NOVEMBER 1977

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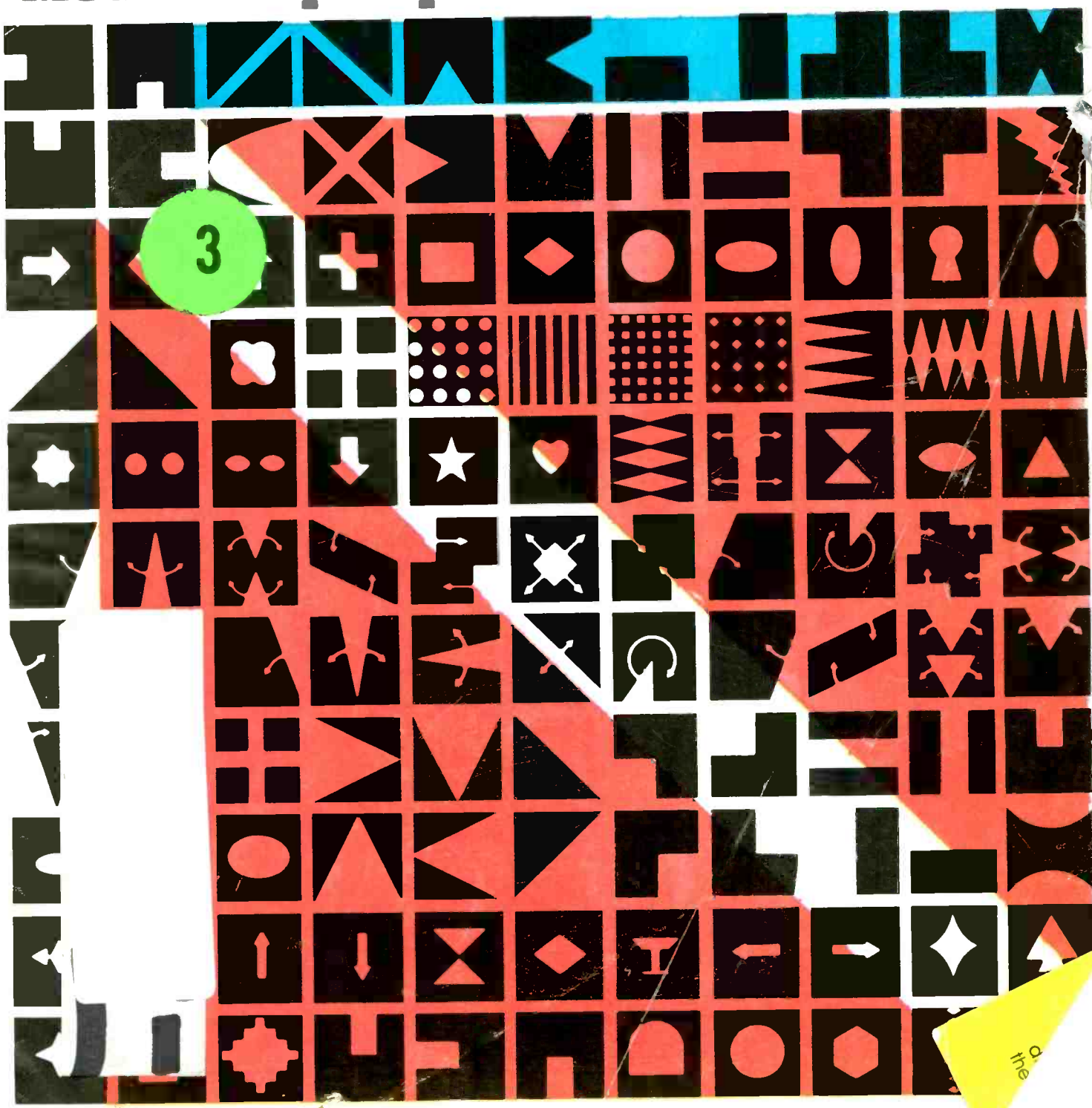

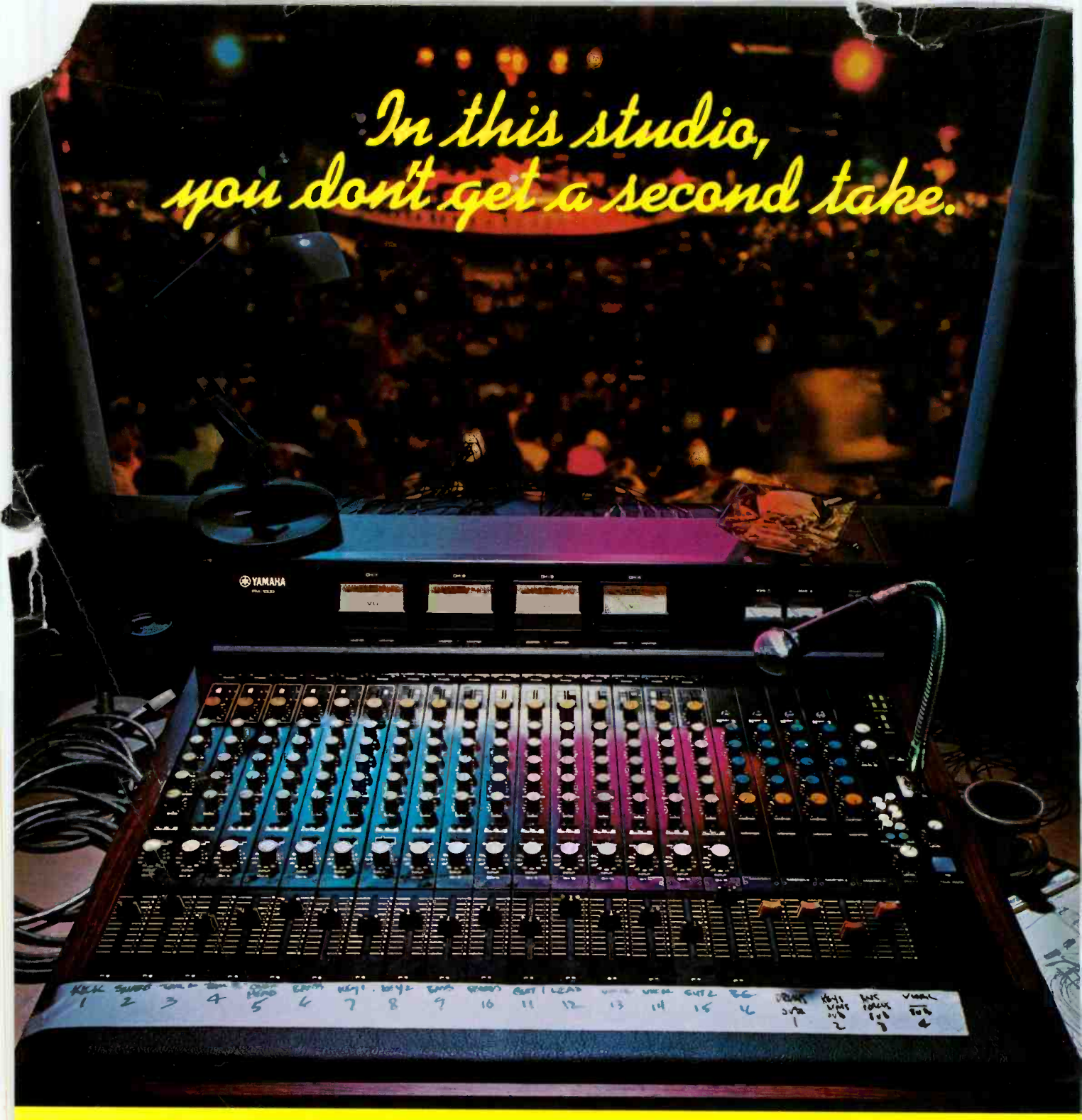

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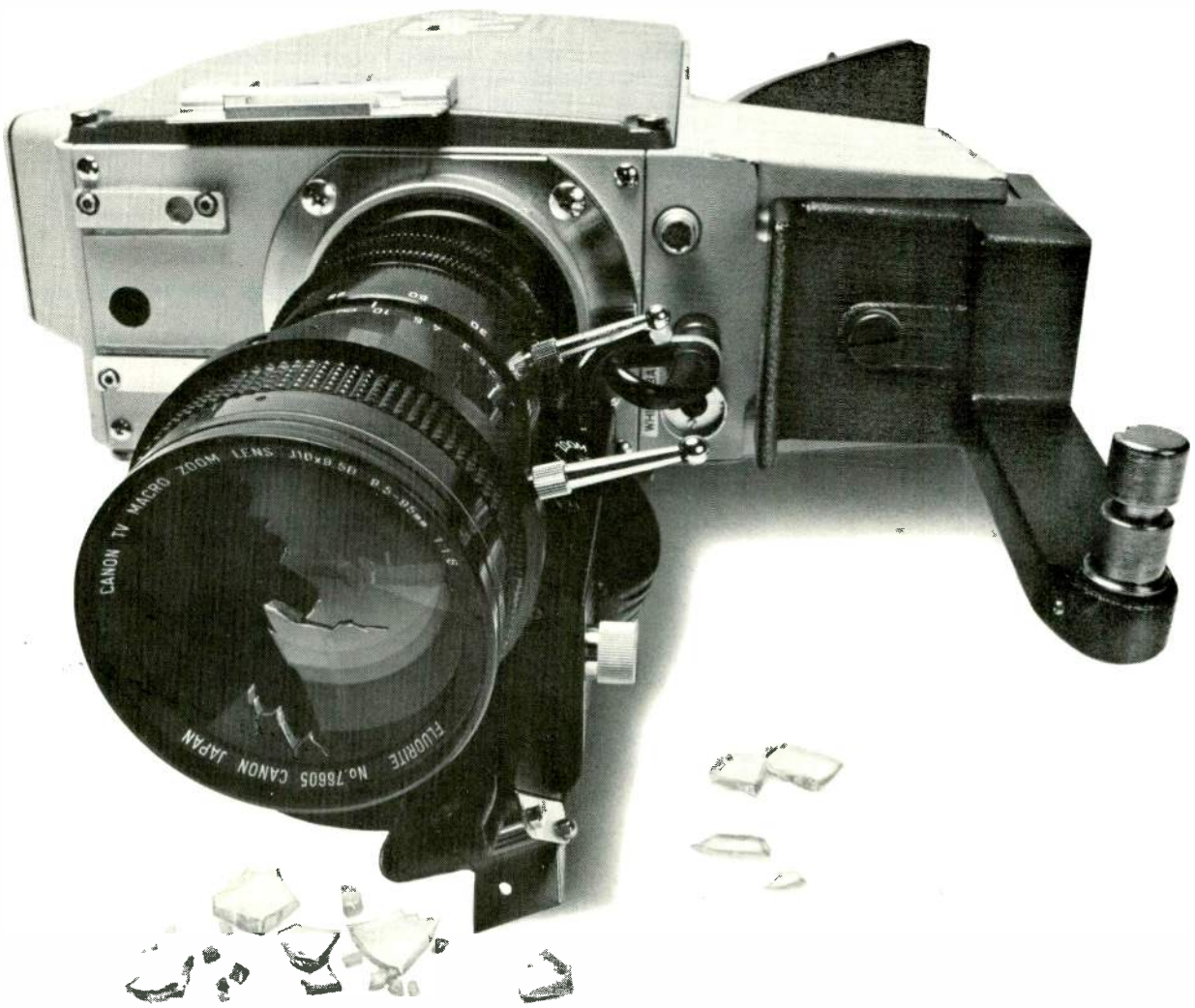

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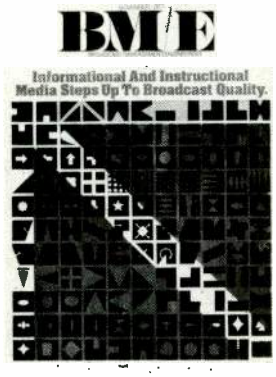

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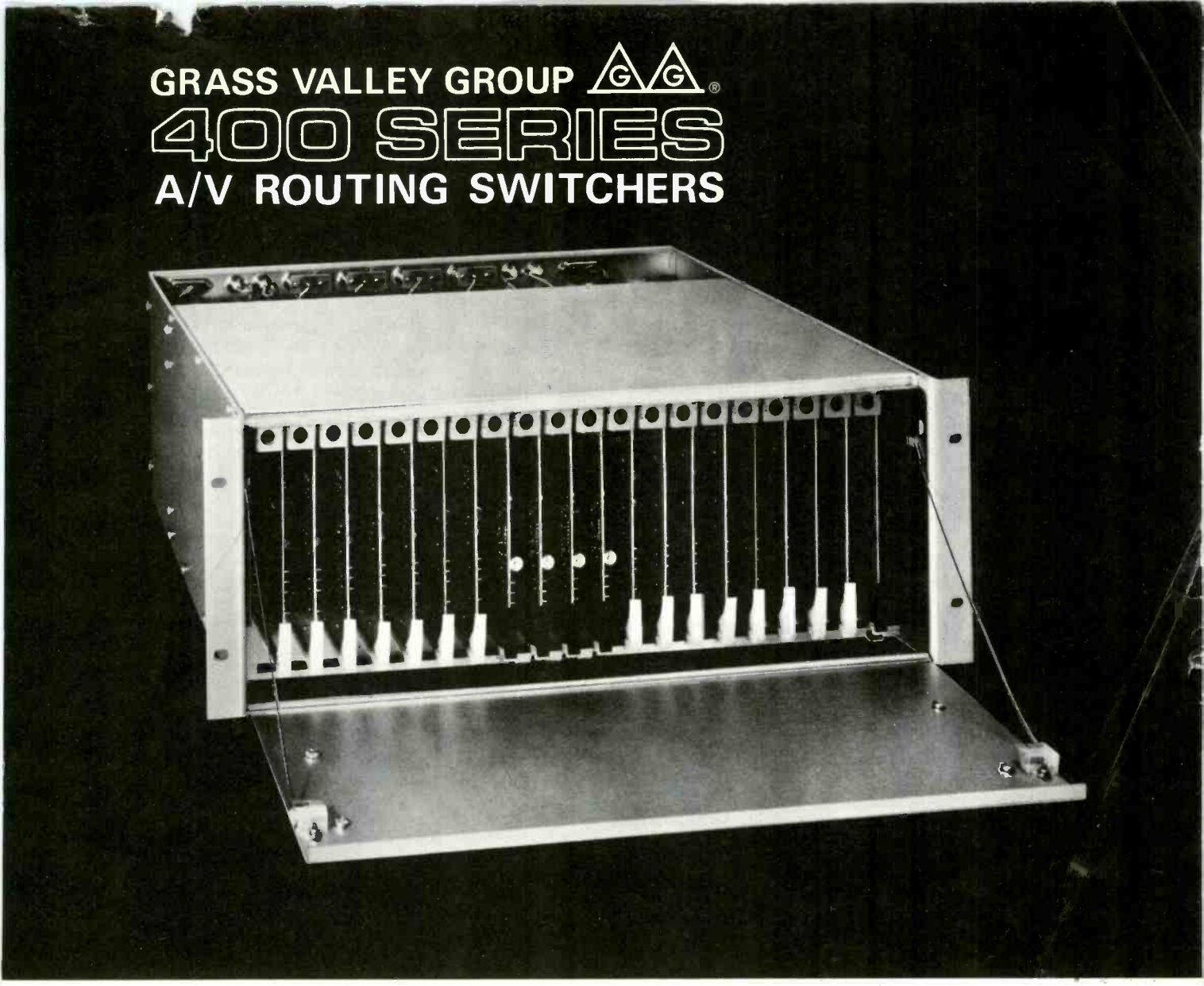

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BROADCAST INDUSTRY NEWS

NAB Files Comments On WARC '79 Highly Critical Of FCC Position

The NAB has raised a number of objections to the position the FCC will take at the 1979 World Administrative Radio Conference. WARC '79 will determine all worldwide frequency allocations for the remainder of this century.

The NAB, which has participated in the formulation of U.S. policy for WARC '79 through serving on many of the various "Service Working Groups" found only one proposal it wholly supported. NAB approves the Commission's proposal that the AM band be expanded to provide 21 additional channels for growth in AM radio. NAB went further to suggest that additional steps be taken to protect these frequencies from preemption which might result from domestic rule makings or international treaties.

In other aspects, however, NAB was highly critical. It opposed the FCC's proposal to create another AM broadcast band in the 115-190 kHz range because of unresolved technical problems. New AM stations using this band, for instance, could only be received on specially manufactured receivers which might prove prohibitively expensive. The AM Service Working Group did not consider these frequencies necessary to accommodate expanded AM service.

Citing the impossibility of preventing interference between Land Mobile services and AM services in a shared 1615-1750 kHz band, NAB opposed this proposal.

NAB also opposed a plan that would reallocate some frequencies now allocated to Broadcast Auxiliary service stating that these frequencies are needed for rapidly growing ENG uses.

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Further Details On 1-In. Video Format Released

Work on hammering out a standard for professional quality non-segmented one-inch helical videotape continues to progress with unusual speed. Following the announcement of July 7, that the SMPTE Working Group had reached general agreement on a new standard (see *BM/E*, August) specific details of the agreement were ready shortly thereafter.

The SMPTE Working Group on One-Inch non-segmented helical video recording will identify the proposed recommended practices and standards as specifications for "One Inch Type C Helical Video Tape Recordings for 525-line, 60-field NTSC Television Systems".

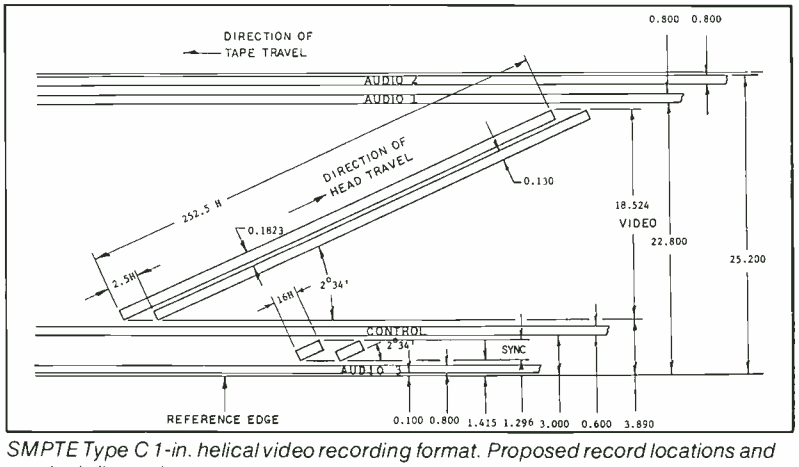
Some of the details for the 525/60 format are: the recording of each field is divided into two parts, the video track and the sync track. The video track contains all active picture lines and the interval starting with line 16 and ending with line 5; thus VITS and VIRS are retained. The video track has a 10 line vertical-interval signal gap. The sync track contains the 10 lines of the vertical-interval not recorded on the video track plus an adequate overlap. For users who do not require the information contained in the sync track the format allows for ommission of this track but no other information shall be recorded in the allotted area.

The rotating scanner drum has six head tip locations. The design provides for separate record and erase heads for both video and sync tracks. Optional features such as video and sync confidence heads and automatic tracking head may be retained. When a particular head is not used, a dummy head tip will be provided in its place.

The linear tape speed is nominally 244 millimeters/second (9.61 ips). Three program quality longitudinal audio tracks of equal width will be provided. Two adjacent audio tracks, near the top edge of the tape, can be used as separate audio tracks or for stereo signals. The third track can be used for time code, cueing purposes or as an additional audio track. A separate control track has been provided that identifies the odd and even fields and alternate frames. All longitudinal tracks are recorded at the same position perpendicular to the edge of the tape and downstream on the tape path.

The video signal is recorded using the High Band FM technique. The audio signals are recorded using conventional bias recording techniques and the control track is recorded using saturation recording techniques.

The SMPTE Working Group studying the Type B segmented helical one-inch video recording format has completed its initial assignment. It has drafted five specifications which describe the Type B format, based essentially on the Bosch-Fernseh "BCN" format. One-inch Type A Helical Video Recording is based on the original Ampex one-inch system introduced about two years ago. Type C differs from Type A and Type B which describe existing equipment in that there are no manufacturers of Type C equipment presently. Ampex and Sony have announced their intention to manufacture equipment which meets the Type C specifications though other manufacturers may enter the race if Type C becomes the preferred format for broadcasters. IVC, Philips, and RCA hold licenses to manufacture the BCN format documented by the Type B standards.



SMPTE Type C 1-in. helical video recording format. Proposed record locations and nominal dimensions.

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NAB also urged the FCC to reserve 470-890 MHz for the Television Broadcasting service rather than sharing it with Land Mobile. This portion of the spectrum is needed for future development of UHF television stations.

NAB also urged elimination of the proposal to permit satellite television operation in the 614-805 MHz UHF frequencies for fear that it would lay a foundation for a satellite broadcasting service that would conflict with the conventional TV broadcasting system.

Though NAB said it shared the concern for air safety with the FCC, it argued that a more efficient use of existing allocations for Aeronautical Mobile Service would be preferred to the proposed allocation of additional frequencies in the 584-614 MHz band. NAB also argued against allocation of the 942-947 MHz band for use by an air-ground Land Mobile Common carrier because no demonstrable need exists. On the other hand, said NAB, Auxiliary Broadcast services have a clear and present need for the spectrum while allocation to a service which may not exist for years would allow this portion of the spectrum to lay fallow.

NAB also questioned the proposal to allocate additional frequencies to the land-mobile service (private) when hundreds of land mobile channels are now being held unused in the 900 MHz portion of the band.

FM Quad, AM Stereo Stir IEEE Meet In Washington

Proponents of contesting systems for FM quadraphonic transmission and similarly proponents of the different AM stereo systems before the FCC differed, sometimes sharply, on the comparative merits of their respective systems before audiences at the IEEE Broadcast Symposium in Washington, September 29 and 30. It was the 27th annual meeting which has been sponsored by the Washington Chapter of the IEEE in recent years in association with the IEEE Broadcast, Cable and Consumer Electronics Society.

In the FM quadraphonic discussion Lou Dorren represented the Quadracast System, Eric Small the Cooper-UMX system and Emil Torick the Columbia SQ System. The arguments were substantially those advanced for the three respective systems on other occasions during the last couple of years.

For AM stereo, Leonard Kahn of Kahn Research Laboratories gave an "engineering update" on all the principal systems, including his own, now before the FCC but not submitted to the National AM Stereo Committee for testing. He also announced that Kahn had entered an agreement with Gazeltine Corporation for joint development of the Kahn system. He was challenged from the floor on certain of the distinctions he made between the systems.

BM/E learned that the NASC report was due to reach the FCC around the time this issue is distributed. There was no comment at the meeting on the results of the FCC listening tests on FM quad systems, summarized in *BM/E* last month. Nor could there be any indication from FCC representatives of a time table for the AM stereo decision, since comments were open until October 15. That makes a decision unlikely before early next year at the earliest.

Tax Deal Suggested To Help Minority Ownership

The NAB has proposed that a tax certificate, which would help a seller avoid capital gains taxation, be issued whenever a broadcast property is transfered to a buyer which is minority owned or controlled.

continued on page 12

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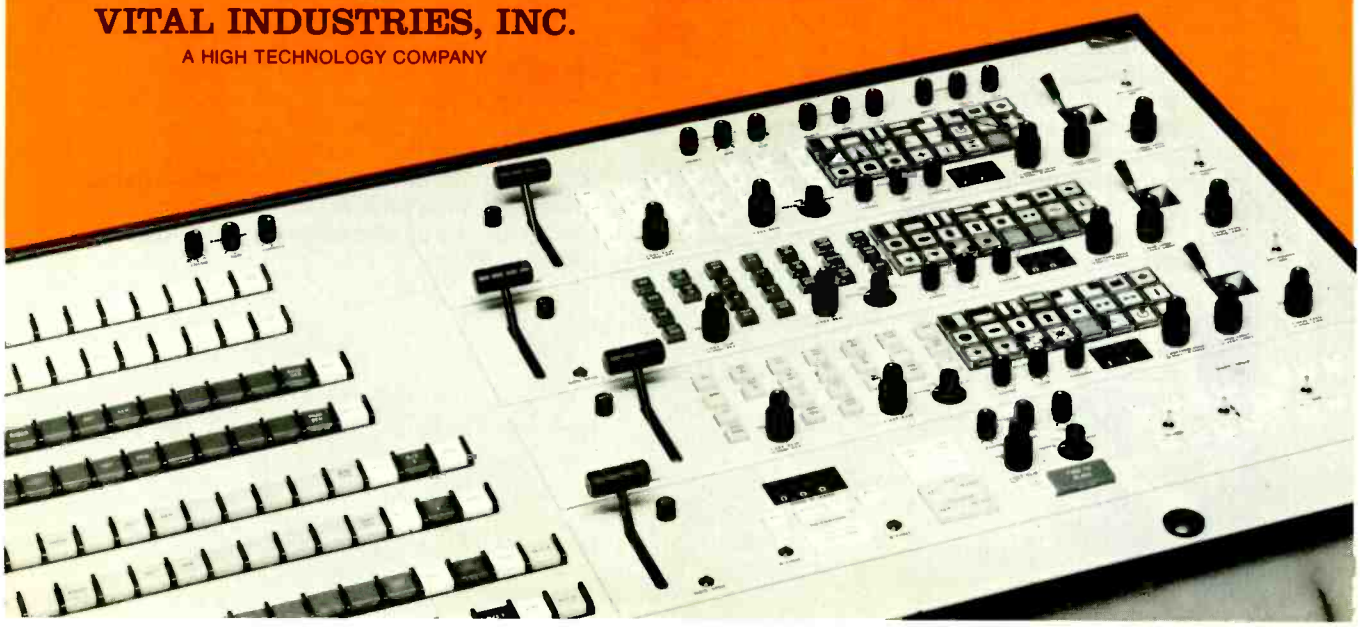

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The future for ENG grows brighter and more exciting with each passing day. The same can be said about the ⅔-inch Plumbicon, the TV camera tube that made Electronic News Gathering possible and practical at the same time.

Reflecting our continuing commitment to provide the broadcast community with state-of-the-art Plumbicon tubes—(it was a Plumbicon tube that revolutionized color TV broadcasting in 1964)—we invested almost four million dollars in the development of the ⅔-inch Plumbicon tube, most of it before the first ENG cameras were even introduced. Very early in the game, we felt that electronic journalism, with the support of modern tube and camera technology could surely add a new dimension to television broadcasting.

Even with that confidence, the phenomenal acceptance of Plumbicon-equipped portable cameras nearly overwhelmed us, as it did everyone else. In just 18 months we have supplied almost 4000 of these tubes to U.S. broadcasters!

In a market of such magnitude, it was not unexpected that other ⅔-inch camera tubes would arrive on the scene, sooner or later, with the usual "ours is better than theirs" claims. We feel that much conflicting and contradictory information has been given to the broadcast industry, regarding these new tubes. In the final analysis, only you, the broadcaster, can judge the *system performance* of these tubes and compare their performance *in the camera* with the Plumbicon tube.

In the meantime, we offer some of our own experience on the system performance of the Plumbicon tube compared to the Saticon (Registered trademark NHK/Japanese Broadcasting Corporation), one of these recently arrived new products.

Sensitivity

Sensitivity is the critical parameter in ENG. In the field, where you have no control over lighting, you need the Plumbicon tube's greater sensitivity to maintain an acceptable signal-to-noise ratio in your final edited news story. Even in those next-to-impossible lighting situations, you are more assured of producing a useable picture with a Plumbicon-equipped ENG camera than with the same camera equipped with the Saticon.

Resolution

Your final, edited tape is the criterion by which you must evaluate ENG system performance, and your pick-up tube should always be selected with that fact in mind.

Resolution specifications are a good example of this principle. Plumbicon tube sensitivity gives you enough latitude for aperture correction with very little loss in S/N ratio, to achieve the required 100% modulation depth at 5 MHz, but the resolution of most ENG *systems* is limited by the video tape equipment used. From the systems performance point of view, therefore, a pick-up tube chosen solely for its resolution specifications may have no positive effect at all on picture quality!

Lag

The Plumbicon tube has lag characteristics that are so favorable that it can be used entirely without bias light. If your camera provides bias light, it simply improves the Plumbicon's lag characteristics. The Saticon *must* use bias light or its pictures will be seriously degraded. In the middle of a news event, should a bias light lamp burn out . . . . . !

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Temperature Stability

Since the Plumbicon's photoconductive layer is processed at temperatures in excess of 175°F, your Plumbicon tube can tolerate temperature excursions that may take the photoconductor to 160°F. The Plumbicon tube tolerates 160°F ambient without damage of any kind. The Saticon, however, will experience partial or complete layer destruction at these temperature levels after a few hours. It is totally conceivable that your ENG camera will experience temperatures which will cause the Saticon tube in your camera to approach a critical life condition.

Life Based upon actual operating experience with the Plumbicon, rather than on statistics of accelerated life testing, you can expect from 2 to 5 years of service, depending upon operating practice.

Burn-in The Plumbicon exhibits no, or very little perceptible picture sticking (burn-in) especially in highlights. The Saticon, on the other hand, has been observed to have a noticeable characteristic of "hanging-up" on bright highlights and also tends to exhibit picture sticking after a camera has been focussed on a scene for any length of time.

Registration The Plumbicon tube incorporates a precision gun assembly for controlled geometry and registration. Our final testing includes a computerized registration check which matches each tube's performance with a data base which includes readings on previously tested tubes. Should any tube fail to match up to this data base, it is rejected. This is added insurance that your camera will maintain precise registration even after you replace your original Plumbicon tubes. Needless to say, you *do not* have to replace the Plumbicon tubes in "sets."

Storage The Plumbicon can, of course, be stored for many months without deterioration. But why store TV camera tubes? Storage means money. Amperex service to the broadcast industry is justly famous. Delivery of replacement tubes anywhere in the USA within 24 hours is routine. In extreme emergency situations, we have shipped tubes clear across the country in as little as eight hours.

We expect you to make your own comparisons and we are sure your findings will agree with ours. One of the things that may not be apparent from your comparisons is the fact that Plumbicon TV camera tubes continue to stay abreast of the needs of the broadcast industry after more than ten years of production which has put almost 150,000 Plumbicon tubes into broadcast stations around the world.

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News

The idea was urged upon the FCC by NAB which asked the commission to adopt such a rule for the purpose of encouraging minority ownership in the broadcast industry. The tax certificate is allowed under Section 1031 of the Internal Revenue Code.

NAB said that under the Internal Revenue Code the seller would avoid capital gains taxation if the purchase of similar property occurs within the requisite time period. The attraction for the seller is that an eligible broadcaster would be able to use the funds previously committed to taxes to buy a more desirable property. Such a rule, if adopted, would further the FCC's intention of increasing minority ownership, according to NAB.

RTNDA Holds Largest Conf. Yet; ENG Is Center Of Interest

More than 800 persons attended the 32nd annual Radio and Television News Directors Association International Convention held in San Francisco. Membership in the organization has risen in the past year to 534—more than 18 percent over '76 levels—and a busy year of activities "has really put RTNDA on the map", according to Wayne Vriesman, immediate past president of the organization.

One immediate example of the increased prestige of the group was a live 25-minute question and answer session between members of the Association on the convention floor and President Jimmy Carter, via a two-way radio hook-up from the White House. The convention, held September 15-17, heard a keynote address by Edwin Newman, NBC News, and other addresses from Ted Koppel of ABC News and Charles Osgood of CBS News. From a rhetorical standpoint, the convention program was outstanding.

Nevertheless, discussion of substantive issues seemed to lag behind. One reason may be that the big issue of the trend to ENG is no longer facing skepticism from the ranks of news directors.

The Television Workshop session on ENG played to a packed house. News directors made no challenges to the panel members who discussed their own uses of ENG. The main accomplishment seems to be that ENG has become an accepted tool for gathering the news and as such has not created the host of journalistic problems that some predicted. Stations are using ENG "just like film" so in that respect no major new problems have arisen. But KYW-TV's news director Ken Tiven showed that it's not enough to use ENG

continued on page 14

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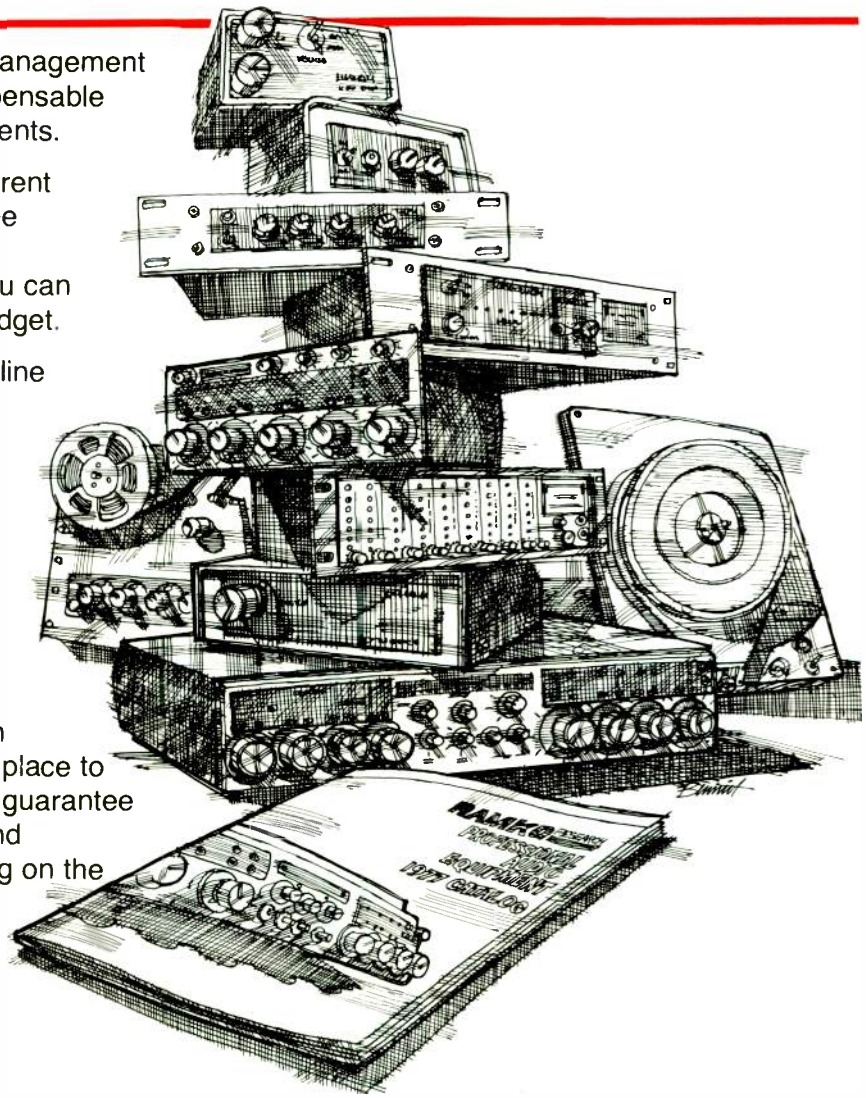

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just like film, it should also be used in a way that its unique capabilities can be exploited. Tiven showed a clip from a KYW news piece in which live minicameras set up in Pittsburgh, Philadelphia, and Harrisburg created a great opportunity to bring combatants in that state's recent budget crisis face to face. What resulted was a good piece of journalism and a great piece of programming in which the audience was provided a rare opportunity to see "a dull bit of news" brought into sharp focus where politicians were confronted by the pleadings of the people affected most by the deliberations they wrestled with in chambers of the state capitol.

ENG for radio also had its high moments. The radio workshop featured three new approaches to news operations in radio. The WBZ news director showed off a portable studio transmission link developed jointly between WBZ and Comrex, a Massachusetts manufacturer of electronic communications equipment. The item, which is not yet generally available, is essentially a radio repeater system which permits the reporter to communicate with the station and go on-air through a transmit and receive the package he carries. The reporter's package transmits to a repeater in a station vehicle that can be positioned up to a mile away from the reporter. The repeater in the vehicle is in communication with the station. The device is still in developmental stages but its superiority to walkie-talkie systems seems to be assured.

Con Stevenson of CKOC, Hamilton, British Columbia, showed a cassette editor developed for use at his station. The console controls three Sony cassette recorders of the type common to radio field work. The console controls the stop, start, record and rewind functions of the recorders and thus allows a reporter (or operator) to rapidly edit his tapes electronically. The system appears to be inexpensive and its quality impressed the newsmen present.

The most startling change in news operations for radio was described by Ted Feurey, news director of KCBS, San Francisco, who explained the computerized text editing system now in use at KCBS. (This story is covered in detail, elsewhere in this month's issue.)

The results of the election held in conjunction with the convention were Paul Davis, WCIA-TV, Champagne, IL, elected vice president and president elect; Phil Mueller, KSL, Salt Lake City, elected treasurer by voice acclamation; Tom Petersen, KWWL, Waterloo, LA, elected director at large; and Walt Haver, KTRK-TV, Houston, elected director at large for the Texas-Oklahoma region.

Pressure Groups And Gov't Interference In Programming Hit

The recent Commission on Civil Rights report which criticized broadcasting and recommended government action "would be laughable, if the implication of this kind of government intrusion weren't so terrifying," said Thomas J. Swafford, senior vice president for Public Affairs of the NBA.

Swafford told the Amarillo Advertising Federation that the Civil Rights Commission "clearly rejects the concept of television providing what people want to see. It's the Commission's contention that people should see what they ought to see." And, said Swafford, the Government will decide what that is.

Swafford also took the opportunity to take a swipe at the PTA and its efforts to use boycotting and other techniques to pressure broadcasters into accepting its views of what is acceptable. The

continued on page 16

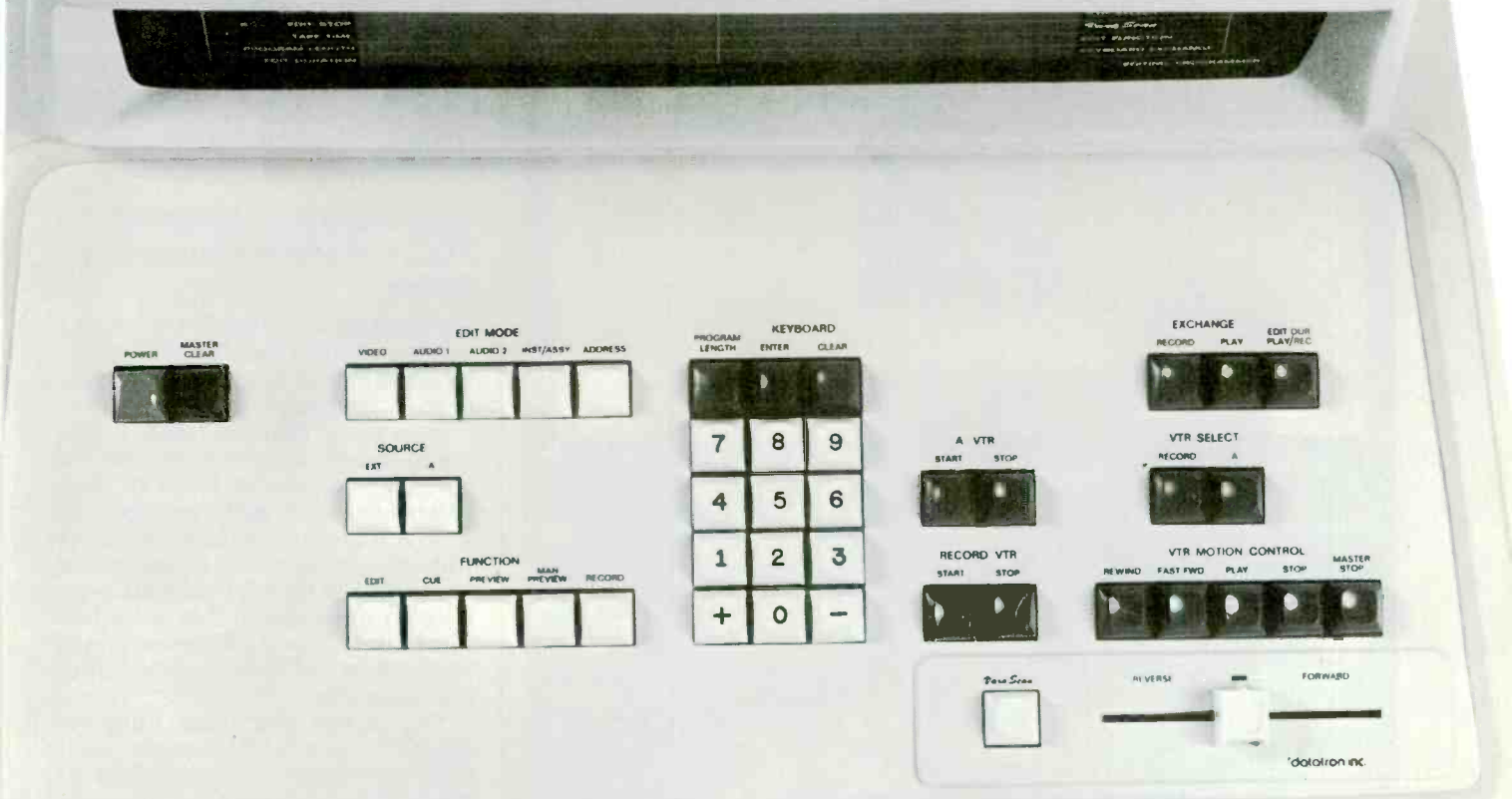
Which of our 18 editor keyboards would make your life easier?

The tremendous range of needs in videotape editing has dictated that the ideal editor must be all things to all people. Do you want capability or economy? Two VTR or three VTR control? SMPTE Time Code or Control Track? An overabundant or barely adequate keyboard?

Datatron's new Tempo 76 Editor offers flexibility, compatibility, versatility and economy in a system that can meet both long and short term needs. The Tempo 76 Series allows you to start with a basic Control Track or SMPTE editing system. The Series has a keyboard selection that offers 18 different configurations. These can provide program and event duration, displays, split audio edits, alphanumeric self-scan panel display, VaraScan,™ automatic assembly, edit decision storage and automatic switcher controls as well as many, many more specialized features.

The basic Tempo 76 Editor keyboard (shown below) gives you all the functions required for Control Track and SMPTE Time Code editing using two VTRs. If you want to add more capability, there are 17 additional customized keyboard configurations (four are shown above) providing you with fingertip control of all editing parameters.

For complete information on the unique new Tempo 76 Editor Series, just write or phone us today. Learn about the first editing system that is customized, not compromised.



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News

Parent-Teacher Assoc., said Swafford, apparently "has given up on the problem of improving the quality of education," and "has dedicated itself to remaking television." He noted that the PTA president has said her organization may resort to boycotting violent programs and their sponsors and the PTA has begun training its members to monitor programming and teaching them how to go about challenging the licenses of uncooperative broadcasters. Though the group maintains that this is not censorship, Swafford said, "actually it goes beyond censorship."

Violence On TV Down This Summer But Still Excessive Says Citizens Comm.

The two-week summer study of violence on TV, conducted by the National Citizens Committee for Broadcasting, found a 5 percent reduction in televised violence compared to last fall.

The monitoring of TV programs showed that both CBS and NBC reduced the most serious forms of violence—killings, beatings and rapes—by 16 to 17 percent. ABC remained the most violent and CBS the least. Two of the most violent shows, *Quest* and *Serpico* are gone and the number of violent incidents in *Starsky and Hutch* have been cut in half. "It looks like the public is at last being heard." said Nicholas Johnson, head of NCCB, but he called the improvement mightly small, and indicated that NCCB would continue its efforts to pressure broadcasters and advertisers.

NAB Asks For Uniformity In FCC's Multiple Ownership Rules

The NAB has asked the FCC to adopt a uniform standard for allowable minority shares in stations which would apply to all of its multiple ownership rules.

In its filing, NAB said there is substantial merit to a fixed standard for governing permissible minority stock ownership. NAB said licensees, the general public and broadcast investors will derive benefits from a more precise formulation of the rules and that raising minority ownership to five or ten percent is likely to have a favorable impact on the degree of investment in broadcast companies.

The current disclaimer filing requirement, said NAB, is ample assurance that undue concentrations of media control will not result from raising the permissible ownership levels.

NAB also asked in the same filing that the cable-broadcast cross-

continued on page 18

The new RCA TFS-121 Synchronizer alone is great.

With freeze frame and picture compression, it's unbeatable.

"Superhighband" video. The TFS-121 Digital Video Synchronizer is designed and manufactured by RCA. It starts with state-of-art sampling and storage technology that positions it ahead of competitive offerings.

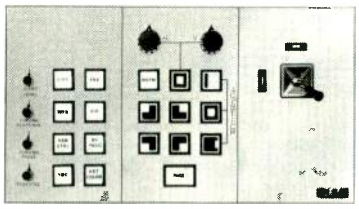
The video sampling is at four times subcarrier frequency, resulting in "superhighband" video performance which translates into excellent picture quality.

That's only the beginning of the TFS-121's high value/performance rating. It is the most versatile stand-alone synchronizer around, and works beautifully without a switcher. It eliminates the need for genlocking and/or rubidium standards. And switches smoothly between non-synchronous sources without disrupting sync.

Forget the old problems. With the TFS-121, you can accept network feeds, ENG and other remote pickups, or satellite transmissions, without disturbing in-house operations—live programming, production, recording. The TFS-121 accepts and matches those signals to station sync, so you can forget about the old problems of glitches, picture rolls and tears, or drop-outs.

A production tool, too. Freeze frame and picture compression add new performance dimensions. With these options, the TFS-121 is far more than a synchronizer—it's a valuable production aid. Consider freeze frame. With it, you can present a still picture, up-date it at the push of a button, or create strobe-like effects such as "animation". Stop the action whenever you want, or at a rate you can vary.

Picture compression on the TFS-121 opens a whole new range of production possibilities. The full-size picture is reduced to ¼ size and can be positioned in any raster quadrant or in any desired pre-set position on the screen. With joystick control, the compressed picture can be placed in any part of the raster, or can be made to slide on and off anywhere. (The joystick control can also be used to move the full-size picture on and off the raster in any direction.)



How to be convinced. The TFS-121 Synchronizer is ready now. You can investigate the many benefits of this new RCA-developed product by contacting your RCA representative. Or clip and send the coupon. The facts about the TFS-121 can be convincing.

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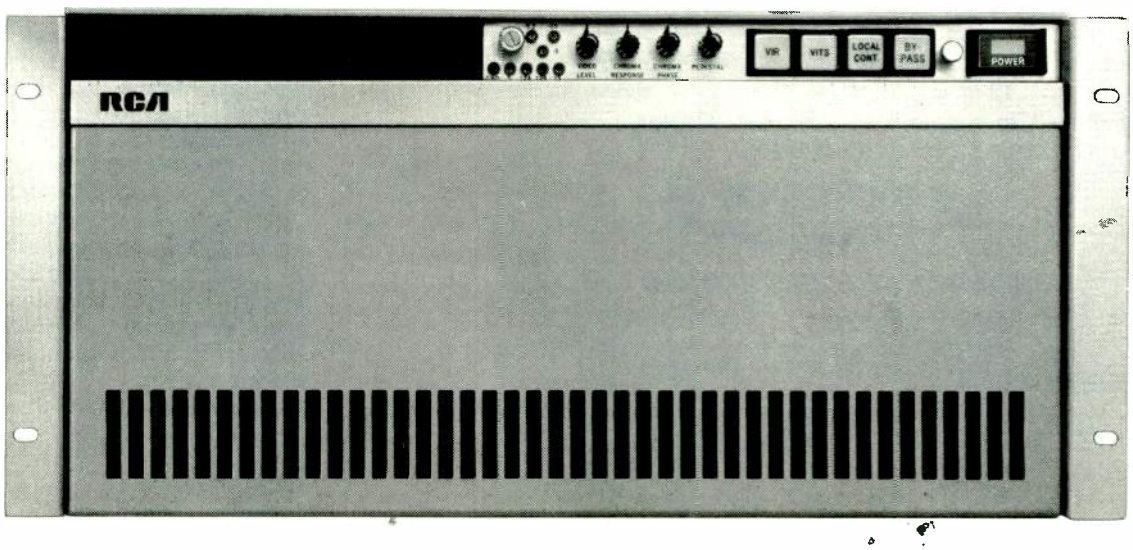

ownership rule be included in the new standard.

Contract Award Signals Start of CPB/PBS DATE System For Digital Audio

DATE, the CPB/PBS proposed system for transmitting four digitized program quality audio channels, took a major step toward reality with the awarding of a contract to DCC (Digital Communications Corp. of Gaithersburg, MD) for the construction and development of equipment to be used in the system. The DATE equipment was jointly developed by CPB, PBS and DCC. Extensive field tests conducted on the system demonstrate that the desired performance and audio quality can be achieved.

The DATE equipment concept is based on processing the audio program material, converting it to a digital format, combining the four program channels after they have been digitized, and modulating a 5.5 MHz carrier with this composite bit stream. The modulated carrier is then combined with the video baseband signals and the composite signal can then be transmitted using the conventional television transmission techniques. At any receive site, the process is reversed by separating the digitized audio from the video baseband signal and reconverting the digitized bit streams into four high-quality audio program channels.

The advantage of digitizing the audio material is that they become highly resistant to interference in the transmission process thus assuring maintenance of high-quality in the audio content. Conversely the digitized subcarrier has been found to cause negligible interference with video signals being transmitted over the television channel. Up to now it has been extremely difficult using conventional analog techniques to achieve the capacity of four simultaneous audio subcarriers in the combined video/audio channel. Mutual interference and excessive distortion have limited analog techniques to one or two channels of accompanying audio.

The DATE equipment, which can be used on terrestrial or satellite facilities, such as those being developed for public television stations, will allow a variety of applications to be implemented. Among these are: multilingual program channels, stereophonic audio with video, quadraphonic audio with video, queuing channels; orderwires, closed circuit TV systems augmentation, data or facsimile transmission.

News Briefs

NAB has registered its opposition with the SEC to a proposal that would **exclude the electronic media** from an impending rule to permit more informative advertising by investment companies . . . . Since the establishment of a joint NAB/FCC committee on regulation, some **620 deletions or amendments** have been made in FCC rules. It was announced that the temporary commiteee would become a permanent Reregulation Task Force . . . . Chairman of the board of the NAB, Donald A. Thurston, told a House Small Business Committee in testimony that the Committee has the duty and the authority "to urge the Justice Dept. and the Federal Trade Commission to **investigate the pricing practices** that have led to the high cost of AM-FM car radios.

"The Federal Communication Commission can stand up and take a bow," said Irving Kahn, chariman of the board of Broadband Communications Inc., "**as the single most effec-**

tive negative force in the communication industry." Kahn made the statement in a talk to a group of lawyers at the fall seminar of the Federal Communications Bar Association. Kahn complained that the FCC impeded technological advanced by being overly protective of established technologies when, in fact, it ought to be "a more gracious host" to emerging technologies . . . . A recent study by International Resource Development Inc., New Canaan, CT, claims that "communication satellites and fiber optic technologies will be combined to provide **universally-available inexpensive, wideband communications,"** that will result in major changes in lifestyles, "within the next few years."

A recent study by Arthur Young & Co. for financial Executives Institute shows that **communications companies paid top management** an average of $99,700 in salary and bonuses in 1976, a 23.2 percent increase over 1975—the largest gain in any of the 22 major industries studied . . . . The Office of Communication Research of the Corporation for Public Broadcasting released the results of a recent **survey of persons who pledged to PTV** stations during "Festival '75". The survey showed that fewer than half of Festival '75 pledgers in Boston, Nashville and Seattle have renewed their membership but attributed a significant portion of these non-renewals to persons moving outside the market. The report gives data on persons who did renew their memberships and certain demographics.

WATD-FM, metropolitan Boston's first authorized commercial FM station in 20 years, will **provide a talking book service** for the visually handicapped on its SCA. The programming will be prepared by community volunteers . . . . The Touchdown Club of America has presented its first **"Golden Mike" award for exceptional television coverage** of football to Pat Summerall of CBS Sports.

Lockwood Richard Doty II has been named director of network communications for the Mutual Broadcasting System . . . . **Dave Taylor,** news director of WEIC, Charleston, IL, has been named president of the **Illinois Associated Press Broadcasters** . . . . **David Day** has been promoted from operating director to **general manager of Texas State Network.**

This year's All-Star game, carried by the CBS Radio Network, attracted a **radio audience of approximately 26 million adults** 18 years of age or older, who listened to all or a portion of the game . . . . According to Robert Cole, vice president of CBS-owned FM stations, the nationwide **FM share of total audience is increasing** throughout the day and in all significant dayparts. FM radio will attract more audience than its AM counterpart by 1980, according to Cole, who also said that FM listeners now surpases AM listeners in the evenings throughout the entire week.

The Robert Wold Co. announced that it will **vigorously oppose a recent tariff filing by AT&T** Long Lines which proposes substantially increased charges for users of AT&T's part-time TV interconnection services. The proposed new tariffs will increase by one-third the intercity charges for part-time program delivery and will at least double the local loop charges for occasional users such as TV stations covering "away" games.

The Legal Dept. of the NAB is taking orders for **updates to its Legal Guide** to FCC Broadcast Rules, Regulations and Policies. The price is $35 for members and $70 for non-members . . . . The Society of Broadcast Engineers is urging Congress to adopt legislation which would authorize the FCC to **require interference protection components** to be included in consumer electronic equipment. **BM/E**

RADIO

PROGRAMMING & PRODUCTION FOR PROFIT

Three For The Money

THE OPPORTUNITIES to succeed with imagination, variety, in audio programming were never greater than they are today. Many stations are now making, and will continue to make, money by locking themselves into one of the four or five standard formats that are likely to get respectable ratings in large cities. But what about all the stations that have to compete with these successes? Being "different" is one way to avoid being an also-ran in the standard competition. Here are three "different" kinds of programming, described not necessarily for imitation but to encourage more freedom in program planning.

"Return Radio" is not just an oldies spree

Covered extensively in the trade press in recent months has been the plan of William O'Shaughnessy, president of WVOX, New Rochelle, NY, to initiate on his FM station (retitled WRTN, for "Return Radio") a kind of traditional MOR that O'Shaughnessy finds largely missing on the radio dial today. In December, 1973, *BM/E* told about the special community character O'Shaughnessy has created for his AM operation, WVOX, with programming directed to a hundred different local activities and local "gut" issues in the New York suburban county of Westchester. WVOX has succeeded handsomely by becoming "our" station to the people of Westchester, thus differentiating itself from the powerhouse New York stations just to the south.

With his plan for WRTN, O'Shaughnessy is again showing his ability to think outside the standard industry trends. In a *BM/E* interview, he emphasized that he is moving away from the current "media influences"—the charts, the listener surveys, etc. He is moving strongly toward music that he finds satisfying and that he believes the audience will too. Although O'Shaughnessy sidestepped the issue, it may be that he, himself, will be the main programmer, with help from some top pros on the New York pop music scene.

What he is making is a careful mix of top pop singers of the 1940's - 50's - 60's, some big bands, some jazz, some live big-band music from local clubs and casinos, Italian love songs, show tunes from Cole Porter, Rodgers and Hart, and the rest, society music, and much more. No "twang", no all-strings, no rock. The ebullient promotion already prepared for WRTN carries such tags as "that wonderful, warm, romantic, popular music you grew up with"; "old smoothie music returns"; "remember the night and the moon . . . . remember the music . . . . remember the girl . . . . WRTN does".

WRTN is scheduled to go on the air regularly about the time this magazine is distributed. It will have a raise of power to 3 kW and a new antenna, about 500 feet above the average terrain. These changes figure to put the signal strongly not only throughout Westchester but into northern Manhattan as well. It will be fascinating to see how this "sincere MOR" will go against NY's battalion of rockers.

BM/E listened to tapes of a couple of programs already prepared. If this kind of music is going to go at all, O'Shaughnessy will win big. The assembly job and the recording are superlative. O'Shaughnessy also has going for him the fact that ratings are not a major part of his selling equipment. He sells WVOX largely on the undisputed fact that it *is* the community's station. WRTN will have its own powerful selling rationale and will be—if it goes—another example of success through fresh thinking.

Really understanding the audience makes "Earth News" a galloping success

A program used by many stations has important lessons for single-station programmers. "Earth News" is syndicated out of Malibu, CA., (32234 Pacific Coast Highway). It consists of two five-minute news—interview programs per day, with the 14 programs for one week distributed to subscribing stations on a 33-1/3 disc. The program is sponsored by Bristol-Myers for "Clairol", and they get 45 seconds at the start of each segment. The series is free to the radio station—the only quid pro quo is an agreement to put it on faithfully twice a day, the first part in evening drive time (3 to 7 pm), the second part between 7 and midnight.

As the sponsorship suggests, the intended audience consists of teenagers and those only a little beyond that state. The producers of Earth News have established a grand rapport with the audience by dealing with subjects that directly concern that audience. Interviews with top rock and pop musicians are frequent. Topics like discrimination in movie casting, ecology, life stories and interviews with leading entertainers of every stripe are also staples. The whole operation is run by young people who are sympathetic to its aims.

Its success is enormous: more than 400 stations in the U.S. and more than 400 more in other countries are signed up. Jim Brown, director, gave *BM/E* an example of the program's pulling power: one request a year ago for a write-in brought more than 40,000 letters.

However, it is totally wrong to imagine the program as a series of gushing inanities, along the lines some adults consider just the trick for teenagers. Brown is emphatic that Earth News postulates a high intelligence among its listeners. It deals seriously with serious topics. Earth News sent *BM/E* two of its weekly discs. One was a series of interviews with the blind pianist-singer Ray Charles and a credible, attractive human being emerged, extremely talented but real, with real problems, not a larger-than-life poster figure. If this is the quality that appeals to teenagers, the Republic may not be as badly off as some oldsters fear.

A new series just getting underway, "Hot News", has already been picked up by 360 stations and its success reinforces the image of the intelligent, aware teenager. "Hot News" uses a comedy team called the "Firesign Theatre" who specialize in political and social satire. It is a once-a-day five-minute program sponsored by Noxzema. Many stations have welcomed it as a genuinely funny series on radio's humor-starved landscape. Satire, of course, is supposed to be a tune-out for all but a tiny minority of listeners. "Hot News" is proving that this is not necessarily true.

The points are obvious: to appeal to a particular audience you have to know that audience and be sympathetic to their concerns. And if you are aiming for teenagers, don't figure them for dummies: that will kill you from the start.

Live concert music is spreading

In an entirely different area of programming, live concert music, station

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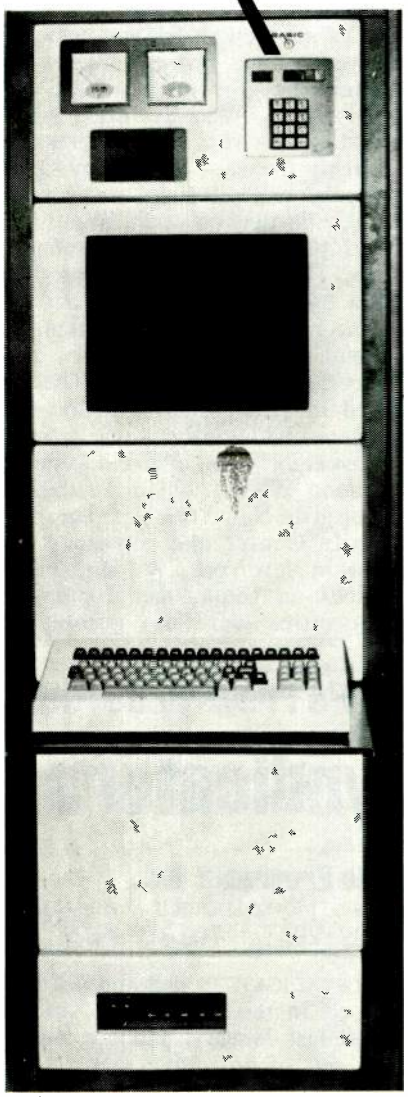
It's BASIC



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We asked broadcasters all over the country what they wanted most in an audio control system. They told us and we built it. We call it BASIC.

Everybody wants a system that talks English... not computerese. BASIC will find the next station ID if you ask it to "find the next station ID." Just like that. You can insert your programming commands in broadcast language phrases.

Everybody wants a system that will perform all important functions (not everyone agreed on what was important and what wasn't). Nevertheless, BASIC performs all of the functions all IGM systems ever have... and more.

...the only audio control system that talks your language ...ENGLISH!

Everybody wants a system that handles thousands of events. BASIC A employs RAM (Random Access Memory) to store 4000 events, expandable to 8000 in 2000 increments. BASIC B employs "floppy discs" to store eight days of up to 6000 events each day plus 8000 events common to all days.

Everybody said "those big systems cost too much. Produce one that we all can afford." So we did. We call it BASIC... and it's the finest thing IGM ever did.

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Radio Programming

WNCN in New York recently announced a series that exemplifies and supports the growing trend for such programming. WNCN will, this fall, put on at least five of the operas produced by the New York City Opera Company, and will distribute them to a nationwide network that already includes 12 stations and will expand to others. The whole series is being sponsored by U.S. Pioneer Electronics Corp., high fidelity manufacturers. Bernard Mitchell, president of U.S. Pioneer, said that the series will be continued in 1978 with expansion to a number of additional stations, to reach at least eight to ten million listeners.

Station WNCN will make the live pickup at the New York State Theatre in Lincoln Center and broadcast the operas in New York City. Distribution methods for getting the programs to other cities were not completely worked out at the time of writing, but it seemed likely that both tape and the new AT&T high-quality diplex transmission would be used. A spokesman at WNCN told *BM/E* that the station was keeping alert, for future series, to the desirability and availability of all forms of transmission, including satellites, if and when they could be readily used.

The stations already signed up (mid-September) were: WFMT, Chicago; WQRD, Detroit; WCRB, Boston; WCLV, Cleveland; KVOD, Denver; KXTR, Kansas City; KING-FM, Seattle; KHEP, Phoenix; KLEF, Houston; KFSD, San Diego; KFBK-FM, Sacramento; WTMI, Miami. The programs for fall 1977 (the first three running before this magazine is distributed) are: October 16, "The Girl of the Golden West"; October 23, "The Coronation of Poppea"; October 30, "The Marriage of Figaro"; November 3, "Cavalleria Rusticana" and "Pagliacci"; November 16, "The Magic Flute".

BM/E's Program Marketplace

Syndicators For Radio

Radio Programs, Inc.

2773 E. Horseshoe Dr., Las Vegas, NV 89120. Tel: 702-451-4273

MOST SYNDICATORS, including all those profiled in this department since it started last January, produce one or more sets of programs, each set furnished in duplicate to all subscribers who choose that particular format. Some variation is provided in a number of the formats, but basically every station that subscribes to a particular format from a given syndicator gets the same music.

This mode of operation is highly successful for many syndicators because it has been highly successful for large numbers of radio stations. But syndication can be done in quite a different way, also with success, as witness the operation of Radio Programs, Inc., of Las Vegas, up for examination this month.

William G. Mors, founder and president, reports that he is in the process of changing from a more or less standard syndication plan, similar to that of most syndicators, to a new practice of *programming each subscriber individually*. He says he developed a strong need to get away from doing the same thing everybody else was doing; the industry seemed to him in a "follow-the-leader" mode, with too many of the formats including the same or very similar music, from one syndicator to another.

From now on, says Mors, all programs from RPI will be put together specifically to meet each client's particular needs. This means reducing the client load to an eventual 20 or so stations. At the time of writing, RPI had about 50 subscribers under its old plan of fixed-content formats, but as these drop out, the old formats are not being resold. There are already nine stations signed on (mid-September) for the new custom programming plan.

Each new subscriber gets time-tapes, fill-tapes, station promos and PSAs, Christmas tapes, etc., along with the monthly programming worked out for that station. Charges are independent of market size at $500 a month for unannounced programs, $600 for the same with announcers. The number of monthly update tapes in not fixed, says Mors, but depends on how much appropriate new music actually appears on the market.

The basic concept, says Mors, is to give each station whatever kind of music that station needs, as opposed to a format designed centrally for all stations, for specialized demographics. Most RPI clients are MOR oriented and use a wide variety of music. But RPI has enough music on hand to make up "block programming", if the station management wants that Ethnic programming, to serve certain audience sectors, is one example. RPI can supply it.

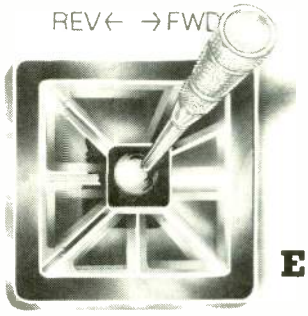
continued on page 24

OUR LIPLOCK™ DOES FOR AUDIO WHAT OUR JOYSTICK DID FOR VIDEO

Editing Videotape Means AUDIO as Well as Video

Most videotape editing systems ignore audio. They solve only half your editing problems. The Convergence ECS-1B Joystick Editing System with Liplock™ solves both your audio and video editing problems and sets a *new world standard* for speed and precision.

Now that you've selected your edit points in world record time, set another speed record for getting that edit on tape with our new switchable Half-Time edit cycle.



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Half-Time reduces cue pre-roll, post-roll and recue times by 50% and saves crucial time when you need it the most.

Liplock™ and Half-Time are deliverable now and available only on Convergence ECS-1B Joystick Editing Systems. As a matter of fact, we even have the patent* on Joystick Editing Systems. Call us for a demo—There's a lot more you need to see—and hear—for yourself.

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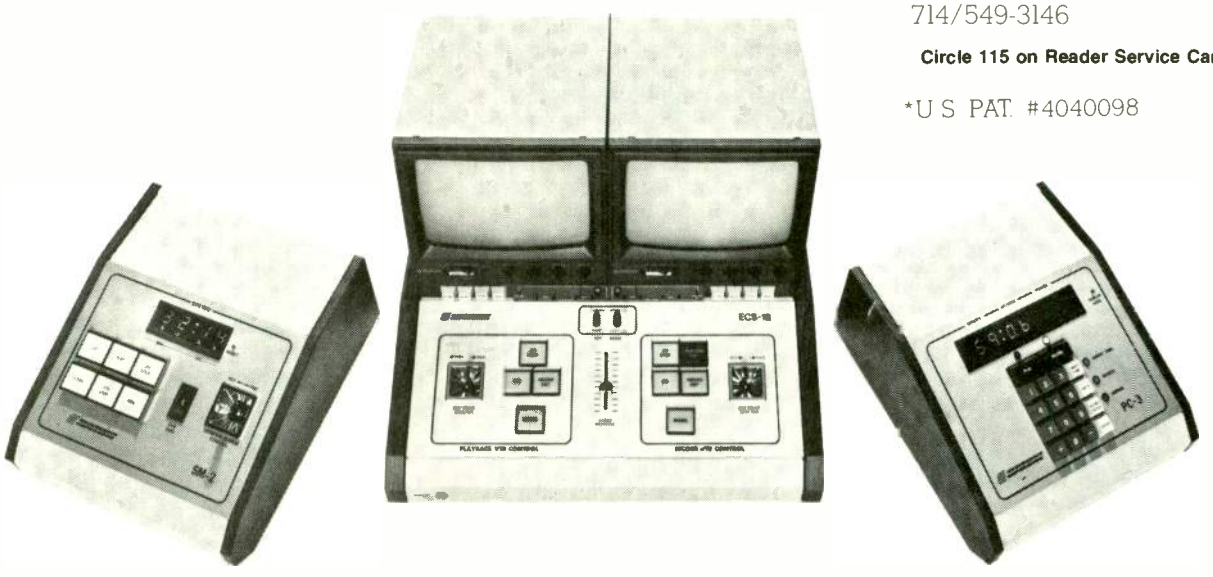

Radio Programming

The station can have the programs with or without announcers. All tapes are duplicated at playing speed.

RPI, says Mors, looks for stations that cannot use the specialized formats offered by many syndicators. Response from clients and prospective clients has confirmed Mors' conviction that the service is much needed. But Mors emphasizes, as do other syndicators, that any syndication has value to the subscriber only to the extent the station management makes a thorough, professional effort of its own. That includes the program director. RPI, says Mors, "is not in competition with the program director . . . . RPI gives the broadcaster the chance to get out of the record business and into the entertainment business."

Bill Mors arrived at his strong notions about how to syndicate broadcast programming from a long and highly varied indoctrination in the broadcast business. He started as a page boy as far back as 1937, at WBBM in Chicago. Then he worked on the production of radio soap operas, including many of the famous ones of the late thirties: Vic and Sade, First Nighter, Bachelor's Children. He was on Wrigley's Melody Ranch with Gene Autry.

He was in the Air Force from 1940 to the end of the war. He rejoined WBBM after the war, then went as TV director of a major market NBC station. He formed an advertising agency, then went back to directing programs for broadcasting.

In 1967 he joined Schafer Electronics and demonstrated that company's automation equipment on the road, in their Demo Buses. He became program director for Schafer's music services.

And in 1968 he left Schafer to set up his own program production company. He was led to this by the experience of putting together the Schafer programming, along the "beautiful music" lines being used by McGlendon at KABL in San Francisco (an inspiration for several other early "beautiful music" syndicators also).

Radio Programs, Inc., the name of Mors' operation from the beginning in 1968, caught on early in its life and helped establish the patterns for successful syndication in this country. The fact that Mors has now abandoned the pattern he and a number of others set up so successfully shows the influence of the personal factor, so important in the character and performance of a syndication. Personal taste is crucial to a viable program mix. And the rules can be changed by one talented and skilled man who is unhappy, for whatever reason, with the way others are doing things. **BM/E**

BETTER YOU THAN THEM.

Today's broadcasting equipment and standards let you to transmit things you never could before.

Like tape hiss, cue tone leakage and turntable rumble, just to name a few.

And that's precisely why you need the JBL 4301 Broadcast Monitor.

It lets you hear everything you're transmitting. All the good stuff. And, all the bad. So you can detect the flaws before your listeners do.

The 4301 is super-compact, 19" h x 11½" d x 12 1/16" w. So it fits all EIA Standard rack shelves. It costs $168. And it's made by JBL. The recognized leader in professional sound equipment.

Just give us your name and address and we'll send you all the 4301's very impressive specs.

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Circle 118 on Reader Service Card

The Sony BVE-500A. It's the best editing decision you'll ever make.

Announcing the professional automatic editing control unit professional editors have been waiting for. The Sony Broadcast BVE-500A.

Already, the earlier BVE-500 has been accepted as the state of the art in control track editing by broadcasters around the world. In the new BVE-500A, we've made substantial improvements that increase the speed, versatility, and convenience of the editing process.

Compare these editing advantages with existing equipment, and consider the added creative capabilities you get with the Sony Broadcast BVE-500A.

1. **BIDIREX control.** The big news in the BVE-500A is BIDIREX: two self-return search dials that take the place of ordinary pushbutton search controls. Many control instructions have been built into these BIDIREX dials to allow an operator to shuttle tape in forward and reverse direction at various speeds.

BIDIREX eliminates mode selection error. And it gives Sony U-matic editing a true "film" feeling ordinary editing systems can't match.

2. **Decision Prompter.** The new BVE-500A uses lamps to prompt the operator to the mode and progress of all editing decisions.

Function lamps blink until the edit commands are made, then go automatically to "steady on." Even in a busy newsroom, with many interruptions, an operator can tell at a glance the status of his last instruction as the BVE-500A prompts him for the next command.

3. **Automatic Entry.** The BVE-500A saves valuable time with a feature that automatically enters the "IN" point when the preview button is engaged.

If the operator has already selected an "IN" point, this auto mode has no effect; the editor may preview without disturbing his pre-selected "IN" point.

4. **New Full Time Counter.** The BVE-500A counts control track pulses from −79 minutes through 0 to +79 minutes. An operator need not concern himself with the count when he initiates an editing sequence.

5. **Short Pre-Roll.** When used with external sync, pre-roll is reduced from five seconds to three seconds, a further time-saving advantage.

6. **Cue Control.** The BVE-500A features built-in cue record and erase. This 1kHz tone is recorded on Audio 1, and is useful for both auto control systems and pre-cueing the tape to air.

These are just a few of the new BVE-500A features.

Others include auto shut-off, external interface of control logic, manual edit capability, and more. You can see them all in action when you ask for a demonstration of this versatile new editing control unit. To do that, just contact your nearest Sony Broadcast office.

Sony Broadcast

Sony Corporation of America, 9 West 57 Street, New York, New York 10019
New York: (212) 371-5800 Chicago: (312) 792-3600 Los Angeles: (213) 537-4300 Canada: (416) 252-3581

Circle 119 on Reader Service Card for literature
Circle 120 on Reader Service Card for a demonstration

The fire, earthquake, election and touchdown company now brings you love scenes in Studio Two.

The new HK-312 studio camera from Ikegami, the ENG experts.

Wherever there's been news, from natural disasters to national elections to sport events, Ikegami ENG cameras have been there with the news teams. Now Ikegami makes news of its own: the introduction of our new state-of-the-art HK-312 studio and field camera.

We've built ENG cameras so good in the rough-and-tumble of news-gathering that more Ikegami ENG cameras are in use than all others combined. So imagine how good an Ikegami camera can be in the stable environment of a studio.

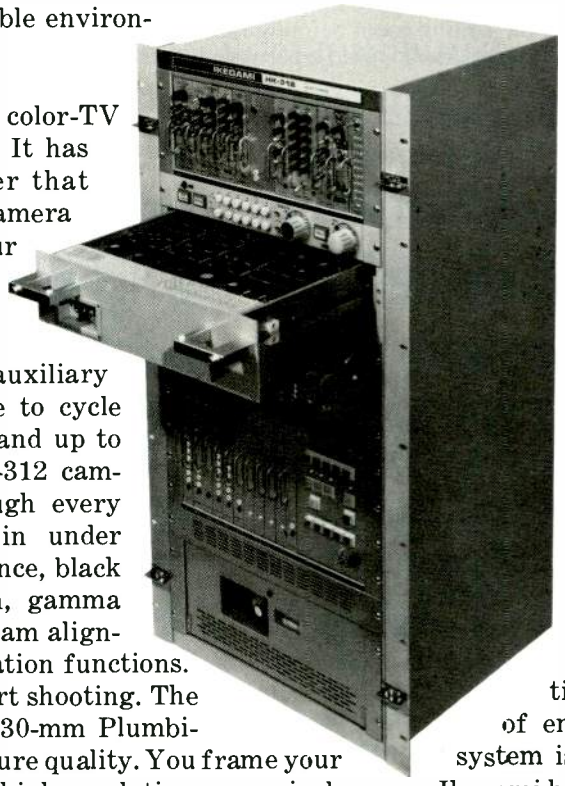
Very good indeed.

Ikegami's new HK-312 color-TV camera is like no other. It has a built-in minicomputer that helps trim the daily camera checkout from a one-hour ritual to an automatic run-through that's shorter than a 20-second commercial. With its auxiliary computer, you'll be able to cycle your Ikegami HK-312 (and up to four other Ikegami HK-312 cameras linked to it) through every adjustment parameter in under two minutes: white balance, black balance, flare correction, gamma correction, video gain, beam alignment, and eight registration functions.

All this before you start shooting. The HK-312 gives you three 30-mm Plumbicon tubes for highest picture quality. You frame your shot on a high-intensity, high-resolution, seven-inch tiltable viewfinder. Signal-to-noise ratio is better than 54 dB.

We've combined the zoom lens and camera tube into a single rigid assembly for highest accuracy of the optical axis. Class-A deflection amplifiers assure maximum linearity and best picture quality. Black level balance correction is automatic. Picture quality and brightness are maintained in spite of flare.

Camera-control unit for the HK-312



A complete two-line image enhancer provides horizontal and vertical detail correction. A special comb filter keeps background noise to a minimum.

All this and a lot more.

If your budget or production requirements are smaller, use our tried-and-tested TK-355 studio camera. Five were used for network feed at the 1976 Democratic National Convention where camera failure would blow a lot more than a few fuses.

The TK-355 uses three 25-mm Plumbicon tubes which are bias-lighted for reduced lag at low lighting levels. This reduces studio lighting and air conditioning power consumption. And the camera is more compact and lighter, a little easier to maneuver. The unique half-rack CCU facilitates multi-camera studio installations.

Both broadcast cameras use TV-81 minicable for ease of handling.

If you need a small, fixed-position camera for announcer booth and newscasting, check out the Ikegami HK-309. It can be operated remotely or simply turned on and left in fixed position.

For movies, the Ikegami TK-950 is a large-image film-chain broadcast camera system for 16-mm or 35-mm film or slides with highest quality color reproduction. Much of its operation is automatic, requiring a minimum of engineering support. Its unique optical system is dust-shielded and unusually compact.

Ikegami has been famous for its ENG cameras for a long time. Now take a look at what we can do with studio cameras. For specs or a demonstration, get in touch with us. We have nation-wide distribution.

Ikegami

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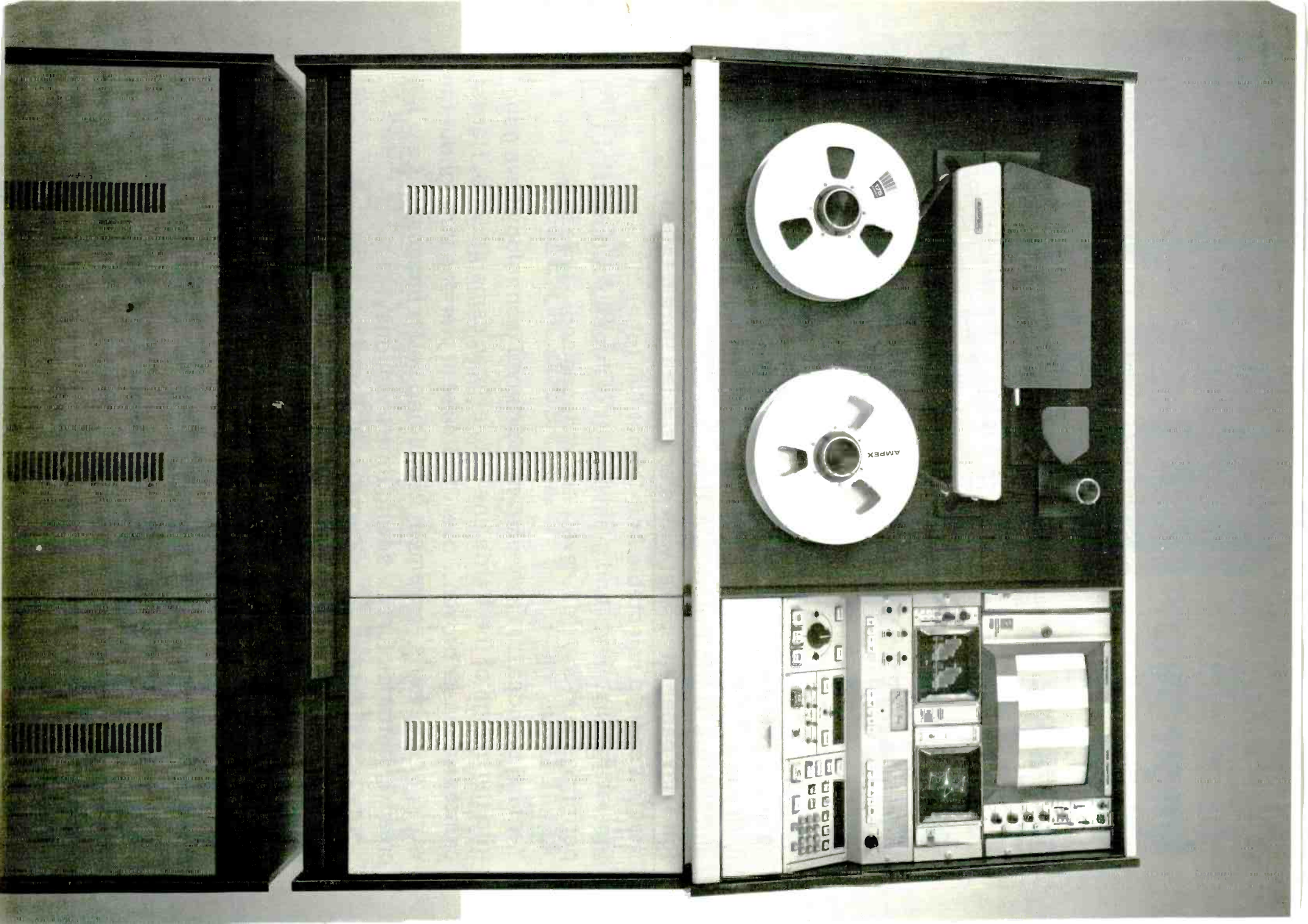
Plumbicon is a registered trademark of N.V. Philips.

Circle 123 on Reader Service Card


AMPEX

Everything Ampex knows about quad: AVR-3.

Nobody in the world knows as much about quad videotape recording as the company that developed it. Ampex. And everything we know about quad is available now in the AVR-3.

The Choice Between High Band and SHBP. You won't have to decide between High Band and Super High Band Pilot, because they're both built into the AVR-3. High Band for playing the material now in your library, and SHBP for going deeper into multi-generation productions than you've ever gone before. And whether you record at 7-1/2 ips or 15 ips, whether your tape is High Band or SHBP, AVR-3 always switches automatically to provide the correct playback.

Faster, Easier Editing. Forget about the wasted hours you used to spend laying down "crystal black" and time code for editing. Just turn on the AVR-3 and go to work. Internal "intelligence" produces magnificent sequential assemblies. The finished production is smooth and locked up all the way. Even if you have to re-edit, continuous time code and control track allow you to insert edit with total confidence.

Famous Ampex Tape Handling. The AVR-3 tape handling system acts as a constant guardian for your tapes. Using programmed acceleration/deceleration rates, the transport shuttles tape at up to 375 ips, yet stops at any precise point with no wasted motion or tape stress. Even when you use 16-inch reels.

A Long-Range Investment. Durability is just as important to Ampex as initial performance. Many of the very first quad VTRs Ampex ever delivered are still in operation, and examples of every successive model are humming away in studios throughout the world. AVR-3 continues the Ampex tradition of building tape machines that last.

An International Performer. AVR-3 is ready to work all over the world on any commercial television broadcasting standard, using any commercial power line voltage and frequency.

Versatility, Economy, Quality. The complete story is available in a free brochure that shows technical and performance specifications for the AVR-3. Read about the AVR-3, and you'll know what Ampex knows about quad.

AMPEX

Ampex Corporation, Audio-Video Systems Division, 401 Broadway, Redwood City, California 94063, 415/367-2011

Circle 126 on Reader Service Card

Non-Broadcast Television Proliferating and Prospering More Diversified Programming Than On-Air Fare

Part I Industry And Business Creating Private Networks

Part II ITV Is Vital Educational Tool In Some School Districts: At Broward County It's Served Four Ways

Part III Television In Health Care: Tempting As A Panacea To Many Problems

Industry And Business Creating Private Networks

VIDEO APPLICATIONS IN BUSINESS and industry are mushrooming; in the health care field, television is being used to improve care and cut costs; on the education front there have been retreats but at many schools the trumpets have always sounded "advance" for both radio and TV; government agencies use TV to increase skills.

It's pretty hard these days not to be aware of the fact that non-broadcast uses of television are exploding. In releasing their new book, *Private Television Communications: An Awakening Giant,* this past summer, Judith and Douglas Brush announced some eye-opening figures. They report that more than 46,000 complete video programs totalling some 15,000 hours would be produced by some 700 business and non-profit organizations by the end of 1977. This is more hours of programming than that produced by all four national television networks combined, the Brushes' report said, and is a four-fold increase over what was produced in 1973.

The Brushes call this private non-broadcast market a $500 million industry headed to $1.5 billion by 1980. The hardware portion—cameras, mastering VTRs, etc., plus video cassette players for viewing the programs—comes to $164 million for 1977 and is growing about 30% a year. These figures will be confirmed from another source, The Hope Reports* in *Hope Reports AV-USA 75-76-77* to be published next month. Preliminary Hope tabulations made as this issue went to press show the number of programs to be a little over 40,000 and hardware purchases of $150 million for 1977. These are exclusive of educational sales to schools and universities.

There have been a spate of publications announcing the new revolution. Beside the Brushes' effort two recent books are *Television and Management, The Managers Guide To Video* by John A. Bunyan and James C. Crimmins and *Profiles in Video: Who's Using Television And How* by John Barwick and Steward Kranz. Both these books are published by Knowledge Industry Reports which also sponsors Video Expo. Video Expo '77 held last month (just after this report was prepared) is proclaimed to be the largest non-broadcast video exhibition in the land. In 1976 over 6000 from business, industry and education attended the New York event.

Over ten newsletters and magazines have jumped into print to cover non-broadcast applications. Consultants in the field are turning out articles by the dozens; one of them, Willard Thomas, claims to be writing three books simultaneously on "media for organizations."

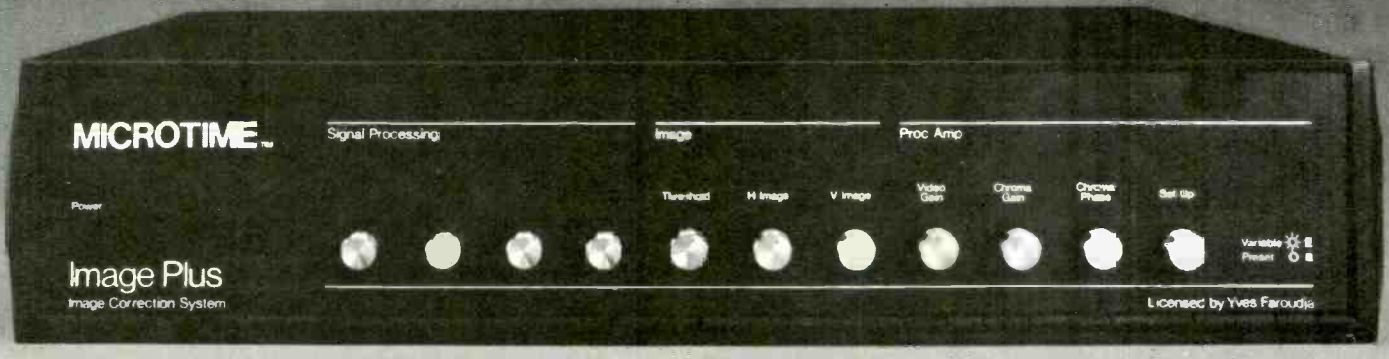
Numerous professional and trade organizations have been formed to serve the field: Industrial Television Association (ITVA), the Media Div. of the American Society For Training and Development, the Industrial Training and Education Div. of the Association of Educational Communications and Techology and the International Tape Association. The latter is a trade association which accepts user members; it has been active in promoting the use of television to corporate management. There are regional groups: ITVA has regional chapters and in the Detroit area, for example, there is the Academy of Video Communicators. The Academy held its Second Annual Awards Program last April. Over 200 attendees watched the presentation of eleven "Twiggy Awards."

Engineers, technicians, camera persons and television producers/directors/writers who in the past had to look primarily to broadcast stations for employment now find their talents in demand by the likes of Standard Oil, State Farm Insurance, Ford Motor, John Deere tractors or the local bank.

*Hope Reports Inc., 9191 S. Winton Rd., Rochester, NY, 14618

continued on page 38

Improve Any Video Signal.



Reduce Color Errors | Increase Picture Detail | Crispen Chroma | Reduce Video Noise by 6 DB

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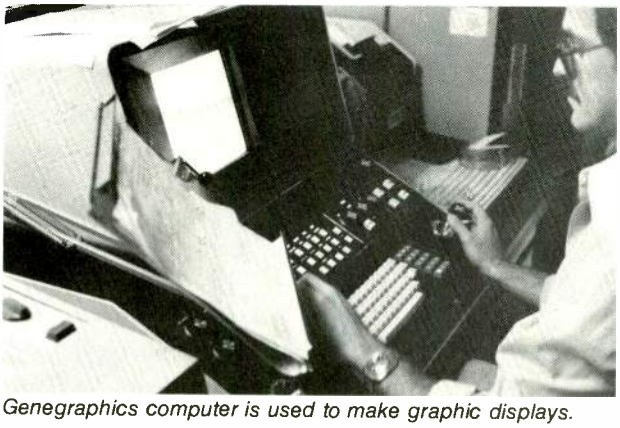
MICROTIME

Circle 127 on Reader Service Card

Non-Broadcast Television

Studio control room at Standard Oil.



Genegraphics computer is used to make graphic displays.

Diversified programs produced; corporate communication big

One may tend to think of industrial TV as an unending succession of training tapes covering safety on the job, how to adjust or replace this or that and so on. Training tapes can be pretty hot stuff. Gulf Oil hires the world's foremost seismologists to lecture to their staff explorers. These lectures are taped for wide internal distribution. The Fluor Corp. trains oil plant refinery design engineers on how to do new plant cost estimating.

Several years ago corporations learned how to use television as a very cost effective marketing sales aid. Use of the medium runs the gamut of updating salesmen on new products to helping them close sales. Videotape is moving in on film as a means of delivering a point of purchase sales pitch.

The most significant latest development is "corporate communications." Since so many citizens have such a low view of industry and business these days, top management is going before the camera to win the hearts and minds of its own employees at the least. To the extent that the company is successful, it ends up with more satisfied employees and it can even motivate some to call upon their Congressmen to halt the passage of legislation that may be harmful to business.

At the ITA Chicago Video Management Seminar in September, Joe Hammond, vice president, Public and Government Affairs, Standard Oil of Indiana, played a tape direct to employees on why they should be against the pending legislation calling for oil companies to divest of their interest in other energy sources such as coal. Standard Oil calls the threat "dismemberment of oil companies."

The production was "slick" and fortified with facts on what dismemberment would mean in terms of future research for energy, employment and the economy of the nation. The expectation is that concerned and informed employees will be effective in asking their legislators to vote against "dismemberment" bills.

Illinois Bell's assistant vice president in charge of employee communications, William Stern, provided another example. Ma Bell is fighting the FCC ruling that permits specialized common carriers to compete in the area of data communications. AT&T's contention is that its long lines operations (which takes in data communications) has been more profitable than local service. This means local rates are lower than might be possible without long lines profits. Unless the Bell System can win back its monopoly, local rates will go up. Thus Illinois Bell produces TV programming designed to convince its own employees that non-competition is necessary to reduce local rates. Bell expects that once an employee is convinced, he will be effective in passing the word to consumers since one out of every 65 Americans knows a Bell System employee on a social basis. (Ill. Bell thinks it's successful in its "education" program. Employees and consumers in Illinois have a more favorable attitude toward the telephone company than do their counterparts in other parts of the country.)

Gulf Oil is another company that is strong on employee communications. It produces "Executive Conversations" which feature chairman Jerry MacAfee and president James Lee answering written questions on a variety of topics. This is part of the company's "right-to-know" program. Conversations are moderated by Robert Goralski, former national NBC television newsman. At one time these programs were produced in outside studios. Now they are shot in Gulf's own facility. Many companies feel that they can't use outside facilities for such corporate communications. For one thing, the lead time is longer. Secondly, scheduling in near impossible—the studio has to be ready when the executive is.

Phillips Petroleum also sends out tapes which get across the company viewpoint on national issues, etc., but it also uses TV in a reverse mode. The Phillips TV production crew videotapes employee opinions on a variety of subjects and these are played before executives. At the ITA seminar, Phillips representatives showed a sample of employees sounding off on the shortcomings of the employee suggestion plan and another of a panel of women employees expressing their views on how equality opportunity was being short circuited.

Large private companies that deal with consumers are frequently the source of Public Service Announcements that play on both radio and TV stations. Sometimes major sections of public affairs programs are produced for a local television station by the A-V department for a private corporaton. State Farm, for example, puts out PSAs on avoiding accidents, preventing fires, how no-fault insurance works, etc. These get air time without credit to State Farm—the company benefits indirectly to the extent

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TeleMation Announces First-Half Earnings

(SALT LAKE CITY, UTAH)—TeleMation, Inc., reported first-half profit of $257,000, or 25 cents per share, on revenues of $4,709,000. This compares to a loss of $536,000, or 52 cents per share, on revenues of $4,754,000 for the first half of 1976.

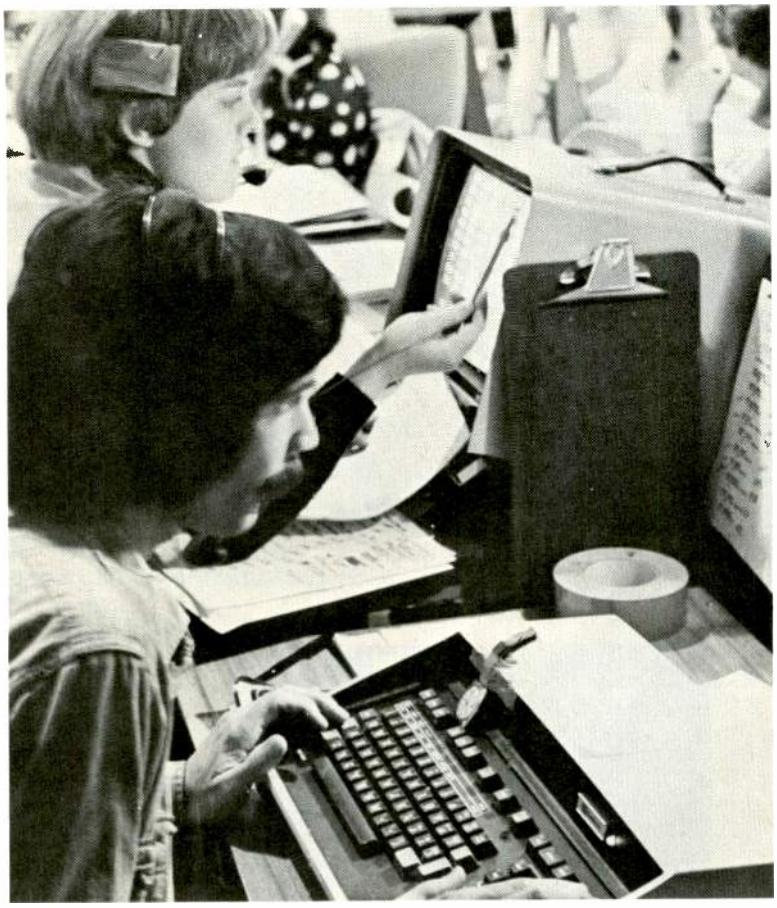
Results for the three-month period ended June 30, 1977 were a net profit of $213,000, or 21 cents per share, on revenues of $2,414,000 compared to the loss of $314,000, or 30 cents per share, on revenues of $2,339,000 for the three-month period ended June 30, 1976.

The above figures are after extraordinary credits resulting from reduction of taxes by use of a tax loss carry-forward. Profits before the extraordinary credits were $144,000, or 14 cents per share, for the first half and $120,000 or 12 cents per share, for the second quarter.

W. Paul Warnock, president of the video equipment manufacturing and television production company, said that the return to profitability in the first half of 1977 was due to the substantially improved performance of the hardware portion of the company's business. "TeleMation Productions, our television production studio in Chicago, continues profitable as in recent years," he stated.

He attributed the improvement in the company's hardware business to a continuing strong demand for the company's principal products and to extensive action taken at year-end 1976 to bring the company's expense level into line with revenues. Mr. Warnock pointed out that backlog at June 30 was $1.7 million compared to $2.1 million at December 31, 1976. "The return of our hardware business to profitability has been very gratifying to us at TeleMation. The dedicated efforts of all our employees have made it possible," he said.

TeleMation, Inc. A Salt Lake City based manufacturer of professional television equipment, maintains offices in San Francisco; Minneapolis, Danbury, Connecticut; Washington, D.C.; and London. TeleMation also operates a television commercial production division in Chicago.



Which character generator produces the highest-quality graphics?

Our customers tell us that the Compositor I Graphics System gives them the sharpest, clearest, most distinctive electronic characters they've ever seen. Like to see for yourself? Circle the number below on the reader reply card and we'll send you a series of actual unretouched color monitor photographs of Compositor I graphics. Compare these pictures with those provided by any other manufacturer, and you'll agree with what our customers are saying. Or, circle the alternate number below for a demonstration in your area. Find out why our customers call the Compositor I "the Excitement Generator". TeleMation, Inc., P.O. Box 15068, Salt Lake City, Utah 84115. Call (801) 972-8000, ext. 350.

TeleMation®

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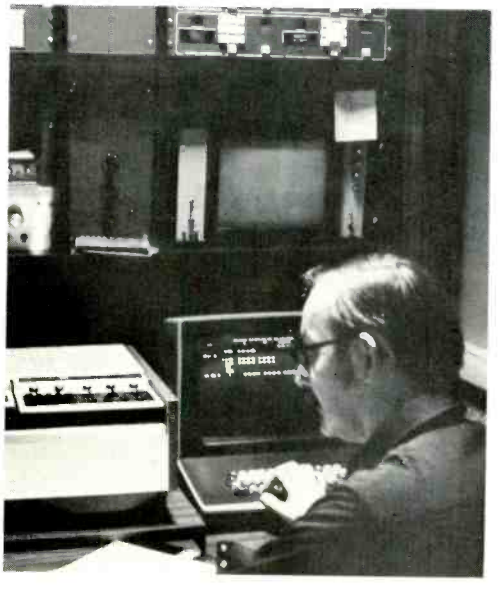
Circle 177 on Reader Service Card for a demonstration

JDTV manager Mike Sheter, above, watches IVC 9000s perform to chief engineer Dave Orr's satisfaction. Below, Lyle Hart editing on CMX-340 off-line editor.



that claims may be reduced if the messages are heeded. Dupont has produced segments of programs dealing with the environment. It can help a local station by providing footage otherwise difficult to obtain.

Needless to say, such "public affairs" programming must be of top "broadcast quality." A surprising number of private companies have first rate broadcast quality equipment—the trend is definitely towards upgrading as will become apparent later in this report when facilities are discussed.

There is one type of production that A-V departments rarely get into and that is the business of producing advertising. Commercials are pretty much done on the outside by agencies.*

Location on organization chart determines types of programs

If a company's A-V department is active in producing PSAs or employee communications, it is likely to be located very near the president of the company. In corporations such as Standard Oil, its A-V group is in the Corporate Public Affairs Department. If such a group has departmental status of its own, it's located on organizational charts in parallel with other staff functions such as Public Relations, Computer Services, or Personnel. In decentralized companies, the A-V department is more likely to be found as an arm of an autonomous division—indeed, each division of a large company might have its own small production group.

Those A-V groups high in the corporate hierarchy tend to serve many: foreign branches, subsidiaries, major divisions (by product line or industry classification), staff groups such as Data Processing. These internal "clients" usually number from a dozen to two dozen in larger sized operations.

In general A-V groups which are located within an operating division as opposed to corporate staff, are likely to be engaged in producing specific job or skill training tapes (with sales training high on the list) rather than corporate communications.

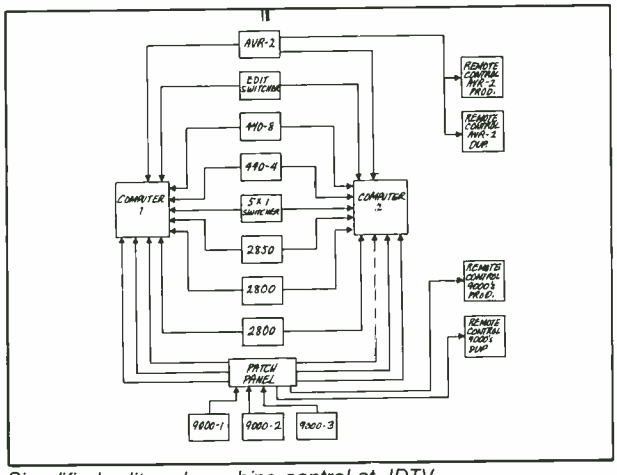
Large companies have private viewing networks

Most large corporations (more than ⅔rds, according to the Brushes) have impressive distribution systems of at least 20 or more viewing locations. Some might have over 100 viewing stations and 1000 or more is not unheard of. Such distribution or delivery nets has made tape duplication big business. Magnetic Video Corp., Farmington, Michigan recently included in a compilation of clients it has served, the number of viewing players per company.

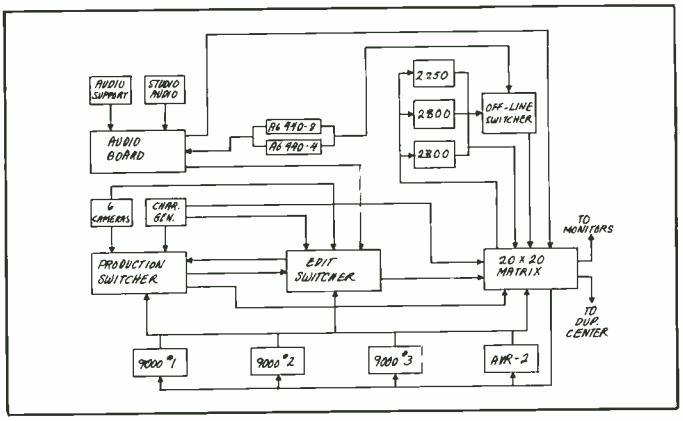
*There are a number of reasons for this: tradition; the frenetic activity involved in getting commercials produced and approved on a tight schedule; the fact that advertising agencies get paid to do such work as part of their commission fee; the fear that unions will move in if A-V departments get into such commercial activity.

Set design at JDTV.

Orr has complete flexibility in machine arrangements.



Simplified edit and machine control at JDTV.



Simplified video-audio flow at JDTV.

MVC CLIENTS	NO. OF SYSTEMS
American Motors Corp. (automotive)	10
Burroughs Corp. (computers)	400
CNA (insurance)	15
Deere & Co. (construction & farm equipment	300
Elias Brothers Big Boy Restaurants (food service)	95
Fruehauf Corp. (trailer manufacturer)	104
Merrill Lynch (stock & money management)	256
Parke, Davis & Co. (pharmaceuticals)	75
Rockwell International (automotive products)	45
The Way International (biblical research)	111
Fisher Body, Div. of General Motors (automotive)	30
Crum & Forster (insurance)	32
Goodyear Tire & Rubber Co.	150
	1623

The principal player for viewing has been, by far, the ¾-in. U-matic cassette player. Recently a number of companies have announced plans to use the ½-in. Sony Betamax format. Last month, the brokerage firm of Dean Wittier said it was establishing a video network linking together 145 branch offices which would use Betamax. Corporate messages and training material will be seen by over 2100 account executives located in these 145 branch offices. Stanley Guth, manager of Advanced Training said why. "We found the half-inch machines more economical for our purposes than larger formats. And since tapes with a short life span are recalled, erased and recycled, the fact that the lighter 7½ ounce cassettes cost less to mail is extremely important to us."

Many networks are training people at the retail sales point. Goodyear recently established a network covering 150 franchised dealers, 38 district sales offices and 15

training centers. It expects the service will expand to include company-owned stores and non-franchised independent dealers. Goodyear will use the ½-in. Betamax format.

Just how far video tape will go in being a point-of-purchase sales device remains to be seen. Film or videotape is cost effective for big ticket items such as automobiles. According to Hope Reports, the big three auto companies spent $52 million in programs for their point-of-purchase programs launched in 1972. Ford Motors' use of videotape players (5500 in the network) has been mentioned often in electronic circles but most point-of-purchase A-V materials are super 8. A Hope-researched report*in the *Wall Street Journal,* Sept. 12, indicated super 8 cartridge is the most widely used medium. In addition to General Motors (19,000 projectors) and Chrysler (5000), retailers such as J.C. Penney and Sears are big users: 1500 projectors for Penney and 600 for Sears according to the *WSJ* account. Kawasaki (motorcycles) is an example of a company into both video tape distribution and super 8. Videotape (¾-in. cassettes) is the way to go according to Dave Sheetenhelm, in preparing technical training materials for its repair centers but for dealers (up to 750 depending on the product line), a few well-produced films that the customer can view are more effective.

Trend is toward professional quality equipment

When the A-V department is high up on the organizational chart the quality of equipment used is high. Quad VTRs are normal. Training directors (located within a Manufacturing div. or under Personnel) have tended to be satisfied with less. (They might not be satisfied but they have difficulties in convincing budget management people to approve that 3 or 4x extra capital expenditure that top quality equipment demands.)

The high cost of quadruplex VTRs is the principal stumbling block for many non-broadcasters. As might be expected, there is, therefore, a keen interest by non-broadcasters in the new one-inch professional VTRs. Gulf Oil Houston just established a television facility of its own and it has purchased Ampex VPR-1s. New Jersey Bell has selected Bosch Fernseh BCNs. Fireman's Fund, as reported in *BM/E*, April, has gone with the Sony BVH-1000. (See box, Fireman's Fund.)

But those quality-conscious managers who had to make a decision 2 or 3 years ago have elected to go with quads or the IVC-9000. (They are, of course, eyeing the one-inch recorders as the next investment since tape operating costs are so much lower.)

Industry has not been the big customer of character generators as have broadcasters. In some respects they are ahead of stations in buying new editing equipment. There is a clear tendency for these users to go to off line editing

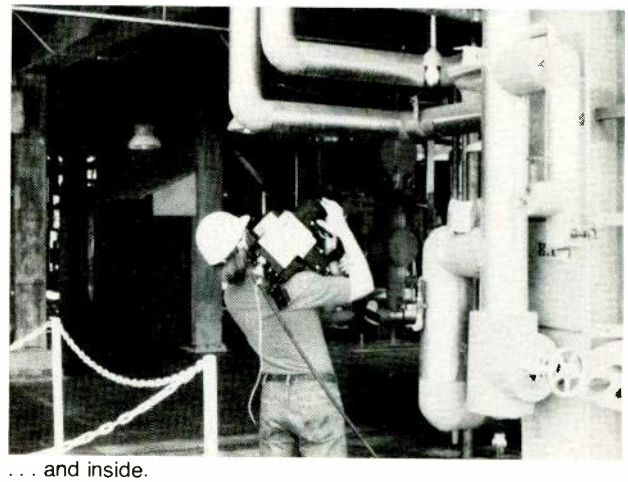
continued on page 44

*For more information on this subject see *Business Use of AV*, $10, available from Hope Reports (address above). This report expands on *Wall Street Journal* Sept. 12, 1977 special section on AV '77.

Dupont remote crew unloads equipment.

Equipment gets rough field use.

SK-70 Hitachi is used outside . . .



. . . and inside.

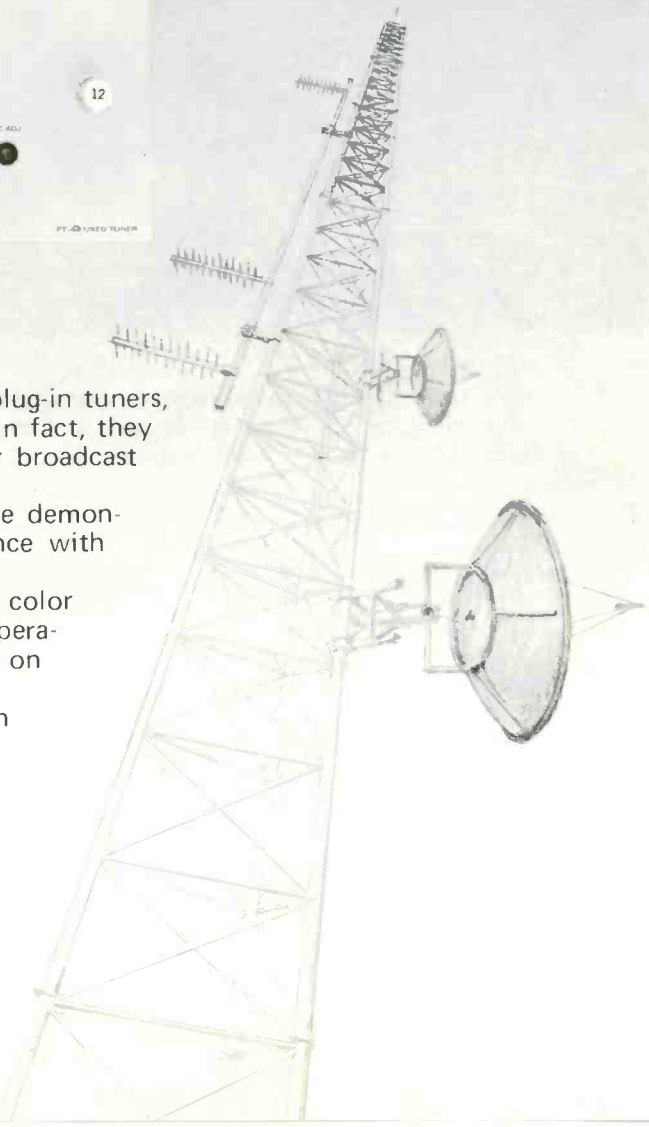
Used in 30 countries . . .
DYNAIR's RX-4B
All Channel Demodulator

VT-4BU Plug-in
UHF Tuner

Model RX-4B Solid-State Off-Air Professional TV Demodulator
with Plug-in Tuner Front-Ends

FT-4B Plug-in
Fixed VHF Tuner

VT-4B-1 Plug-in
Variable VHF/UHF Tuner



DYNAIR's Models RX-4B and RX-4BE, equipped with plug-in tuners, are now in use in over 30 countries around the world. In fact, they are compatible in 63 of the 136 countries with on-air broadcast television.

Designed for professional use, the demodulators have demonstrated excellent reliability and outstanding performance with over seven years of field use throughout the world.

The RX-4B is compatible with NTSC and PAL M color standards (system M and N) and the RX-4BE provides operation on PAL B color standards (system B). Both operate on 115/230V, 50/60 Hz and require only 40 watts.

For monitoring video modulation levels and for use in VIR closed-loop operation, the optional solid-state video chopper may be added.

For off-air broadcast monitoring, CATV, or relay service, select a DYNAIR demodulator.

Write or call us for complete details including a free copy of our VIR applications bulletin.

DYNAIR ELECTRONICS, INC.
5275 MARKET ST., SAN DIEGO, CA. 92114
PHONE: (714) 263-7711; TWX: (910) 335-2040

DYNAIR

Circle 131 on Reader Service Card

Both on-line (quad) and off-line (cassette) editing is done at State Farm.

simply to free up master recorders for ever tightening studio schedules. For example, Deere and Company, Moline, Ill., has two CMX-340 systems: one for on-line use, another for off-line.

State Farm has just purchased a Datatron Tempo 76 system with SMPTE time code for off-line editing. Most managers in charge of these private facilities view time code editing as the desirable way to go. Standard Oil has a TRI system with SUN time code.

One finds the private TV user in a state of transition these days upgrading new equipment as it comes along. He can't justify a new piece on the basis "the competition has it therefore we must too," but once equipment is fully depreciated, an improved replacement is possible.

Arthur Anderson and Company's corporate training headquarters (Center for Professional Development, St. Charles, IL) is a case in point. Dennis Schultz, chief engineer, reports on past, present and future trends:

"We have had a full broadcast quality studio here since 1972. Our system consists of two TK44B cameras, two RCA 2-in. quad VTRs and a TS-51 switcher. Editing is accomplished using EECO editors with SMPTE time code.

"Earlier productions, requiring location shooting, were done on film. Within the past year we have added an RCA TKP45 minipak camera system used in conjunction with a ¾-in. recording system for remotes. This portable system has allowed us to replace location filming with videotape. It has also created a demand for more location work, including entire programs shot on location.

"This increase in demand for location work has created a number of problems and we are working on solutions to these problems at the present time. Shooting single camera generates large amounts of original tape which must be edited. Presently we must dub ¾-in. up to 2-in. to edit using SMPTE time code. This is costly, time consuming and it ties up the studio for production, duplication or other editing. Furthermore, two people (a production person and an engineer) are also required. The solution to this editing bottleneck, we believe, is an off-line computerized system allowing us to make edit decisions in a less costly manner from both an equipment and personnel standpoint. Quad VTRs would be used for final editing but with much less time involved.

"While the ¾-in. recording system we are now using has given us acceptable quality for original recording, it has inherent limited capabilities. For this reason we are looking at 1-in. helical or 2-in. quad portable recording equipment. Each of these systems also has its limitations. Quad is more costly to purchase and operate as well as having limited field playback capability. One-inch helical at present is far less portable than either ¾-in. or quad. While manufacturers promise more portability in the future for 1-in., it, too, will be limited as far as field playback capability. We're watching the SMPTE/industry effort to establish standards which may or may not affect our future decisions.

"In the past we haven't required a graphics generator, but we are now realizing such a need. The obvious advantage being editing efficiency and flexibility."

A/V manager at Arthur Anderson, Harry E. Paney, sees the use of television growing to keep up with the company's overall expansion.

Another quad facility in the midwest is Standard Oil of Indiana. Standard has three TV studios (equipped with TK-44s) and a separate audio studio. Amongst its newer equipment is an Ikegami HL-37 portable color camera and an Arvin/Echo freeze frame disc recorder (which it uses for some animation work) and a TRI editing system. Standard has a complete off-air recording system (to catch sensitive energy related news items) and a cable TV internal distribution system. A cassette tape duplicating system is part of the facility. Eleven staff members keep the TV facility going. The TV operation is part of Audio Visual Services which has a total staff of 90. The biggest department is Art with 50 people. This group produces over 10,000 original slides each year—many of which end up as part of a TV presentation. Most slides are prepared on a General Electric Genegraphics, a computer generated art system—data is stored on computer disc files in digital form. Data can be manipulated automatically, color added, etc. as a function of input instructions. This equipment costs about $350,000 per system. Standard Oil will end up with two such systems with extra keyboard input and editing terminals. Vic Johnson says equipment paid for itself in less than two years. (Return on investment is a calculation many managers of top quality facilities have to make. Trend is for A-V department to charge back 100% of operating and investment back to

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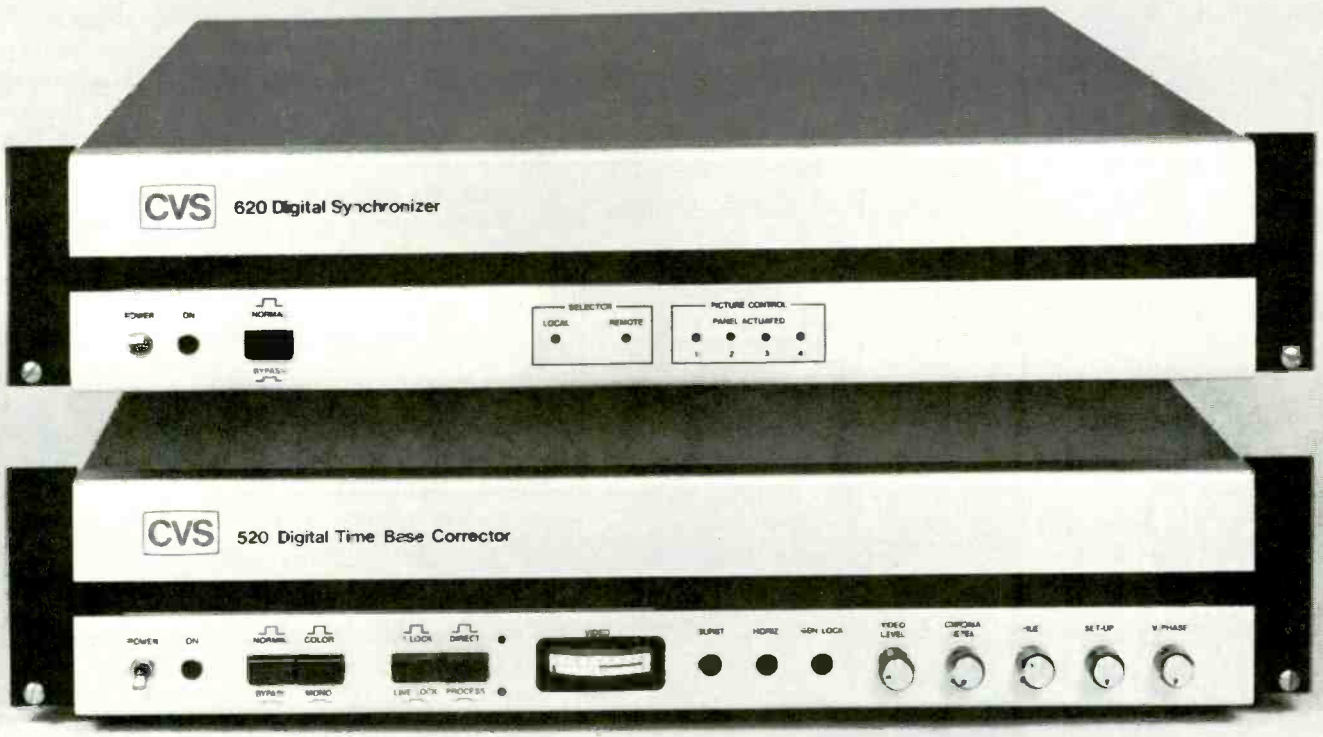
There's an affordable frame synchronizer in your future,



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With the CVS 620, your CVS 520 will become a true, microprocessor-controlled "infinite window" TBC. You'll be able to easily handle signals from network feeds, satellites and ENG microwave. It won't matter whether they're stable or unstable, heterodyne or direct color. You'll still get fully color framed, synchronous outputs. A picture positioner will add even more versatility.

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In short, the CVS 520 is truly the TBC of the future. But you can get it from your Authorized CVS Distributor today! For details and a demonstration, call or write.

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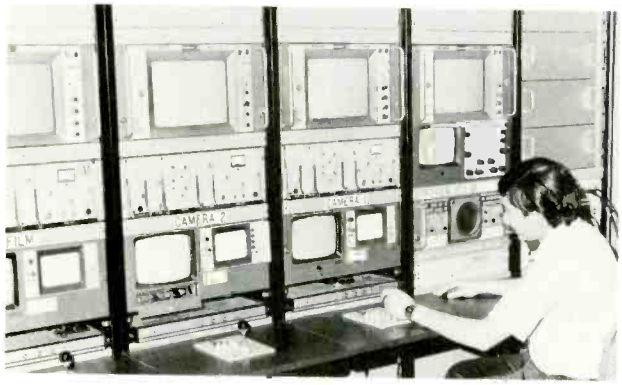
Studio and camera control at Prudential. John Kenlon, producer, is operating Grass Valley 163G switcher. Edward Reyer, systems engineer, is at CCU console.



John Kettle, audio engineer, makes highest quality audio tapes on Automated Processes board.

clients although not many have achieved that goal. Standard Oil has.)

The Standard Oil facility would impress any broadcaster but the John Deere Television (JDTV) facility of Deere and Company in Moline,Ill, would actually make some broadcasters envious. JDTV has three 2-inch helical IVC-9000 VTRs as master recorders which David Orr, chief engineer, feels are unsurpassable for quality. For on-location work (a growing pattern), an Ampex VR 3000 portable quad recorder is used. One AVR-2 (about to be upgraded to super-high band) is used to dub quad to the 9000. Three IVC 7000P cameras are part of the studio compliment of equipment. One is designed for hand carrying. JDTV did not invest in a broadcast quality telecine but it finds this no limitation. Rather than go the expensive route, such as TK-28, for example, JDTV projects film and slides onto a front projection screen picking up the projected image through a studio IVC 7000P camera. Through zooming, fades, switches, etc., it can convert a large stock of slides into dynamic tape presentations. Projector is a quiet Athena 4000 which plays slow-motion if desired.

JDTV has a full production capability switcher. It's a double re-entry Sarkes Tarzain with digital special effects. It has another downstream switcher attached which allows special effects such as quad splits. A Thomson-CSF Vidifont IV character generator with 34 fonts is part of the facility.

The audio production board is part of a Cetec 20 LM. This 18 x 8 board is split with 8 in x 4 out used in production and the other portion used for editing. For production, an Ampex 440-8 eight track recorder is used. For editing there is an Ampex 440-4.

As mentioned, flexibility is the key word at JDTV and Orr has developed an edit and machine control system so that all recorders can be assigned to production or post production work via pushbutton control. The interface with the CMX I^2L was developed by Orr. Over 400 video patch points are available. A 20 x 20 digitally-controlled custom switcher manufactured by ComTec in cooperation with Swiderski Electronics of Chicago is the matrix tying it all together. This is shown in the simplified video-audio flow diagram.

As the simplified edit and machine control diagram shows, both on-line and off-line editing can take place simultaneously. At JDTV the input-output terminal for edit decision list compilation is a Texas Instrument Silent 700 ASR terminal which has a CRT display and stores data on cassettes (no paper store is used).

During 1977, JDTV will produce 2800 finished minutes of videotape according to Michael Shetter, manager. Besides Shetter and Orr, there are eight other full time staff members. JDTV figures its costs to run about $300 per minute. JDTV's principal client is the Industrial Equipment (earth moving) division which also, incidentally, has its own small color facility in Dubuque, Iowa. Another client is the Industrial Engineering Group for which JDTV has produced a Basic Motion and Time Study series (20 units). This series has been translated into four languages. Other clients include the large Agricul-

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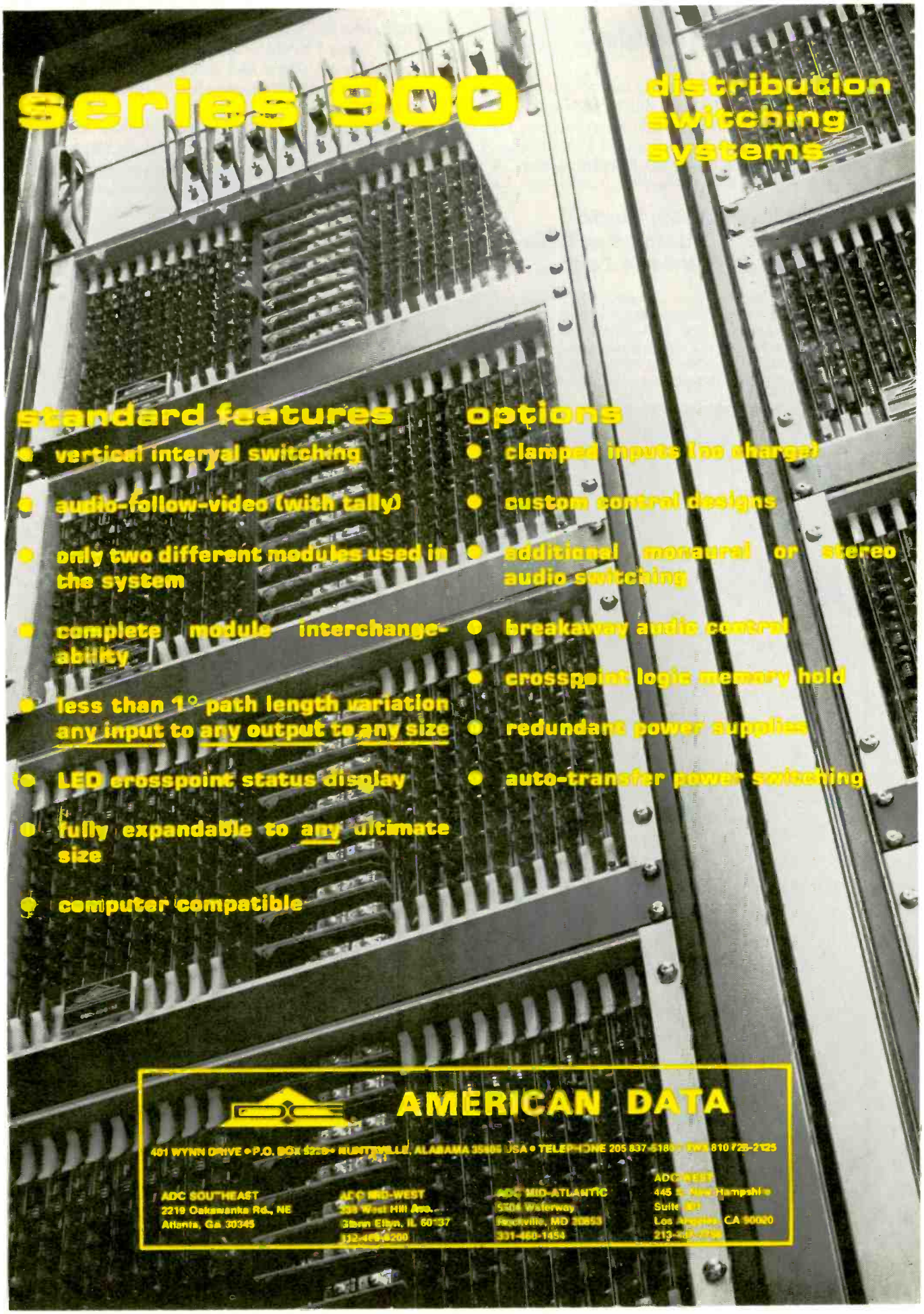
Harold Gallina, systems supervisor at Prudential, gets top quality out of Ampex 7900 recorders.



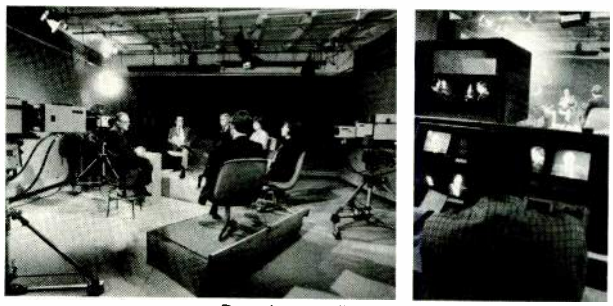
Circle 133 on Reader Service Card

tural Div., which has been a big user of film. It is interesting to note that JDTV was able to justify its facility by being able to underbid outside film producers. On one major job an outside film group bid $1 million; JDTV's bid to the client was $310,000. Normally a 30-min videotape costs JDTV $9000. A slide/film presentation on the same subject would come to $15,000 produced on the outside and a 16mm film about $36,000. The company does its own tape duplicating for a distribution network of over 250 players.

Facilities are not always as costly as those we have just described. Prudential Insurance, Newark, NJ, has a complete studio setup with broadcast quality cameras but it

Broadcast Quality Studio Equipment and Betamax Delivery System At Fireman's Fund

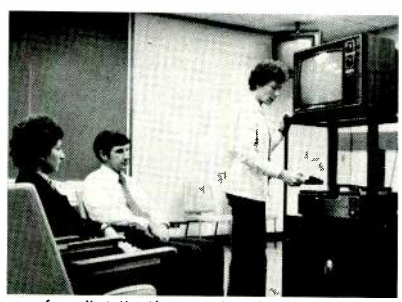
Fireman's Fund Insurance Companies might have kept its sophisticated, though aging, black and white studio and network longer than it did. However, the need to satisfy the demands of a new external audience sealed the old system's fate. The company had decided to offer programming to franchised agents. But, since participation would require a sizable investment on the part of the independent businessmen, the tapes had to be of professional quality.



Panel type discussion . . .

. . . taped on BVH-1000 recorder . . .

. . . and duplicated on Betamaxes . . .



. . . for distribution to the field.

To provide this quality, the company designed a 1-inch studio with three Hitachi color studio cameras, including one that converts to a portable ENG, and two Sony BVH-1000 video tape recorders. It installed 60 Betamaxes at its branch offices and other facilities across the country. Almost 100 agents also purchased Betamax units for their homes, and simultaneously became part of the firm's network.

Besides buying a Betamax, each agent paid an enrollment fee which entitled him to 12 monthly training tapes and 6 bimonthly tapes. The monthly series covers the nuts and bolts of an insuranceman's business. They show subscribers how to interview a prospective employee as well as how to fill out underwriting guidelines. The bimonthly series explains new ideas and products and offers information about meetings, conventions, and the network itself.

Agents did not make a blind commitment to video. They were first shown three sample programs that reflected the quality and content they could expect in the future. Betamax was chosen for the distribution network because of the practical investment for agents and savings in tape and mailing cost.

Programming for agents is a recent innovation at Fireman's Fund. But for ten years the company has maintained an elaborate internal video program, providing training, educational, and informational tapes.

Video is particularly important to the firm's training efforts. Few classes at the company's school in San Francisco are conducted without the medium. In addition, each of the firm's 48 branch offices contains a permanent library composed primarily of training tapes. (All of the new agent programming is also distributed to the branch offices, since personnel in these offices work closely with agents in the field.)

In choosing the 1-inch format, Fireman's Fund steered a middle course between standard industrial hardware and professional broadcasting equipment. As an industrial user, costs of operation and maintenance were major factors. Quad was out of the question. The firm sought equipment that was simple to operate and easy to edit with. The new system provides the desired quality and the capability of shooting on location.

Remote location shooting has always had a high priority at Fireman's Fund. The new system expands that capability. A Hitachi SK-70 converts from a studio camera to an over the shoulder ENG. Since the firm has not yet acquired a 1-inch portable color recorder or a van to transport a BVH-1000, the SK-70 is used in tandem with a Sony ¾-inch U-Matic® portable recorder.

"The SK-70 gives the U-Matic the best picture possible," Dave Larson, director of training, reports. "Then we dub the tape up to 1-inch on the BVH-1000's. This is where the BVH's are such beautiful machines. They don't effect the quality at all. Once we've color enhanced and time corrected the remote footage, it looks like it was shot in the studio. In fact, the best thing about the BVH's is that you can take a tape down several generations and not lose any quality."

After the 1-inch master is completed, the first generation of copies is duplicated on ten Betamaxes kept for that purpose in the studio. Subsequent copies are dubbed from a ¾-inch master using a Sony 2850 recorder. The primary value of the 1-inch format is in editing and production.

uses Ampex 7900 one-inch helicals as mastering recorders. Harold Gallina, systems supervisor, reports very satisfactory results from the 7900s. "We've learned how to run and maintain them properly," says Gallina. Prudential uses SMPTE time code editing laying code down during recording. Prudential's TV workload had been increasing and it could use additional VTRs so that studio recording and post production editing could be done simultaneously. Gallina expects to purchase the VPR-1 at some future date. The VPR-1 is the obvious choice for tape interchangeability reasons. Prudential has an outstanding audio facility (separate from TV) for producing quality audio tapes. An Automated Process recording console is used.

Prudential has a large distribution network which numbers 675 machines. The field is equipped with Sony 2600 recorder/players. Prudential chose a VTR with a record mode so that the field could do local recording such as taping role plays.

Dupont, which more recently established a TV facility, uses ¾-in. U-matic cassette recorders but a lot of its final product is converted to film for distribution. Tape to film transfer is done by Image Transform at about $65 per minute. The final quality is thus improved by this process but costs are comparable to shooting in 16mm film. Dupont does a lot of work in film (about half now) but finds videotaping a speedier, more flexible process. Next year more production will be video than film. Convergence editors are used. A lot of Dupont's production is done in the field as mentioned earlier. Field camera is the SK-70 Hitachi although Ikegamis have been rented. Studio cameras are Panasonic AK-90s.

Chase Manhattan uses the new Hitachi SK-80 ENG camera with recorders being Sony 2850s. Gulf Oil has purchased the VPR-1 as its mastering recorder for its new facility. It uses Datatron Tempo 76 editing equipment and Harris TC-50 cameras. The First National Bank of Chicago facility uses Philips LDH-1 cameras in the studio and a Sony DCX 1600 camera. IVC one-inch recorders are used for mastering. Facility is handicapped by a limited capability switcher. Many industrial facilities are limited in studio height because they were initially sandwiched into existing buildings. The Fluor Corp. ended up with a better than average studio by being able to lease the facilities of a cable TV origination studio that had been abandoned.

Productions made in these facilities tend to be straight forward—that is show biz is played down. (Prudential does use animation in a number of programs.) In training tapes professional talent is favored over company employees (except for chairmen and presidents). Reading from a Teleprompter the professional can usually do better than the company specialist.

ITV Is Vital Educational Tool In Some School Districts: At Broward County It's Served Four Ways

INSTRUCTIONAL TELEVISION WAS A FRILL that got cancelled during the last major school budget crunch, true or false? The answer might be true for many districts but not for the School Board of Broward County Fla.[1]

ITV at Broward has gone through budget cuts as elsewhere but it was never emasculated in this district and is stronger today than ever before. It's inconceivable that the county's schools could function without TV. Every one of the 147 schools in the country wide district are wired to receive 4-channels ITFS transmissions and altogether there are 2,347 black and white receivers and 458 color receivers in classrooms.

Teachers can use TV in their classrooms in one of four ways:

1. Picking up off-the-air direct telecasts. Each program is offered four times each week on schedule.

2. Making a call-in request "You asked for it" for over-the-air play.

3. Getting a program dubbed onto the school's own tape for use anytime on the school's own videotape player. (Some schools have ¾-in. cassettes; others have ½-in. cartridges for a total of 79. This number is increasing as schools buy more for their own exclusive use.)

4. Borrowing a tape from the Instructional Television Center Loaner Library for five days use. (A cassette player and monitor can be borrowed too.)

The Instructional Television Center's September monthly program guide is 33 pages long! A total of 80 programs are available.[2] On top of this, there are six in-service courses for teachers (five are on the regular broadcast schedule; one on a "You asked for it" basis).

The in-service courses are offered for credit at Broward and ITV makes it possible for teachers to easily update themselves. Television means every teacher, regardless of where they are located in the county, can take advantage of an in-service course. Television is particularly valuable in getting across new skills teachers should have. This year, for example, a new federal law goes into effect which requires schools to meet new obligations regarding the handicapped. The Instructional Television Center has three handicapped-related in-service courses this fall; two on methods and materials (one for middle schools, another for senior high schools) and a third on teaching children with special needs.

Television has helped Broward County schools in meeting other challenges. Florida is one of the first states to pass legislation[3] stipulating that a student cannot be promoted or graduate unless he/she is competent in the basic skills (reading-math). "Teaching Children To Read" is a new teacher in-service course this year that will help the school teach minimum competencies.

A return to basics is a trend in schools all across the nation. Broward's Instructional Television Center has 11 series dealing with the basics. A new series this year, "Magic Vocabulary" is geared for third graders but it is also a good remedial program for 4th, 5th and 6th graders. There are 60 fifteen minute programs in this series. "Magic Math" is another. (Programs 15 minutes in length or shorter—such as 5-10 minutes—are the trend these days. This gives the classroom teacher ample time for discussion, follow-up activity, etc.).

Television has always been extremely valuable in courses dealing with values. Intense dramatic situations can be enacted on the CRT screen as a lead-in for open

ended discussion. One of Broward's programs is entitled "Landmark Decisions Of The U.S. Supreme Court". The series involves students in examining such concepts as equality, liberty, justice, and law and order.

"Landmark . . ." and other locally-produced programs are quality programs which are in demand by other schools. Broward accommodates them by making its programs available on a rental basis.

Broward prides itself in its production quality. It has the best of equipment—better than some broadcast stations. The Center has, for example, a Vital Industries VIX-114-4 production switcher in Studio A. This switcher with its three mix/effect systems, chroma keyers, quad split, pre-set line mixer and downstream keyers makes a host of special effects possible to help get academic points across in an interesting manner.

Broward's Instructional Television Center has been a leader in substituting eye-appealing animation for monotonous talking faces. At the last AECT Convention, the center's dynamic director, Marion Bell, showed how high production values have made television programs effective in capturing and holding the attention of pupils. The programs produced by Broward get used because they are responsive to teachers needs and because they work. In the process of developing a program, instructional lessons are pre-and post-tested in a classroom. During the development process, student's reactions are studied closely by the studio teacher, the producer/director, the art/graphics manager and the director of ITV. Students'

Broward County has finest production equipment.

facial expressions and involvement in the lesson are indicators of a successful program. The studio teacher is not just any teacher but the one who has passed a "screen test" after a casting audition. Broward has produced about 51 percent of the courses it is using this year.

Another key to effective use of instructional TV in Broward County is the three person utilization team. These people are responsible for program development and acquainting teachers with effective use of TV in the classroom.

Impressive facilities make quality possible

The facilities at Broward would raise the eyebrows of most commercial broadcasters; both broadcast and pro-

continued on page 52

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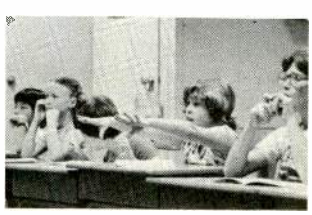
duction facilities are housed in the Instructional Television Center which measures approximately 23,000 square feet (set on 7.1 acres). The broadcast facility operates four 10w 2500 MHz Instructional Television Fixed Service (ITFS) transmitters located in the main facility and four additional transmitters 12 miles from the base station. The omnidirectional pattern transmitted from these two sites provides coverage to all schools in Broward County. Each of the 147 schools is equipped with ITFS antennas and converters designed to provide picture and sound quality in the classroom equal to Class "A" commercial broadcast signals.

The 1,500 square ft. Master Control area houses all of the switching, distribution, patching, monitoring and camera control equipment as well as the four transmitters and associated transmitter input switcher. The four-channel switcher was designed for operation by one man. This is made possible by permitting pre-selection of the next event for all four channels. The switcher has only five output busses: one for preview and one for each of the four channels. When pre-selection of the next event is made on one of the channel busses, the button illuminates yellow and the next event is displayed on a monitor for that channel control. To transfer the pre-selected event to "on the air", the technician operates a cut-bar adjacent to that row of buttons. The yellow light turns red and audio and video are transferred to air and displayed on the line monitor for that channel. The technician is free to immediately pre-select his next event for that channel on the same row of buttons. When a videotape or film is selected for the next event, a pre-roll warning indicator is illuminated for that channel and operation of the cut-bar places the appropriate machine in the play mode and the switcher electronics automatically switches video and audio on the air five seconds later.

Students facial expressions and involvement in lessons is used in evaluating effectiveness. Viewing students are studio teacher, art/graphics manager, producer/director, and ITV director



A 1,600 square ft. VTR telecine area houses the videotape recorders and film chains for both production and broadcast. All "on air" programming orginates from a bank of six Sony VO-2800 ¾ in. videocassette machines operating through Microtime 2020 time base correctors. Three custom-designed consoles house these machines. A video operator watches associated monitors and gives the cassette machine the same concern and care that quadruplex machines receive. Mastering of studio productions is done on three RCA TR-600 VTRs equipped with super high band and pilot tone and AE-600 SMPTE time code editors. These three machines and two RCA TR-4HB machines provide standard high band dubbing capability to allow interchange with other broadcast facilities.

One area of the room is reserved for the dubbing equipment that provides ½-in. and ¾-in. tapes to the schools. Included in this area are two Sony VO-2850 ¾-in. videocassette machines. One of these machines is equipped with a time base corrector and both are equipped with the Sony RM-400 editor. A Cohu 1500 color film chain and two black and white film chains are available for both production and broadcast. It is standard procedure to transfer all film to viedotape for either editing or air play.

The 40 ft. x 60 ft. Studio "A" is equipped with three RCA TK-630 color cameras and one RCA TK-60 black and white camera. Some ninety-plus quartz lighting units are controlled from a master dimmer system allowing lighting for a small diorama or a life-size re-creation of the United States Supreme Court. Studio "A" has the Vital VIX-114-4 switcher as mentioned and a Vidifont character generator. Studio "B" is fully equipped for 16mm film production (both single and double system sound, recording, dubbing, mixing and editing). Many film productions, for both ITV and outside agencies, have been completed in this facility.

Because of both cost and convenience, Broward ITV, like others, finds itself moving toward th use of portable TV cameras and recording equipment for location production.

The total staff at the Instructional Television Center numbers 38. The budget this year is $936,000 dollars. New equipment purchases last year came to over $500,000!

In addition to the above center-based equipment, there are 14 ½-in. b&w portapack systems, 52 single camera systems and 49 complete closed circuit TV systems (cameras, recorders, switchers, monitors) located in various schools.

[1]ITV is strong at other places, too, like New Trier township, north of Chicago; a rich district that can afford it. The Chicago Diocese is a big user also, not by papal edict but because TV is the only practical way to get certain programs into parochial schools. And Hagerstown, Maryland, site of the first big experiment in public school TV back in the early sixties, is a steady user. Granite school district, Utah, is nationally known because of its heavy investment in cassette players which make individual TV watching possible. This section does not assess national practices as does the preceding one on industrial uses of TV. There have been districts that have retired TV equipment to the closet to be brought out only for student extracurricular activities. Not so at places like Broward where ITV was wisely used during those richer days in the early 70's becoming an essential communication/instruction link in the school. It will remain.

[2]Two kindergarten, 29 primary, 38 intermediate, 44 middle and 45 senior high series. Sixty-six are on a regular broadcast schedule.

[3]WPLG, Post-Newsweek station in Miami, takes considerable credit for getting such legislation passed as the aftermath of 61 educational stories "Why Johnny Don't Know". See *BM/E*, July, p. 28.

Television In Health Care: Tempting As A Panacea To Many Problems

HARDLY ANY FIELD OF HUMAN ENDEAVOR, hardly any profession can make better use of television than the health care field and the doctors, nurses, administrators and paraprofessionals associated with it.

The ability of high resolution color TV cameras to televise, for all to see, the details of an operation performed by a surgeon-teacher is well known. And the ability of a camera to diagnose a patient separated from the doctor by miles (or thousands of miles if access to a satellite is possible) has fired the imagination of doctors and laymen alike. The benefits of expert doctors being able to convene a videoconference to discuss rare cases has caught everyone's fancy. Two-way TV connecting neighborhood clinics, nursing homes or possibly even private patients' homes directly to a doctor's office seems a good way of serving outpatients—and inexpensively if two way cable TV is available. The role that TV can play in keeping doctors updated—and recertified when state laws mandate it—is self evident. TV can be valuable in training nurses and paraprofessionals. It can save hours of a doctor's time educating outpatients, some of whom might have a terminal disease, on how to take care of themselves.

TV can monitor patients in hospitals, it can entertain them, and it can offer security surveillance. The uses of TV in health care are truly legion.

In this report we'll look at a new plan about to go into its final phase of operation in Pennsylvania—the Hahnemann TV network—and we'll describe briefly how the American Hospital Association is using mobile TV in interesting ways.

Hahnemann two-way network

The Hahnemann TV network is a vital telecommunication link that will make it possible to train primary care physicians located in underserved areas of Pennsylvania. The network will connect the Hahnemann Medical College & Hospital of Philadelphia with Wilkes College and five hospitals in the greater Wilkes-Barre area. Thus Hahnemann faculty will be available to medical students training miles away from their instructors.

The overall program is known as the Medical Development/Pennsylvania (MD/Pa) program. It's Hahnemann's response to the growing shortage and maldistribution of primary care physicians in Pennsylvania.

Students who are good prospects for family medicine and who have a desire to practice in underserved areas of Pennsylvania are selected in MD/Pa. They first spend two years at the local college or university: Wilkes College in Wilkes-Barre; Lehigh University in Bethlehem; Gannon College in Erie and Widener College in Chester. Those who remain interested and academically qualified will spend the next three years at the Hahnemann Medical College in Philadelphia.

Students then return to their home areas where they receive clinical training in local hospitals under the guidance of Hahnemann. These training programs will be reinforced by the live communication provided by the network.

The first class of 16 is now five years into the program and will be graduated with MD and BS degrees in 1978.

The Hahnemann TV Network will provide live, two-way interactive color television to Wilkes College and the affiliated hospitals in surrounding areas. X-rays, electrocardiograms and other diagnostic devices can be transmitted over the system, which is scheduled to begin operating early in 1978.

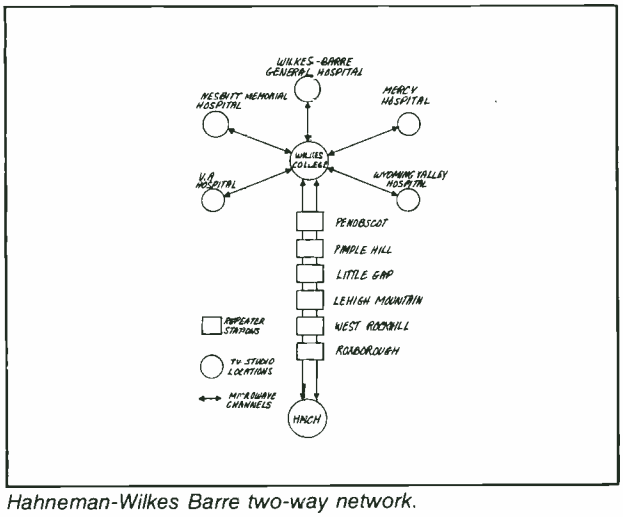
In addition to linking Hahnemann faculty and students, the network will provide hospital patients in outlying areas with access to sophisticated diagnosis and consultation available at a major medical complex such as Hahnemann. Continuing education for health professionals, in-service training, patient education and other instructional programs will also be televised.

The Philadelphia/Wilkes-Barre project, sponsored by the U.S. Department of Health, Education and Welfare, is the first stage of a plan to build a statewide communications system for health education and health care delivery programs, according to Richard R. Getz, chairman of the Communications in the Medicine Department at Hahnemann and director of the TV network.

Network extensions are being designed to connect Hahnemann with education centers and hospitals in the Allentown-Bethlehem-Easton area, Erie, Chester and other sites. Other medical schools will be encouraged to interconnect with the system. Expansion to adjacent states is a possibility.

According to Getz, after four years of planning, the telecommunicators system is now nearing completion. The network shown in Fig. 1 consists of two full-duplex interactive color TV channels between Hahnemann Medical College & Hospital (HMCH) in Philadelphia and Wilkes College in Wilkes-Barre. The 126 Hz microwave route contains six intermediate repeater stations. In addition there are twelve voice-frequency (V.F.) channels on this "backbone" route. With Wilkes College as the central switching and control center, one full-duplex video and program channel, as well as six V.F. channels is connected to each of five hospitals in Wilkes-Barre via microwave links.

continued on page 55



Hahneman-Wilkes Barre two-way network.

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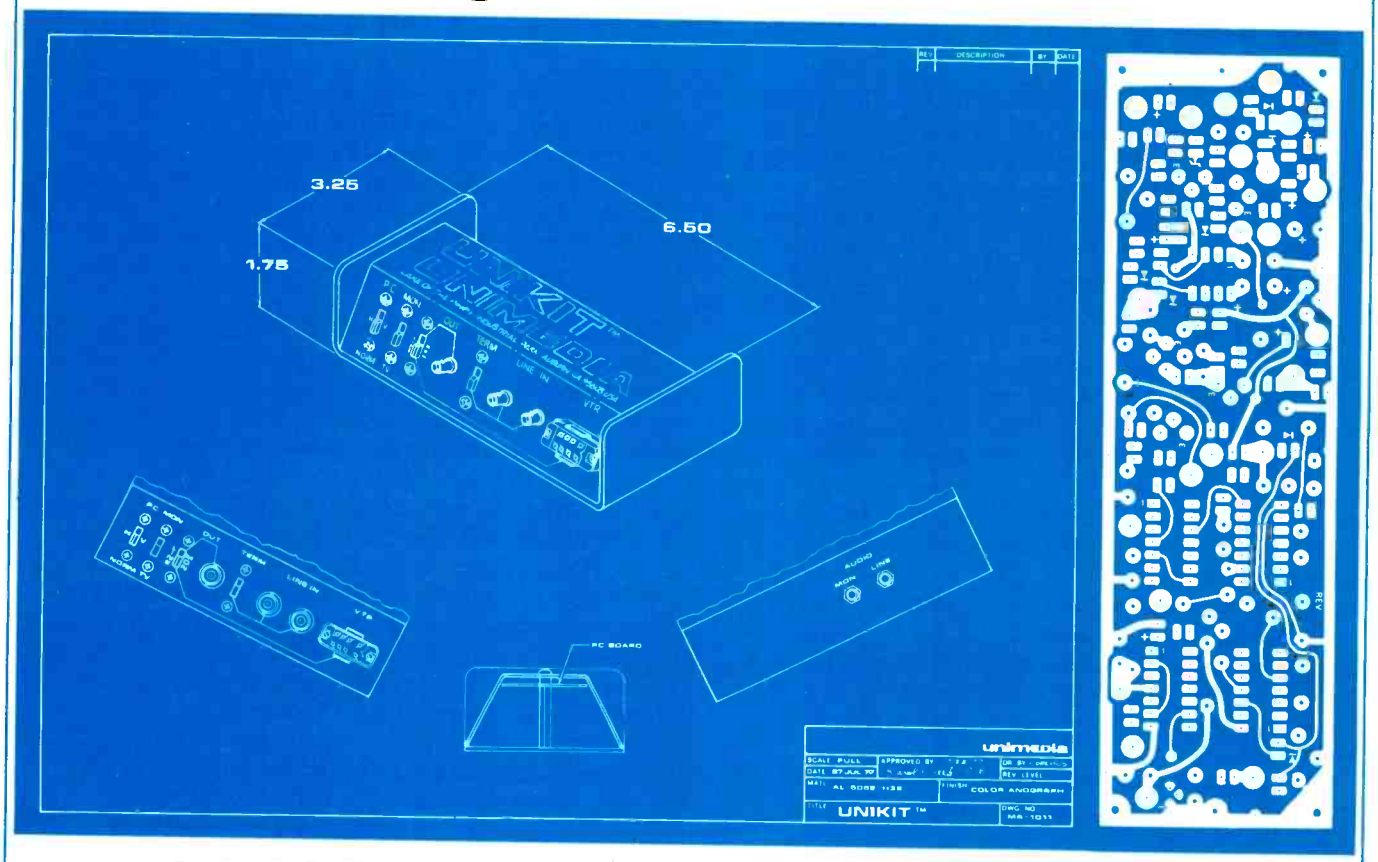

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Non-Broadcast Television

The basic transmission channels are 20 MHz wide and are equipped for video and nominal 15 kHz audio, an engineering order wire and private line voice frequency circuits. At the switching center in Wilkes College these channels can be switched into any desired configurations. For example, if it is desired to have Hahnemann faculty interact with students at Wilkes-Barre General, Mercy and Nesbitt Memorial Hospitals and utilize the second channel for a patient "case" analysis between a Hahnemann specialist and a physician at Wyoming Valley Hospital at the same time, this can readily be accomplished by the local engineer at Wilkes College.

Studio origination, receiving equipment and record/playback systems are being provided at all seven institutions. In addition to the TV studios/classrooms, provisions have been made at all the hospitals for remote origination of video and associated sound from selected areas i.e., CCU/ICU, OB/GYN, Emergency Rooms, etc. for training and diagnostic purposes. Cardiopulmonary sound amplifiers will also be available for use at the remote sites for diagnostic transmission over the system. It is also possible to interconnect the V.F. (C-2 conditioned) lines to the hospital PBX's for additional system flexibility.

The microwave system operates in an unattended mode. Major equipment functions include alarm circuits. All alarms are transmitted to the Wilkes College and HMCH control centers via the service channels when a failure occurs. Between Wilkes College and HMCH all alarms, including the repeater stations, are transmitted over both channels to aid in fault isolation and for redundancy. One voice channel is utilized as an Engineering Order Wire (EOW) for system set-up and programming communication needs during operation.

The backbone route is approximately 110 miles long and the responsible subcontractor for the microwave system is Ford/ESD. The microwave and associated transmission equipment is being provided by Collins. The major subcontractor for the TV studios is Pierce-Phelps. Director of the communication system and project director of the TV network is Jack H. Wolff.

Funds have also been requested to establish Learning Resource Centers (LRC) at each of the local hospitals and Wilkes College. The LRC will consist of video tape playback equipment which will provide the Wilkes-Hahnemann student and other health professionals with a useful educational tool. Although the primary mode of the Wilkes-Hahnemann TV network is "live" interaction amongst participants, video learning carrells in the LRCs will allow the student to review taped medical conferences and prerecorded instructional programs and materials in a self-instructional manner. The preparation of a variety of instructional tapes is already underway.

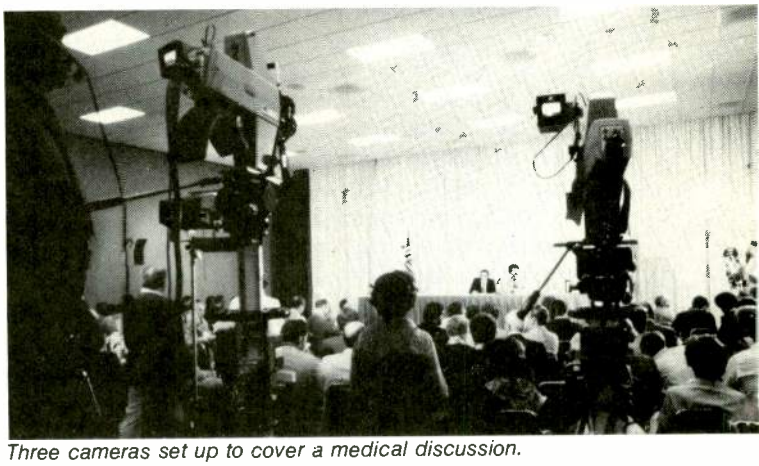
American Hospital Assoc. reduces costs

Health care delivery has grown into a mammouth service in the last few decades. Hospitals now employe nearly 3 million people—up 55% in the last ten years. They serve 36 million inpatients, up 25% in the same ten years. Hospital admission per thousand population have advanced about 15% over the last decade. Outpatient visits have doubled. At the same time, there are many legislative bodies and regulatory agencies now concerning themselves with hospitals. EEO, OSHA, PSRO, UR, and NLRB are initials of some governmental groups hospitals now have to satisfy.

National Health Insurance plans, Planning and Re-

continued on page 56

American Hospital Assn. equipment delivered to on location site.



Three cameras set up to cover a medical discussion.

Portable switcher, editors, CCVs, monitors, telephones, etc. in on-location control room.

Close-up of suitcase switcher, TBC, and character generator on location.

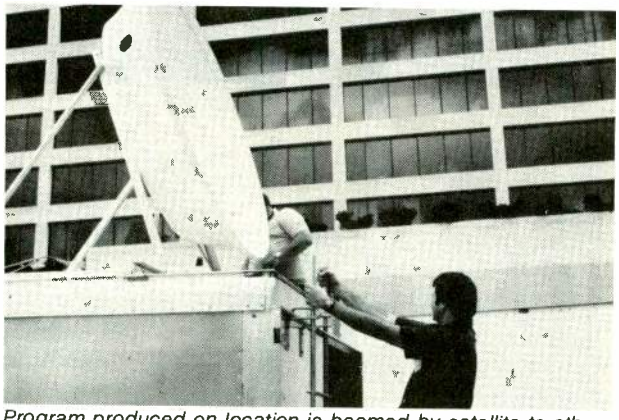
source Development, Manpower Training, Medicare and Medicaid and other legislative matters affect hospitals. The National Fire Protection Assn. is another group imposing regulations on hospitals. Malpractice suits are of concern. There are many professional groups—AMA, Assn. of American Medical Colleges, American Nurses Association and others—whose views impact hospital operations.

Representing hospitals in all of these matters is the American Hospital Association. Last year, AHA held 294 institutes, workshops and seminars; 293 reports were published. There were 24,200 consultations and visits with individual institutions. Some of these activities dealt with plant operations, biomedical instrumentation, saving energy, training, accredidation, licensure and proficiency exams.

With this perspective it is easy to visualize why the Media Center of AHA can be a busy place. This coming year its operating budget, according to Bruce Brennan, Mgr. Media Services, will be $491,000. With this money, it will help its various departments: financial management, administrative management, research and information, professional relations, legal, malpractice/risk management, public affairs and education, do their job.

A typical program might be on how to avoid malpractice suits. To prepare a program on this, the Media Center has to go into the field—into hospitals to tape incidents of neglect or loose operations which could lead to a malpractice claim. Consequently the AHA Media Center is equipped with mobile gear (some $360,000 worth). There is also a studio, control room and an audio announce booth at home base, 840 N. Lake Shore Drive, Chicago, but the cameras are three IVC 7000Ps which can be packed up for travel. At the Media Center, master recorders are IVC 870 helicals (which will soon be upgraded to the IVC-1070 Chromacom VTR). When on the road, an Ampex quad portable VR 3000 is rented. Training tapes are usually made single camera film style, but the Media Center often covers important seminars or workshops for which multi-camera setup is desirable. When handling such field productions, the Media Center takes along the TRI suitcase switcher, the PCC-1.

Two views of AHA's studio setup showing IVC one-inch recorders (with TRI editor) and camera control racks.



Program produced on location is beamed by satellite to other hospitals. Transmiter antenna (12 GHz) is beamed at experimental CTS satellite.

These monitors show signal before and after satellite transmission. The two-second delay can be disconcerting.

The Media Center is a busy group producing about 2 programs a month. Production turn-around is about ten weeks from concept to finished tape but it has put out as many as four programs in 3 days, according to Dave Williams, producer/director/writer. The Media Center has a full production capability switcher, the American Data 558, and TeleMation 1432 character generator. Its IVC recorders are controlled by the TRI-EA 5 edit control system.

The AHA Media Center is on the cutting edge of technological advances. In September it traveled to the AHA convention in Atlanta to telecast the proceedings. Its signal blanketed a large part of the North American continent via two satellites, the new Canadian-American Communication Technology Satellite, CTS (or Hermes, as the Canadians who control it have dubbed it) and the ATS-6 which is operating again in the U.S. conducting experimental programs. Chris Blaser, chief engineer at the Media Center, reports the received signal from the 14 GHz CTS was fantastic even though the Atlanta receiving site was on the edge of the footprint. Manager Bernnan foresees a hospital satellite network in the not too distant future. **BM/E**

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Electronic News Gathering makes tough demands upon the broadcaster. Color imbalance and colorimetry problems are frequently encountered. Matching remote camera shots to indoor studio programs or assembling tapes from different locations or cameras is "chancy" at best. Often that fast-breaking story doesn't allow for camera rebalancing!

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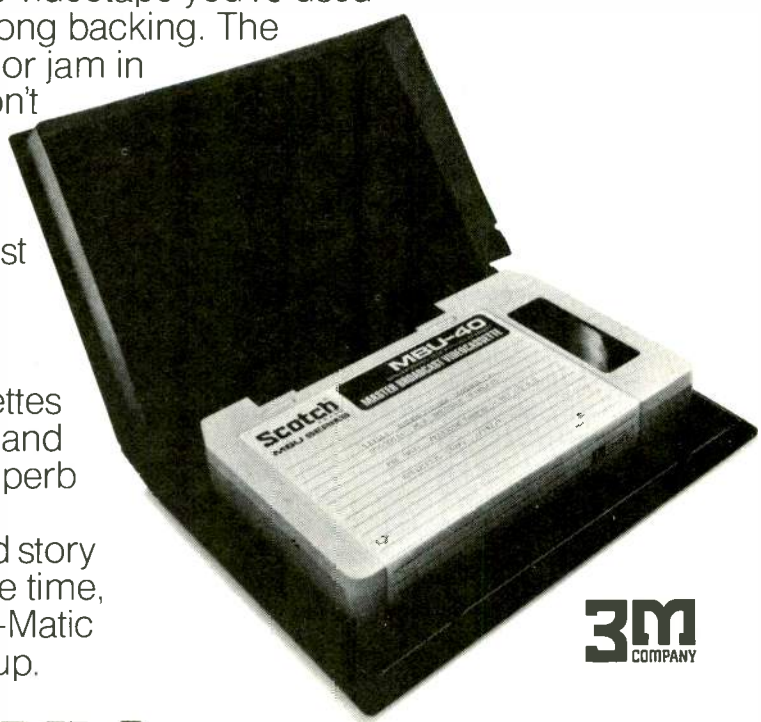

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KCBS All-News Radio Enters The Computer Age With Broadcasting's First Electronic News Room

A joint UPI-CBS experimental project has brought the power of computerized text editing to radio news. Early indications are that this may be the beginning of a long overdue movement to modernize the news production process.

WALK INTO THE KCBS NEWSROOM in San Francisco expecting to hear the clatter of typewriters and you'll be disappointed. The only typing going on is being done by a highspeed printer over in the corner issuing sharp bursts of words every few seconds. The next thing to unsettle the visitor is the absence of papers spilling off the tops of the reporters' desks. For a moment you get a sense of "What's wrong with this picture?"

The answer is "nothing is wrong with this picture." KCBS has merely entered into the computer age where reporters work on VDTs (Video Display Terminals) instead of typewriters. Reporters sit in front of these monitors and type their stories on a keyboard similar to a typewriter keyboard in every way except that it is silent and there are a number of keys that you don't see on a common typewriter. The words appear instantly on a display screen above the keyboard. If a word (or phrase, sentence or paragraph) needs to be changed, replaced or deleted, the reporter simply uses another section of the keyboard to direct a cursor to the location and with a simple instruction, makes the necessary change. If the change affects the length of the line, adjacent words, sentences or entire paragraphs are automatically adjusted to accommodate the change. The result is constantly clean copy. No blue pencil scribblings. No looping arrows directing a reorganization of the way the copy reads, no confusing strikeovers. And, as has happened with more than one story, no crumpled paper tossed into the can when so many changes have been made that rewriting is the only way out. If perfectly clean copy, however, were the only benefit of using a word processing system like this, the system wouldn't be here. What you are looking at is ISR, the UPI Information Storage and Retrieval system which brings an extremely powerful tool right to the reporter's desk, improves the control of the editor, and gives instant access to up-to-the minute news to the on-air announcer.

Computerized text editing systems are not all that new to the news media. Many newspapers have used them for years in addition to news wire services. Interfaced with computerized typesetting systems they have increased efficiency and reduced cost. Broadcasters have lagged behind because the obvious benefit of setting type by computer is not a problem for broadcasters. Nevertheless, radio and television news departments have had "paper problems" with lost notes, cue sheets, reams of scripts and instructions, etc. As Ted Feurey, KCBS news director, said, "It's like a headache. It's difficult to describe but if you have it, you know it."

Overall the system consists of 6 Zentec terminals at KCBS, a satellite communications link from San Francisco to UPI's Chicago Time Division Multiplex center and a hardwire link between TDM and UPI's central computers in New York City. All information storage and retrieval is physically in the New York computers including the editing software. San Francisco is on a real-time dedicated link to the system and uses the same software programs that UPI uses for its bureaus. The Zentec terminals are intelligent and contain firmware for the primary instructions needed to write copy.

There are many facets to the ISR system that makes it attractive for broadcasters. Beyond the elimination of a "paper problem", the system encourages better writing since the reporter has more information at his disposal and can reorganize a story innumerable times with no worry of lousing up the copy. The editor can review all stories available for air, including any stories in the UPI file or other news services carried by UPI (UPI carries 22 different news services, most of which are UPI originated services such as sports news, business news, etc., but also includes such services as the New York Times news service and Los Angeles Times news services). Of course, the total resources available to the editor depend on which services the station subscribes to. All services not subscribed to are electronically locked out. The editor also has the ability to keep constantly informed as to what is available by use of a UPI abstract printer on his desk. The abstract printer provides a continuous flow of billboards describing what is on file in the Pacific Coast Broadcast Data News report. A file number, slug, the first one hundred words and a word total are printed out on each item and if the editor wants to see a particular story, he can simply call for it on his VDT by typing in the appropriate file number with a single English instruction, "Get SN123". The story will become available in a few seconds and be displayed on his VDT. If the story needs to be reshaped for use by the radio station, it can be assigned to a reporter for rewrite on his terminal.

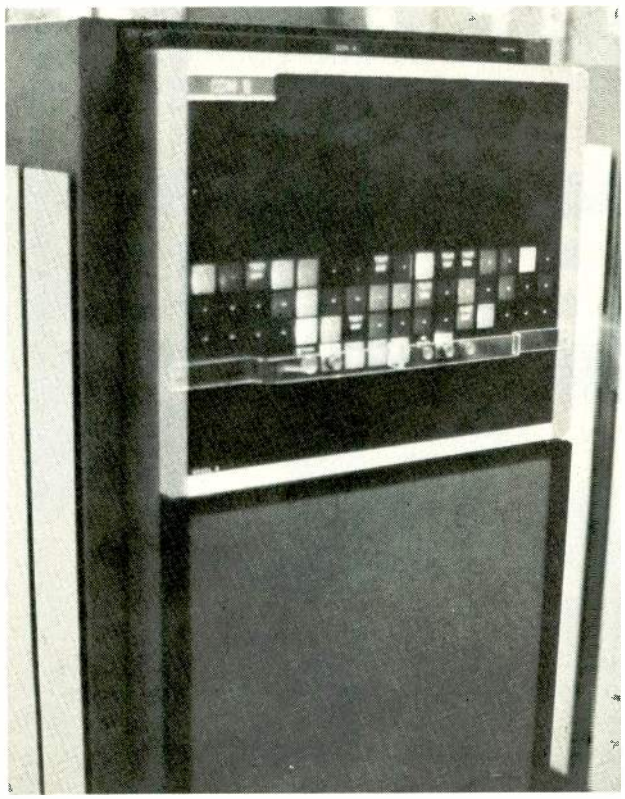
The reporters also have two very helpful "files" at their disposal. A "desk file" allows information on a developing story to be maintained under a number and slug. When the story reaches sufficient development to be written for air, the reporter calls up all the information currently being held on this story and begins to write the on-air piece.

Once the writer is satisfied with the piece, it is switched to the "hold file". Once in the hold file it is available to anyone on a terminal, that is, the editor, the announcer or any other reporter. In addition to locally produced stories, the hold file also contains all stories slated for broadcast whether they were written by UPI or any other source connected to the system. A table of contents for the hold file is available to any terminal user. The reporter can call for this index to see what the latest information is or for stories related to one being worked on currently. The index lists slugs and ID numbers for every story in the system for a 48-hour period.

The hold file also contains a number of blank forms peculiar to the KCBS system. These forms were designed by Jeff Field, the UPI project director in consultation with KCBS. One blank form is Bay Area Weather which is updated hourly. A desk assistant merely types in that information which has changed from the last report, and the announcer calls for the information on his VDT when the weather update is scheduled. Other so-called "blank forms" exist for box scores, livespike memos, instructions, reminders, etc. The announcer is on an intercom system with the editor and if a bulletin is issued, the editor advises the announcer that the bulletin is coming in and it is displayed on the VDT for reading.

As can be imagined, since all this communication is done electronically, paper shuffling and wasted motion is reduced to a bare minimum. The staff has adjusted very well to the system. A relatively short training period conducted by Jeff Field and other UPI people was sufficient to prepare the KCBS staff for the switchover in late August. Since then, a degree of comfort has developed that is remarkable. Reporters have adapted very well and most of them reportedly feel that they would never want to return to the old way. Ted Feurey is definitely happy with the system. He was originally in on the conceptual stage and feels that the system has lived up to his expectations. Even the announcers, whom one might expect to be least ready to adjust to a display screen, have smoothly assimilated the VDT into their operation. Though a printed script is still used (it is printed out on the highspeed printer) announcers are resorting to the screen increasingly.

The capacity of the system is more than adequate to meet the needs of the KCBS all-news format. The station reports about 800 stories a day, averaging 15 to 45 seconds each. That boils down to about 30 to 50 stories for



At UPI headquarters in New York, CCM controls flow of information between UPI bureaus around the world and KCBS in San Francisco.

All software for handling news copy is contained in one of three UPI Univac computers. KCBS is in real-time communication with UPI computers at all times.

UPI vice president of Broadcast Services, Bill Ketter, looks over printout of transactions in the UPI nerve center.

Electronic News Room

Zentec terminal displays "Bay Area Weather" blank form.

each 1 hour cycle. Some of these stories are, of course, fresh each hour and some are updates of stories reported earlier. On-air reporters, announcers, newswriters, and editors all use the VDTs to prepare their portions of each segment.

Another facet of the system is a communications link between KCBS and the CBS station in Chicago, WBBM, and the Washington CBS bureau. These two stations can communicate with KCBS by using terminals at their locations. They supply information on actualities available to KCBS or other memoranda.

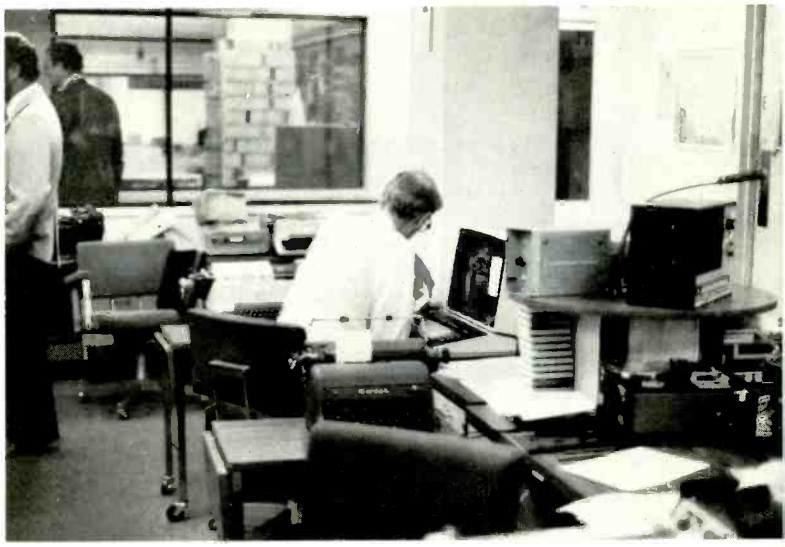
Though this is a lot of information, it is being processed on the same UPI system that handles the output of 200 bureaus which produce between 4000 and 5000 stories of considerably greater length every day.

Overseeing the experiment for CBS is Steve Peppard, director of CBS Management Information Systems. If there is an aspect of the system that can be improved, according to Peppard, it's the speed of the communication system. Normally, response time is anywhere from instantaneous to a delay of a few seconds. On Thursdays and Fridays, when UPI is moving its weekend load, response time may get as bad as 20 seconds or more. This is not particularly bad but Peppard would like to see this speed increased. Right now the system is capable of carrying 1200 words per minute. Peppard feels that a direct satellite connection to New York rather than going through the Chicago TDM might help to speed things. This, however, is part of what the experiment is all about. UPI is not selling this service to broadcasters and is not likely to offer it in the future since they are a news wire service and are not necessarily interested in developing a service that might eventually compete for computer time with their primary purpose. If the pilot project is successful, CBS will probably develop its own system either using on-site computers or a time sharing system with host computers in New York. The centralized computer seems to have the inside track since UPI uses this approach and has had good success with it. Several benefits, economical and opera-

tional, can be had with a centralized system and, as a network, CBS is in a position to take advantage of these benefits.

UPI's interest in the project also partially stems from concern for speed. The UPI highspeed service at 1200 words per minute is currently used by just a fraction of UPI customers. Most customers are using a conventional system that is relatively slow with just a 60 to 100 word per minute through-put. A slow output can create a log jam for an otherwise much faster system. To avoid this, a number of steps are taken to buffer the information flow. These steps represent, to some degree, an inefficiency that would not exist if more clients were on a highspeed system. A customer on a highspeed system with his own computer based system could take the UPI information in a dump-fashion. This would free up much of the UPI communications network for other work. UPI does feel, however, that if the experiment is successful, it could offer consulting and software services to broadcasters interested in developing a word processing capability.

Peppard feels that it is technically feasible for a station to use existing computer power that it currently has for technical automation or business system and turn some of that capacity to text editing. This, of course, is a speculative notion and much research would have to be done to determine its efficacy for any particular station. Certainly a combined AM-FM-TV station or broadcasting group could generate enough volume to make it economically feasible, or perhaps, broadcasters on a cooperative basis could develop the system on a market by market basis. Competitive and security problems could be solved with



Newswriter at KCBS prepares copy at VDT.

security codes and addressable systems such as are already employed to deny access to information not subscribed to by a UPI customer.

All such concerns will be looked at in this experiment. The greatest question is already answered. Is the system adaptable to broadcast needs? Emphatically yes. In what configuration or on what scale will the system be practicable? That remains to be seen. One thing is certain given the enthusiasm for the system felt by the staff of KCBS; this may be the first computerized newsroom but it is not likely to be the last. **BM/E**

Making Recordings That Put A Good Sound On The Air

This is a quick rundown of techniques used by a number of broadcast engineers to produce recorded programming high in audio quality. The techniques are available to just about any radio production department.

PROGRAM PRODUCTION IN A RADIO station, when it is the main source of on-air material, most often starts with a disc that must be dubbed onto a cart or onto open-reel tape. Other recording operations come up in many stations: live programs onto tape, tape to cart or tape transfers, etc. But disc-to-cart and disc-to-tape are the basic program production operations in the industry today.

Here are some general rules for doing these jobs well, gathered in conversations with a number of radio chief engineers and also from professionals in studio recording. The material supplements and extends the advice from chief engineers included in last month's report, "The Audio Of The Eighties".

First: have top-grade disc equipment

Emphasized last month, and emphasized again, is the absolute necessity of having disc playing equipment of top-most quality. This includes pickups, turntables, preamps. Luckily pickups of super-grade are now available from a number of makers. Favorites in broadcasting for a long time and still most used, have been the top models of Shure and Stanton. A whole class of other super-pickups has developed in recent years in the hi-fi industry and the broadcaster needs to keep his eyes open in this field.

There is also a grand new deal in turntables, as noted in earlier articles in *BM/E*, including last month's "Audio In The Eighties". A whole class of turntables with DC servo motors, direct drive, several with crystal oscillators for speed reference, have reduced wow, flutter, speed instability and noise by at least an order of magnitude. One of the first of these, Panasonic's Technics SP-10, has scored a large success among broadcasters. There are at least five other brands now competing at approximately the same level.

The reduction of low-bass noise has become especially important as ever more listeners use hi-fi listening systems with extended bass response. Turntable rumble is a frequent complaint from such listeners.

Albert Grundy, head of New York's Institute of Audio Research, points out a reason for close control of sub-bass noise from disc equipment: it may push the compression equipment, reducing level in an erratic fashion. He reminds us that such noise often comes from *outside* the turntable (room vibration) which means that turntable mountings have to be carefully considered. Several chief engineers have built special mountings with sand-filled panels, for extra, non-resonant weight. Every installation will differ in its requirements on this, depending on the sources of vibration in the studio. The main principle is the addition of weight to the turntable support, so that the support can act as a proper high-pass filter blocking low-frequency room vibration.

In some cases the engineer needs help from a high-pass electrical filter, cutting off sharply just below the audible spectrum, to control sub-bass noise.

Maintain the disc equipment. Sustained, skillful maintenance must be added to careful choice of disc equipment. Ted Renneberger, chief engineer of WXLO, in New York, says he changes his pickups at least once a year, styli at least once a month. Periodic checks with a wow and flutter meter and test record will uncover trouble in the motor or speed control system. Tracking force on the pickups is checked every day.

Listening to a standard music recording or test record on the monitor system regularly is also highly recommended. We discuss monitoring equipment in detail a little futher on: here it should be noted that the monitor must include the widest-range low bass response to reveal any increase in low-bass noise from the disc equipment.

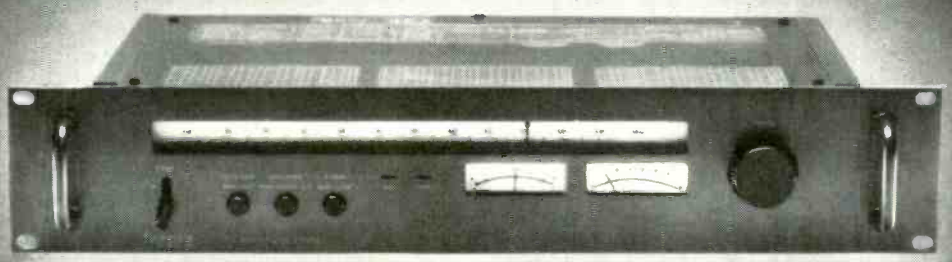
Second: inspect and monitor the disc thoroughly

Stations serious about on-air sound quality appraise individually every disc they put into the production process. This includes a physical inspection, a technical check-out, and a program monitoring, for sound quality and appropriateness to the format.

The physical inspection covers obvious faults: scratches, serious warp, off-center holes. The technical checkout can include a phasing check because a few stereo

continued on page 66

Introducing the Technics ST-9030 tuner. Purists would feel better if it cost over $1,000.



To some, tuners that offer 0.08% THD, 50 dB stereo separation, a capture ratio of 0.8 dB and waveform fidelity should demand a price tag of over $1,000. But with the ST-9030 this performance can be yours for under $400.*

That's quite a feat for a tuner. But then the ST-9030 is quite a tuner. It has two completely independent IF circuits: A narrow band, for ultra-sharp selectivity. And a wide band, for ultra-high separation and ultra-low distortion. It even selects the right band, depending on reception conditions, automatically.

Both bands give you the same extended flat frequency response. Because, unlike conventional tuners, the ST-9030 utilizes an electronic pilot cancel circuit that cuts the pilot signal, without cutting any of the high end. It's ingenious. And a Technics innovation.

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records reach the market out of phase.

For the listening check, the station needs at least one person, but better a group, thoroughly imbued with the program objectives and sensitive to quality. As noted in last month's story on WPAT, the monitor group might well include non-engineering personnel, especially young women with their high sensitivity to unpleasantness in reproduced music.

During the listening check, the engineering department can decide on equalization, compression, special effects to be added—but note carefully in the discussion of these matters below the general advice to use all such "alterations" with a very light hand.

Monitoring equipment: top grade and standardized. For the listening check the station obviously needs monitoring equipment of the very best. The monitoring system also is essential, of course, to quality control throughout the broadcast process. And the quality of the monitoring is dependent not only on the electronics and the speakers, but also on the acoustics of the listening space. The acoustics ought to be reasonably representative of listening-room conditions.

Moreover, if more than one monitoring position is used, they should be matched as exactly as possible in equipment *and in acoustics*. The acoustics requirement may be difficult in some stations, using rooms of different sizes, shapes, etc. However, skillful acoustic treatment can bring the various rooms into at least approximate equality. An expert in this field may be highly worthwhile to the station's sound objectives.

Engineers interviewed for this report were emphatic on the point that a monitoring system with low quality and serious quirks means low-quality sound on the air. The engineering department may try to compensate for the faults in the monitor producing a queered sound. At the least they have lost contact with the actual quality of the on-air sound.

Moreover, the old idea that the station should aim to sound "good" on the lowest grade on receiving equipment is rapidly going out of style. Ever larger segments of the audience are sophisticated as to sound quality and have equipment to match. A station definitely aiming for the car radio, and only the car radio, may have different imperatives—more on that below. One or two engineers interviewed by *BM/E* do use a typical car radio, tuned to the off-air signal, to make sure they are reasonably effective on such equipment. But in every case this is a supplement to the basic monitoring which uses the best available grades of reproducing equipment.

Good amplifiers and speakers are plentiful. There is on the market today a veritable tidal wave of audio power amplifiers with total bandwidth and vanishing distortion (below 0.1% THD, say). Crown has been a favorite audio maker among broadcasters for years and still is. McCurdy's audio equipment also has fanatical supporters in a lot of radio stations. At least ten other makers could be named with justice here.

Excellent speakers are superabundant too. As every radio engineer knows, JBL and Altec speakers have dominated the monitoring scene for a long time and their latest models are still very much "in". But several other brands are breaking in, mostly from the hi-fi field. Just

one among them is Panasonic with their Technics linear-phase speakers.

Reproduction equipment of this grade obviously will cost considerably more than pieces picked up from the ocean of lower-grade equipment on the market. But the total investment in a high-grade monitoring system is a small item in the price of a broadcast plant. It is essential to high sound quality.

Third: play the disc with care

Every disc, say the good sound advocates, must be cleaned before the actual dubbing is done. Some use a home brew of water and about 2% alcohol. The production operators must be trained to do this faithfully and well.

The operator must also know how to handle the turntable and pickup correctly in accordance with the routines set up for the production operation

Fourth: get carts and cart machines ready

A station that wants good sound and uses carts for all on-air music must be especially rigorous in selection, set-up, maintenance. Every cart needs a trial recording of a steady tone on each channel to make sure it is stable, with monitoring on a scope to show phase relations, and with a wow/flutter meter for speed instability. Ted Renneberger says that around 10% of the carts from his favorite supplier get tossed out immediately—a cart that is way off in the phase or flutter tests cannot be "brought back".

The same checks, with a known good cart and a test signal, must be applied daily to the cart machines themselves. Renneberger says that an increase in wow often signals a motor that is headed for trouble, well before there are any perceptible physical or aural signs of this.

Flutter is heavily dependent on the pressure adjustment in the cart machine and this throws emphasis on the need for constant adjustment and maintenance of such machines. The whole tape path should be cleaned daily. A pressure adjustment can be guided by the flutter meter. Azimuth and other head adjustments have to be checked regularly.

A point emphasized by Renneberger is the need to keep heat from distorting the metal frame of the cart machine by concentration in one spot. The cart machine stack needs plenty of ventilation so that heat can be moderate and evenly distributed through the members.

Fifth: set all levels precisely

Getting uniform levels on the carts as recorded is one of the most essential parts of the operation; it contributes heavily to control of the on-air quality. Al Grundy points out that it pays to start with a test record that has a standard 1 kHz tone—it is at a level of 7 cm/sec. on the NAB test record used in most recording studios.

Set the disc output for a meter reading of 0 dB. Do the same for the recording amplifier level on the cart, using a standard test tape. Then you have a known base from which ups or downs can be inserted, as required by the music, to get the same level every time on the cart.

Sixth: A-B monitor the input and output

Several engineers testify that one of the most important

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control methods, to make sure everything is going right in the dubbing process, is instant comparison of the signal coming off the disc with that recorded onto the cart. A switching system to send first one and then the other into the monitor is simple for the engineer to add to his installation. Any kind of slippage, flutter, distortion, noise added is immediately apparent.

Pushbutton mono check. A good idea that came up for the monitoring during dubbing is a pushbutton system for combining the left and right channels off the cart momentarily in the monitor. This lets the engineer tell quickly if he is in trouble from phase shift, with its degradation of the quality of the mono signal. Controlling phase shift in stereo carts is one of the main concerns of the production department as detailed in many stories in *BM/E* over the last few years.

Seventh: use equalizers, compressors, etc. for precise purposes

There is, of course, plenty of chance in the production process to "tailor" the sound with equalization, compression, special effects, etc. It is good to remember, though, that the disc, especially if it is pop or rock, will already be "processed" to a considerable degree—compression will be heavy on the "top 40" material.

The advice of several engineers boils down to this: if you are simply trying to "fix up" a record that sounds terrible, forget it. The processing will too often cause trouble to break in through a new hole in the dike, when the old one is plugged. But if you have a definite concept of a "special" sound you are after, then experimentation with processing units may be in order. Here is a very brief rundown, suggestive only, of a few of the things you can do with the different processing units. The chief engineer and the program director must determine themselves the more precise applications of processing units, to achieve their particular objectives in sound quality.

Equalizers. The general effects of equalizers are known to everybody: more bass for "weight" more middle for "presence", more highs for brilliance. There is a flood of equalizers, a massive flood, each of which will ring hundreds of changes on the simple formulas. What the broadcast engineer has to watch out for is the introduction of some new kind of distortion when he applies heavy equalization.

One hazard of this kind is the ringing that may be produced by a sharp, hi-Q boost circuit used to push a narrow segment of the spectrum up high. Some graphic equalizers are prone to this. Equalizers that give control of the Q (the boost bandwidth) can be set to avoid it.

The latest generation of broadcast equalizers, at least in their "flat" position, have very low noise and harmonic distortion; but these qualities should be checked by the engineer in any case. And he can check for ringing by watching results on a scope when he pushes some boost segment hard.

Special effects: delay lines. As Richard Factor of Eventide set forth in the February issue, the special effects unit today, especially one using digital techniques, can produce an enormous variety of sounds, changes in sound, outer-world wooshes, throbs, echoes, etc., etc. In this area particularly, the engineer has to know fairly well

what he wants, usually from hearing it on the air or in somebody else's shop. Whatever it is, he can get it—the only problem is to learn what the possibilities are. A publication that could help is "Studio Applications of Time Delay", an intensive 20-page technical discussion prepared by Lexicon, Inc., available from them at 60 Turner St., Waltham, MA, 02154.

Excellent time delay/special effects units are coming from many makers; in addition to Eventide and Lexicon, there are MXR, MICMIX, Marshall, Sennheiser, Bozak and others.

Compression, limiting. Should the production department apply compression between the disc and the cart (tape)? The application of compression is a management decision, related to the station's intended audience and the format, among other things. As noted in last month's "Audio In The Eighties" report, stations aiming for hi-fi oriented listenership generally use compression very lightly; the less they can get away with the better. However, if you are trying to make it big on car radios with Top 40, you must acknowledge the possible dynamic range of car listening, roughly 6 to 10 dB, limited at the bottom by the horrendous ambient noise level. Fairly heavy compression becomes a necessity.

Is it beter to put compression in to the production line or to apply it to the signal just before it goes on the air? Generally speaking, the noise level will be lower with the compression applied in the production process. But this locks the station into a definite compression level: the engineering department may want to keep adjustment more available.

Noise reduction. The use of "compandor" noise reduction systems in recording is by now familiar to everyone. Both Dolby and DBX are very widely used in radio production departments and both produce large gains in the never-ending struggle with noise. A newer system, the Telefunken, promises to make an impact, too.

New on the scene is an entirely new kind of noise reduction: the elimination of "ticks" and "pops" by systems that blank out response for a very short interval, often a fraction of a millisecond, when there is an especially sharp transient. The tick eliminator is not much used in broadcasting yet, but on the face of it, it does seem to have a future.

An important point, though, is this: the tick eliminator does not affect the steady hash or hiss and the rumble that the compandor systems reduce. So a "complete" noise reduction system apparently will need both the tick eliminator and the standard compandor system.

Eighth: use most of the same for disc-to-tape

The discussion up to now has been directed toward the disc-to-cart operation but obviously a majority of the techniques described are equally essential in the disc-to-tape operation. Some differences are: the elimination of the stereo phase problem; the availability of open-reel tape machines with extremely high-level performance. If open-reel tape fits into the station's programming procedures, the production department can more easily produce a *very* superior grade of sound. That implies, of course, investment in the cost of one of the top tape machines, not small. But for several of the stations recently interviewed by *BM/E*, it has been judged very much worthwhile.

BM/E

Updating Studios For Tomorrow

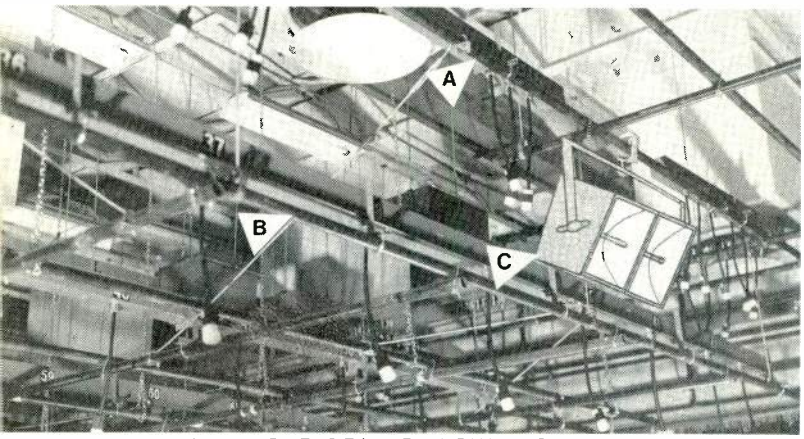
By Donald 'Pete' Howard

Even small studios can serve big production goals if designed to use space efficiently.

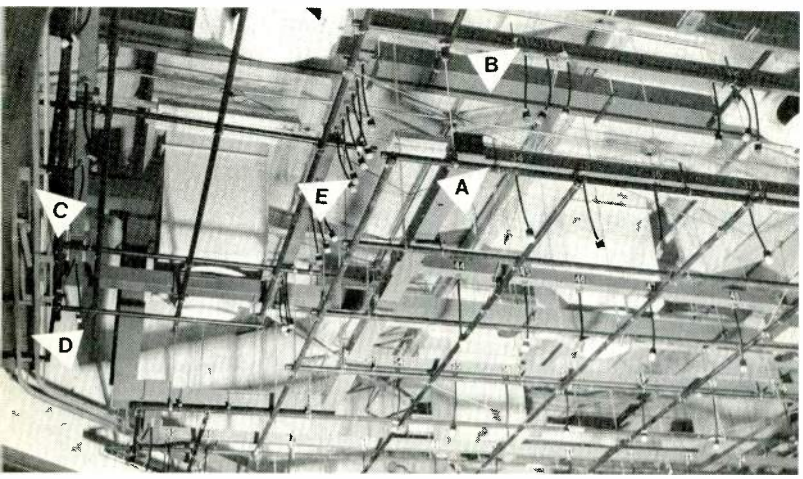
WFAA, THE DALLAS, TEXAS ABC AFFILIATE, has been undergoing an expansion program to provide space for state of the art video production facilities. As part of this program the three existing studios are slated for updating. Alterations in one studio have been slated for updating. Alterations in one studio have been completed and the second is underway. It is this second studio, Studio "C," and its flexibility problems which we shall discuss here.

This small studio (1800 sq.ft.) houses the entire daily news/public affairs programming offered by WFAA. This amounts to the average production of 5 one half hour live programs per day. This exacting schedule has been accomplished by the WFAA production staff through ingenious design of the various sets used. Each set is modular and castered so that it is easily set and removed to storage areas adjacent to the studio. All the set elements are designed to pin together and maintain their relative locations each time they are set up in the studio. However, a problem was encountered. The original fixed pipe grid in the studio was "designed" on an approximate 5 ft. x 5 ft. module which limited lighting instrument hanging space. This limitation became very apparent as more than one lighting plot was left in position to accomplish the fast turn-around demanded by the multiple show schedule. The lighting plots were compromised to allow one lighting instrument to perform two and threefold duties. Many times refocusing or rehanging of lighting instruments was required to overcome the hanging space limitation offered by the existing grid system. Eventually, lighting time became the criteria by which the change from setting to setting was scheduled.

Pete Howard is vice president, chief consultant, Imero Fiorentino Associates.



(A) UPPER GRID (B) LOWER GRID (C) TYPICAL CYCLORAMA LIGHTING FIXTURE



(A) LOWER GRID (B) UPPER GRID (C) CYCLORAMA & DRAPERY TRACKS (D) FLOOR OF PERIPHERAL CATWALK (E) CYCLORAMA LIGHTING OUTLETS (3 color)

Additional limitations were encountered in the lighting operation due to an inadequate distribution of lighting circuits. Repatching power circuits to control circuits and running jumper cables to remotely placed outlets added to the time required to light each set.

Even with these limitations, WFAA found that it was possible to clear the studio for additional taping operations, but another basic limitation was discovered. Fast commercial and/or interview productions require "instant scenery" and in most cases the studio cyclorama plays an important part. If proper control and instrumentation is available, then a background color and decorative light patterns may be achieved with minimum fuss and bother. In order to accomplish this, a well planned and designed system of cyc lighting must be installed, circuited and controlled. Such a system takes both horizontal and vertical studio space. Horizontal space is specified by the lighting instrument to be used, but vertical space is dictated by the grid height and the desired cyclorama height. When considered lightly, cyclorama height, which should be determined by camera lens angle studies, is often limited by the physical intrusion of the cyclorama lighting equipment suspended from the grid. Such was the case at WFAA where a flat 16 ft. high grid, with a cyclorama suspended below, could not possibly allow camera shots to include more than a 14 ft. height of cyclorama background. This limits the work of the camera and a large percentage of uniteresting floor must be included in wide shots.

Thus, the basic limitations of the studio were discovered: (1) grid module was too large, (2) lighting outlet circuits were too few, and (3) the cyclorama was too short. It was also immediately apparent that if conditions

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occasioned by these limitations were going to be improved, thsn the whole question of lighting control operations and flexibility would have to be reconsidered.

The problem of overcoming these limitations was assigned to the Production Facilities Design department of Imero Fiorentino Associates (IFA). IFA began business in 1960 as a small company specializing in TV lighting director services. Since that time, with the addition of numerous skilled experts and talented lighting designers, the firm has grown to include a number of divisions and field offices and expanded its scope of expertise into production and staging.

Our redesign of the studio has essentially relieved the foregoing limitations: (1) the basic grid design is based upon a smaller module offering 100% more lighting in-

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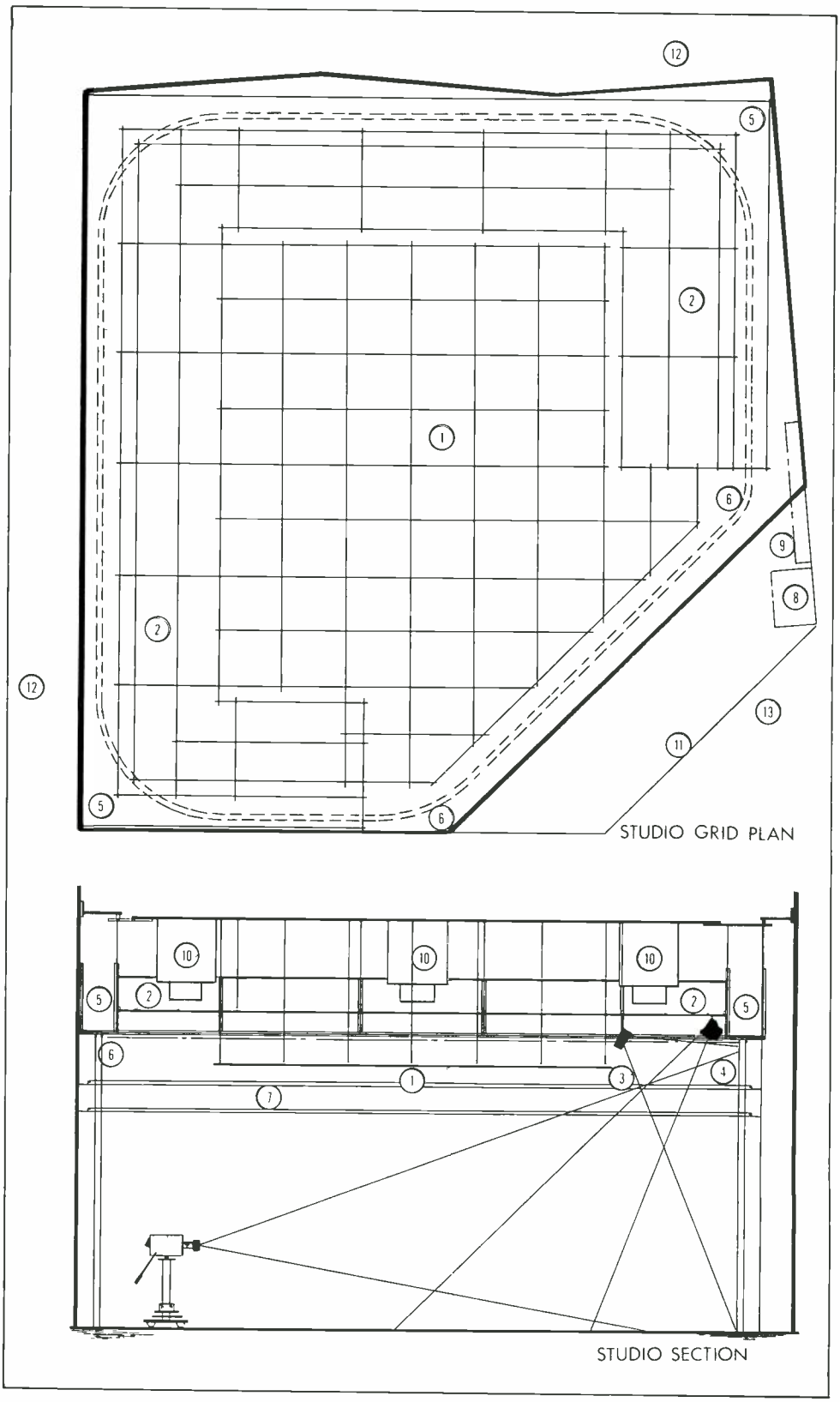

Key to call out numbers on studio plan and section

1. *Low Grid: Fixed gridwork of 1½ inch pipes suspended 16 feet above studio floor.*
2. *High Grid: Fixed gridwork of 1½ inch pipes suspended 19 feet 2 inches above studio floor.*
3. *Typical cyclorama lighting fixture.*
4. *Typical back light fixture.*
5. *Catwalk.*
6. *Cyclorama track.*
7. *Audio/video cable trays.*
8. *Lighting control console at studio floor.*
9. *Lighting patch panel at studio floor.*
10. *Air conditioning ducts.*
11. *Studio area under existing control room.*
12. *Studio scenery door.*
13. *Studio personnel door.*

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strument mounting positions, (2) lighting outlet circuitry has been redesigned to optimize the location of lighting instruments to an adjacent outlet, and (3) a lens angle sight line study was made to determine the optimum cyclorama height for the studio considering the basic structural limitations.

The solution to the cyclorama problem hinged upon the analysis of the sight line studies and a careful evaluation of lighting practices and techniques. Through experience we have found that fixed grid systems without catwalk access from above should not be greater than 16 ft. above the studio floor. Fixed grids higher than 16 ft. are difficult to operate, ladders and lift devices must be excessively large. We have also found that in the central portion of a studio, especially of the 1500-2000 sq.ft. size, that the function of the suspended lighting is to provide key and fill. Key and fill lights are generally mounted at scenery height down to head height.

Additionally, in a studio of this size, the scenery is mounted peripherally so as to allow maximum blocking space for performers and cameras. Thus, the backlight, which is normally placed above the scenic backing, also forms a peripheral pattern. This arrangement, of course, is also true when the cyclorama is used as the basic scenic background.

Consideration of the general operating facts led us to design a two level grid system. The central portion of the grid is fixed at 16 ft. above the studio floor and the peripheral portion at 19½ ft. above the studio floor. The lower grid is serviced normally by the use of ladders and lift devices while the upper grid is serviced from a peripheral catwalk. The cyclorama trackage is suspended from beneath the catwalk framing and its height, which is 17½ ft., was established by the physical clearance required by the catwalk system and the studio ceiling. Because the basic back lighting and cyc lighting instruments are suspended from the upper grid level the full cyc height is useable.

The step-up from the lower grid level to the upper occurs at the optimum distance from the cyclorama for lighting distribution. Back light positions are easily reached from the catwalk.

Our final problem concerned lighting control. Maximum flexibility was required. A system of 60 dimmer channels was designed including 12kW dimmers for cyclorama lighting, 7kW dimmers for other group loads and the occasional 5kW lamp and 3kW dimmers for optimum individual control of key and backlight units.

Due to the relatively large number of dimmers and number of daily production set-ups, a Kliegl Bros. Cue Level Control System was selected. This system contains adequate memory capacity to retain the presets assigned to each of the repertory productions and has sufficient additional capacity for other production activity that may be scheduled.

Overall studio flexibility has been vastly increased. More lighting instrument hanging space and power circuits are available. Cyclorama height is optimized and its basic lighting is fixed. Backlighting positions are above the cyclorama and easily ssrviced from a catwalk. The control system makes it possible to repeat complex lighting set-ups instantly. Lighting time is no longer the primary gauge of "turn around time." The deck may be cleared for more production! **BM/E**

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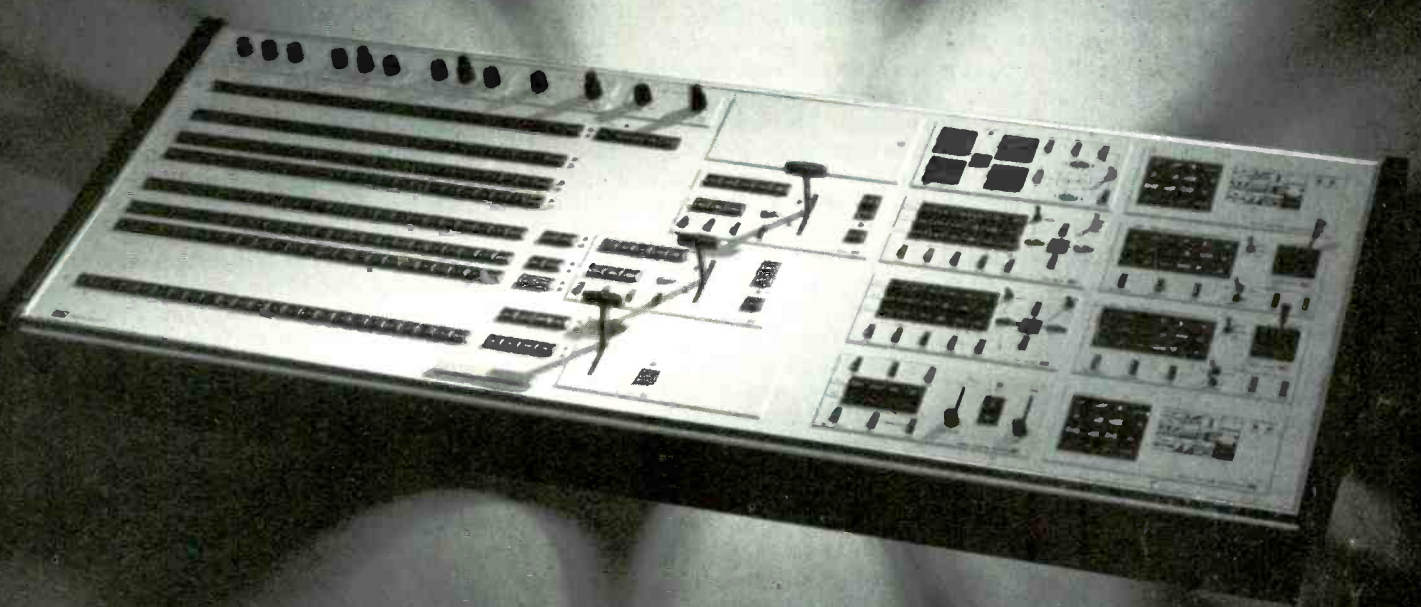

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INTERPRETING THE FCC RULES & REGULATIONS

The Commission Balks At Entertainment Format Regulation

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

THE COMMISSION HAS BEEN at odds with the United States Court of Appeals for the District of Columbia Circuit for some time concerning regulation of entertainment program formats. The Commission has always shied away from treating on the merits complaints concerning changes in entertainment program formats. The rationale is that reviewing proposed changes in entertainment program formats constitutes an infringement of licensees' programming discretion, constitutionally protected by the First Amendment.

On the other hand, the Court of Appeals sees things differently when a station seeks to change an entertainment program format that is unique in the listening market. There, the Court of Appeals finds that failure to make a public interest finding concerning the program format change "may inhibit rather than promote the First Amendment goal of 'the widest possible dissemination of information from diverse and antagonistic sources.' "

Background

The Court of Appeals during the last few years has held in several cases that:

> . . . (T)he Commission must conduct a hearing to determine whether a proposed sale of a broadcast station is in the public interest whenever (a) the purchaser intends to discontinue the station's existing entertainment format, (b) there has been a significant public protest complaining that the effect of this charge would be to deprive listeners of a format not otherwise available in the market, and (c) there exists a question as to whether the format is, or could be, economically viable.

In response to these decisions, the Commission called for comments concerning the Commission's role in reviewing program format changes. The Commission decided that the U.S. Court of Appeals for the D.C. Circuit's holding requiring an entertainment format hearing in the circumstances described above was

> . . . inconsistent with our (the Commission's) understanding of congressional policy as manifested in the Communications Act, contraproductive in terms of maximizing the welfare of the radio-listening public, administratively a fearful and comprehensive nightmare, and unconstitutional as an impermissibly chilling innovation and experimentation in radio programming.

The Commission admitted in its *Reconsideration*[1] of this finding, that it, or any administrative agency, has no authority to overrule a holding by any U.S. Court of Appeals. By acknowledging the spector of disobedience to the Court of Appeals mandate, the Commission seemed to be telling the Court of Appeals that it has made a grievous mistake in ordering the Commission to conduct entertainment format hearings. The Commission is waving a red flag at the Court of Appeals, telling it to look again at the constitutional and administrative problems that its format hearing mandate will cause.

In its *Reconsideration*, the Commission affirmed its prior conclusion that entertainment formats, and proposed changes in these formats pursuant to sale of a station, are matters of discretion for the licensee alone. The Commission also reviewed the history of the difference of opinion with the Court of Appeals.

The Commission's *Reconsideration* delineated some of the many practical reasons why the Court of Appeals mandate to review certain entertainment formats would be most difficult to implement. As the Commission argued persuasively, "what is a particular format?" As many broadcasters will confirm, distinctions between formats are blurred for the most part. For instance, is the Court of Appeals aware of the rapid proliferation of format characterizations that have taken place over the past 20 years? In this regard, it would be most instructive to compare radio station listing and format charts contained in the entertainment sections of many daily newspapers from, for instance, 1957 and 1977. The Commission emphasized this transformation. In reflecting upon the *Citizens Committee to Save WEFM* case, the Commission noted the following formats in one city: "all-news," classical music, rhythm and blues, Jewish ethnic, Greek ethnic, Spanish country, modern country and gospel, talk, easy listening, middle of the road, show tunes, beautiful music, popular standard . . ." Additional format variations have developed since the Commission compiled this list.

In its *Reconsideration*, the Commission turned the Court of Appeals' rationale on its head by stating that imposing any limitation whatsoever upon format changes will *limit* rather than promote potential format diversity. That is, if a station broadcasts a unique format in the market, it is precluded, without going to hearing, from developing a brand new format. Creativity and innovation are stifled.

Throughout its *Reconsideration*, the Commission expresses extreme reluctance to be "drawn into the supervision of broadcast programming to an extent that is consistent with neither the intent of the Communications Act nor with sound public policy." The Commission contends that the allocation of formats by means of market forces has an especially desirable element of flexibility which simply cannot be duplicated by government supervision. It is doubtful that any broadcaster would disagree.

Further, as every broadcaster knows, being designated for hearing is an extremely expensive proposition. The Commission recognized this and stated that this is a potent chilling effect which runs concomitant with any scheme of program format regulation. The Commission quoted a well-known Supreme Court case by saying that the administration of entertainment program format regulation would require "a comprehensive, discriminating and continuing state of surveillance." The Commission went on: "(T)he lines which distinguish one format from another are becoming increasingly obscure." At what point does a change in programming constitute a change in format?

[1] *Memorandum, Opinion and Order*, 41 RR 2d 543 (1977).

The Commission concludes that it would be up to its elbows in regulation of program content if it is required to hold entertainment program format hearings.

In its *Reconsideration*, the Commission answered critics who questioned the Commission's lack of hesitancy to regulate public affairs and news programming pursuant to the fairness doctrine, political broadcasting rules and personal attack rules. The Commission refuted charges that format regulation, as required by the U.S. Court of Appeals in the *WEFM* case, "would be enormously more intrusive into licensee decision making that the Commission's present involvement in the news and public affairs area." A closer look at regulation in these latter areas sheds some light on this distinction. The Commission, pursuant to the fairness doctrine, does not direct a broadcast licensee to program any specific material or viewpoints. Rather, the Commission limits its regulatory role to directing a license to broadcast some additional program material so that opposing viewpoints are not completely absent with regard to controversial issues of public importance in the community. The Commission's role in the area of the fairness doctrine is confirmed by the rare instances in which it formerly directs a licensee to provide opposing viewpoints concerning controversial issues. Broadcasters sometimes get the wrong idea because they become aware of only the high profile, contested fairness doctrine cases. They can be assured that these cases are only the tip of the iceberg of fairness doctrine complaints made to the Commission in which the Commission *declines* to infringe upon licensee programming discretion.

In contrast, the Commission argued in its *Reconsideration* that "supervisory control of program formats" required by the *WEFM* case would face the Commission with:

> . . . the prospect of rejecting virtually the entire broadcast schedule proposed by the private licensee, and it is not inconceivable that (the Commission) could also be faced with directing a licensee to adopt a particular type of format, thus requiring him to broadcast all of his entertainment programming of the type he had not been broadcasting and that he did not desire to broadcast.

In sum, the Commission contrasts its involvement in news and public affairs as a "limited involvement in licensee decision making" as compared to the "pervasive, censorial nature of the involvement in format regulation that *WEFM* requires."

Conclusion

The ball is back in the U.S. Court of Appeals' court (no pun intended). It will have to decide whether its *WEFM* case decision is prudent in light of the difficulties envisioned by the Commission. To help the Court of Appeals out, the Commission listed the difficult determinations that an entertainment program format hearing would require: (1) What is the station's existing format? (2) Is there any reasonable substitute for that format in the station's market? (3) If there is no reasonable substitute, will the benefits accruing to the public from the format outweigh the public detriment accruing if the format is abandoned?

The Court of Appeals might well focus upon the apparent short shrift given by the Commission to the probability that program format hearings would be required in the relatively infrequent situations in which "unique" format stations are sold. On the other hand, if the Commission is correct in its prediction that a format definition will be extremely difficult and time consuming, the Court of Appeals may re-evaluate its position as enunciated in the *WEFM* case.

In any event, the coming Court of Appeals review of the Commission's position will have a substantial impact upon governmental intrusion into program content.

BM/E

GREAT IDEA CONTEST

30. Compact Remote Control For TRT Model 360 EBS System.

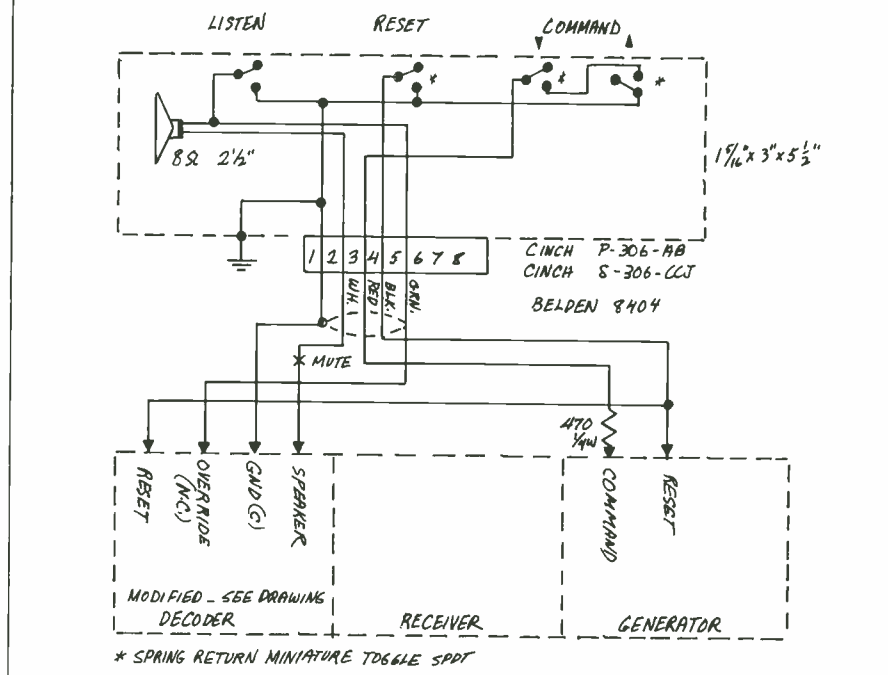
Tim Valley, Engineer, KFYE, Fresno, California

Problem: When we decided to mount our Model 760 EBS System (TFT) in a program rack rather than in the air studio, we wanted to remote all its functions.

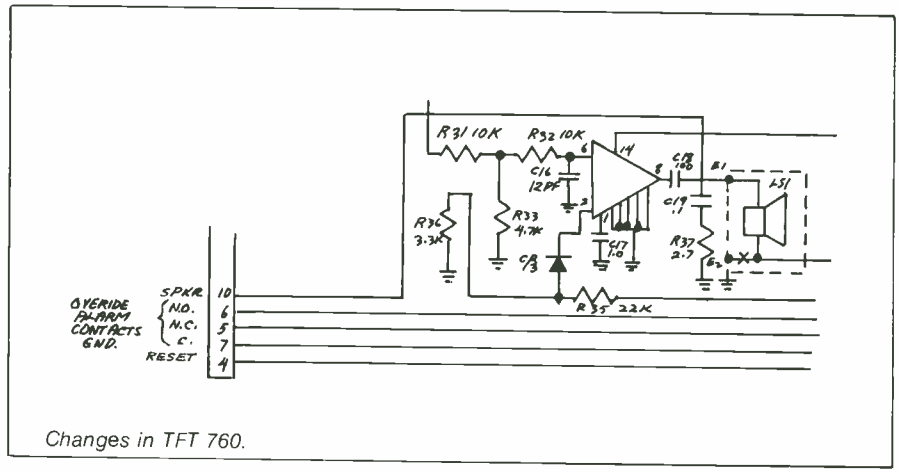
Solution: Space is always at a premium at the operating position, and to keep the remote as inconspicuous as possible, we built the unit, including a monitor speaker, in a 1-5/16" x 3 x 5-1/2" mini-box. A 2-1/2" 8-ohm speaker fitted nicely in the bottom, and a Cinch P-308-AB chassis plug was mounted on the rear. A 306 plug has all the pins you'll need, but we had the 308 in the junk box and it fitted neatly across the 1-5/16" height. Also mounted in this box are three spring-return miniature SPDT toggle switches and one non-spring type SPDT. Belden 8404 was used to connect the unit to the rack system.

Since we wanted to monitor the decoder unit audio, and there are no external connections for this purpose, we had to change some wiring within the unit. We also wanted to add the "Listen" feature to the remote, and an override circuit which would activate both speakers in the event of a received tone. To accomplish this, we utilized the decoder's internal alarm relay contacts as shown on the schematic. The LM380N (Z2) was grounded through R35 to achieve a steady "ON" or "LISTEN" mode. Both speakers were then individually switched on or off, and the override was wired across the switches.

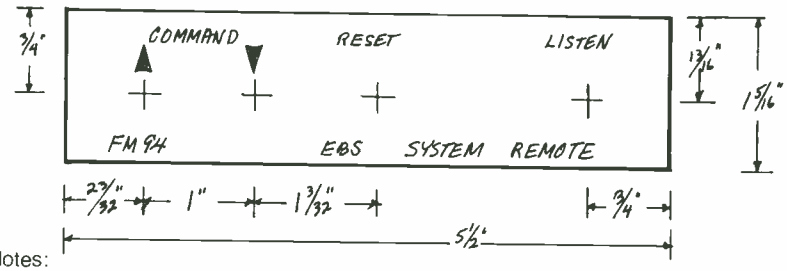
To finish off the installation, a



Internal wiring of remote.



Changes in TFT 760.



Notes:
A). 4-holes are 1/4-in. on centers.
B). "EBS SYSTEM REMOTE" lettering type is as model above.
C). Notice that "Listen" hole is 1/16-in. lower than Command or Reset.
D). If possible—add "FM94" to lower left corner. If this lettering is impossible, use whatever comes close.

Front panel, remote box.

brushed aluminum facia was ordered and lettering added. We also ran the SPEAKER wire (cinch connector pin #2) through the air console's mute relay to prevent accidental transmission of received tones. Connecting the two reset functions together seems to present no problem, but a 470 ohm 1/4 Watt resistor was added in the COMMAND circuit to prevent any false alarms. A lower value may be needed for wire runs over our own 70'.

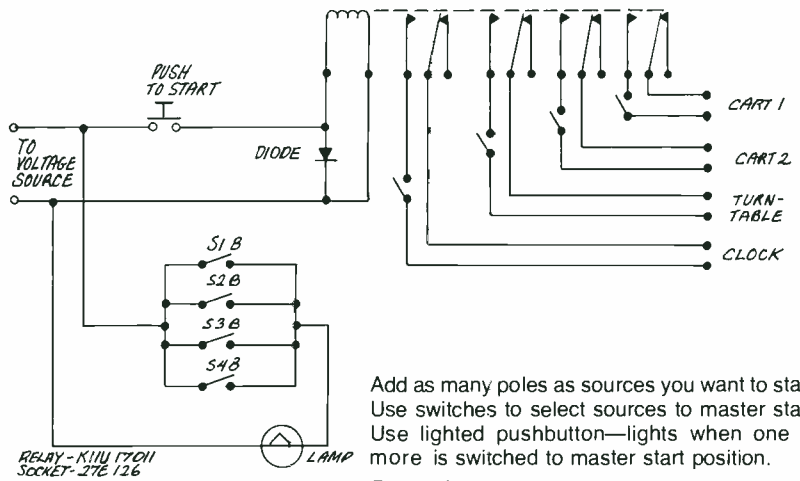
31. Starting Multiple Sources At The Same Instant.

Jon Bennett, Chief Engineer, KYND, Pasadena, TX

Problem: It was clearly visible that we needed a way to start a multiple number of sources (i.e. cart, reel to reels, timers, turntables, etc.) at the same instant. Our announcer staff complained they could not reach the buttons at once.

Solution: A neat functional solution was arrived at. Construct a single button. A start switch (Gates 604-051) was used with 2 Potter Brumfield (KHU17D11 and sockets 27E126) relays. Miniature toggle switches were used. This way, the announcers can select one or more or any combination of courses that they want to start at the pressing of a single button.

Be sure to place a click supressing diode across the relays used. I mounted the completed unit flush on the desk top next to the console for easy accessibility. A welcome addition to the production from operation.



Add as many poles as sources you want to start. Use switches to select sources to master start. Use lighted pushbutton—lights when one or more is switched to master start position.

Bennett's master start.

32. Low-Cost Microphone Windscreen.

Jacob Z. Schanker, Ind. Consultant, Rochester, NY

Problem: A very low-cost, yet effective, windscreen for microphones can be made from so-called air conditioner filter foam. A 15'' x 24'' sheet was obtained at a local discount store for well under a dollar, and suffices for about a half a dozen windscreens.

Solution: Bearing in mind the finished shape desired, a piece of foam is cut and then sewn together on two or three sides to make the windscreen. Once slipped over the mic, it can be secured with a rubber band.

Unlike other types of foam that are sometimes tried, unsuccessfully, as makeshift windscreens, this foam is porous. In fact, it looks very much like the acoustic foam used in commercial windscreens. A 10 to 15 dB reduction in wind noise with no noticeable change in voice quality was observed when using one of these windscreens on an A.K.G. D707E microphone.

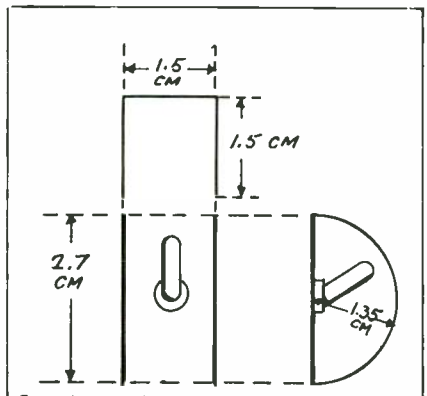
33. Installation Of Switch Guards.

Alan W. Parnau, Chief Engineer, WFME-FM, Newark NJ

Problem: People accidently brushing against power switches on equipment and turning it off. This is especially troublesome if the equipment affects what is on the air. The first thing

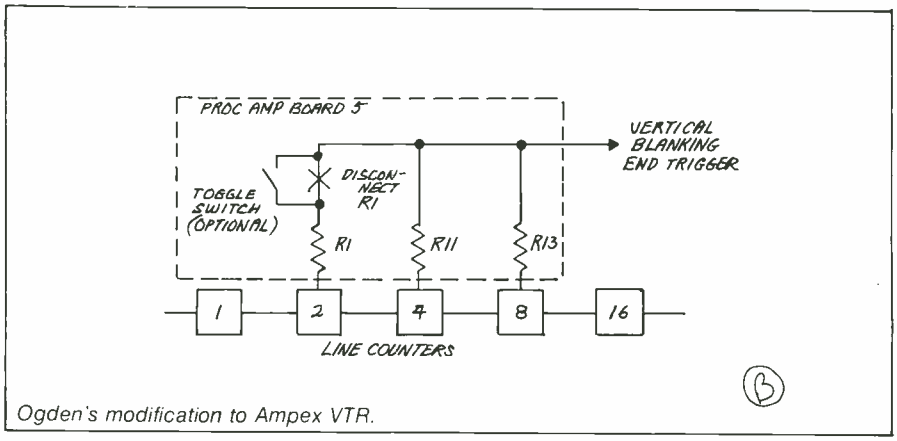
continued on page 80

that comes to mind is to do away with the power switch either by removing it or shorting it out. I don't like this approach.



Switch guard by Parnua.

Solution: Construct and install switch guards. The one shown here I made for our Thomson-CSF Labs model 4450-A Audimax and CBS Labs model 4110 FM Volumax. These guards make it virtually impossible to turn something off by brushing against it. Another idea to make it even more foolproof would be to remount the switches. Most power switches are on when up making it easy to turn them off when being hit by something falling from above. Turning them upside down will eliminate this problem. The guards can be made out of anything that you can cut and bend into shape, and the dimensions can be altered to fit any switch that needs to be protected.



Ogden's modification to Ampex VTR.

34. Modifying an Ampex VTR To Pass The VIR Signal.

Everett B. Ogden, Technical Specialist, Albany, NY

Problem: To modify an Ampex VR-2000 VTR to pass the Vertical Interval Reference (VIR) signal.

Solution: All signals through line 20 are normally deleted by vertical blanking in the 2000's proc amp. To pass the VIR on line 19 it is necessary to shorten the blanking interval by 2 lines. The proc amp has a binary line counter which starts at the end of vertical sync (line 6). The 2-, 4-, and 8-line outputs are tied through 12k resistors to the vertical blanking end trigger bus, developing an end trigger at line 20 (6+2+8=20). To shorten the blanking by 2 lines, simply lift 2-line output resistor R1 on board 5. To retain the ability to delete the VIR, wire a toggle

switch in series with R1 and mount it to the board so it is accessible with the proc amp drawer pulled out.

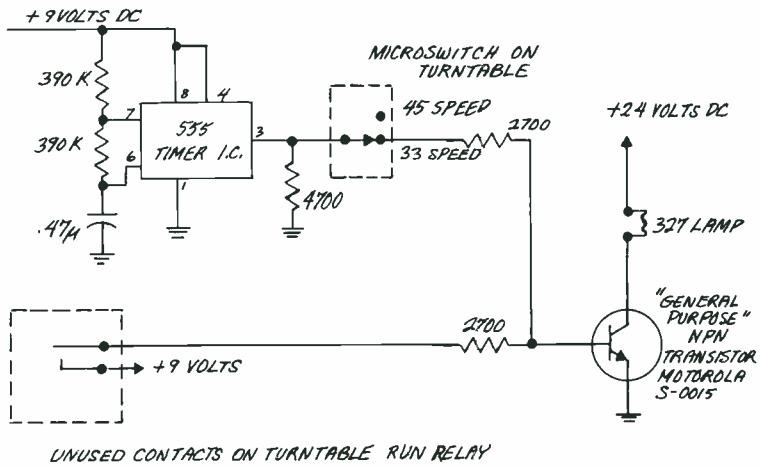
35. Warn Announcers That Turntables Are On The Wrong Speed.

Charles Gustafson, Dir. of Eng., WKMI, Kalamazoo, MI

Problem: Announcers sometimes forget that they have played an LP record on a turntable and then the start of the next 45 rpm record is at the wrong speed.

Solution: Warn the announcer that the turntable speed selector is in 33⅓ rpm position by blinking the turntable "run" light on the console when the turntable is in 33⅓ rpm position but not running.

The Sparta turntables used in control and the Russco turntables used in production both have internal microswitches which light lamps on the turntables to indicate which speed they are set on. As the turntables are not in front of the announcer he cannot see these lights as he is ready to start the turntable. Another microswitch was added to each turntable in the 33⅓ rpm position. A "555" timer circuit supplies a 2 Hz pulse to the base of a "lamp driver" transistor of the turntable run lamp indicator. The turntable run relay supplies a steady DC voltage to the same "lamp driver" transistor when the turntable is running which stops the blinking and the lamp remains on all the time. Stop the turntable, and the lamp resumes blinking until the turntable speed selector switch is restored to the 45 rpm position.



Modification to turntable to prevent running at wrong speed.

VOTE NOW!

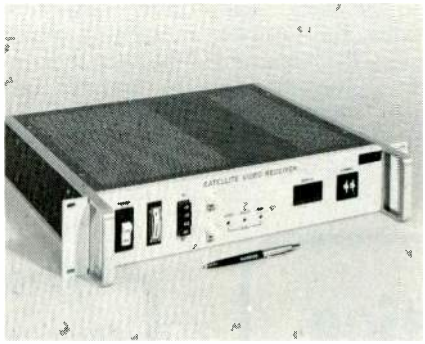
GREAT IDEA CONTEST BALLOT ON READER SERVICE CARD

BROADCAST EQUIPMENT

Some standouts on the product list this month are a new earth terminal receiver for television programs designed particularly for CATV service; a system called "Liplock" for making the sound track on video tapes intelligible at low and high speeds, for editing convenience; and a new pickup transmitter for radio remotes.

Earth Terminal Receiver 300

Earth terminal receiver has 24 channels for video programs, is designed especially for CATV systems. Model SVR-461 is phase locked, has complete frequency agility in local or remote control over the range 3700 to 4200 MHz, for a frequency modulated video signal, with audio program subcarriers. It includes a down converter, phase lock demodulator, video processor, audio subcarrier demodulator, and associated power supplies. Frequency control circuits use COS/MOS logic, for high noise immunity with local or remote BCD control. HUGHES AIRCRAFT CO.



Audio-In-Video Pitch Control 301

Pitch control system provides intelligible audio from video tape when it is moving from 1/10 speed up to 3 times playing speed. "Liplock" allows videotape editor to use audio for cueing. System uses a microprocessor to sample and reshape the monitor audio output during the edit point selection process. The low-speed mode allows editor to find the "hole" between two sounds, free of the usual low-speed rumble. CONVERGENCE CORP.

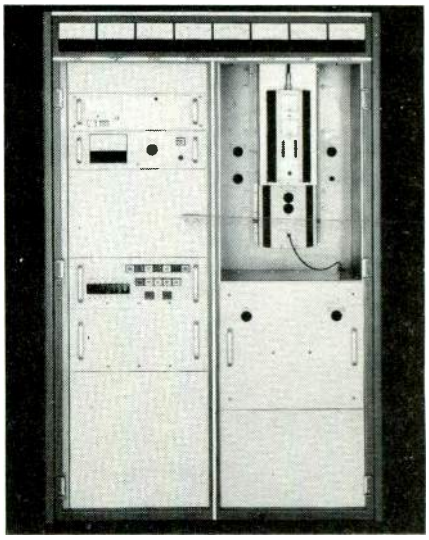
For more information circle bold face numbers on reader service card.

Character Generator 302

New character generator has 16-page memory capacity, replacing earlier model with 4-page memory. Model 3016 has three font sytles, Video Gothic, Piper Roman, and Helvetica Semi-Bold, each in upper and lower case. Unit can hold at one time two different upper case fonts, or an upper and lower. Display is up to 22 characters per row, 10 rows per page; up to 160 single-row titles can be stored. $6900. 3M CO.

Line Of TV Transmitters 303

Television transmitters with 10 watt, 100 watt and 1000 watt video output use quarter-wave renentrant cavities. Models TX-10, TX-100 and TX-1000 have low-level IF modulation, CMOS logic circuitry for both local and full



remote control. HOWE-YIN RESEARCH CO.

Electronic Still Store Systems 304

Line of electronic video still store systems have on-line capacities ranging from 200 to 3000 frames. ESP series provide full editing facility, index systems, programmable sequences, accept input electronically from videotape, film, 35mm slides and remote camera feeds. Input is converted to digital form for storage under microprocessor control. Removable disc packs provide unlimited off-line storage, with segments quickly installed. Digital processing minimizes noise and distortion in handling. ADDA CORP.

Facsimile Weather Receiver 305

Receiver for weather facsimile broadcasts from GOES-SMS satellites provides 16 plus range of dynamic steps. Model M-136 produces charts and other information in 8½ in. x 8 in. form. Receiver also brings in NAFAX weather charts. MUIRHEAD, INC.

Video Delay Lines 306

Passive delay lines at 75 ohms impedance have toggle or rotary switches, as well as terminals for strappable delay variations. Series consists of ten units, ranging from 0 to 10.5 nanoseconds with 0.5 nanosecond steps, up to 0 to 2075 nanoseconds with 25 nanosecond steps. $55 and up. ALLEN AVIONICS, INC.

Video Distribution Amplifier 307

Video DA derives 6 color outputs from one color input. Model VDA-1 requires a 12-volt power supply. Model VDA-1P has built-in power. VDA-1P, $125.00. VIDEO AIDS CORP. OF COLORADO.

Program Switcher 308

Compact program switcher and special effects generator uses a numerical keyboard to select video inputs, wipe patterns, buses and effects. Model 7400/A is 7 in. wide, 8¾ in. high, has LED numerical readouts to show inputs selected for each bus, selected wipe pattern, special effects, and bar status. Unit has four-bus output, 26 wipes, six

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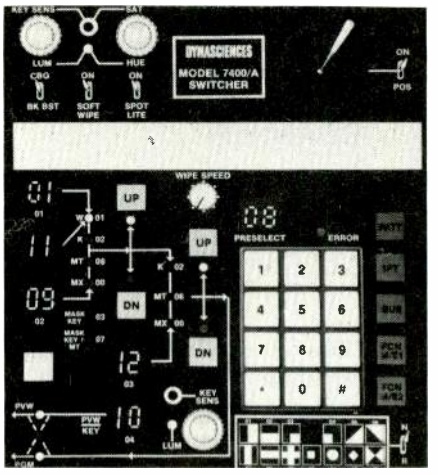
Broadcast Equipment



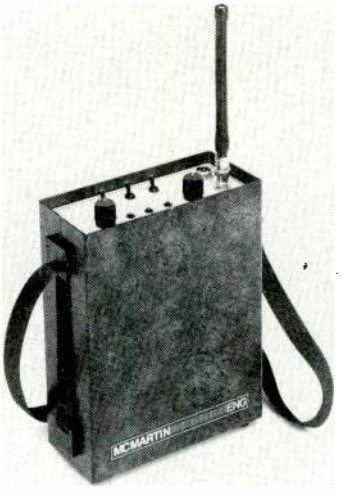
other effects, joystick positioning. DYNASCIENCES (WHITTAKER CORP.).

Video Deck Sequencer 309

Vertical internal deck sequencer controls up to six quad or U-Matic video machines, playing cued segment from each machine in pre-set order. Model VISA 360 is used first to record cue tones at beginning and end of the wanted sequence on the video tape. Then with up to six tapes loaded, the unit can start the sequence, which follows automatically in numerical order. Rack mount, $5495.00 SYSTA-MATICS, INC.

Transmitter For Radio Remotes 310

Remote pickup transmitter for radio programs has three-watt output, carrier in 150 MHz band, is claimed to meet or exceed all new FCC requirements that



went into effect August 1, 1977. Model RPU-1103 has a rechargeable Nicad battery that runs the unit for eight to ten hours, at a 30% duty cycle. Unit has strap allowing easy operation on the shoulder, weighs six pounds, including the battery. Two carrier frequencies are standard, with front panel switch selection. Mic input has 25 dB of compression; line input is provided for feeding transmitter from a tape recorder or other source. With line input in use, mic input provides talk-over. MCMARTIN INDUSTRIES, INC.

Multi-Track Recorder 311

New tape recorder comes in 8, 16, 24 and 32 tracks, uses clocked CMOS logic with Hall effect pushbuttons and solid state switching. Model M-15A has indirect capstan drive system with crushless DC motor referenced to a quartz crystal oscillator. Mechanical servo provides constant tension in all modes, with editing flexibility. Fast speeds are continuously variable. Recording/playing speeds are 7-1/2/15 or 15/30 ips. Auto-locator has nine position memoires, microprocessor control. TELEFUNKEN (GOTHAM AUDIO).

Aural STLs 312

Line of aural STL equipment has such features as choice of wideband composite with phase-lock loop technology, or narrowband single or dual system; direct-reading forward and reflected power; 2 watt monitor built in; RFI modules in both transmitter and receiver; 10 watts of RF output.

Low Cost Audio Delay 313

Digital time delay system has dynamic range above 90 dB, noise and distortion below 0.1%. Model 92 has two lines of delay of up to 120 ms each, with front panel control for 7.5 ms increments in dealy. Five-position LED display shows headroom in 10 dB increments. Accuracy claimed is ±0.1% of setting plus 0.17 ms long term. Under $2000. LEXICON, INC.

Automation Using 8-Track Carts 314

Automation system starts and stops up to 8 eight-track cartridges in preset sequence. Digital memory holds about eight hours of programming. Time announce that programs itself is optional, provides automatic network join/leave. Unit is small enough to stand on desk corner, $2645 and up. SIMPLIMATION CORP.

For more information circle bold face numbers on reader service card.

Motorized Azimuth On Carts 315

Cart machine with motorized adjustment for azimuth of heads has internal random noise generator to assist in adjustment. Unit can be added to machines for recording A-size cartridges. Adjustment of azimuth can be made down to a few thousandths of an inch. UMC ELECTRONICS CO.

Mixer 316

Mixer for radio, TV, film production and disco installations has linear faders, automatic start and fade for fast tape program production. Model S6-2 has two phono inputs, two mic inputs, equalization on all inputs, broadcast

cue, stereo output and stereo monitor output. It has a digital system for start/stop of turntables and tape machines. Under $1100. ALLEN AND HEATH (U.S. DISTRIBUTOR. AUDIO MARKETING LTD.).

Ten-Station Intercom 317

Intercom has 10 stations, each a master. NOVA-COM requires only a push on button for desired station, held during talk, released to listen. "All Call" button alerts all stations. Installation requires only a four-conductor cable. Stations can be added. About $250. NOVA CORP.

Beam Power Tube For FM 318

Power tube for FM PA use gives 25 kW of useful power at 20 dB gain and 80% overall plate efficiency. Model 4695 uses a plate supply of 10 kV, is rated for full input to 230 MHz. $900. RCA.

In-Line Mic Preamp-Limiter 319

In-line mic preamp has gain of 23 dB to 56 dB, externally adjustable. Model 1400 also has a built-in limiter with

continued on page 86

Broadcast Equipment

2.51:1 compression ratio, 100 ms attack time. Ratings claimed are -0.5 dB at 20 Hz, -0.25 dB at 20 kHz, THD less than 0.05%, equivalent input noise -127 dB ref 0.775 v. Unit runs on batteries, avoiding ground loop problems. Input is 150 ohms, balanced, for line or mic source. Maximum output +16 dB (4.89 v). $185.00 RTS SYSTEMS, INC.

Low-Cost Video Switcher 320

New production video switcher has 12 effects selectable by knob. Model 812's effects include circle, diamond, upper left corner, square diagonal, others. Joystick control allows positioning. There are eight video inputs, 3 buss configuration, (Program, Preview A, Preview B), a non-sync warning indicator, preset for mix to wipe or wipe to mix. Suggested list, $3995. 3M COMPANY.

Frame Sync With Special Effects 321

Digital framestore synchronizer has two fields of storage for full picture processing capability. Quantel Model DFS-3100 locks incoming non-sync signal into station reference, can freeze frame or field; compress frame to one quarter size anywhere on screen, or at five fixed, preselected positions; center a chroma key area, with compressed picture automatically following camera pan; automatic wipe; move smoothly from compressed to full picture. $39,500. MICRO CONSULTANTS, INC.

Audio Distribution Amplifier 322

Amplifier will feed up to 30 600-ohm audio loads or up to 60 in the stereo version. Model DA-X30 is installed by running line from output around area to be served and tapping off as needed. Claimed response is ±0.75 dB, 10 Hz to 20 kHz; output level is +27 dBm. $145 to $240. RAMKO RESEARCH, INC.

Amplifier For Earth Terminal 323

Amplifier sub-system is designed to act as ground transmitter in a satellite communications system. Model 924OH-02 provides 400 watts of output and 55 dB saturated gain from 5.9 GHz to 6.4 GHz. It has a metal ceramic WT, fault and status indicators, provision for remote control, protection against load faults, automatic recycling. HUGHES AIRCRAFT CO.

Remote Audio Switching 324

Solid-state remotely controlled audio switching systems can be assembled into different system sizes. Series 5900 can be made for 5-in -1 out, 10 in by 1 out, 5 in by 5 out, and others. Basic element is a plug-in module, Model SW-5985A with popless FET switching of five sources to one balanced output. Frame adapter assemblies allow joining of various combinations. DYNAIR ELECTRONICS, INC.

Wireless Mic System 329

Wireless mic transmitter and receiver system is on VHF high band, has two selectable RF levels, and an adjustable non-clipping compressor. PRO 1/3 Series can use any electret or dynamic microphone; transmitter requires one standard 9-volt battery. Receiver has calibrated meter for vu, RF and battery condition. EDCOR.

Vertical Phase Adjuster 330

Circuit for vertical phase adjustment is an option for video cameras and switchers. V-Phase is complete on circuit board with adjusting potentiometer. Operator adjusts potentiometer until LED indicator lights, showing an inphase condition, which allows switching in the vertical interval, especially useful with videotape recorders. JAVELIN ELECTRONICS.

Video Cassette Sequencer 325

Sequencer for ¾-in. videocassette machines can handle from two to six machines. Model VMC-100 has automatic re-cue or program segment advance; remote control of vertical interval switcher; pulse-restart allows break during any sequence of operation, toehr; two-tone PLL system for positive; others. VIDEOMEDIA.

Noise Reduction for Nagra 326

Add-on tape noise reduction system is designed for use with Nagra IV-S portable stereo tape recorder. Model 193 needs no power supply of its own, has four separate signal processing circuits, two for record and two for playback, allowing the normalized signal to be monitored while recording goes on. Compression/expansion is 2:1 - 1:2, mirror image, linear in decibels over a 100 dB range. System adds 10 dB of headroom to Nagra and 30dB of noise reduction. System bolts directly to Nagra case, weighs 5 pounds. $850. DBX, INC.

Video Proc Amplifier 327

Video processing amplifier regenerates sync through an internal EIA generator which genlocks to incoming video. Model SPA-500 can be used with an EIA video signal, has external controls for video, sync, chroma and burst levels, burst phase, and pedestal adjustment. Output is adjustable .7 v to 1.25 v with 1 volt input; frequency response ±0.5 dB to 4.2 MHz. SYSTAMATICS, INC.

FM Modulator 328

FM modulator is designed to work on any FM channel or TV sound channel. Model FMSM-9172 produces fully stereo FM sound with analog audio input. FUNG ENGINEERING CO.

Corrections & Additions To The Sept. "Source '77"

Make these changes to your copy of "The Source '77", BM/E's September guide to broadcasting equipment.

Changes to the Instant Source Locator:

I. **Audio Equipment**
Consoles, add MCI 1-5, 7▼
Automation Equipment, add MCI 3,7▼
VU and Peak Indicators, add MCI 1,2▼

III. **Film Equipment**
Film Processors, delete Magnasync/Moviola
Film Editing Equip., add Magnasync/Moviola
Magnetic Recording Equip. and Accessories, add Magnasync/Moviola

IX. **Cable TV Equipment**
Amplifiers, add AEL 1-3▼, Jerrold, 1-3
Antennas, Receiving, add Jerrold
Connectors, add Jerrold
Converters/Descramblers, add AEL 1▼, Jerrold 1, 2
Distribution Accessories, add AEL 1▼, Jerrold, 1
Head End Processors, add Jerrold
Test Equip. CATV, add AEL▼, Jerrold

X. **Components/Hardware**
Rectifiers, add Wilkinson▼
Surge Protectors, add Wilkinson▼

Changes in the Alphabetical Listings

P. 112 add:
RCA Service Co.
Rand Office Center 1263A Rand Rd
Des Plaines IL 60016
312 298-7980
Videotape duplicating service **VS**

Delete videotape duplicating service from RCA Service Co. description with Camden, NJ address.

RCA Electro Optics & Devices
Delete from product listings:
blank audio tapes, batteries, test instruments, digital display devices.

P. 71 add:
AEL CATV Comm Div
PO Box 552 Landsdale PA 19446
215 822-2929
CATV amplifiers, converters, passive distribution accessories, CATV test equip.

P. 78 change address:
Central Dynamics Corp
147 Hymus Blvd Pointe-Claire Quebec
H9R-1G1
819 697-0810
Delete Canadian field office address and add:
NJ CDL 230 Livingston St Northvale 07647 ..... 201 767-1300

P. 80 change name:
Cosmicar Lens Div., Asahi Precision Co., Ltd.
424 Higashi-Oizumi Nerima-Ku Tokyo Japan
Delete previous name

Engineers

Technological Leadership for 3 Decades!

Ampex, headquartered on the San Francisco Peninsula, is the company that "invented" the magnetic recording industry.

The technology pioneered by Ampex over three decades has affected many aspects of our modern lifestyles, and has established Ampex as a leader in magnetic recording. Our continued effort in developing new technology has always been the key to our leadership. Right now our Advanced Technology, Data Products and Audio-Video Systems Divisions are embarking on several new programs. To insure the success of these programs we are seeking innovative graduate engineers with experience in the fields listed below.

Opportunities like this don't happen very often. But they're happening at Ampex now.

Advanced Technology Division

- electron beam and optical recording
- magnetic recording
- tape or film handling
- servos
- high-bit rate digital circuit design
- optics
- signal analysis
- pattern recognition
- high frequency circuit
- communications theory

Data Products Division

- circuit/systems design of very high-bit rate systems
- disk read/write systems and equalizing systems for tape recorders
- codes for magnetic recording
- precision servo systems for both linear positioners and rotating systems
- mechanical design of high precision systems in disk recorders and in longitudinal, helical and transverse scan tape recorders

Audio-Video Systems Division

- analog videotape signal systems
- digital video signal processing
- servo systems
- videotape editing
- professional audio recorders
- head technology
- TV cameras

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