consumer tapes in the Betacam automation system. According to Freeman, "The Sony consumer tape literally tested as good as broadcast tape" in all parameters. The major difference in the tape, he says, is that the consumer tape is somewhat less sturdy, making it unsuitable for the rigorous demands of news editing. For program material, which is not edited and runs only a limited number of times, this doesn't create a problem; commercials, on the other hand, are recorded on the 20-minute broadcast-quality tapes. WNOL uses Fuji and 3M cassettes in addition to the Sony. Besides running longer, the consumer tapes cost considerably less.

Master control operator enters information from BIAS traffic log into the Connolly automation computer that controls WNOL-TV's mass delivery system.

Quest for quality

The half-inch mass delivery system is one of the last links in a quality assurance chain that runs throughout WNOL-TV. For program material, that chain begins even before the product is accepted. According to Rod Cartier, WNOL's vice president and director of programming, "Our film director's primary responsibility is the assurance of quality media—locating the absolutely best available print of a product." While 35 mm film is WNOL's preferred medium, the station will accept other media if they meet stringent standards. "We reject probably 40 percent of all 16 mm prints sent here," Cartier estimates. "Sixteen mm is accepted only after thoroughly exhausting all avenues to getting a 35 mm original or a 35 mm to one-inch transfer."

A key element in assuring print quality is the station's RTI film previewer, which is used to scan all film material before acceptance. "I had no idea how effective that device would be," Freeman says. Before dubbing, all films are cleaned with a Lipsner-Smith ultrasonic film cleaner. Next, they go to one of the two dubbing stations for transer

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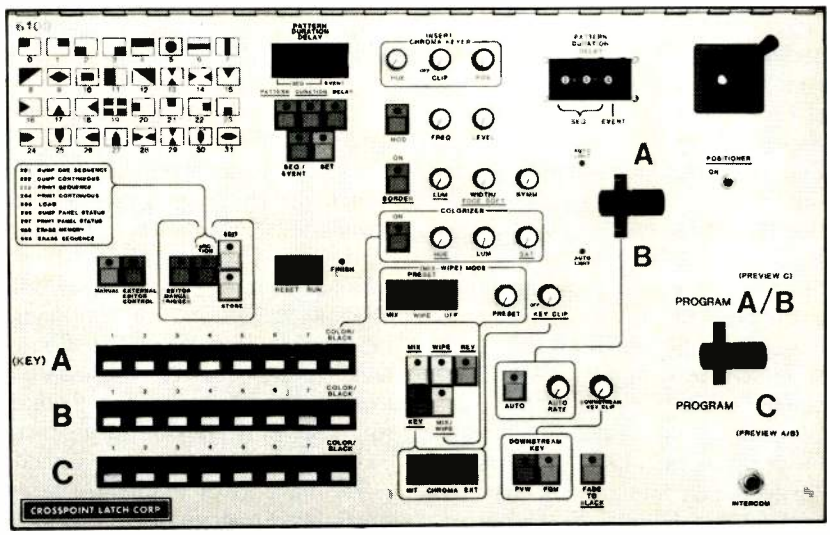

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to half-inch and striping with SMPTE time code. It is at this point that WNOL again sets itself apart from its fellows. Rather than editing films that are too long, the station employs time compression to "shrink" them to the proper size.

A Sony BVX-30 digital noise reducer cleans up WNOL's signal before transmission.

"Airing uncut, unedited movies has immediately set us apart from other stations," Cartier asserts. A beneficial side effect is that the station cuts film handling, and hence costs, by eliminating editing. "We don't edit any movies at all," Cartier continues. "We put ratings advisories at the heads of movies and within them." Airing R-rated films during prime-time has created no audience problems, he asserts.

Time compression takes place during the dubbing process. Each dubbing station has a Sony BVW-40 Betacam recorder and a Lexicon time compressor to adjust audio pitch. "We can compress to about 92 percent of the original with no visible effect," Freeman says. One dub station uses an RCA FR-16 projector for 16 mm film, a product that did poorly in the marketplace but has satisfied WNOL's needs admirably because of its servo control and variable speed capability. According to Freeman, the FR-16 runs an average of 16 hours a day with no problems.

The second dub station has a Rank Cintel ADS-1 CCD telecine, the first one delivered in the U.S. Also capable of variable speed operation, the ADS-1 handles both 35 and 16 mm film. According to Freeman, Rank has cooperated well with WNOL in working out some minor operational problems with the ADS-1, and the station is very pleased with the unit.

For dubbing videotaped material, the station has an additional BVH-2000 plus two BVH-1100s, along with a single Sony U-Matic deck, used only occasionally for material received on ¾-inch. An M-format machine is available for interchange if needed, and the station also has a used quad VTR for commercials and any other material that comes in on two-inch.

Final check

The last stop after the mass delivery system and before the transmitter is a Sony BVX-30 digital noise reduction system, which Freeman says is "a very expensive device but worth every penny." In addition to the DNR, the BVX-30 incorporates a frame synchronizer and an aperture corrector, which compensates for the softening of the picture that results from noise reduction. According to Freeman, the frame synchronizer can lock onto a satellite feed; a downstream keyer below the

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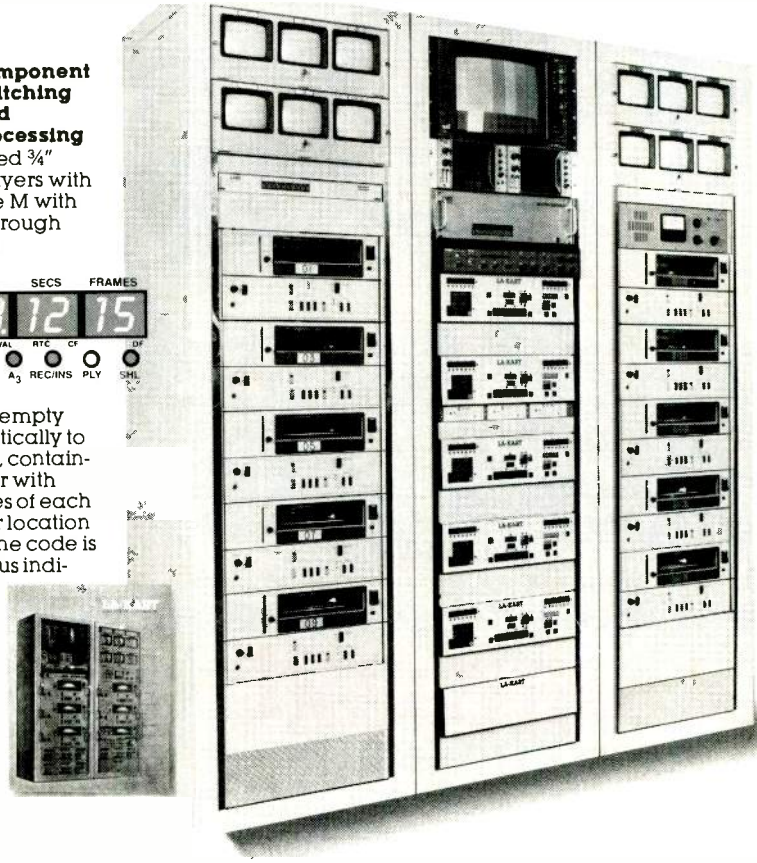

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BVX-30 allows the station to add Chyron titles so that satellite feeds can simply air live without going through the automation system.

"The device gives flexibility and service to the system," Freeman states. "During a direct satellite feed, we can pull the mass delivery system off-line and work on it." In addition to the BVX-30, the station employs a Grass Valley Group proc amp with AGC to keep the video level consistent.

With its video quality so well assured, WNOL is not about to short-change audio. The station is internally stereo-ready, and at press time was awaiting delivery of an Orban stereo generator and an MTS modification for the RCA exciter. The main edit room, used for promos and other in-house production work, has a 32-input ADM audio console with stereo output and four submasters—probably a bit beyond what the station actually needs, but at least it won't grow out of it. The station creates from 85 to 105 pieces of promotional material a month, according to Freeman, with all basic production taking place on half-inch. WNOL uses Sony BVW-3 cameras in their one-piece configuration for outside work and their studio configuration indoors. A Sony BVE-3000 editing system in the main edit room directly controls the Sony tape machines along with a CDL switcher. For additional effects capability, the station uses a Quantel DPE-5000.

Seeking success

It's easy to see that WNOL-TV was designed from the start with success in mind. And success seems on its way for the plucky newcomer.

"We see our competition as not only the guy down the street, but also the networks and the pay services." Cartier asserts, and his stance seems justified in a market with over 50 percent cable penetration. WNOL's market share was "a strong six" in the January ratings book, and Cartier says he's "looking for a seven in February."

"It's working because we have a very, very consistent product and our overhead is manageable, predictable, and low," he explains. The user-friendly operations system has allowed the station to train people just out of high school or college for many tasks. Still, experience counts in many areas.

The engineering staff is small but capable: besides Freeman, who spends most of his time elsewhere, the full-time engineering staff consists of chief engineer Jim Gonsey, plus a transmitter supervisor, studio supervisor, and one other full-time engineering person.

Innovative management, streamlined operations, and devotion to quality set WNOL-TV apart and have resulted in its early success. Cartier expects the experiment to spawn imitators, as most successful experiments do. "I'm convinced that all stations built in the next five years are going to be patterned after this," he asserts. But both he and Freeman credit Protter with creative helmsmanship. "Hal has a strongly analytical mind—if he has an idea, it's worth checking out," says Freeman. "With Hal, no engineering department will ever catch up." **BM/E**

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TV GRAPHICS & SPECIAL EFFECTS PIONEERS

In the early days of digital effects and computer graphics, a few pioneers recognized the enormous potential for the TV industry, and worked to develop practical systems.

By Robert Rivlin, Editor

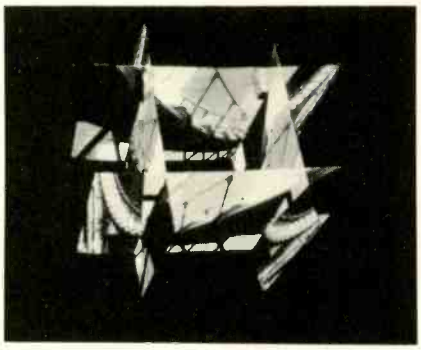
TV graphics, the kind involved in painting illustrations for news, has an acknowledged father. In 1983, Dr. Richard Shoup received an Emmy for his pioneering work with a digital painting system he invented while at the Xerox Palo Alto Advanced Research Center (PARC) in the 1970s. The first computer graphics images ever used as part of a national telecast—titles and effects Shoup created for a PBS series—came out of the Xerox system in 1976. By 1977-78, Shoup was also working with art director Damon Rarey, on the *Over Easy* series being produced at KQED, Los Angeles.

Flag graphic combines camera-entered black and white artwork from the Quanta Video Paint system with titles generated by the Quanta Q8 character generator. The flag artwork was colorized, color spread, shaded, and anti-aliased from the paint system. Fireworks were created freehand from the bit pad using different brushes and airbrush techniques.

Shoup had received his PhD in cellular logic arrays from Carnegie Mellon University in early 1970, and had immediately gone out to California to work for Berkeley Computer Corp. building a timesharing machine. But BCC went out of business, and several key BCC people, including Shoup, went over en masse to PARC.

"They asked us what we wanted to do," recalls Shoup, "so I got together

On the Cover:



The new Infinity three-dimensional priority technique of the Ampex ADO allows the user to pass frames, planes, or objects through each other. Here, multiple-plane intersections have been created by the Infinity package's three-dimensional key. Infinity uses two or more ADO 3000 channels and allows multi-freeze and the building of swirls, trails, and sparkles, with or without delay.

"Hot Day in the City," created by artist Scott Harris on the ColorGraphics Artstar I, shows drops of melted ice cream rolling off the screen. First, a background color was selected and an outline of the cone penciled in. The illusion of ice cream was created with the system's airbrushes. The darker cone color was filled in and then overdrawn using a lighter shade of the same color.

This still from the "Piece by Piece" music video for rock group The Tubes was created by artist Jennifer Grey of San Francisco Production Group using the Computer Graphics Lab Images II system. Grey scanned in photos of band members, adding new clothing, makeup, and hair styles. Various pieces along with mattes were constructed and recombined in post-production using an Ampex ADO.

Artronix Computer Art Services of Seattle, WA, created this image of a B-1 bomber using the MCI/Quantel Paint Box and a Dunn Instruments 635 compact color camera. The airplane is a model approximately two feet long. The airstrip was compose of digitized samples of concrete cut out in a soft edge using the airbrush function in a stencil add mode. The stencil was reversed, the section removed and then placed in the frame.

Created on the Thomson-CSF Vidifont V, a two-dimensional star field was typed in and depth, perspective, and shading added with the Vidifex 3D program. The shape-drawing program made the torch, which was then shaded to add roundness. The flames themselves were hand-drawn and colorized and form an animated series that appears to rotate. Olympic logos were shaded and surrounded with a bordered, shaded background rectangle.

Image created using the Multimode Graphics Module (MGM) option of the Chyron IV graphics system. Taking video input from a monochrome camera, MGM captured the graphic, digitized it, and stored it on a hard disk to allow color control of each pixel.

with two men who had come to Xerox from the University of Utah—Jim Currie and Bob Flegal—and we talked about how we would like to do graphics." (Shoup first became interested in graphics while still at Carnegie Mellon, working on a vectorgraphics system. He had then visited some of the major graphic centers around the country, including Utah, MIT, and Image West in Denver, where he had seen the Scanimate system at work. "I didn't know what practical applications it would have," he notes, "but I remember that people noticed it—they were impressed with the images it created.")

"So I went to the Xerox people with a few ideas, and they said 'Fine, Why don't you take a year to think about it?' Which I thought was a pretty generous offer, and took them up on it." Shoup, Flegal, and Bill Bowman went to work designing Superpaint—the industry's first color graphics program designed to write images directly into a framestore rather than using the buffer as a passive storage memory for images which had been rendered by a 3D graphics processor.

First paint programs

The very first paint programs came into existence in the late 1960s. The earliest program was probably the one written by Joan Miller and run at the Bell Labs in 1969-70 on a three-bit framestore (Ken Knowlton, now of Via Video, had to jury-rig part of the core memory of a mainframe computer for the buffer memory.) Users could draw lines and then alter their colors by turning knobs. More or less simultaneously, the Tricolor Cartograph was built at the University of Illinois, offering eight fixed colors, including black and white.

Then came the 1970s, and both the tremendous increase in memory capacity and the equally important decrease in memory prices. For computer graphics, this meant the development of framestores that could hold an entire screenfull's worth of pixel data, and then read it back out to the raster scan

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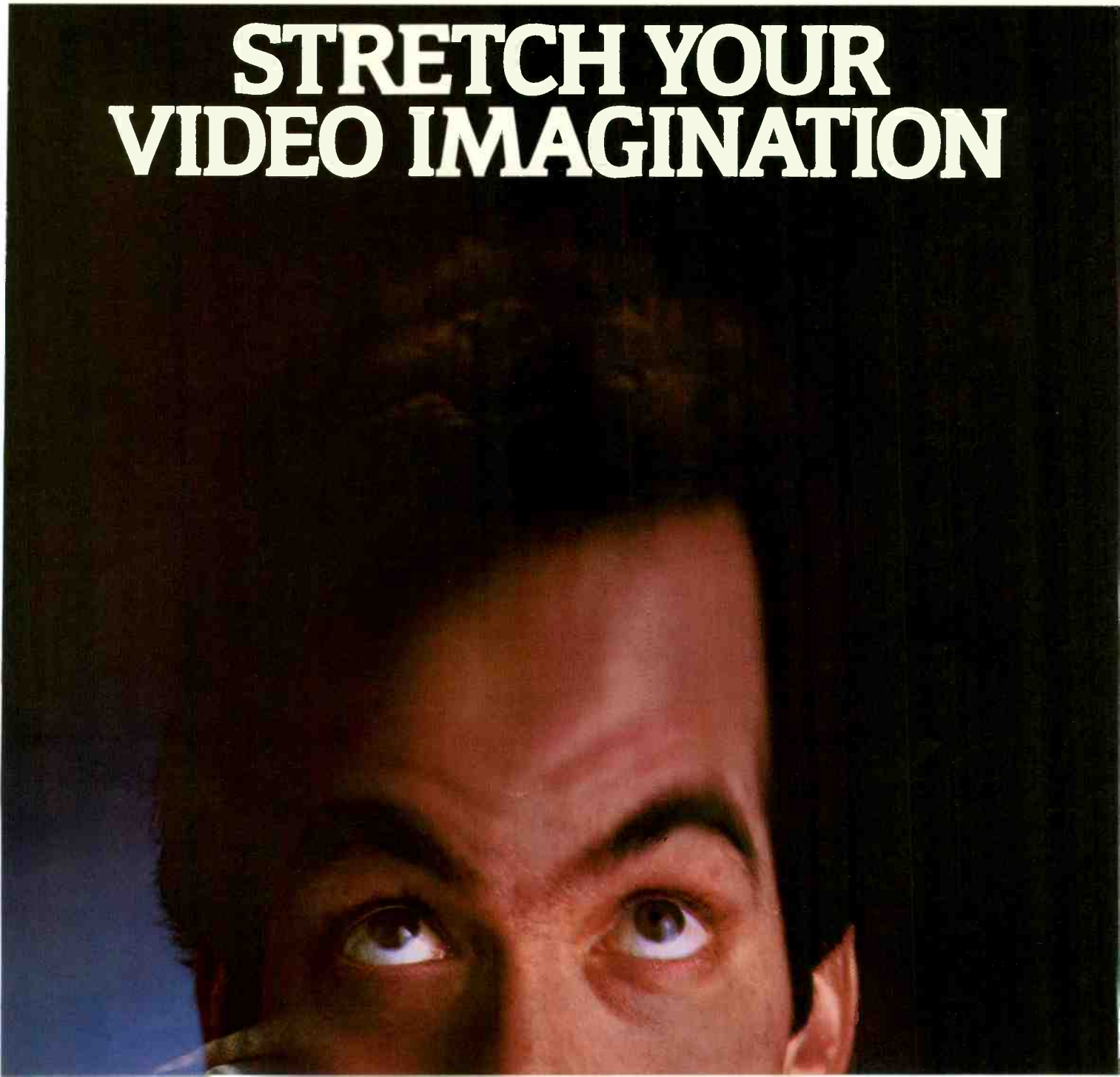

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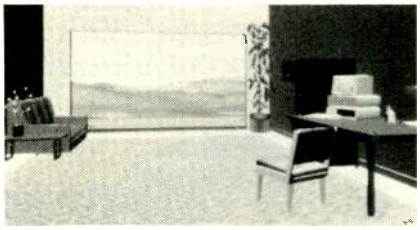
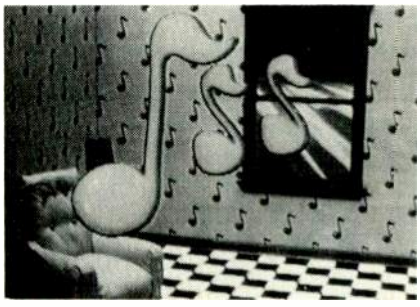


The PictureMaker allows the creation of solid models of virtually any shape—utilizing more than 65,000 colors. Using an IBM PC and Cubicomp's CS/16 16-bit framebuffer, the artist can render wireframe models into realistic three-dimensional solid models with up to 65,536 colors in a single image.

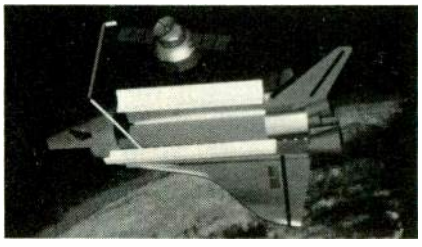
Artist Ron Lang of KRON-TV, San Francisco, created this image on the station's Aurora/100 graphics system. Background artwork was drawn directly on the system using a bit pad. Lang then videoed in a photo of the announcer to use as a reference, then painted over the photo with the Aurora/100.

This posterization effect was produced by PBS station WPTB2, Miami, on an NEC E-Flex DVE system for their program American Journey Live. *To provide transitions from one segment of the show to another, E-Flex was used to freeze and posterize frames from the actual film, and subsequently turn them like a page.*

"Madison Avenue" was created on the new 24-plane Artonics/3M Studio Computer (Artron) paint system, which features automatic anti-aliasing and warm, metallic colorization and highlights. The system includes an Image-Grabber video input camera that lets the artist input clip-art or real objects for enhancement or manipulation.



"Music Room" by Computer Image begins by zooming away from a Scanimate-generated background and through a window. The viewer is followed into a rotating model room by three dancing notes, built on Computer Image's Caesar computer. The acrobatic notes then activate a logo treatment.



Various capabilities of the Bosch FGS-4000 were called upon for this graphic. First, the background was created with the paint program. It was then composited with true 3D objects in the foreground, which were built on the FGS-4000's 3D editor using software allowing surface revolution and merge. The computer-generated space shuttle has some independent moving parts.

CRT's electron guns 30 times a second. Rather than having to rely on three- or four-bit memories, the industry suddenly got its hands on eight-bit memories capable of distinguishing 256 different colors on the screen. By the early 1970s, the industry was beginning to accept an eight-bit framestore—that could be bought for somewhere in the neighborhood of $30,000—as a commonplace example of a graphics system.

Using the newly-developed eight-bit memory, Shoup's Superpaint program allowed the user real-time interaction with the graphics display. The program also allowed the user to pick up an electronic stylus, touch it to the menu screen to select a color and a painting mode, and to then electronically paint with the stylus on the screen. Inside the framestore, an array of pixels representing a brush, their bit value set to display a particular color (the "paint"), was being copied into whichever framestore memory locations the stylus/brush passed over, turning them into the specified color. This simple technique actually spawned a whole branch of modern computer graphics.

The December 1978 Pioneer spacecraft project, for which Shoup received his Emmy, arose from NASA's Ames Research Center, which had heard about Shoup's work at Xerox PARC. Two separate Pioneer spacecraft were sending a total of four probes to the surface of the planet Venus and radioing back all sorts of information. But, there was very little imagery to show the public, except for the crude, low-resolution, slow-scanned data maps that were being sent back by the probes. Shoup's task was to animate the complex mission, and to give the public something it could relate to in place of a photographic record.

Shoup took his Superpaint system from Xerox over to Moffett Field, and set it up near the press center, where a few sequences that had been done in advance were combined with a steady flow of graphics and animation produced on the spot, based on press briefings and information supplied by the scientists. It was instant, live animation, and the medium picked up on it immediately. Shoup's computer graphics paintings were carried by every major network, and were distributed around the world. In September 1979, Shoup repeated his effort for the Pioneer Saturn mission.

Important visitor

Between the time the system first made pictures in 1972-73, and when Shoup left the Xerox center in 1979 to set up Aurora Systems to commercially market the videographics project, Shoup had a very important visitor at Palo Alto: Alvy Ray Smith. ("The first eight-bit framebuffer paint program that I know of, and certainly the first I personally used, is the one written by Dick Shoup [assisted by Bob Flegal and Patrick Baudelaire] at Xerox PARC in 1972-73," wrote Smith later in *Paint*, published in July 1978, which outlined his own very extensive contributions to

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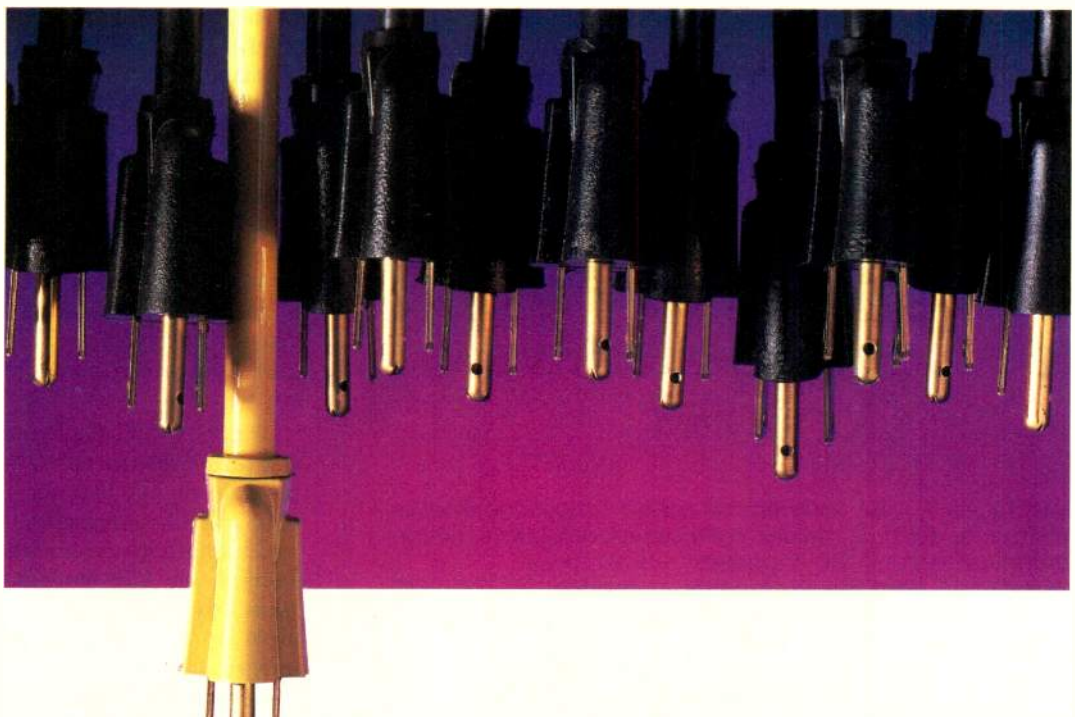

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the state of the electronic art.)

Smith and Shoup had met several years earlier, when neither was yet interested in graphics. Smith, working on his graduate degree at Stanford University in the mathematics of cellular automata (cellular logic arrays), had invited Shoup to speak on a panel he had organized. But it was their 1974 meeting at PARC that proved to be a turning point in Smith's career. Quite simply, he became "incredibly turned on" by the graphics system he saw there. He quickly gave up his teaching job in the mathematics department of New York University, where he had gone after receiving his doctorate from Stanford University, and moved out to Palo Alto to do programming on the Xerox system.

Smith was recruited away from PARC in 1975 to come back to New York and help set up what was to become the country's first major academic center devoted to computer graphics research and development, the New York Institute of Technology (N.Y.I.T.). Smith began working on a digital painting program that would allow animation cells to be colored by using the computer, rather than by the laborious process of hand-coloring each and every frame. Smith spent the next two years writing what became *the* standard for almost every commercial painting program that came onto the market. By the time he left N.Y.I.T. in 1979 to join Ed Catmull at Lucasfilm, his work had become almost legendary.

The system that Smith designed at N.Y.I.T. was sold to the CBS network and Ampex Corp. in 1977 for development into a television graphics system. Installed at Ampex by Smith, and modified there slightly by Ampex engineeers Junaid Sheikh (now at Abekas), Rodney Stock, and Richard Evans, to expand the original eight-bit pixel memory, it was used by Leroy Niemann to do "instant paintings" on the Super Bowl telecast in January 1978. The AVA, which cost approximately $250,000, was subsequently brought out by Ampex as a product in 1980; five units were sold, and it was withdrawn from the market a few years later. Last year, of course, Ampex introduced a new version of AVA—with many more capabilities than the original system, and at a considerably lower price.

The N.Y.I.T. Computer Graphics Lab people also modified Smith's Paint program slightly to make it compatible with a 24-bit framestore. Eventually, once exclusivity rights with Ampex had expired, the Lab brought out Images (now Images II), a highly-sophisticated paint system used throughout the TV industry. Many of Smith's concepts, and even many of his algorithms, had already been published, however, and were freely adapted by other people writing digital painting software.

Quantized television

Meanwhile, unaware of what was going on in the U.S., over in England Richard Taylor was beginning his work on digital special effects. Like so many others in computer graphics, Taylor got his start doing research for the military. Having received his Masters degree from London University in 1967, he went into the EMI research laboratory, working on pattern recognition, infrared scanning, and eventually image processing. It was in the latter area that he had his first brainstorm.

"I realized all of a sudden," he recalls, "that all the image processing that was being done in research centers around the country was on an incredi-

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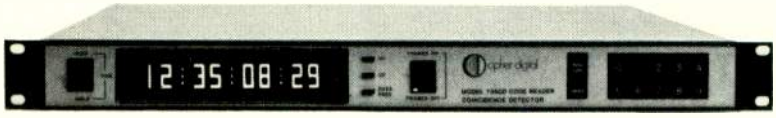

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bly small number of pictures—a total of about a dozen images that had been scanned into the computer. One of the classics showed a man standing and looking through an old box camera on a spindly tripod. Another image showed a woman in a checkered suit. No matter which research center you went to, you would find these same images."

In 1973, Taylor came up with the idea to build a device that would scan live camera images into the graphics processor, converting a video image coming out of a camera into a digital image that could be processed by the computer system. EMI wasn't interested in pursuing the idea, so Taylor left and joined Micro Consultants, taking with him his digital converter.

A short time later, Taylor created Intellect, credited by most as the first real-time graphics image processor. It consisted of a video input from a source such as a camera, a framestore, and a video output. Between when the image was digitally sampled and read into the framestore, and when it was read out of the memory registers again and converted back into video form, it could be manipulated by addressing the framestore memory through two computer ports. Intellect is still in production today, and is used mostly as a research tool by people doing image processing and special-purpose digital applications.

By the time the system actually became available, Taylor had begun to realize exactly how powerful this kind of processing could be in the medium of television itself. One of the key problems facing the industry at that time was trying to keep all the signals coming into a TV station synchronized with each other. Taylor's idea was that a small version of the Intellect could be designed to solve sync problems: the video from the field could be read into the framestore on one side, then read out on the other side using the station's own sync signal as the clock to control the digital readout rate.

MCI/Quantel (for quantized, or digitized, television) came to the NAB in 1975 with its digital frame synchronizer. Julie Barnathan was one of those who saw the product, and thought it was great, buying a dozen or so for installation in his remote production trucks.

In addition to the basic ability of the DFS to synchronize images, it had a little something extra: it could compress the image at the same time it was being synchronized, and then display the compressed picture on any part of the screen. This was extremely simple from the image processing standpoint. You took the digitized data that had been read into the picture store, applied an algorithm that averaged pixel values together depending on how many "overlapped" during the compression, then wrote the new pixel values back onto the screen.

As simple as this technology was, however, it represented a completely radical concept for television at that time. For the first time, the TV picture was freed, rather than being confined to a raster, completely filled from top to bottom. As interested as Barnathan had been over frame synchronizing, he went wild over this digital video effect, and was one of the first to see its ultimate potential. "If you can compress the image, why can't you also expand it? Or do other effects? Or make the picture move?," he said. Barnathan wanted more, and Taylor returned to England to see what could be done.

The trick in digital effects is to be able to take a full raster's worth of digi-

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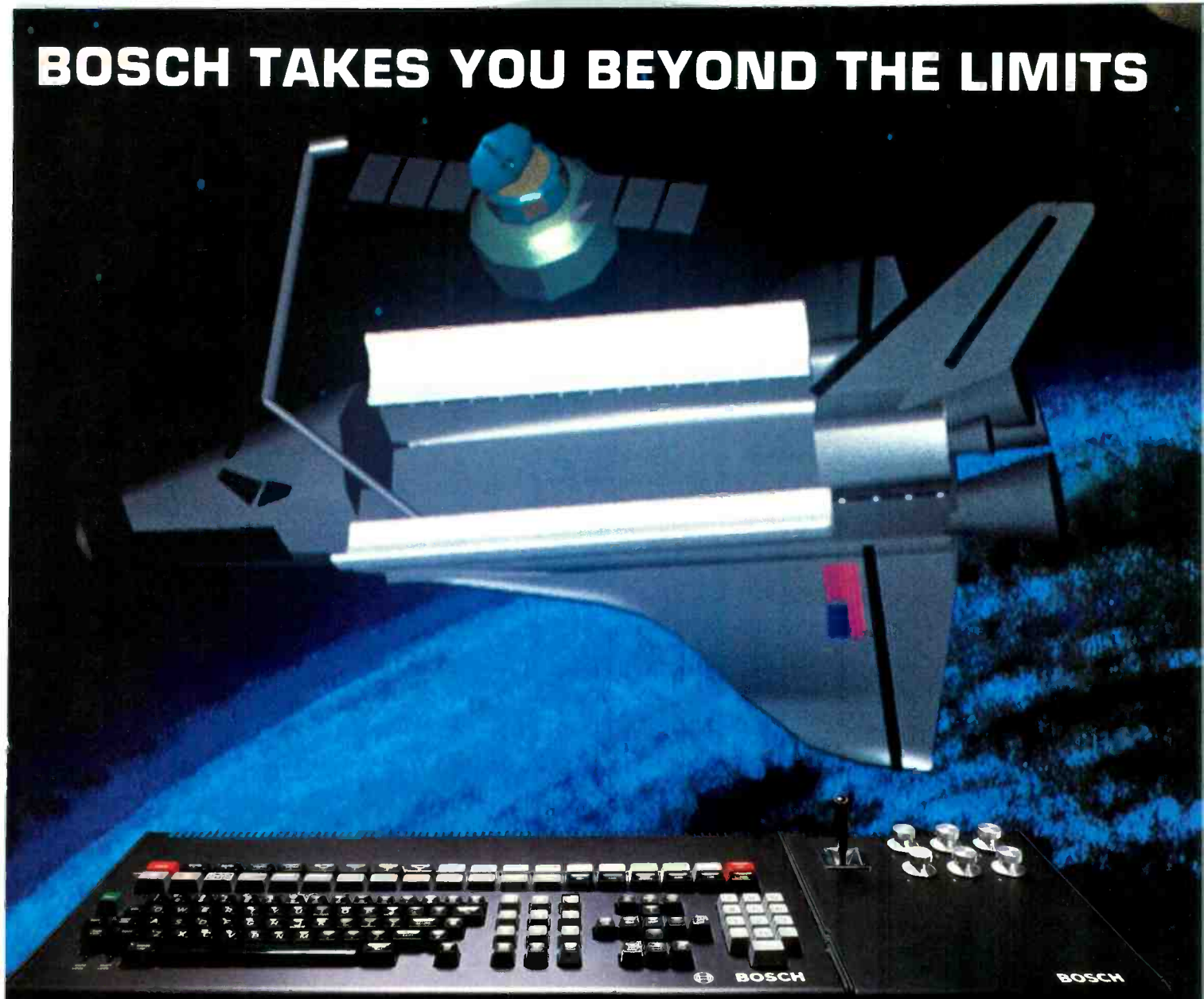

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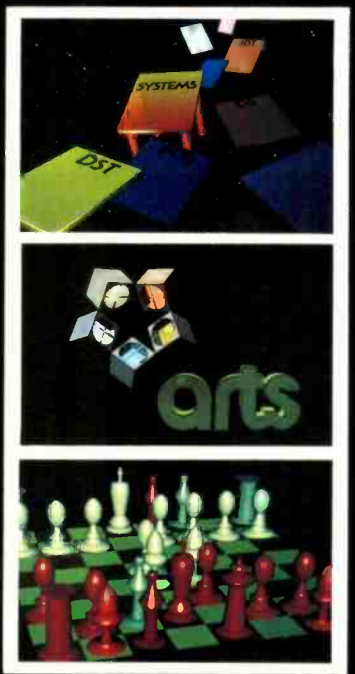

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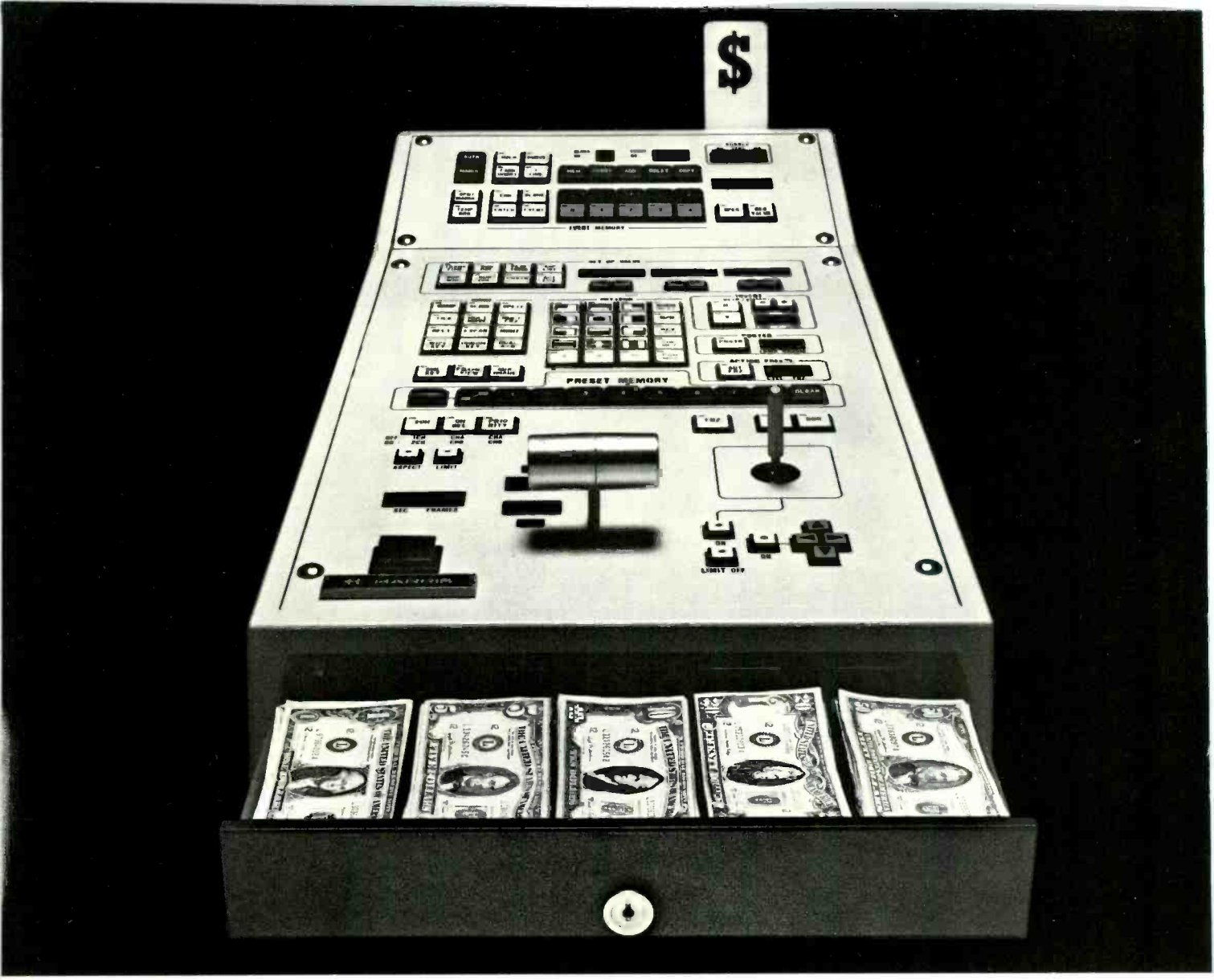

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tized video information, manipulate the signal, rewrite the new pixel values back into the framestore, and then read the new image back out to the video screen—all in real-time.

Some idea of how this is done can be gleaned from analyzing the Grass Valley/NEC Mark II DVE. The most basic algorithms are those that change the size and the position of the image, based on values provided by moving a lever arm on the control panel. The lever values are added to existing values, indicating the picture's current position and size, and a new set of coordinates is derived.

Factored into the equation are various coefficients indicating how the new picture will replace the existing picture—whether it will simply slide over it, or compress it more and more until it disappears ("squeeze" effects). The coefficients are loaded into a lookup table at the same time that the effect pattern is selected.

The basic Mark II algorithm is made up of two equations. The first determines the change in position of the image. Its initial position (P_i) is added to the coefficient of position (C_p) times the lever arm position (L). This value is then added to a value read from the positioner control (P_c)—a joystick that determines where the compressed raster will appear. The whole formula reads as follows:

$$P = P_i + C_pL + P_c$$

The second part of the algorithm determines the size of the full or compressed image relative to its initial size (S_i), plus the coefficient of size (C_s) times the lever arm setting (L).

$$S = S_i + C_sL$$

In a simple effect that would slide the full-sized raster image into view from left to right, there would be two sets of calculations, one for the horizontal axis and one for the vertical. In the horizontal calculation, the lookup table values would show that $P_i = -2048$, the x axis location completely out of the active picture area on the right side of the left side of the screen. The C_p value is 1, since this has been defined as a horizontal move and the lever arm location (L) will have an effect on the image. The size of the raster, S_i, is defined in the table as a full frame, 4095. But the size coefficient, C_s, is 0, since the size will not change with this kind of effect. Thus the horizontal part of the equation looks like this:

$$P = Pi + C_pL + P_c$$
$$2048 = -2048 + 1 \times 0\text{-}2048 + 1$$
$$S = Si + CsL$$
$$4095 = 4095 + 0 \times 4095$$

For the vertical axis, the size remains the same, while C_p is read from the lookup table as 0. All this means is that as the lever arm slides throughout its range, its value is used to change the position of the horizontal axis, while having no effect on the vertical position of the raster, nor on its size. The exact same process could create virtually any effect, including something as complex as having the picture grow from a small dot to a full screen while expanding over the existing image and eventually replacing it.

Digital art

Taylor's work back in the U.K. had produced the DPE-5000, just two short years after the frame synchronizer had been shown. This was actually the first full-scale digital effects device to hit

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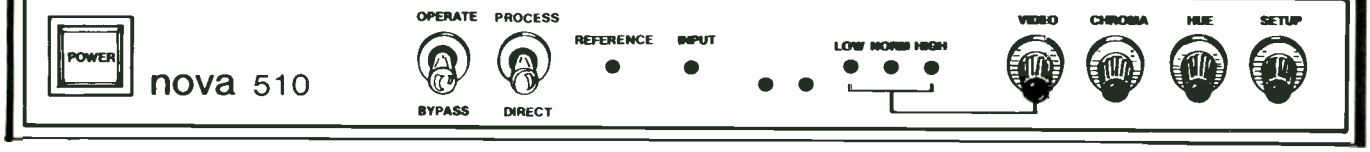

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the market. But Taylor, like others, was already at work on something new, something that could be used to fill the box with illustrations. "One weekend in 1975," he recalls, "one of our engineers wrote a program using Intellect's special graphics programming language, ART, that presented a palette display on the bottom of the screen to allow him to select colors, choose a brush, and then draw images. He did it as an amusement for his children, but we thought it might have some application for broadcasters, so we took it to a trade show in England. They told us to go on working on digital effects—there was really no interest in a device that could do digital art."

Taylor's engineer had, of course, invented a paint program on the Intellect's 512 x 512 pixel framestore in a completely unrecognized but parallel development with what was going on in the U.S. at the time. The project was dropped, however, due to the lack of interest by broadcasters, and the fact that, for Taylor, it seemed simply "too easy a project" if an engineer could do it on his spare time in a weekend. Not until the NAB show of 1980 did it reappear—first as Telegraphics, and then as the "Digital Paint Box." (It was joined at the show by at least half a dozen other companies seeking to get into the TV market, including the first commercial product offering from the N.Y.I.T. Computer Graphics Lab with its Alvy Smith-based Images paint system.)

Rather than simply reprogramming a general-purpose computer and hooking it up to a framebuffer to store and display the images, the Paint Box used special purpose hardware to generate and manipulate the images. Its 68000 microprocessor merely provides control algorithms; it never actually touches the images themselves.

Broadcasting weather graphics

At least one other early development should be recognized—the work done by Peter Black at Xiphias (Xiphias is the Greek word for swordfish, an omen of good fortune to come, invoked when a mariner set out on long sea voyages. Black, who had been a scholar of ancient languages and literatures before getting involved with computer graphics, had thought it an appropriate emblem.)

Black had set up Xiphias in 1980, and had taken a somewhat unwieldy version of the product to a trade association conference of radio and television news directors. Two of his visitors were Van Sauter (at that time general manager of KNXT, Los Angeles, later the head of all CBS news), and Jay Feldman, his news director. Feldman was intrigued by the technology, and decided to put some money into bringing a Xiphias system to the station to do some live weather graphics on air. Weather graphics has never been the same.

The system Black took to KNXT in early 1980 was primitive at best: two Chromatics graphics processors, one installed in the graphics design department with a Summagraphics bit pad (although the system was largely operated through the keyboard), and another in the newsroom for the actual on-air displays. The graphic would be created in the design area, and the floppy disk rushed to the newsroom, where it was loaded into the other system and displayed on its storage refresh tube. A camera pointed at the screen would feed the image to the control room, where it could be mixed with the other signals (at that time, the system was still not capable of a direct video output). It worked well, and KNXT produced what most consider the first local use of live computer graphics on air: a map of the U.S. into which were inserted high and low temperatures based on data coming over the National Weather Service fax machines.

There are, of course, many other early pioneers of graphics and special effects on television. Harvey Dubner's work that led up to the 1980 ABC Olympics presentations cannot be overlooked. Nor can the work of Larry Seehorn at Consolidated Video Systems done on a digital framestore, and later sold to Harris Video Systems and developed even further. What stands out clearly in all this early work, however, is the courageous engineering required to produce digital products for an industry that was barely aware of the meaning of the term digital bitstream, and convincing those in the TV industry that an investment in more sophisticated production equipment would pay off in the end. **BM/E**

Note: Material in this story will be incorporated in Robert Rivlin's forthcoming book *The Algorithmic Image*, scheduled for publication later this year.

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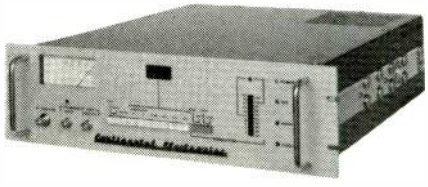

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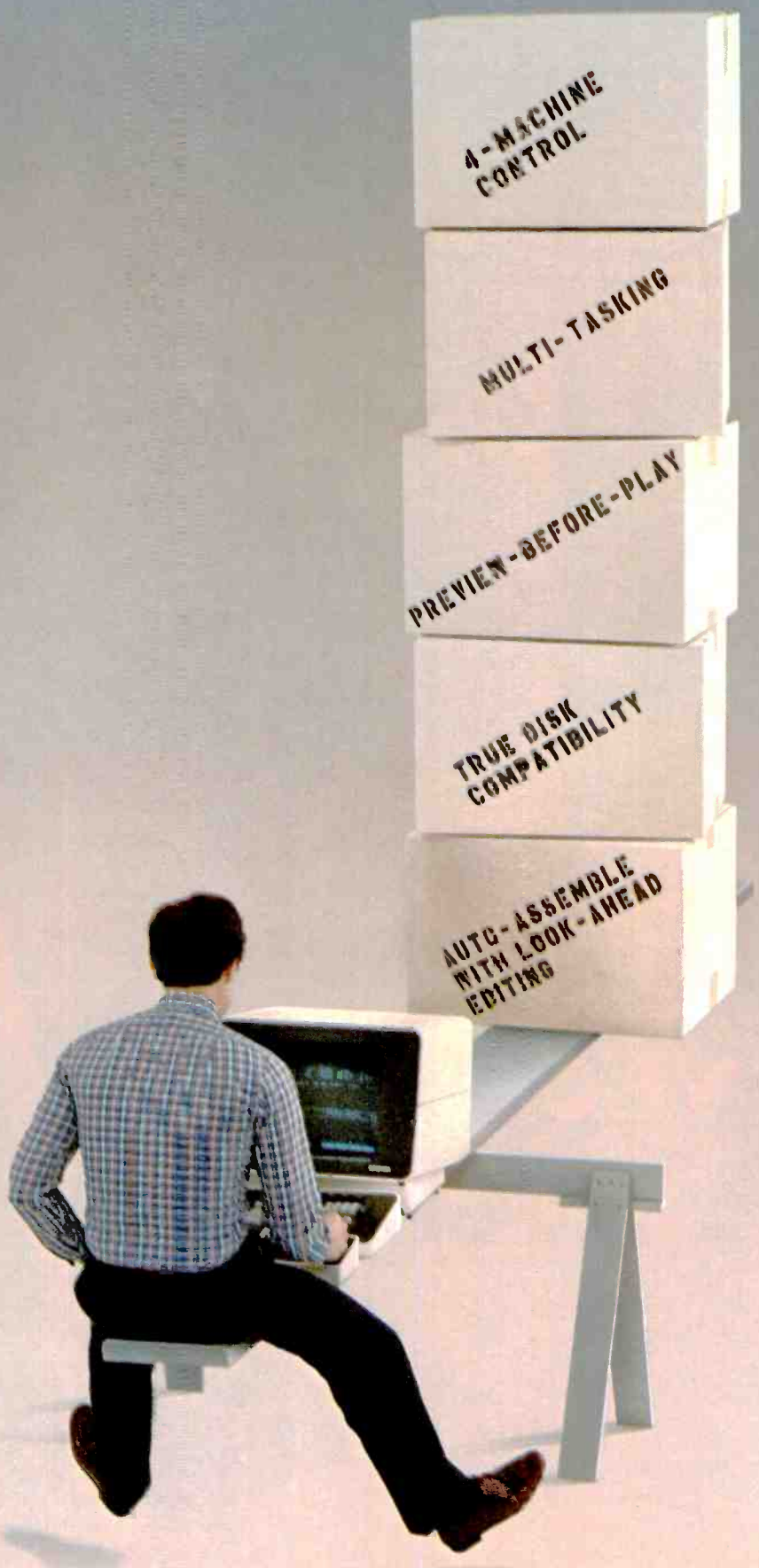

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BROADCAST DESIGNERS ASSOCIATION MEETING MIRRORS INDUSTRY GROWTH

Broadcast designers are taking center stage at the increasing number of stations with sophisticated graphics equipment and budgets to support it.

By Douglas Damoth, Assistant Editor

When Brad Nims, the new president of the Broadcast Designers Association (BDA), describes what he sees as the current situation of more and more art directors at television stations across the country, one new phenomenon stands out. It shows best in the predicament of an art director Nims speaks of who, after finally getting his MCI/Quantel Mirage and learning how to use it, immediately needed another one. The solution to all his troubles—no more art cards, no more cells—had ushered in a new set of problems as well as a new era of station graphics.

The challenge facing designers at many stations today is not how to get into the action, but rather how to adapt to the heavy demands of changing technology, burgeoning workloads, and new management positions.

The upcoming BDA Seminar, to be held June 6-9 in Chicago in conjunction with the Broadcast Promotion and Marketing Executives (formerly BPA) meeting, seems well designed to help with that situation. Scheduled in with the how-to workshops and hands-on demonstrations by computer graphics and special effects systems manufacturers are sessions such as "Emotions In Advertising," which describe what makes an ad special, and management

training lessons for those who now must direct a staff.

Nims points out that attendees will want to learn how to better solve problems ranging up and down the technical spectrum from razor and paint to real-time manipulation, and so seminars have been planned for all levels.

Another requirement that Nims says he has had to take into account is artists' need to learn from doing and seeing rather than reading, to have personal experience with a system in order to conceptualize and design for it. Thus, the electronic graphics manufacturers are offering hands-on lessons for those who want to find out what's new or what more they can do with their tools, and also for those who have yet to break into the electronic design medium.

Getting acquainted

Those beginners have a hard time getting over the "total wall" presented by the unfamiliar world of microprocessor-based equipment, Nims points out, and ones who don't get hands-on experience have a real weakness. Additionally, without knowing just what the equipment could help them do or how it could make life easier and more cost-effective, they are going to have a difficult time trying to convince station management to spring for a major equipment purchase.

One persuasive factor in favor of graphics and effects systems, however, is the difference they can make in a station's on-air look. Nims plans to try and find out how many attendees have paint systems, because he thinks the number is growing rapidly and has become a major force in the industry. Every station wants a slick, polished look, he says, and once a station invests in the necessary equipment for sexier special features and promos, every producer at the station also wants to add that look to their own segments.

For the art director, the result is a net increase in his or her volume of work, even though part of the reason for getting the equipment often is its labor saving efficiency—thus, the art director who soon needed a second Mirage.

From his own experience, Nims, who runs Broadcast Design, a design firm, warns that the volume of work tends to inhibit learning more about equipment capabilities. "On-air is an all-consuming animal," he observes, while most education in the subject is picked up by experimenting, not through formal classes. Manuals are okay for self-explanatory systems, he feels, but with others, one has to learn what they can do. Nims says he taught himself how to use a weather graphics unit at a local production facility by fooling with it during off hours.

Once people saw what he could do with it, however, a market grew up around those skills. Some eagerly see this as an opportunity, and others are finding it thrust upon them, but in either case, art directing has become broadcasting's latest glamour group. The BDA president states that both pay and competition for art directing jobs are going up.

"Art directors are being included in management meetings," he says, "and many are now reporting to the station or general manager, not the production or promotion manager." Art departments are becoming separate entities, whose time and resources have an important effect on stations' overall philosophy, as reflected in news, sports, local productions, commercials, and print ads. In response to this, the BDA has scheduled three or four workshops at the Chicago convention to teach only management skills.

Designers are also becoming more involved in production, Nims says, sometimes actually in direction sessions in the control room. He finds that this usually happens in stations willing to spend more money on their shows, and who manage to think ahead. Even at the last minute, however, art directors have been known—no examples cited—to save producers who walk in with their projects in shambles.

The art/engineering interface

Another area in which art directors are picking up new skills is in their new but vital relationship with the engineering department. Since graphics equipment has become another source for the station's video signal, Nims reports he has learned to put together a friendly, working relationship with engineering, although he finds that the level of good will can vary quite a bit from station to station. Not all engineers are eager for extra equipment to hook in, he says, but they do want it done right.

Engineers, in fact, are one of the constituencies the BDA is talking to in an effort to solidify the emerging broadcast design profession. Character generator operators are often in the engineering (rather than art) department, but as their equipment has become more powerful, they've picked up design skills, a reverse of the process in which people formally trained in art have had to learn about electronics. Other potential members are art directors, formerly in print, who've recently come into the broadcast community, and designers at production facilities. BDA's membership has climbed to about 600, including a growing international contingent, and the association plans to double this number in the next two years.

The main jurisdiction of the art department remains art, obviously, but electronics is changing how the job gets done. As BDA president Nims says, to produce what would have taken days by hand on an animation stand, he can now "book an editing suite, create cells with the weather graphics system, throw them on the CMX editor for 15 minutes, and have a nice package" in hours.

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What to look for at the BPME/BDA Seminar

This year's convention will hold many events of interest to broadcast designers. A symposium by George Lois, an independent station workshop, "The Art of Charlex," and the annual design competition are among the listings you'll find in the schedule below, which includes only items relevant to the BDA. Those who have not already received registration materials through *Scan Lines*, the BDA journal, can do so by calling Russ Smith at (415) 788-2324.

Thursday, June 6

8:30 Registration Desk Open
9:00 BDA Introductory & Members Meetings
Exhibit Area Open
10:30 Welcome Sessions for Radio, Cable Members
Welcome Session/ Presentation for International Members
Art Directors' Management Workshop with J. Finkleman
11:30 New Members Welcome/ Reception
12:00 Seminar Opening Luncheon, speaker TBA, and a special look at TV promotion since the late 40s.
1:45 Exhibit Area Opens
2:30 Major Session—Emotions in Advertising: A major presentation on how that very special "magic moment" in an ad or campaign can send chills up the spine that gets attention and interest and motivates action.
3:45 Workshops:
Low Budget and Hi-Bang Media Spots: Case studies and suggestions for radio and television stations interested in producing a quality image at a reasonable cost. With Janice Dexter, WSET-TV; Al Dunning, WTMJ-TV; William Aydelott, Aydelott Assoc.
Computer Generated Sales Promotion Made Easy: Explores how computers can be a great help in creating effective sales promotion/ ratings information. Apple owners can bring disc and get free graphics program. With Mike Hudak, ABC O&O Research Dir.; Art Cabot, WJBF-TV; Art Greenwald, KDKA-TV
Advanced Computer Graphics Design: Features the amazing output of some of the nation's top computer animation houses. Presented by Paul Sidlo, Cranston/Csuri
4:30 Exhibit Area Open
7:30 Hospitality Suites Open
Associate Parties, Receptions
Chicago Night Out

Friday, June 7

7:30 Registration Desk Open
7:45 Breakfast with Speaker
9:15 Workshop:
Illustration Symposium: With R.O. Blechman
10:30 Exhibit Area Open
10:45 Workshops:
Designing Storyboards for 3D Animation: The problems and techniques of storyboarding for 3D electronic graphic animation. With Ron Tsang, Cranston/Csuri
Management Certificate Workshop (Motivation).
How to Speak Like a Winner
12:30 Buffet Lunch in Exhibit Area
2:15 Major Session—Creativity: Phil Dusenberry, Exec. VP, BBD&O
3:30 Workshops:
Designing for the Independent Station: Solutions for challenges faced by independent stations with more on-air time for graphics than affiliates. Moderator: Jim Minton, KCPQ-TV
The Artist's Eye, A Courtroom Sketch: Demonstrations of conceptual artists' effectiveness in depicting hard and soft news in ways which heighten viewer interest and awareness.
5:30 BDA Awards Reception
6:30 BDA Awards Program
8:30 Hospitality Suites
Associate Member Parties, Activities
Management Certificate Workshop (Negotiation)

Saturday, June 8

7:45 Buffet Breakfast & Idea Swap
9:30 Exhibit Area Featured
9:35 Special Activities &Work-shops:
Design Symposium—George Lois on George Lois: From "Is this any way to run an airline?" to "Taste Sherraton," this art director has been someone to watch and listen to.
Management Certificate Workshop (Communication)
11:00 News Set Design: News sets, from conception to completion.
12:30 BDA Luncheon with Major Industry Guest Speaker, TBA
2:15 Major Session—In-House Animation, Revisited: Last year Billy Pittard was a newcomer who knocked the seminar on its ear with a superb instructive session on this topic. Now he is a BDA board member and design director for KCBS-TV, and is still working in-house magic with existing station tools.
3:30 Management Workshop (Decision Making)
BDA Auction: No longer limited to art. A chance to bid on fine items for low prices, with the proceeds benefitting the BDA scholarship fund.
4:30 Exhibit Area Closes
8:30 Hospitality Suites

Sunday, June 9

8:00 Continental Breakfast
Design Workshop—Production Tools: Takes the audience through the paces with equipment such as DVE-Mark II, ADO, Mirage, Dubner, Scanimate, System 4, MCI/Quantel's Paintbox, and Bosch. With Alita Kins.
9:45 Major Session—The Art of Charlex: The state of the art video graphics techniques explained by the people who gave us such exciting work as the *SNL* open and Grammy-winning Cars video. With Charlie Levi.
11:15 Major Session—TV Advertising, State of the Art: Steve Sohmer, Sr. VP, NBC-TV, once again shows his highly personal selection of commercials and promos that have been trend-setters in the past year. An annual seminar highlight.
12:00 Seminar Closing Luncheon with Major Industry Speaker, TBA
1:45 BDA New Board Meeting

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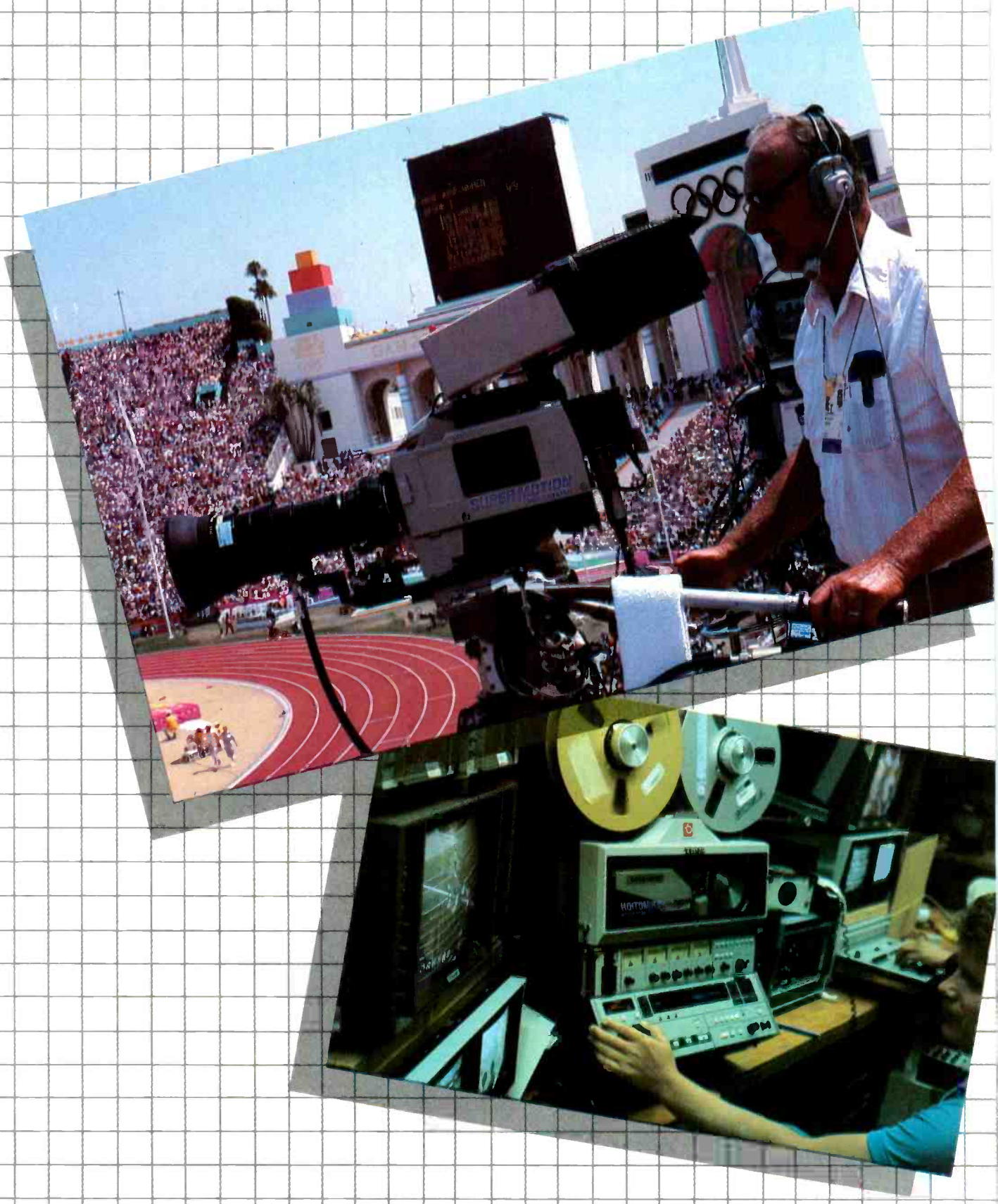

SUPERMOTION

Super Motion

By Julius Barnathan, President, ABC BO & E

A new slow-mo technology developed by ABC and Sony Corp. eliminates motion blur and strobing—and sports instant replays never looked so good.

Olympic gold medalists Mary Lou Retton, Evelyn Ashford, Greg Louganis, and Edwin Moses have more than award-winning accomplishments in common. Their athletic prowess, which captivated millions of television viewers around the world, was viewed in great detail for the first time due to a unique slow motion system ABC Television developed with Sony Broadcast Products Company. Called the Super Motion System by Sony, at ABC we dubbed it "Super Slow Mo." Certainly, it was one of the most visible improvements in sports television coverage since the instant replay was introduced in monochrome at the Tokyo Olympics two decades ago.

The Super Motion System brought a new dimension to sports coverage through its high-resolution slow motion imaging techniques. By standards converting a high-speed camera operating at 90 frames-per-second to the normal 30 frames-per-second that NTSC broadcasting requires, image "exposure" time was reduced by one-third. In the short five meter second races, when gold medalist contenders moved at right angles to the camera, they travelled at a rate of 16.6 cm (6.5 inches) per TV frame. Super Motion cut this down to 5.5 cm (2.1 inches), and although cameras are not always panned precisely, the apparent motion blur was even further reduced.

The picture content with "Super Slow Mo" was dramatic. Intimate glimpses of the athletes' muscular strain, facial expressions, even the markings on their clothing were clearly visible in high resolution slow motion playback. The smooth fluidity of complex motions, such as was seen in the gymnastic "Super Slow Mo" replays,

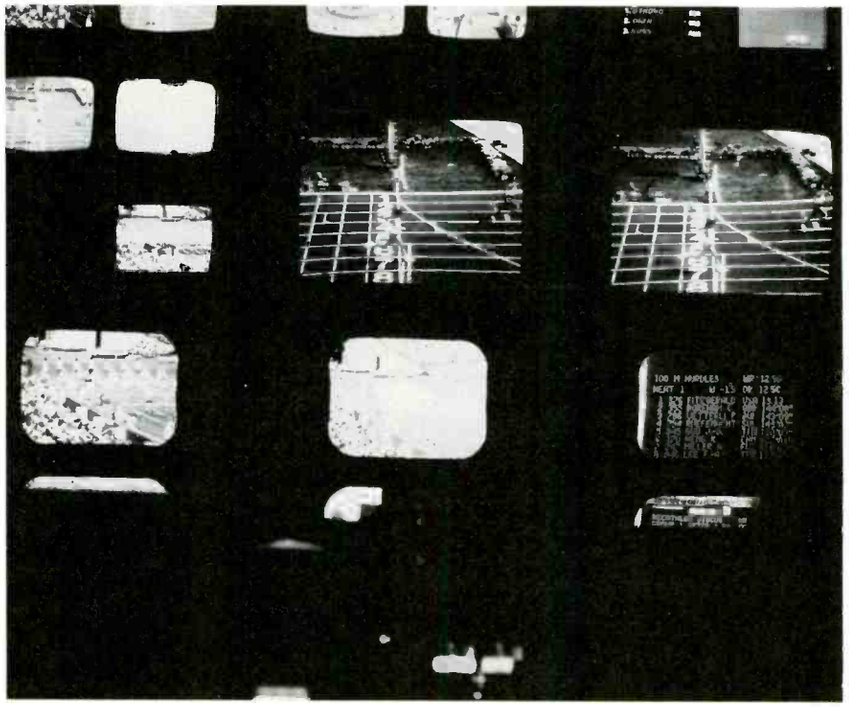
provided a new view of this sport.

In our coverage, ABC deployed three Super Motion Systems to cover those events in which the athletes' movements, captured by conventional slow motion systems, would have appeared significantly inferior to the pictures that could be obtained with the Super Motion System.

Center stage

At the track and field events at the Los Angeles Coliseum, the Super Motion color camera took center stage in the press section overlooking the principal finish line. This camera was also used to pan adjacent areas where the high jump, pole vault, and other field events took place. The teleproduction van, a few hundred yards away in the middle of the ABC television compound, contained the camera control, CCU, and Super Motion VTR. An ABC crew fed both its live and recorded Super Motion images to a nearby van, where they were either switched live or edited in with other color camera feeds. Another Super Motion camera was mounted on a motorized, elevated stand between the diving and swimming pools at the USC Swim Stadium, while a third camera took command of the UCLA Pauley Pavilion to cover the gymnastics events.

The Super Motion System was integrated with conventional color cameras and videotape recorders to log the athletic competition for instant replay, daily wrap-up, and archival footage. The TV director could select normal playback from a regular Type-C one-inch helical recorder or the enhanced images from the Super Motion VTR.



Track and field truck's monitor wall displays feeds from various cameras.

The Super Motion color camera operates by 180 fields, interlaced 2:1 to produce a 90 Hz frame rate of 525 television lines. The horizontal line rate extrapolated from its 15,734.26 NTSC base becomes 47,202.78, requiring a more sophisticated ⅔-inch Plumbicon camera pickup tube with electrostatic

Super Motion—How it Works

Sony Broadcast's proprietary research for the development of its high-definition video system significantly advanced slow motion imaging techniques in the design of its Super Motion System, which emulates high-speed photography with the added benefit of immediacy.

By scanning 90 frames-per-second, the Super Motion BVP-3000 camera captures three times the number of TV images of conventional NTSC. Because of this accelerated scanning rate, the bandwidths of the RGB signals are three times that of normal camera bandwidths. Electrostatic deflection technology from Sony-developed high-definition pickup tubes enables the required high scanning rates to be practically implemented.

After 525 television lines have been scanned at the 90 Hz frame rate, the signals are converted to the standard 30 Hz rate utilizing a digital CCU. In the standards conversion process, each high-speed image is expanded to produce three separate pictures at the normal 60 Hz field rate.

To exploit the enhanced motion attributes of the BVP-3000 camera output, the Super Motion System has a specially-modified BVH-2700 VTR with a BVT-2700 time base corrector. Tapes may be played back on conventional one-inch Type-C VTRs.

Three record heads

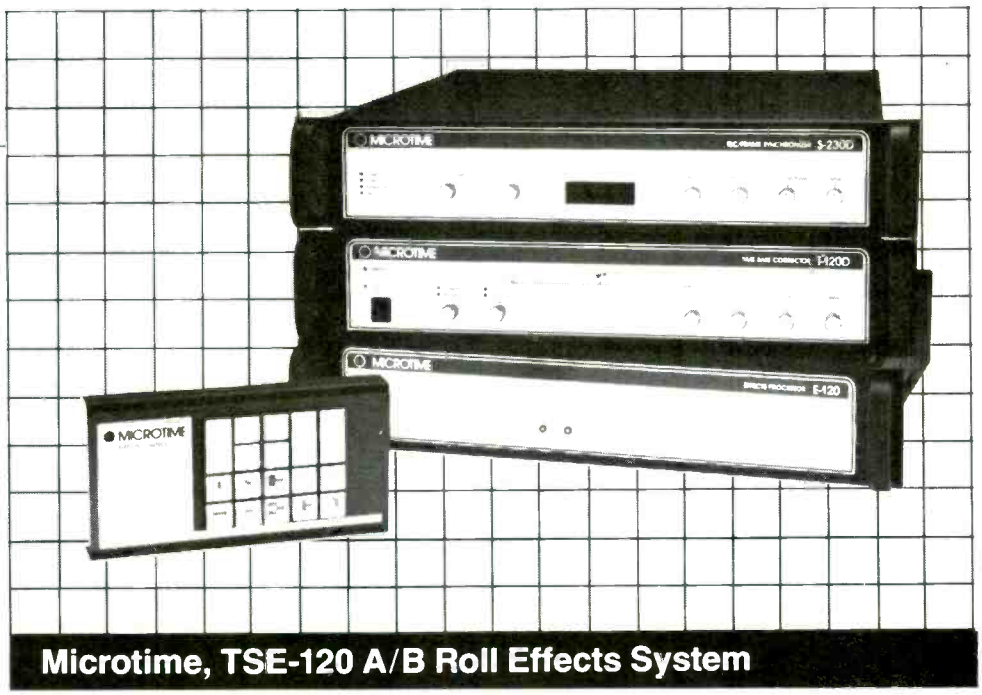
The three recording heads of the BVH-2700 VTR are spaced 120 degrees apart. In the RECORD mode, the tape moves at three times normal Type-C linear speed. The combination of the drum and its three record heads, each of which is separately fed by one of the three encoded signals, produces a perfect Type-C recording on tape. Every original high-speed field shot by the BVP-3000 camera is recorded as a normal speed NTSC field on the BVH-2700 VTR. Digital technology maintains absolute matching of luminance and chrominance levels in the reconstructed NTSC signals for flawless playback. By playback at a standard Type-C rate (24.4 cm/s), the original picture is reproduced at one-third speed of motion with all the detailed resolution of a conventional 525/70 camera/recorder combination running at normal speed.

Fiberoptic link

A fiberoptic link is used to transmit the wideband 20 MHz RGB component signals from a remote camera head to the digital CCU converter. In addition to providing three encoded pictures to the BVH-2700 VTR, the CCU also provides a standard NTSC picture for monitoring on-air transmission.

Sony anticipates delivery of the Super Motion System to begin in the second quarter of this year.

In effects, you can't beat the system. At Camera Mart.



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The S-230D provides the ultimate in input signal flexibility and freeze effects capability. It allows inputs such as in-house camera signals, external ENG, microwave, satellite, network and remote studio feeds as well as VTR formats with or *without* capstan servos.

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deflection instead of the usual magnetic coil deflection.

We're told that development of these electrostatic pickup tubes resulted when Sony researched its high-definition 1125-line, 60-field video system with a much higher horizontal line rate of 33,750 Hz. The higher scan rate also means the primary RGB images from the Super Motion camera have a much wider bandwidth of approximately 20 MHz per channel. To get these RGB component signals back to the CCU for processing, we used a fiberoptic link between the camera head and the teleproduction van. The signals were then coverted from very high-speed analog to digital (A/D) converters.

NTSC output

The CCU also provides a standard NTSC output so that we can use the Super Motion camera as a conventional color camera when necessary. Its main function, however, is to provide specially processed signals in a built-in standards converter, which time expands each of the Super Motion high-speed frames (90 Hz) into a normal TV frame (30 Hz) that can be recorded on a

Inside the control truck at the track and field venue, engineers check the Super Motion image.

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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 ¼-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.

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For more information on Shure's FP31 Mixer, call or write Shure Brothers Inc., 222 Hartrey Ave., Evanston, IL 60204, (312) 866-2553.

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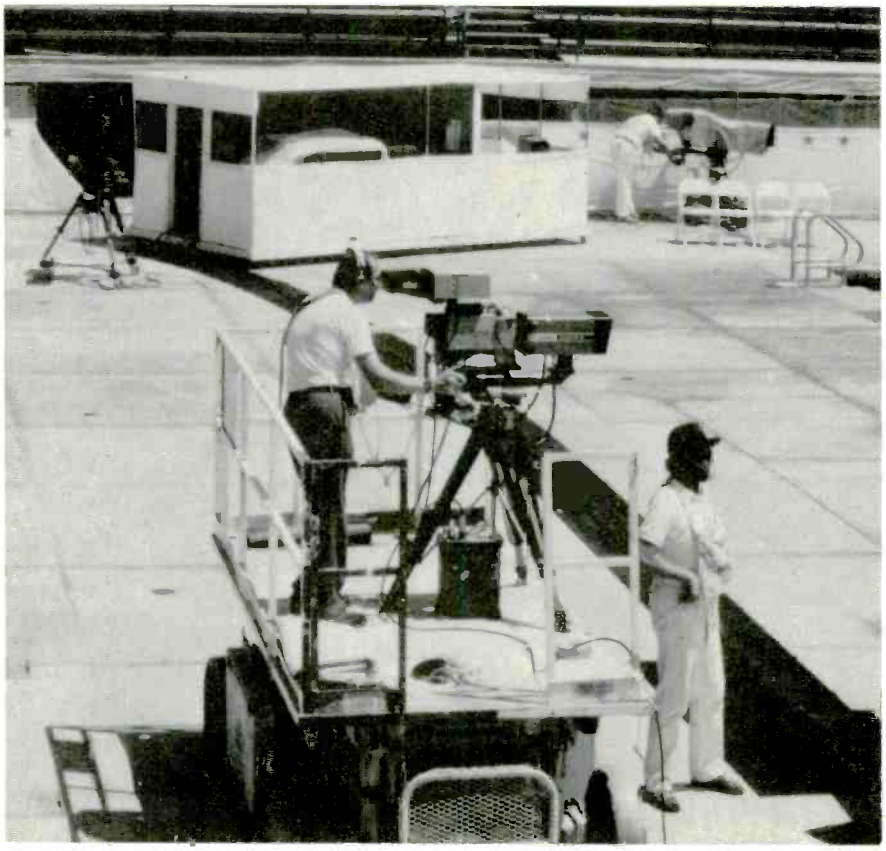
modified one-inch Type-C helical VTR. In its design, Sony maintained the Type-C format making the Super Motion tape compatible with normal one-inch VTRs. On its own specially modified one-inch VTR or any Type-C format one-inch VTR, the playback speeds can be varied from normal to freeze frame.

Unlike other techniques for current slow motion and still frame imaging involving mechanical shuttering with CCD cameras, Super Motion shoots and records more image information using a wider bandwidth, emulating high-speed photography. Playing back Super Motion tape also reduces motion judder, or the staccato effect when normal Type-C machines are used at nonstandard tape speeds.

As a technology for sporting events coverage, Super Motion will continue to capture the world of sports, as was evidenced by viewer reaction to our use of the system to cover Monday Night Football and the major league baseball playoffs.

It is very much a part of ABC's commitment to bring the best possible sports programming and coverage into viewers' homes. **BM/E**



Super Motion camera focuses on Olympic swimming contestants. (All photos by Joe Roizen.)

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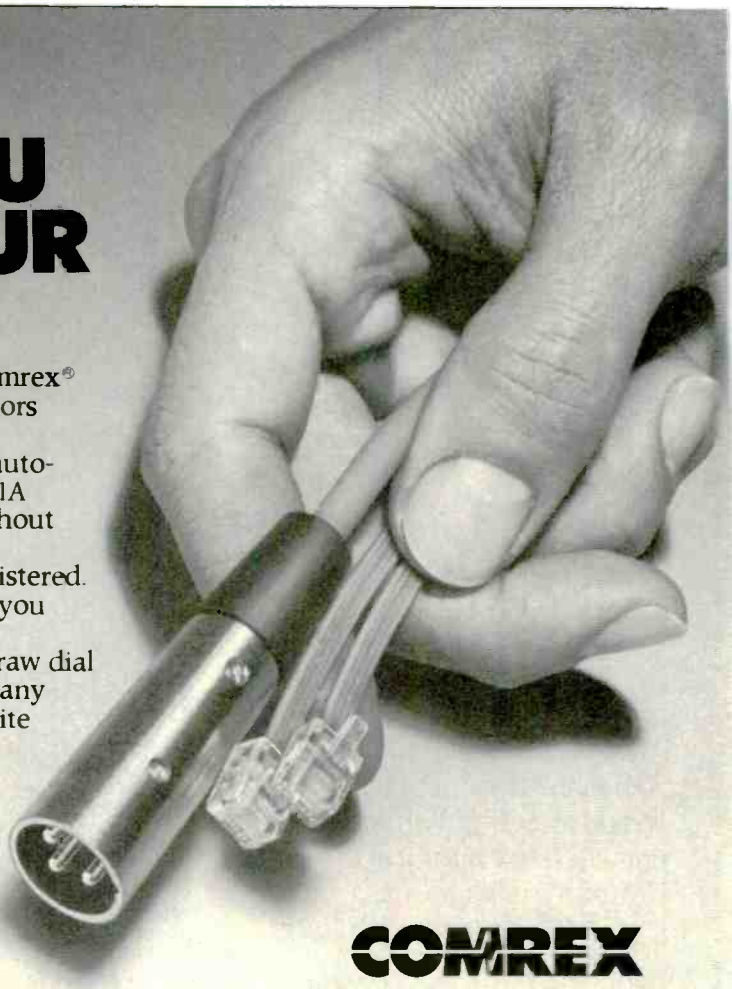

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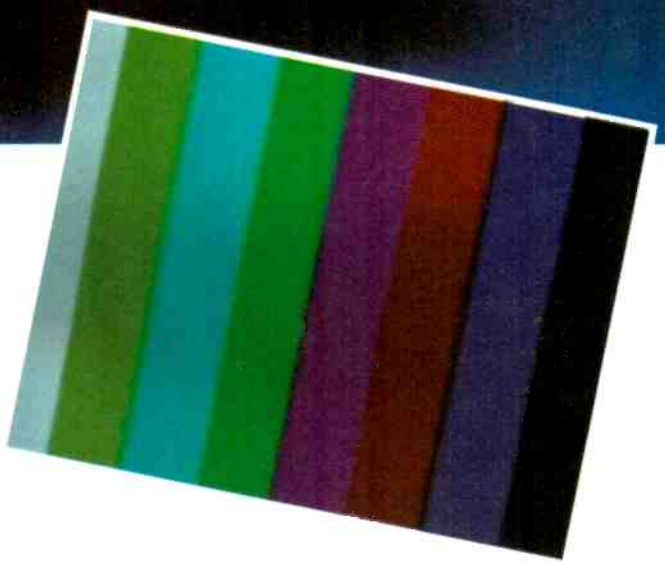

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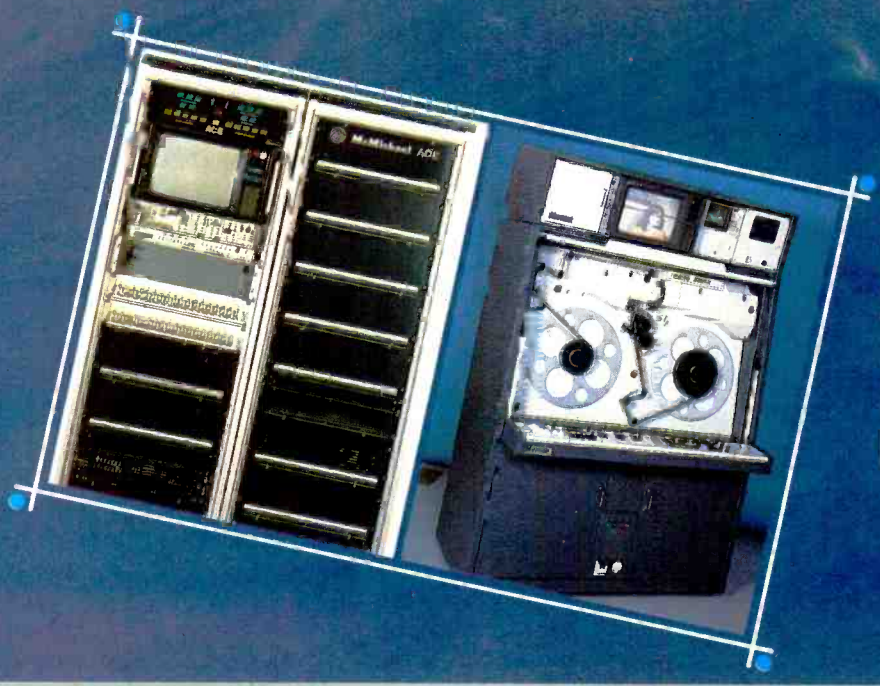

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The State of cable

An Industry Catches Its Breath

After phenomenal growth, followed by a shakeout, Cable TV seems about to level off with a nice healthy chunk of the viewing and advertising pie.

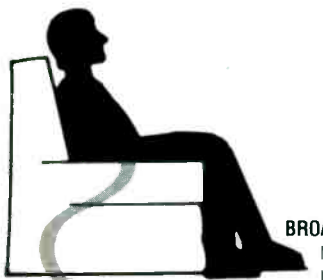
By Judith Gross, Associate Editor

About three years ago, the very word "cable" was magic to the ears of investors and new venture capitalists seeking groundfloor entry into what came to be known as the "gold rush" days. Franchises sprung up at a furious pace, promises were made to gain new franchise approval, and major media players scrambled to come up with the most innovative new programming services.

But the very next year saw what has come to be a major shakeout in cable. A fledgling industry can seldom sustain such rapid expansion, and cable was no exception. New networks were abandoned amidst financial catastrophes, franchises were forced to scale back many of their overly-ambitious plans, and plans to wire the major cities continued to be placed on hold. Reports of mergers and bankruptcies crystallized into one message: cable was washed up.

Cable systems regrouping

But instead of creeping quietly off to die, cable systems have regrouped and tightened their belts, programmers have started to view a narrower focus as an advantage that can be promoted for



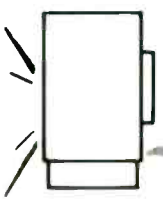
Weekly Viewing in Cable* Households (Total Day)

SOURCE: A C. NIELSEN PREPARED BY CABLETELEVISION ADVERTISING BUREAU

	1984		1983		
BROADCAST SERVICES	Hrs:Mins	Share	Hrs:Mins	Share	% Change in Viewing
Network Affiliates	31:42	58	31:42	59	0
Independents	6:54	13	7:27	14	−7.4
Public	1:29	3	1:34	3	−5.3
Total Usage	54:52		53:30		+2.6
CABLE SERVICES					
Satellite Networks	7:17	13	5:41	11	+28.2
Superstations	4:50	9	4:13	8	+17.0
Total Ad-Supported Cable	12:07	22	9:54	19	+22.4
Pay Services	5:56	11	6:04	11	− 2.2

Minutes do not sum to Total Usage due to Multi-Set Households

*Number of Cable TV households = 37.3 Million, as of 11/84



advertising dollars, and the cable industry seems more determined than ever to grab a bigger share of both audience and advertising dollars away from what *Ad Week* recently referred to as AOT—"All Other Television." What has helped many of them survive hard times is the fact that subscribers and ad dollars have continued to rise over the past few years despite gloomy forecasts, although they have fallen short of the optimistic predictions of just a few years ago.

Although cable passes 85 percent of the homes in this country, only slightly more than half that number subscribe to basic cable service. Even less subscribe to the pay or premium services—HBO, Cinemax and the like, that are often lumped together under the same heading as cable. According to the national Cable Television Association, subscribers can expect to pay an average of $8.92 per month for basic cable services, and an average of $10.25 additional for pay or premium services. But these vary widely from region to region, as do the kinds of programming offered.

The rate of growth of subscribers seems to be leveling off. The 1980 to 1982 period saw the greatest subscriber growth, from 21.7 percent in 1980 to 34 percent just two years later. Numbers have grown steadily since then to the 44.6 percent of all TV households subscribing today. Ed Dooley, the NCTA's director of public affairs, says estimates are that subscription will increase at the rate of about 250,000 households per month. He says conservative projections put cable penetration at the 50 percent mark next year, reaching 58 to 60 percent by the end of the decade.

"Some people will conclude that cable is flattening out, but you're talking about large numbers of households," Dooley explains, admitting that the quick expansion of the last few years had to level off at some point.

"That kind of a build rate could not be sustained, it was becoming very costly," says Dooley.

Cable demographics

Bob Alter, president of the Cable Advertising Bureau, points out that it isn't just the numbers that cable is boasting, but the particular types of demographics of those numbers, which he calls "quality," meaning the kind most advertisers would like to target.

But one blatant fact still remains—in the 10 largest television markets, 65 percent of the homes are still without cable television. This is painfully obvious in places such as the outer boroughs of New York City, the center of Chicago, and parts of Los Angeles. Viewers in these three cities, as well as in Chicago, Detroit, St. Louis, Philadelphia, Cleveland, Washington, DC, and Sacramento may grow tired of waiting for cable and turn instead to backyard satellites, MDS services such as one about to be launched by Microband Corp., or increasingly, to VCR and tape rentals.

According to the NCTA, the major problems with getting large urban areas wired for cable have been "excessive demands of the governing bodies." Dooley cites requirements for dual-channel or two-way systems carrying as many as 120 channels as prerequisites for awarding franchises. Some cable companies have won waivers of such requirements in favor of smaller systems, however.

Politics is another problem in many urban areas. Not unexpectedly, cable systems are all too eager to build in the more affluent areas, and argue about how that particular pie should be divided, while nobody wants to wire the poorer areas. City governments usually then enter the picture to decide on a fair course of action, which then causes more delays.

Plain vanilla cable

The change from the ambitious channel systems originally proposed to the more feasible, single-channel systems which are now being agreed upon in some areas eager to get going with cable came about largely as a matter of survival for cable systems. It has been getting too costly to build new systems with the speed and enthusiasm demonstrated in the 1960s and 70s. Most industry insiders are willing to concede that grandiose promises made in the attempt to win choice franchises were, if not totally out of the ballpark, at least somewhat overly optimistic. If the codeword for the previous decade was "gold rush," for the rest of this decade

Trouble in Paradise

There have been many attempts to fend off failure in recent cable history, some of them successful, some not. Here are the most notable examples:

- Sept. 13, 1982: CBS Cable, a cultural service run by CBS Inc., shut down after $30 million in losses.
- March 31, 1983: The Entertainment Channel, a quality entertainment cable service backed by RCA, closed with $34 million in losses after nine months of operation.
- June 14, 1983: Cable Health Network, a Viacom-owned 24-hour health channel, merged with Hearst/ABC's Daytime, a four-hour-per-day channel of self-help and family programming (updated on Feb. 1, 1984).
- Sept. 7, 1983: Showtime and The Movie Channel, the second and fourth largest subscription TV networks, merged.
- Oct. 27, 1983: The Satellite News Channel, a 24-hour headline service co-owned by ABC and Westinghouse, was shut down after a little more than a year in operation and an estimated loss of more than $40 million after a buyout by Ted Turner.
- Jan. 17, 1984: The QUBE Network from Warner Amex, a nightly satellite feed of interactive programming to six QUBE systems, is suspended because of costs and lack of subscriber interest.
- Feb. 1, 1984: After much delay, Cable Health Network and Daytime become the Lifetime Cable Network.
- Feb. 1, 1984: Spotlight, an around-the-clock pay cable movie service managed by Time Mirror Satellite programming, folded after less than three years. Its assets were acquired by Showtime/The Movie Channel.
- Feb. 1, 1984: The defunct Entertainment Channel joins ARTS to become an advertiser-supported service known as the Arts and Entertainment Network.
- April 30, 1984: Texaco agrees to sell ESPN to ABC after the network has lost $100 million.
- June 30, 1984: ABC abandons Telefirst, an experiment in home recording of an entertainment network.
- Nov. 30, 1984: Ted Turner sells his three-month-old Cable Music Channel to MTV after failing to reach projected number of subscribers.

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it would appear to be "scaleback."

Interactive cable, local origination, and public access have not fared well in deciding what goes and what stays in a new franchise's plans. In Milwaukee, Warner Amex has been allowed to defer its interactive QUBE service and its second cable was allowed to abandon plans to build a local origination studio. Cox Cable has been allowed to delay Indax, its interactive service in Tucson, Omaha and Vancouver, Washington, and defer construction of a third public access studio in Vancouver as well.

One other problem plaguing systems is the wiring of homes in rural or mountainous areas, or low population communities. Physically passing a cable from home to home in areas with few households or potential subscribers, often drives the cost of building the system beyond the point where it will pay for itself. Cox has been permitted to charge a higher franchise fee to wire areas in Vancouver, and Warner Amex won approval to defer construction in low-density population areas of Dallas, where cable subscription lags behind the rest of the country at about 25 percent of all TV homes.

The necessity of scaling down original cable construction plans has given rise to a new concept in cable: plain vanilla cable. Denver-based Tele-Communications Inc., the largest MSO in the country, has led the way by going into areas where other systems have failed with more elaborate ideas, and by turning things around with basic cable service. TCI bought Warner Amex's teetering flagship system in Pittsburgh last year and instantly negotiated scaleback proposals.

Still, other cable system owners have been forced to sell off franchises to eliminate debt. Such was the case last autumn, when Storer Communications sold 23 cable systems in 11 different transactions to offset two years of losses.

Programming scalebacks

The cable industry's belt-tightening has not been limited to construction of new systems. Nowhere has the fateful verdict about what does and doesn't work been more evident than in the kinds of programming services offered. Channels which missed the mark have gone under or merged with others in an attempt to stay alive, while others have succeeded with a narrow focus.

Unlike broadcasters aiming for a wide audience to attract advertisers, subscriber-supported cable has the luxury of being able to target specific audiences. There are channels aimed at ethnic minorities with Black Entertainment Television (BET) and the Spanish International Network (SIN); at children with The Learning Channel and Nickelodeon; at religious groups with the Christian Broadcasting Network (CBN); at sports fans with ESPN; and at the deaf with The Silent Network.

Using its popularity with the 12 to 24 year-old crowd as a springboard, MTV also sponsors Nickelodeon, a children's network.

The ability to win target audiences, at first seen as a weakness, is now viewed as a strength by those charged with the task of selling cable to advertisers.

"It is definitely an advantage to be able to target advertising, especially for advertisers looking for a specific audience," says the CAB's Alter.

What it may do is provide a more efficient use of ad dollars for a national advertiser. To reach the largest number of viewers, target broadcast audiences. To reach teens, especially female teens, buy MTV.

Still, there have been a multitude of failures, and a few spectacular successes, on the road to finding out exactly what kinds of programming American viewers will dig into their pockets and pay extra money to see.

The very mention of CBS Cable provokes knowing chuckles. CBS got into the cable game early, with the hopes of providing a network of cultural programming. Viewers proved they weren't exactly culturally starved as they largely ignored the venture, and CBS shut it down in 1982 after $30 million in losses. RCA's Entertainment Channel topped that the next year with a $34 million loss after only nine months in operation. It, too, was aiming at "quality" entertainment, and it, too, was shut down.

Programmers which have tried to go head-to-head in competition with successful services sometimes find out the hard way that the viewing public only wants so much of a good thing. The Satellite Network Channel, a 24-hour headline news service co-owned by ABC and Westinghouse, which was similar to Cable News Network's Headline News, was shut down after one year and a $40 million loss after it was bought by CNN owner Ted Turner. And just last September, Turner tried to launch an MTV-type music video station called the Cable Music Channel, which was aiming for 2.5 million subscribers. At the end of November, Turner sold CMC to MTV for $1.5 million after only signing up about 400,000 homes.

The Regulatory Scene

The Cable Communications Policy Act, passed by Congress last October, will take effect in December of 1986. It was reached only after much compromise between the NCTA and the nation's municipalities.

In effect, it will deregulate the cable industry, and cities will no longer be able to determine subscriber rates. At that time, rates for basic service are expected to rise somewhat, while rates for pay and premium, which have been used to subsidize basic services, are expected to decrease.

In other regulatory areas, must-carry rules are expected to be renewed. Must-carry states that cable systems must carry all stations in their vicinity. But must-carry of multichannel, or stereo and bilingual audio of broadcast stations by cable systems has been put on hold by the FCC, which would like to see the marketplace battle it out without the need for regulation. The NCTA's Dooley points out that most systems would probably carry stereo sound anyway, since services like MTV are already stereo and Turner's WTBS recently switched to multichannel, but the question remains up in the air.

Other regulatory issues that Dooley says will continue to get attention involve first amendment considerations, especially on matters of obscenity. Dooley says that due to a recent case in the U.S. Circuit Court of Appeals involving a cable system in Miami, cable systems seem well on their way to winning the argument that they are more like newspapers in first amendment cases than like TV stations.

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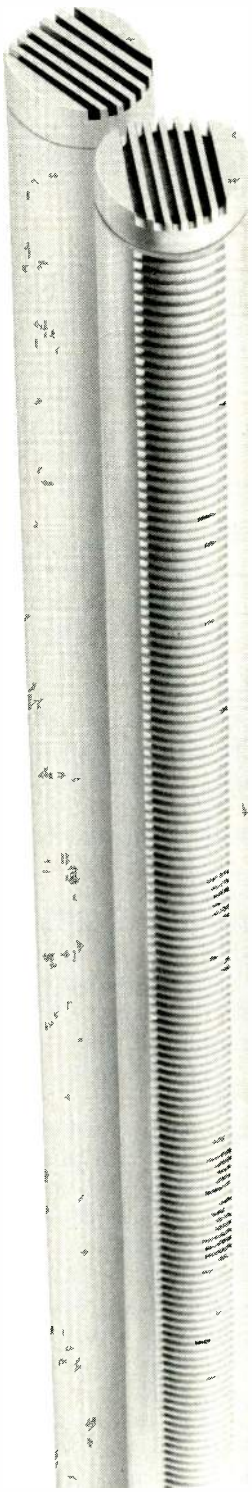

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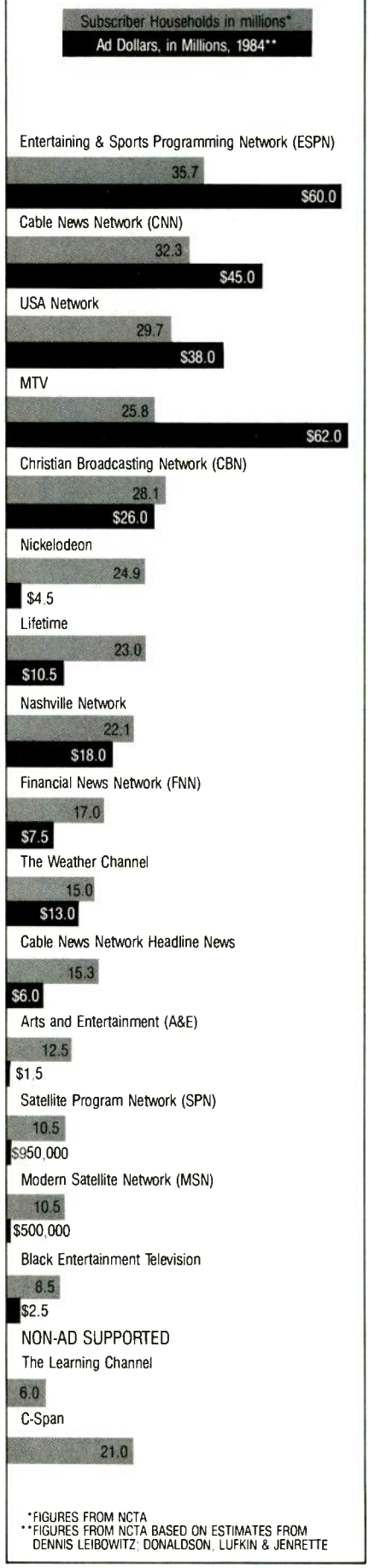

*FIGURES FROM NCTA
**FIGURES FROM NCTA BASED ON ESTIMATES FROM DENNIS LEIBOWITZ, DONALDSON, LUFKIN & JENRETTE

Other programmers who were on shaky ground have found a way to breathe new life into their offerings by merging and altering their programming. Two success stories in this area are the current Arts and Entertainment Channel and the Lifetime Cable Network, both enjoying modest success in ad revenues and subscribers after successful mergers and revamped programming (see chart).

The biggest success stories in cable are in sports and music. ESPN still boasts the most subscribers and the biggest advertising revenues, although it has yet to turn a profit and was sold to ABC last year after suffering $100 million in losses.

MTV is not only the classic success story, but has become profitable enough to venture into other areas with the newly-formed VH1, a music channel for softer tastes, and with Nickelodeon for children. MTV reported a phenomenal 120 percent increase in revenue for 1984, and has sparked many similar types of programming on broadcast TV.

The surprise success story of the year, though, is the Disney Channel, which reached its break-even point in January, two years after it began, and some four months ahead of schedule.

On the down side of things, pay TV sales are sagging. HBO has reported dollar losses, and subscriber losses are bleakly being predicted for HBO and its other movie service, Cinemax, as well as Showtime/The Movie Channel, which would mark the first time such losses have occurred. Industry insiders put the blame for this on the price of such premium services, which may be more than the average subscriber is willing to pay. Two other problems pay channels have are the increasing use of VCRs and tape rentals, which are very inexpensive, and a shortage of programming. A cartoon strip in a national paper recently summed up the programming problem with one character's lament that the movie *Porky's* was being shown on 19 out of 20 cable/pay channels on the same evening. Upon turning to the remaining channel, the offering was *Porky's II*.

The five percent solution

While the successful cable programmers might like to think they can court advertising dollars by offering narrow audiences or "quality" demographics, right now it seems that the networks with the largest number of subscribers garner the most ad revenues (see chart).

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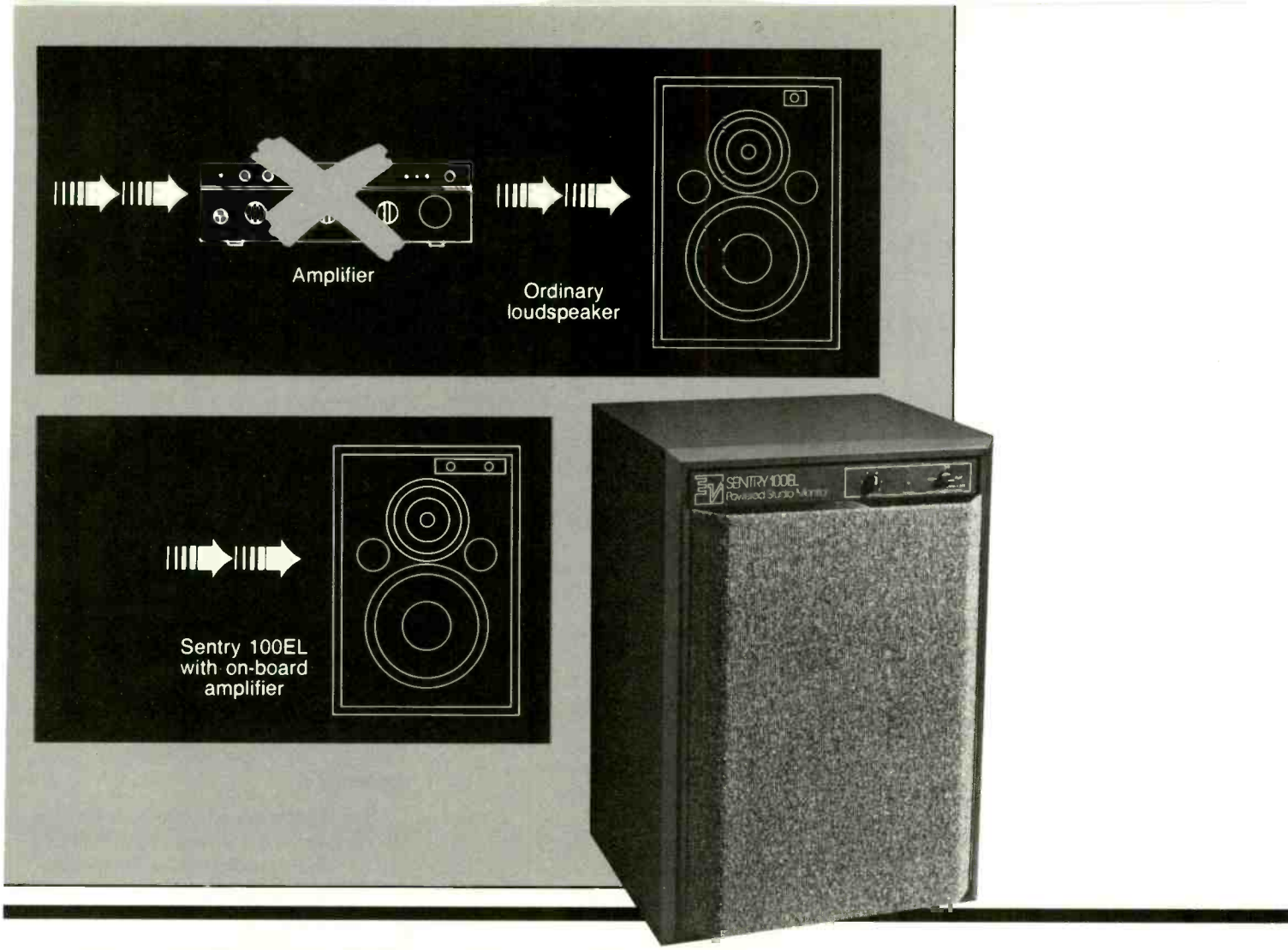

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MTV's phenomenal success has coined the term "VJs" for video jocks and made instant celebrities of Alan Hunter, Martha Quinn, Mark Goodman, Nina Blackwood and J.J. Jackson.

Overall, cable ad revenues seem to be about three percent of the dollars spent on TV in total, and cable executives and ad managers have been trying to persuade major advertisers to give cable about two percent more in a plan known as "the five percent solution."

It's difficult to get a handle on exactly how many dollars are being spent on cable, because those with the most to gain are being optimistic in their figures, and those with the most to lose are being conservative.

The TV Advertising Bureau's president, Roger Rice, reports that cable's take for 1984 was $276.7 million out of a total TV expenditure of $8.766 billion.

The CAB's Alter, however, puts 1984 revenues at a total of $542 million for '84, up over $363 million from the year before. He believes that this year, cable's fortunes will climb even higher, to $750 million, a prediction backed up by Group W Broadcasting and Cable chairman Daniel Ritchie. Ritchie, however, is not limiting his optimism to 1985. He has also said he believes cable advertising will hit one billion dollars in 1986.

The NCTA reports that Dennis Leibowitz, vice president of Donaldson, Lufkin and Jenrette, believes that cable will become the fastest growing advertising medium in the country, experiencing an average annual growth of 30 percent through 1990.

While any slipping away of ad dollars to cable is not something broadcasters are likely to smile at, the TvB's Rice believes cable's growth is a small threat to other TV advertising.

"They're growing along with us," he explains, "they aren't taking our dollars away."

The amazing vanishing audience

Even if growing ad dollars for cable is something that does not worry broadcasters, there is a slippage problem that

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*National Academy of Television Arts and Sciences award for technical achievement, 1983-1984.

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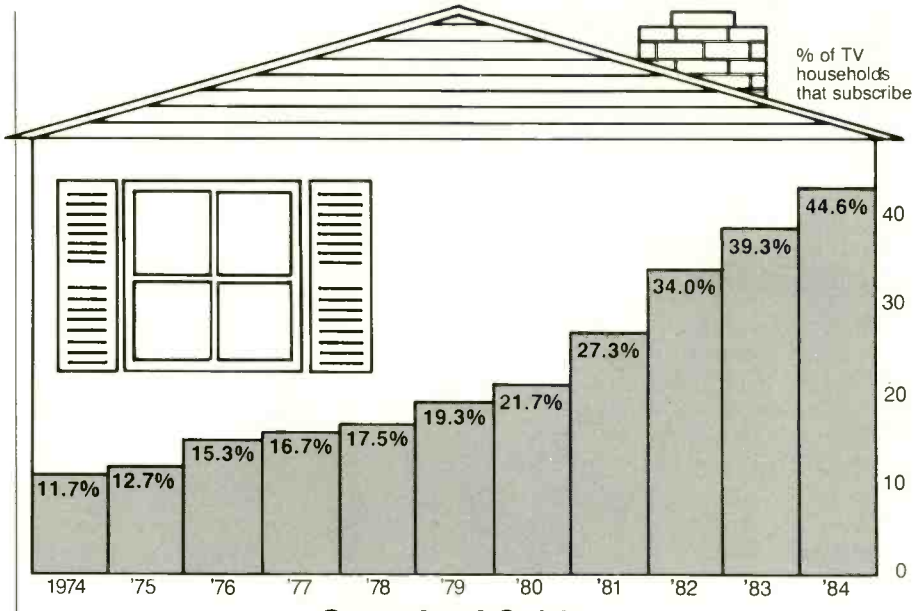

Growth of Cable Source: A.C. Nielsen Co. and NCTA

up until recently was cause for alarm—audience erosion.

The problem with trying to gauge defection of viewers is similar with trying to compare ad revenues; it depends on who's evaluating the situation. Aggressive cable moguls have been gleefully making claims of erosion from network to cable viewing, while at the same time being especially secretive about their own audience numbers under the guise of "proprietary information."

Studies have been done, but these often tell less than the whole picture. Where erosion from the networks has been claimed, it's hard to tell exactly what the cause is. Are viewers watching more cable and less network TV, less TV overall, or just increasing their share of cable viewing on top of network viewing?

A recent look at TV viewing in households that receive cable and pay TV services done by A.C. Nielsen, and prepared by the CAB, brings the picture into focus despite the claims that are being made. It monitors changes in viewing habits for all kinds of TV viewing, based on the hours watched in a typical week.

From the looks of things, network TV viewing stayed the same from 1983 to 1984, even though cable penetration rose slightly more than five percent (from NCTA figures). Ad-supported cable viewing rose by more than two hours per week, while pay TV viewing stayed about the same. Total TV viewing also rose. What did decline was the audience for independent TV. The results seem to say that when households subscribe to cable/pay, they increase their overall viewing in the form of cable or pay shows, and watch about an hour less of independent programs. That's not surprising when you consider that independents often offer the same kinds of programming found on cable/pay—movies,

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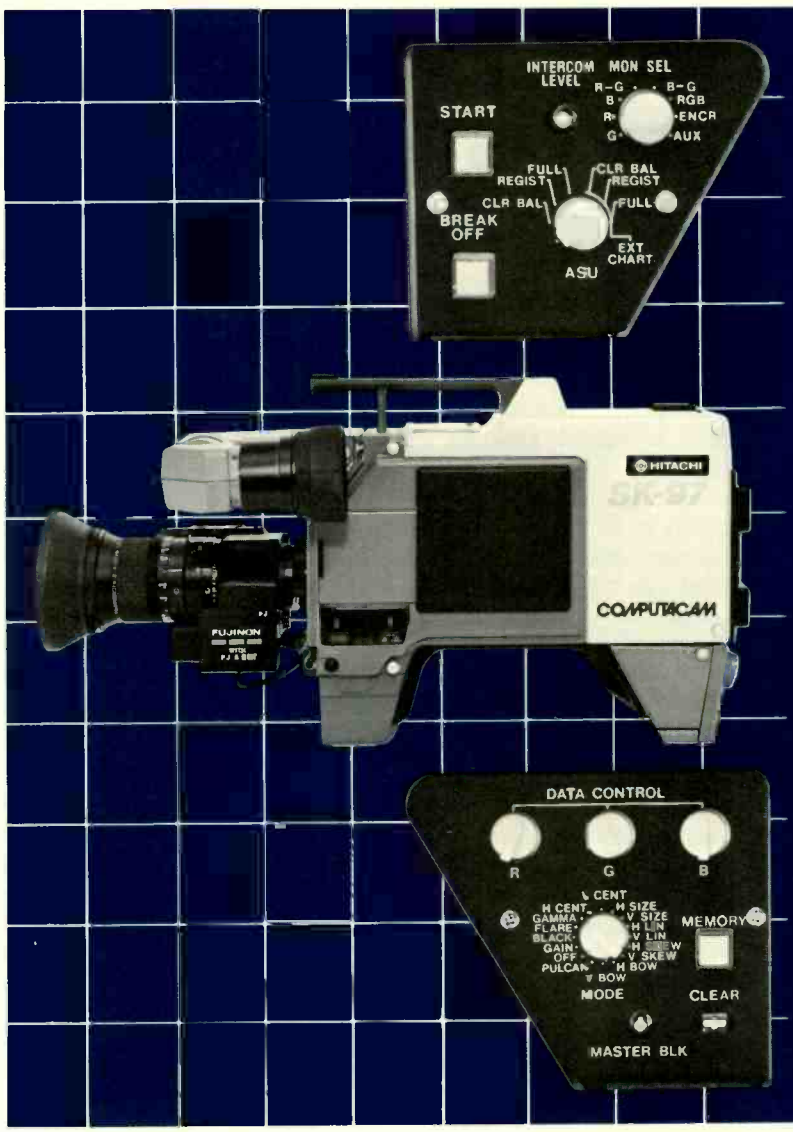

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sports, syndicated shows—and in light of the fact that many independent stations from larger cities are now carried on cable systems as superstations, such as Chicago's WGN and New York's WOR and WPIX.

Nevertheless, network research departments do admit to erosion which, at it's peak several years ago, did have them worried.

Both George Keramidas, ABC's vice president of television research, and Jerry Jaffe, NBC's vice president of research projects, put the peak of erosion at around 3.5 ratings points for all three networks about four or five years ago. But things have slowed considerably from the time when cable systems were enjoying their largest growth. This year, the networks expect to lose no more than a point and a half. And, as Jaffe points out, it may not all go to cable, now that there are more independent stations than ever and more VCRs in use.

Both agree that the erosion has slowed primarily because the growth of cable itself has slowed down. Keramidas predicts that cable penetration will level off at only 50 percent of all households, and that that will help the erosion to level off as well.

Jaffe believes that as viewers have more to choose from, some slippage is inevitable.

"The average viewer can receive about 14 stations now, so there's no way to avoid it. It's not that they are watching more cable, just that they are spreading their watching over more channels," he says.

Networks that used to split a 90 share between them, have thus far had to be content with diminishing numbers. Jaffe's projections call for the three networks to reach a 70 to 72 share and level off at that point. But, he's optimistic.

"All three networks have been improving their product, buying more original programming, so it might turn out even better for us, at 74."

Threats from beyond

Compared with some new programming technologies, cable is relatively old. Some of the new players pose threats to cable and also to broadcast TV, while some offer opportunities waiting to be tapped.

An opportunity is awaiting cable in the medium of pay-per-view. This is an application of interactive cable that may address the problems some pay subscribers have with movies they don't want to watch, or ones they've already seen. The key is addressability, which some cable systems cannot presently accommodate. So, the success of PPV seems to be a distant dream right now, even though it has become the "darling" of the cable industry.

A big question mark still hangs over the potential of VCRs. With more of them than ever in homes, and with cheap rental outlets springing up every few feet, tapes offer a real alternative to all kinds of TV.

The NCTA, however, reports that more than half the number of VCR purchases come from cable subscribers. The association's Dooley sees a great deal of compatibility between the two, with viewers taping programs they can't be around to watch, and with more choices than ever about what to tape and what to watch.

NBC's Jaffe doesn't see a big threat to TV viewing from VCR use, either. He points out that even on Saturday nights, generally conceded to be the biggest night for VCR use, the HUT level (households using television) has usually remained constant over the past

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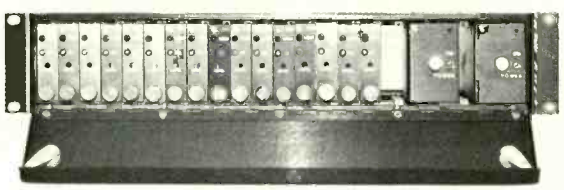

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year. In both cable and broadcast viewing, then, it would appear that VCR owners are simply doing more shifting of their time—taping for later viewing what they can't watch immediately, and watching the same amount of shows they did before, which amounts to an overall increase in the amount of TV programs being viewed.

Where VCRs do seem to have an impact is in the area of pay TV, which consists mostly of movie channels. Inexpensive tape rental competes with HBO, Cinemax and Showtime head-to-head, and more recently, has beaten out pay services in getting the rights to first-run movies.

One persistent problem cable companies continue to face is theft of services. Because the broadband cable technology is so simple, and because the cable itself has to pass some residences to get to others, it's relatively easy to steal a cable signal. The cost to the cable industry is in the millions of dollars, and companies are fighting for tough laws to combat the situation. But while enforcement is difficult, there have been some cases of theft uncovered and successfully prosecuted. Usually the cable system insists that thieves sign-up for the service, although some cable systems have tried to set tough examples by insisting on fines and penalties.

Other threats to cable have taken form in an increase in the number of UHF and LPTV stations, which is expected to grow even higher in the next few years. Many UHF and LPTV stations are opting for an all-music video format, which allows them to provide relatively inexpensive programming, yet competes head-to-head with MTV.

Another headache for cable is the increasing threat from backyard satellite dishes, which can receive anything being sent by satellite, as most cable programming is, and from multichannel MDS.

The NCTA's Dooley says that cable and pay program services are about to fight back against backyard dishes by encripting, or scrambling their signals. But as for new multichannel MDS services, they may start to be attractive in those vast, as-yet-unwired urban areas. A company called Microband has promised to begin offering microwave programming for as low as $20 per month with a $50 installation fee. If their concept takes hold, residents may start asking themselves, "who needs cable?," especially when new cable systems will take from two to seven years for construction alone.

Overall, Dooley says the NCTA believes the new technologies will be factors in the marketplace, but not threats to cable's survival.

"They're about as much of a threat to cable as cable is to broadcast TV," says Dooley, indicating that broadcasters might have less to worry about than they might imagine.

"Program distribution lines are blurring," Dooley concludes, "and the benefit to the consumer is more choice. In effect, viewers become the programmer, they are in charge." And he adds, "We don't see ourselves as anything other than compatible with broadcasting."

These sentiments are similar to something CBS said in a presentation a few years back. "People do not watch cable or pay cable or networks or stations or satellites or STV or MDS or disks or cassettes. They watch programs." Fortunately for broadcasters, programming is something they have been perfecting for the past 35 years. **BM/E**

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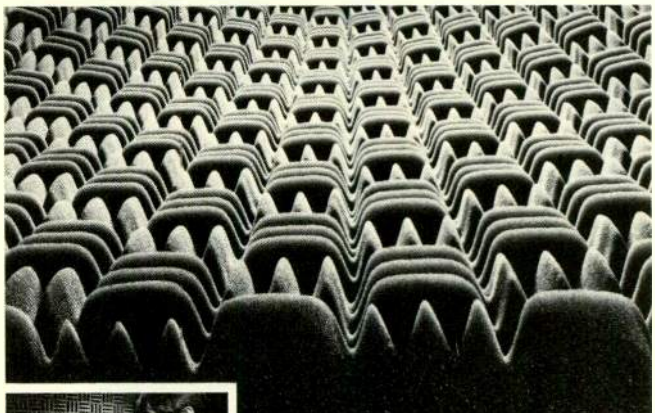

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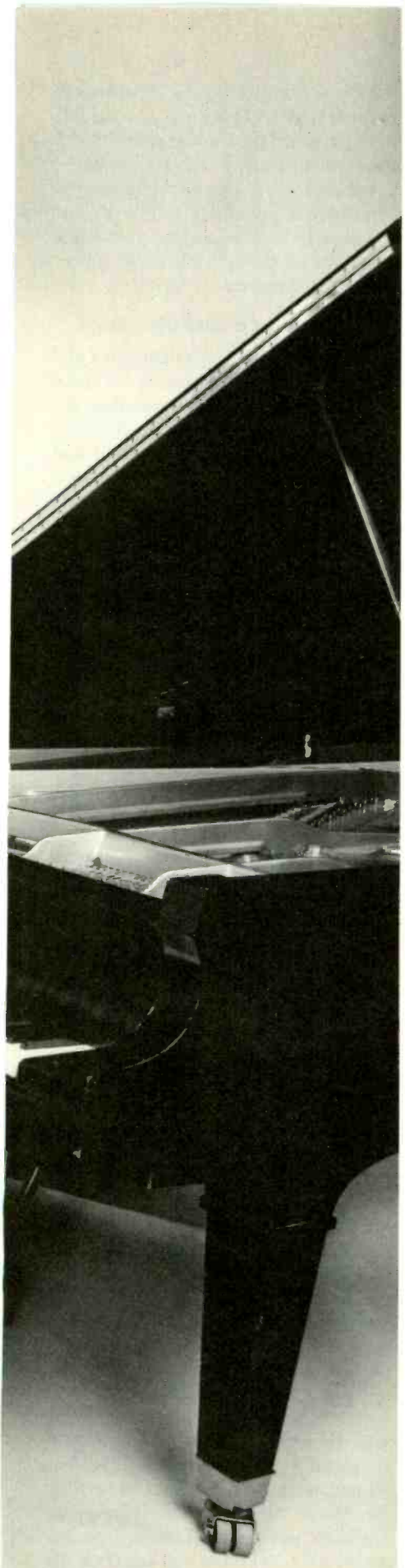
Robert Dalrymple (left) and Bill Fertik will produce a television special on the Van Cliburn Competition, using this Camera Mart-supplied portable Convergence/Betacam editing suite.



Piano Competition is Field Producers' Forte

By
Eva J. Blinder
Senior Editor

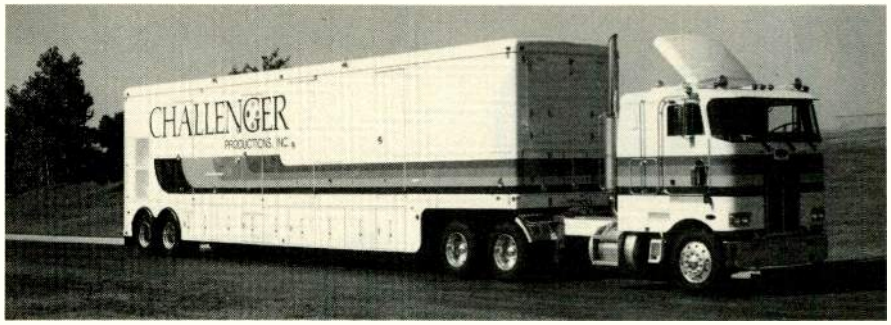
The pressure behind the scenes will match that onstage as a crack production team strives to capture the Van Cliburn Competition on tape.

When the curtain rises for the finals of the seventh annual Van Cliburn Competition late next month, six talented young pianists will be under pressure to perform to their utmost abilities. Less visible to the live audience, but under just as much pressure, will be a production team striving to capture the sight, sound, and drama of the contest on videotape, for airing to a nationwide audience just two days after the contest ends.

Throughout the preceding months, the short air date has shaped the plans of the production team. As coproducer and production manager Mark Bauman says, "We have to set up the cards so that when they fall, they fall in the right place."

Musical Olympics

Because the contestants have so much at stake, conveying the essence of the contest involves more than simply setting up a camera and console in an auditorium. According to executive producer Robert Dalrymple, the 90-minute PBS special he is producing will aim to look into the lives of the competitors and the local families they will stay with as tension rises toward the award announcement. Vignettes about the competitors, their "surrogate families," and the host city of Fort



Challenger Productions of Tulsa will roll its Lerro-built truck into Fort Worth for the final round of the piano competition.

Worth will be interspersed with footage of these musical Olympics. Dalrymple estimates that about 40 percent of the special will be devoted to this kind of "color," with the remaining 60 percent concentrating on the competition itself.

Actually, this complex event involves not one, but several field production stories. In addition to the PBS special, scheduled to air June 4, the competition's June 2 awards ceremony will be carried live over the Public Broadcasting Service, with audio simulcast over local FM stations. National Public Radio will carry the final four days of the competition live nationwide, and the music will be recorded digitally for later album release.

The competition lasts the better part of a month, with 35 contestants from around the world entering the first round. Held every four years in Fort Worth, it honors its namesake, the young Texan who thrilled the music world in 1958 by winning the prestigious Tchaikovsky Competition in Moscow. The Van Cliburn Competition is patterned after the Tchaikovsky, and has grown to international stature, attracting top-flight competitors. Winning is seen as a sure ticket to a successful career as a concert pianist.

The competition is divided into three rounds. For the preliminaries, the 35 pianists, selected from over 1000 aspirants who submitted videotaped auditions, each will play a piano solo. After six days, the judges will narrow the field to 12 semifinalists, each of whom will then perform with the Tokyo String Quartet. When the six finalists are announced, the competition will move from Texas Christian University's Landreth Hall, where the first two rounds will be staged, to the Tarrant City Convention Center. There, the finalists will each play a piano concerto with the Fort Worth Symphony Orchestra. The winner will be announced June 2 at a black tie awards event, hosted by F. Murray Abraham. The actor, who recently won an Oscar for his portrayal of composer Antonio Salieri in the movie *Amadeus*, will also be the on-camera host for the Van Cliburn Competition special.

The story starts in New York, however, where Dalrymple is based along with director/writer Bill Fertik and editor Brian Williams. (The trio's past successes include an ACE Award for their cable production of the 1982 Tchaikovsky Competition.) The ongoing nature of the event, which lasts three weeks, dictated that the producers find a production medium that combined quality with speed. Because the producers would be following the private lives of the contestants, another requirement was mobility. The obvious answer, of course, was half-inch.

In seeking out a rental house that could provide them with the right combination of production and post-production gear, the team eventually settled on New York's Camera Mart, that had available a transportable editing setup that fit the show's needs. Originally built to the requirements of ABC News (with the support of NBC News), the package was used last year by ABC for coverage of both the Democratic and Republican political conventions. According to Camera Mart's Leo Rosenberg, the company is supplying two editing rigs for the Van Cliburn Competition, one configured for half-inch Betacam editing, the other for Beta-to-one-inch. Each consists of four equipment racks in wheeled shipping cases. One rack holds the editing console—in the Beta-to-Beta system, a Convergence ECS-104 with additional software to make it equivalent to the Convergence ECS-204S, plus a small Convergence switcher. The monitor rack, which can be placed on top of the editing rack during use, has a Tektronix waveform monitor, Sharp color video monitor, BGW Systems broadcast power amp, and a pair of Sony speakers. The remaining two racks hold the VCRs: a Sony BVW-40 record deck and two BVW-10 players. Also included in the setup are a Yamaha M508 8x2 audio mixer and an Okidata printer.

For the Beta-to-one-inch editing system, the edit controller will be a Convergence ECS-204S and the switcher a Grass Valley Group Model 100; otherwise, the equipment is identical.

The pressure builds

The transportable editing suites will give Dalrymple and his crew the flexibility they will need to complete the show with such a tight schedule. "We'll start shooting May 14 and start editing May 15," Dalrymple explains, "and we'll shoot and edit continuously for three weeks." The team will use a double-system approach, recording audio digitally for later conforming. (The audio plan is described in detail below.)

Both inside Landreth Hall and out in the field, the cameras used will be Ikegami HL-95 Unicams, also supplied by Camera Mart. Around Fort Worth, two Unicams will be used in their recorder/camera configuration with Sony Betacam decks. Indoors, three Unicams will be used on tripods with studio viewfinders and separate Beta recorders. For the first round, one of the three will be locked off—i.e., used for a stationary fixed shot with no camera operator. For the second round, all three will have operators.

Lighting at both Landreth Hall and Tarrant City Convention Center will be designed by Alan Adelman of Imero Fiorentino Associates, who recently lit the MTV Music Awards. "He's lit two other of my big shows," Dalrymple adds. "He has a very dramatic sense because he's done a lot of theater."

The two ENG crews, travelling around Fort Worth to glimpse the lives of the participants, will include besides the camera operator a gaffer, grip, and audio engineer. According to Bauman, as each day's video footage comes in, it will be logged, rough cut, and fine cut, with the audio then match cut to the picture. (In New York, Bauman is production manager for the Emmy Award-winning series *Live at Lincoln Center*.)

The results of the first two rounds will be announced in ceremonies at Landreth Hall, with the semifinalists named May 22 and the finalists on May 28. While the three studio-configured Unicams tape the proceedings on the stage, the ENG units will focus on the reactions of the competitors and their host families.

On May 29 the crew will strike

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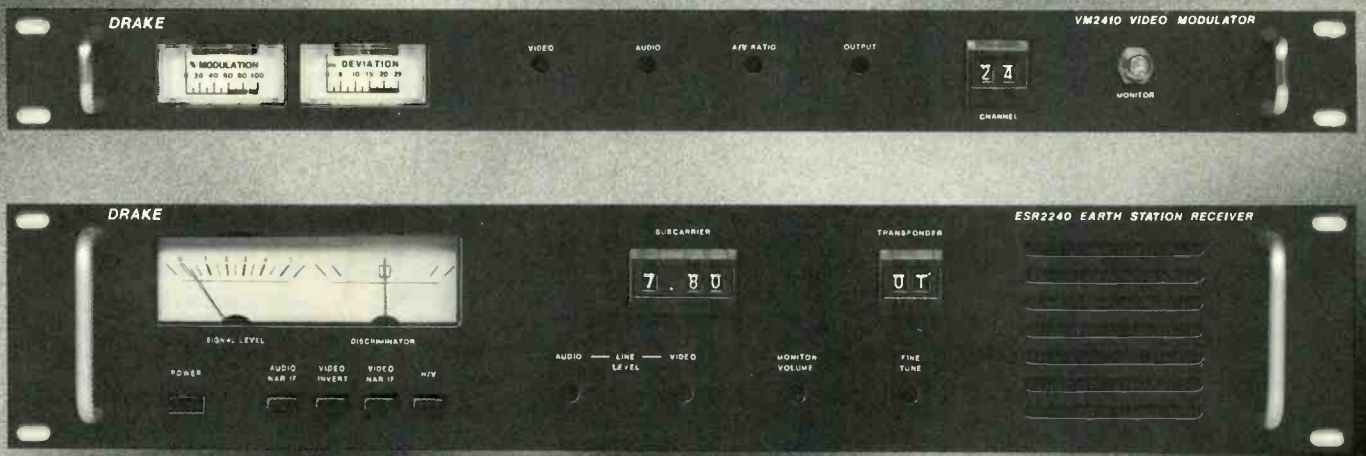

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Landreth Hall and set up in the big convention center. At that point, they will call in Challenger Productions, a state of the art mobile teleproduction facility based in Tulsa, OK. Half-inch video will then be set aside for Challenger's Ampex VPR-2B one-inch VTRs, using the truck's complement of Ikegami HK-357AT2 triax field cameras supplemented by the Camera Mart-supplied Unicams. L.A.-based director Gary Halvorson will direct the final segment.

The "loaded" trailer, built by Lerro Corp. of Philadelphia with coach work by Gerstenslager, should have every video facility needed for the shoot: a Grass Valley Group 300-2AN production switcher with two M/Es, an expanded dual-channel Chyron IV graphics system, ADDA ESP-2 still store, RTS intercom, and a full complement of accessories.

Because time pressure will be so acute by this time, audio will be recorded directly onto the videotape for the final round, in addition to separate digital recording. Video material will be switched live, with final conforming and cleaning up at Dallas post-production house Video Post and Transfer. Dalrymple estimates that over the course of the production, the team will shoot about 150 hours of Beta and 40 hours of one-inch material, all of which must be boiled down to a 90-minute special.

Varied audio needs

The complexity of the audio production involved in the Van Cliburn Competition rivals or even surpasses that of the video plan. Michael Woolcock, audio producer for the contest, explains, "We're recording the entire competition from beginning to end in both digital and analog. Out of that, we're providing a series of feeds for various components of the show." Coming out of the piano competition, according to Woolcock, will be a series of audio discs to be issued by commercial record companies; a direct digital feed to KERA-FM, a local public radio station; another feed to KTCU-FM, the radio station of Texas Christian University; yet another feed to the PA system in Landreth Hall to allow people in the offices and lobby to hear the contest; and finally, the television feed.

"The idea is to have stability and consistency of sound quality between the television production, the stereo simulcast, and the discs," Woolcock continues. That consistency, he explains, will give a sense of continuity when someone who's seen the PBS special, for example, listens to the recordings of the competition.

A primary player in the audio plan will be Digital Services Recording of Houston, a mobile facility with sophisticated digital and analog recording capabilities. According to Digital Services' John Moran, the truck carries an MCI 636 transformerless, automated audio console with 36 inputs and 24-bus multiple mono and stereo outputs. A Neve 8x2 submixer, plus the four echo returns on the MCI board, give the truck the ability to go to 44 inputs "without batting an eye," Moran says. Recorders include two Sony PCM-3324 digital 24-tracks, an Otari MTR-90 analog 24-track, a Sony PCM-1610 digital two-track, an Otari MX-5050B analog two-track, and a Sony/RTW F-1 digital two-track. In addition, the truck carries a Sony DAE 1100 digital editing system, Adams-Smith System 2600 audio/video synchronizer, Lexicon 224XL and Sony DRE2000 digital reverb.

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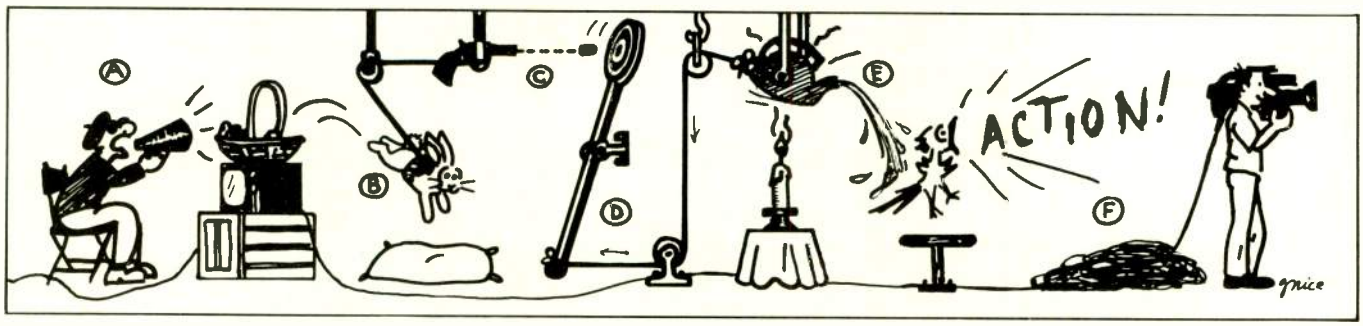

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The truck, which will be used for all three rounds of the competition, will give Woolcock a completely independent audio setup and allow him to edit on-site as the production proceeds. (Final audio sweetening and layback for the television special will take place at Omega Sound, the Dallas sweetening house affiliated with Video Post and Transfer.) Although all details of the audio production were not nailed down at press time, Bauman was able to give a general outline of what will take place.

For the preliminaries and semifinals, Bauman relates, PCM audio will be recorded on Sony BVU-800 U-Matic VCRs using a Sony 1610 processor. Synchronous time code will be fed to all cameras and to the digital audio tape, and an audio "scratch track" will be recorded on the Betacam recorders. Editing of the digital audio will employ the 1610 processor and the DAE editor. In addition, edited digital audio tracks will be bumped to the Otari 24-track ATR, with Dolby noise reduction.

Once the pictures are rough cut and fine cut, the audio will be cut with the DAE digital editor and the edited pieces will be bumped to a 24-track analog submaster with synchronous time code.

"We will do this every day for two weeks, at the end of which, hopefully, all we'll have to do is the layback of the 24-track audio tape to one-inch videotape," Bauman says.

For the third round, the audio will be recorded directly on Challenger's VPR-2B VTRs with Dolby. "We'll be two or three days behind in terms of editing throughout the job," Bauman explains. "If we had to deal with laybacks at that stage, we'd be in real trouble."

The Digital Services truck's Sony/RTW F-1 digital recorder will also be used throughout the competition to record the audio for later release on disc.

Distribution

The distribution story for the Van Cliburn Competition is as complex as the production. According to Dalrymple, during the finals, National Public Radio will be broadcasting live nationally from the convention center. The production team will provide one-hour excerpts for the local cable system in Dallas-Fort Worth during the first and second rounds. "We'll basically be letting the cable system dub and voice over what we've edited," he explains. For security reasons, the completed special will be hand-carried by two people travelling on separate planes to Washington, DC. There, it will go out over the PBS network, with a nationwide stereo feed for FM simulcasting. Arts and Entertainment, the cable channel, "has already indicated their interest in picking it up," Dalrymple adds, and Trans World International will handle foreign distribution.

With so much going on at once and so many final destinations for both the audio and video material, it might seem easy for objectives to grow hazy. Not so, according to Dalrymple, who is very clear on what he's looking for.

"Our objective," he asserts, "is to capture the inherent drama of the competition. Our show is the anguish, pressure, and anticipation that these artists are going through because their artistic careers are on the line." With such a tight production schedule, Dalrymple and his colleagues will certainly be able to empathize with that anguish, pressure, and anticipation. The result is bound to be a moving and exciting inside look at the world of music. **BM/E**

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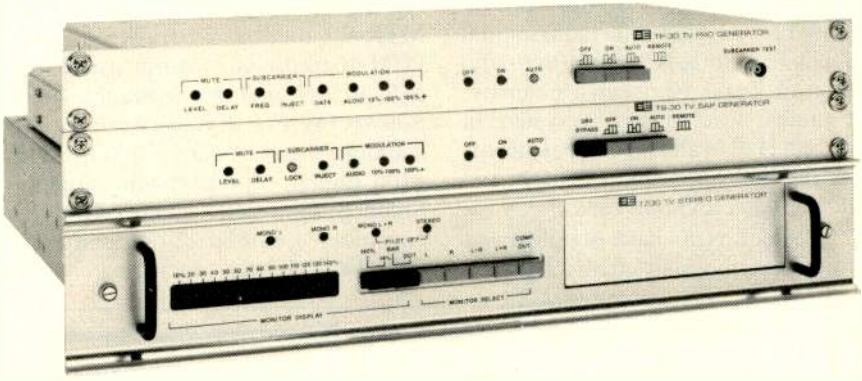

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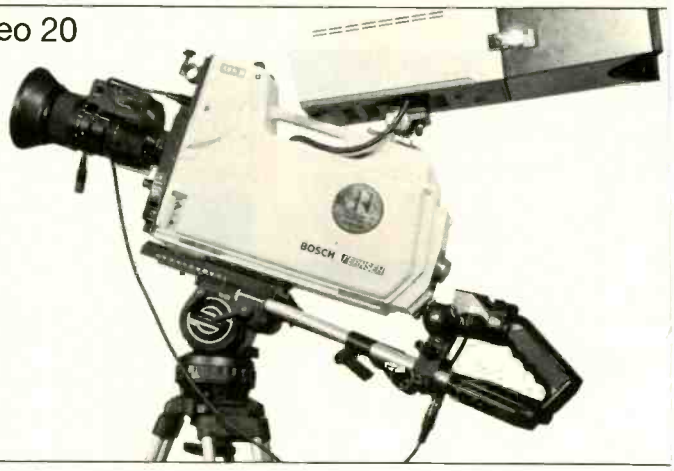
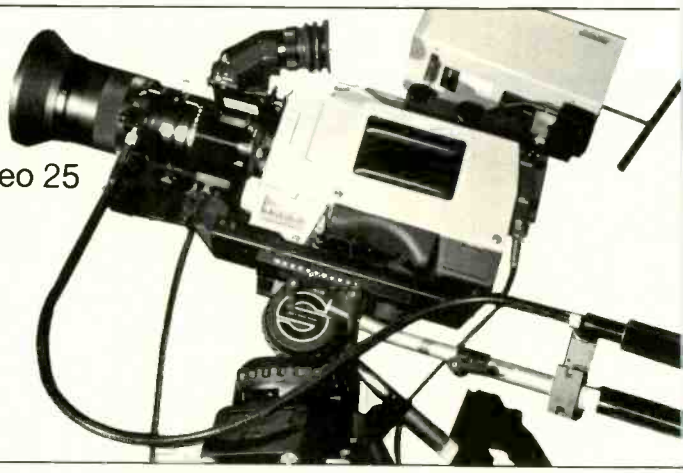
Video 20



Video 25



Video 30

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New AM Filing Standards...and New Broadcast License Fees

By Harry Cole, FCC Counsel

You can expect a couple of familiar FCC rules to be in the news in the next few months as the Commission tries, first, to keep its deregulatory program rolling on the AM side and, second, to get all the industries it regulates to carry the financial load for the Commission's own regulatory activities.

The Commission has proposed to do for AM radio something akin to what it has done for FM radio in Docket No. 80-90. That is, the FCC is seeking to loosen substantially the acceptance standards which restrict the filing of applications for new AM stations (and new nighttime service for daytime-only stations). Meanwhile, the Commission has also proposed to reinstate a fee structure which would require all licensees to pay an annual license fee, and which would also require all applicants to pay fees both for the filing *and* granting of applications.

AM rules

With respect to AM acceptance standards, it looks like curtains for the lion's share of Section 73.37(e) of the Commission's Rules. That rule establishes what have been termed "artificial" acceptance standards for new AM service (both daytime and nighttime). Some of you may be familiar with this section as the "two-to-a-community" rule, although it encompasses more than just that provision.

Section 73.37(e) has been around in roughly its present form for more than a decade. It was originally devised to slow the growth of AM service in already well-served areas, so that AM spectrum space would be available in less populated areas which might ultimately desire AM service. With that in mind, the Commission—in 1973—grafted onto its technical standards (i.e., standards related to interference and quality of signal) two additional criteria which had to be met before an application for new AM service would be accepted. Under the 1973 standards, the applicant had to demonstrate that at least 25 percent of the area or population which would receive interference-free service from the proposed station did not already receive either interference-free service from an existing AM station or 1 mV/m service from an existing FM station. If the applicant could not satisfy that standard, it could show in the alternative that its proposed community of license did not have an available FM channel allocated to it, and that at least 20 percent of the community did not receive two city-grade AM or FM signals.

The 1973 rules were clearly designed to block the establishment of new AM services in already well-served areas. Even if an applicant could demonstrate that its proposed station would not create any interference and would provide the necessary signal over its proposed community of license, the application would not be accepted if it did not provide service to essentially unserved or underserved areas. As it turned out, the 1973 rules were *too* effective in that regard, and the incoming flow of new AM applications slowed to a trickle. Partly as a result of that slowing, and partly in response to complaints from would-be applicants blocked only by the "artificial" acceptance standards, the Commission acted in 1975 to loosen the rule to create a third alternative "artificial" standard. The 1975 addition provided that, even if an applicant could not make the "unserved/underserved" showing required by the 1973 rule, its application would still be accepted if the proposed community of license did not already have a vacant FM channel allocated to it, and if the proposed station would be the first or second radio station licensed to that community.

Eliminating artificial criteria

The rules as amended in 1975 resulted in a modest increase in the number of AM applications. They did not, however, open the floodgates. Section 73.37(e), even with the "two-to-a-community" exception, continued to stand as a major impediment to many applicants. Now the

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See "Government by Consent?" on p. **8**.

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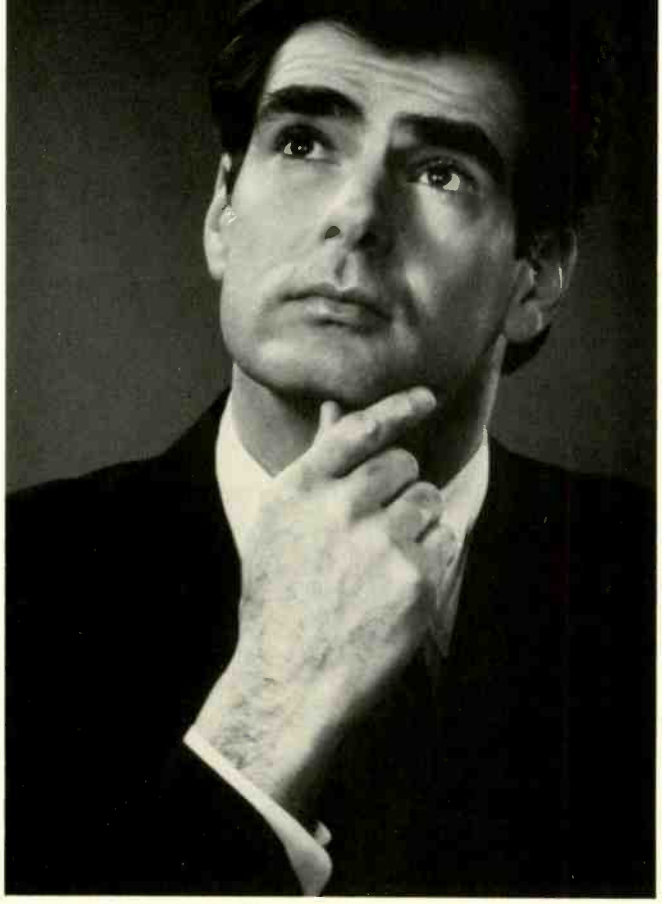

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Commission has decided that it might be a good idea to scrap these "artificial" criteria in their entirety. In the FCC's view, AM radio "has become a mature service." This maturation should not be any real surprise, since the Commission also acknowledges that AM was the "first broadcast medium." In any event, consistent with its actions on the FM side to open up the medium to maximum competition consistent with reasonable engineering standards, the Commission has proposed simply eliminating the "artificial" criteria described above.

What the Commission appears to be looking for is an AM equivalent to Docket No. 80-90 on the FM side. In other words, the Commission is willing, indeed eager, to invite as many applicants as possible to come forward and stake their claims to portions of the spectrum. The only restrictions which would apply would be purely technical standards designed to assure an acceptable level of service to the public. Apart from that, the marketplace would be left to decide who gets stations and where they get them. This is not necessarily a bad idea, and one which may be long overdue. The National Radio Broadcasters Association, which filed a petition for rulemaking proposing elimination of the "artificial" criteria, has long been of the opinion that Section 73.37(e) should be taken off the books. The Commission's recent proposal, which may be acted on by the end of the year, strongly suggests that the Commission now agrees.

One striking element of the FCC's proposal is the fact that the Commission has revealed its inclination to eliminate even the preferences for minority and noncommercial applicants on the 25 U.S. clear channels. Under the alternative, an application would be acceptable notwithstanding the other criteria if the applicant were minority-controlled or if it proposed noncommercial operation. Elimination of this additional "artificial" criterion is also being proposed since, in the FCC's view, the provisions favoring minority/noncommercial applicants have "had ample opportunity to serve their purpose and it appears appropriate at this time to allow other entities the opportunity to file" for stations on the U.S. clears. While it is too early to tell, this could signal some shift by the Commission away from its longstanding policy of encouraging minority ownership.

Licensing fees

While the Commission appears ready to scrap its nontechnical acceptance criteria, it also appears ready to haul out the regulatory cash register by charging fees for its various licensing activities. Any of you who are relatively new to broadcasting may not realize that, in the 1960s and early 1970s, the Commission had an elaborate fee structure which required payment for filing an application, getting an application granted, or just being an operating station. When that structure was challenged in court in the mid-1970s, the court concluded that the structure was not properly designed since the fees were not based on the cost of the services provided by the FCC in connection with the activities for which the fees were being assessed. Essentially, the court found that the only proper fee schedule would be one that was tied directly to the cost of the FCC's regulatory activities.

The court's decision made it clear that the Commission

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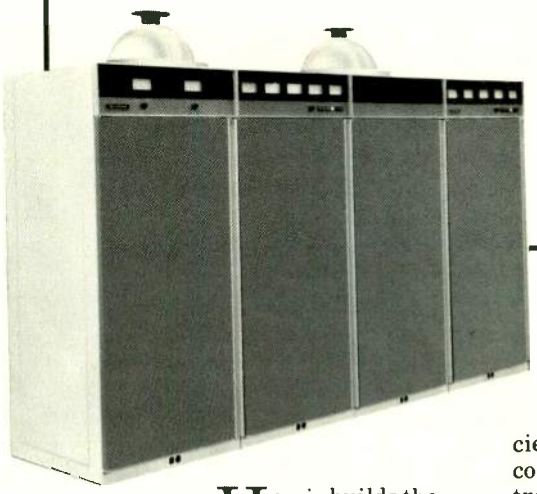

Harris builds the world's most efficient UHF-TV transmitters. Do a few quick calculations above and prove it to yourself. If you're running a 55 kW or 60 kW transmitter, compare it with our TVE-60S, 60 kW model. Replace your transmitter with a Harris TVE-60S, and save up to $25,000 a year in utility bills!

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could indeed charge fees; the court found only that the fee structure had been improperly designed. Nonetheless, the Commission decided to walk away from the fee collection business after the court decision. This was probably based in large part on the fact that designing a proper fee schedule consistent with the court's decision would be pretty complicated. It probably also had something to do with the fact that the FCC had other things to do since the court also ordered the Commission to refund all fees illegally collected, a job which ultimately took years to complete. Whatever the reason, the Commission has not collected fees for approximately 10 years.

Reducing federal deficit

The FCC's recent proposal to crank its collection activities back up apparently arises from its desire to "do its part" to help reduce the federal deficit. By the Commission's own estimate, as much as half of its annual budget, or more, could be collected in the first year alone. That would amount to some $50 million, which would be paid into the general fund of the federal treasury.

To give you an idea of where that $50 million would be coming from, the Commission is proposing to charge television stations in the top-20 markets $9000 each as an annual license fee. Want to file an application for a new FM channel? That'll be $375. A television application would go for $1200. It would cost you $1250 to file an application to sell a television station, while radio assignment applications would go for $600.

Congressional approval

Unlike the proposed elimination of Section 73.37(e), which the Commission itself can act on, the proposed fee structure must first be approved by Congress, and it was thus to Congress that the Commission addressed its fee proposal. Before the House Appropriations Subcommittee, chairman Fowler indicated that the proposed fees are not linked to the FCC's overall deregulation efforts. While there is no reason to doubt the chairman on this point, it is still significant to note that proposals to establish a kind of "spectrum fee" to be paid in return for an indefinite broadcast license (or, stated somewhat differently, an ownership interest in a portion of the spectrum) have been bandied about for years. Such proposals have invariably met with significant resistance from various groups, and as a result have never left the drawing boards. The pendency before Congress of the Commission's proposed fee structure, however, could provide an opportunity to rekindle any spark of interest which might still exist relative to that approach.

Obviously any tradeoff of fees for license security would be an extremely complicated deal to strike. Among other things, it would almost certainly include some provision intended to assure some minimum level of programming performance (a factor which has historically been a sore point in this kind of discussion), and would require a major effort at compromising the various conflicting interests. Because of the obvious complexities involved, it is not clear that anyone will seek to get the ball rolling in that direction. But if someone were inclined to do just that, the Commission's proposal could provide a propitious starting point. **BM/E**

broadcast EQUIPMENT

Stereoscope from Leader

A new stereoscope from Leader Instruments has been introduced to meet the growing demand for stereo measurement from broadcasters.

CIRCLE READER SERVICE #276

The LBO-552BH1 is designed for studio applications and displays left and right channel traces side by side to simplify channel amplitude comparisons. The graticule has left and right channel indications and zero phase angle reference line to optimize measurements for level, balance, azimuth, separation, and phase angle. The stereoscope is rack-mountable with rear panel XLR input connectors.

New Serial Control Option for Lexicon 1300 Series

Lexicon Inc. has a new serial control option which allows both stereo and mono versions of its Model 1300 Digital Audio Delay Synchronizers to be compatible with the Tektronix 110-S four-field frame synchronizer.

The RS-422/RS-232 option is hardware-ready, and enables Model 1300 units to achieve precision synchronization.

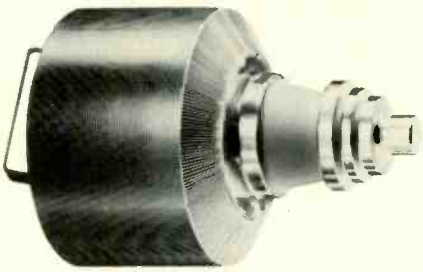
The new option provides coded delay times via serial ports. It is the third Model 1300 offered by Lexicon recently, joining one which detects video phase differences and another for delay pulse widths.

CIRCLE READER SERVICE #277

Coaxial 10 kW VHF Power Tetrode from Amperex

Amperex Electronic Corp. has introduced a 10 kW power tetrode capable of operating up to 250 MHz.

The 9018 is designed for linear amplifier service in TV and FM applications. The tube features intermodulation products at least 54 dB below sync level, a heating mesh cathode, metal-ceramic construction, and forced-air cooling. A power gain of 16 dB allows it to be driven with semi-conductor drivers.



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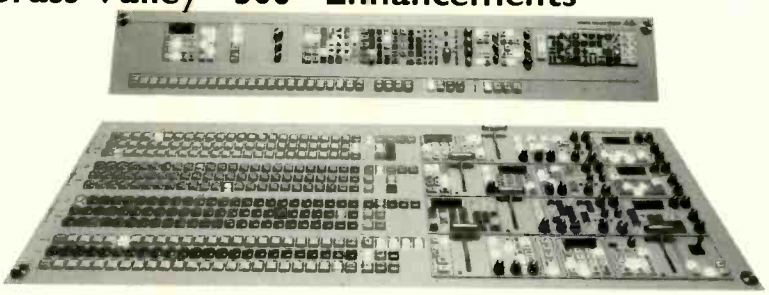
A complete VHF amplifier circuitry assembly is available for the 9018. The input circuit is broadband.

Grass Valley "300" Enhancements



CIRCLE READER SERVICE #279

A new key processing system, known as "Omni-Key" will be incorporated into Grass Valley 300 Series production switchers starting this month. The enhancement allows for greater key flexibility, and is in response to customer requests. The Omni-Key provides all of the current capabilities of the 300, plus four additional features.

The Linear Key mode, available on both the video keyer and the title keyer of each mix/effects includes a number of sophisticated digital processing devices. This feature provides a precisely calculated key signal allowing for a perfect transition between background and insert. The operator can select the Linear Key mode, which causes the transition to be totally controlled by the incoming signal. If it has been correctly calculated, it will be devoid of the edge effects associated with conventional key circuitry.

Dubner Computer Systems will offer linear key outputs in both the CBG-2 character background generator and the Texta character generator. In addition, use of the Linear Key mode with a normal video input allows a range of effects to such as sepia tinting and color-to-monochrome dissolves to be achieved.

Key Memory is extended in switchers with the new Omni-Key. The usual settings of clip, gain and hue for each foreground will be extended to include memory of the shadow setting for each chroma-key setup. And in both Video and Title key, a separate memory for Luminance Key settings is provided for each input.

Key Invert selection is now provided on the video keyer of each mix/effects, for increased flexibility in situations requiring interchange of background and foreground in a composite.

Finally, External Key delegation has greater flexibility, with each external key input able to be associated with any one primary video output plus any one title video output.

Low-Angle Prisms for ENG/EFP Cameras

Alan Gordon Enterprises has announced exclusive distribution for Imerect Low-Angle prisms, designed for ground or table-top level point-of-view camera angles.

The Imerect 500 is the smaller model, weighing only four pounds, four ounces, and is designed for ENG/EFP cameras. It costs $5100 and can be used on 16 mm cameras.

The Imerect 925 is larger, at seven pounds, eight ounces. It can accept a wider angle lens and can be used with several types of video cameras. Its cost is $6100.

The images reflected through the prisms are not reversed, and are correct from left to right. All prism surfaces are hard magnesium-fluoride coated so there is no color fringing, distortion or resolution loss.

CIRCLE READER SERVICE #280

Hewlett-Packard Microwave Radio Test Set

A new noise and interference test set from Hewlett-Packard simulates flat-fade and/or interference conditions on microwave radio links.

The HP 3708A adds calibrated levels of white noise and/or interference signals to the radio IF carrier, and is able to maintain an operator selected carrier-to-noise (C/N) or carrier-to-interference (C/I) ratio. It

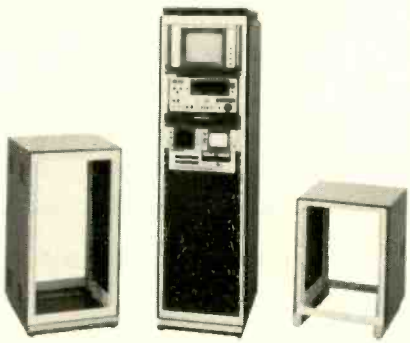
CIRCLE READER SERVICE #281

is designed to operate in the IF section of a digital or FM microwave radio.

The test set is aimed at manufacturers and operators of microwave-radio systems and is suitable for digital radio, analog FM, or satellite TDMA applications.

Winsted Corp. Vertical Racks

Vertical rack cabinets for audio and video equipment are available from the Winsted Corp. They are designed to industry standards and are available with 24.5, 35 or 70 inches of usable rack space.



CIRCLE READER SERVICE #283

All models have removable side panels for installation and servicing. Ventilating louvers on top allow for air-circulation and cabling holes are designed into the base. They are compatible with all Winsted System 85 consoles.

FOR MORE INFORMATION on these products, use the Reader Service Card.

Hard-Disk Automation from Harrison

Harrison Systems Inc. now has a hard disk automation system for its PP-1 Series of sophisticated video and post-production audio consoles.

The PP-1 features some automation capabilities of its own, and can function without the new system support. But with the new hard disk automation, the PP-1 is able to provide totally-automated, frame-accurate system functions which include fader level, fader mute, input signal select, input gain, channel phase, EQ in/out by section, high-pass and low-pass filter in/out, and dual A/B insert point control. In addition, when fitted with Harrison's companion Autograph graphic equalizers, the PP-1 provides dynamic real-time equalization necessary for intricate stereo production.

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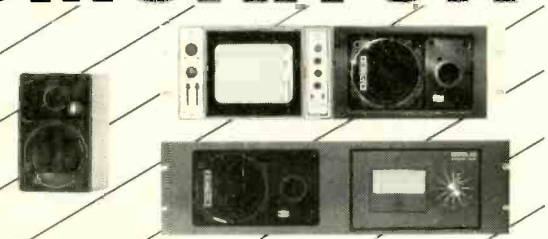

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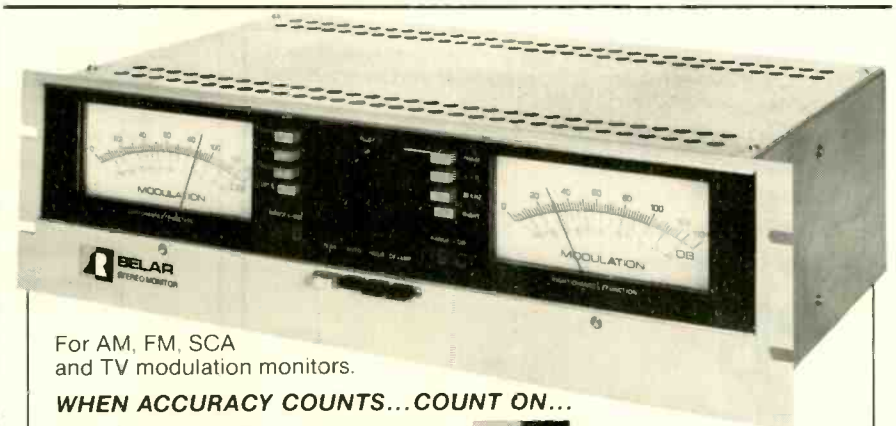

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Ampex Expands 197 ¾-Inch Tape Line

Ampex Magnetic Tape has expanded its line of popular 197 ¾-inch videotape with the addition of four new configurations. These are designed to meet demands in ENG/EFP, post-production, and other changing broadcast needs.

The new Ampex 197-BCS05 is a five-minute minicassette which operates in both portable and standard-sized VTRs and is designed for ad

CIRCLE READER SERVICE #284

agencies and production houses which dub commercial spots for client demo purposes. This five-minute mini is also being offered with a safety shipper for mailing as is the new Ampex 197-BCO5W. Both of these new configurations include Ampex's recently introduced ENG/EFP log sheets and labels.

The Ampex 197-BCA45 is a 45-minute cassette designed to meet the news industry's needs for editing and archiving tapes.

Finally, the Ampex 197-BCA05 is another five minute cassette made more durable for those stations which currently use ¾-inch U-Matic VTRs in a cart capacity for airing commercials.

Data Storage/Display Option for BTX Softouch

The BTX Corp. has announced a data storage and display option for its Softouch audio editing system. The enhancement allows the system's loop memory to be extended, preserved, protected and reviewed.

With the new option, desired portions of the Softouch memory are stored on microcassette tapes where they can be read back into the memory, printed out, displayed on a terminal, or transmitted via RS-232 to another computer.

Each cassette provides access to an additional 990 loops and 160 Softkeys. One microcassette can store as much data as 10 Softouch controllers. All data store, recall, print, and display functions are menu-driven and require few keystrokes.

Model 4795 includes software, the microcassette unit, RS-232 cable, and tapes, and is priced at $2000. Model 4796 is a special computer interface version which does not include the microcassette unit; its price is $1000.

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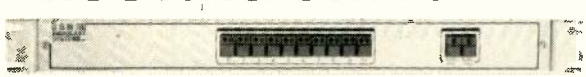

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International Microwave's Low-Power Transmitter

A new low-power microwave transmitter designed for short-haul, line-of-site communications is available from International Microwave Corp.

The LCT Series transmitter has a power output of 100 mW (+20 dBm) and operates in the frequency range of 6.5 GHz to 18 GHz. A remote head is also available. The transmitter can be used with a standard FM receiver or multichannel link receiver. It is ideal for studio-to-transmitter links.

CIRCLE READER SERVICE **#286**

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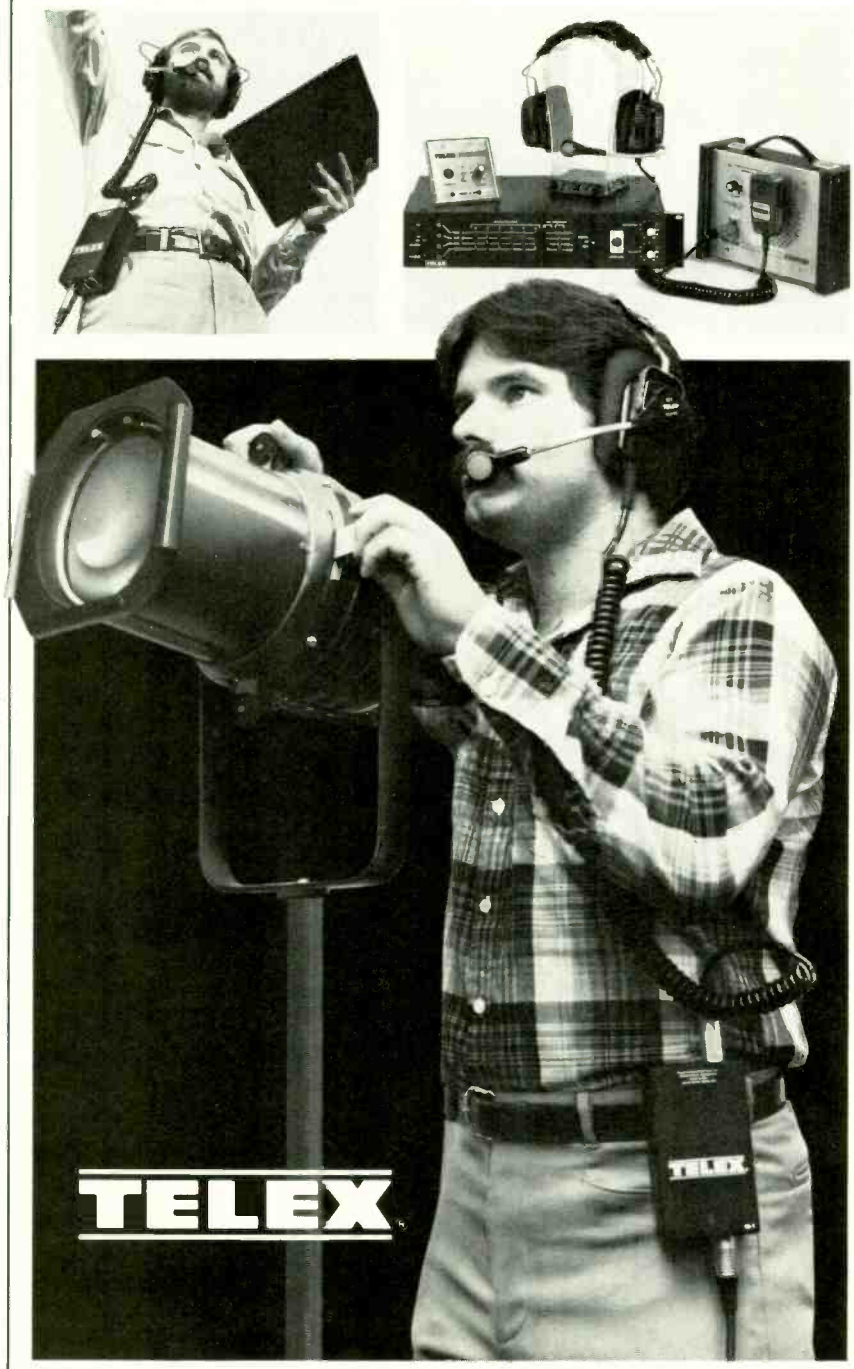

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BUSINESS BRIEFS

After nearly a year of study and tests, the **SMPTE working group** has expressed a decided preference for progressive (noninterlace) scan as the worldwide standard for high-definition electronic production and post-production of TV programming and feature films. That is, in effect, a vote against the 1125-line interlace system developed by Japan's NHK and strongly favored by CBS and Sony.

This year's course schedule at **SIGGRAPH '85,** scheduled for July 22-26 at the Moscone Convention Center in San Francisco, has been updated and expanded, covering topics such as B-splines and Beta splines, fractals, and graphical workstations. To obtain a copy of the conference program, as well as details of the courses offered, contact: SIGGRAPH '85, Conference Services Office, 111 East Wacker Drive, #600, Chicago, IL 60601.

LNR Communications, Hauppauge, NY, has received contracts from American Satellite Company totalling more than $4 million . . . . **Uniden** has announced several new products including an advanced block downconverter, and lightweight (UPS shippable) antennas and positioners . . . . Sensing a growth potential, **Scientific-Atlanta** has reentered the home TVRO market . . . . **NBC Sports** has contracted with Satellite Gateway Communications, New York City, for downlink services five hours on Saturdays and Sundays to pick up satellite remote feeds of sporting events around the country . . . . **RCA Americom** is offering a distribution service for regional or specialized radio networks using single-channel-per-carrier (SCPC) distribution over Satcom I-R . . . . On March 1, **Satellite Music Network** began transmitting its four live, 24-hour radio programming formats on Galaxy I, Transponder 3.

New York City facility **National Video Center/Recording Studios** has an innovative new mag pickup system capable of providing four pairs of stereo tracks and optimum flexibility of stereo sound recording. The system includes a Trident 18 input/eight output stereo and mono feed console, dbx compressors, Urei 1117 dual peak limiters and Dolby four-band noise gates

Senior audio mixer Dick Mack works the controls of the Trident console recently installed at National Video Center/Recording Studios in New York City.

. . . . "The Making of *Space,*" a documentary on the production of the 13-hour CBS mini-series, was posted at **Framerunner, Inc.,** New York City . . . . **Brewster Sound and Video,** Lynchburg, VA, provided the audio feed for the twelfth annual Danville March of Dimes Cablerama held in Danville, VA . . . . **NEC Communications** provided video for "The Night of 100 Stars II," held March 10 at New York City's Radio City Music Hall.

A new division specializing in the development of sales promotion and marketing programs for media clients has been formed by **Ventura Associates International.** The new group, called Ventura Communications, will be headed by Robert Silverman . . . . Century III Teleproductions, Boston, MA, has a new division, **Digital Images,** which will create broadcast packages for television news, production companies, and broadcast and corporate communications . . . . A west coast office has been opened by **Imero Fiorentino Associates** at 7060 Hollywood Blvd., Suite 1000, Hollywood, CA 90028 . . . . Also on the west coast, **Peirce-Phelps** has established an office at 3000 W. MacArthur Blvd., Santa Ana, CA 92704 . . . . **Howe Audio Productions** has moved its manufacturing and corporate facility to the Flatirons Industrial Park, 2300 Central Avenue, Suite E, Boulder, CO 80301.

Joy Golden, whose Laughing Cow Cheese radio campaign won the 1984 New York International Radio & TV Festival Grand Award, has launched **Joy Radio, Inc.,** which will package comedy and musical radio commercials . . . . A new New York-based production company, **CTI Communications,** has been formed by Thomas F. Bailey, former director of video communications for Dean Witter Reynolds . . . . Another newly-formed company, **Whitehouse Audio Visual,** located in West Los Angeles, will specialize in sales, service, and rental of new and used professional motion picture, video and sound equipment.

Post-production house **Pacific Video** has acquired substantially all of the assets of San Francisco-based Versatile Video for an undisclosed price . . . . **Computer Showcase, Inc.,** Phoenix, AZ, has signed a distributor agreement with Vectrix Corporation to sell and service Vectrix products through its computer centers . . . . **Anton Bauer** was recently issued a patent for the Triconn connector on its Pro Pac 90 VTR battery. . . . **Aston Electronic Designs** of London, England, has opened an American marketing subsidiary in Olathe, KS. John Holton, Aston's chairman, will serve as a president of the American subsidiary.

Among the personnel changes this month, Alan Hershner and Daniel Marchetto have been named professional product marketing coordinators at **Shure** . . . . **O'Connor Engineering** has appointed Gary Nelson field sales manager . . . . At **Fuji,** Bradley Friedrich has been named marketing manager, Magnetic Products division.

Leasametric has named Robert Whisten vice president of MIS systems . . . . At **Tandberg,** Peter Wellikoff has been appointed VP, Consumer and Professional Audio Products division . . . . Tony Fasolino becomes executive vice president/CEO at **Torbet Radio** . . . . **RCA** has elected Robert Frederick as CEO.

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