

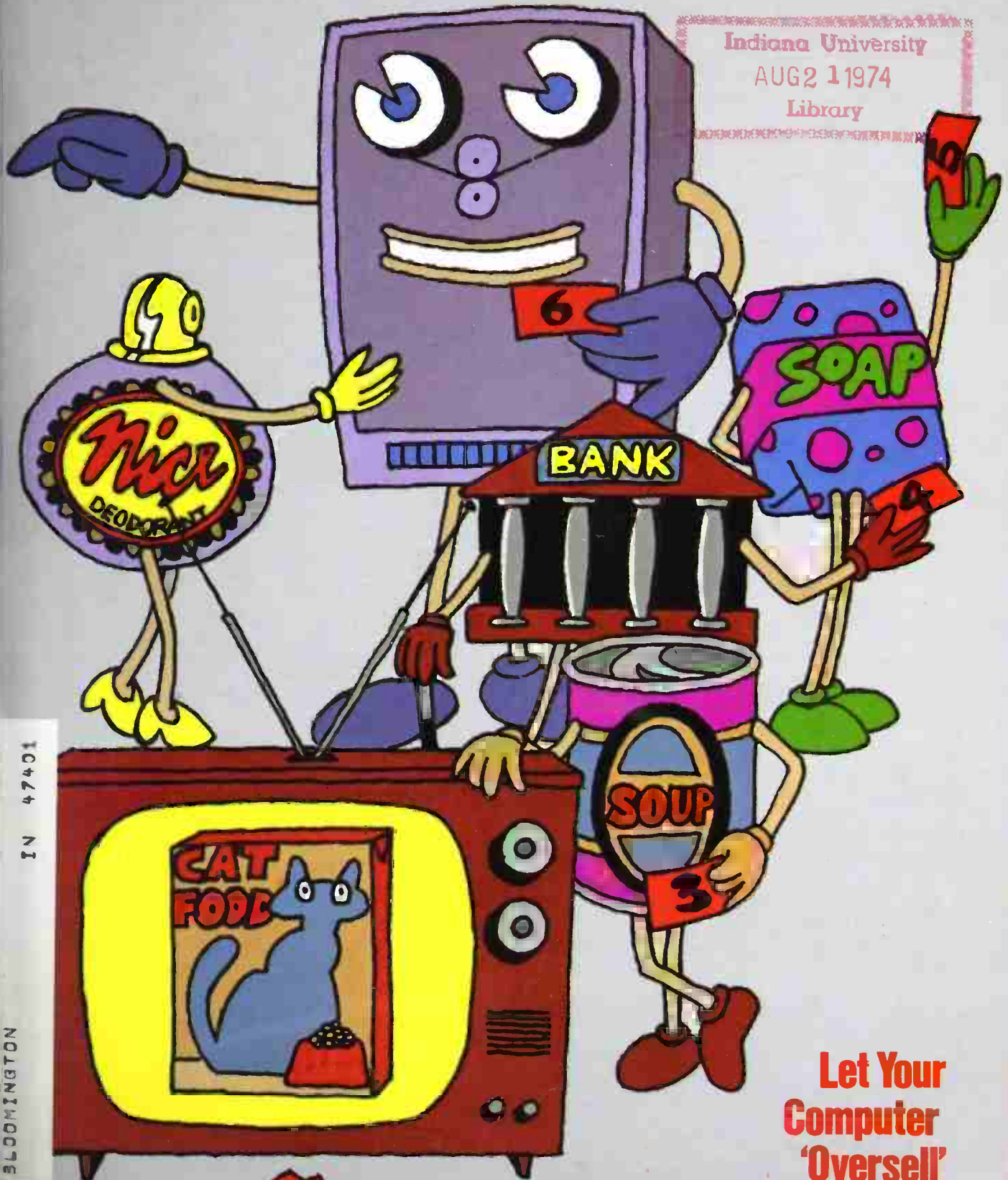
AUGUST 1974

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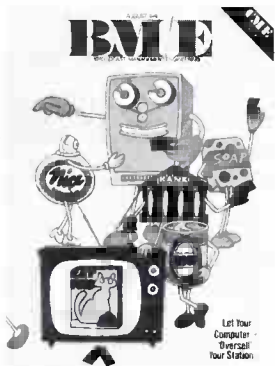
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BM/E

BROADCAST MANAGEMENT ENGINEERING

AUGUST 1974/VOLUME 10/NUMBER 8



You can oversell during busy periods, and your computer will keep you out of trouble—reschedule low-priority spots, remake log up to the minute. See story beginning on page 34.

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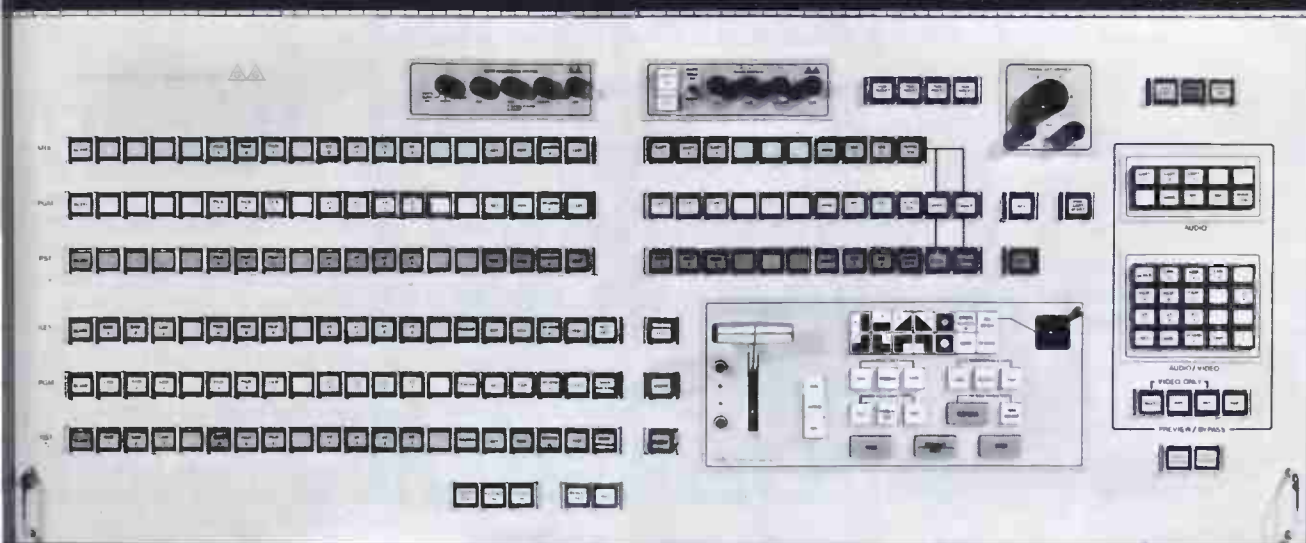
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BROADCAST INDUSTRY NEWS

Big Chicago Show Previews What's New in TV Sets

Between 8.5 and 9 million color TV receivers will be sold this year, according to recent estimates, providing the cost-jittery industry with its second best sales year ever. In addition, there will be another 6 million to 6.5 million monochrome sets sold in 1974.

So all in all, there are bound to be more TV set purchases by American consumers despite economic uncertainties and for the first time, second-set or replacement purchases will surpass original buys for color units. What's in store in the new lines announced for the coming year? Reviews of the TV manufacturers' model line unveilings and the exhibits at the recent Consumer Electronics Show in Chicago, indicate that the all-solid-state-chassis is in command.

RCA has already made its last "hybrid" receiver; while the major Japanese imports, Panasonic, Toshiba, Hitachi, and Sony, have long since gone the solid state route. The other U.S. leader, Zenith, has also announced that 1975 will probably be the last year for hybrids.

The other dominant theme among

the new lines is electronic varactor tuning for high end models. Zenith, for example, has 23 models with electronic tuners. Sylvania and GE have also made strong commitments to these tuners, though they still must be priced higher than mechanical, detent versions. The most elaborate tuner shown at the Chicago exhibits was the Magnavox STAR all electronic remote tuning system. Featured on the high-end consoles, STAR tuning is designed around an integrated circuit supplied by Mos-tek.

Using a hand-held keyboard that looks a little like a calculator, the viewer can select any channel by number. The tuner seeks out the proper frequency randomly for the entire VHF and UHF channel spectrum. Then the new channel number is displayed on the screen in six-inch-high digits for three seconds before fading. If the viewer needs a reminder of the channel being watched, a touch of the recall button brings back the display. In fact, the channel number display appears on screen even if that channel is not operating or assigned. System adds about \$125 to cost.

Another trend apparent in Chicago is that the picture brightness race has reached a plateau. The last few years have marked the development

of new picture tubes in the U.S. and Japan designed to enhance brightness. But these product features have tended to underplay picture clarity, thus the trend next year will be toward promoting picture sharpness, which means concentration on convergence circuits and improvement in tube guns. The instant-on feature, requiring a small amount of current to heat the tube at all times is just about dead thanks to the energy crisis. However, faster heating picture tubes will soon be on hand to take the place of instant-on.

As for prices, television receiver manufacturers have hoped to raise tags this year and have made strong statements to that effect for several months. However, it's doubtful that increases will stick, putting the makers into a cost/price squeeze. The only force countering rises in the cost of materials and labor has been declines in prices for semiconductor units used in the all solid state chassis. Nevertheless, the TV companies face a year of slim profits despite very good sales.

On the scheduling boards for the near future will be another effort to get 110 degree deflection tubes in U.S. sets. RCA tried the wider angle screen a few years ago in two tube models, but had no success. Wider angle screens are already in general use in Europe and Japan. In fact, Sony and Toshiba have entered the angle race with the former promoting the "4 degree difference" in 114 degree tube and the latter bumping up the numbers game by announcing a 118 degree set. Meanwhile, U.S. producers have steadfastly remained in the 90 degree camp, but now as American home screens become smaller and second-set purchases more common, the room-saving, shorter 110 degree tube may finally catch on here.

Video Players: The Long Hello?

While all attention was riveted on the latest audio and television products at the Consumer Electronics Show and at the IEEE Broad-

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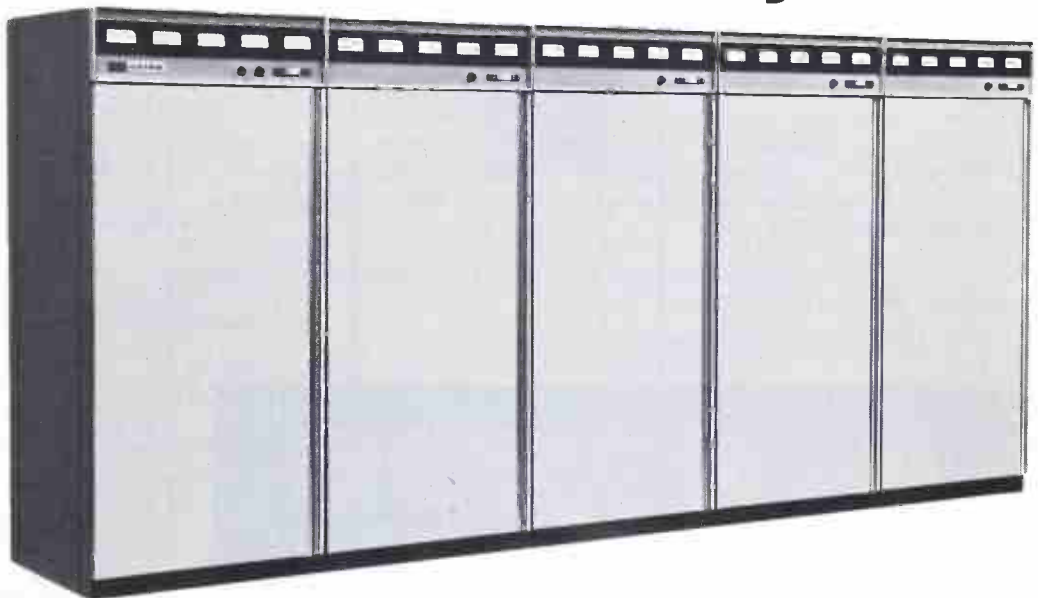


Magnavox's new STAR system lets you switch to any and all 82 UHF-VHF channels at random.

Design: IF Modulation!

**Benefit: Superior
color performance!**

**Result: Harris/Gates
TV transmitters
have outsold all others
... more than 100 sold
in the last three years!**



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Modulimiter has low-noise, low-distortion, integrated circuitry, and a test switch for proof-of-performance.

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and TV Receiver conference held multaneously in Chicago recent home video players received on moderate notice. Once the darling of the video market—the future ticket item destined to revitalize TV sales by the mid-70's—VTRs and video discs appeared to be almost far from reaching consumer's living rooms today as they did four years ago when all the hoopla began.

VTR hardware and software occupied a section of the Consumer Electronics Show area. However, review of the exhibits revealed that none of the products nor the programs were actually ready for the average home. All of the action, was plain to see, is now in the industrial and educational arena. In fact since there has been little pretense having a VTR ready for U.S. home for some time, the appearance of the exhibit at a consumer show was more promotional than commercial. Nevertheless there has been some action in players. Kodak has continued its development of a super-8 mm film videoplayer and RCA has actually completed a pilot run of 20 MagTape Selectavision units demonstrators. Sony has brought out a portable version of its popular U-matic VTR to be priced at \$2000 in Japan.

Another portent, the video disc appears to have gained the upper hand in developmental dollars for future consumer products as evidenced by the papers delivered at the Broadcast and TV Receiver Conference. Even though the Teldec system hit a technical snag earlier this year just as it was ready to go on sale in Germany, other developments have kept engineering circles active. Both Thompson-CSF of France and Zenith have revealed details of their cooperatively developed optical disc systems featuring a unique self-corrective means of tracking the record grooves.

MCA had already shown its optical disc system to an admiring audience at a recent SMPTE conference in California. Its disc reading approach is very similar to the Philips video disc which has also been demonstrated in Europe and the U.S. Finally, the I/O Metrics disc which uses film recording techniques has been improved since its first announcement.

While all of the disc systems promise low cost players and records, as well as economical means of recording the discs, yet to be pro-

continued on page

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Circle 105 on Reader Service Card

In Response...To varied requirements...

EQUALIZERS FROM AUTOMATED

In response to the increasingly complex needs of the audio community, the industry standard Model 550A, perhaps the most popular equalizer in the world, is now joined by a group of new devices providing extraordinary flexibility.

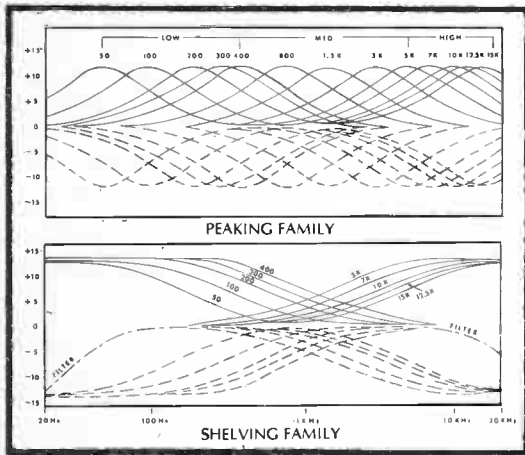
The four equalizers are physically interchangeable

and "pin for pin" electrically identical. It is therefore possible to retrofit, or provide a new installation with a variety of these curve-shaping devices.

Consult your distributor or the factory for specific data sheets.

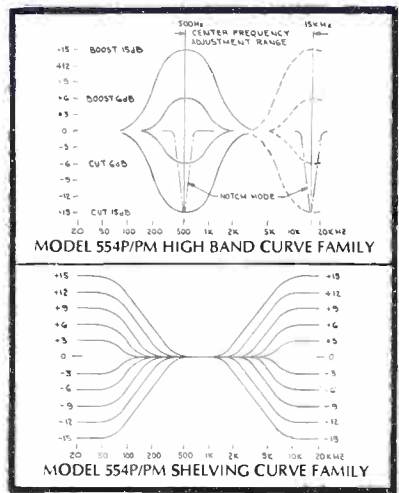
THE INDUSTRY STANDARD-MODEL 550A

Concentric High, Mid, and Low frequency range switches allow a choice of 15 center frequencies with up to 12 dB boost or cut in each range. Additional switches provide independently selectable low and high frequency bell or shelf curves, band-pass filter, and in-out function with indicator light.



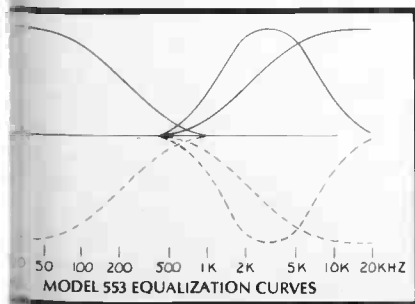
NEW-MODEL 554P/PM

Dual Parametric manual and automated, continuously variable reciprocal peaking curves to a maximum of 15 dB boost or attenuation. A narrow "Q" notch is also provided, as are reciprocal shelving curves. The Model 554P provides flexibility and versatility consistent with the most advanced automated and manual audio mixing systems.



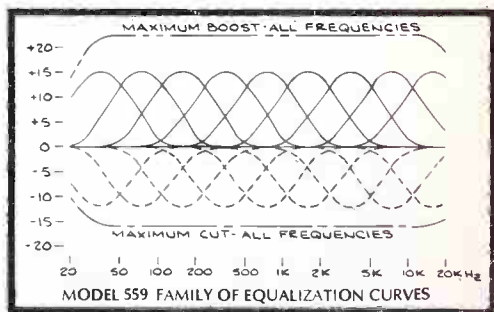
NEW-MODEL 553

Most modular Equalizer suitable for a variety of applications in broadcasting, recording, film mixing, and sound reinforcement installations. The shelving, peaking, and high frequency families of curves produce familiar overall balance in the musical spectrum. The 3 kHz frequency peaking curves specifically define the "presence" range of music and speech.



NEW-APSI MODEL 559

Simultaneous equalization in nine bands distributed over the three decades of the audio spectrum, with band centers at 35 Hz, 75 Hz, 160 Hz, 350 Hz, 750 Hz, 1600 Hz, 3500 Hz, 7500 Hz, and 16 kHz. Each band is controlled by a lever switch with an amplitude readout and provides reciprocal cut and boost of 2, 4, 6, 9, and 12 dB from unity gain and an additional 15 dB boost position.



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ised is the programming to go along with the hardware. Generally, the target is to get 30 to 40 minutes playing time on a side (I/O Metrics claims 60 min. is possible), and a disc price of \$4 to \$5 at retail. But the real problem is to achieve broadcast quality pictures on mass production type machines rather than laboratory models, a claim nobody in video disc development can yet make.

**Dolby Wins on Pre-Emphasis:
FCC Approves FM System**

The drive by Dolby Laboratories over the past few years to get into use their proposed combination of a 25-microsecond FM pre-emphasis with Dolby B-type noise reduction, reached its first objective late in June with approval by the FCC of optional use of the systems by an FM station, according to a Dolby announcement.

Dolby also announced availability

of their B-type FM noise reduction unit with switchable circuitry for effecting the change in pre-emphasis no other equipment or changes are needed by an FM broadcaster to incorporate the system.

Advantage claimed by Dolby for the pre-emphasis reduction (many engineers agree) is a great reduction in tendency to high-frequency over-modulation, allowing use of far less compression and limiting of FM broadcasts. Dolby says the system is "compatible" with all present receivers: the Dolby B-type encoding, by producing a "brightened" signal on receivers without Dolby decoding effectively offsets the loss of highs from the reduction of pre-emphasis. Receivers with decoding will get the full benefits of both noise and pre-emphasis reduction.

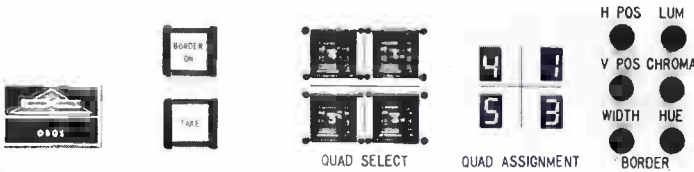
TV Code Board Wants Large Changes in Kid Programs

Clearly responding to the continuing clamor from consumer groups and from Congress, and to the FCC's latest stance of "you'd better do something, or we will have to," the TV Code Review Board has asked for what the NAB calls "sweeping changes" in children's TV programming, including a gradual reduction in the amount of commercial time allowed. Recommended reduction amounts to 16.7% by December 31, 1974, and to nearly 21% by the following year on Saturday and Sunday programs designed primarily for children under 12 years old. Other Code Board recommendations: clear separation between program and advertising; banning vitamin ads; tightening restrictions on non-prescription medicine ads; requiring disclosure when a toy needs batteries; and a number of others. The proposals went to the NAB TV Board of Directors just after this issue went to press.

NAB Asks for Sure-Fire Air Cargo For Broadcasters

Pointing out that broadcasters often suffer great hardship when delivery of tapes or films is delayed or missed, the NAB filed a statement with the Air Transport Association asking for a priority-cargo air system for broadcast program materials. "NAB envisions" said the statement, "the need for a system like the REA which will facilitate the efficient movement of priority cargo... it is imperative that broadcasters have at their disposal a system of

Model 1290 "O B Q S"



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Circle 106 on Reader Service Card

continued on page 12
Circle 107 on Reader Service Card

“TV-newsfilm got the short end of the stick until we got into the act...”



An Open Letter to the TV News Industry
from Ed DiGiulio, President of
Cinema Products Corporation.

When the TV news market first exploded on the scene in the early 50's, manufacturers of professional motion picture equipment could not, or would not, respond to the special needs and requirements of the new medium. It's almost as if they wished it would just go away and disappear.

And so, for the past two decades, this extremely important and large segment of the market for professional film cameras was served almost exclusively by “conversions” and “garage-shop” specials — usually incorporating used components.

Certainly TV-newsfilm got the short end of the stick until we got into the act in 1972!

Our CP-16's are the first truly professional 16mm sound cameras designed *specifically* to meet the demanding requirements of TV-newsfilm operations. We *pioneered* the crystal drive system, the plug-in battery, the built-in Crystasound amplifier, the fast-acting plastic magazine, and a host of other innovative features.

Of course you can buy cheaper equipment than ours. But, when you budget for new equipment, *keep in mind what it will cost you in the long run.*

Remember the *quality* built into our cameras, and the worldwide network of factory trained dealer/service organizations we have established for after-sales service.

Note that with every CP-16 you buy, you get a film clip and a test report. The *film clip* is a double-exposure steady test. The *test report* indicates that composite wow-and-flutter does not exceed .4% r.m.s.; frame line registration is accurate to within $\pm .002$ inches; lens flange depth is accurate to within $\pm .0005$ inches; and your camera, when pulling film, *does not exceed* 32 dB when measured 3 ft. from the front of an Angenieux 12-120mm zoom lens (on the weighted “A” scale).

That's what you deserve to know as a professional user. And that's what we give as the top professional supplier. *No one else does!*

Remember. There are some *1500* CP-16's out in the field. This represents unprecedented user acceptance in little more than two years!

Key network freelancers such as Ron Eveslage, Skip Brown, Bob Peterson, Patrick O'Dell, Larry Travis, Jim Klebau, and many others, have all *bought* CP-16's and have already *traded up* to the newly introduced CP-16 *reflex*.

Remember. These are cameramen whose livelihood depends on the equipment they *own*. If they can afford to pay the price for quality, *can you afford to do less?*

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NEWS

transport which will assure timely delivery...."

NAB Radio Board OKs New Services for Members

The Radio Board of the NAB late in June approved recommendations for more management conferences and program clinics, primarily for small-market stations; more how to do it booklets; and a strong radio programming for the NAB's fall confer-

ences and conventions. The Radio Board also approved plans for a NAB study of the extent to which CATV systems are origination programs, importing distant signals and selling time. These moves and others, were designed said the NAB, "to make radio more visible and provide AM and FM members with additional services."

Cable Board to Work For Copyright Law

A resolution to work for the speedy passage of S. 1361, the new copy-

right bill, was among the actions of the National Cable Television Board of Directors in late June. Among other actions: created an ad hoc committee on Cable Television Regulation; approved establishment of a task force to encourage independent operators to file comments on the FCC non-duplication proceeding; appointed Robert Weary, Junction City TV, chairman of the Ownership Committee, directed to study cross-media ownership policy.

NC Engineer Committee Working With C-TAC

Under a new NCTA policy, the Engineering Advisory Committee has formed a close working liaison with the FCC's Cable Technical Advisory Committee (C-TAC). Nathan Levine, chairman of the NC committee, has included in his membership one person from each of the nine C-TAC panels. Some objectives, said Levine, are to eliminate duplication of effort, and strengthen the voice of the cable operator in the deliberations of C-TAC.

Delivery of First IVC-9000 In The U.S.

Trans-American Video, Inc., Hollywood, got the first delivery in the United States of an IVC-9000, the segmented-helical videotape recorder.



er. Standing in front of the machine, left to right, Michael Moscarolo, president of the IVC; Jack Conway, TAV vice president, engineering and operations; and Gerald H. Tel, IVC director of sales. A number of the machines are in use in Europe.

CATV Center Wins Grant to Design Experimental 2-Way Systems

The National Science Foundation has granted the Cable Television Information Center, Washington, D.C., a \$99,129 grant. The money is to be used to fund three experimental applications of CATV, will test the costs and benefits of applying two-way cable to the delivery of social

continued on page

AUTOMATION



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NEWS

services in an urban setting, and to the improvement of urban administration. The design studies will be carried out with the cooperation of the City of Peoria, Illinois, and the General Electric Cablevision system in that city.

The Peoria experiment will explore CATV's role in bringing improved social services to the elderly, as well as investigating the use of telecommunications to improve the elderly's real and felt sense of partic-

ipation in municipal government. The two-way system also will help determine whether or not cable may noticeably improve the accessibility and management of social services.

Peoria's demographics (population, employment, family income, age and education) are felt to be identical with national averages. G.E. Cablevision's Peoria system is up to date, and consists of a dual hub, single trunk and feeder system. When completed this month, it will consist of 434 miles of activated two-way cable passing 40,000 homes, color and black & white studios,

switched access channels and two-way cable interconnection between system hubs.

The design work is expected to take approximately six months. At that time, NSF will decide whether or not to grant additional funds for the experiments.

Similar contracts went to six other organizations: Alternate Media Center of New York University for Reading, Pa.; Annenberg School of Communications, UCLA, for Los Angeles; Denver Research Institute Univ. of Denver, for El Segundo, Ca.; Lehigh University, for Allentown-Bethlehem, Pa.; Michigan State University, for Rockford, Ill. and Rand Corporation, for Spartanburg, S.C.

Conglomerate Multi Media Ownership to be Feared

The concentration of ownership of television and radio station licenses in the hands of conglomerates, which also own newspapers, magazines, book publishing houses and record companies, is dangerously limiting the introduction of new ideas into American society. So testified Earl K. Moore, a New York attorney, on behalf of the United Church of Christ, to the Sub-Committee on Communication of the Senate Commerce Committee. The Sub-Committee, holding hearings on bill which would extend the duration of station licenses and make other modifications in the Communication Act, heard, on June 19th, Mr. Moore opposed the proposed legislation because it was felt that the legislation fosters monopoly and extends the licensing period of television and radio stations from three to five years.

The proposed bills "would make citizen participation more cumbersome and expensive," Moore noted. They would protect broadcaster with poor records and encourage return to the standards of public service which have stimulated over 20 public petitions to deny license renewals," Mr. Moore said. Referring to a bill which already has passed the House, Moore asserted that "the really devastating provision" is one which would prohibit consideration of the desirability of local ownership and of media concentration issues in the proceedings for license renewals. "The increasing control of the media by a handful of corporate managers already has resulted in the manipulation of children, the exploitation of women in both advertisements and employment, and in the development of new techniques for playing on

continued on page

Circle 111 on Reader Service Card

Prove to yourself what other broadcasters already know.



Hundreds of broadcasters are using ITC tape cartridge equipment daily and find it delivers outstanding performance . . . such as the compact SP Series reproducer and the RP Series master recorder/reproducer shown here. And this experience has brought our attention to an interesting fact. Our tape cartridge equipment does an excellent job of selling itself. So, the problem was how to get the equipment into your studios where you could test it fully under actual broadcast conditions. The answer is our **30 day guarantee of satisfaction**. Just issue an order and we'll send the equipment you want. If for any reason it fails to perform up to your expectations, send it back within 30 days and you don't owe us a cent. It's a sure, painless, no-risk way to prove to yourself what other broadcasters already know . . . ITC tape cartridge equipment is the answer to a broadcaster's prayers. To put things in motion, call us collect at 309-828-1381.



INTERNATIONAL TAPETRONICS CORPORATION

2425 South Main Street • Bloomington, Illinois 61701

Marketed exclusively in Canada by McCurdy Radio Industries Ltd., Toronto

Circle 110 on Reader Service Card



WE'RE INTO REFLEX NOW...

And that means that you're in for the most outstanding 16mm reflex news/documentary camera ever! Designed and built with the same kind of innovative engineering and manufacturing excellence you've come to associate with Cinema Products. The CP-16R reflex camera system is everything you would expect from Cinema Products. And more.

Like our new CP-16R miniaturized BNCR-type lens mount, for instance. It's the kind you get on professional 35mm motion picture studio cameras. With a positive locking ring to hold your lenses securely. And a locating pin to main-

tain proper lens orientation at all times. With our new reflex CP lens mount system your lenses are protected against any torque-related damage. A mere twist of the locking ring is all it takes to secure even those heavy zooms!

The new CP-16R reflex has really got it all together.

Its spinning mirror shutter, set at a 45° angle, stops automatically in a viewing position. A newly developed erect-image orientable viewfinder — designed and manufactured by Cinema Products — locates the eyepiece approximately 1" (25mm) behind the film plane! It is, of course, dioptically adjustable, with right and left eye viewing. And its highly efficient light transmission system delivers an extremely bright image.

The CP-16R reflex incorporates all the basic features that have made the non-reflex CP-16 the most dependable, best-selling single/double system sound camera of its kind. In addition to crystal controlled sync speeds of 24 or 25 fps, the CP-16R also features variable speeds of 12, 16, 20, 28, 32 and 36 fps. Naturally, you get total System CP-16 compatibility. With the Crystasound recording system, power supplies and camera accessories interchangeable between the reflex and non-reflex models.

The ultra-silent CP-16R reflex. Lightweight. Rugged. Extremely versatile. Ideal for documentary filmmaking as well as TV-newsfilm.

For further information, please write to:

cinema products
CORPORATION

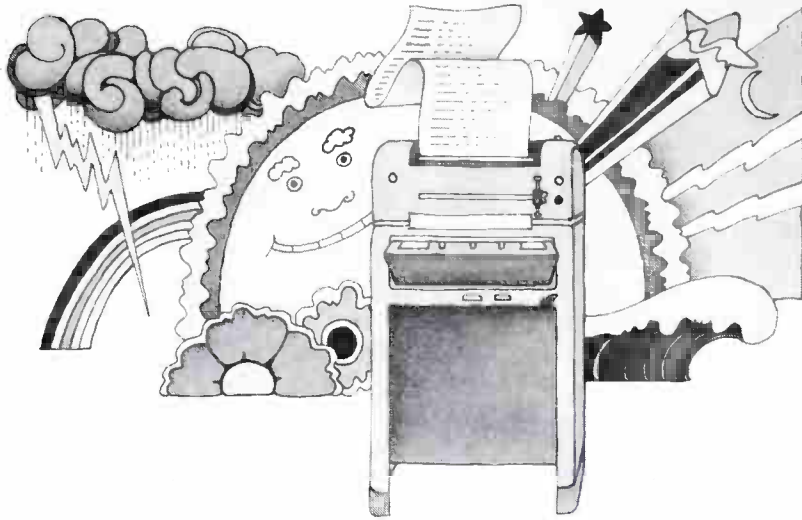
Technology in The Service Of Creativity

2037 Granville Avenue, Los Angeles, California 90025
Telephone: (213) 478-0711 ■ Telex: 69-1339 ■ Cable: Cinedevco



CP-16R reflex camera shown with Cinema Products' orientable viewfinder, with eyepiece located approximately 1" (25mm) behind the film plane; Angenieux 9.5-57mm zoom lens, with CP-mount; Angenieux C-4 lightweight 400 ft. (122m) magazine, made of glass-filled Lexan®

And now the weather...



Get your weather forecasts via a teleprinter from RCA. Teleprinter, including maintenance, on a lease basis — just \$59 per month. Also available on outright purchase.

The teleprinter prints out the weather forecast automatically, and we make sure it keeps running reliably. Maintenance is prescheduled and automatic. Installation and service are fast, because RCA data communications specialists are based in over 140 cities, and our warehouse network is nationwide.

The weather changes, but RCA reliability stays constant. Call us at (609) 779-4129.

RCA Service Company, A Division of RCA
Technical Services, Bldg. 204-2, Camden, N.J. 08101

RCA

WE GIVE YOU MORE OF WHAT YOU'RE LOOKING FOR.

Circle 112 on Reader Service Card

NEWS

human insecurity and weakness to sell goods and services that are useless and, in some cases, injurious to people and the environment," Moore testified.

"Since conglomerates tend to be interested almost exclusively in ratings and profits, programs have tended to become more violent and sensational," he continued. The church counsel rhetorically questioned "...the use of local licensing if stations serve primarily as outlets for the programming ideas of a few superstars..." Moore concluded, "...the church favors a system in which media ownership is widely shared and in which owners have a concern for community welfare as well as for profit."

Big Jump in European Data Network Investments Seen
















According to marketing researchers Frost & Sullivan, Inc., European investments in data communications are slated to total \$3.4 billion over the next decade. The survey, "The European Market for Data Communications Equipment: 1974-1983," found that the continent's data communications facilities "...lags that of the U.S. from three to five years." The New York-based firm also reports that the value of computers needed just to control the new networks will add another \$50 million to \$100 million to the total.

The study says that the market for modems, acoustic couplers and digital termination devices will total \$228 million; the multiplexer market "will remain small," only doubling in size by 1977 from the current level of \$5 million in annual sales. Communications processors, now a \$102 million annual sales level, will more than double by 1978; but line concentrators, front-end controllers and message switching systems will account for \$1.9 billion.

Telecommunications networks in Europe, as is well known, are run as government monopolies. Because of the historic emphasis on the postal systems by each country's PTT authority, the telephone lines have become seriously overloaded between principal cities during peak hours. That is one main reason for the large coming investment in communications equipment.

The study notes that price erosion of telecommunications equipment in Europe is "less severe" than in the U.S., the reasons being fragmentation of markets along national lines, variations in standards and specific

Your move.

 TRAFFIC SYSTEM	 SALES SYSTEM	 BILLING SYSTEM	 AVAILS SYSTEM	 LEDGER SYSTEM
 PAYROLL SYSTEM	 ACCTS. REC. SYSTEM	 PAYABLES SYSTEM	 CHECKWRITING SYSTEM	 SCHEDULE SYSTEM
 RADIO SYSTEM	 TV SYSTEM	 SMALL SYSTEM	 LARGE SYSTEM	 "BAT" SYSTEM

One unit covers all squares.

The PSI "BAT" unit. An in-house mini computer system providing profit-winning, quick information, already selected by over 70 stations.

For a free in-station demonstration anywhere, write or call collect.

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P. O. Box 38 2000 "A" St., Bellingham, WA 98225 (206) 733-8510

Circle 113 on Reader Service Card

ations, design conservatism of the
TT's, and the lengthy depreciation
allowed for telecommunications
equipment.

TAC Sends '73 Report to 150 Participants

The Cable Television Technical Ad-
visory Committee to the FCC
(CTAC) has published its 1973 an-
nual report. CTAC accomplishments
through 1973, and goals for 1974,
are outlined. Copies of the report
were sent to more than 150 partici-
pants in the CTAC effort, including
more than 30 organizations con-
tributing to the CTAC Fund, along
with a letter of commendation from
David D. Kinley, Chief of the FCC
Cable Television Bureau and Vice
Chairman of the Committee. The
document includes abstracts of sta-
tus reports of the nine panels to De-
cember 31, 1973 and establishes
general priorities for the remaining
work to be accomplished. Although
the document is not CTAC's final
report, it has been submitted to the
Commission for their information
and consideration. A copy of the
CTAC 1973 annual report may be
obtained by writing to CTAC, 1629
K St., N.W., Washington, D.C.
20006

NAB Asks FCC Action on Pay-Cable TV Broadcast of Yankees' Games

The National Association of Broad-
casters has asked the FCC to take
action on the televising of New York
Yankees' games over pay-cable sys-
tems.

In a letter to Richard E. Wiley,
FCC Chairman, Willard W. Wal-
bridge, chairman of NAB's Special
Committee on Pay TV maintained
that the games being distributed by
Home Box Office Corp., "appear to
be a violation of the anti-siphoning
rules of the Federal Communica-
tions Commission."

WPIX-TV, New York, presently
broadcasts some, but not all, New
York Yankees' games. Home Box
Office distributes some of those not
broadcast over the station, to pay-
cable systems in New York, New
Jersey, and Pennsylvania.

FCC's Sarnoff Urges Satellites Be Shared

FCC Chairman Robert W. Sarnoff
recently urged more sharing of satel-
lites by government and commercial
users and better planning of all satel-
lite developments to avoid confusion,
unnecessary duplication and wasteful ex-

continued on page 18

Canon IOx UNIVERSAL ZOOM

1¼-Inch Plumbicon Color Camera Zoom



P 10X20

20mm to 200mm; f/2.2

- 10X Zoom Range
- High Efficiency Coatings
- Excellent Technical Quality
- Small Size
- Lightweight
- Fast Change Range Extenders
- Operational Back Focus
- "Macro Focus" Operation
- Includes Range Extenders & Shipping Case

Canon

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CANON U.S.A., INC., 10 NEVADA DRIVE, LAKE SUCCESS, N.Y. 11040

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VALUE

... LPB's S-15, 8-Channel, Dual-
Output Mono Signature Line
Audio Console with 19 inputs
(shown) is one giant value. So is LPB's S-14, 5-Channel,
Dual-Output Console with 15 inputs. In addition to
moderate prices and excellent performance, both con-
soles feature:

- Step attenuator mixers.
- Plug-in fiberglass printed circuits.
- Individual plug-in program, 12-watt monitor, cue and headphone amplifiers.
- Remote line talkback.
- Input transformers.

There are many other plus features you'd expect to find only in higher priced units. And, speaking of price, other LPB consoles start in the low hundreds!

LPB offers a complete line of broadcast audio equip-
ment. Call or write us for all your audio needs, from
tape recorders to frequency and modulation monitors.

LPB

LPB Inc.

520 Lincoln Highway, Frazer, Pa. 19355

(215) 644-1123

Circle 115 on Reader Service Card

Precision Attenuators

- FIXED
- VARIABLE
- ROTARY
- SLIDE
- PUSH-BUTTON

Customized units to meet your specific requirements.

All circuit configurations available, 'T', 'L', 'H', etc.

We also have a range of: Potentiometers, Rheostats and Decade units.

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Tech Labs
SINCE 1935

Circle 117 on Reader Service Card

NEWS

penditures in space.

Addressing the Armed Forces Communications and Electronics Assoc., Sarnoff said that new technology is adding many new capabilities to individual spacecrafts; systems dedicated to a single function or user soon will be unjustified and wasteful.

Sarnoff states that "What we need, and do not have, is a rational long-term plan based upon a clear conception of national needs and objectives, an appreciation of the technological resources we command and an awareness of the problems to be resolved."

Sarnoff also called for establishment by Congress of a new independent agency—a Science and Technology Board—to coordinate research and development activities of the government and to maintain close ties with the general scientific and engineering community.

Seven Companies Modify Claims—NAD Reports

The National Advertising Division (NAD) of the Council of Better

continued on page 5

DRACON Aluminum Relay Racks...Economical and Available!

IN STOCK, and ready to ship, Dracon channel-type aluminum relay racks are available in standard 19" and 23" sizes with choice of self-supporting or overhead supported styles. Construction is of durable high-grade aluminum extrusions with smooth satin finish and choice of gold iridite or telephone green enamel colors (custom colors and finishes are available on special order).

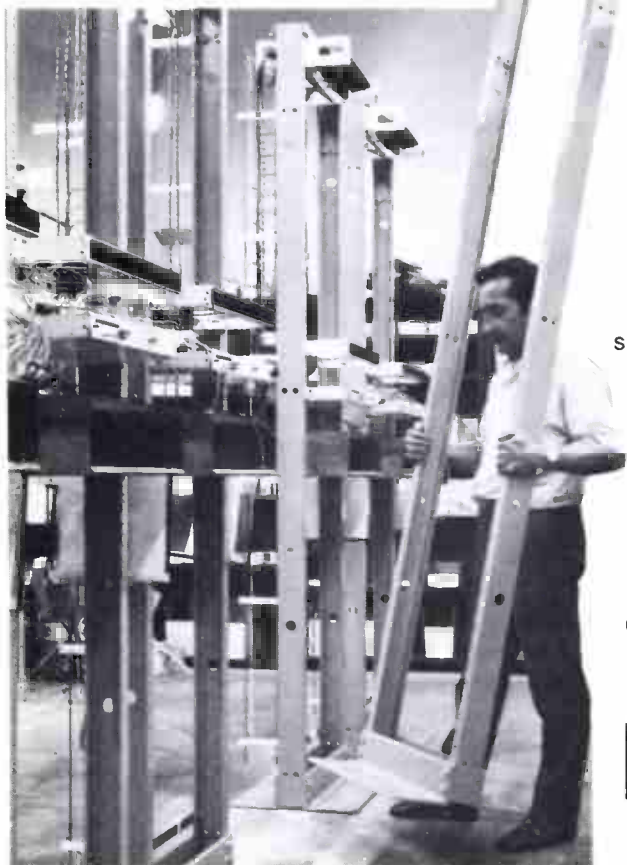
PRICED COMPETITIVELY with heavier steel models, Dracon Aluminum Relay Racks can also appreciably reduce shipping handling and storage costs. And, because of their light weight (about 40 pounds for even the largest standard size one man can easily carry and install them. Floor loading significantly reduced in large installations.

COMPLETE DETAILS AND PRICES of Dracon aluminum channel type relay racks are available from Dracon Industries or local offices of major telephone supply houses.

DRACON
INDUSTRIES

9541 Mason Avenue, Chatsworth, CA 91311 (213) 882-8595

Circle 116 on Reader Service Card



SUPER 8 IS HERE.

Single-system sound for less than \$430...

the new KODAK SUPERMATIC 200 Sound Camera.



Comprehensive's the key word behind the new SUPERMATIC because now, for the first time, you can get single-system automatic sound motion pictures with lip synchronization for less than \$430. This means location shooting for news coverage, commercials and features at a fraction of the cost of electronic equipment. And the SUPERMATIC 200 keeps you from hampering cables and bulky power supplies. And even better, you can shoot in existing locations with no external illumination. The new camera comes with a built-in sound recording and omnidirectional mike for high-quality reproduction. It loads with either 50- or 200-foot cartridges of economical super 8 film. All this, together with many of our specially designed broadcast accessories, provides you with a low-cost solution for local color programming.

Find out what's happening with reliable, economical super 8. Send for more information.

The KODAK SUPERMATIC 200 Sound Camera. Now you can really sound out the news.

Please send me more information on all of your professional super 8 equipment.

Eastman Kodak Company
Dept. 640-PR
Rochester, New York 14650



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Election '74: Use of Broadcast And Cablecast Facilities By Candidates For Public Office

By Frederick W. Ford and Lee G. Lovett

Pittman, Lovett, Ford and Hennessey, Washington, D.C.

As another important election looms in November, broadcasters must face the task of complying with Sections 312 and 315 of the Communications Act, as amended, and with the Commission's Rules relating to candidates' use of the media. To be sure, public attention will be focused, as never before, upon candidates' full financial disclosure in compliance with federal¹ and state election laws. Public scrutiny is certain to encompass the broadcast stations (and cablecast systems) employed by candidates in their election campaigns. Thus, broadcasters and cablecasters should re-double their normally conscientious efforts in meeting the letter and spirit of all applicable laws and regulations.

The Commission issued its "1970 Political Broadcast Primer" to elucidate upon certain ambiguous rulings and interpretations of Section 315. (See Section 315 and the FCC "Primer," BM/E, October 1970.) The Campaign Communications Reform Act of 1971 resulted in the Commission's issuance of "Guidelines" aimed at clarifying amendments to Section 315 (see "Political Use of Broadcast and Cablecast Facilities," BM/E, June 1972.). The Guidelines did not moot the 1970 *Primer*; however, any conflicts between the two are to be resolved in favor of the Guidelines. Finally, since the implementation of the Guidelines, the Commission has decided numerous cases further clarifying various aspects of the Commission's Rules relating to candidate use of broadcast facilities.

Broadcasters and cablecasters should focus upon the following questions when dealing with requests for air time by candidates for public office: (a) Is the candidate legally qualified under state or federal law? (b) What procedures must be followed by the station or cable system to certify that a candidate has not exceeded his legal campaign spending ceiling? (c) Must the station or cable system allow a candidate to purchase air time, or must air time be supplied free of

charge? and, (d) What rates may the candidate be charged? (a), (b), and (c) are addressed in this month's article. (d) is treated next month.

"Legally Qualified Candidate"

The Commission has defined a legally qualified candidate as:

"Any person who has publicly announced that he is a candidate for nomination by a convention of a political party or for nomination or election in a primary, special, or general election, municipal, county, State or National, and who meets the qualifications prescribed by the applicable laws to hold the office for which he is a candidate, so that he may be voted for by the electorate directly or by means of delegates or electorates, and who:

- (1) Has qualified for a place on the ballot, or
- (2) Is eligible under the applicable law to be voted for by sticking by writing his name on the ballot, or by other method, and (i) has been duly nominated by a political party which is commonly known and regarded as such, or, (ii) makes a substantial showing that he is a bona fide candidate for nomination or office."

The definition is clear on its face, yet is qualified in several respects. Distinctions exist between (1) presidential and (2) other federal and State candidates.

First, a presidential hopeful becomes a legally qualified candidate when he (or *any other authorized person* on his behalf) *makes an expenditure* (even without public announcement of candidacy) to further his candidacy for nomination. Another federal or State potential candidate is not classified as "legally qualified" until he *publicly announces* his intention to be a candidate.

Second, certification of presidential candidacy applies when running for nomination ("whether running in a primary or exercising influential action on behalf of a political party or delegates"). Certification of federal senatorial or congressional candidates is limited to elections, not nominations.

Third, a broadcast station or a cable system may not charge a legally qualified candidate for *federal* elective office for the use of its facilities *only upon receipt*

continued on page

¹Especially, the Federal Election Campaign Act of 1971 (hereafter, the FECA of 1971).

PrimeTime

We're proud of a new TCR-100 milestone...

We're pleased to announce that deliveries of the TCR-100 Cart Machine recently passed the 200 mark. The 200th Cart Machine went to WGN-TV Chicago, which joins the rapidly growing number of stations that are so sold on the Cart concept that they're ordering their second machine.

Worldwide, the Cart Machine is responsible for some 27,000 commercials per day. So it's no wonder that the 12 millionth cart commercial was recently broadcast.

Some of the reasons for the success of the Cart idea;

Labor savings of up to 1100 man-hours per year. Each station break is set in motion at the push of a button. And making up a daily spot list is eliminated. Which helps explain why many stations report yearly savings of as much as \$10,000.

There's improvement of the on-air look of station breaks. Automatic switching means clean and precise spots.

Also, the Cart Machine frees up out-to-reel equipment for other revenue-producing duties. And increasing numbers of users are finding production applications for the Cart.

So it shouldn't be a surprise that 41 out of the top 50 U. S. markets are using at least one TCR-100 on a regular basis. And 75 out of the top 100.

In 33 U. S. markets, the TCR-100 is the only automatic station-break machine currently in use.

That includes all five stations in Seattle, Washington.

In short, more and more stations are finding that for them, the Cart Machine is an idea whose time has come. See your RCA representative for a demonstration. Or talk to one of the 200 stations who own one.



RCA

And grateful for a new TCR-100 honor.

It was with a special sense of gratitude that RCA accepted the coveted statuette granted the TCR-100 Cart Machine at the 26th annual Emmy Awards presentation ceremonies.

As noted by RCA Division Vice President Neil Vander Dussen, "This recognition by the Academy is a tribute to a great RCA design team and to the many broadcasters who shared with us the uncertainties of pioneering a system completely new to TV station operation."

We'd like to assure all broadcasters of our continuing commitment to the discovery of new and better ways of improving the art and science of broadcasting.



For its leading role in the development of quadruplex video tape cartridge equipment.

Answers to the most-asked questions about RCA TV transmitters.

Q. What one thing would you say to convince me to order my next transmitter from RCA?

A. More TV broadcasters choose RCA transmitters than any other. And the percentage is growing.

Q. O.K. Suppose I switch to an RCA transmitter. Will I see any improvement in picture quality?

A. Very likely. And the older your present transmitter, the more change you should see. We're improving transmitter quality all the time. You can take advantage of modern video processing, signal precorrection, the minimal use of RF linear amplifiers after modulation, and DC filament supplies that reduce hum to far below the interference level.

Q. What about stability?

A. Very little adjustment is needed for peak transmitter performance, thanks to automatic sync level control and regulated filament supplies to keep tube filaments at precise voltages.

Q. How difficult is it to set up and tune an RCA transmitter?

A. Not difficult—simple. Many of the tuning adjustments needed in earlier-generation transmitters just don't exist in an RCA "F" line transmitter. Only two visual tuned linear amplifier stages. No tuning at all in the solid-state visual RF amplifiers following modulation.

Q. Has maintenance also been simplified?

A. It sure has. In fact, RCA transmitters are quite easy to maintain. Designed that way. Thanks to the lower number of tubes, for instance. Only one blower cools the entire transmitter (two in parallel transmitters). And components are readily accessible for servicing. Our thinking is that a transmitter which is easier to maintain will be better maintained.

Q. How many types do you make?

A. Just about a transmitter for every need. VHF highband and lowband, 15 kW to 50 kW. UHF 30 kW to

220 kW. Single end or parallel systems. And all associated audio and video equipment. Plus transmission line. And antennas.

Q. Do RCA transmitters cost less?

A. In most cases, no. We believe that the lowest cost over the life of the transmitter is realized by building in quality right at the beginning. And that extra quality—represented by improvements like regulated DC filaments, interstage RF circulator, automatic sync level control, a broadband solid-state linear amplifier—costs extra money.

Q. Then you're saying I'll get more for the money I do spend?

A. Right.

Q. Where can I get more information?

A. Easy. Call your RCA representative—or write RCA Broadcast Systems Marketing Services, Bldg. 2 Camden, N.J. 08102. We'll send you our latest brochure.

RCA

In film to tape transfer, image quality doesn't have to be a losing game.

If there's any one reason for the acceptance of our TK-28 Film Camera by a growing number of teleproduction houses, it's quality. Quality operation and quality of results. Consider this comment from Jack Calaway—Vice President, Engineering and Operations at Trans-American Video, Inc., Hollywood: "The TK-28 produces pictures of the highest quality with nearly zero downtime. It is far and away the most stable and easily operated camera I have ever been associated with."

And that's very important in situations like the extremely competitive West Coast post-production market, where TAV operates.

TAV houses complete TV production facilities. Their TK-28 runs for ten to twelve hours a day with "excellent reliability".

To quote Mr. Calaway again, on the TK-28: "The picture quality in all critical areas is excellent, and we are particularly pleased with the low noise and excellent resolution.

"Since the installation of the camera, we have transferred all types of material, from home movies to features for network airing. In every case, our clients have commented on the quality of the product, and this is what counts."

The TK-28's unique ability to handle a wide range of picture-quality problems and to actually enhance the reproduction of film is a major reason for its rapid acceptance by critical film users.

Among the problems handled automatically by the TK-28 are: Variations in film density and contrast; low color saturation; film use errors; scene-to-scene matching and color fidelity.

The TK-28 takes care of them all—with automatic color balance, automatic level control, a preselectable Chromacomp color masking system and other high-performance features.

Chromacomp is valuable where the TK-28's colorimetry must be matched to that of live cameras, as at Videocassette Industries, a fast-growing Los Angeles teleproduction center.

VCI's TK-28 system is equipped with Plumbicon pickup tubes, chosen for their low-lag qualities.

Ernie Rinaldi, Chief Engineer at VCI, is another industry professional who stresses the need for top-quality performance in this highly competitive atmosphere.



Besides straightforward film-to-tape transfers, the VCI TK-28 system is also used to transfer filmstrips to the videocassette format—one more example of the flexibility in the film/tape mix.

Flexibility is also evident at Editel, Inc., another TK-28 owner. Editel's Hollywood Telecine operation includes the TK-28 and a TP-55 Multiplexer with a TP-7 slide projector; a TP-66 16mm film projector, and a 35mm film projector—

along with an interlock magnetic master recording system.

Editel may on one project transfer film to tape. Then on another, start with tape, transfer to 35mm workprint for editing, and back to tape for "masters" and distribution. The end product is almost always tape, according to Editel's Don Johnson.

Other recent purchasers of the TK-28 for teleproduction are Teletronics International, New York, and Compact Video Systems of Burbank—more instances of the TK-28's expanding use in the burgeoning teleproduction industry.

You've read the story... now see the demo tape.

It's one thing to read about the TK-28. But seeing what it does with the video image is another.

Which is why it will pay you to get in touch with your RCA representative and take a look at the TK-28 demo tape.

You'll see an actual demonstration of how this third generation of film cameras improves upon the performance of older, second-generation equipment in a number of ways.

And you'll find out how the TK-28 can help you operate more economically at the same time it's improving your product.

So give your RCA representative a call. Because seeing is believing.

RCA

Grand Ole Opry has some brand-new RCA color cameras.

We know one reason why the recent opening of the new Grand Ole Opry House just outside Nashville was so colorful:

Five new TK-45 color cameras. Plus a complete TK-28 telecine system. (And coming—two TKP-45 color portables.)

The new cameras are due for a workout, because the busy new Opryland U.S.A. complex is already in full swing, producing live shows, syndicated programming, and commercials, too, under the direction of WSM-TV.



The Opryland broadcast operation includes the Opry House's 4400-seat auditorium, a TV studio seating up to 400, and a small mobile van carrying the TKP-45s.

Grand Ole Opry has been broadcasting for nearly half a century,

providing country music buffs with outstanding entertainment. We're pleased with the opportunity of helping to make their second half century even more colorful.

Circular polarization comes to VHF antennas.

Currently undergoing FCC-authorized tests is a new RCA antenna that employs circular polarization, long a success in FM broadcasting.

The new antenna, being tested by WLS-TV, American Broadcasting Company's Chicago O&O station, sits atop the 110-story Sears tower. The radome-covered antenna is mounted on a cylinder along with a standard horizontally polarized antenna.

Since early May, with special FCC permission, WLS-TV has been using the circularly polarized antenna for its normal broadcast operations.

The hoped-for result will be improved service, more solid coverage, and reduced reflections, particularly in densely populated urban areas.

If you're thinking about a new VHF antenna and would like to be kept current on circularly polarized development, write us at RCA Broadcast Systems, Bldg. 2-5, Camden, N. J. 08102.

The TR-70C... A teleproduction machine with something extra.

At a list price of \$103,500, which includes CAVEC & DOC, our TR-70C teleproduction machine has a lot of important extras. Extras that you probably won't find in lower cost machines.

Unsurpassed in its video and audio specifications, the TR-70C is for



the broadcast station or other television facility that demands the very best in quality and performance. Operational conveniences include automatic stop cue, automatic FM standards selection, variable shuttle speed, two switchable-previewable

video inputs, built-in record current optimizer and a list of others too numerous to mention here.

For assurance of day-in, day-out performance, monitoring facilities include 17 fault indicators, 13 metering readouts, and audio and control track simulplay.

Still another extra is "Cart" capability. The TR-70C is an ideal master for the TCR-100. In this capacity it doubles as both a reel-to-reel recorder and a signal processor for the Cart Machine. Its built-in Chroma Amplitude and Velocity Error Correction (CAVEC) and Dropout Compensator (DOC) are the same as those employed in the TCR-100's Signal Processing Unit (SPU).

There's a lot more to the story. Check your RCA representative for complete details.

The TR-70C... its most important extra is value.

RCA

certification "that the payment of the charge will not exceed the spending limitation" in the FECA of 1971. On the other hand, absent an applicable state spending law, a station or cable system need secure no such certification from a legally qualified state elective office candidate.

Fourth, the Commission has interpreted the Congressional intent behind the FECA of 1971 to be that minimal expenditures will not make a presidential hopeful a "legally qualified candidate." Thus, a person's two-line newspaper advertisement and concomitant certification will not entitle him to Section 315 equal opportunity access to broadcast facilities (at least, absent other *bona fide* evidence of his candidacy).

For the purposes of certification (as opposed to equal opportunity" to broadcast facilities), a "legally qualified" candidate is an individual who (1) is eligible according to state or federal law to hold the office for which he is a candidate, and (2) is eligible to be elected for by the electorate directly or by means of delegates or electors. Thus, the "public announcement" and "expenditure criteria" are not relevant for this particular purpose.

Procedures for Candidates' Certification

A candidate for federal *elective* office has (1) a "reasonable access" right² to use a broadcast facility or cable system when he is a legally qualified candidate (whether or not another candidate has utilized the time), and (2) an "equal opportunity"³ right to use a station or cable system when he is (a) a legally qualified candidate, and (b) another legally qualified candidate has had prior use of the broadcast facility or cable system.

A candidate for *non-federal* elective office does *not* have any "reasonable access" rights, but *does* have an "equal opportunity" right to use a station or cable system when he is (a) a legally qualified candidate, and (b) another legally qualified candidate has had prior use of the broadcast facility or cable system.

Broadcasters and cablecasters are responsible for obtaining a certification that the candidate has not violated federal or state campaign spending laws. The Commission's Guidelines have outlined a suggested certification procedure:

- (1) The written certification should include (a) the call sign and community of the station (system name, community and state, if a cable system), (b) the candidate's name and party, (c) the elective office sought,

continued on page 60

In the past, a broadcaster was not required to supply a candidate any air time at all. Now, a broadcaster *must* supply a candidate for *federal* elective office with a reasonable amount of time. As to non-federal candidates, a broadcaster still need not supply any air time at all. However, as in the past, federal and *non-federal* elective office candidates have "equal opportunity" rights. Thus, note the distinction: *federal* elective office candidates have "reasonable access" and "equal opportunity" rights; non-federal elective office candidates have *only* "equal opportunity" rights when there has been a prior "use" by another candidate.

Note that an "equal opportunity" right goes not accrue to a candidate (*federal or non-federal*) when another legally qualified candidate appears on any:

- (1) bona fide newscast,
- (2) bona fide news interview
- (3) bona fide news documentary (if the appearance of the candidate is incidental to the presentation of the subject . . . or
- (4) on-the-spot coverage of bona fide news events (included but not limited to political conventions and activities incidental thereto) . . ."



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How To Get A Data Processing System That Works

By Joseph D. Coons

Hundreds of broadcast stations today are using computerized data processing to handle traffic and accounting functions at high speed, get financial, sales, availability reports in minutes whenever they are needed. But these benefits of computer accounting cannot be realized without effective planning and system choice. This article outlines the main requirements for success with data processing, from the point of view of a supplier of computer systems.

Computerized data processing is today a major trend in broadcasting operations. All the well-known advantages of computer data handling are being enjoyed by hundreds of broadcast station managements. A number of articles in this magazine and elsewhere have pointed out the special help the computer can give stations with, for example, instant availability reports, automated program scheduling and logging, missed spot reports, etc.

At the same time, we have seen some customers buy systems that were wrong, really wrong for their stations, and others try to put systems in where systemization was impossible. This article is intended to help you avoid the mistakes of these managers, while still getting the maximum benefits from any installation. Here are some requirements to follow as you determine whether automation of the back room is possible for you.

Requirement #1. Define your problem

We have had people call us up to find out what we could do for them who cannot tell us what they need! Best example of this was a broadcaster who actually put in one of our systems (which we later took out) to do all his paperwork. He bought the system with the intent, of course, that it would do the job. As we put it in, however, we discovered that his station was totally disorganized. No charts of accounts, people going on vacation during the installation, sweeping generalizations about "getting it done" at some time in the future, etc. The computer needed hard data to function, of course, so the system never worked. Needless to say, it was a bitter experience for both of us, since although the money spent on the hardware was returned to him, neither of us could recover the time and labor lost by our personnel. We've been much more careful since then to force a station to define the problem well. You must not skip this step.

Requirement #2. Make a commitment to research

By commitment, we aren't suggesting expenditure of a big sum. What we are suggesting is an expenditure of the *effort* and *time* to choose wisely. Realize,

Mr. Coons is President, Paperwork Systems, Inc.

as you study the alternatives and grow closer to a decision, that incorporation of a data processing system will affect every operation at your station for years to come, and staff members will spend thousands of hours doing the work according to the system be chosen. Be thorough in your studies.

One kind of thoroughness is to read specifications carefully. Demand complete specifications from potential system suppliers. At PSI, our best installations tend to be those where management has done homework.

For example, our second BAT installation was WRMN/WJKL, Elgin, Ill., where Managing Owner Richard Jakle and Chief Engineer Hal Cattron studied the system market for months before buying late 1972. Rick and Hal then were able to select a BAT system knowing exactly what they wanted. Today, after incorporation in their system of many ideas first suggested to them, the WRMN/WJKL system effectively runs an AM, FM, and music business, and does numerous utility jobs as well.

Going to see installations is, of course, an important part of any purchase. At least a phone call to several users is in order. And unless you are uniquely suited by personality to delays, pressures beyond relief, and long hours, try not to buy the first or second system of a type unless the supplier has made some concessions in the event delays do occur.

Requirement #3. Remember, installations are murder!

No matter how much effort the supplier puts in to help you, the start-up of your system will be tough. That's because only your people know your data, and only your people can answer questions about order copy, account numbers, and so forth. If you go into the start-up phase of your project fully aware of scope of effort required, as "psyched up" as possible it will go smoothly, or at least no worse than expect. Counting on a "breezy" installation is whistling in the dark!

This is true not just because of data-entry loads, either. Your equipment will be brand new, and you'll have a few warranty service calls to go before it sets down. Your employees are just learning how to

the system, so they won't be efficient. And to start up the system, more data has to be put in than at any other time. So the deck is stacked against you for the first week or two. Be prepared, and it will go well.

All the reputable broadcast data system suppliers try to help with this, including Compu/Net, BCS, MAS, and PSI. Our PSI installers bring in an extra computer, sometimes two, to help get the job done. At KRRX in San Jose, California, for example, everything went smoothly and was fully operative in just a few days largely because the Levitt family, station owners, had done their collective homework and were totally ready for our three-person team to get the system in.

Requirement #4. Don't forget some systems can do other work

If you are acquiring a data system that can do other jobs, don't overlook them. For example, at two stations, WIBX/WIBQ in Utica, New York, and WLBR/WLBR-FM in Lebanon, Pennsylvania, BAT systems are "dumping" the schedules into broadcasting automation systems, eliminating the need for Fred Brown or Ray Stadiem, General Managers, to have personnel "load" the systems with air schedules. At KFIZ, Fond du Lac, Wisconsin, a BAT 1500 system is handling the logs for KFIZ and accounting, billing, and payroll for all the rest of Don Jones' Public Service Broadcasting chain, now numbering 7 AM's and 7 PM's.

The advantage of this additional capability is obvious: it reduces the cost *per job* done by a given hardware package, while it improves the function of other areas of concern, and it helps the radio stations, too. In addition, multi-department installations as opposed to those that just handle traffic eliminate the need to enter data for each use. In a BAT system, for example, once an order is in, the data need never be entered again . . . until the P&L comes out!

Requirement #5. Make a personal commitment to the system

Systems just won't work without first-hand, management knowledge of how they work, and what they cost. Time and again, we have seen systems go in like a hot knife through butter at Levitt's in San Jose because they were ready to follow through on details, not just during start-up, but after the installers left. And, on several occasions, we have gotten call after call from an upset clerk who was faced with a problem and could turn to no one for assistance but us.

In a well-run operation, the Manager is the person staff members turn to in a crisis. The Manager must be aware of the job the staff is doing, the pressure they face. And Management cannot do this without understanding, without hard work learning the system during start-up. That's why at PSI, we always try to have the General Manager assign a key person to the installation to know *all* the details of the system, and have that person report to the General Manager directly.

Requirement #6. Especially with your own design, member documentation

Documentation of a system can consume as much as 40% of the development budget for computer pro-

grams. Good documentation starts with system specifications written before any programming is done. These are "user specifications"—how the system is to work from the station's point of view; and "programming specifications"—written from the software perspective. In addition, the operation manuals are writ-

The Questions to Answer in Planning a Data Processing Installation

For each question, also answer "How much time does this take in hours?", and "How important to us?" If you don't have this now, rank its desirability.

- Who gets the new orders?
- Who types them?
- Who accepts or rejects them?
- Who compares them to the rate card for accuracy?
- Who checks mathematics?
- Who quotes availabilities?
- How far ahead?
- Are special rotations required for the station?
- How complex are they?
- Who schedules an order?
- Who confirms it?
- Who types the confirmation?
- Who prepares the program schedule?
- Who prepares the commercial schedule?
- Who schedules copy numbers?
- Who schedules production if this is a TV station?
- Is there a daily sales report?
- Who prepares it?
- Is there a weekly sales report?
- Who prepares it?
- Who types (prints, copies) the Program Schedule?
- Who reports to TV Guide/Newspaper/Magazine Supplement?
- Who advises customers of spot run times if required?
- Who annotates additions/deletions/discrepancies to schedule?
- Who posts customer ledgers from performed schedule or off-air log?
- Who posts ledgers to invoice?
- Who arranges for make-goods, etc.?
- Who posts invoices to accounts receivable?
- Who posts invoices to affidavits?
- Who ages accounts, pressures for collection of overdues?
- Who reports account payment histories to sales department?
- Who posts payments on accounts?
- Who tallies contract utilization by customers?
- Who reports on sales by product category for station?
- Who prepares revenue projections based on orders?
- Who prepares the payroll?
- Who prepares Payroll Tax reports?
- Who prepares cash disbursements for station?
- Who prepares general ledger?
- Who reconciles Bank statement?
- Who prepares Profit & Loss Statement?
- Who prepares Balance Sheet?
- Who prepares W-2's?
- Who calculates Salesmen's Commissions?
- Who calculates Representatives' Commissions?
- Who prepares Network report?
- Who prepares ASCAP, BMI reports?
- Who prepares miscellaneous bills (tape, art, etc.)?
- Who audits accounting work?

ten at this time, to more effectively control the programming decisions affecting performance from the operator's point of view. Then, after the system software is written, the operating manuals should be rewritten.

Make sure your supplier, or programmer, can show you these before you spend anything on actual programming. Without them, programs will be poorly written, and likely not to do exactly the job you want them to.

Requirement #7. Remember service is important

You should have all your service questions answered before the system goes in. Not just hardware service, but service on the programs too; and telephone line service, if yours is to be a time-sharing system.

Service is sold in a variety of ways, including full or limited-hours service contracts, time and materials contracts, warranty exchange programs, guarantees of factory branch support, etc. Any reputable supplier should be able to give you hard figures for factory branch support or other service factors.

In addition, be careful if service is divided among suppliers, for you may run into problems with buck-passing, as each supplier blames trouble on the other guy's components. A single contractor can protect you from this problem. This is a classic cause of trouble when a computer is bought from one firm, and software is provided by another. The best systems, no matter who made them, have been provided by con-

tractors who take full responsibility, like BIAS, BCS Compu/Net, PSI.

Your supplier should have the depth and flexibility to back you up in a real emergency with loaner equipment and support people. We have had as many as four computers going at a station that *bought* only one, in the past year. In addition, some kind of emergency back-up should be a standard ingredient of the system design to avoid panic if the system fails. A simple report as an advance schedule already on hand, with late changes pencilled in, can tide you over until service is restored and save panic.

Requirement #8. It's better to buy from someone who knows the broadcasting business

Watch out when a business machines manufacturer is to program his system for you if he, or his local people, have no prior broadcast experience. This warning explains how I got in business: going all over the country and fixing installations that had been put in by people who didn't understand the business of broadcasting. It's a different business than banking, retailing, or manufacturing, and the systems engineer in the local office is going to have to learn all about billboards, PSA's etc., before he can do your job. And he'll be learning on your machine, while you rent it and pay his hourly fee.

I know the manager of one TV station who has been this route. He's still trying to get his general business computer-based system working, after a \$81,000 investment in software alone. The manage-

The main types of data systems available to broadcasters today—and what they cost.

Time-sharing

These are the systems designed primarily for higher level traffic, billing, management, supervision, etc. Offered primarily by BIAS, BCS, and Compu/Net, each offers its services to both TV and Radio Stations.

The systems use a centrally located computer, or computer network, and thus bring enormous computer power, or processing and storage capability to the task at hand. Thus, they are especially able to handle the requirements of really large stations in large major markets. Each firm has developed in-station hardware applications that allow the system to be used off-line part of the time, to help control communication costs. Consequently they are adaptable to smaller operations too. Time-share systems can accommodate the future. Dial up terminals for example, can access a growing list of data service related to rep services and agencies.

Rentals run \$2,500 to \$5,000 per month for TV; \$1,000 to \$3,000 for radio. In addition, local equipment must be purchased or leased. The costs do include line charges, however.

In-House

The only two firms substantially involved in in-house computer systems for radio and TV are IBM and PSI.

IBM bases most of its installations on the System/3 Computer, which rents in basic form for about \$1,400 per month including service, but without software. Software can add as little as \$200, to as

much as \$1,000 per month to the charge. In addition, some users will want CRT terminals, etc., which add dollars in chunks of at least \$150 per month. Usually, IBM software does not include computer time for testing, and charges for engineering the reports to user requirements, so an allowance should be made for this. IBM does, of course, offer an excellent line of Payroll and Accounting software packages for this machine, and it has plenty of power to handle extra jobs, provided the station has operators capable of getting them running from the software and time-allocation point of view.

PSI acts as a "Turnkey Systems Contractor," and sells its packages outright or on a lease purchase, arranging for manufacturer's service on the hardware. PSI "BAT" systems handle all billing, accounting, and traffic work, and their systems are based on the Datapoint 2200 minicomputer, which has an in-built CRT display. The usual printer used runs at 165 characters-per-second. Flat prices begin at about \$24,000 and range up to \$70,000, with leases running from about \$550 to \$1,550 per month, including everything. The PSI prices include training and documentation.

The IBM Systems are obviously limited by the machine's basic lack of a CRT in the standard System/3 and by programming which has been non-standard from a broadcasting point of view, with no one programming house doing a really good traffic job.

PSI, on the other hand, has not designed its system to do the job for major-market TV's, concentrating instead on the radio market, and the average TV up to about the top twenty-five markets. Thus, its reports are not as sophisticated as those from a full-blown BIAS, BCS, or Compu/Net installation.



Sequential

Specifically engineered for the easy formats and those stations located in smaller metropolitan areas where finding quality talent or quality engineers is usually a problem. Staff members can be produced while they are on the air. Schedule up to 60 separate events per hour from as many as 60 different audio sources. (Total number of audio sources and events may be increased by using an inexpensive SMC Format Expander.) The system is flexible, inexpensive, and easy to maintain. Automatic logging is an inexpensive option. Network join capability is built in.

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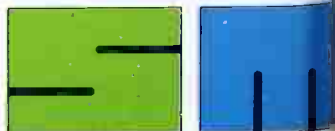
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...unified in one quality-controlled operation head-
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...larly if you are concerned about future service.

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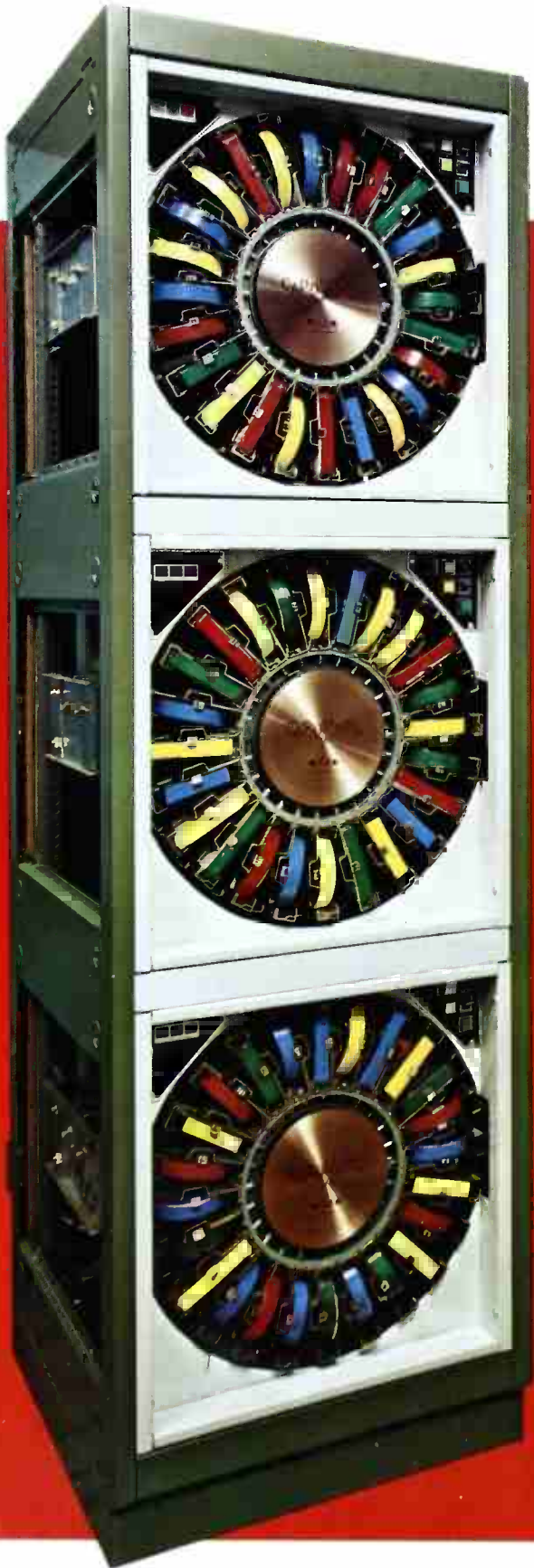
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**The all-new SMC Audio Expander Module
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A Station's Experience

KSLM and KOR1 (FM) are typical of radio stations across the U.S. in many ways. The AM is a 5KW-D, 1KW-N operation; the FM is a separately-programmed Class C facility. Salem, the capital city of Oregon, has a population of about 70,000, with three other AM's. It is about 40 miles from Portland. With local and Portland stations competing vigorously for audience and advertising dollars, KSLM/KOR1 Vice President and General Manager Bruce Kerr has his work cut out for him.

"I first thought about a revision in our systems about four years ago, to get better, more timely, costs, sales, and profit data," says Kerr. "I quickly focussed my attention on computer systems, because it was obvious that they could do so much more than manual systems or bookkeeping machines."

With three-and-a-half office people, plus an accounting service that charged \$600 per month for services to the station, KSLM/KOR1 was getting month-end reports around 45-60 days after month-end, even longer at year-end. It was over two years after Kerr's search began that he found some answers.

In early 1973, he looked at IBM's System/3. "For me, it was overkill. It was a great computer, but they weren't getting the traffic reports out easily, and that concerned me." Then, at an Oregon Association of Broadcasters meeting, he saw a demonstration of a PSI "BAT" System. The BAT approach really interested Kerr, especially when he discovered all the sales data it provided that he hadn't thought about before.

"I spent at least a man-month during the next ninety days studying my needs, talking to BAT System users, getting my questions answered. I had PSI give my staff demonstrations. When I became convinced it could do the job, I went to the bank with a thorough economic study, got the money, and bought the System."

The KSLM/KOR1 BAT 1250 System cost about \$30,000 installed, and does all traffic, billing, bookkeeping, and payroll jobs. The key operator is Esther Konantz, Office Manager, who has been with the

stations for 28 years. Esther runs the accounting and payroll functions; other staff members handle the traffic processes. "Esther loves the computer," says Kerr. "But she's still a little afraid that at month-end, when all the financial reports come out, it may not balance!"

As for the results of the installation, Kerr is very positive. "PSI quotes figures more conservatively than I do, but I'm saving over \$1,000 per month with the system, and it'll pay for itself in thirty months or less. And that's not counting social security, and so on, that I don't pay for a computer!" Kerr points out that the savings came from a one-and-one-half person reduction in staff, plus savings on the accounting service charge. He has included the service contract cost for the computer system in his calculations.

In addition, he now has month-end reports the day after the month ends, daily sales reports, easy exact-time invoicing for those customers that require it, and so on.

"For example, the quick aging of statements, and the completeness of invoices has cut my overdue list in half," he says, "and my sales department has each day's sales figures the day *before* broadcast, so I can keep them highly motivated, and their customers fully informed. In addition, I sit down with my department heads right after month-end and discuss the P&L with them. We plug up leaks before they get to be floods."

It wasn't all a bed of roses, however. "Start-up was really tough," says Kerr. "A secretary-traffic girl quit because she hated the computer. It wanted yes-no answers, and she wanted to think in shades of grey. So I hired a new person, and she learned everything there was to know in a week, and loves it ... she's a definitive, yes-no kind of person."

"In addition, we had some hardware breakdowns during start-up, and I got a PSI installer who didn't know as much as I thought he should." (PSI has since beefed up its staff and training, and sends extra equipment into an installation.)

What would he do differently if he were to do it again? "I'd know even more about the system during start-up. When the installer left and said, 'It's all yours, Bruce,' it scared hell out of me!"



1. Esther Konantz, office manager, enters payroll data to system. High speed printer in background.



2. Cassette cases on desk hold all station records, according to Bruce Kerr, general manager.



3. At the BAT 1250 computer: Trainee (left), learned all system operations in one week!

another TV station just gave up on another installation ... fortunately, the manufacturer gave him his money back. But the time and labor lost cannot be reaped, nor can his staff's mistrust of computer systems in general be easily overcome.

If you do your homework, it will pay off. A good in-

stallation is planning, commitment to detail, attention to the suppliers history of success or failure, and a candid relationship between the system vendor and the station. Under these terms, it's also a wise investment for nearly any broadcasting facility except the very small. **BM/E**

Computer Inventory Control —A Dynamic Sales Tool

By Maurie Webster

Broadcast managers who want to give their sales managers a big boost in effectiveness can find it in computerized inventory control, which allows the maximizing of broadcast sales in important ways that are impossible with manual inventory.

There's really no mystery about the primary responsibility of a Sales Manager. It is to produce the largest possible revenue from the availabilities on his radio or television station.

The mystery is—how can he do it? What tools can help him meet this month's sales budget? No aggressive Sales Manager will "see how business is" and be content with a fair share of it. He wants more than his share and he's hunting new ways to get it.

He's constantly measuring program sales vs. sale of spots to see which generates the most dollars. He uses the rate card as a selling tool. He probes for special sales opportunities—unusual program ideas—new spot packages that may entice new clients. He experiments with different rotation schedules and orbits plans to mix less attractive items with those in demand.

And the pre-emptibility concept is valuable. A \$300 spot may be available at \$200 with high pre-emptibility or at \$250 with a better assurance. At \$300, it's firm.

IRTS Sets Up Committee To Work Out Broadcasting-Advertising Computer Standards

Following a second seminar on the subject of broadcast advertising and the computer, the International Radio and Television Society has created a committee to come up with standards for coding. Chairman will be George B. Arnold, Jr., Ogilvy and Mather, Inc., 2 E 48th St., New York City.

Meeting was held June 25; first meeting was in April. Attending were representatives of ANA, AAAA, RAB, TvB, IBFM, SRA, station reps, station personnel and computer service companies, including those that serve advertisers such as Donovan Data Systems and Media Payment Corp. Subjects of Contracts and Forms and Rotation for both TV and radio were explored as well as the subject of Coding. There is currently a standard to identify agencies, but more information is needed to facilitate invoicing and relating invoices to the contract. Maurie Webster, president of IRTS, said IRTS's major interest is to "identify current practices, define them and then adapt them to computer handling to reduce problems of the industry in the years ahead."

Mr. Webster is executive vice president, Compu/Net, Inc.



Standing at Compu/Net's computer console are, left, Maurie Webster, vice president, and, right, Ed Stevens, president. Magnetic tape units for data storage are around wall in the background.

The modern Sales Manager knows that controlling the inventory well is an intricate balancing act—essential if he's to produce maximum revenues.

But there's another part of the equation. It's one thing to develop an ingenious sales plan. It's far more complex to handle it properly. And promises made the time of sale which aren't kept mean the next sale is twice as hard. As one Station Manager recently told me, "I'm exhausted, trying to 'negotiate' with the Traffic Manager, to get things done the way we want them."

More and more managers and owners recognize that this single factor—the ability to control inventory properly—can mean a 10% to 30% increase in sales and perhaps as much as a 75% rise in profits!

Many industries have found computers the key to a problem like this, but broadcasting has been slow probably because inventory control here is more complicated than in almost any other field. A station with a totally new inventory each day. A typical radio station (18 minutes of commercial per hour) has 4 minute availabilities in a 24-hour day. If half are second spots, this is 648 potential spots a day—45 per week. And each complete with rotation and competitive problems, enhanced by late sales, cancellations and changes.

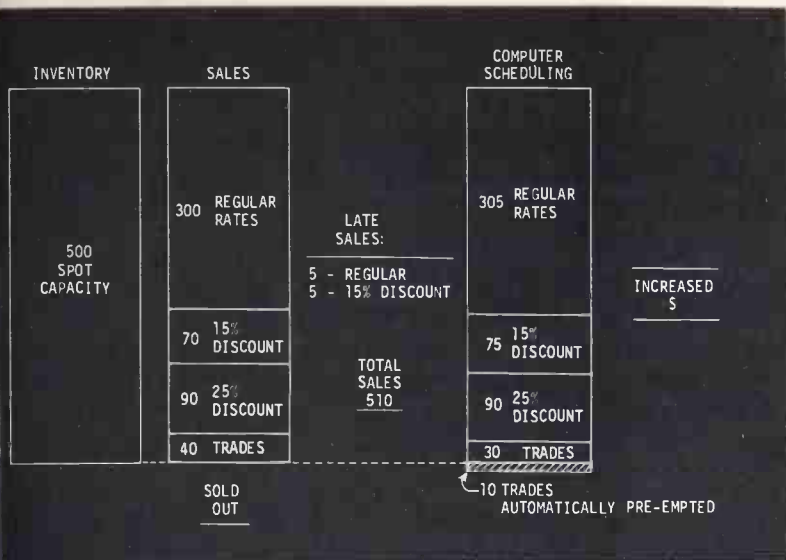


Chart shows example of increased income available with computer inventory control. Sales department can add ten last-minute spots at high rates to sold-out period; computer automatically "bumps" 10 lowest-ranking spots.



Traveling "road show" of Compu/Net provides in-station demonstrations of system operation. Here Frank Crane (standing), director of Compu/Net marketing services, is showing Stu Wittenberger, vice president of station KCBQ in San Diego, operation of mini-computer and high speed printer in producing station log.



Mass data storage at headquarters of Compu/Net system is on magnetic discs. Each pack (ten discs) can hold over 110 million characters.

entries in a notebook, a wall chart or strips on a file, they can spell disaster! Computers are the answer. But they've been slow to take over.

Controllers first discovered computers. They used them for invoicing, expense accounting and accounts payable.

Then came the effort to use them in traffic handling. It was slow and tentative, for good reason. It was easier in television, with orders for "7:30 on Thursdays" or a strip in the "11 O'Clock News." Handling the availability, entering the spot and recognizing a sold-out condition was not too difficult. Today systems work that way today. It's the "pigeon-hole" concept.

Radio was more difficult. Rotation through time slots and across day parts was a problem. But mechanically-devised vertical and horizontal rotation systems eventually covered the needs. When the avails were filled however, sales had to stop. These were "rotating pigeon-holes."

This can't satisfy a busy modern station with imaginative sales management. It is crucial in radio (and increasingly in television) for a Sales Manager to have flexibility and to be able to use his avails the best

way for each account. He must be free to treat clients according to need; to vary treatment according to the client's importance to him; to have different prices for a given spot depending on the guarantee of its availability. If the buyer knows what he's buying and gets just that, he's satisfied. Most stations have spots that can be highly productive at the right price; packaged properly they can answer the client's needs and boost station revenue.

A system which can meet these demands is called "dynamic"—a far cry from "pigeon-holing." A modern computer can do nearly anything if it's big enough and programmed properly. The secret of "dynamic" traffic scheduling is a computer big enough to accommodate an entire day's log in its central processor and fast enough to organize that log in a few seconds. Plus sophisticated programs that understand the concept of broadcast inventory control.

The ingredients of a successful program:

- A. Ability to handle rotation in many different patterns.
- B. Competitive separation capability, giving one to three categories for each spot.

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Automation Helps A UHF To Survive

WTOG-TV, Hubbard's Channel 44 station in St. Petersburg, Florida, had to have a switching automation system to handle its heavy programming load, and a business automation system for the heavy accounting load—the increased efficiency was essential in a highly competitive market. Now the management is planning to connect the two systems for a totally automated operation.

The long-range goal of many TV stations in the country, total automation, is just "one loop away" at WTOG-TV, channel 44, the Hubbard Broadcasting Company independent station in the Tampa-St. Petersburg market, according to Chief Engineer George Orgera.

"It's something we've been working towards for a long time," said Orgera, "and all the equipment we've been buying has been based on achieving that goal. Now all we need is an interface loop between our production switching gear and our BIAS computer and we'll be home free."

The importance of automation is extremely well demonstrated at this Hubbard independent station in Tampa-St. Pete. A UHF-independent competing with three network-affiliated VHF stations in the market, WTOG welcomes every efficiency-increasing and labor-saving piece of equipment that can be integrated into the operation.

"We have to keep efficiency up and costs down," said Orgera. "We've been able to do this with the wide variety of automated equipment we use. We're probably the most fully equipped TV station in the country. And we can thank the Hubbard's for that.

WTOG reaches for higher efficiency in a number of ways, including this portable JVC 4800-U color camera system for news gathering; news gets on the air rapidly from cassettes recorded in the field.



They've completely cooperated with us for our need and as a result we have the cleanest and sharpest operation around."

The core of WTOG-TV's master control room is Sarkes Tarzian digital production switcher, custom built for the WTOG-TV operation. As an independent, WTOG-TV has an unusually large volume program elements. The station needed a switcher that could handle a great many events, and the computerized Sarkes Tarzian switcher, a revised model of Tarzian's APT-2000 production switcher, did the job.

To further implement the need for a clean, efficient and competitive operation, WTOG-TV uses two RCR-100 cart machines, one of the few stations in the country with a back-up cart operation. "The acquisition of the second cart machine," says Orgera, "was a stroke of genius. We no longer have to worry about reel-to-reel stock and have everything programmed the two cart machines."

Among the many advantages of the second machine, according to Orgera, is the ability to program 44 tapes in advance. The station can thus offer greater variety of promos, much more public service and a far wider choice of studio scheduling for other uses.

In operation, pre-events are, of course, stored in the Sarkes Tarzian switcher. The switcher can normally start VTRs, telecines, etc. At WTOG-TV it does not automatically start the cart machine which is preloaded with a sequence of events but does flash when the separate cart start button should be operated. The operator watches the preview monitor and hits the bar at the appropriate moment. The cart machine then plays through the pre-arranged sequence.

Another highly important element in the event of total automation at WTOG-TV is shooting for its BIAS operation. Again, as an independent, WTOG-TV has a far greater volume of orders to process and the use of the BIAS computerized information service has become a major factor in the station's growing competitiveness in the Tampa-St. Pete market.

"There's no other way we could handle all the volume we deal in," said Jim Dowdle, General Manager of the station. "The BIAS operation is as indispensable to us as our transmitter. It provides a level of knowledge and efficiency that is imperative to our competitive needs. I really don't know how we operated without it."

Given the competitive situation in the Tampa-St. Petersburg market, the "need to know" the most current status of all sales activities is a must for WTOG-TV, according to Jim Dowdle. "We have to be ready to implement a wide variety of schedules in a minimum amount of time and the BIAS system enables us to do this. It has provided us with an information tool that often gives us a sales edge on our competitors."

The two-cart system also has been a great benefit to the UHF station, according to Dowdle, because of the versatility of production options the second cart machine affords the station's crews. "We're able to program, promote and produce a far greater volume of the time-consuming spots and ID's most stations can in far less time and with no increase in manpower."

WTOG-TV is also the possessor of a new JVC portable color camera system which it feels will put it ahead of its news competition in the market. The new electronic-journalism package, which includes a CVS Time Base Corrector, a CVS 8000 Image Enhancer and an extra playback machine, in addition to the JVC 4800-U color camera, can be handled by a single person. News events are recorded on tape cassette, which can be rushed to the station and fed instantly into the system. No time is wasted waiting for processing or prints; there are none of the delays that usually surround news program preparations. "The top quality," says Orgera, "is the best of its kind to date and the efficiency of the portable system has greatly increased the speed of our spot news coverage."

Overall the portable color camera system comes to about a \$24,000 investment, which Mr. Orgera and Dowdle agree is a bargain for the increased versatility it has generated in the WTOG-TV news coverage.

Mr. Orgera also pointed out that with the initial cost of the system already invested, WTOG-TV can add additional portable cameras at a cost of about \$7000 per camera. "With the additional cameras we can broaden our scope of production. We can shoot anywhere in the area at a minimum cost; we can offer public service coverage of major issues and events without the expenses of a remote unit and we can cover different news stories breaking in different areas at the same time. Our range of potential of this system is unlimited." The near-automation of station WTOG-TV has enabled Orgera to accomplish an efficient usage of his engineering staff that could make chief engineers and station management turn green with envy.

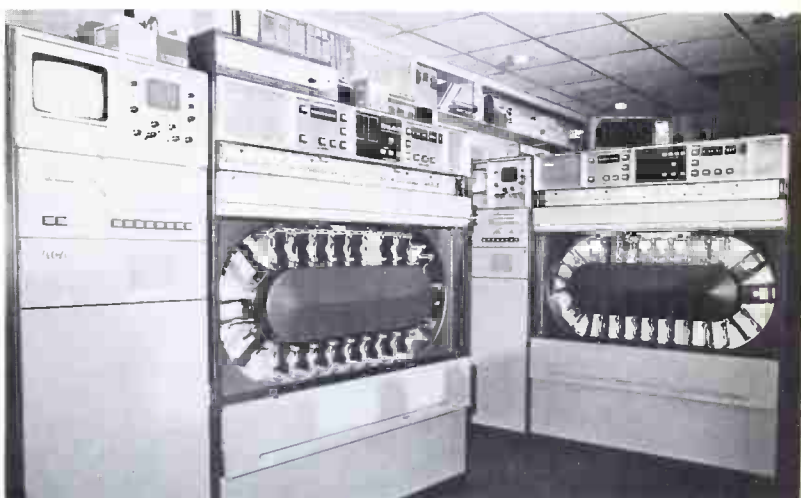
"The accumulation of all of this computerized and automated equipment has enabled us to operate in a particularly effective manner," said Orgera. "I don't mean that automation has replaced manpower. That's not the case and I don't think that it will be the case. However, it has enabled us to use our engineering staff in a far more effective and meaningful way. They have become truly an integral part of the overall operation and have had the opportunity to increase their engineering skills. In many cases, because they've had increased time to experiment, they have initiated changes in our operations that have still further increased our efficiency. This is what I call 'Creative Engineering' and it has developed an extremely fine rapport and pride in the station operation."

"Everyone is aware that WTOG-TV is the underdog market," Orgera added "and it has increased everyone's interest in developing a better operation than the competitors." A prime example, according to Orgera,

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Operator at WTOG sits at Sarkes-Tarzian video production computer, which provides basic control of programming. Unit is a modification of APT-2000, adapted to specific needs of station, which has extremely busy scheduling.



Important elements of automation at WTOG are two RCA TCR-100 automatic cart machines shown above. Having two machines lets station program 44 tapes in advance, eliminates worry about reel-to-reel stock, and makes possible greater variety of promos, public service announcements, and other items.



BIAS data input and print-out terminal is focal point of the computerized billing, traffic, and accounting operations. BIAS system will be hard-wired to production switcher for "complete" automation.

era, is the weekend operation of WTOG-TV, which takes a team of just two engineers. The engineers handle all the engineering-production functions in the master control room which includes the logging of events on the switcher, dubbing of all the reel-to-reel cassettes, loading of film, slides and art work and handling of any other production problems that come up. "We do twice the volume that other local stations do, with less manpower and no loss of efficiency," said Orgera. "and our engineering staff loves it because they know that they are an integral part of the overall station operation, not just bystanders."

Despite its status as a relative newcomer in the Tampa-St. Petersburg market, the progressive and modern policies of the station management have left a strong imprint on the competitive situation in the market. "We were the first station in the country to

use digital rotary effects over two years ago." S Orgera, "and we're one of the first to utilize the digital master control computer system. We're among the first to use two cart systems rather than just one and the first to utilize the portable color camera system in this area. I think we'll be among the first stations to be fully automated when the final loop between master control switcher and the BIAS terminals is stalled."

Commenting on the effects of these methods on the station's business, Jim Dowdle pointed out that station has become a solid competitor in the market despite the network affiliation of the three VHF stations in the market. "With one of the network stations on a head-to-head non-network programming basis we're ahead in many time segments," he said "and with our counter-programming policies in some time segments, we rank number one in the market for adults. That's a pretty good show for an independent UHF. **BM**

KBMA-TV: The Station Built Around A Computer

While TV stations throughout the country are in a turmoil re-evaluating their operations in light of the increasing trend towards computerization of station equipment, station KBMA-TV, the UHF independent in Kansas City, Mo., is quietly going ahead with its own plans for greater operating efficiency. Its only problem is that of interfacing certain aspects of its operation with existing equipment, for KBMA-TV is one of the few stations in the country which was built around a computer operation to begin with.

In 1970, when KBMA-TV first went on the air, the core of its production set-up was a General Electric 360 series computer which was interfaced with all of the production equipment in the master control room. This gave KBMA-TV the potential for being the first all-automated TV station in the country.

To all intents and purposes, KBMA-TV is already fully automated according to Bob Wormington, president and general manager, but a few additional interfaces are needed to complete the computerization cycle. "Our production switching gear is already controlled by our own in-house computer," said Wormington, "and all administrative work—traffic, logs, sales reports etc.—are also computerized.

However, because we are in three different locations at present, there is a gap in our full automation due to the fact that we are on two different computers, one at the studio for production and the other the main computer at our parent Business Men's Association Office, which handles all of our administrative work."

However, the complete cycle will be fulfilled when all of KBMA-TV's divisions move into the 17-story BMA building in 1975. "With that move," says Wormington, "we'll be able to go "on-line" with the BMA computer and interface our production computer with that thus completing the full computerization of our station."

But full computerization is not the end-all according to Wormington. "We've got too much competition here in Kansas City to go patting ourselves on the back for our computer operation. Actually, like any computer, what comes out is only as effective as what goes in, so we are constantly working to develop operational skills that will enable us to utilize tools such as the computer to give us that little competitive edge."*

Wormington is a believer in the old "city room" syndrome, where all the staff members can sit and talk with each other, and are always in sight. "We only have a staff of 45 people," says Bob, "so it's kind of homey in our office. And it also makes it easier for all our personnel when one group can help out the other group as needed."

But homey or not, with the services of an IBM 360 available as well as the in-house GE at the master control room, the chain of command moves fast at KBMA-TV. "Sometimes we're so far ahead of ourselves it scares us," said one of the traffic girls, who admitted she has never had to type a log by hand, "but fortunately for all of us, the computer knows what's right as against what's wrong, and helps us out a great deal."

* Scrapping all the way is primarily how KBMA-TV made it into the black in just three years. Counter-programming, remote-programming (over 600 in three years) and sports programming was the main thrust. Despite its UHF-Indie status, it has racked up a No. 1 status in the market in many of the early fringe areas and has topped prime time standing several times with sports with as much as a 60 share.



Control area at KBMA-TV includes master control, left, VTR's in background.

Total Automation A Reality For Growing Number Of Computerized Business Services

Business computers are now talking to switching computers.

Only one year ago, a BM/E article carried the headline, "In TV Automation, Most Of The Action Right Now Is At The 'Business' End" (BM/E, August 1973). The article went on to describe the various automated production alternatives available to broadcasters but made it plain there were many more traffic systems installed than production switching systems and except for a few in-house systems, traffic wasn't connected with automated switching. It went on to say, however, that "total TV automation is inevitable." The people at Kaman Sciences Corp. (Broadcast Computer Service, Colorado Springs), say the inevitable has now become reality for users of the BCS Traffic and Accounting Service.

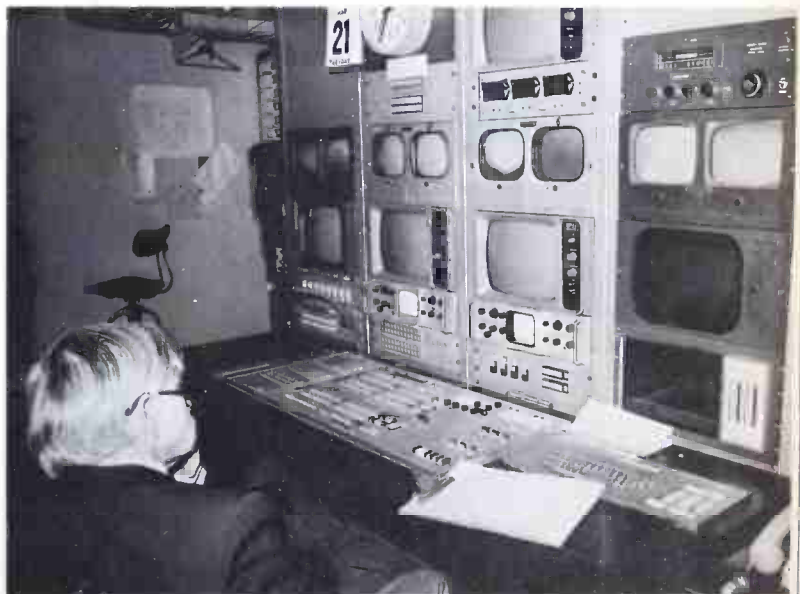
The BCS mini-computer is now feeding information to a CDL APC-310 automated switching system, manufactured by Central Dynamics, Ltd., Montreal, and New York's Channel 11, WPIX-TV, and will soon be hard-wired to a CDL APC 610-200 at Metromedia's Minneapolis station, WTCN-TV.

WPIX-TV was the first BCS client to link its computerized traffic system with an automated switching system. At WPIX, the BCS System not only handles all scheduling of programs, PSAs, Promos and Commercials, but also calculates exact times for each event. The BCS System will also have the capability to assign each event to a particular machine in the station's equipment configuration and prints a list of the facilities to run on each machine throughout the day's schedule. The master control operator then enters the completed schedule to the CDL switcher's event stack on keyboard, and the switch gear takes over from there. The next logical step, in WPIX's total automation plan, will eliminate the manual transfer of the BCS-produced schedule going directly from the BCS minicomputer to the switcher. The result is a state-of-the-art solution to the traffic-to-production interface. According to Otis Freeman, WPIX v.p. engineering, the station and BCS are currently investigating the alternatives for eliminating the manual step entirely.

The value of a direct, interconnecting link between station's traffic computer and its automated switching gear is apparent to many others. At the request of Metromedia's WTCN-TV, Central Dynamics and Kaman Sciences software designers have already agreed on a communications specification and are



WPIX vp of engineering Otis Freeman points out BCS terminals.



View of CDL APC-310 automated master control at WPIX

now implementing software to transmit the BCS schedule, complete with exact times and equipment assignments for each event, if desired, directly from the BCS Digital Equipment Corp. PDP-11 minicomputer to the APC 610-200, also run by a PDP-11. The schedule file, transmitted directly from one minicomputer to another, contains instructions for each on-air event, specifying:

- Scheduled air time
- Exact air time
- Event title
- Event source and type
- Duration
- In-house facility code
- Video source and transition
- Audio source and transition

This file will be created one day ahead of air-time by the BCS master computer at Kaman Sciences computing center in Colorado Springs, and transmitted to the BCS mini at WTCN. The BCS mini then transmits the file immediately to the CDL mini, as is, for backup. The file is also retained on the BCS mini for on-line editing and modification by station traffic personnel until shortly before air-time. At that time, a block of events from the edited file will be transmitted to the CDL mini where it can be further edited until seconds before air-time, on a CDL terminal until the

event is actually aired. These event blocks of arbitrary time span can be transmitted at station-determined intervals, keeping the log current with traffic except for last-minute changes that occur after transfer of the event block to the switching system.

The last-minute changes made on the switching system are flagged on the FCC log file in the CDL minicomputer. Later the entire log file is sent back to the BCS mini, reflecting a precise picture of air events. The station traffic and accounting personnel then process deviations as indicated by the BCS minicomputer and the mini produces a final FCC log. This assures that affidavits will show exact air times for each commercial event. The final log can also be transmitted back to the BCS master computer and microfiched for archival storage.

Alan Larrabee, Director of Systems for Kaman BCS group, cites a number of advantages the station derives from the direct, hard-wired interface. He noted that the two-way transmission of data between CDL and BCS minicomputers allows file back-up between the systems regardless of the data on file and regardless of which computer needs backup. For example, the FCC log is contained on both machines until it is archived; if one mini goes down, the other is still operable, and the log can be retrieved. Also, all and all log information can be captured on a CDL terminal.



Mary Jean Jiminez talks to BCS minicomputer at WFLA-TV, Tampa



Operator in front of keyboard unit of CDL's APC 610-200 in master control which can interface with business automation systems. FCC log printer to far right.



Grass Valley's APC-2000 switching automation system will soon interface with BCS business system

final and later posted by the BCS system. This provides not only extremely effective backup capability, but a great deal of operational flexibility as well.

Larrabee described the BCS to CDL hook-up, at least as it will operate at WTCN-TV, as a "state-of-

the-art solution" to the total automation problem. Not only is a spot carried from order entry through air-time, to final log and billing—all by computer—but the station can also use the communications software—
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Engineering Automation And The BIAS System

Extensions of the BIAS system to work more fully with engineering automation will consist of the following: a commercial media (film, tape, slides, etc.) inventory facility; extensions to the log preparation facilities of the BIAS system; a standard interface to automatic switching equipment; and automation of the log correction function for invoicing.

The BIAS commercial media inventory system will help stations automatically manage the commercial media inventory in the station. As commercial media are received in the station, they will be prescreened as usual for quality and acceptability. During the screening, exact timings will be obtained for the commercial material and the event description or descriptions for each commercial will be formulated. The agency identification for this commercial and the timings and event description will then be entered into the BIAS system.

BIAS will search its records and assign a physical location in the station's library for this commercial material. Once this information is entered into the system it will automatically be inserted on the log when the commercial is called for. The expiration date of this commercial and disposition instructions to be used when the commercial is removed from inventory, will also be input available to the BIAS terminal. Reports provided by the commercial media inventory system will include media not received, reports listing all commercials needed which are not in-house, and library maintenance instructions listing all commercial media which may be removed and destroyed or returned to the agency.

The log preparation functions will be facilitated because actual times will be known. This will show any break or day part that is overfull. Films can be trimmed or commercials exchanged for shorter ones. Also shown will be time that is underfilled, necessitating the insertion of filler material to prevent dead air-time. Checks will also be made to insure that the physical limitations of the station are not exceeded. No media sequence should be allowed which requires more film chains, video tape machines, slide projectors, etc. than are available to the station. Facilities will be provided to allow input of event descriptions for all non-commercial events so that the log will contain all information needed to allow automatic operation of the switching equipment. Lists of video tape, film, slide and other media required to produce this particular log will be generated to assist in gathering and sequencing this material.

Because of the large number of types and models of automatic switchers currently on the market, a standard interface will be provided between the BIAS system and automatic switching equipment. This interface will follow the RS232 industry standard for serial asynchronous data transfer. It will use the United States of America Standard Code for Information Interchange. The transfer from the BIAS system to the switcher will consist of a series of standard event descriptions. In the other direction the switcher will send to the BIAS system a series of



Salesgirl gets information from BIAS CRT terminal.

standard log reporting descriptions. The standard event description will include a BIAS event identifier, the agency media identification, the station's internal media identification, the type of machine required by this material, nominal duration of this event, the nominal start time of this event, and the transition type between the preceding event and this event, including what triggers the transition and what type of cut, fade, or other transition to perform.

The automatic switcher itself must perform the functions of machine control, starting and stopping the equipment at the appropriate time. It will include a real time clock to synchronize events with the actual time of day. The switcher will perform machine allocation since breakdowns or conflicts with production operations require allocation to be performed on a real time basis. As each event is aired, the switcher will perform the automatic logging function and will report back to the BIAS system the exact time of all events and any deviations from schedule.

The BIAS invoicing function will be streamlined since correction data will be provided automatically through the switching interface. There will be no need for editing and correcting the log; all invoices will be accurately and promptly produced.

The advantages to the station that will accrue as a result of the BIAS engineering automation functions include better control of the commercial media inventory—including reduction in physical size of the library required and notification when needed media are not yet in house. The on-air operation will benefit by the reduction of technical errors, and increased uniformity of transitions from event to event yielding an improved station image. The overall profitability of the station will be increased by the reduction in the need for makegoods inherent in the increased accuracy of transmission, which results in more time to sell.

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• Print FCC log with exact "aired" times, and variance reports for easier reconciliation.

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Total Automation cont from page 41

ware to link other minicomputers at multiple sites via phone lines. This is possible because the communications software is designed to be data independent. In group organizations, the idea of linking multiple minicomputers has obvious attractions, among them being the reporting of individual station data to a group management information system.

Larrabee reports that the BCS interface with CDL is not exclusive. He points out that BCS is also developing an interface with the Grass Vally Group's APC 2000 System. The two firms do not have a mutual client at present, as is the case with CDL, but they have agreed to develop an interface quite similar to the one described above, as a service to any mutual clients they acquire. Since Grass Vally also uses Digital Equipment Corp. minicomputers to drive their switching systems, it's a relatively straightforward process to teach the BCS System to talk to Grass Vally gear. Such an interface is currently being developed jointly by Kaman Sciences and Grass Valley systems specialists.

Larrabee stressed the wide flexibility of the BCS System to interface with any station's switching system, provided the station desires it. "We're taking a careful, considered approach to the interface question. Rather than lock ourselves into one or two manufacturers' equipment, we're developing a concept that will help stabilize and standardize linking traffic and production operations, consistent with responsible data processing procedures."

Kaman Sciences Corp.'s BCS Manager, Jack Finlayson, expects many more stations to turn to total automation in the next year. "It's now a very simple step for any station with either a CDL or Grass Valley switching system to add a BCS traffic management system and connect the two," he said. He added that stations with other types of computer-driven switch gear won't find it a problem to teach the BCS programs to talk to their switching software—the BCS programming staff has already developed substantial experience in that area. Finlayson further noted that stations currently using the Kaman BCS service who want to add a switching package are already half way there.

Reflecting on what Kaman considers a TV automation breakthrough, Finlayson added, "When we introduced automated traffic to the broadcast industry back in 1968, we envisioned a time when our system would feed other computers that controlled production. So, while automation was spreading to include virtually all facets of the broadcast business, we continued to focus our attention on serving the station itself. Now our improvements to station service are paying off for the entire industry by smoothly taking orders from confirmation through airtime—all by computer. As the pioneer in automated traffic and accounting systems, we're pleased to have also pioneered the link between traffic and engineering."

BM/E

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Radio Automation Equipment —1974

The following chart shows the main characteristics of the available radio automation control units about which information could be secured up to press time. This is the specialized part of automation systems; in most cases a system will also include one or more multicart machines (see the following section); one, but usually more standard reel-to-reel tape machines and single-cart players; and may include a wide variety of other standard units, many of them shown in the options listed in the chart.

Most automation systems installed are to a greater or lesser degree custom-designed for the particular

station's needs. Manufacturers in most cases can offer a wide variety of function beyond those shown on this chart. The automation shopper, therefore, should discuss his problems with the manufacturer* in detail before deciding whether or not any particular system is right for the station.

Multicart machines

A majority of radio automation suppliers (including, of course, SMC), install the SMC Carousel multicart applications. This widely-used device has the following main characteristics: the moving drum holds 24 carts; maximum access time to any cart is 10 seconds; access can be instantaneous with two or more drums; the price is \$1660 for the stereo model, \$1660 for mono. SMC supplies a random access control with switch selectors for up to 50 steps, for \$100. Other makers who use the Carousel can furnish their own random access controls (see the Chart).

Control Design Corp. has developed their own multicart machine, the CD24R, similar to the Carousel (capacity 24 carts, access time 6 secs), but with a moveable drum that allows easy pre-loading or storage. The price is \$1895.

* CCA Electronics Corp., Gloucester City, N.J., supplies radio automation systems comparable to many of those listed. Detailed information was not available up to press time.

Maker and Model	Sources Handled	Events Stored	Control Units		
			Type of Memory	Data Entry	Price
<i>Class I—Control by General Purpose Computer (Format Established by Computer Software)</i>					
Schafer/NTI 740	39	5000	Computer core	Keyboard, CRT, teletype or external computer	\$22,000.00
Schafer/NTI 750	39	28000	Core for format, disc or magnetic tape for switching	Same as above	\$29,000.00
Schafer/NTI 770	39	Unlimited	Same	Same	\$48,000.00
<small>Note: These systems were formerly sold by International Good Music. All include Digital Equipment Corp. PDP-8 mini-computer, digital clock, monitoring and metering equipment, teletype/paper tape unit, network join, random-access control of multicart machines, standard software, encoder/decoder log system. Model 750: also has CRT terminal, DEC tape memory. Model 770: Magnetic disc memory gives unlimited on-line event storage.</small>					
<i>Class II—Switching Sequence in Computer-Type Memory ("Hard-wired" Program Control)</i>					
Control Design CD-28	12	2000	MOS	Keyboard, paper tape, or RS232	\$9,950.00
<small>Note: Source expanders (up to 98 total), \$950 plus \$135/channel. 4000-event memory, \$1215; 8000-event, \$2430. Network join, standard. Options: digital clock, \$1200; 25 Hz generator, \$425; 25 Hz sensor, \$350; remote control, \$495; time announce, \$435.</small>					
Gates KSP-10	10	4500	Magnetic	Digital keyboard	\$7,547.00
<small>Note: Time correction up to once per second, anywhere in sequence. Random access for multicart, with RA10, \$3805, MOS memory for 1000 events, 10 sources. Other options: 25 Hz generator, \$435; remote control, \$250; time announce unit, \$405.</small>					
RCA DAP5000A	12	2000	MOS	Digital keyboard	\$9,405.00
<small>Note: Source expander (up to 92), \$1280 for each add'l 16; 4000 events, \$1400; 8000 events, \$3000. Other options—digital clock, \$1350; random access for multicarts, \$1248; remote control, \$395; time announce \$490. Standard: 60-minute power back-up; LED read-outs for on-air, next to play; audio fade; silence sense.</small>					
Schafer 903	19	2040	MOS	Keyboard, CRT, Teletype or, external computer	\$11,500.00
<small>Note: 90-minute power back-up; digital clock; network join; random access control of multicart machines. Of the stored events, 1440 are time insertion (one per minute for 24 hr/day), the remainder are sequential. Options: remote control, \$150; time announce, \$1925.</small>					
SMC DP-1	20	2048	Ferrite	Keyboard or external computer	NA
<small>Note: Includes digital paper tape—load and dump of format information, or magnetic tape, same. Also standard: digital clock; network join; 150 Hz generator; random access control of multicart machine; remote control; 25 Hz sensors; AGC amplifiers, fade amplifiers. Options: 25 Hz generator, \$300; time announce unit, \$375.</small>					

Two multicart machines are available that do not use the carts. The IGM Instacart has the carts in vertical stacks of 12 each; one, two, or four stacks can be assembled into a unit, giving a capacity of 12, 24, or 48 carts. Each stack has a single drive system with a vertical shaft; the cart to be played is pulled 1/16-inch into contact with the drive shaft; access is virtually instantaneous. Each cart position has its own playback head. Prices are: For a 12-cart assembly, \$2600 mono and \$3100 stereo; 24-cart assembly, \$4000 mono and \$4850 stereo; 48-cart assembly, \$5900 mono and \$8400 stereo.

The Schafer Audiofile, introduced at the NAB convention in Houston last March, also holds the carts in vertical stacks. The standard assembly has three stacks of 16 carts each, for a total capacity of 48 carts. There is a playback unit for each stack; it moves vertically to the cart to be played. Access time per stack is under 7 seconds; with the three stacks, access can be instantaneous. The prices are \$4700 mono, \$4950 stereo.

Special Sequential Cart System

The Broadcast Electronics ("Spotmaster") is something of a special sequential automation system. Model ESD-15 (\$310) provides start, by-pass, and end switching for up to 15 carts. Carts are available

in assemblies of three or five each, each cart position a separate, complete playback unit. A cue tone at end of one cart starts next in sequences. Prices are as follows: Model 303D (3 carts), \$1620; Model 305D (5 carts), \$2370. Assemblies can be added as wanted. Each assembly has switching to a single audio output for the assembly.



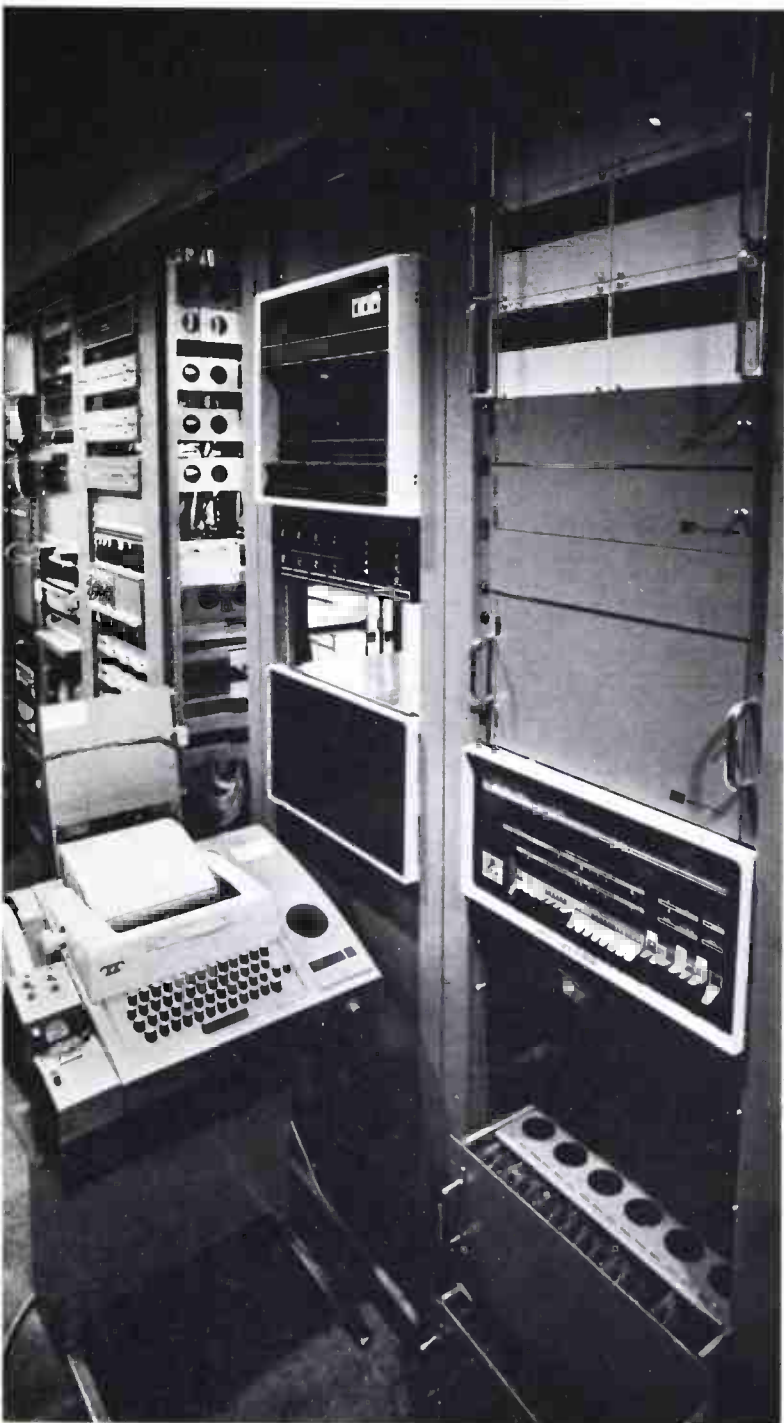
Control Design Corp.'s CD24R Multiple Cartridge Machine with unique removable drum; holds 24 standard cartridges, access time 6 secs.

Control Units-Cont.

Maker and Model	Sources Handled	Events Stored	Type of Memory	Data Entry	Price
<i>Class III—Time Insertion</i>					
IGM/NTI 504-6 (stereo)	10	Unlimited	Relay	Rotary Switch	\$4,635.00
Note: Talk channels are called up on real time, as set by rotary switch selectors. Music fills time between talk segments. Event storage is unlimited in sense that talk channels repeat in time sequence set; any talk channel can be reloaded while another is on the air. Music can be on an end-cue basis, on an "A - B" mode, on a time basis, or with optional 10-step or 20-step music sequencer (\$1150 and \$1560 respectively). Other options: network join \$3275; 25 Hz generator, \$550; random access for multicart, \$4640; remote control, \$225; time announce, \$490.					
IGM/NTI 502-4 (mono)	6	Unlimited	Relay	Rotary switch	\$3,440.00
Note: Same as preceding model.					
IGM/NTI 400 (mono)	6	Unlimited	IC	Rotary switch	\$2,730.00
Note: Same as preceding, except network join is \$470; no music sequencer applicable					
Autogram Seq. Music	14	Set by cart capacity	Elec-Mechanical	Matrix pins	\$3,025.00
Autogram S-027	10	Same	Same	Same	\$3,025.00
Autogram S-049	14	Same	Same	Same	\$5,225.00
Note: Music repeats in a sequence of up to 24 steps; substitution can be made for any step at any time. Talk features are inserted on a real-time basis, as set-up by matrix board pins; internal clock provides impulse every 30 seconds or every minute, depending on model. Exact time is available for some insertions. Numerous options to extend flexibility.					
<i>Class IV—Switch Memory or Matrix Board</i>					
Gates SC-48	9	48	Thumbwheel switch	Thumbwheel switch	\$2,520.00
Note: Time correction can be inserted 4 times/hour with front panel control					
Schafer 902	19	48	Thumbwheel switch	Thumbwheel switch	\$4,250.00
Note: Digital clock included. Options: time gate network join, \$995; random access for multicart, \$3350; remote control, \$150; time announce unit, \$1925.					
SMC Sequential	10	60	Slide switch	Slide switch	NA
Note: Designed primarily for format that repeats on an hour-to-hour basis. Audio sources can be added with 4CM-1 format expander (four sources per unit); which can be cascaded indefinitely. Standard: digital clock, network join, remote control, dual 25 Hz sensors, AGC line amplifiers, fade amplifiers. Options: random control of multicart, \$1000/carousel; time announce, \$325.					
SMC Formatter	4	10	Slide switch	Slide switch	\$1,200.00
Note: Standby automation; no amplifiers, switching only. Add 25 Hz sensing to control reel-to-reel sources.					
Sparta 1052	12	52	Matrix board	Diode pins	\$3,000.00
Note: Standard is digital clock. Options: network join, \$200; 25 Hz generator, \$475; random access control for multicarts, \$2000; remote control, \$150; time announce, \$1550; monitor panel, \$400; alarm panel, \$120.00.					

Another Step Towards "Total TV Station Automation."

Ampex's automatic cassette VTR, the ACR-25, can now interface with CDL's automation software program.



Ampex went to the NAB Convention in Houston with the ACR-25, and CDL with the APC-610/200. The ADA which stands for *Automation Data Access* and Central Dynamics went with ARCH, short for *Automatic Remote Cassette Handler*. ARCH was designed to permit CDL APC-610/200 and 100 TV station automation systems to control the ACR-25 until both showed up on the exhibit floor at Houston. It was not known whether the marriage could be consummated. Lines were strung between the two exhibits and by Wednesday a perfect union was demonstrated. BM/E asked Central Dynamics to provide a few more details of what is involved. Both CDL and Ampex have advised BM/E that an actual station test will be made shortly and both companies will be able to supply production configurations in the later part of 1974.

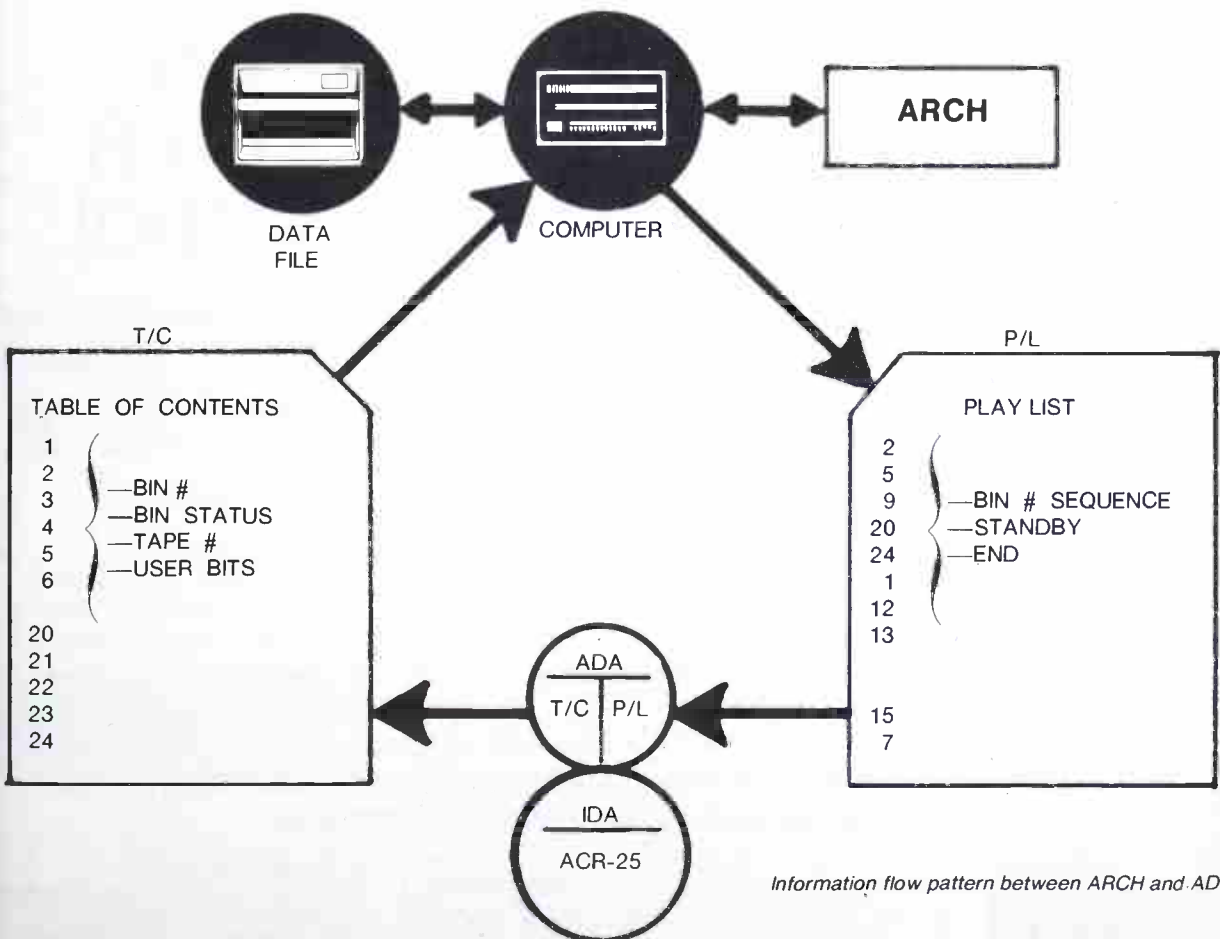
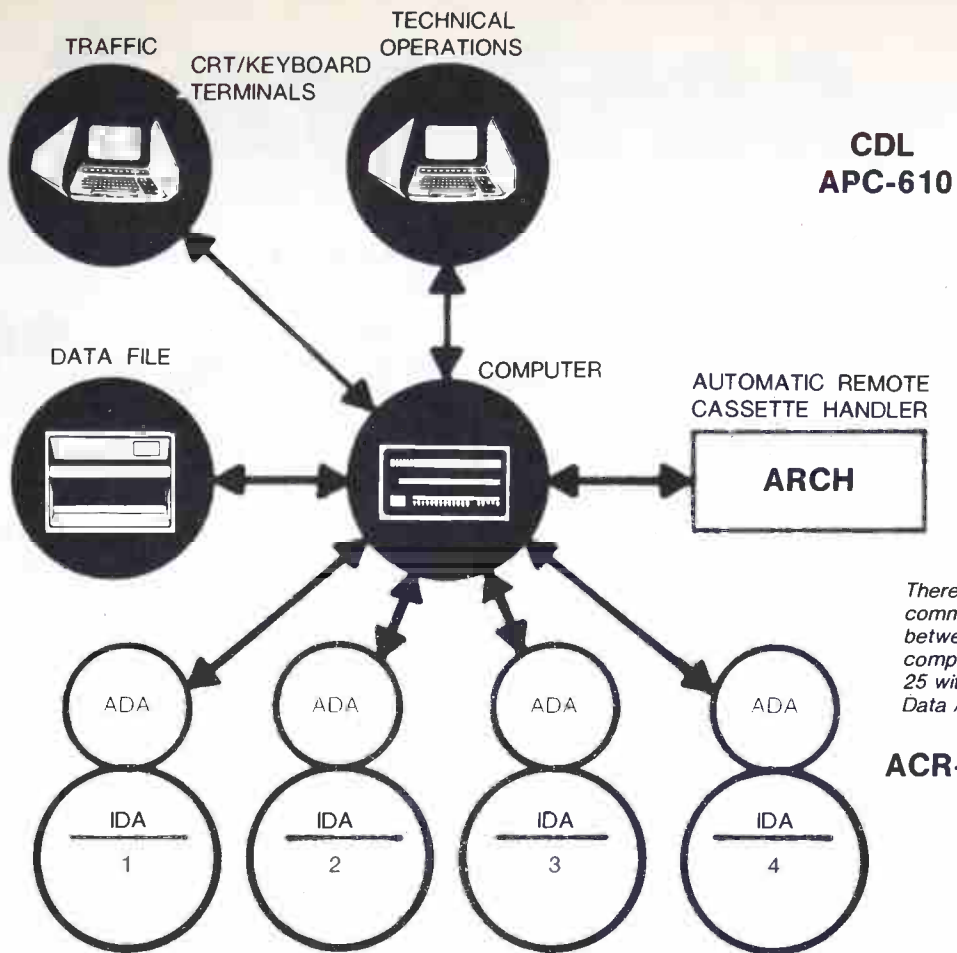
ARCH, in automatically controlling the Ampex ACR-25, bridges the data communications gap between two intelligent computer systems. This data link represents another advance toward obtaining a total TV station automation environment, and speaks well for the flexibility of a software controlled computer system. (CDL's first APC-610/200 system installation at KYW-TV has been operational for two years.)

Communication between two or more computer systems is called the "hierarchical" approach in computerese; namely, computers can serve as a communications channel to and from a higher level of supervision, and also perform as a discreet and multi-task controller. (Other examples of the "hierarchical" approach . . . See another article this issue, Total Automation A Reality for BIAS Users . . . CDL's Kaman Science Link-Up at WTCN.)

The block diagram, Fig. 1, illustrates the 2-way communication data link between CDL's APC-610 system and the ACR-25. The APC-610 can simultaneously handle four ACR-25's and treats each ACR-25 as a separate entity.

continued on page

Computer and central data file of APC-610/200. CDL's software program controls the minicomputer and magnetic disc file and supervises all communications and machine tasks. ARCH is also supervised by the software program.



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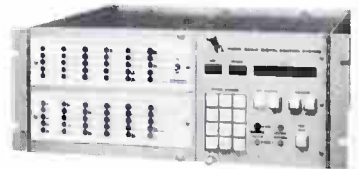
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Fully digital remote control of transmitter plants is provided by the Model DCS-2 Digital Control System. Large numbers of telemetry, control and status channels can be accommodated as well as multiple transmitter sites. With the addition of the Computer Option, totally automated operation is possible. Up to 30 parameters are simultaneously displayed on the CRT Terminal provided with this option. Tolerances for all parameters, automatic and fault parameter logging and status/alarm functions are just some of the other features of the DCS-2 Digital Control System.

For details on all the Moseley Associates Digital Remote Control Systems, please contact our Marketing Department.



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BROADCAST EQUIPMENT

Drop-resistant VOM has a tough thermo-plastic case and finger-tread finish. Model 310 Type 3 has 18 ranges, at 20,000 ohms/volt dc and 1000 ohms/volt ac. \$48. TRIPLETT. **300**

Video monitor has more than 650 lines of resolution and all solid-state circuitry. Model MV-12 has plug-in circuit modules, 12-inch screen. GBC CLOSED CIRCUIT TV CORP. **301**

Pray-on zinc cold galvanize primer reduces rust on antenna towers or on other exposed metal. "ZINC IT" gives galvanic protection, dries in 15 minutes, can be painted over. CRC CHEMICALS. **302**

RF power sources cover 10 KHz to 500 MHz with plug-in heads, are available with power to 50 watts CW. The 446 series claims direct reading of frequency to 0.002%. MILTECH. **303**

Digital panel instrument has 4½ digits, integral circuitry inputs, and dual slope integrating A/D converter. Model AN2525 has high noise rejection, accuracy 0.01% of reading per count. \$199 ANALOGIC. **304**

Aural transmission monitor will alert station personnel to loss of audio. "AUDIO SENTRY" is connected to AM, FM, SCA, or TV modulation



monitor, will flash lights, produce warning tone, or otherwise signal loss of audio after a preset interval. MELAR ELECTRONICS LAB. **305**

Storage batteries hold charge over long periods. Charge Retaining series claim loss of only 15% of capacity in a year. WISCO **306**

Dual-beam oscilloscope has 400 MHz bandwidth. Model 7844 has thirty plug-in amplifiers for the four main-frame positions for a wide range of applications. Typical price with four plug-ins, \$9,450.00. TEKTRONIX. **307**

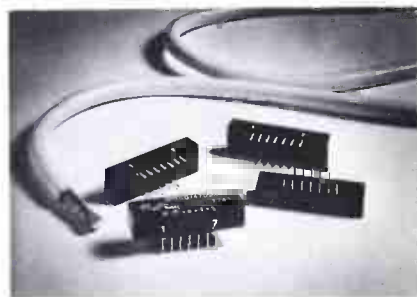
Printer interfaces and controllers for many standard mini-computers have basic 200-line/minute speed. The 2000 series includes RS-232



teletype format, and 600-to-9600 baud for mini-computer output, others. TALLY CORP. **308**

Phase-angle meter supplies both digital readout and analog angle-nulling capability. Model 305D reads 0 to ± 180 degrees, and 0 to ± 360 degrees, with 0.01 degree resolution. Frequency range is 2 Hz to 11 MHz. DRANETZ ENGINEERING. **309**

Video trimmer delay line has five separate delays, ½ ns, 1 ns, 2 ns, 3 ns and 4 ns. Delay Module allows con-



nection of sections in series in any combination. MATTHEY (TELEVISION ASSOCIATES, U.S. AGENT) **310**

Pre-sunrise or auxiliary AM transmitter has 50-watt output, crystal control. Model 50D meets FCC requirements for auxiliary transmitters. \$1485. LPB, INC. **311**

Audio processor includes a microphone-line amplifier, a limiter/compressor, graphic equalizer, and line driven amplifier, in one package. OPTRO 740 also has built-in power supply. Units can be used separately as well as together in processor. OPTRONICS PTY. LTD. (AUSTRALIA) **512**

Cue system cartridge alignment tape allows checking of cue system on NAB audio cartridge equipment. Model 350-STQ has tests for operating level, bandwidth, selectivity and sensitivity, for all three NAB standard tone frequencies. \$35. FIDELIPAC. **313**

Digital meter is designed as addition to Model 465 and 475 portable oscilloscopes. Meter, Model DM43, has 3½-digit display, five voltage ranges

continued on page 50

PRODUCTS

from 200 mV to 1200 V and 6 ohms ranges. Meter also can display directly the time between two points on the CRT as a digital number. \$475.00. TEKTRONIX. **314**

Broadband microwave amplifiers cover 5 to 550 MHz. FMA series are hybrid MIC and include the 150, gain 15 dB, output -2 dBm; the 155, gain 10 dB, output +10 dBm; and the 160, gain 14 dB, output +10

dBm. Respectively, \$53, \$49, \$74.50. FAIRCHILD CAMERA AND INSTRUMENT. **315**

Thermal voltage converters allow measurement of ac, 10 Hz, to 1 GHz, by comparison of heating effect with that of dc voltages. Series 1396A covers 0.25 volt to 7 volts in three models. BALLANTINE LABORATORIES, INC. **316**

Variable-frequency oscillator allows adjustment of capstan speed of Ampex MM-1100 and AG-440 se-

ries tape recorders. Model VS-10 oscillator provides a range of ± 1 full tone in quarter-tone steps, plus coarse/fine variable speed adjustment. One VS-10 will drive up to three recorders. \$795 with optional digital readout; \$395 without. AMPEX CORP. **317**

Constant-tension tape device can be added to nearly all Ampex and many other popular tape machines. TEN



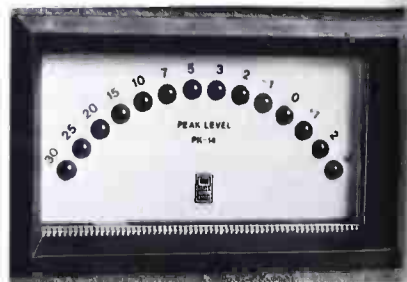
TROL eliminates tape speed changes with reels up to 14 inches consists of a reel speed sensor and control circuitry. INOVONICS, INC. **318**

Test chart provides all reference material for setting zoom lens back focus, tube focus. Lens Focus Chart also allows checking other functions of television and motion picture lenses. TELECOMMUNICATIONS INDUSTRIES, LTD. **319**

Glass delays for vertical aperture correction of color TV cameras incorporate a 63 microsecond ultrasonic delay. Sonicstore delay line works in a signal delay network at 3 MHz to correct edge distortion, improve fine detail. TELEVISION EQUIPMENT ASSOCIATES. **320**

Sweep generator covers 200 Hz to 3 MHz in one band. Model 1201 has attenuation of 110 dB in 1 dB steps, three variable voltage reference pulse markers and up to seven crystal-controlled birdy markers. \$1895 up. TELONIC ALTAIR. **321**

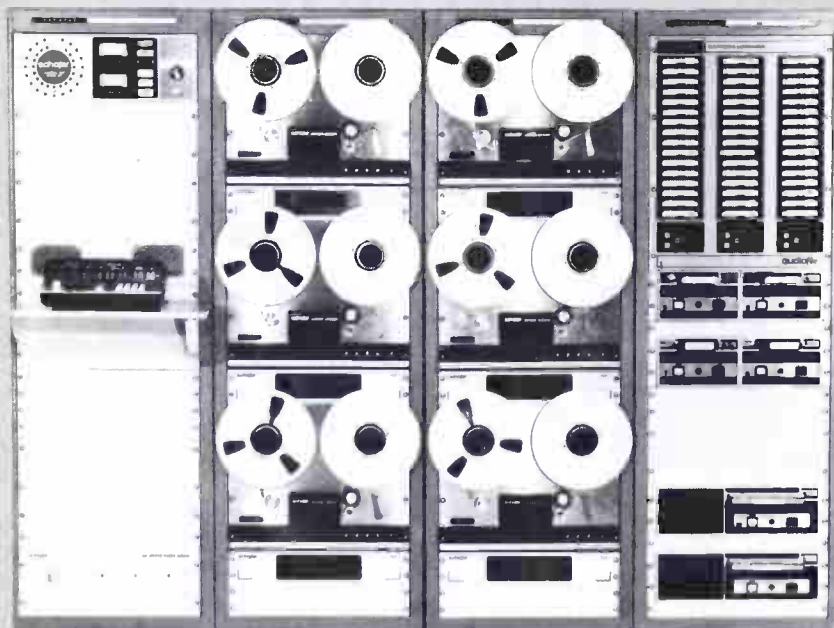
Peak program meters give visual level indication via sequentially lighted LED readouts of signal level. Model PK-14 has LED's in an arc,



for retrofitting into 3 1/2" meter installations. Model PK-16 has vertical row of LED's. Both have brightness control, fallback adjustment and input level scaling. QUAL

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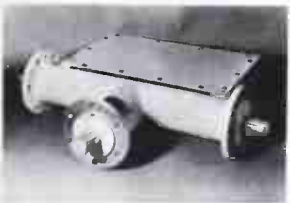
Type 2430 Diplexer for Two 20kw stations



Type 3330-20 Air Cooled Load 20 kw rating



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Type 8130 SPDT Switch

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PRODUCTS

EIGHT ELECTRONICS. 322

Wireless receiver for 16mm sound cameras is mounted on camera side, about 1" of width. Crystalink Receiver, Model CL-1, fits CP-16 reflex and nonreflex cameras, can be used with Vega Model 55 or Model 54 transmitter, or similar units. Meter indicates whether or not rf is adequate for quality reception. Installed with Vega # 55—\$1,390; with Vega # 54, \$1,450. **CINEMA PRODUCTS CORP. 323**

TV pattern generator supplies monochrome and color patterns. Model PM5512 has checkerboard, cross-hatch, dots, grey scale and definition lines to 5 MHz and a white cir-



cle setable on any pattern—in monochrome. Patterns in color are 50% red, white with color burst, standard bars, chroma staircase with multi-burst, and demodulator bars. \$885.00. **PHILIPS TEST AND MEASURING. 324**

High frequency attenuator pads operate from dc to 13.3 GHz. Series FP-88 are in coaxial housing, have values of 3, 6, 10, and 20 dB, at 2 watts average, 200 watts peak. \$35. **TEXSCAN CORP. 325**

Automatic digital multimeter has 5½ digits (200,000 count), five dc ranges from 200 mV to 1200 V, four ac ranges and six ohms ranges. Model 8800A has autoranging and autopolarity, common mode rejection 120 dB to 60 Hz, high ac accuracy 30 Hz to 100 KHz, isolated four-terminal ohms measurement. \$1099. **JOHN FLUKE MFG. CO. 326**

High-resolution TV camera has up to 1400 lines of center resolution. Model 7120 has bandwidth to 32 MHz, scan rates adjustable 525 to 1225, uses a 1-inch Vidicon. **COHU. 327**

European-style semi-conductor fuses have offset brackets on both ends, are for replacement in equipment imported from Europe. Two types are: 700 volts rms (5 to 500 amps rms) and 250 volts rms (5 to 600 amps rms). **INTERNATIONAL RECTIFIER. 328**

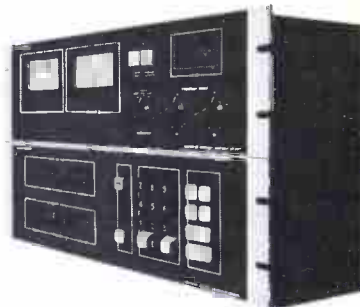
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Program up to 2,000 events and control 12 audio sources with full random access. Expand, as you expand, to 8,000 events and 92 sources. Will interface with all audio sources having full function remotable capability. And the CD28 is virtually mistake proof . . . easily programmed and operated by even the most inexperienced personnel.

CD25G 25Hz Tone Generator



For production studio use to insert the standard 25Hz automation actuating tone. Simple operation.

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- This all solid-state unit has been designed to work from all audio sources providing up to +8dBm line level.

CD25S 25Hz Tone Sensor

Provides control functions for sensing the presence of pre-recorded 25Hz tones on audio material. Features a unique built-in fixed tone alarm with 8 second tone activation allowing flexibility in source switching, automatic rewind of tape and other features including end-of-tape function.

CD60T Time Announce Control Unit

Designed to add versatility to your automation system. Allows the use of 2 single play cart machines, 2 reel-to-reel transports or a combination of cart and reel-to-reel transport for time announcements. Features a built-in power failure interlock . . . will not air a time announcement following a power failure until corrected and reset. Internal IC integrated clock included.

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NEW LIT

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

The entire line of **public address and paging microphones** is now available in a 12-page catalog. Turner. **250**

New 4-page, two-color newsletter, "SCAN," is for educational and professional users of video tape. Memento. **251**

A 6-page brochure details the line of **hysteresis synchronous and torque motors**. Beau Motor Division. **252**

Solid-state, microwave switches are detailed in a 4-page bulletin. Specifications for 27 standard switches, including five multi-octave types, are included. Raytheon. **253**

The Series 2855 **low light level cameras** are detailed in data sheet 6-589. Cohu. **254**

An application note discusses **contact protection and arc suppression** for contacts and relays. Covered in the 8-page note are protective de-

vices, dielectric breakdown, arc suppression, selenium suppressors, the need for contact protection and relay circuits without spark suppression International Rectifier Corp. **25**

"**Principles of Color Sensitometry**" has been newly rewritten, and is an essential aid to serious filmmakers as well as to film manufacturers and laboratories. The 128-page book includes 39 illustrations, as well as appendices and a bibliography, detailing the entire sensitometric field. SMPTE. **25**

An 8-page catalog, covering **digital panel instruments**, includes clocks, counters, stopwatches, thermometers, voltmeters for a total of 12 different instruments. Product descriptions, technical specifications, and prices are listed. Nationwide Electronic Systems. **25**

A 73-page catalog/manual describes **CATV distribution systems**, and their specifications in detail. Full technical specs also are provided for distribution accessories. Scientific Atlanta. **25**

Three **scramble/descramble systems** for one-way pay-TV networks are described in a 12-page bulletin. Included are an introduction, background and complete descriptions of the three systems. Jerrold Electronics Corp. **25**

A technical application brochure presents features, performance characteristics, and applications of the new $\frac{1}{4}$ -inch \times $\frac{3}{8}$ -inch **solid-state sensor**, the CID. The 4-page, two-color publication details essential conditions, output signals, and power requirements of the CID sensor. General Electric. **26**

"**Cinema Perspectives**," a four-color 16-page catalog features articles on TV news-documentary filmmaking as well as product data about the XR35 lightweight studio camera. A free copy may be obtained by writing on company letterhead to Cinema Products Corporation, 203 Granville Avenue, Los Angeles, California 90025.

Wall chart tabulated recommendations for **power tubes** by power level and application and catalogs the various services by frequency from 50 kHz to 1450 MHz and cross-references tube recommendations against power levels from ten watts to 25 kW. Special services are also tabulated. RCA. **26**

A 4-page application note shows how **opto-isolators** can be used when large common-mode signals are encountered, along with low power requirements. Hewlett-Packard. **26**



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Exciting things are happening in the reel-to-reel market. And it's all caused by a new machine called the ITC 850 Series. Here is the result of a long series of consultations with broadcasters to determine what they most desired in a reel-to-reel machine. Then we added a few innovations of our own. Truly, the 850 Series is equipment designed specifically with the professional broadcaster in mind. Some 850 features: motion sensing, multi-function edit mode, super quiet operation, automatic tape lifters, TTL logic circuitry, capability of handling dissimilar size reels... and more too numerous to mention here. If you're in the market for something new and vastly improved in reel-to-reel, a **collect** call to us will reveal an interesting story that you may have been waiting to hear. Make the **real** move to reel-to-reel...ITC. Collect number 309-828-1381.



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Safety equipment catalog is divided into chapters covering the products required to meet applications in specific government-regulated industries. Multiplier. 263

Specifications, controls, operation and typical application of video and audio recorder cue controller operating in conjunction with synchronizer are covered in a 4-page brochure. Electronic Engineering Co. of Calif. 264

A single-page spec sheet lists mechanical and electrical specifications for a directional tap. Hamlin. 265

A 12-page data sheet presents all electrical characteristics on micro-vave power transistors rated from 1 watt to 10 watts at 2.3 GHz. Curves of transfer characteristics, collector efficiency and impedance for each device, and PC board layouts for test circuits appropriate to each device are shown with complete parts details. TRW. 266

Connector catalog and price list, found in a three-ring notebook, details specifications on over 450 items. Cambridge Products Corp. 267

Catalog lists over 500 items of cine equipment for rent. Some of the categories covered include 35 mm, 16 mm, high-speed, and underwater cameras; camera accessories; sound and grip equipment. Image Devices Inc. 268

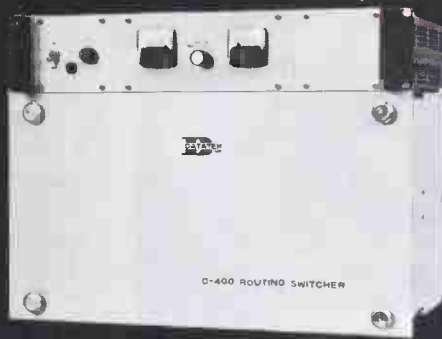
A revised 12-page specification is available on irradiated PVC suitable for the internal wiring of meters, panels, electrical and electronic equipment where minimum size and weight are desired. Brand-Rex. 269

A data sheet describes a line of AC non-vane panel meters. The single-page sheet lists case sizes from 3" to 6", and prices are given for meters ranging from 10 to 500 milliamps full scale to 30 amps full scale, and 0 to 300 VAC. Beede. 270

Catalog describes applications and detailed specs of high-power RF sources in the Series 400 line. Options and accessories also are described. Ailtech. 271

Practical remote pickup link application information describes the applications and system configurations for remote pickup links. Bulletin includes information on antennas, transmission lines and connectors required for interface. Mosely. 272

Color catalog is available on multi-purpose trencher and accessories. Basic design is explained, as are interchangeable modular tools. Ditch Witch. 273



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Datatek D-400 video-audio routing switcher for the best in video-audio distribution

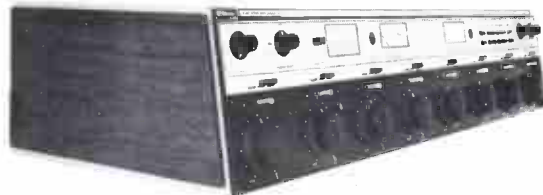


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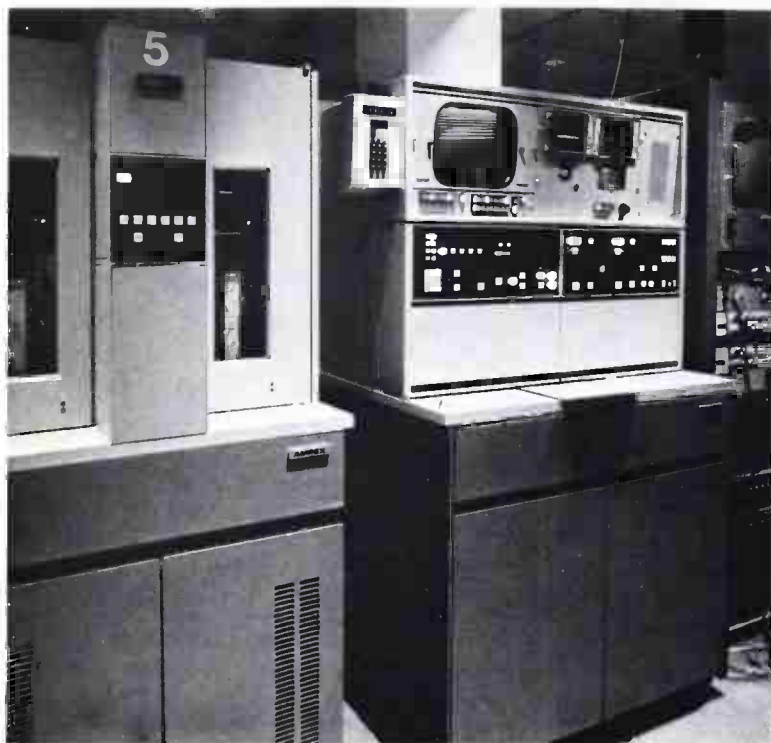
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audio control CONSOLES



Ampex ACR-25 operating with APC-6 10/200.

25 as 24 separate tape machines (24 bins per machine).

The second diagram, Fig. 2, illustrates the information flow pattern between the two systems. The ADA option to the ACR-25 is a programmable memory that stores tape numbers, bin numbers and other information identified by the ACR-25's IDA (Identification Data Accessory) option. This data becomes a Table of Contents that is transmitted to CDL's APC-610 computer system which then automatically searches through its Program Schedule (compiled and entered by the traffic department and stored in the disc Data File), sorts out the tape numbers and the sequence in which they are to be played. This manipulation results in a Play List (up to 63 events long) that is transmitted to the ACR-25 with the exact sequence in which the tapes are to be "played."

The APC-610 and ARCH continuously interrogate each ACR-25/ADA to update the Play List in real time, and monitor operational status. The On-Air Schedule file (resident on the disc Data File) is automatically updated with play list changes and distributed to all monitor and CRT displays. Master Control can also make bin assignments of unidentified tape

BM/

PERFECT YOUR CCTV SYSTEM WITH COSMICAR® LENSES

A rich variety of COSMICAR CCTV lenses will ensure you to satisfy any of your technical purpose.

Be sure to get the finest image recording results with quality COSMICAR lenses.

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- F.L. 50mm F/1.8 for 1" & 2/3" Cameras



Also available are scores of other lenses, ranging from 4.8mm to 150mm telephoto, zoom and those motordriven among them, for immediate delivery after being tailored to your specifications.



COSMICAR OPTICAL CO., LTD.

424, Higashi-Oizumi, Nerima-ku, Tokyo, Japan

Cable Address: "MOVIEKINO TOKYO"

Representative & Service Office: Asahi Optical (America) Inc. 15 East 26th Street, New York, N.Y. 10010, U.S.A.

Circle 127 on Reader Service Card

- C. A multi-level priority system, controlled entirely by the computer.
- D. A "default" system, so a spot "bumped" from one location will automatically move to a second or third.

A system like this can totally change a Sales Manager's approach to his job. No longer does he fret over whether an order will be handled properly or forgotten. He knows that proper scheduling is *humanly* impossible. Now he discovers a computer that not only remembers, but it acts in microseconds!

Here's what it can mean:

A wide choice of priorities for each client—or each spot. From 5 to 50 different levels, each getting preference over all those which are lower.

Every spot or order can range from fixed and immovable to pre-emptible by nearly everything else, depending on his decision.

He can confidently agree that "we'll guarantee that time," or "we'll probably get you in" or "you'll be there if no late orders come in," knowing that nobody will forget those instructions.

If the offer of preferred time can't be met, the spot will run the same day in previously agreed-on periods. Re-scheduling is automatic.

A late important order, received and entered a minute before the log is ordered, will be scheduled.

If sales are good, he can oversell 5% to 10%, know-

ing low priority spots (probably trade deals) will be moved or skipped.

- If sales are light, lower priority spots will fill the avails, eliminating any holes.

This kind of computer system puts the Sales Manager back in control of that critical inventory. He not only has sales flexibility, he has sales integrity. With that, his imagination can be freed to develop the creative sales effort that requires a computer to handle.

Meantime, the computer gives him the forecasts and analyses that are crucial in making the most of a flexible inventory control system. He can foresee weak sales periods months in advance; he can evaluate the rise and fall of various types of business and direct sales efforts to solve these problems; he can see each salesman's performance in exact detail; he has regular advance warning of expiring accounts, so surprises are eliminated.

With high speed computers on-line (instantly available for orders, availability reports, scheduling or other activity) and with highly sophisticated programs designed by experienced broadcasters, the modern radio or television Sales Manager has a marked advantage over his competitor with a manual or less advanced computer system.

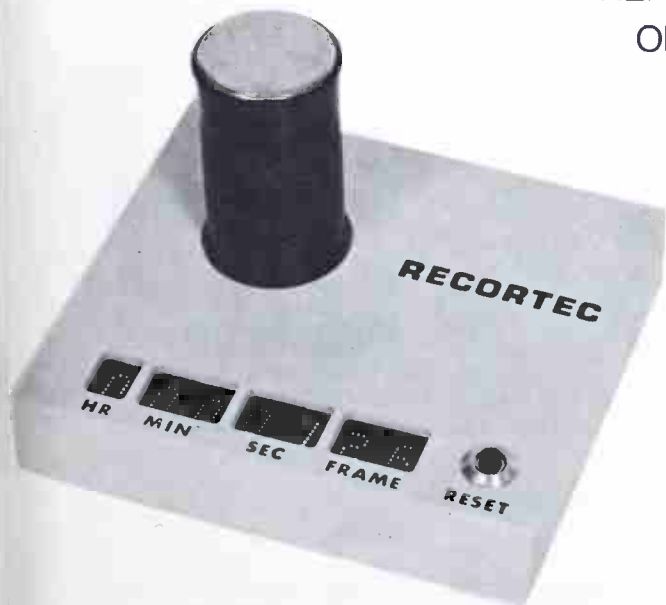
No wonder alert radio and television stations are finding that this kind of system can literally raise revenue figures and multiply profits.

It's taken a long time to climb out of the pigeon-hole, but once you do, you'll discover the air is exhilarating and the outlook is inspiring!

BM/E

Video Tape Timer

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- No warm up time is necessary... instantaneous operation!
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TELEPHONE (215) 874-5236 874-5237

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NEWS

cont from page 18

Business Bureaus reported recently that seven national advertisers voluntarily agreed to modify or discontinue challenged advertising claims. These claims involved cruise tours, a camera, a terrarium, padlocks, motel room rates, mailgrams and insurance.

Other activity at NAD showed that four other matters involving national advertising during May, 1974 were resolved. NAD ruled that substantiation provided by the advertisers adequately supported the questions claims.

NAD handles investigative work for the National Advertising Review Board (NARB). It reviews and evaluates all challenges to the truth and accuracy of national advertising brought by outside sources or initiated by NAD as a result of its own monitoring of print and broadcast advertising. Following its investigation NAD will dismiss or uphold the challenge, requesting the latter event modification or withdrawal of the questioned advertising. The results of NAD's investigations are detailed in a monthly report that is made public.

Senate Acts on Copyright Bill—NCTA Praises Decision

The Senate Judiciary Committee recently acted on the Omnibus Copyright Revision Bill. The Committee voted to delete the CATV sports blackout provision and to reduce CATV fees by one-half.

Following the Committee's action, Alfred R. Stern, chairman of the NCTA Copyright Committee and chairman and chief executive officer of Warner Cable Corp., issued a statement to the Senate Judiciary Committee on behalf of the cable television industry. Citing their gratification, Stern stated, "This action stands to benefit millions of cable TV subscribers and the American public as a whole. We believe the committee has acted wisely and in the best interest of the viewing public."

Six Newcomers Join TV's Top 100 in 1973

IBM, Montgomery Ward, Dynamic House, Florida Citrus, Toyo Kogyo and Tampa Marketing made television's elite top 100 advertisers in 1973. The Television Bureau of Advertising made this announcement recently when they released the an-

nual Top 100 and combined network and Spot TV category reports.

Among the big gainers were Record and Tapes, Radio and TV Set \$105.4 million, up 54%.

50 Advertisers Support NAD's Children's Advertising Review

More than 50 major national advertisers have agreed to support the National Advertising Division (NAD) of the Council of Better Business Bureaus' new children's advertising review activity. The NAD, along with the National Advertising Review Board (NARB), constitute the industry's self regulatory mechanism to assure truth and accuracy in national advertising.

The advertisers met in New York where they committed themselves to give financial backing to enable the NAD to expand the review activity. They also agreed to furnish the NAD with their "on-air" commercials for review.

R. P. Campbell, who heads the NAD, explained various steps being taken to intensify the review. He stated that a seven member panel of authorities in the field of child perception and behavior will be selected. None will be affiliated with an industry or advertising group.

Campbell stated that the expanded effort on children's advertising will utilize "an existing and continuing mechanism which will assure review of the major portion of advertising to children." He said, "Our review will be substantially aided by the existence of an expert panel against the benchmarks of a variety of existing standards."

Quadiscs Emphasized at AES L.A. Conclave

by Oliver Berliner
Contributing Editor

Many of the new audio boards exhibited at the recent Audio Engineering Society semi-annual convention at the Los Angeles Hilton led to this observer outrageously difficult to operate, making the invaluable claims of "human engineering seem far-fetched, to say the least. These boards, resembling "Laun Control" at Cape Canaveral, are apparently now attracting a lot of

Women who realize that their audio must keep pace with the video . . . even if it starts out in multi-track and ends up being heard over ten million 3-inch loudspeakers.

AES Convention Exhibits continue to suffer from lack of interest on the part of commercial—sound equipment makers, virtually all of the displays being recording-studio oriented. This writer, a co-founder of the West Coast (now the Los Angeles) Section of the AES, continues to believe this is the fault of the Society, which not only seems to have veered itself, almost intentionally, in this direction, but whose directors have even attempted to place the Society on an “academic” level, forgetting the “practicality” of being *practical*.

Commercial sound reinforcement is an area that requires far more attention than the recording studios of today do; yet at the AES it is an *also*. It was necessary to literally dig to find a product having even the remotest application in this area. A firm called MicMix Audio was showing three classes of compact verb machines which, although appearing to have greater decay time than that of other well known brands, also displayed a “coloration”

of sound which, while possibly better sounding, could be considered “abnormal.” It will take a less hectic and distracting atmosphere to permit drawing valid conclusions. This device, while aimed at the recording studio (of course) does have application in the sound reinforcement field for niteries, arenas, theatres. Amen.

Probably the most exciting product was one which attracted the least attention. Virtually buried in a tiny booth at the rear of the smaller of the two halls was a demo model of an automated quad sound control system about to be marketed by an upstart Boulder, Colorado firm with the ungainly name of Video and Audio Artistry Corporation. VIDAAC showed this truly amazing and “fun” device which accepts 4 or 8 (can be expanded to 16) audio inputs and feeds them to 4 outputs. But in between it will permit you to pan your sources in a myriad of “freaky” patterns to the four outputs at any desired speed . . . from one complete “cycle” in thirty minutes to four cycles in a second. There are “chases” and “figure-eights” and “spread-outs” and “star” patterns, all repeatable and all presettable for any of the 4 or 8 sources. Once

continued on page 58

Listen to the Sound of Dependability

STL test tapes maintain a reputation as the most dependable and accurate tapes you can buy because of the **consistently** high standards produced on the finest precision equipment.

In addition, they are available in more sizes than that offered by any other manufacturer in the world.

Listen to the sound of dependability . . . and accuracy. Order STL test tapes and find out where your system really is.

All audio widths from 150 mil. to 2-inch. Prompt delivery insures freshness.

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Tennessee distributors: Auditratics, Inc., Studio Supply Company

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MICROTIME 388 TBC
Broadcast Application

BROADCAST QUALITY from LOW COST VTRs

For network delay, and local production and playback, upgrade your VTR's with the MICROTIME™ 388 NTSC HETROCOLOR™ Time Base Corrector. It's the perfect low cost answer for your low cost or older equipment — from ½" and ¾" helical to 2" quad.

The MICROTIME TBC eliminates those TV jitters that previously made the output signals unacceptable for broadcast. And all MICROTIME TBC's include a full proc amp with front panel controls to touch up chroma gain, chroma phase, video gain and setup. It's ready for immediate delivery.

From leading television distributors throughout the United States and Canada. At under \$10,000. Send for your product bulletin, today.



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"RELIABLE"**

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NEWS

you've selected a pan pattern for one of the input sources, and have decided upon its panning speed, you lock it with the Position Hold Control, then start fooling around with the next source until you've hit upon exactly what you'd like it to do. And so forth. This remarkable creation accomplishes quadrasonic stereo effects unobtainable by any number of human hands, with perfect repeatability, and should not only be a handy gadget in the studio, to say nothing of making quad sound more appealing, but has excellent prospects of appealing to the hi-fi "nuts" if a low-cost version for the consumer market could be made.

A wide, interesting and informative variety of technical papers were presented on the subjects of digital techniques in audio, audio in broadcasting, disc recording, transducers, electronic music, quad and movie sound, sound reinforcement and acoustics, magnetic recording, signal processing, studio design, instrumentation and measurements. **BM/E**

Briefs

Ameco, Inc. has contracted to provide Koenick Electronics Co. with a turnkey CATV system in Corydon, Indiana, using their Nova PII trunk and Nova 300 line extender amplifiers and passive electronics. In Ohio, Telesonics Associates is using the firm's CATV equipment to build a two-way cable system in Struthers, a suburb of Youngstown, Ohio. On the West coast, Ameco is supplying Cowlitz Cablevision in Longview, Washington with its push-pull trunk amplifiers and line extenders. And in New England, the company will supply amplifiers and passive gear for an 80 mile dual-plant extension of Valley Cablevision's system to Naugatuck, Beacon Falls and Oxford, Connecticut.

Ampex Corporation is supplying television broadcast equipment to independent television station KBMA, Kansas City, Missouri. The equipment will be used to originate TV coverage of K.C. sports. . . . A mobile broadcast recording vehicle, also built by Ampex, valued at more than \$500,000, was delivered to the Ministry of Information of the State of Qatar in the Arabian Gulf. The 36-foot mobile unit includes a compact color videotape recorder, full production and editing facilities and space for up to four TV cameras. . . .

A real-time color videotape duplicator from **International Video Corporation** is designed for users of the IVC one-inch format. The expandable tape duplicating system includes a master control station and eight or more cart systems, each containing four IVC-825A recorders.

The **E-Cam Company** of Hollywood, California is the exclusive U.S. distributor for all Eclair cinematographic equipment. . . . The **Broadcast Electronics Spotmaster** line is available in the central Midwest through Communications Systems, Inc. of Cape Girardeau, Missouri. . . . Negotiations are being conducted for the sale of **WOW-TV** Omaha, Nebraska, to Pulitzer Publishing Co., St. Louis, Mo, confirm the **Meredith Corporation**.

GTE Sylvania has received turnkey contract from Good-Vu Inc., for the installation of a 17 mile segment of the system in Sprir Valley, Clarkstown, and Ramapo, N.Y. . . . Wideband communication equipment, furnished by the CATV manufacturer, will be used in a 65 mile system operated by Ocean Cablevision, Inc. of Honolulu on the island of Oahu in Hawaii. . . . Warren, Ohio, the firm has been awarded a contract by Mahoning Valley Cablevision Associates for their 225-mile, 30-channel system the first segment of which is soon to be completed. . . . Hartford CATV Inc. has awarded GTE Sylvania a contract for an 800-mile system in the greater Hartford, Connecticut area. Installation of the first 20 miles of the mid-band split system expected to begin soon. . . . A contract from Cablevision S.A. of Mexico City has been awarded to the firm to furnish equipment for a CATV system to be operated in the suburb of that city.

Members of the Program Committee for **SMPTE's** 116th Conference, slated for Nov. 10-15th at the Four Seasons Sheraton Hotel, Toronto, are: Michael Barlow, Sir Arthur Chetwynd, Donal Clayton, Leslie H. Holmes, Ted Litwin, Roger Ross, C. A. Siocos, Israel Switze, Lou T. Wise, and Findlay J. Quinn. Muskegon Cable TV Company, Inc. has awarded a turnkey contract for approximately 350 miles of plant to **Theta-Com**. . . . Effective May 15th, Harris-Intertype Corporation changed its name to **Harris Corporation**. The company's shares on the New York Stock Exchange are trading under a new ticker symbol, **HR**. . . . **Anaconda CATV** is now located at the Anaconda District Office at Warehouse, 3919 N. Ballast, Portland, Oregon. . . . The **America**

Broadcasting Company has received special temporary authorization from the FCC to operate WLS-TV, Chicago with a new circularly polarized antenna recently installed atop the Sears Tower in Chicago. . . . Scientific-Atlanta has been awarded a contract for two additional satellite earth stations for the Alaskan communications system engineered by RCA Alaska Communications, Inc. RCA is equipping Nicaragua with its first FM stereo broadcasting station; installation is to take place later this year by Radiodifusora Nacional S.A., the government-owned broadcasting organization, in the capital city of Managua. . . . Network television advertising statistics for the month of March are in. The Television Bureau of Advertising reports that \$193.6 million was invested in the medium, a 6.3% increase over last year and an all-time high for the month. Weekend daytime, up 26.9%, rose to \$24.5 million; nighttime TV, up 5.1% to \$129.6 million; weekday daytime, down 0.3% to \$39.5 million. . . . The Magnavox Company, CATV Division, has made arrangements with LVO Cable, Inc. to supply about 1,200 miles of active and passive electronics over the next two years. The equipment will be used to

continue construction of the cable TV system in Tulsa, Oklahoma.

The Arizona Cable Television Association has unanimously adopted and filed with the FCC resolutions supporting cable TV industry stands on two issues: a resolution opposing the proposed amendment to Part 76 of the Commission's rules requiring all CATV systems to maintain program logs for imported signals and programs carried, and deleted pursuant to program exclusivity requirements; a resolution protesting the present FCC non-duplication regulations and supporting the Rocky Mountain Cable Television Association contention that same-day protection is unfair and discriminatory. . . . The Caribbean Broadcasting Corporation of Barbados is enhancing its color facilities with the purchase from Marconi Communication Systems of three Mark VIII color studio cameras and the new B3404 integrated color telecine.

Programming

A thirteen-part series, called "The Ascent of Man," dealing with man-

continued on page 61

MICROTIME 220 TBC/720 VEC
Teleproduction Application

4th GENERATION TAPES with 1st GENERATION QUALITY

Now you can produce multiple generation tapes which are indistinguishable from the original.

Use standalone MICROTIME™ systems for your H-locked quad and helical VTR's to achieve performance equal to the most sophisticated integral time base correctors.

At a fraction of the cost of those expensive systems, the MICROTIME™ 220 CHRO-MATIC™ TBC and 720 VEC™ Velocity Error Corrector are ready for immediate delivery. They upgrade your equipment to NTSC direct color broadcast quality — and reduce hue shift and jitter to less than ±2 nanoseconds (±2.6°) throughout the entire visible picture. Send for our product bulletin today. And ask about our quad high-banding service, too. When it comes to picture quality, we have the answers.



Jack Hansen, WFMD, Frederick, Md.

Directional Antenna Monitoring Simplified

With the Model AM-19D (210) Digital Antenna Monitor, accuracy is assured and operating cost savings are realized. Now antenna phase angle and loop current ratio readings can be taken by lesser grade operators. The easy-to-read numeric readout provides exact readings and eliminates interpretation errors common with conventional meters. Resolution is 0.1° for phase angle and 0.1% for current ratio.

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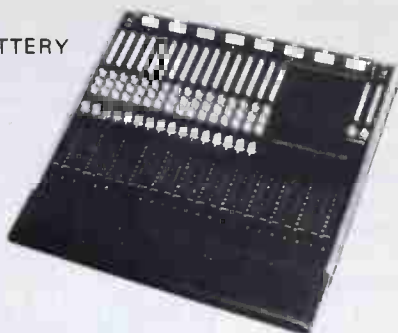
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FPC SERIES... FROM, \$4995.00

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FPC-26 8 INPUTS - 2 OUTPUTS
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FPC-30 12 INPUTS - 2 OUTPUTS
FPC-32 8 INPUTS - 8 OUTPUTS
FPC-34 12 INPUTS - 4 OUTPUTS
FPC-36 12 INPUTS - 8 OUTPUTS
FPC-38 16 INPUTS - 2 OUTPUTS
FPC-42 16 INPUTS - 4 OUTPUTS
FPC-50 16 INPUTS - 8 OUTPUTS

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A Robins Industries Corporation

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FCC Rules and Regs

cont. from page 25

(d) the dates the candidate plans to use air time, (e) the length and time of day of each broadcast, (f) the rate to be charged the candidate for each broadcast (g) the total amount of charges that the candidate certifies can be incurred without violating the campaign spending law limits, (h) the signature of candidate or his authorized agent (including the latter's name, address and any restrictions or limitations imposed on him), (i) the date of signature, and (j) the following statement:

"Payment for the use of time purchased, including any agent's commission allowed to the agent by the station, will not violate the candidate's permissible limit on campaign spending under provisions of Section 104(a) of the Federal Election Campaign Act of 1971 as determined by the Comptroller General of the United States." [Use appropriate similar language where state instead of federal law applies.]

(2) One copy of the certification should be placed in the station file and made available for public notice for two years; a second copy should be retained by the candidate.

(3) An amended certification must be filed if there is a change in the amount of air time charge.

(4) One certification is necessary for a series of air time uses as well as where a single use is divided between two candidates (as long as each candidate's address location is shown).

(5) No certification is necessary if the station give free air time for a candidate's use.

Reasonable Access And Equal Opportunity

A broadcast station or cable system is *required* to give legally qualified candidates (not spokesmen) for federal elective office "reasonable access" to station air time. The "reasonableness" standard is capable of no "cut-and-dried" definition. The commission has stated that *it will not substitute its own judgment* for that of the broadcaster or cablecaster; it will rather limit its judgment to whether the broadcaster or cablecaster acted reasonably and in good faith. A broadcast station or cable system must (a) give a reasonable amount of free air time and/or (b) permit the purchase of a reasonable amount of air time. In addition, should a station give free air time, it is *not required* to permit purchase of air time. Conversely, if station permits purchase of air time, it is *not required* to give free air time.

The requirements concerning legally qualified candidates for *non-federal* elective offices are somewhat different. Here the station or cable system is *not required* to supply free air time or permit the purchase of air time if, "in its own good-faith judgment in serving the public interest," the political race involved is insignificant (i.e., a local election in a small suburb overshadowed by county, state, or federal elections of interest to the station's entire service area). However, should a station or cable system give free air time or permit purchase of air time to one legally qualified candidate for non-federal office, it must provide an other legally qualified candidate for the same office an "equal opportunity" for the free or purchasable time.

The key words involved are *reasonable* and *consistent*. A broadcaster or cablecaster should give serious consideration to working out an access policy prior to an election campaign, with all candidates in interest. In this way, disputes between candidates and the broadcast station or cable system, as well as possible confrontation with the Commission, will be obviated.



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Best selling 3 1/2 digit DMM even better with new options and accessories

New ac/dc high current option lets you measure 10 A. continuously or up to 20 A. momentarily. New low 2 and 20 Ω scales give 0.001 Ω resolution. Low cost RF probe offers new capability.

Other options include rechargeable battery pack, digital printer output, deluxe test leads, 40 kV high voltage probe, 600 A. ac current probe, carrying cases, dust cover and rack mount.

Basic "best buy" \$299 DMM feature dc accuracy of 0.1%. Measure ac/dc volts from 100 μ v to 1200 v, current from 100 nanoamperes to 2 A. and resistance from 100 milliohms to 20 megohms. Guaranteed 20,000 hour MTBF.



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NEWS

kind's scientific and cultural history, has been co-produced by the **BBC-TV and Time-Life Films**, and underwritten by the Mobil Oil Corporation and the Arthur Vining Davis Foundations. It will be televised by the **Public Broadcasting Service** next winter. The presenting station will be **WGBH**, Boston. The programs highlight man's development as seen through the perspective of science. Individual shows incorporate sights never before filmed. The series is narrated by Dr. Jacob Bronowski. Though well-known to British and Canadian television audiences, this will be Dr. Bronowski's first appearance on U.S. screens in a major series. The 13 hour-long programs cover man's efforts to understand and build on the secrets of nature. The programs, covering specific areas of concern, touch on: Anatomy & Intellect; Architecture; Mathematics; the Industrial Revolution; Science & Humanism; the Future, to name some.

In addition to the PBS telecast, Time-Life Films will also distribute the programs to schools, libraries, and to business and industry. The typical commercial TV station in America produced at least five public service spots about the energy crisis during the winter season and aired them over 150 times, according to a survey taken by the **Television Information Office**. Also, according to the TIO survey, the typical station produced at least three documentaries related to the energy squeeze. These were designed to describe and analyze specific problems at the local level. Starting September, 1974, **Young & Rubicam** Ventures syndication Department will be distributing on behalf of General Electric a wildlife series "Last of the Wild." The twenty-six programs in the weekly half-hour color TV series

are being produced to appeal to an all-family audience, and to be scheduled in the prime time access periods. The series is an international production of Heritage Enterprises, Inc. with Ivan Tors, producer and Lorne Greene as host and narrator. . . . **Satori Productions** is offering a two-hour long women's television series called "Daytime." Produced in color, the series will be available to cable systems throughout the country on video-cassette at no charge.

Century 21 Productions, Inc. is expanding its consulting and production services. . . . Eleven programs on the environment will be broadcast nationwide this summer by **PBS**. The series, "Man Builds—Man Destroys," was produced by the New York State Education Department and United Nations Television, in cooperation with the Ontario Educational Communications Authority. . . . **The American Garden Institute**, New York, has available at no charge 52 3½-minute public service radio programs on tape. Name of the PSA freebie: "Garden America With Jerry Baker" . . . Paul Galan, Dick Hubert and Morty Schwartz have formed their own company, **Gateway Productions, Inc.** The three men have worked with one another on various projects for many years, but Gateway represents their first joint venture.

People

Richard Silvera became chief engineer of TV station **WHLI**, Hempstead, L.I. . . . **Peter M. Kendrick** is president of the cable division of Diversified Communications, and of its subsidiary, **New England Cablevision, Inc.** . . . **Elliott K. Klein** was appointed director of engineering for all **Buck Owens** broadcast stations.

Robert Mai, Sr., is the new manager of **Jerrold Electronics Corporation**

continued on page 62

There's immediate validation and updating of information with the BIAS system.

(We've got the numbers!)

No other broadcast computer system can compare with Bias. Maybe that's why more than 60 stations are now on line with Bias—the world's leading broadcast computer firm.

For more exclusive reasons why Bias is the leader, call 901-332-3544 collect. Ask for Jim McKee, Vice President.

BIAS

BROADCAST
INDUSTRY
AUTOMATION
SYSTEM



a division of Data
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3000 Directors Row, Memphis, Tennessee 38131
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SPORTS Commentator Headset

Dynamic Boom Microphone; 400 OHMS, frequency range 50-15,000 Hz, sensitivity 2mV (loaded) for close speech.

Double Headphones; independently wired, 200 OHMS each, frequency range 50-15,000 Hz.

Ventilated Foam Cushions eliminate perspiration and let you hear ambient sound (optional ear enveloping cushions).

Weight 6½ oz. Practically unbreakable components. Optional cough switch.

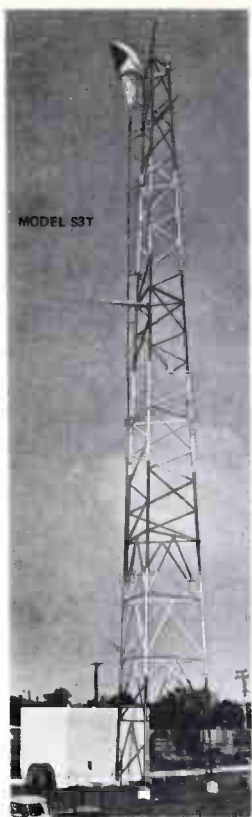


Television Equipment Associates, Inc.

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Box 1391 • BAYVILLE, N. Y. 11709

Price: \$75.00
Delivery from stock

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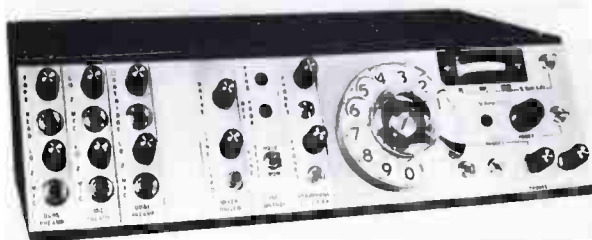
Small Tower Site? Install an S3T Self-Supporting Tower

- ▶ Basic design for a 40PSF wind-load and for support of two 10 ft. diameter high-performance antennas or two 10x15 reflectors with rigidity required for 12 GHz systems.
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NEWS

tion's Turnkey Systems Division . . . Paul G. O'Friel was named vice president and general manager of Warner Cable of Massachusetts covering the complex of Warner systems in the Boston area . . . Robert A. Shannon is marketing research manager for TeleMation, Inc., a new position reflecting expansion of the company's marketing division.

Harold R. Krelstein, president of Plough Broadcasting, Memphis, was elected president of the NAB Radio Board of Directors; and Wilson C. Wearn, president of Multimedia Broadcasting Co, Greenville, S.C. was elected president of the Television Board . . . Re-elected chairman of the Joint Board of Directors was A. M. Ockershausen, vice president of the Washington Star Stations.

Also on the NAB election list were six chosen for the Engineering Conference Committee: H. A. Dor schug of WTIC, Hartford; F. I. Flemming, NBC TV, New York; E. R. Hill, Kaiser Broadcasting Corp; D. H. Smith, Capital Cities Communications; L. A. Spragg, Store Broadcasting; and J. C. Wulliman, WTMJ.

continued on page 6

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STANT CHIEF ENGINEER wanted for TV station open market. Must hold valid First Class Radio phone license and have at least five years broadcast experience. Also needs proof of performance experienced studio and transmitter maintenance experience. Applicant with E.E. degree and P.E. Salary open. resume to Box 874-1, c/o BME Magazine, Blue Summit, PA. 17214. An Equal Opportunity Employer.

TECHNICIAN Stereo public radio station. Must be experienced in maintenance, construction, production with quality audio and transmission equipment. Valid first class license and valid driver's license required. No starting. Liberal vacation and benefits policy. Contact Garrard Macleod, Manager, WMUK, Western Michigan University, Kalamazoo, Mich. 49001. WMU is an affirmative action/equal opportunity employer.

Experienced Studio Maintenance Engineer needed at station in Virginia's Shenandoah Valley. First Class License required. Full color, five year old facility. Send resume, availability, and salary requirements to Chief Engineer WVPT-TV, Harrisonburg, VA 22801, or call (703) 433-391. Equal Opportunity Employer.

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EQUIPMENT FOR SALE

ELECTRATOR: Demonstrator like new model 400, complete with external keyer, automated push button control, twelve position symbol generator, spare glass and two pens. Complete price \$13,600.00. Will send engineer to install unit.

AMPEX: Demonstrator VPR-5800C Color Video tape recorder in like new condition. Price \$9,600.00

AMPEX: New VR-7000, in sealed box. 1" VTR with two tracks of audio, audio and video meters, excellent buy Price \$1,000.00

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FOR SALE: 250 watt RCA AM transmitter, type BTA—1, excellent condition. Available May 15. Price \$2500. Tel. 546-7473. Also **FOR SALE:** 4 Gates Cartridge II cassette play back machines and one Gates Cartridge Tape recorder/play back machine and approximately 250 cartridge tapes loaded at various lengths. Price \$200 each for the play backs and \$250 for the recorder play back and \$100 for the cartridges. Phone (314) 546-7473.

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state audio modules-console kits, power amplifier power supplies, Octal plug-ins—mic, eq, line, disc, play, tape record, amplifiers, Audio & tape bias oscillators. Over 50 audio products. Send for free catalog and literature. Opamp Labs, Inc., 172 So. Alta Vista Blvd., Los Angeles, Calif. 90036. (213) 934-3566.

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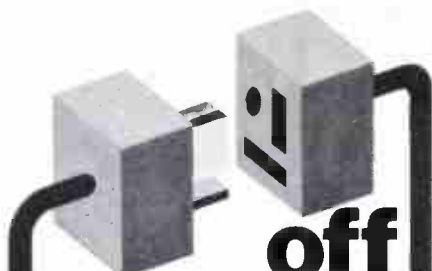
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NEWS

Clayton Caughill was named chief engineer of KPOI-AM and KHSS-FM in Honolulu . . . **Clyde A. Parker** became engineering manager of WOKR-TV, Rochester, N.Y. . . .

Paul J. Steen is the new general manager of KPBS-TV and KPBS-FM, public stations of San Diego State University, San Diego.

Stuart L. Bailey, one of the pioneers of electronic communications and a founder of the long-famed consulting firm of Jansky and Bailey, from which he retired in 1970, has accepted a position on the executive committee of the Cable Television Technical Advisory Committee (C-TAC).

Thomas H. Creighton III was appointed director of sales and marketing for Broadcast Electronics, Inc. . . . **Neal Keehn** joined Byron Motion Pictures, Washington, D.C., as vice president for sales and services . . .

Paul Wimmer was elected president; **O. L. Presholdt**, vice president; **C. E. Smith**, Secretary; and **D. G. Everist**, treasurer, of Association of Federal Communications Consulting Engineers.

Bill Schiller was elected president of the California Community Television Association, in Sacramento, Ca. . . .

William S. Harmon is director of marketing for CPAC-Profit Recovery Systems, Leicester, N.Y. . . .

Chuck Kunze was named chief engineer of WCCO Radio, Minneapolis-St. Paul.

William J. Ryan, vice president of Palmer Broadcasting and general manager of the radio-TV center in Naples, Florida, was elected president of the Florida Cable Television Association . . . **Howard M. McCartney** became studio supervisor at KOLO-TV, Reno, Nevada; he had been transmitter supervisor at Univ. of Missouri's KOMU-TV.

Sanford Sussman was appointed vice president and general manager of a new division of Cerro Corp., Cerro Communication Products, taking over manufacture of the company's CATV products . . . **Mary K. White** became national accounts sales representative, a new position, for the CATV operations of GTE Sylvania in El Paso, Texas.

Homer Hull became national sales manager for the Scully/Metrotech divisions of Dictaphone Corp., a new position . . . **Curt Pierce**, formerly director of engineering for NBC in Chicago, joined Broadcast Communications (WEAW/WOJO/KMO) as vice president, special projects.

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