

BME

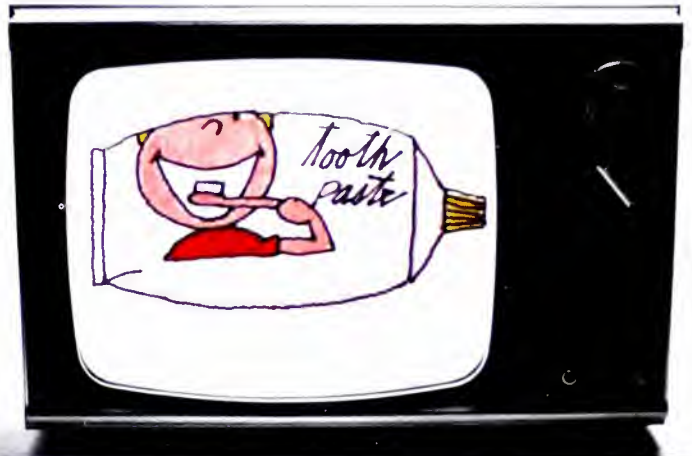
BROADCAST MANAGEMENT ENGINEERING

OFFICE: UNIVERSITY
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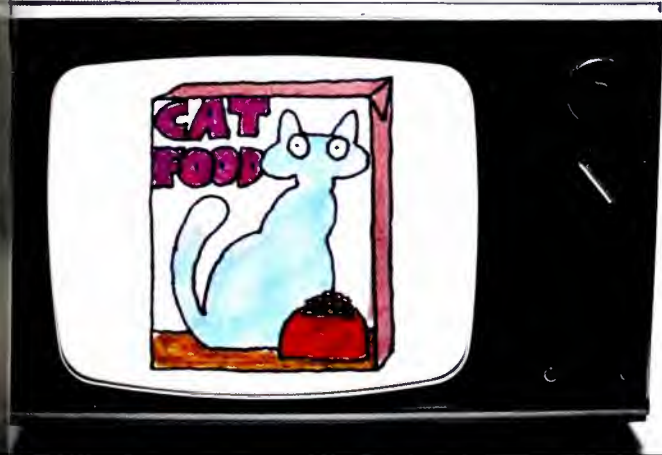
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9:28:00 sold



9:28:30 sold



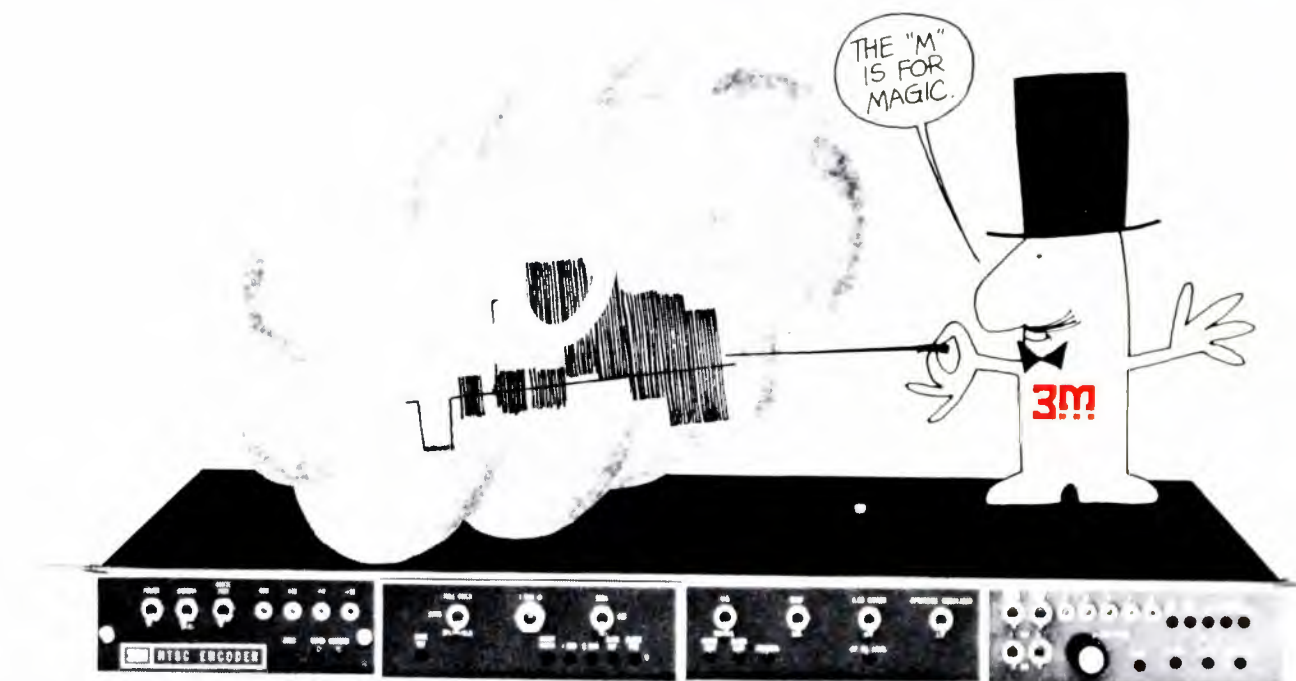
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Its luminance enhancement circuit increases the resolution of 3-channel cameras, improves the color fidelity of 4-channel cameras, and provides automatic green channel luminance when switching to monochrome.

And maybe best of all, its price is lower than you'd expect.

As we said, like nothing you've ever seen before, so why not let us show you? Ask for a demonstration. There'll be no hocus pocus, no mumbo jumbo—we let the 3M color video encoder speak for itself.

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VIDEO PRODUCTS

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If you are planning a broadband communications switching and distribution system you should talk to DYN AIR.

That's right. DYN AIR specializes in the switching and distribution of broadband signals to 100 MHz. Our 70-MHz computer-controlled microwave IF switching system distributes television and other information to all major universities in Indiana . . . and several other installations are now being completed with similar equipment.

Large DYN AIR video switchers, some with bandwidths to 50 MHz, are being used to route information from orbiting satellites, Mars and Moon probes and a variety of other aerospace functions. Our standard video and audio switchers have been used for years in commercial, industrial and educational television. And most of our installations are based upon off-the-shelf equipment.

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Shouldn't you talk to DYN AIR? Give us a call today. Or if you prefer, drop us a note and we'll send literature.

DYN AIR ELECTRONICS, INC.

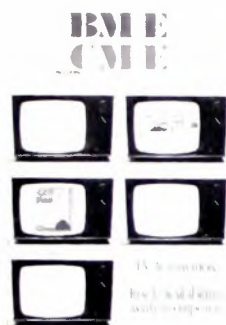
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PHONE (714) 582-9211

DYN AIR

Circle 100 on Reader Service Card

AUGUST 1973/VOLUME 9/NUMBER 8



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BROADBAND INFORMATION SERVICES, INC.
274 Madison Ave.
New York, N. Y. 10016
212-685-5320

Editor
James A. Lippke

Associate Editor
Robln Lanier

Contributing Editor
M. L. H. Smith

Assistant Editor
A. E. Gehlhaar


Editorial Assistant
Alexandra N. Mills

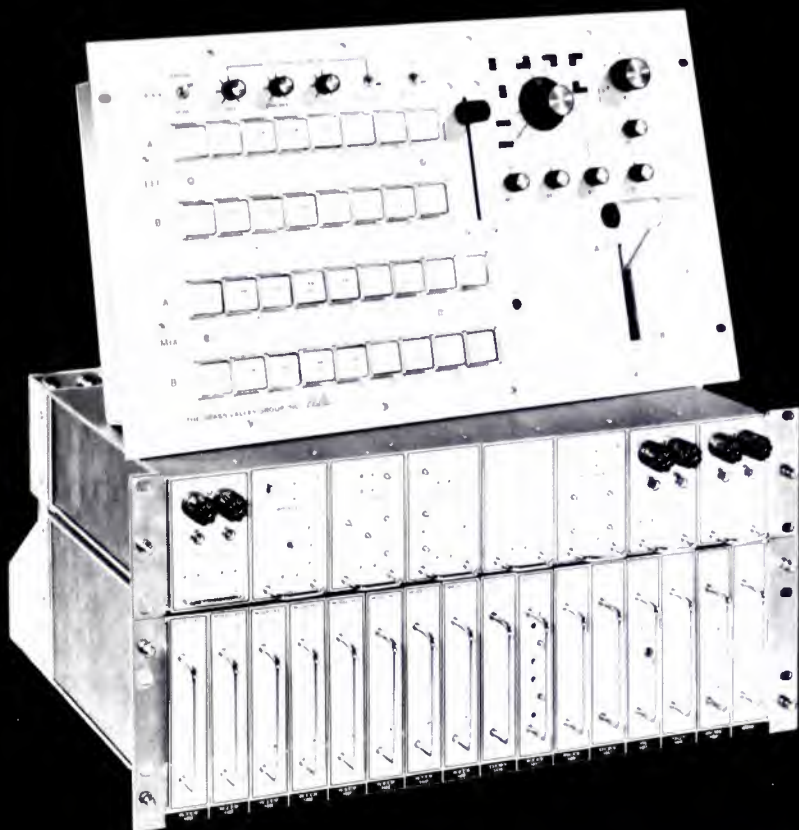
Art Director
Gus Sauter

Production Manager
Arline G. Jacobs

FCC Counsel
Pittman Lovett Ford
Hennessey and White

Advertising Director
Charles C. Lenz Jr.

 **BM/E, BROADCAST MANAGEMENT/ENGINEERING**, is published monthly by Broadband Information Services, Inc. All notices pertaining to undeliverable mail or subscriptions should be addressed to 274 Madison Ave., New York, N.Y. 10016. BM/E is circulated without charge to those responsible for station operation and for specifying and authorizing the purchase of equipment used in broadcast facilities. These facilities include AM, FM, and TV broadcast stations; CATV systems; ETV stations; networks and studios; audio and video recording studios; consultants, etc. Subscription prices to others: \$15.00 one year, \$25.00 two. Copyright © 1973 by Broadband Information Services, Inc., New York City. Controlled Circulation postage paid at East Stroudsburg, Penna.



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BROADCAST INDUSTRY NEWS

NAB Asks Anti-Siphon Rule For All Non-Broadcasters

The National Association of Broadcasters has urged the Federal Communications Commission to apply a single anti-siphoning rule against all non-broadcast systems that deliver programs to the home for a fee. The objective, said the NAB, is to prevent the charging of home subscribers for programs they now see free on broadcast TV, not only through cable systems (already covered by an anti-siphoning rule), but also by other delivery methods now in development: microwave, telephone line, etc. NAB did not ask restriction on pay-programs for hotels and other "transient" areas.

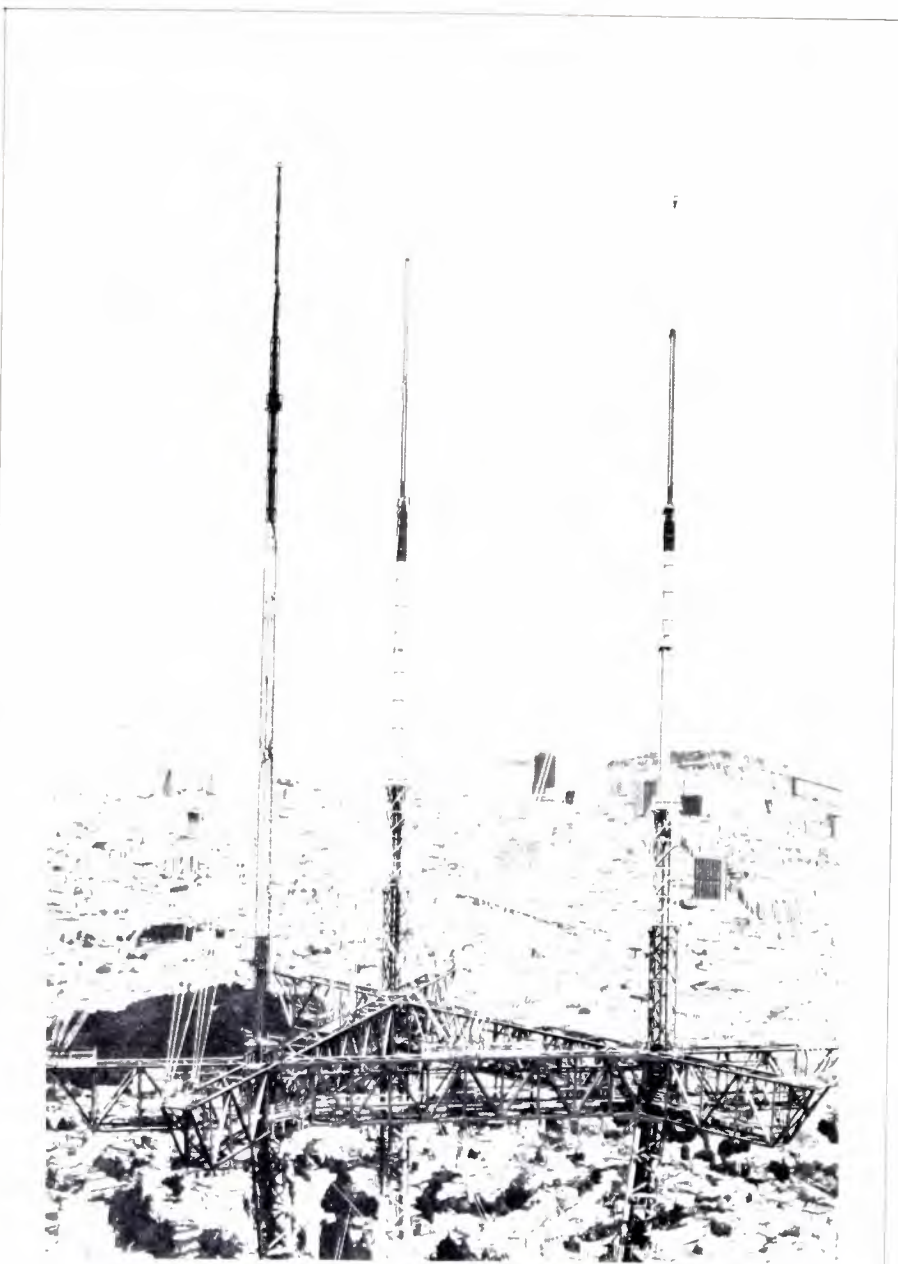
Supreme Court Will Rule On FCC Cable Fee Authority

In response to a plea by the National Cable Television Association, the U.S. Supreme Court has agreed to rule on the authority of the FCC to impose annual fees on cable television operators. The decision will come in a review of a Court of Appeals ruling that the FCC could impose an annual fee of \$.30 per subscriber on all cable systems, as a means of recovering FCC operating costs.

TheatreVisioN Pay Cable Will Expand To Six States

Chairman Joseph Freidman, of Chromalloy American, said that the affiliate TheatreVisioN, pay-cable system, had signed with cable operators in six states—Florida, Michigan, Missouri, New Mexico, Pennsylvania and Texas—with a total of 170,000 subscribers. Dore Schary, president of TheatreVisioN, opens marketing efforts in the six states in August, and first installations are expected in November.

continued on page 8



San Francisco's new eight-station TV broadcasting tower, as viewed from a helicopter, is 977 feet high and rises 1811 feet above sea level on its Mt. Sutro site. The antenna system, which was designed by RCA, is configured in three 210-foot stacks rising above the triangular platform. The tower and its antennas, electronic equipment, and transmitter buildings, cost more than \$12 million.

Now...you can convert your TK42/43 camera to use Plumbicons* in the chroma channels!

Eight years ago, the Plumbicon TV color camera revolutionized the broadcast industry with its clean, sharp, noise-free images, and its color rendition so obviously superior to that of the TK42/43 cameras it superseded.

But not all of the TK42/43's in use in 1965 have been replaced. There are still many studios where TK42/43's are the workhorses of color TV.

If yours is one of those studios, and you're not considering a new camera, we offer you the opportunity to convert your TK42/43 to use Plumbicon tubes in its chroma channels

instead of vidicons and enjoy performance at wholly new levels, including:

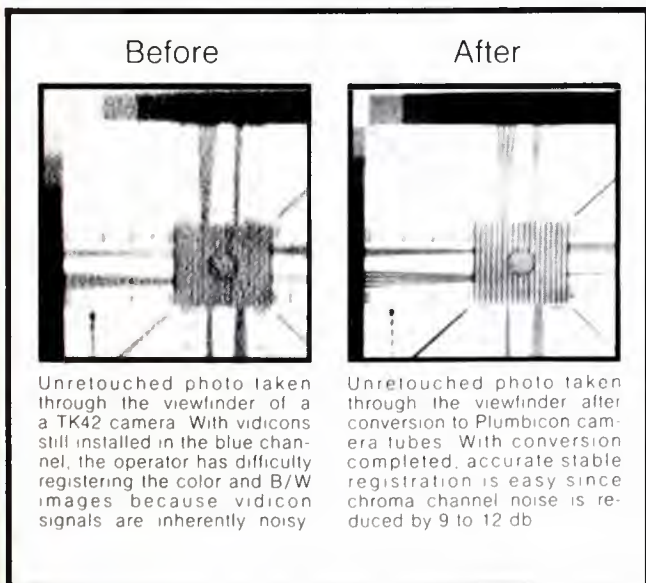
- 9 to 12 dB noise reduction in chroma channels
- Easier, more accurate, registration
- No more chroma channel lag
- Clean color keying
- Shorter black-balance time
- Faster, easier, gamma tracking
- No more need for faceplate temperature control

But the big difference will be the difference you see on your monitor screens... a difference immediately obvious to your viewers and to your advertisers.

We make the conversion with a kit developed for us by the Electro-Optical Devices Division of Amperex Electronic Corporation, manufacturer of the Plumbicon color TV camera pickup tubes. We remove the three chroma channel vidicons from your camera and replace them with three new Amperex Plumbicon tubes and yoke assemblies; we add a new Amperex interconnect board and we modify the deflection modules and the preamplifier to match the characteristics of the Plumbicons.

The conversion takes about one working day... at your studio. The complete cost, in continental U.S.A., is only \$7,860.

For further details, write: Rank Precision Industries, Inc., 260 N. Route 303, West Nyack, New York 10994. Attention: Nick Glade, Service Manager. Telephone: 914-358-4450.



Unretouched photo taken through the viewfinder of a TK42 camera. With vidicons still installed in the blue channel, the operator has difficulty registering the color and B/W images because vidicon signals are inherently noisy.

Unretouched photo taken through the viewfinder after conversion to Plumbicon camera tubes. With conversion completed, accurate stable registration is easy since chroma channel noise is reduced by 9 to 12 db.

*Registered trademark of N. V. Philips of Holland



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NEWS

marketing efforts in the six states in August, and first installations are expected in November.

American Satellite Signs For Channels on Canadian "Bird"

The American Satellite Corporation announced agreement with Telesat Canada for use of up to three full-time and one part-time transponder circuits on the Canadian Anik-2 satellite, for ASC's commercial communications channels. Voice, TV and data service to American customers is slated to begin in fall, with earth stations ready in New York, Chicago, Dallas and Los Angeles, and additional earth stations projected.

Public Radio Operators Form National Association

Representatives of the nation's public radio stations voted at a May meeting to form a national body, the first all-radio organization in public broadcasting. A nine-member interim board, with Hugh Cordier of National Educational Radio as chairman, will develop the organization's structure and name.

Xtra-Vision Pay TV Starts on Carrolltown, Penna., Cable

Another pay-cable system, Xtra-Vision, was slated at press time for a July 9 turn-on date on the Cambria TV Distribution Co. cable system in Carrolltown, Penna. The multi-channel service will be available to the 5100 subscribers of Cambria, with both movies and regularly scheduled non-movie entertainment.

Hughes TV Network Has \$12 Million Sales, Last Half '73

The Hughes Television Network, enlarging its programming to include prime-time entertainment and documentaries as well as sports, announced sales in excess of \$12 million for the last half of 1973, a record. Hughes, which operates by "borrowing" stations for specific broadcasts, has benefitted from the FCC prime-time access rule and also by release of a number of documentaries and specials. Strong

continued on page 10

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Our rigorous system test routine is one of the reasons you should **talk to Farinon** before you buy Microwave.



The equipment shown here in system test is part of a microwave network which extends CPB programming from Sprague, Washington to ETV stations in Pullman, Washington and Moscow, Idaho.

Every Farinon Microwave System goes through a complete operational test before our Vice President in charge of Quality and Customer Service will let it ship. Everything possible is done at the factory to assure that each system will work as intended when the user turns it on.

Farinon has learned how to test solid-state microwave by repeating the process on thousands of terminals since the first solid-state equipment was produced in 1965. You'll find Farinon equipment furnishing reliable video, voice and data circuits throughout the United States and Canada, and in more than 50 other countries. Any user will tell you about the in-

herent reliability of Farinon equipment, and about our fast response when help is needed to keep a system operating.

You can use Farinon Type SS12000 Microwave for video in the 12.7 to 13.25 GHz CARS, STL and intercity relay bands. This system is similar to those used for video by common carriers in the 4 GHz, 6 GHz and 11 GHz bands.

If you need microwave for importing distant signals, for studio to head-end links, or for any other purpose, you should see what Farinon can do for you before you buy. Call John Bartelme at (415) 593-8491 to get equipment details or engineering help.

Farinon Electric,
935 Washington St.,
San Carlos, California 94070
(415) 593-8491

Farinon

Circle 105 on Reader Service Card

NEWS

emphasis on production of national sports telecasts continues.

FCC Emphasizes Rule On Source of Material

The Federal Communications Commission has issued a strong reminder to broadcast stations that pre-recorded material furnished to a station by government agencies or officials, candidates, businesses,

trade associations, non-profit groups, etc., must be identified as to source when it is put on the air. Stating or implying that such material originated with the station's own news staff, or any other misrepresentation as to source, will raise questions as to the qualifications of the licensee, said the FCC statement.

Anixter To Distribute Sony Cassettes To CATV

Anixter Brothers, Inc. has a nationwide franchise to sell Sony video-

cassette equipment for use by CATV systems. Sales will be through Anixter-Pruzan, affiliate giving national service to the cable industry.

FCC Sees Problems With Profits Tax, Other Proposals

The FCC has expressed strong doubts as to the desirability, even the legality, of proposals advanced in Congress for a tax on broadcast profits, for the auctioning of licenses to the highest bidder, and for the abolishment of the Fairness Doctrine. Chairman Burch, in a letter to Senator William Proxmire, said that fixing a profits baseline would be difficult or impossible, and that any tax was a Congressional and not an FCC responsibility. He pointed out that auctioning licenses to the highest bidder would, in effect, take spectrum management away from the FCC, ending "reasoned decision making by an expert body accountable for its actions to Congress. Commissioner Wiley said that the Fairness Doctrine carried out an express mandate of Congress, and that broadcasting could not be on the same first amendment basis as print media as long as there is a scarcity of channels which restricts access to the public.

Three Station Groups To Produce Children's Programs

A consortium including Capital Cities Communications, Inc., Metromedia Television, and Storer Broadcasting Company, all multi-station operators, will create, finance and produce a series of television programs for children, initially aimed at the 6-11 year-old viewer. The programs will be available to stations both inside and outside the three groups, according to the announcement from wxix, Metromedia station in Cincinnati.

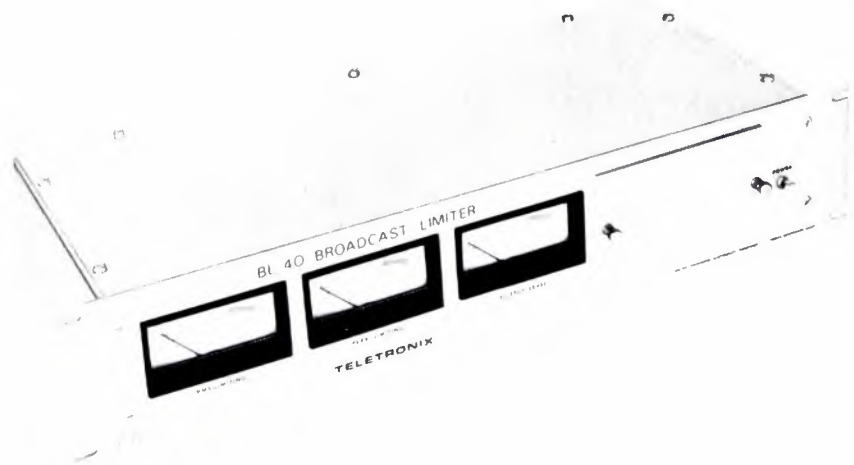
Hotel Pay-Movies No Drain on Theatres, Says Wometco

Wometco Enterprises, which has joined with TransWorld Communications in a Miami trial of hotel pay-movies, and also operates more than 100 movie theatres, has concluded that the hotel service is not stealing people from the theatres. Mitchell Wolfson, president of Wometco, said: "If these early results are a valid barometer, we will be adding an entire new market for motion pictures rather than draining the

continued on page 12

MODUlimiter...

you can hear the difference!



The Urei Model BL-40 Broadcast Limiter is more than a compression limiter...Modulimiter provides independent adjustment of RMS gain and peak limiting, without clipping! The result allows continuously variable, asymmetrical limiting to maximize effective power for your particular program format.

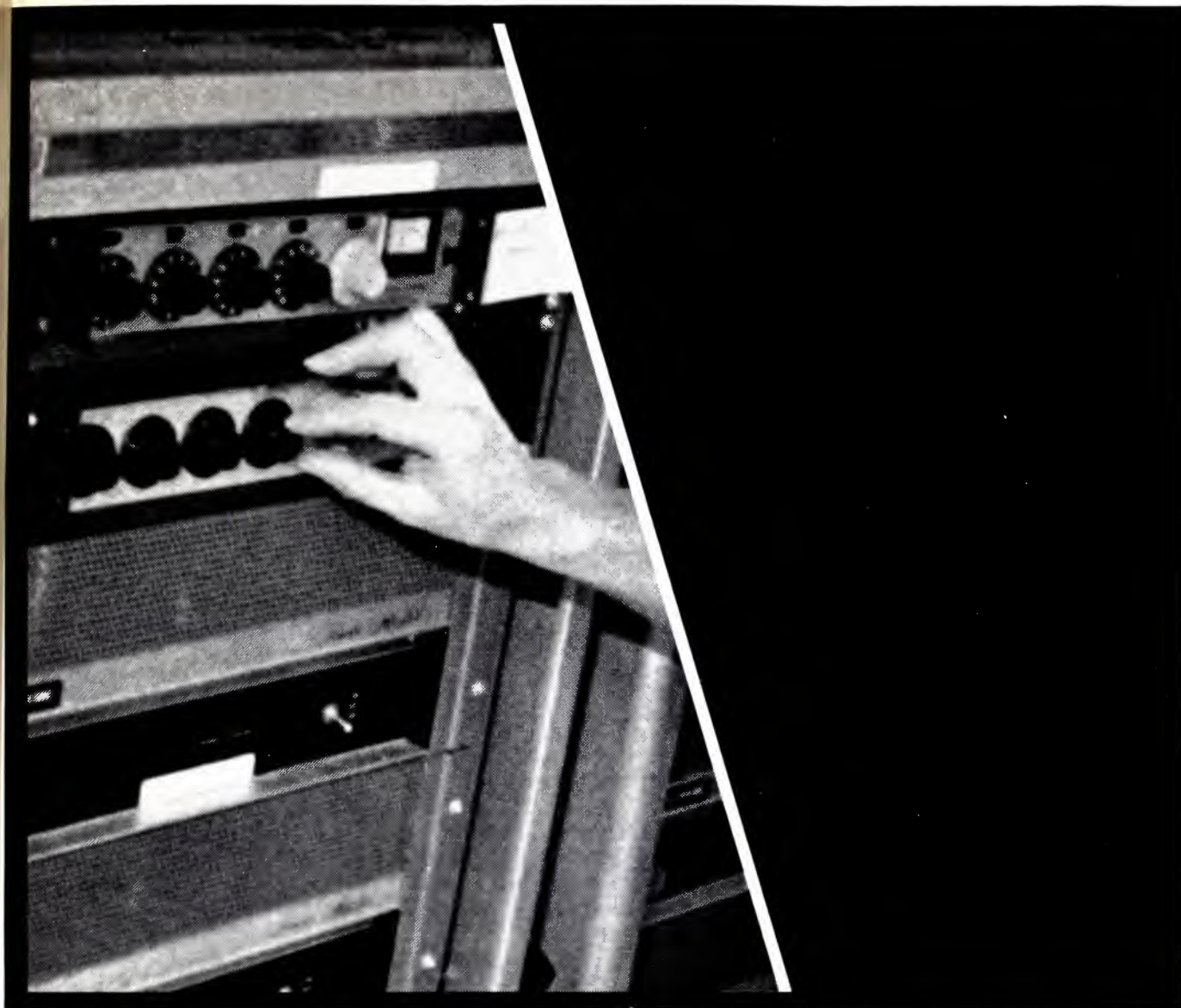
Modulimiter features low noise, low distortion integrated circuitry and has full function metering. Output meter can be calibrated to match any transmitter input. All critical adjustments are located behind a security panel and a test switch for proof-of-performance is provided.

Modulimiter is another product for the Broadcast Industry, distributed by Pacific Recorders...the Total Equipment Supplier.



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Coordinate sound reinforcement & live TV for \$455.40



Problem: An in-studio musical event with input signals from various sources — and you have to make sure that the combined output meets *both* the special requirements of the house sound reinforcement system and a live TV station feed. Sounds tough, but Shure cuts it down to size with a pair of M67 Mixers, stacked with our new M610 Feedback Controller. The M67's provide up to eight microphone inputs, each individually balanced, adjusted for signal level, and ready to run "flat" into the broadcast line. The combined output also runs into the M610 Feedback Controller *before* it reaches the PA system, where the M610's eight slide-switch filters plus high and low frequency roll-off controls provide the house system with a "room-tailored" signal, shaped for optimum feedback control and maximum system gain! Result: good sound in the room . . . and on the air.

* More to come . . . other ingenious sound control centers will be discussed in future issues.

Shure Brothers Inc.
222 Hartrey Ave., Evanston, Ill. 60204
In Canada, A. C. Simmonds & Sons Ltd.



Circle 107 on Reader Service Card

NEWS

current one." He pointed out that the typical hotel guest is around 42 years old and has upper-middle income, a class conspicuously missing from present movie theatre audiences.

Code For Children's Ads Is Adopted by NAB Board

The Television Code Review Board of the NAB adopted in June a statement of principles covering ad-

vertisements directed to children. Among the principles are: material to be non-exploitative in manner, style and tone; information on the characteristics and functional aspects of a product/service to be disclosed; edibles to be presented in accord with commonly accepted principles of good eating; promised benefits in strength, growth, prowess must reflect documented evidence; no appeals that state or imply a child will fail with peers without a product, or succeed with it; no frightening material; no appeals to violent or dangerous behavior.

KPMC Joins CBS Radio Network

Sherril W. Taylor, vice president of CBS Radio Division for Affiliate Relations, announced that KPMC, Bakersfield, California, has joined the CBS radio network. KPMC is the eighth station to sign on as an affiliate in the past two months, raising the number of network stations to 250. Other new affiliates are WEMP, Milwaukee; WWSW, Pittsburgh; WSIX, Nashville; KIXI, Seattle; WEST, Easton, Pa.; KGNC, Amarillo, Tex., and WMEL, Melbourne, Fla.

RCA Supplies Transmitting Systems for Canadian Network

Broadcast transmitting systems for the first phase of Canada's new Global Television network will be supplied by RCA. Three VHF transmitters and six antenna systems valued at \$780,000 are included in the order received by RCA Limited, Canada.

Global Television is establishing a grid of TV transmitter facilities strategically located for overlapping coverage of most major Southern Ontario urban centers, as well as broadcast service to less dense areas. The transmitters and Global's new studio complex in Toronto will be interconnected by two-way microwave. The transmitters will be automated and remotely controlled. Testing of the transmission system is scheduled for the end of November, with January 1, 1974 planned as the on-air date.

WDHO-TV First to Install New ABTO Color TV System

The first broadcast quality projector equipped with the optical components of the ABTO System has been installed at WDHO-TV, Toledo, Ohio, an affiliate of the ABC Television Network.

The ABTO System is based on the principle of Abtography which codes color information onto conventional 16mm black-and-white film through use of a glass micro-filter in the taking cameras. The information is optically decoded by ABTO-converted projectors. The result is color projection.

WDHO-TV has completed over four months of daily news operation using prototype equipment. Arthur M. Dorfner, president of WDHO-TV, expects significant cost savings to allow broader color coverage of local news.

BE

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Space Setter

\$469



Three/70™ Cartridge Playback Deck

Meet our midget. And don't be fooled by its modest exterior. The new Spotmaster® Three/70 packs the performance of its big brother—the incomparable Ten/70—into a pint-sized package at a pint-sized price.

Standard features include the Ten/70's direct drive synchronous motor, all silicon solid state circuitry, high output (+8 dbm) and plug-in modular construction. Deck operation is pushbutton-quick, with instantaneous response.

Now look what happens when you put a trio of Three/70s together. They fit side by side in a single rack mount. The whole thing takes up just 7" of rack space.



Three/70s accept all Type A cartridges, playing up to 10½ minutes at 7½ ips. Options include 3¾ ips operation, as well as 150 Hz and 8 kHz secondary and tertiary cue tones (to augment the 1,000 Hz primary stop/re-cue tone).

Good things do come in small packages. Learn more about the Three/70—contact us today.

BROADCAST ELECTRONICS, INC.

A Filmways Company

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TWX 710-825-0432

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AUGUST, 1973—BM/E

www.americanradiohistory.com

REB PRIME-TIME

The automatic TK-45 Color Camera. Why we made the best even better.

Probably the question we're asked most often about our new TK-45 Color Camera in relation to the TK-44 is "Why tamper with a good thing?"

This usually comes from people who have worked with one or more of the approximately 700 44's over the years and have come to rely on their proven performance and stability.

Our answer is "To make it better." Since the TK-44A was introduced in 1969, it has undergone a continuing evolution, with new features and design improvements incorporated each year.

So, in coming up with the TK-45, we had our work cut out for us:

Add more automatic features without compromising the well-known stability and performance capability of the TK-44.

What happened is that the new features actually contribute to the operational simplicity of the camera while enhancing the quality of the pictures produced.

In effect, we designed *in* the new features, while designing *out* complexity—by utilizing new techniques, more solid state devices, improved modular packaging concepts.

Take a look inside the TK-45's camera control unit and you'll see a big difference: fewer interconnecting cables; far fewer set-up controls, and not nearly as many modules. But, in

this case, much less adds up to *much more*... in convenience, operational simplicity, and performance.

In essence, the TK-45's stability results from basic design simplicity, like our use of the RGB system. Simple to understand, operate and maintain.

As an example of what this new configuration can do, imagine a ball



The TK-45 made its first public appearance at the 1973 NAB Convention.

game that runs from the afternoon into the evening. And the wide variety of lighting conditions and color temperatures encountered.

Now suppose the sun is setting and the lights come on. Instantly, the color temperature of the scene is radically changed.

And instantly is how the TK-45 responds. The cameraman zeroes in on any white portion of the scene, presses a button, and white balance

is automatically restored. Picture quality remains excellent. And true to life.

Black balance is set even more easily—just cap the lens.

All the while, the automatic iris is responding to the changing light levels—such as when a cloud obscures the sun or in panning from the field to the dugout.

And, thanks to automatic centering, the picture comes into precise registration at the touch of a button. So you're ready for instant action, even during the normal camera warm-up time, when the pickup tubes are varying.

And of course, the 45 has all the advanced features the TK-44 has, including Scene Contrast Compression to bring out shadow details in high-contrast scenes (another natural for baseball, by the way). And all of the 44's low-light capability.

In sports or commercial or program production, both camera stability and operational simplicity can now almost be taken for granted, so production people can pay attention to the more creative aspects of their work: shooting angles, precise focus, composition, intercutting, etc.

And when less time has to be devoted to the camera, more time can be devoted to turning out a quality product.

It's that simple. To see for yourself, see your RCA representative.

Broadcasters discover extra values with a TCR-100/TR-60 package.

When purchasing a TCR-100 Cart Machine, many broadcasters take advantage of our extra-value package. Instead of the separate, self-contained Signal Processing Unit, they order a TR-60 reel-to-reel recorder. With the TR-60 as "master" and the Cart Machine as "slave", they get a combination that can do a lot more than the two machines can do separately.

The TCR-100 can time-share the signal processing circuitry of the TR-60, and the station gets an additional reel-to-reel VTR for its work force.

In addition to a "station-break machine", stations are using the Combo as a side-by-side, miniature tape-processing center for production and delayed broadcast purposes.

Automatic cueing and switching are possible between the two machines without adding switching equipment, resulting in a clean vertical interval switch from one ma-

chine to the other. Separate, individual operation is possible too, of course.

So for a station that programs a lot of syndicated material, automatic on-air playback is easy. Properly cued program material goes on the TR-60, commercials on the Cart. From then on, everything happens automatically.

The TR-60 is placed in the "Auto Start" mode, and the machines are then able to cue one another for playback. For example, ten seconds before the end of the last event of a cart sequence, a warning signal is sent to the TR-60, which puts it in the "Play" mode. It automatically goes on air at the end of the cart sequence, provided it has been cued up at ten seconds prior to the switch and placed in "Standby".

The master TR-60 cues the Cart Machine in a similar manner. A cue mark prerecorded at two seconds before the end of play on the reel ma-

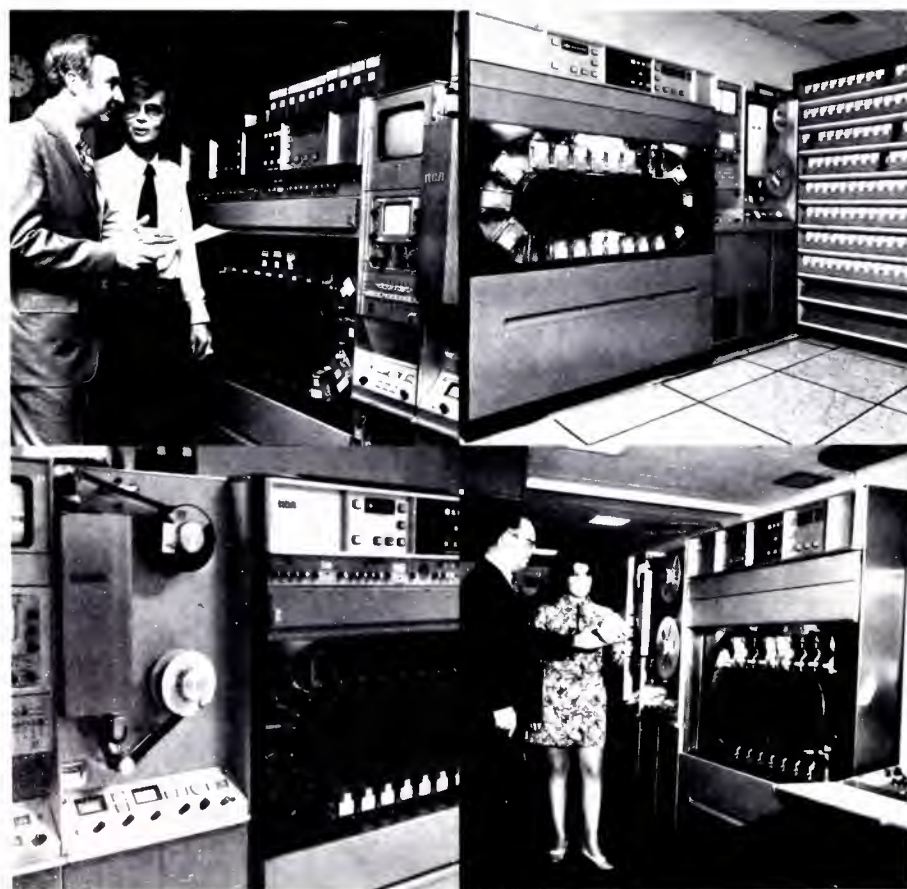
chine cues the Cart to go on air two seconds later. The master recorder may then stop or continue to play, at the option of the user.

The Combo also permits A-to-B dubs on the Cart Machine with external editing of the signal. Start and end timing of the dubbed tape are the same as the cartridge being copied.

The Cart Machine has built a reputation on releasing reel-to-reel recorders for production work, but in combination with the TR-60, it really hits new heights.

In delayed broadcast, production, or news segment dubbing—from network, from the studio, from film, from reel-to-reel to Cart or vice versa—the "Combo" is totally flexible.

Ask your RCA representative to explain the details of this extra-flexible, extra-value package...the TCR-100 and the TR-60.



A gallery of TCR-100/TR-60 owners.

Making events flow smoothly at the station break and during dubbing sessions are TCR-100/TR-60 VTR systems at these stations (clockwise from upper left): KIRO-TV, Seattle, Wash.; KVRN-TV, Houston, Tex.; KTSM-TV, El Paso, Tex.; and WUTV, Buffalo, N. Y.

TCR-100 Box Score

Number delivered	121
Number of commercials broadcast	3,749,000*
Present rate (commercials/day)	15,750*
Man hours saved	155,167*

*Estimate

Recent Deliveries

ABC, Network, New York, N. Y.	WECT-TV, Wilmington, N. C.
KATC-TV, Lafayette, La.	WJAC-TV, Johnstown, Pa.
KOAA-TV, Pueblo, Colo.	WKYC-TV, Cleveland, O.
WBOC-TV, Salisbury, Md.	WLS-TV, Chicago, Ill.
NBC, Network, Burbank, Calif.	WMAR-TV, Baltimore, Md.
NBC, Network, New York, N. Y.	WTEV-TV, New Bedford, Mass.
	WTOG-TV, St. Petersburg, Fla. (2)

Our Pressurized Traveling Wave Antenna. The pollution/corrosion solution.

If you're in an area where natural or industrial corrosion is a problem and you're considering a new antenna, you might like to know about one station's experience.

San Diego's salty air and nightly fogs gave KFMB-TV's Superturmountable Antenna a daily corrosive bath for 18 years. The antenna performed well, but the hostile environment took its toll. The moist salt air had an electrolytic effect on the antenna's bronze and aluminum fittings.

To make preventive maintenance easier, the antenna was split so that six of its twelve bays would be operational at all times. And to fight off corrosion, KFMB-TV engineers had settled on a pliable vinyl plastic compound and taping.

But after 18 years of continuous operation, antenna components were deteriorating and a new antenna was needed.

The antenna choice was narrowed to either a radome-covered antenna, or the new RCA Pressurized Traveling Wave Antenna.

A radome antenna with increased windloading would have required a new tower. So KFMB Manager of Engineering Charlie Abel took a closer look at the Traveling Wave. In addition to a proven, high performance antenna, he saw some obvious design and construction advantages to solve his environmental problems:

A corrosion-resistant hot-dip galvanized outer tube surrounding a copper inner conductor with irradiated

aluminum coupling probes and stainless steel hardware.

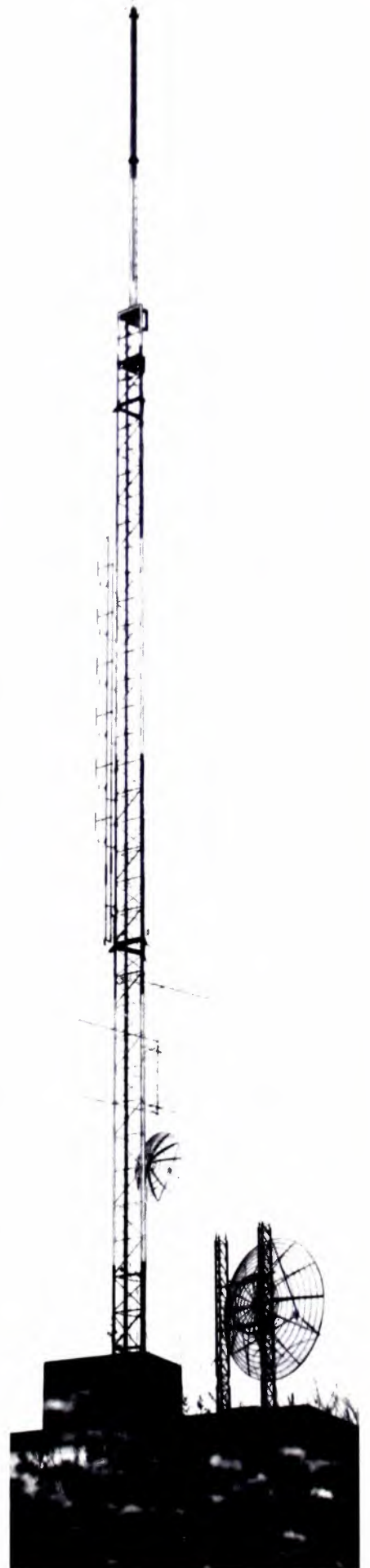
The antenna is fitted with eight "slot covers", four on the upper half and four on the lower half, that extend over the radiating slots of the antenna. The slot covers are fabricated from a heavy-duty polyethylene material that is resistant to the ultraviolet rays of the sun. The antenna is kept internally pressurized with dehydrated air at 3-4 PSI. So there's no moisture to promote electrolytic action.

Along with the pressurized TW Antenna, KFMB updated their entire transmitting facility, adding a TT-50FH parallel 50 kW Transmitter and an Opto-Switcher. With system optimization, a lower VSWR is achieved and with it, better color transmission.

Mr. Abel notes that although no specific measurements have been made, the new transmitter/antenna plant has resulted in a noticeably improved signal, with outlying areas reporting a stronger, sharper picture.

KFMB-TV has the first pressurized Traveling Wave antenna in the U.S. Since this antenna is well prepared to resist the attack of both natural and industrial corrodents, we expect that other broadcasters will be utilizing pressurized antennas soon.

If you have a similar problem, your RCA representative will be happy to consult with you.





Sprucing up for a date with Emmy. Technicians help ready Pacific Video Industries' new van for duty at the Academy of Television Arts and Sciences' Emmy Awards telecast—one of the many assignments being handled by this fully equipped mobile unit.

The 40-foot van carries three RCA TK-44B color cameras, two TR-70C highband video tape recorders, a complete video tape editing system, and a 16-track mastering quad mix-down audio system.

It is designed and equipped for electronic production of feature films. A major advantage of this technique is the ability to play back a scene immediately so it can be re-shot if necessary. This results in a significant saving in time and expense over conventional film-making methods. Still in its early stages, electronic moviemaking is expected to mushroom in the next few years.

When not in use for producing video film features, the Pacific Video van keeps busy with on-location taping of sports events, commercials and broadcast programming.

WTVS Mark X Headwheel joins RCA 1000 hour club.

After registering 1,150 hours, an RCA reworked Ampex Mark X headwheel panel at WTVS, Detroit has recently joined the 1,000 hour club. It was installed June, 1972.

Director of Engineering Ed Hendry notes that two of his three Ampex VTR's are now equipped with RCA rebuilt headwheel panels with Alfecon II material. The second headwheel is also approaching the 1,000 hour mark and will be joining the "club" soon. Ch. 56 also operates two TR-70C tape machines and has previously qualified for the 1,000 hour club with an RCA headwheel panel.



Products in the news.

RCA space research has resulted in the new **Type TPR-10 Portable Video Recorder**. It records color, studio-quality two-inch quad video tapes using two units—transport and electronics—which together fit into a space only about 11" high by 24" wide by 13" deep. This and the recorder's ruggedness make it ideal for almost any location assignment.



The TPR-10 can play back its 20-minute tapes in monochrome for immediate verification. Retakes are possible because full erase facilities are included. Tapes are also playable in full NTSC color on any quad recorder-reproducer meeting SMPTE standards.

Announcing the **TG-6 Color Sync Generator**. This self-contained, modular unit is designed primarily as a signal source sync generator, but also has the stability to operate as the primary timing standard for complex video installations.

The generator produces sync, blanking, H&V drive, burst flag and color subcarrier. Options include a line amplifier that duplicates each of these functions; a grating dot generator module; and a black burst module.



Control track phasing is the process of moving the relative position of the tape with respect to the video head to assure the passage of the head precisely over the prerecorded track.

This function has now been automated by the **Automatic Control Track Phasing Accessory** (MI-591713) which can be added to any TR-70C. The key feature of this accessory is the incorporation of a memory which stores the correct playback phase for the particular tape loaded on the machine.

The "cued" tape memory provides for complete lockup within the normal time specified, and additionally permits a "Time Lapse" check/reset capability which eliminates the degradation in system performance which would occur in a continuously operating mode.

For complete specifications and product details, check your RCA representative.

CCBA Plans Annual Convention

The Central Canada Broadcasters Association will hold its annual convention from October 21-23 at the Skyline Hotel, Toronto, Ontario. For information, write to: Bert Verwey, CCBA Engineering Section, c/o CKVR-TV, P.O. Box 519, Barrie, Ontario.

TelePrompTer Listed On New York Stock Exchange

TelePrompTer Corporation, the nation's largest cable television company, was recently listed on the New York Stock Exchange. The stock was assigned "TP" as its ticker symbol.

TPT President William J. Bresnan purchased the first 100 shares—the first trade of the day on the stock ticker tape. TelePrompTer has more than 14,000 shareholders owning 16,800,000 shares. The company operates 140 systems in 33 states and two Canadian provinces serving more than 818,000 subscribers.

Time-Life Films Available On Norelco VCR Video Cassettes

All titles in the Time-Life Films Inc. library are being made available in the Norelco VCR video cassette format.

Selections cover a vast range of topics such as "Time-Life Video Speed Reading System," narrated by Dick Cavett; the five-part "Effective Executive" series by Peter Drucker; an extensive list of sports titles on nearly every major individual and team sport; "Bernstein on Beethoven;" and a number of widely-acclaimed BBC productions including Alistair Cook's "America" TV series and "Civilisation" narrated by Lord Kenneth Clark.

New productions will be continually added to the list. Titles and price information may be obtained from Anthony J. Palms, Time-Life Multimedia, Time & Life Building, New York 10020.

Briefs

RCA has sold a TCR-100 videotape cartridge system to Westward Television, independent program producer in England . . . **Canon**

U.S.A. Inc. appointed Eclair Corporation exclusive U.S. distributor of Canon 16mm lenses in the Eclair CA-1 mount . . . **Marconi** sold three Mark VIII automatic color video cameras to the government of Qatar.

International Video Corporation has completed three new buildings for headquarters, engineering, and systems facilities, totalling 90,000 square feet, in Sunnyvale, California . . . **Poly-Tek Enterprises**, publicity firm, moved to larger quarters at 16661 Ventura Ave., Encino, Cal. . . **Microband Corporation of America** has received FCC authorization for MDS private TV service in New York City.

Goldmark Communications Corp. has given a non-exclusive license to Avtel Corp. of Glen Head, N.Y., to manufacture and market the Goldmark "Star-Pak" cable programming system, which uses video cassette players, plus a skew corrector developed by GCC . . . **Ampex Corp.** announced a five-year leasing agreement for about \$900,000 for supplying the Pennsylvania Public Television Network with ten VR-1200C VTRs and other items.

Oak Cable Communications, Ltd. is a new subsidiary formed by
continued from page 18

versatile and compact
easy-to-use,
consider the reverberating
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RV-10

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NEWS

Oak Industries to market Oak cable products in Canada . . . **FCC data** showed more than **six million cable subscribers** as of January 1, 1972 . . . "In Search of The Sun," 28½-minute travel film, is available free from the **Tucson, Arizona, Chamber of Commerce.**

Sony won an "Emmy" from the National Association of TV Arts and Sciences for the Trinitron tube.

. . . **Certron Corp.** has an agreement with **Autotape** of Rome, European tape product distributor, for marketing of Certron cassettes in most of Europe . . . **CBS Radio Network's** all-night news has brought in more than 40,000 letters of approval in a five-week span, a network announcement says.

C-Cor Electronics will supply **Cypress Valley Cable TV** with equipment, and the necessary services, to build about 117 miles of a cable system in Marshall, Texas . . . "The Stuntmen" is an Australian-produced documentary on movie stuntmen, showing how stunts are prepared and carried out: info from the Australian Overseas Trade Dept., 636 Fifth Avenue, New York City.

Warner Cable Corp. won the cable franchise for St. Louis Park, Minn., a suburb of the Twin Cities.

. . . **Corning International** has reached a tentative agreement with Samsung Electronics Co., Ltd. for manufacture of TV picture tube bulbs in Korea . . . **VidExpo 73**, Billboard-sponsored video equipment convention, has invited producers of industrial educational video programs to submit them for showing: address VidExpo, Billboard, 1 Astor Plaza, New York City.

Rupert Neve, Inc. will build a custom control console, with 40 inputs and quad, stereo, and mono output capability, for the new "Opry House" in Nashville . . . **Gates** has sold about \$1 million worth of broadcast transmitting equipment to the Wisconsin Educational Television and Educational Radio networks . . . **Motion Picture Laboratories** of Memphis has opened a new laboratory at 2517 South Blvd., Charlotte, N.C.

TelePrompTer of San Bernardino began tests in June of the pay-cable system developed by **Magnavox** . . . **The Practicing Law Institute** will run a Workshop at La Costa Hotel, Rancho La Costa, California, Au-

continued on page 59

Authorized AKAI video dealers sales & service

N.Y. Metro Area

FOR IMMEDIATE DEMONSTRATION CALL:

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- RIPLEY DISC.***
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- TECHNISPHERE CORP.**
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66 W. 48th St. 490-2411
12 Warren St. 227-5800
- THE CAMERA MART, INC.**
456 West 55th St. 757-6977
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Stillhouse Rd. RD#2 446-9008
- Paterson PROFESSIONAL A/V INC.**
344 Main St. 523-3333
- Trenton EWING INDUSTRIAL INC.**
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For other areas, contact your local dealer.

*Monochrome only

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AKAI Portable Color Recorder Preliminary spec:

- weight — 16¼ lbs.
- automatic editing
- sound dubbing
- 240 line resolution
- 12V battery or A.C.



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It's only a broadcast quality, portable COLOR camera that's priced under \$4000 and weighs less than 6 lbs.!

AKAI'S new CCS-1505 Portable Color Camera weighs only 5.8 lbs. yet offers professional studio quality costing thousands more in any other camera.

The specifications tell the story:

- Completely compatible with any U.S. TV system.
- Two video systems with separate Luminance and Chrominance channels.
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Chrominance—Better than 30:1
- 525 line scanning, 2 to 1 interlaced, locked chroma.
- Better than 300 line resolution.
- Built-in 8 to 1 zoom lens.
- Viewfinder—1.5" picture tube.
- Custom directional microphone.
- Servo controlled iris.
- Sensitivity control, 80 to 2,000 f.candles (without filter).
- AC or battery operated.
- Dimensions: 17 1/2" (H) x 12 3/4" x 12" (D) including lens and grip.

The performance of AKAI's new CCS-1505 color camera will make you wonder you see it as the perfect tool for on-camera shooting or as an ultimate studio camera. So, see for yourself... It's really no big thing!

From

AKAITM

The Innovators

AKAI America, Ltd./P.O. Box 55055,
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INTERPRETING THE **FCC** RULES & REGULATIONS

New Call Sign Rules

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

A broadcaster's call sign is his basic source of identification to the public. Often it is the key to his promotional efforts, exactly as a trademark or brand name is to other businessmen. Since the Federal Communications Commission has recently adopted new rules relating to the assignment of call letters (Section 1.550 of the Commission's Rules), it is appropriate to go over the call sign Rules in some detail.

The new Rules, adopted June 21, 1973, stem from a Notice of Proposed Rulemaking issued in 1967. The new Rules formalize and clarify previously existing Commission policies on call signs, while adding a major change in procedure to deal with the abuse of "trafficking" in call signs.

Call signs are intended to provide identification of the source of a signal. Their assignment arises from international agreements dividing the alphabet among nations, whence the familiar "W" and "K" of American broadcasting. The FCC has jurisdiction over call letter assignments to United States stations under the Communications Act.

Call signs are required by many types of stations and transmitters other than broadcast. The Commission allocated signs among a variety of users, assigning combinations of letters and numerals in varying order. These combinations generally identify the type of station, sometimes its geographic location as well. Non-broadcast signs usually include numerals, while broadcasters use only letters.

Originally both three- and four-letter calls were assigned to broadcasting, but the possible number of

three-letter calls, being much smaller, could not accommodate the growing industry. Three-letter calls are therefore no longer available, although existing calls have not been revoked. One instance in which calls have had to be changed was in compliance with the Commission's former policy limiting identical calls of commonly-owned stations to the same community.

The regulatory history of call letters has centered around clever attempts to exploit other broadcasters' calls, attempts which the Commission has tried to discourage. Two forms of this practice have existed: requests for identical signs recently relinquished by another broadcaster in the service area, and requests for confusingly similar signs. For example (hypothetically), powerful station WGDG is sold and changes its call; another station in the same area immediately requests the WGDG call. Or, while WGDG is in operation, a nearby station requests WGGD.

The Commission has had to deal with such proposals one-by-one as they arose, usually expressing its disapproval. Thus call letter policies have developed through the regulatory process in reaction to new abuses as they were recognized.

Many long-standing policies achieved the formal status of Rules only this June.

Available signs

For broadcasters, currently available signs are four-letter combinations beginning with "K" and

continued on page 22

Manual video correction is no longer necessary...



...so why do it?

The TEKTRONIX 1440 Automatic Video Corrector takes the work and the worry out of video signal quality control . . . with FULLY AUTOMATIC CORRECTION of overall video gain, black level, color saturation, burst phase and gain, and sync level.

The quality of your program signal will be stubbornly maintained by the TEKTRONIX 1440 Automatic Video Corrector. And, since signal distortions are automatically

corrected, your engineering people will be freed from the task of continuously readjusting controls.

Attempting to keep up with continuously varying conditions with manual correction is no longer necessary . . . so why do it?

The assurance of signal quality that comes from using the 1440 is something that can't be priced, but the 1440 costs just \$2450.

The VIR Signal is the reference used to assure signal quality.

Your local Tektronix Field Engineer can demonstrate how the 1440 and other VIRsatite products will work for you at incoming network feed, remote feeds, master switcher output, transmitter input and at other key points.

To receive a VIR Signal application note, use the reader service card or write:

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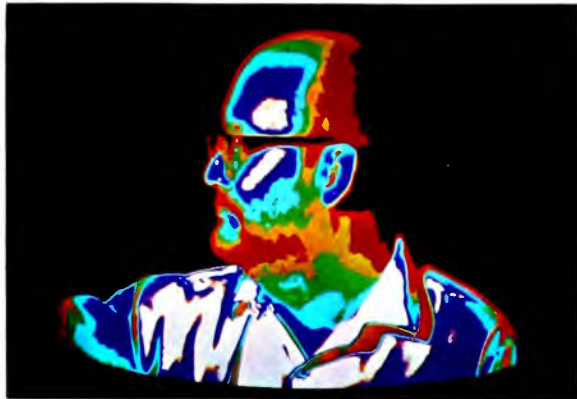
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For demonstration, Circle 113.

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FCC Rules & Regs

"W"—a theoretical 35,152 possible call signs. But several restrictions come into play.

First, Commission policy has long assigned "W" calls only east of the Mississippi River, "K" calls west of the Mississippi. This policy is written into the new Rules. *Second*, signs whose last three letters correspond with the initials of the President, a living former President, the United States or any of its departments or agencies, may not be used unless "suitable clearance" is obtained. *Third*, call signs which would not be in good taste may not be used. *Fourth*, and this is the requirement most likely to cause problems, possible confusion with other stations must be avoided.

The most obvious source of possible confusion is identity of call signs, which is forbidden except for certain stations under common control as noted below. Four-letter signs may already be in use by other broadcasters, by vessels in documentation, and by other nonbroadcast radio stations. A common source of woe is the checking of other broadcasters' signs only. Since no complete, up-to-date listing of all signs is readily available to the broadcaster, you should have your Washington counsel check with the Commission for an immediate ascertainment of the availability of a specific call sign.

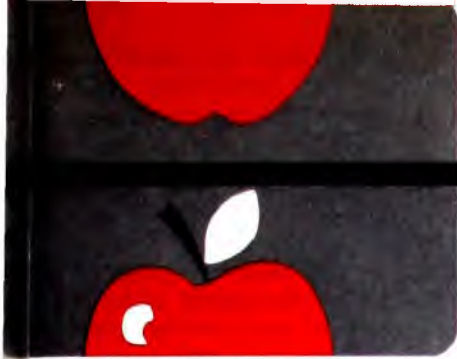
Further problems of possible confusion arise with call signs which, while not identical, are substantially similar to those in use by another station in the service area. (Often, of course, the similarity may be deliberate.) Such signs are most likely to be objected to by other licensees in the area. The Commission considers both phonetic and rhythmic similarities unacceptable. It decides the permissibility of proposed signs on the basis of "significant likelihood of public confusion" between stations.

Thus, numerous constraints limit the choice of a call sign for a new station, a station changing hands, or a station which merely wishes to change its "name."

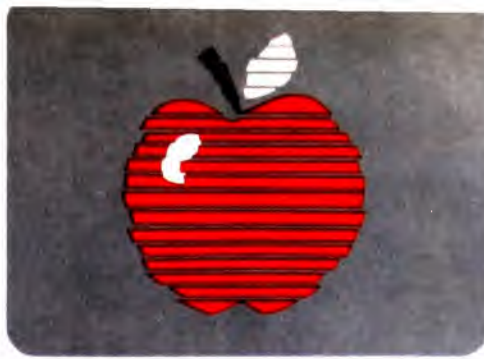
Obtaining a call sign

Once the proposed new call sign is chosen, Commission procedures are straightforward and reasonable. The same procedures apply to new permittees (who *must* request or be assigned call letters by the Commission on its own motion), to transfer applicants, and to those simply wishing to change. Application is made by letter to the Secretary of the Commission. As many as five proposed calls may be listed in order of preference. Notice must be given to all licensees or holders of construction permits for AM, FM, or TV stations whose communities are wholly or partially within a 35-mile radius of the main post office of the applicant's community of license. (These are the most likely sources of objections.) A public notice of receipt of the application is given by the Commission. Thirty days are allowed for filing objections. The validity of objections received is weighed, and the application is granted or denied. The Rules caution, rightly so, against reliance (particularly in the form of promotional expenditure) on securing a desired sign before notification that the request has been granted.

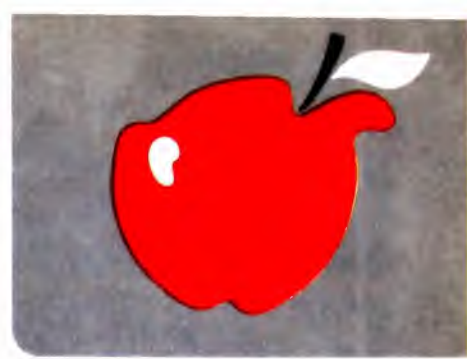
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PICTURE ROLLS



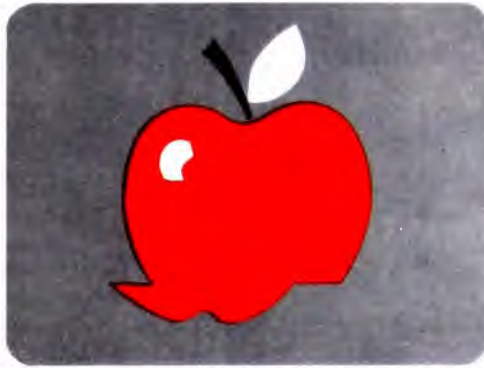
TEARING



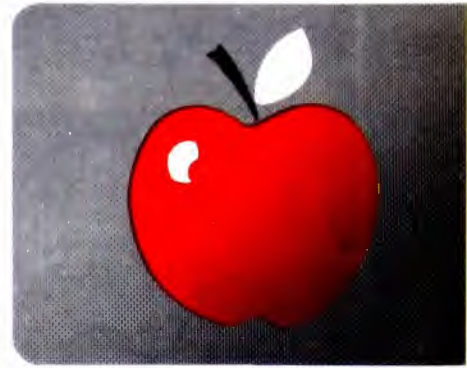
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HUE SHIFT



SKEW ERROR



COLOR STREAKING

How do you like them apples?

Like 'em or not, them apples show composite errors in video signals which accumulate every time you use VTR equipment. Errors caused by changing tape geometries, varying tape speeds, fluctuating head velocities. But how do you get rid of the bad apples?

With a standalone Delta Series TBC from Television Microtime.

Delta TBCs give you broadcast quality from every VTR — 2-inch "quads," 1-inch helicals, 3/4-inch cassettes, 1/2-inch EIAJ — in monochrome, or direct or heterodyne NTSC color. And you can get them with standalone or built-in velocity error correction.

Delta accessories convert V-lock VTRs to H-lock operation and add automatic skew tension correction to low cost cassette and EIAJ VTRs. Our new full line brochure, *Meet The Compatibles*, describes over 20 different models . . . covers time base errors, the causes and the solutions. Use the coupon to send for your free copy. Or send for our special tape demonstration. We're available anytime to tell you how we can help solve time base problems.

Dear Sir,

I want to know more about time base error correction and Delta Series TBCs.

- Please send me your new brochure: *Meet The Compatibles*.
- I would like to see your tape demonstration.
- I want to talk with one of your representatives. My application is:

Name _____

Title _____

Company _____

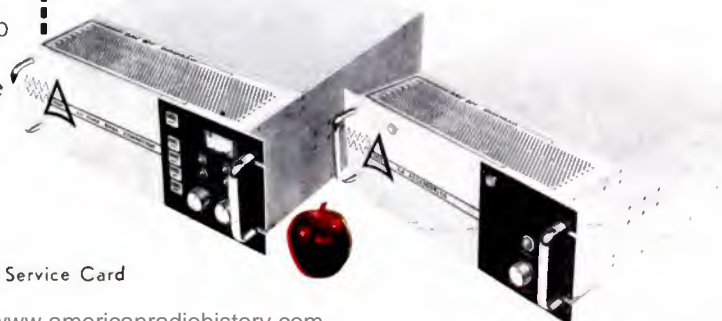
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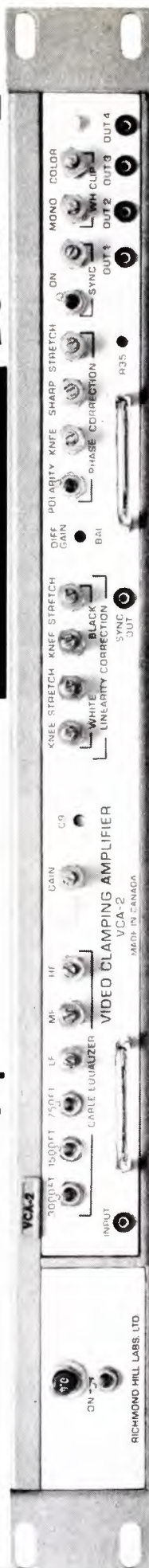
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Circle 116 on Reader Service Card



FCC Rules & Regs

Normally, receipt by the Commission of the first application for particular call letters blocks all later ones. (A modification of this basic "first-come-first-served" rule to deal with relinquished calls is described below). Call letters may *not* be reserved. New stations may not request calls until a construction permit is granted. Applicants for transfer or assignment may file for new calls concurrently with their transfer or assignment applications, although the new call will not become effective until completion of the transaction unless the transferor's written consent is obtained.

Addition or deletion of "-FM" or "-TV" suffixes to calls requires only a letter to the Secretary; no notice to other licensees is necessary to effect changes in the basic call.

These are the basic provisions; however, a number of special situations must also be discussed.

Commonly-controlled stations

An exception to the prohibition against identical calls is made for stations in different services under common control and licensed to the same or adjoining communities. In these cases, identical calls may be applied for and granted, as: WXXX, WXXX-FM, and WXXX-TV. Newly-acquired stations may be conformed to the calls of "sister" stations, while stations with conforming calls which are sold *must* give up the conforming call or be assigned new calls by the Commission on its own motion.

The common control requirement is *prima facie* met by 50% or greater common ownership. The requirement of location in the same or adjoining communities is meant literally. The Commission has considered and rejected suggestions to broaden the Rule's scope to embody an urbanized area or Standard Metropolitan Statistical Area concept.

The situation of common control also provides exceptions to two other Rules. Three-letter call signs are still available only to conform with those already held by "sister" stations. Similarly, "K" and "W" may cross the Mississippi for conforming purposes only.

Identical calls with other stations are available *only* when the conditions of geographic and ownership identity stated above are met.

Relinquishment and deletion of call signs

The principal change embodied in the new call sign Rules is the modification of the "first-come-first-served" rule in the case of relinquished or deleted call signs. The practice of "trafficking" in call signs was common because private arrangements with stations relinquishing their calls were the logical way for stations desiring the calls to be first in line. Often, the Commission notes, both the relinquishment and the new application were filed by the same attorney.

To prevent "trafficking," the Commission has instituted a new procedure for relinquishing or deleted calls, modifying the "first-come-first-served" rule. Now, when a call is relinquished or deleted, the Commission will issue a public notice. If two or

continued on page 63

When you take Cohu's Model 1500 Color Film Camera and combine it with Eastman Kodak's CT-500, it's quite a system, especially when these two units together are priced nearly the same as the base price of other color film cameras alone. It's like getting two for one.

In addition to its moderate price, the 1500 gives you a proven and superior method of correcting for film base and dye transfer errors utilizing instant black and white paint, auto sensitivity and black level control. For gross film errors, continuously variable gamma correction is available in all three channels.

The Model 1500 was designed with a simple and efficient optical system which transmits better than 65 percent in any one channel through the sealed dichroic beamsplitter.

This permits the camera's vidicons to be operated at relatively low target voltages and very low dark current resulting in low lag, long life, and better black level stability. This sensitivity precludes the need for expensive lead-oxide tubes.

Featuring a rear-loading parallel yoke system that can be retubed in seconds, the Model 1500 is virtually free of registration problems encountered in other color film cameras and can be totally retubed and set up from scratch in 20 minutes by an experienced operator. Cohu's yoke system is not removed

during tube changes and you are not subjected to alignment problems inherent in systems requiring yoke removal.

A passive remote control station is included and does not contain video circuitry which would be subjected to interference and signal degradation. Throughout, this film camera features simple circuitry, unencumbered by the requirement for 'extras' such as complex test equipment for sophisticated circuitry.

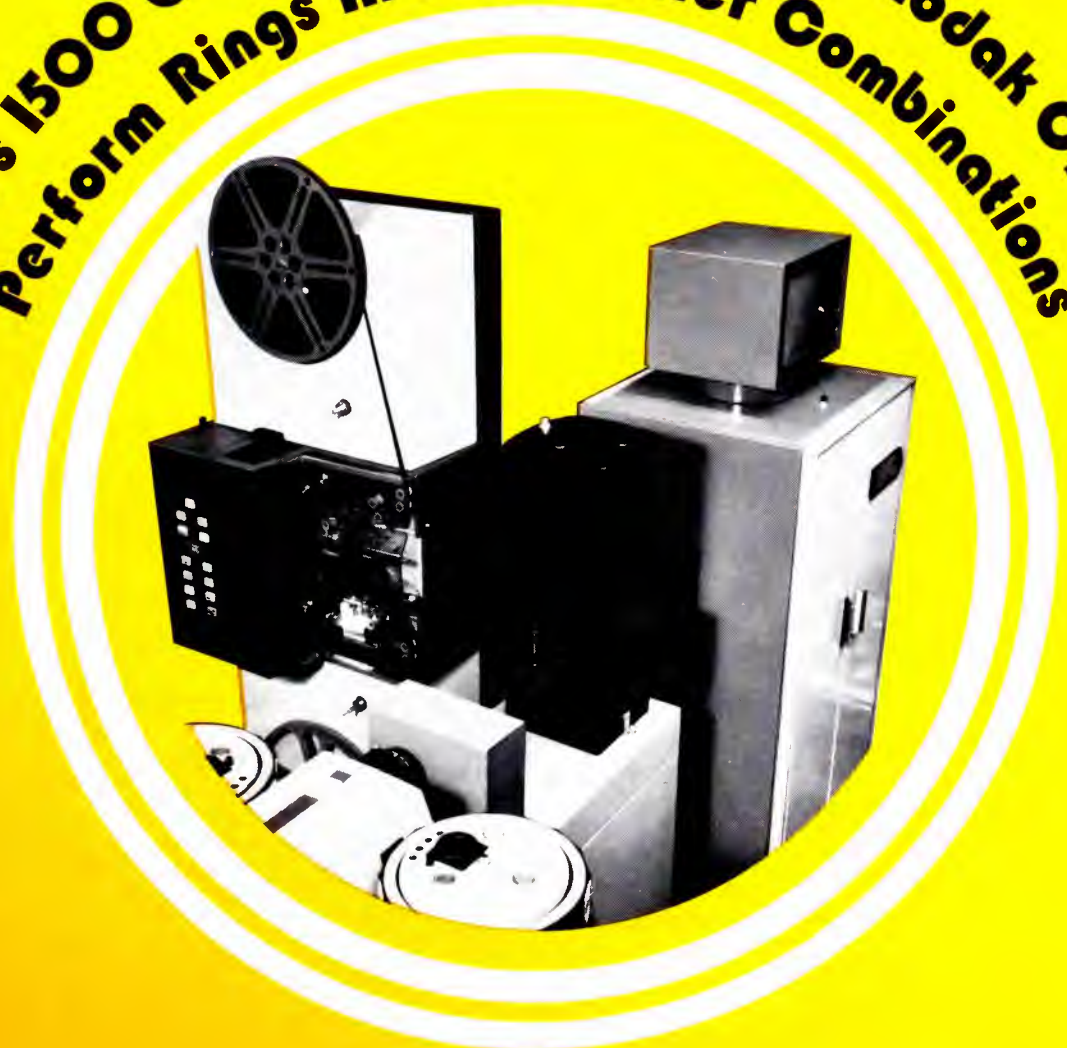
It all adds up to the reason why broadcasters are turning to Cohu's Model 1500 Color Film Camera — it's the choice, not an alternative.

You expect more from Cohu, and you get it.

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Cohu's 1500 Color Film Camera & The Kodak CT-500 Perform Rings Around Other Combinations



*From the June 16th
issue of Business Week*

**“Helical scan promises the
same results as quadruplex
but at a lot less cost!”**

**To which the attendees at the
recent NCTA convention might
reasonably add...“Amen!”**

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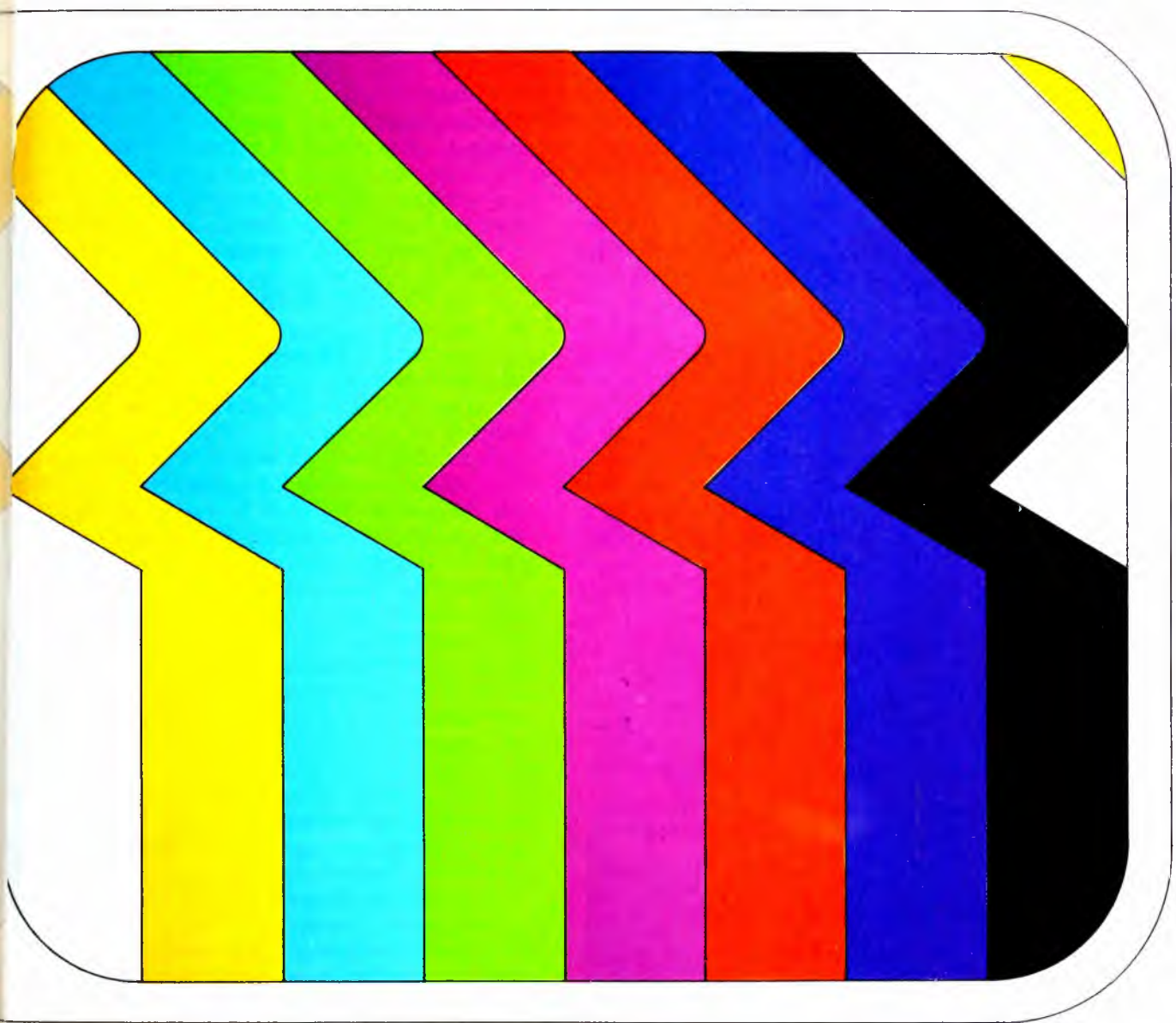
**What happened was... we demonstrated
our newest “funny little box,” the
CV 502 digital video signal corrector.**

**What this means to you is that,
regardless of the helical VTR you’re
using, you can now produce fully
corrected and stabilized color.**

That’s a fact.

At the NCTA we corrected color signals from a Sony $\frac{3}{4}$ " cassette, an IVC 870 and at various times managed to sneak in the new AKAI $\frac{1}{4}$ " low-cost VTR. The results were not to be believed—unless you were there and witnessed the demonstration.

Let’s face it! For many years the only VTRs that met FCC specs for broadcastable color were quads. That limitation no longer exists.



Today, at least twelve helical VTRs (from five different manufacturers that we know of) meet these same specifications with the help of our digital video signal correctors.

All this is made possible by CVS's digitized processing of helical VTR signals. Where all these new found advances will ultimately lead is anybody's guess—but you may be certain we are hard at work perfecting new products to broaden the scope

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In TV Automation, Most Of The Action Right Now Is At The "Business" End

Automated program switching is moving in, but much more slowly. With business-end computer systems automatically assembling and storing complete program instructions, the goal of TV automation is clearer than ever—total integration, with the computer-assembled program instructions fed directly to the switching equipment.

FOR QUITE A WHILE, the broadcast industry has been watching television automation come in from two directions: from the data-processing, financial-report, traffic-handling end, and, independently, from the automatic program-switching end. Putting the two together has been an obvious long-range goal, but so far very few installations to do that have been made.

What is happening right now is a rapid spread of business-end computer use, plus solid but much slower progress by the handful of firms making automatic program switching equipment.

The growing popularity with broadcasters of computer handling of business, traffic, etc., rests in general on maturity and flexibility of the available sys-

tems, with emphasis on two services that broadcasters find most valuable: the supplying of instant availability data, in any form desired, as an almost essential sales and scheduling tool for busy stations; and the service already noted, the automatic assembly and storage of complete, error-free program instructions, with the instructions amendable in any detail, at any instant, usually by a simple keyboard entry.

A number of stories in this issue (and the July issue which stressed radio automation) cover in detail the services supplied by various specific computer systems for broadcasting. Suppliers in this field note the current thinking of broadcasters is to dig in for a period of consolidation with a new business-end computer service before moving on to automated switching. However, the increasing availability of electronically-stored program instructions is building up the long-range pressure on integration. The logic of feeding those instructions to automatic switching equipment is too strong to be ignored indefinitely.

Two completely integrated systems that have been in development for some time, and have been described before, are the Sarkes Tarzian "Starcom," with Sarkes Tarzian's automatic switching equipment added; and the General Electric total automation system, now in the hands of Gates. Manufacturers of automated switching equipment for video who are now most active in supplying the field include, in addition to Sarkes Tarzian and Gates, Grass Valley, Central Dynamics, and Vital Industries.

The Sarkes Tarzian total system has been in use in the maker's own station, WTTV in Indianapolis, for a two-year shakedown with the APT-2000 switcher attached. Biagio Presti, general manager, told *BM/E* that operation is now smooth and effective and that active marketing of the system should start in "a couple of months."

An early model of the General Electric system (now Gates) similarly underwent refinement and trial at Taft station WNEP, in Scranton, Pennsylvania, in a collaboration between GE and the station's engineers. Chief engineer Chester Sawicki says it is doing an excellent job. Gates had made no an-

Introduction to the APC-610

The APC-610 performs real-time tasks, such as:

- The operation of on-air, video and audio production equipment, including selection of sources, operation transitions and effects, and remote operation of reproduction equipment such as film islands.
- Capture and storage of significant events (whether automatically or manually initiated) and their times for logging and analysis.
- Updating displays to the current system status.

Several on-line tasks include:

- Building, maintenance, and retrieval of daily program schedules and log files.
- Generation of variance reports to account for deviation from the schedule and to highlight problem areas.
- Maintaining reference files of information such as repetitive program formats and other operational aids.
- Printing of schedules, summaries, VTR and Film/Slide run sheets and other data systems.
- Communications with larger data processing units.

Other interesting programs that will be used at WNEW are:

- Calculating FCC percentages for such things as commercials, PSAs, local news, etc.
- Automatic calculation and insertion of true times for each event as derived from event duration time.
- Event duration time summing to make sure that all the individual pieces are equal to the whole.

nouncement of marketing plans at press time, but it seems likely that this system will also eventually play an important role on the automation scene.

Central Dynamics has been offering for some time not only automated switching but a modular approach to integrated automation, with a number of units designed to interface with large data processing systems. *BM/E* reported, in the September 1972 story on television automation, several stations that were using, or planning to use, Central Dynamics' switchers—as well as those of the other makers discussed here.

Since then, *KYW* in Philadelphia (a Group W Westinghouse station) has gone on line with a completely integrated system involving the Central Dynamics switcher, a company-owned computer, and other elements. *BM/E* was unable to do a story on this operation because of an IATSE strike underway during June. Hopefully, we can provide details at a later date. (Parenthetically, we might mention *KYW* has functioned smoothly throughout the strike with more people on the sidewalks than in the studio.)

Metromedia planning integrated system

Central Dynamics' switching equipment with mini-computer control is a key element in another current story that illustrates well the step-by-step approach to automation. Metromedia, with TV stations in New York, Los Angeles, Washington, Cincinnati and Minneapolis, is working toward integrated automation of each station with the chain tied together, with completion a couple of years off. There is an IBM computer at *KTTV*, the Los Angeles station, slated to do large volume data processing for the chain—financial, sales, and demographic—and is already doing much of this work.

WNEW, the New York station, was one of the first stations to use automatic switching in any form: for about a decade, an early system using punched cards, Nixie tube indicators, a Visual Electronics' video switcher and Grass Valley audio switcher, has been in use there. According to Bill Kelly, chief engineer, within the next several months a Central Dynamics' switcher with mini-computer control (Digital Electronics PAP 11/15) will go in. For a while the punched-card system will still be used for entry of data, since production of the cards is all set up.

The mini-computer will share the automation load with the IBM unit in Los Angeles; just how this will be divided will be decided later, based on operating experience. But the mini-computer will, of course, handle program switching (it can store up to 15 days of programs), and the large computer will do the larger data processing jobs that are beyond the capacity of the mini.

Another key element in the plan is the Ampex ACR-25 cassette player, which will be used for airing of spots, IDs, and other short segments. Bill Kelly reports excellent cooperation from both Central Dynamics and Ampex in modifications to help him interface the systems, with the station's special needs in mind. The interface problem can be a serious hang-up for integrated automation; more on that in a moment. Some of the capabilities of the Central Dynamics APC-610 are described in the accompanying box.

Two of the most recent Grass Valley installations paint a quite similar picture of step-by-step progress toward total automation. *WUC* in Pittsburgh has had the Grass Valley 1400-24 switcher in use for about a year, with manual push-button operation. However, the station is now well advanced toward service



Inserting a "cart" into the TCR-100 for making a dub at KOB-TV.



Ampex's simulated "on-air" newscast during the last NAB Convention demonstrated how news, sports, commercials, and promos can be incorporated into a fast-moving news show using the ACR-25 and AVR-1. The ACR-25 provides random access to up to 24 programs ranging in length from ten seconds to six minutes.

from a completely computerized traffic and billing system, as part of the Cox chain (see box). The switcher will eventually be connected in for automated operation—this shows movement in the opposite "direction" from some stations, which, as al-

ready noted, have moved from traffic control to switching. The switcher at WNC was designed with relatively small capacity (230 events) because close support from the traffic-system computer will supply frequent data updating.

Master—Minicomputer Combo for Flexible Automation

Kaman Science Corporation's Broadcast Computer Services (BCS) made its first installations at KVOR Radio, Colorado Springs, in 1968, and at KOOL-TV, Phoenix, in 1969. "We are continuing to develop increasingly sophisticated software and to broaden the capabilities of available hardware to meet stations' growing needs," says Jack Finlayson, manager of BCS.

BCS was the first system to adopt the ultra-high-speed mini-master concept with brief daily connection between in-station minicomputers around the country and large master memory banks located at Kaman Science's Computer Center in Colorado Springs. Although the in-station mini units provide about 99% of the data needed for several days' operations, all stations in the BCS system have the option of connecting with the central computer whenever they so choose. To date, no stations have found it necessary to use that option.

Wide flexibility results from the on-line real time access, speed, large system economy and in-house minicomputer. The mini-master concept provides built-in insurance against breakdown through the dual location of data. Even if the in-house mini goes down, an alternate-site feed can be arranged and, should the master go down, the essential data for several days' operations is available in the mini.

Experience at stations in the BCS system shows that, depending on the scope of the operation, four to six persons are required for smooth functioning.



Searching the availability file on the in-station minicomputer disc used by BCS. Information for a vertical/horizontal rotation is retrieved in less than a second and displayed at the rate of 300 characters per second.

Because the BCS system dialogues in broadcaster language, stations find that, after a brief training period, the existing staff can man the operation and it's not necessary to add personnel with data-processing expertise.

The in-station minicomputer is a Digital Equipment Corporation PDP 8/E, which has a disc-stored memory of 3.2 million characters. Up to three entry-display terminals, functioning at 300 characters per second, may be used throughout the station to handle all availability and demographic searching and manipulation of logs and data entry. Any portion of the logs and/or avails can be found and displayed within one second.

All data entry is made via a simple question-and-answer technique with the mini continuously editing incoming data for errors. In case of an error, the entry-display terminal immediately questions the information and forces the operator to make a correction before proceeding.

Avails can be displayed in two forms. They can be shown with just the total time remaining to be sold or with the total time as well as a complete listing of all sponsors in a time period (with spot length, rate section, last air date, and product code) to provide station personnel with needed information if preemptions become necessary. Each new contract entered throughout the day is processed by the mini and avails are immediately updated with the new information.

One of the system's special features is a selective search mask which allows the mini to seek out specific items on the log for display and editing. A late film change on one commercial flight, for instance, can be entered in the mini and, one by one, all spots involved in that flight can be altered as required—at the touch of one key.

Printouts at 400 lines per minute, are produced on an in-station CDC printer. Any portion of the logs or avails can be printed at any time and as often as needed. A 24-hour log, for instance, is turned out in four minutes.

The high-speed, high-volume capability and round-the-clock availability at the stations provide managements with many advantages. The versatility of the mini permits a broad range of uses from film inventory maintenance to engineering programming. *Of major interest to station operators is the ease with which the PDP 8/E can be expanded economically and used for automatic control room operation, as it is now used by several automated control room equipment companies. Research into interfaces currently is underway at BCS.*

In evaluating the versatility and economy of this system, monthly costs are an important factor. Average fixed costs for a television station range from \$3300 to \$3800 per month. Each month, more and more station managements agree that it is a bargain.

Bias Service To Stations Booming

A comparative Johnny-come-lately in the broadcast automation field, the BIAS (Broadcast Industry Automation System) Division of Data Communications Corp., a Memphis-based company, has emerged as the largest station communications service firm in the broadcast industry.

Launched a short three-and-a-half years ago by Norfleet Turner, who is president of the firm, BIAS has out-distanced competitors in the sale of its service to TV stations. As of June 1973, the young, aggressive, and creative staff of BIAS had a contract list of 42 stations.

The success of the BIAS service (see KSTP's use elsewhere in this report) has come largely through word-of-mouth recommendations, with client stations pointing out the cost savings they've enjoyed—particularly in the area of elimination of "make-goods" and in the streamlining and increased efficiency of their traffic and sales departments—to other station operators. The client list includes stations from the major markets (San Francisco, New York, Seattle), to medium-size markets (Oklahoma City, Tampa-St. Pete), and small markets such as Albuquerque.

A typical example of station management approval of the BIAS operation was made by Herb Mayes, comptroller for WOR-TV, New York, one of the largest and busiest independents in the country. "The BIAS operation," he said, "has increased our revenues about 10% without an additional increase in our business." The business manager for KPIX-TV, San Francisco, stated, "We can sell substantially more time due to the lack of make-goods, and also more time is available due to the lack of over-runs on a contract."

The primary reasons for BIAS' success, according to Norfleet Turner, were 1) the decision not to market its service until the system was completely free of bugs (based on pilot operation at WMC-TV, Memphis, Tenn.), 2) its claim that it is the only communications service which offers "On-Line, Real-Time" availability of central computers, and 3) the intensive conversion program it conducts for its new clients prior to the "on-air" date. The conversion is effected in an eight-week indoc-

trination and preparation period spearheaded by a team of BIAS conversion specialists and includes a visit to the Memphis headquarters for on-the-scene orientation for station staffers.

Just recently BIAS signed a contract with a British TV firm for a joint venture project. Jim McKee, BIAS vice president, feels that BIAS' impact on the broadcast industry communications field is only the beginning of what may be the most comprehensive media communications network in history. "We have plans for the future which we hope will embrace every facet of the communications industry," said McKee. "They are in the works and about the only clue we can give as to the scope is that we have ordered a Burroughs 6700 computer (the largest model) to supplement the 3700 and 4700 computers we now have on hand." A special system for radio stations is in the works now.



Terry Bate (left), Beaverbrook Newspapers Ltd., London, was one of a group of British broadcasters in the United States recently for a tour of broadcast operations and facilities' development, such as BIAS's station automation communications systems. To right is Norfleet Turner of BIAS.

Cox Data Promotes Marketing Service

A pioneer in efforts to properly exploit the computer, particularly as a marketing tool, is the Cox Broadcasting Corp. Cox now has on stream a sophisticated system serving three of its own stations (in Atlanta, Pittsburgh, and Dayton) and three others: KSD-TV in St. Louis, WTVT in Tampa, and shortly WSOX in Charlotte. Operations are handled by a separate group, Cox Data Systems. The system is on-line using a central Honeywell Computer at Atlanta and mini-computer at each station. Objective is to give a salesman current timely information on availability—and cost based on latest ratings and demographics. Inventory control is central to the system—pricing can be extremely timely depending on the latest ratings which get cranked in immediately.

The system provides a host of other management reports and ties into a billing system. System is relatively costly—more than that of BIAS—and, as such, is probably of most interest only to stations in the top-50 markets. Cox expects to use it for all five of its own stations but, to help underwrite costs, will accommodate seven or eight outside stations.

TV station CHCH, Hamilton, Ontario, has also been using a Grass Valley 1400-24 switcher for about a year, with plans to integrate it with a computerized traffic system. Here the switcher has greater capacity (1000 events) because the management wanted full-day stand-alone capability in the switching system itself. A small disc unit supplies the additional memory for the CHCH switcher.

For both installations, data entry on an interim basis is from a typewriter-style keyboard; eventually both will take data directly from the traffic system, and the keyboards will be used only for day-of-air changes. Computer hardware will be the Digital Equipment Corp. PDP8/E mainframe.

Vital Industries' automatic switcher, described in detail in last September's automation round-up, is in use at a number of stations. The story at WTVJ in Miami illustrates, again, the process of moving into automation step by step, with shakedown over an extended period of use. The Vital Industries switcher was expected there at about press time for this issue. It will be used for some time standing alone,

with manual or magnetic tape input, for program control.

But WTVJ is also "breaking in" an IBM 370 computer for data processing. At some future date, according to Joe Klein, chief engineer, the two will be hooked together. However, that integration is not going to be hurried: the management wants to get fully on top of the operation of the large computer before taking on the interface job. (Nubar Donoyan, president of Vital, points out that his switching system is fully adaptable to the interface with the computer system: it is designed to be so.) The large computer is just about to produce the complete program log and program instructions.

WTVJ also has an Ampex ACR-25 for airing of short material, which for some time will also operate standing alone. Over the long haul it, too, will become part of the total system. By the end of this year the station plans to have a second ACR-25: this allows for convenient transfer of spot material to cassettes, on one machine, while the other is on the air—and is also good insurance against down time.

The WTVJ story reinforces the picture of the current status of television automation emerging from the other stories here. Hardware for all segments of the job is ready. But many stations need a considerable period for shakedown and interfacing, getting integrated software that meets specific needs. As WNEW (above), for example, WTVJ is learning how

to divide the load between the large computer and a minicomputer for the program switching. Putting the big one "on line" is not economical, points out Joe Klein, because the computer is too lightly loaded by "real time" operations.

Mention of the interface problem in the foregoing leads to a tentative general observation: the progress of automation probably would be a great deal more rapid if the automation industry had a greater degree of intra-industry integration. Interface hangups are obviously most likely when a station has long-existing equipment to which new equipment is to be added. Cooperation from hardware manufacturers in helping solve such problems can certainly be expected in most cases; nevertheless, the fact that the problems are there is an impediment to automation progress.

How much intra-industry integration is practical is clearly a matter of contention. Steven Smith, chief engineer of KCMO, Kansas City, has held in speeches and papers that the industry badly needs a much higher degree of integration than it now has. In an accompanying box we summarize very briefly a few of his main ideas.

Aiding and abetting the automation movement, as well as supplying an initial semi-automated operation that can precede automation and later be integrated with it, is the rapid spread of video cart systems.

The RCA TCR-100, with two years of use, is now playing a key role in automation. At KOB-TV, Albuquerque, front-office automation provided by a time-shared computer is helping to streamline the operation of on-air equipment. When a salesman brings in an order for a commercial, it is entered in the computer. A printout, identifying the order, its scheduling, billing and so on, goes to all station activities involved.

The printouts serve as guides in setting up the day's schedule on the RCA TCR-100 videotape cartridge machine. Any new spots needed in the cartridge format can be quickly identified and dubs made by the production crew after its 6 a.m. arrival.

The machine holds up to 22 cartridges and is loaded manually in quick order. The machine's magazine is readily accessible to the operator so that carts can be removed and replaced to accommodate last-minute changes in scheduling or a newly-arrived spot.

The Ampex ACR-25, already mentioned in a couple of the station stories, came on the market later, but during the past year went out to more than 40 stations. Like the TCR-100, the popularity of the ACR-25 is based on the ease it brings to handling the short video segments: the spread of the ten-second spot, for example, would be greatly impeded without automatic cart handling, which allows such spots to run smoothly back-to-back.

A final general observation: TV automation is inevitable because 1) station operators badly need it; 2) the basic technology is fully available to do it at a feasible cost. Adapting automation to the specific needs of broadcasters has taken longer than most observers expected five or more years ago, but the main hurdles seem to have been passed. **BM/E**

Prelude To Automated Systems: Automated Equipment

Automated performance of individual studio equipments—cameras, tape machines, film systems, and other apparatus—is the forerunner of automated stations of the future, in the view of RCA Broadcast Systems officials.

Neil Vander Dussen, division vice president, says his company's TCR-100 "is hastening the trend toward automatic devices in the TV studio and their future integration into fully-automated systems."

He noted that the TCR-100 has removed virtually all of the uncertainty, confusion, and costly errors that have plagued multi-machine station breaks since TV broadcasting began. The extensive on-air experience gained from more than 100 operating TCR-100 systems proves that the station break now can be delegated to a single machine.

Recently RCA introduced a new color studio camera, the TK-45A, which has been designed for a high degree of automated performance. White level is accomplished automatically for instant correction of variations in scene-to-scene colorimetry. Black level is automatic too, as is iris operation. The iris responds to changes in subject lighting faster than any human could.

Centering also has been automated. The operator presses a button and he has automatically compensated for the centering limitations of the camera's pickup tubes. Previously it was a tedious procedure.

These and other automatic features of the newest studio apparatus suggest that a first practical step toward automation has been made, Mr. Vander Dussen says. Full studio automation will not come overnight, he adds, but on an incremental basis through integrating such devices into larger and finally all-inclusive systems.

Step By Step To Full Automation

Hubbard Group uses both an in-house computer and on-line computer service to carry a five-million dollar load, while working toward integration of all accounting and programming.

THE HUBBARD BROADCASTING COMPANY, which operates stations KOB-TV/AM, Albuquerque, New Mexico; WTOG-TV, Tampa-St. Pete, Fla.; WGTO-AM, Silver Springs, Fla.; and KSTP-TV-AM, the Twin Cities, is moving towards an all-automated station status which it hopes to achieve within "the next few years" according to Stanley S. Hubbard, president of the Hubbard Group.

"We installed our own IBM System 3, Model 3081," said Mr. Hubbard, "as the nucleus of our automation concept. Each step we take from here will be toward the end result of a fully-automated operation covering every aspect from production through administration and accounting."

Gerry Deene, comptroller for the KSTP-TV stations, is highly enthusiastic about the eventual automation of the Hubbard Group's operation. He points out that with the System 3 doing all the billing, payrolls, general ledger, etc., for the radio stations, including availabilities and logs, it is heavily loaded. The company, therefore, also subscribes to the BIAS on-line computer service, which supplies availabilities, logs for the three TV stations, and works on each TV station's own marketing and sales administration too.

However, all information on each TV station's financial status is forwarded to the headquarters station, KSTP-TV, for correlation into reports for the Hubbard management. This includes payrolls, financial reports, and other pertinent financial material. Information from the radio station is similarly correlated at the headquarters station into management reports.

Between the two systems," he says, "we have already made great strides in the consolidation of our accounting operations. As we get further into automated production gear, we foresee that this also will be tied into our central computer set-up and we'll be as well on the way to complete automation as one can get within the activities of a group operation."

The combination of individual utilization of on-line automation for the local TV outlets of the Hubbard Broadcasting Company and the IBM System 3 computer located at the KSTP-TV group headquarters has provided the Hubbard management with a complete, centralized system of all accounting procedures.

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Jerry Deene, KSTP-TV comptroller, checks out a confirmation contract from the BIAS "on line real time" computer terminal.



Jan Murphy, KSTP-TV, programs the station's spot information via a BIAS terminal. All Hubbard Broadcasting Group stations use BIAS and information from this service is forwarded and stored in KSTP-TV's IBM computer for consolidation purposes.



Mary Leibfried, KSTP-TV programmer, inserts a new tape into the station's IBM computer . . .



. . . and sets the System 3, Model 5, for printout operation.

According to Mr. Deene, the tremendous increase in efficiency has been accomplished with no increase in personnel. "Thanks to the computer, and the BIAS systems used at all our stations," said Deene, "we have been able to centralize all of our accounting efforts. The instant communications that have been established via the computerized "on-line, real time" service of BIAS keeps us posted with an on-going, up-dated, and extremely accurate series of reports of all kinds. For overall planning, for future considerations of projects, costs analyses, and other important financial aspects of a group operation, the combination of our computer and the BIAS computerized service has given us the most effective operating tools for broadcast evaluation we've seen to date."

Mr. Deene envisions a whole new era of broadcast accounting concepts as computerized equipment becomes more sophisticated in the future. "Automation is really the key to competitive growth," said Deene. "In the not too distant future, many of the activities we now perform will be handled by a computerized service. With a simple tie-in with a bank, for instance," said Deene, "we should be able to make all payments directly without drawing a single check at KSTP-TV. The range of possibilities for automated activities in future operations is virtually unlimited."

Mr. Deene also pointed out the potential for tying in production operations with the automated systems currently in operation at KSTP-TV. "Already there is automated production equipment which can be interfaced with some of the computerized systems we now have. There is a present capability of automating the transmitter and, when all of the various segments of present automated operations are interfaced—when the right equipment is placed in the right sequence—we will have a fully-automated broadcast operation completely embracing every aspect of station performance from sales and traffic through engineering and production."

He emphasized that Hubbard's plans for the interfacing of accounting and program control were still in the "search and study" stage, and said that a far greater degree of compatibility among automation and control systems would greatly advance the feasibility of the project. In other words, some integration of broadcast automation systems, as pointed out in other stories in this issue, is building up as a tremendous need.

For those operators who have been slow in adjusting to the mercurial changes developing in the broadcast industry, both administratively and in engineering, the time is getting short, according to Mr. Deene's forecast. "The growing intricacies of broadcast advertising and the increasing deluge of paper work, reports, and informational needs professed particularly by the local, state and federal governments, make automation an urgent necessity at this time," said Deene.

It's getting to the point where the station operators, particularly the group operators, must 'automate or disintegrate.'

BM/E

A SALES MANAGER'S TOOL

STARCOM

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SARKES TARZIAN INC.

Data Processing System

AN ENGINEER'S NECESSITY

APT SYSTEMS

NAME *	TIME	OP	VIDEO	AUDIO	DURATION	MODE	FILM * ETC
210	00:25:30P	C	VDS	TAV	001:33	RC	

The APT MC control systems are mini-computer controlled designed to interface to STARCOM. Master control automation gives automatic pre-roll/take control over FILM and VTR islands, audio and video sources, and provides long term, fail safe, memory storing log data one week or more into the future with immediate access to modify, insert, or delete events—even the immediate next event.

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MC Automation

STARCOM



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APT SYSTEMS

TOTALLY INTEGRATED TV AUTOMATION

STARCOM



The STARCOM system provides the station with a printout of all their contracts, rough logs, final logs, daily avails, weekly avails, sales backlogs, invoices, billing summaries, discrepancy reports, reports of expired contracts, missing commercial instructions, log conflict reports, billing discrepancies, FCC reports, pre-emption summaries, name and address information, and a complete range of options which include revenue summaries, and accounts receivable package. All of the reports may be printed at the TV station.

STARCOM will interface to the APT system so that on-air control is automatic—providing FCC log report and providing full last minute override for last minute changes.

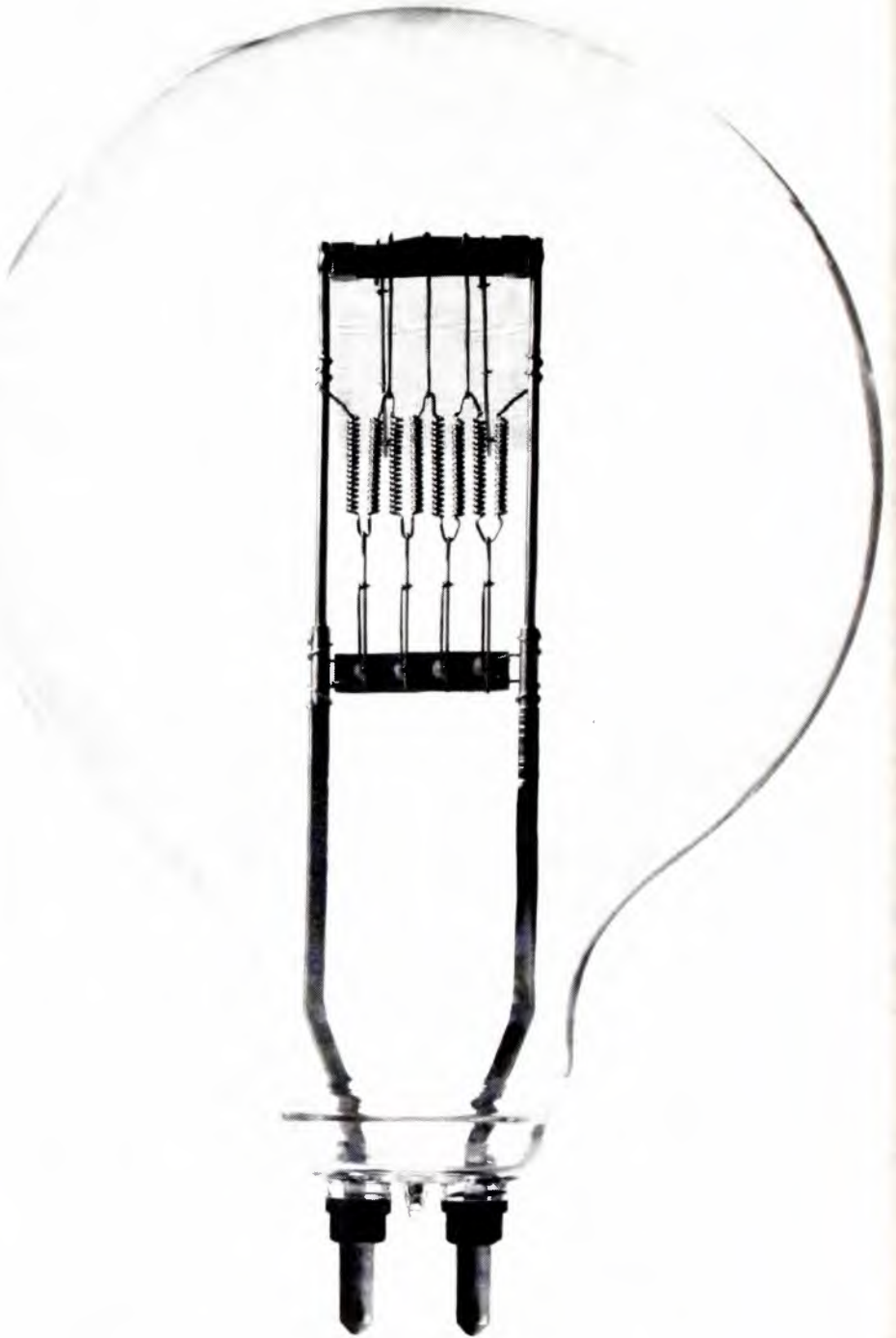
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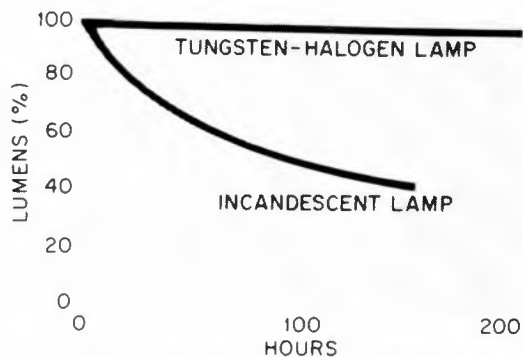
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10 KW TUNGSTEN-HALOGEN LAMP.



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Now Sylvania tungsten-halogen lamps have come to the rescue.

They don't blacken with age, so their light output and color temperature don't go into a slump.

That means you don't have to keep

70 HOURS LATER.



10 KW TUNGSTEN-HALOGEN LAMP.



10 KW INCANDESCENT LAMP.

Working with the studio lights or camera settings. You get constant color condition on color film and save money on print correction.

Tungsten-halogen lamps outlast the incandescents 2-to-1. (Or even 3-to-1, since you may have to throw away the blackened lamps before they go out.)

Then there's size. Why should anyone want big, heavy glass balloons when he can have nice, slim little

lamps that are easy to handle and store?

We've developed two complete lines of Sylvania tungsten halogen lamps.

The first is a line of direct replacements. These lamps fit into the big, old sockets vacated by the big, fat incandescents.

The second is a line of even smaller tungsten-halogen lamps that you can use to replace our replacements once

you've gotten rid of the old sockets and fixtures. They fit into entirely new, smaller, more efficient fixtures.

Ask us about both our lines. Right away.

Before another 70 hours go by.

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GTE SYLVANIA

Camera Remote Control— Is It For You?

TV stations that use it love it. It saves time, money, personnel and tempers—but for some, it hasn't all been gravy.

IN A LITTLE TOWN IN PENNSYLVANIA, sophisticated camera remote control equipment is assembled in an incredible profusion of types, models, sizes and designs for just about every kind of TV camera there is. Units and systems available from the Power Optics Fairview Village plant control pedestal height, pan, tilt, zoom, focus, and iris. The controls can be programmed from a computer—there are several memory core storage options—and the whole thing seems to be ideal from the automation standpoint. Yet, field tests by broadcasters have yielded a mixed bag of sentiments about camera remote control. Some stations love the systems and wouldn't do without them; a couple have relegated the remote equipment to the storage room.

Very high on the whole idea is Charles King, manager of operations for General Electric's WRGB in Schenectady, N.Y. He had a chance to watch the systems in operation at WNYS and WHEN in Syracuse, liked what he saw, and installed two systems in his own station.

Other stations, especially those that purchased equipment five to six years ago, complained about poor repeatability and the fact that they could use the equipment only on non-critical shots. Two stations surveyed indicated that the remote equipment was gathering dust in the storeroom because of their unhappy experiences with it. One common denominator has emerged from *BM/E's* survey: systems dating back to 1967-8 are the ones that caused trouble and disenchantment; stations with more recently installed remote equipment are delighted with performance and utility.

One of the happy users is KCMO's director of engineering, Steve Smith. He told *BM/E* that the station's two remote systems are in almost constant use. Using Power Optics' automation on two of the station's three cameras, one of the automated cameras is ordinarily used manually while the other is always used in the automatic mode for calls, supers, and trick shots. KCMO uses the automated cameras for all its news shows and for production. Important to the operation is the use of one camera in a fixed shot so studio personnel are free to perform maintenance.

The controls are at the audio console, so the audio man controls focus, zoom, and tilt. The station likes the control systems, but initially had some repeatability problems. "The company told us to put 90 pounds of dead weight on top of our cameras," Smith said. "Well, one of our sister stations tried it and it didn't do a bit of good. Besides, how do I get

90 pounds of dead weight specifically made and in such a size that I can put it on a GE camera? And where do I attach it so it won't fall off and break somebody's foot?"

Controllability is okay for most shots, but Smith says it does not have the accuracy or repeatability for closeup zoom shots. Reports Smith, "We can't use it exclusively for dynamic shots. It's great to set it in an area and use it within a limited range, but we can't use it to do an entire news show."

Even within the range of these shortcomings, KCMO has plans to extend the use of the automated cameras. They are building a platform to elevate the camera for wide shots. During news shows, they often turn the automated camera around to show the operator-manned cameras to lend an element of realism and urgency to the newscast.

Stations like KCMO have come to depend on the remote camera system so totally that they wouldn't sell their second unit under any circumstances. They use the second unit mainly as a backup. If the first one goes on the fritz, the camera is used manually and the other remote camera takes over. The station definitely feels that use of this equipment has saved it considerable money—mainly the salary of an extra camera operator.

At Cincinnati's WKRC, the single remote camera unit is used for virtually every one-camera operation in the studio. It's used for the news show and on all programs that originate there. Chief engineer Ray Owen feels that the camera control system was definitely worth the investment, but that it hasn't really saved the station the cost of a camera operator's salary. "What it did do for us," said Owen, "was to save an operator during actual production." The time-saving is not so apparent during setup, he pointed out, but the remote feature has definitely paid for itself.

In production of commercials, Owen feels that the remote system is far better than using a manually-operated camera. "When we've had some extreme zooms and fast zooms on preset shots, a man just can't do it that well," Owen pointed out. Commenting on the repeatability of presets, "I understand that the new ones have been modified so they come right back to the same spot. Ours does not, but it's workable. If you're concerned about really tight framing with a closeup and want to come back to the precise framing, then the camera will be off a little bit." The station has one show that does not use the remote camera, mainly because its production people have a thing about live operators.

One station that's not so happy about the remote camera control is Buffalo's WGR. According to engineering supervisor Ed Gordon, the station stopped using the system because "It's too slow. Generally, we found the unit to be more of an inconvenience than having a man actually on the camera. Its operation has been jerky—never smooth. It's never really worked properly. We haven't used it for over a year now." The unit is one of the oldest ones sold by Power Optics, and was installed in 1968.

Another oldie that's not in use is the one at WTVN in Columbus, Ohio. According to studio supervisor Glade Grable, the station has taken a different approach to its broadcasting in the last six months. The remote camera unit was taken out of operation to make it more flexible in production. Grable pointed out, "If you needed that camera moved to

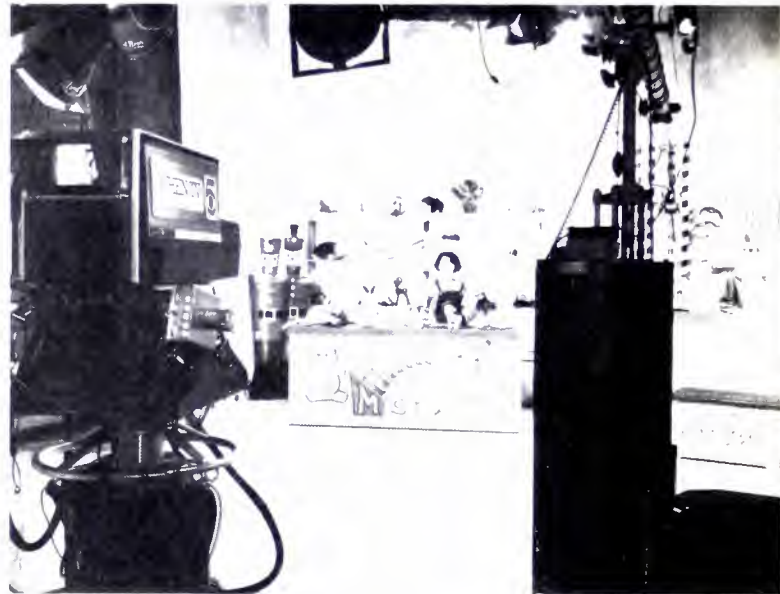
another spot in the studio for something else, it took three men and a boy to move it. It was unwieldy and quite heavy. In fact the tilt-pan automatic section probably weighed one-and-a-half times as much as the camera itself. If we had three cameras in our studio instead of just two, I'm sure the remote unit would still be in use here."

Later models overcome earlier problems

The older units were also found wanting by Albert Chismark, director of engineering for WHEN, Syracuse. He had installed a pair of systems in 1967, and then replaced them with new ones in 1970. "The 1967 units didn't have a satisfactory memory for accuracy of pan and returning back to a particular spot. The newer, more sophisticated systems are much more to our liking." WHEN uses



Control panel and console for two-camera remote control system at WHEN-TV, Syracuse, New York. The console is portable and movable between two Control Rooms. Each camera features six "shots" complete with manual hand controls.



WHEN uses remote control system for children's program.



General Electric PE 350 cameras are used in WHEN's news and weather studio (shown at left), and also in the news studio (above).

the new units for all types of programs, for both live and taped shows. Typically, two cameras are remotely controlled in a three-camera studio setup. Chismark feels that the systems have definitely paid for themselves.

"I think that for normal everyday use, these units are quite adequate," Chismark told *BM/E*. "I don't think you could do an extravaganza with them, but they're just fine for our applications." WJLS feels that even without the third camera, the



General Electric PE 250 color camera with remote control system at WJLS in Utica



Power Optics' remote control panels installed on WJLS's main control console (facing camera bottom left and top right).

Power-Optics' Portable Manual Controller. With this unit six functions of a television camera's movements for pan, tilt, zoom, focus, and iris, plus pedestal height, may be controlled



two remote-controlled cameras can work well without anyone being able to tell that the entire show is remote controlled. The station is "married" to the remote cameras and Chismark feels that they just couldn't get along without them.

At Syracuse's WNYC, two recent-vintage Power Optics' systems are in daily use. Chief engineer John A. Carroll told *BM/E* that the systems are excellent not only for day-in, day-out live programming, but do yeoman service in production as well. He feels that the systems have excellent repeatability. "There are limits, though," he pointed out. "You can't get halfway across the studio and expect repeatability, but by moving the camera in close for tight shots, you can get excellent repeatability."

The units are operated by computer control, but not from a large-scale memory. Carroll, like everyone else surveyed, felt that the Power Optics factory reps bent over backwards to be helpful in making the installation, setups, callbacks for service and for helping out with problems. While reliability was a problem during the initial installation period, the station would do it all over again without hesitation.

In Utica, N.Y., WJLS's chief engineer Gerald Devine uses the camera remote for everything. He feels that the equipment has good repeatability—well within the tolerance indicated by the manufacturer (to 1/5 of one degree in pan.). Reliability is also excellent, although the equipment required an initial debugging period. The station has just two cameras, and one of them has the remote system, used with drop cards and for studio and production work. Devine is very happy with the equipment, and would buy it again if need be. As with most of the other stations surveyed, WJLS's equipment cost has already been amortized and more than repaid by salary savings.

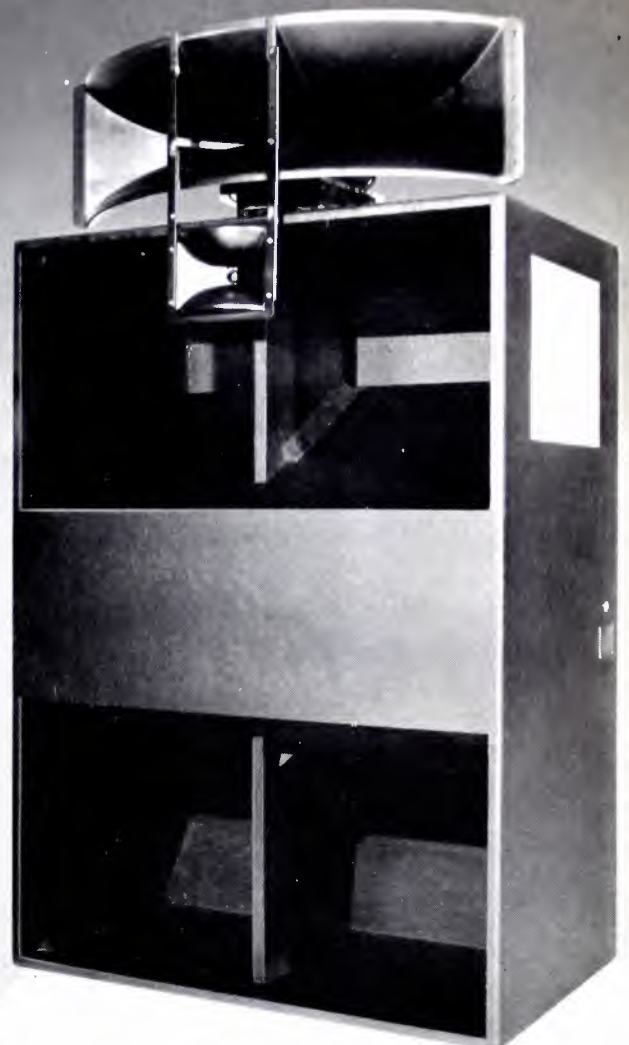
As far as salary savings are concerned, having one remote camera doesn't necessarily mean saving a full camera operator's salary. After all, *someone* has to operate the remote controls, but this is often an audio man working the pushbuttons from his sound console position in the control room. Some stations don't operate remotely at all, but have an operator at the camera location itself. The rationale here is that the powered control equipment works zooms, pans, and tilts more smoothly than manual control does and can zoom and reset much faster than mechanical controls can.

In almost all cases, the equipment has managed to pay for itself within a two-year period or less. In stations with two remoted cameras, it has meant not having to call in a separate night camera crew for the late news programs—a night crew that would draw a full day's pay for a couple of hours actual work. In production work, the remote cameras can operate from preprogrammed settings, making all operations smoother and more efficient.

Looking forward, Power Optics has in development an automation system for control of all camera motion which could be operated by potentiometers, or by a digital system or MOS memory. Among the functions to be brought into the system would be the trucking path on the floor, height relative to the base, and others.

BM/E

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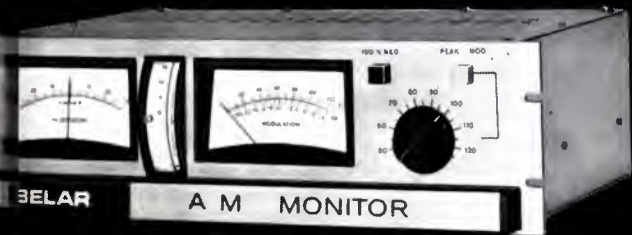
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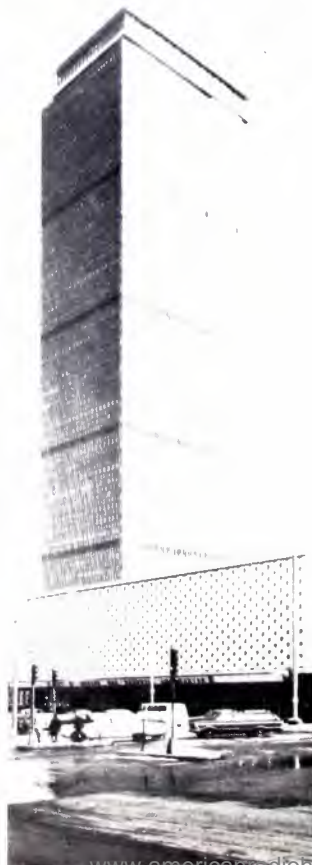
Free-Form Music: Bucking The Trend and Making Money Out Of It

Two big things have happened at Boston's veteran FM station, WBCN—a move to a spectacular, see-through tower-top home, and success with an individualized rock-to-classics format hung on announcers' musical care and expertise.

WITHIN THE PAST COUPLE OF YEARS, the Concert Network flag-station in Boston, WBCN, has nailed two big trophies to the wall. One is very recent—a remarkable new home at the top of the 50-story Prudential Tower that puts the station in full view of the public in a spectacular setting. The other is the culmination and solid success of a program format experiment that began in 1968, a "free-form" approach to a wide range of musical styles, from rock to classics, proving that you don't necessarily have to concentrate on one narrow style of music to hold a recognizable, "salable" audience. This counter-trend success suggests that FM operators, at least in larger markets, have more options than the current high-popularity formats provide.



The 50th floor "skywalk" of the Prudential Tower in Boston is the new home of WBCN. Station operations may be observed by those visiting the skywalk through specially designed soundproof windows.



Not every FM operator can find a 50th-floor home, but the public can be given a good look almost anywhere—and a number of other stations are doing that.

WBCN completed a year and a half of construction in June, to take it to the new Prudential Skywalk studios. T. Mitchell Hastings, chairman of the board of Concert Network, Inc., WBCN's corporate parent, said: "We'll have spent \$150,000 on this move before we're all through, but it's not out of proportion to its value."

At the top of its tower, the WBCN offices, studios, and transmitter are located in one area inside and contiguous to the Skywalk, the observation "corridor" that circles the top of the tower. The antenna is located directly above the transmitter and projects 75 feet into the sky from the Prudential Tower roof.

Every part of the operation can be seen through windows opening on the Skywalk, which is visited by about 500,000 people a year.

There are three production studios, a news room, and a conference room which also serves as a public affairs (PA) studio. Programs can either be broadcast live or recorded in the PA studio. There are stereo speakers and headsets on the Skywalk side of the studio windows, so visitors can hear and see programs in production.

Adjoining the main studio is the library, where over 15,000 records will be stored.

With windows to the Skywalk from the reception area and from the largest of four executive offices, the public will be able to see all aspects of WBCN in operation. The studio windows have three to five panes of different thicknesses separated by air spaces for sound isolation.

The programs produced in the studios for broadcast are carried through mixers, amplifiers, filters, compressors, stereo generators and into one of the two 20-kilowatt transmitters and then to one of the two vertically and horizontally polarized antennas, which propagates the WBCN 104.1 MHz signal into the air from atop the Prudential Tower. Every piece of equipment is duplicated and electronically switched into use when needed. Within the studios, no extraneous sound or vibration is permitted to mix with the broadcast signal. Each studio is completely

lined with sound-absorbent materials on ceilings, walls and floors. The total facilities take about 3500 square feet.

WBCN has done considerable pioneering in both FM programming and engineering since its 1958 inception. It was the first commercial FM station to use vertical polarization (in addition to its horizontally polarized signal). This was an outgrowth of Hastings' development in 1952 of a successful FM car radio, a receiver which was bedeviled by "pick-et fence" effect when mobile until the vertically polarized signal was added.

In its first year, WBCN pioneered FM stereo by carrying the left-hand side of the Boston Symphony broadcasts while WGBH carried the right. All a listener needed for full FM stereo reception was two FM receivers.

WBCN was also very active in the formation of the National Association of FM Broadcasters (NAFMB); the management strongly aided and abetted the persuasion of the FCC to open up FM stereo.

Another crusade backed by WBCN was the opening of the 150%-maximum power limit for stations in Zones I and IA of the U.S.

The new music format represents quite a change from the station's original orientation. WBCN, like its three Concert Network sister stations in Providence, Hartford, and New York City, began as a full-time classical music station. The station presented many innovative programs, such as "the Basic Repertoire," wherein a variety of recordings of the same masterpiece were played, discussed, and compared.

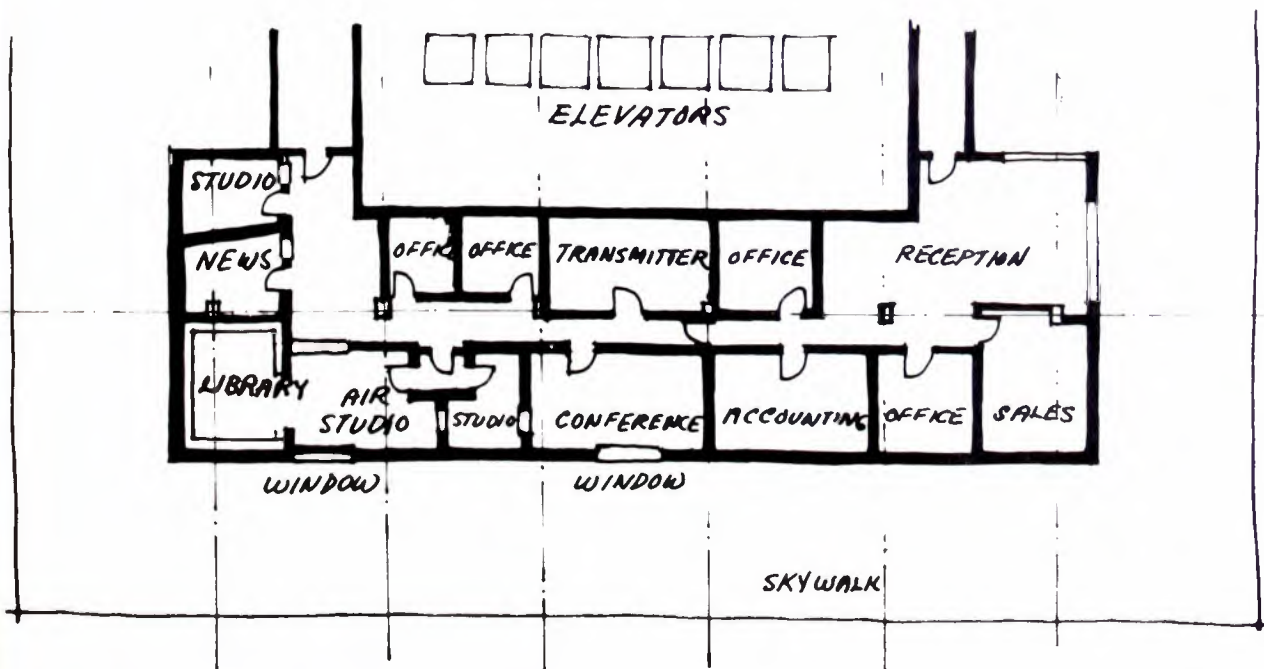
In the mid-sixties, audience research done by the NAFMB revealed a shift in preference to popular and Broadway melodies. The station followed the trend. By 1966, the programming was largely middle-of-the-road except for an evening symphony

concert. By 1968, enough listeners had been won over to FM to assure its success, but a new generation had arrived which was not being reached in substantial numbers by the medium. To reach them, an experiment with a new late night sound was attempted, starting on a part-time basis on March 15, 1968, when from 10 p.m. to 5 a.m. "free-form broadcasting" ruled 104.1 on the Boston FM dial. Favorable listener response, coupled with an increase in advertising, resulted in the station's switching full time to its current format two months later.

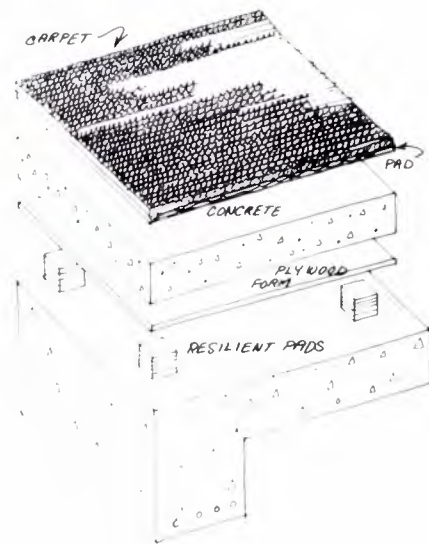
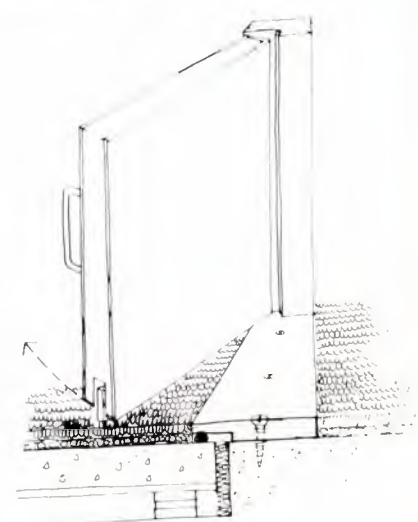
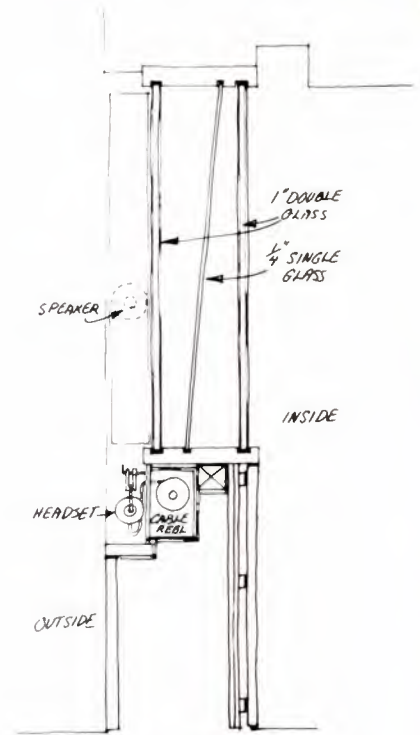
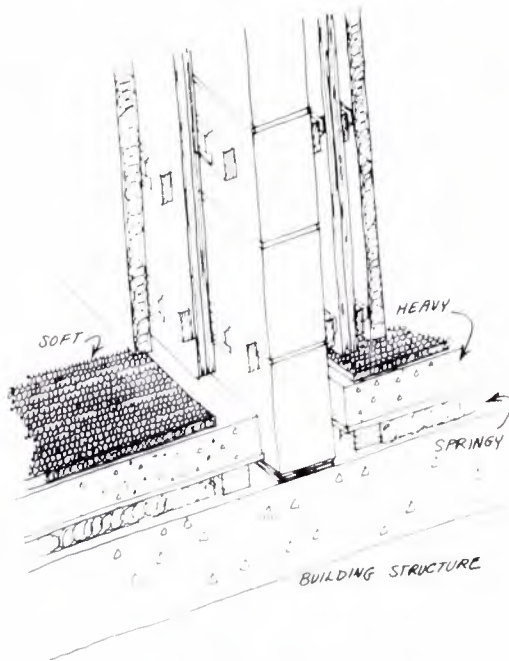
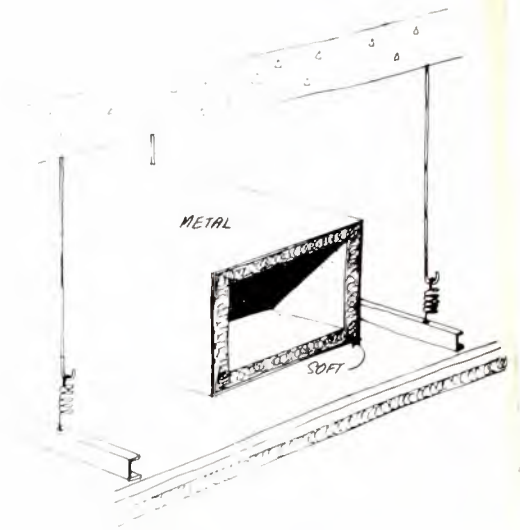
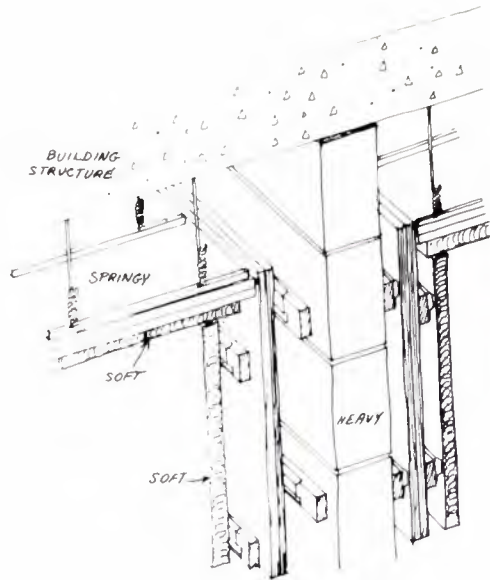
Call it progressive, free-form, prog-rock, whatever, it can range during a typical three-or-four-hour WBCN program from David Bowie, the Velvet Underground, and the Mothers of Invention, to Glenn Gould and Eugene Ormandy with the Philadelphia Orchestra. Liberally interspersed might be British and American blues, folk, hard rock, jazz, gospel, country . . . in short, practically anything on record or tape that would enhance the listener's enjoyment and awareness of music.

What ties it all together? WBCN has on its staff a group of "announcers," each of whom is really a "programmer," highly competent in some field of music and adept at interesting choices and introductions. Together with Manager Al Perry, the music staff chooses records and tapes from the station library, following their own special knowledge and likes, or acting on the large volume of requests that come in. Their enthusiasm for the music has proven highly communicable to the audience, which has developed a strong tendency to come back for more and more.

As Perry said of the staff, "Everyone approaches the music from his or her own orientation and manages to pull a sense of coherency out of it all." These young announcers try to lead rather than



Floor plan shows layout of WBCN's tower-top studio.



Studios at WBCN are "floated" inside the existing building to keep out noise of elevator movement, large fans, pumps and compressors, and even of people walking on hard surfaces. The ceilings (first drawing) are hung from spring supports and move up and down free of the main structure. Floors (second and third drawings) supply a combination of heavy and soft isolation from building. Air conditioning ducts (fourth drawing) are lined with sound-absorbing material. Observation windows (fifth drawing) have three panes of glass, with center pane at an angle to others. Doors (sixth drawing) are heavy steel with tight fitting rubber gaskets to eliminate all sound leaks.

simply react, the collective aim being to ascertain where music will be in the coming months and years.

The audience maintains a strong attachment to the station. In addition to the continuous phone calls for requests, each day's mail produces favorable reactions, such as, "Dear BCN . . . If it weren't for you, I'd leave home . . . Love Gail" (quoted in its entirety); ". . . Thank you for giving me Tom Rush, Richie Havens, James Taylor, Tim Hardin, and Buffalo Springfield in the morning when nothing seems promising . . ."

It is equally heartening for the announcers to receive a letter such as Daniel R. Gustin's. Gustin, education affairs director of the Boston Symphony Orchestra, wrote, in part, ". . . I have been impressed with the way you are able to juxtapose music of widely divergent styles on the program. I have found this particularly impressive because, contrary to the usually accepted 'rules' of radio programming, hearing B.B. King sing the blues right after the adagio from a Schubert symphony really seems to me to be aesthetically pleasing . . . i.e., it 'works'."

It's not only recordings—the special excitement of "live" music helps cement the audience. Currently a weekly jazz concert is broadcast live from Boston's famous Jazz Workshop, live blues is presented from Joe's Place in Cambridge, and leading performers in the rock and folk fields are broadcast regularly from Paul's Mall. Concerts such as a sold-out Grateful Dead performance have also been aired, as were some outstanding productions from Boston's 16-track Intermedia Studios. Moving to the Prudential expands the possibilities for live studio broadcasts of concerts by major name performers.

WBCN has met the challenge of rising costs by steadily expanding its audience and increasing spot rates proportionately. In this manner, a program policy of no more than eight commercial minutes per hour remains strictly enforced. WBCN reached a breakeven point at the end of its first summer with the new format. The first profit was earned in 1971.

Hastings said that, "A handful of FM licensees, which included WBCN, were willing to risk considerable amounts of money because of their belief in the future of FM radio. As an engineer, I had faith in the entertainment and inspirational value of great sound faithfully reproduced. And now, at the Prudential, we'll broadcast in quadrasonic sound 24 hours a day, giving the listener the experience of being totally surrounded by music as in the concert hall."

WBCN is also very active in public services. Every morning at 11 a.m., a ten-minute program of recorded music or comment is presented on "Feedback," consisting entirely of tapes submitted by listeners. The HUB-FELT (482-3358) Listener Line will do practically anything the hundreds of daily listeners' calls request, from helping in the search for stray animals to coordinating drivers and riders to travel destinations. All services are without charge and greatly encourage intercommunity and interpersonal communication.

In addition to the various news and public affairs

Genuine Interest in Music Wins the Young Adults

The effectiveness of the WBCN "personalized" approach to free-form music programming is sharply drawn in the Pulse audience survey for the last quarter of 1972 and the first quarter of 1973, covering the radio stations in the Boston area. One of the stars of the WBCN program operation is staff announcer Charles Laquidara, who, according to manager Al Perry, has outstanding ability to communicate his knowledge of and love for classical music. Around the first of the year Laquidara was put in the morning slot, 6 to 10 a.m. WBCN's average quarter-hour audience in the crucial 18-34 age group went from 11,200 in the final 1972 quarter to 37,200 in the 1973 first quarter, putting WBCN among the top three stations. With the program format crystallizing all down the line, similar increases were picked up throughout the day: from 12,400 to 33,500, 10 a.m. to 3 p.m.; from 15,800 to 40,700; 3 p.m. to 10 p.m. (putting WBCN first in this time slot in the 18-34 age group). At night, 7 p.m. to midnight, WBCN was far and away first in the 18-34 group in the January-March 1973 period, with 38,100 against the nearest competitor's 16,300.

specials and documentaries, the weekly program, "Lock Up," on Sunday evenings, focuses on prisoners' news events in Massachusetts penal institutions. The music consists of inmates' requests exclusively.

In the WBCN news department, under the direction of Danny Schechter, "Your News Dissector," a strong policy has evolved to keep the listeners abreast of subjects in which they are interested while entertaining them with delightful touches of whimsy and humor. So . . . the WBCN news staff not only presents facts, but also stimulates a good-natured response to the news.

News features may occur informally during the day or evening (such as recent interviews with Muhammad Ali, Ramsey Clark and Jane Fonda). As a half-hour public affairs program, significant local events are presented weekly on "Community Reports," Sunday at 6 p.m. (repeated Tuesday at 1 a.m.). Educational needs of the community are served by "School Days," a 15-minute program Monday at 7 p.m.; Tuesday at 7 p.m. another 15-minute public affairs program known as "Third World Report" is designed to meet the needs of minority groups.

February 12, 1973, was memorable for WBCN, for on that date the station was notified it had "won First Place in the News Category, commercial division, of the Ninth Annual Major Armstrong Awards" for "Excellence in News Programming" in 1972. The bronze plaque for this highest national award in FM newscasting was presented to Schechter on March 24, 1973, at the NAFMB Convention. The winning program, a group effort by seven staff members, was WBCN's post-election broadcast to Massachusetts citizens, entitled "The Election: Nixon 49, America 1."

That helps paint a picture of extreme liveliness for this 15-year-old, and augurs an open future. **BM/E**

Computer Keeps Management In Control Of The Data Flow

By Richard H. Chapin

OPERATING DYNAMICS in a TV or radio station involve a steady flow of information—from sales, confirmations, and advertiser instructions, through preparations for broadcast, daily lots, to invoicing, accounting and management reporting.

This flow goes on every day, every minute that the station is on the air. Broadcasting is a business in which many factors have to be brought together for a payoff measured in seconds.

Time, the most perishable commodity in the world, is the station's "product." If a spot isn't sold, it's lost forever; and if advertiser instructions are not followed, there's often no "second chance." Everything becomes critical, because the many different things that need doing must all be done *now*.

In this light, recent trends have multiplied the broadcaster's problems. The move from the 60-second to the 30-second—and even shorter—commercial serves to illustrate the point. It automatically created more spots, with a resulting impact on operations and a greatly increased need for accurate, easily-available information. These spots represent more film, tape, slides or copy that must be made ready and available to the engineer or announcer at the right time. Often the spots have to be scheduled for rotation within certain time flights. They raise the danger of clutter, which can lead to less effective commercials, thus watering down the broadcaster's product. They increase the work necessary to assure that one advertiser's message is not too near that of a competitor. And the increased volume has a real impact in accounting, where it creates far more paperwork and figure work.

Inevitably, some lost revenue results as spots fail to be broadcast because, sadly, they were not scheduled, or the wrong message was broadcast, or separation was not adequate and the advertiser refused

to pay, and so forth. Lost revenue from these causes is particularly painful because it represents business that was in the house; all that was needed to produce revenue was proper execution.

TV and radio profits today are under pressure for other reasons as well. Collections of accounts receivable, always a problem in this business, impact cash flow and put yet another element of pressure on profits. And, while the standard invoice is intended to help TV, it, in itself, tends to add to operating costs.

An interesting aspect of this situation is that while broadcasters are very well aware of what's going on, very few have the same "hot button." Talk to a station manager in the Midwest, and he will com-

continued on page 61



Mr. Chapin is senior program administrator-Broadcasting, Data Processing Division, IBM Corporation.



TOUCH!

A couple of well aimed bricks. A helicopter crash. Immersion in flood waters...

Caught up in the turbulence of news events as they happen, any camera—no matter how rugged—can get damaged. We ought to know. Our rugged CP-16 TV-news/documentary cameras have seen plenty of action around the world. And, of course, they do get damaged.

That's why we have established—

throughout the world—a network of authorized dealer service centers, well stocked with critical replacement parts, and staffed with factory trained technicians. So that you can quickly get your "injured" CP-16 or CP-16/A camera to the nearest service center, in the USA or anywhere else in the world. And be confident that your camera will be quickly and expertly repaired and back to you in a short time. So you can get back to filming the action. Fast.



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If your future depends on cable TV . . . there are a few things you ought to know:

Information about opposing forces and the moves they are planning. Information about your competition and the growth opportunities they're exploring. Information about your industry's fight for survival and profit. Information about local franchise bidding and negotiation, about regulatory trends, about new markets and equipment, financing and programming.

Now there's a way to get all this information—from *one* source, in *one* convenient format. It's all in **Broadband Communications Report**, the first truly comprehensive publication exclusively devoted to cable TV and broadband communications.

BCR comes to you from the publishers of Broadcast Management/Engineering and Cable Management/Engineering, the authoritative publications on broadcast and cable equipment. To create BCR, we brought together knowledgeable editorial people with experience in every aspect of the industry.

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You get valuable insights and analyses that can help you make better decisions. What effect will political, social, legal and regulatory trends



have on the broadband industry? What kind of cable franchise arrangements are working—and what kind are not? What are the intricate factors affecting the economic outlook of the industry?

You plug into a vast clearinghouse of information. BCR doesn't attempt to spell out every detail—but it makes a particular point of telling you where to go for more information. In every issue, we provide you with important new sources of data in specific areas that interest you—including names, addresses, prices. This unique service can save you or your staff valuable hours of research time.

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BROADCAST EQUIPMENT

Antenna monitor provides direct reading of phase angle and loop current ratio. Model AM-19 (204), FCC type approved under the new rules adopted January 1973, requires no operator adjustment except tower selection by front-panel push buttons. Input level range is 32 dB (.5V rms to 20V rms) without adjustable attenuators. \$1660 and up. POTOMAC INSTRUMENTS. 275

New line of cables for CCTV and VTR use includes camera extension, video-audio-power extension, remote control, remote-control-video, and coaxial types. Models 9254 through 9262, inclusive, cover nine different cables, with various combinations of control, audio, and coax conductors. BELDEN CORP. 276

Portable quadruplex videotape record-

er gives 20 minutes of on-location recording, in full NTSC color. Model TPR-10 is in two units, a transport weighing 45 lbs and an electronics package weighing 55 lbs. Tapes are fully compatible with any standard quad system. Monochrome playback is included for reviewing immediately after shooting on location. RCA. 277

Video signal generator produces grey-scale, grating, dot, window, multiburst and flat field signals. Model 615 has grating control for horizontal and vertical phase and frequency, and multiburst phase. Video output is 1 volt across 75 ohms. \$1500. COLORADO VIDEO, INC. 278

Active combining network has differential inputs for 600-ohm balanced circuitry. Model 6X1 mixes six audio

sources with no loss, 60 dB source isolation. It has 10K ohm balanced bridging inputs, unity to 20 dB gain, set by potentiometer. \$75. ROH CORP. 279

Noise control devices for discotheques and factories have a sensor triggered at pre-set sound level. The "Electronic Orange" and "Electronic Lighthouse" light a warning signal when preset level is exceeded, then automatically turn off the musician's amplifiers, or the offending machine. CUSTOM ELECTRONIC ASSOCIATES, LTD. (American agent: R-Deck, Inc.) 282

SCA FM tuner has a phase-locked loop second detector, ceramic IF filters. The Purist Mark I has average sensitivity of 1.5 microvolts, crosstalk main channel to SCA of -60 dB, stereo to SCA of -55 dB. \$101.75. PERMADYNE continued on page 52



Type Approval #3-204

Potomac Instruments 275



RCA 277



Roh Corp. 279.



R Deck, Inc 282

Before you buy an audio console... look inside the GATESWAY 80.

One look will convince you that the Gateway 80 monaural 8-channel console is the best buy for your money. Here's why:

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20-20kHz \pm 1dB
- 18 inputs into 8 mixing
channels provide versatility

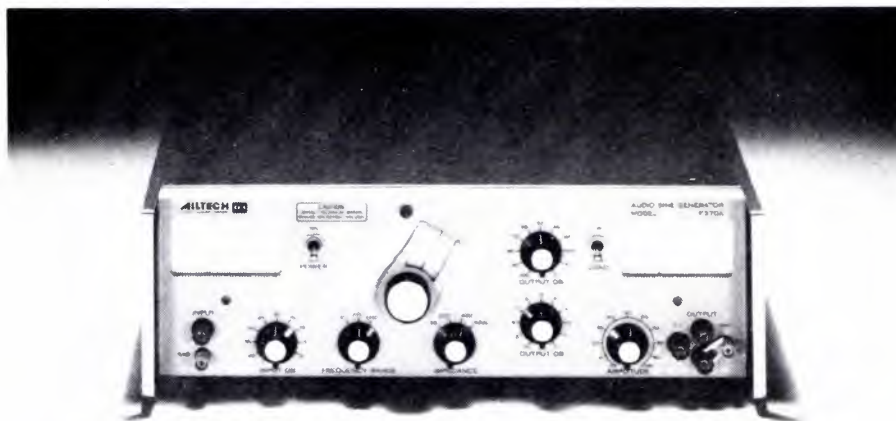
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HIGH watts are a must for the effective testing of audio range devices. For such applications as measuring return loss, AILTECH's Model F370 Audio Sine Generator has all the specifications you'll ever need. Model F370 has a frequency range of 20 Hz to 20 KHz; a built-in voltmeter; 110 db control and impedances of 50 to 5000 ohms. If your requirements include input level metering and secondary metering, Model F370 has it all— for only \$625. Write today for information on the finest high watt audio sine generator built — AILTECH's **Model F370.**

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PRODUCTS

ELECTRONICS CORP.

280

Portable VTR system includes camera and recorder for EIAJ-1 standard. Model GS-4500 (camera) has automatic light control, electronic viewfinder, zoom lens, 5.5 lbs weight. PV-4500 (recorder) has automatic gain control, 3-way power capability — 110 VAC, nicad battery, or car/boat battery. JVC INDUSTRIES. **281**

Automatic iris control for low-light-level CCTV cameras covers range from bright sunlight to almost total darkness. "Auto-Iris" is designed for cam-



eras with silicon-diode array tube, comes in three models, with 25mm f/1.4 lens, 12mm f/1.4, and 50mm f/1.4. GBC CLOSED-CIRCUIT TV CORP. **283**

Digital printer for output of digital voltmeters, counters, and other devices operates at a speed of at least 2.5 lines per second. Model 2010A prints eight columns of data and two of function; or in a larger model 16 columns of data and two of function. Function symbol generation and decimal position circuits allow interface with digital instruments of most manufacturers. Ten-columns, \$795; 18 columns, \$875. JOHN FLUKE MFG. Co. **284**

Impulse generator is flat within \pm 1 dB from 500 Hz to 35 MHz. Model 93453-1 has useful output DC to 400 MHz, output adjustable in $\frac{1}{4}$ dB steps up to 121 dB above 1 microvolt/MHz, pulse rate variable 2 to 100 pps. Single pulse is also available. \$578. SINGER INSTRUMENTATION. **285**

High energy master tape for high-speed duplication produces low-noise copies. Fuji master tape is said to provide acceptable copies after 250 passes. FUJI (U.S. Distributor: Coltape.) **286**

Diode switch for 18 GHz has insertion loss of 1 dB. Model 33632A is two-diode model. 3364A is four diode model with loss of 1.8 dB at 18 GHz, 1.2 at 12 GHz. Carrier lifetime of both

is 200 ns, allowing 10%-90% switching in 100 ns or less. 3363A, \$60; 3364A, \$100. HEWLETT-PACKARD CO. 287

Power supplies for Nixie tubes take input at 5, 6, 12, 24, or 28 volts (to be specified), and deliver 200 volts. Series T is 1 x 1 x 1/2 in., rated 3 ma. Series N is 1 x 1 1/2 x 1/2 in., rated 12 ma. T, \$15.95; N, \$29.95. MIL ELECTRONICS, INC. 289

Battery-powered video level meter connects into video line to indicate camera output level. Palm-sized unit is intended for CCTV and ETV operators. KALART VICTOR CORP. 290

Digital monitors have 2-, 3-, or 4-digit readout, can be calibrated to read rates, events per unit time, machine or process time, counts, shaft or other motion ratios, etc. Models in "D" Series operate on 115 VAC, are available with overflow indication. BCD output, have input compatible with most digital sensors. \$150-\$225. SEQUENTIAL INFORMATION SYSTEMS, INC. 291

Gated compressor provides "hands free" gain riding for audio inputs. Model SE30 has three-input mixer, with compressor that virtually rides



gain automatically. Memory circuit holds level when input drops out, to eliminate "pumping" or build-up of crowd noise when announcer stops talking. \$310.20. SHURE BROTHERS, INC. 288

Numeric readouts are available with number of digits desired, mounted with bezel and filter for panel output. Series 68000 has snap-in terminal board which can hold decoder-drivers, memory, or counting logic. Lamped readout, \$5.90/digit; with decoder-drivers: \$11.80/digit. INFO-LITE CORP. 292

Encapsulated power supply puts out ± 12 volts at 100 ma. Model 12100 is 3 x 2 3/4 x 1 1/2 in., has internal short-circuit protection, operates from 115 VAC. \$9.95. KENMARK DEVELOPMENT GROUP. 293

Dual-station controls for CCTV and surveillance systems operate all scan-



\$475

... buys LPB's S-9B, the best little high-quality 4 channel mono production board you've seen yet! Features include:

- 2 inputs on each channel
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LOW distortion a requirement for the testing, monitoring, and maintenance of your broadcast instrumentation? AILTECH's Model F380A Audio Sine Generator has proof accuracy in one box. Total distortion is less than 0.1%; it has a built-in voltmeter, calibrated in volt and db; a balanced 150/600 ohm output; and a 20 Hz to 20 KHz frequency span. All that for only \$925. If you're interested in only the finest in broadcast test instrumentation, AILTECH's Model F380A can guarantee **proof of performance.**

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NEW LIT

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

atalog shows listings and technical data on **Foamflex and Spirafil II coaxial cables** for CATV. Phelps Dodge Communications Co. **209**

nap-action switches are covered in catalog, with engineering drawings, specifications, and a switch selectoricator that shows in seconds the right switch for any application. Cherry Electrical Products Corp. **210**

rochure MWD-311, details extensive line of **transferred-electron devices for microwave applications**. RCA. **211**

Multipoint Distribution Service Systems are described fully in brochure with general background on system application, technical details on available hardware. Varian. **212**

Digital incremental readout systems are subject of a technical data sheet with application data and specifications. Sequential Information Systems, Inc. **213**

"High Frequency Signal Sources" is a 10-page booklet describing in extensive detail **signal generators from DC to 2 GHz**, including 17 different units. General Radio. **214**

"Cable Television and Education: A Report from the Field" is a 52-page booklet detailing **actual uses of cable for education around the country**. National Cable Television Association. **215**

Narrow-band video applications are covered in eight-page brochure, including transmission line requirements, signal characteristics, etc. Colorado Video, Inc. **216**

"Silver Prospecting Today" is an illustrated booklet describing the various systems for **recovering silver from film-processing apparatus**. HF Photo Systems, Technology Incorporated. **217**

Cross-reference catalog shows comparable **Littelfuse and Bussmann numbers for hundreds of standard fuses, holders, clips, etc.** Littelfuse, Inc. **218**

All current test instruments and related products are covered in new short-form continued on page 56



Stanton. Benchmark for an Industry.

Stanton's 681 Series is the Calibration Standard to recording engineers such as Robert Ludwig.

Whatever the requirements for recording and playback, Stanton's Series 681 cartridges are the Calibration Standard. And there is a 681 model engineered specifically for each of these critical applications. That's why Stanton is truly the Benchmark for the industry.

The Stanton 681A—For Cutting Head Calibration. With Stanton's Model 681A, cutting heads can be accurately calibrated with the cartridge, for it has been primarily designed as a calibration standard in recording system checkouts. Frequency response is factory calibrated to the most rigid tolerances and the flattest possible response is assured for precise alignment of recording channels.

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All Stanton Calibration Standard cartridges are guaranteed to meet the specifications with exacting limits. Their warranty comes packed with each unit—the calibration test results for that individual cartridge.

For complete information and specifications write Stanton Magnetics, Inc., Terminal Drive, Plainview, L.I., New York 11803.

All Stanton cartridges are designed for use with all two- and four-channel matrix derived compatible systems.

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SYSTEM CP-16 NEW from cinema products

Front-Mounted VU Meter for CP-16/A Cameras



The new front-mounted auxiliary VU Meter provides the TV-news-film/documentary cameraman (working an assignment on his own) with an important added control. The auxiliary VU Meter is mounted

in front of the CP-16/A camera, directly across from the lens eyepiece, permitting

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Now through the use of WILKINSON voltage sensitive Line Surge Protectors you can protect your equipment from line surges that may exceed even twenty times the normal line voltage.

A WILKINSON pulse compensated Line Surge Varistor, is placed across a line of its rated voltage. Should a surge or increase of voltage occur, the resistance of the varistor decreases at log scale as the voltage increases, thus acting as a momentary load or short circuit to the surge. WILKINSON Line Surge Protectors draw little or no current and are capacitor compensated for microsecond surges, thus damping all line disturbances as well as excessive voltage increase.

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NEW LIT

catalog. Hickok Electrical Instrument Co. 219

"Cinema Perspectives" is a quarterly publication with feature articles on new motion picture techniques and applications of motion picture photography around the world. Cinema Products, Inc. 220

Push-pull broadband power amplifier is subject of application sheet describing design, construction and performance of a 100-watt, 225-400 MHz amplifier. Communications Transistor Corporation. 221

"Mastering TV Distribution Systems" is a new MATV design guide, a 64-page book showing detailed specifications for 38 different systems, with sections in addition on basic MATV design theory. Jerrold Electronics Corp. 222

New 12-page catalog shows full line of microwave studio-transmitter links and intercity relays, with general design background and full technical specifications. Marti Electronics Inc. 223

Directory shows more than 5000 cur-

rently popular electron tubes of 2 manufacturers, with quantity price Metropolitan Supply Company. 22

Brochure covers full line of trunk, distribution and extender amplifiers and accessories for 50-220 MHz, with specifications and mechanical data. AEI Communications Corp. 22

"A Selection of Application Ideas shows in full technical detail more than 20 different ways of using video switchers, modulators and related equipment in videotaping, ETV, monitoring, switching, etc. Dynair Electronics. 221

A 68-page technical booklet describes how to choose the right digital voltmeter with general background or DVM design. A/D conversion techniques, etc. Hewlett-Packard. 227

"What Happens to Your Film At the Lab" describes film processing techniques, with a tour of a typical lab and constitutes a basic introduction to laboratory procedures. Motion Picture Laboratories, Inc. 221

Catalog covers emergency lighting equipment, and shows technology of life safety egress illumination, data on OSHA and the Fire Protection Code and complete line of emergency light systems. Teledyne Big Beam 229

"a complete monitoring system"

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 - measures internal S/N •
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CROSS-TALK

Feedback On Video Production Switchers

Reader reaction to the special emphasis in June on video production techniques has been enthusiastic—particularly about Eric Somer's "Television Creative Palette." Our brief historical recap, page 30, stands corrected, however, by the following letter from Bob Hueffel of Central Dynamics Corp. Please note also the proper photo of KOOL-TV's Sarkes Tarzian switcher.

Dear BM/E:

"Video Production Switchers—A New Breed Is Available" was a timely feature in your June 1973 issue and certainly highlighted manufacturers' responses to many of the industry's real needs.

Your unique and enviable position to accurately evaluate the industry was manifest in your editorial content.

Your awareness also steered you to the current buzz words—"production and editing back into the studio control room," "human engineered," "simple operation yet extreme flexibility for creative talent," "production of locally-produced spots," "mix AND effects on each bus," and "cost-effectiveness."

However, I do take issue with the history and chronological order of the introduction of *some* of these "New Breed Switcher" features.

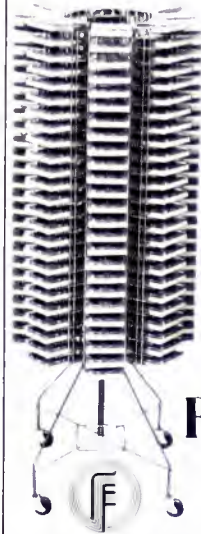
All solid state switching and systems were installed almost ten years ago. Meeting and maintaining exacting specifications has also been a reality for a long time. Operator-oriented switcher designs, "human engineered," are at least four years old. Mix AND effects amplifiers, simple operation, IC circuits, flexibility, production capabilities of locally-produced spots, and cost effectiveness also have a birth date of 1969.

To be specific, I'd like to submit the following brochures and infor-

continued on page 58



Fidelipac's Hot Convertible



The new Cart-A-round Storage Racks. Each WR 25 Modular Rack holds 25 Type A Cartridges—eight can be mounted on our Mobile Carousel Base to make up the MR 200. Convert to wall mount by using the brackets supplied.

Want more information on Cart-A-round Racks and the other new Fidelipac Professional Accessories? Contact your distributor or

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Spotmaster

Compressor-Limiter Amplifier



(The Great Leveler)

\$465!

You can stop riding pain now even when a shouter and whisperer are on the same talk show. The Model CIA 20 40 Compressor-Limiter Amplifier does it automatically— instantaneously for both AM and FM. Switchable controls permit symmetrical FM or asymmetrical AM peak limiting, pre-emphasized or flat response, compress limit, compress only, or compress limit off. Automatic gain control range is 40 dB dynamic and the compression ratio is better than 10:1. All solid state, plug-in modular construction assures trouble-free reliability. Write for details.

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Crystasound Pre-Amplifier for CP-16/A Cameras



The Crystasound Pre-Amplifier optional accessory provides the CP-16/A camera system with an **additional** condenser microphone capability— **without** requiring the use of the Crystasound Auxiliary Mixer. When the Model CM-1 Pre-Amplifier unit is plugged in, the CP-16/A Crystasound built-in Amplifier will still accept two low impedance microphones and one line input— as well as one Sennheiser 804/805— series condenser microphone, with all systems controlling the Crystasound built-in Amplifier remaining fully operational. All required power is supplied by the same NC-4 nicad battery pack powering the entire CP-16/A camera system.

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CROSSTALK

mation for your "Who's Who" and "What-Where-When-Why and How" file:

1964: Central Dynamics introduced its VS-100 series all solid state, vertical interval, color video switcher.

1969: Central Dynamics, at the NAB, introduced its series VS-800 Video Production Switcher—human engineered, oriented for production people and studio production work, and with a patented Mix AND Effects amplifier.

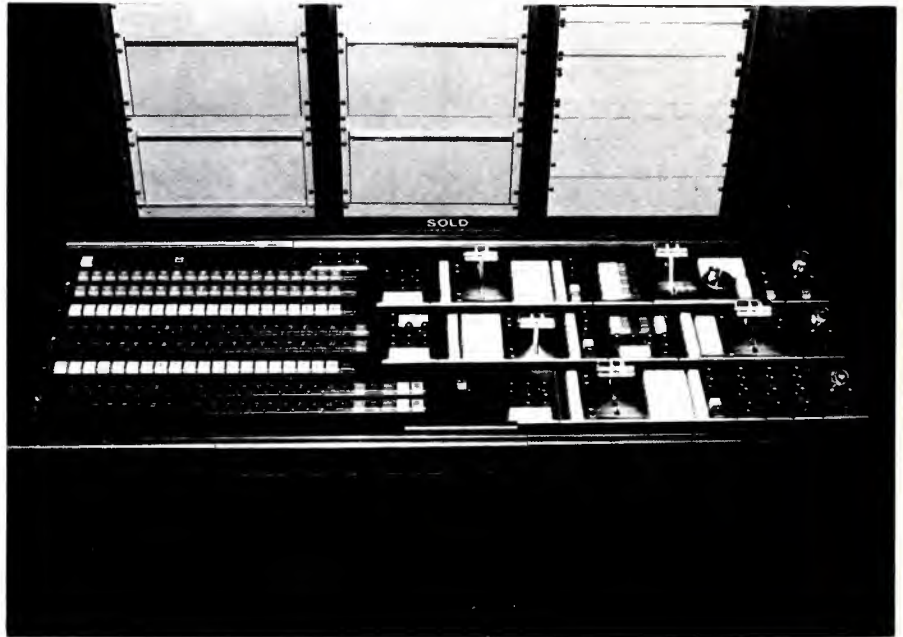
1973: Central Dynamics at the NAB, introduced its series VS-1200 Video Production Switchers with up

to three CDL unique and patented Mix/Effects amplifiers, soft edge wipes and keys, vignettes, borderline keys, spotlight, and transparent matte picture framer.

Although Central Dynamics' equipment was not one of your feature articles, we take great pride in realizing that for years we have been anticipating and meeting the industry's needs and that the "New Breed of Switchers" are reflections of CDL's creativity and advancement.

Be assured that your readers can continue to look to CDL advancing the state-of-the-art—and hopefully reading about it in *BM/E*.

*Robert G. Hueffed
Vice President
Central Dynamics Ltd.*



Right switcher

The production switcher pictured on page 31 of the June issue of *BM/E* was identified as being the

one used by KOOL-TV, Phoenix, Arizona. That's not so. KOOL-TV's production switcher is shown above.

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gust 27-29, on legal "packaging" of television and motion picture programs: info, PLI, 1133 Sixth Avenue, New York City.

Sola Electric has rescinded a selective 4.5% price raise, announced early in June, in response to the President's June 12 price freeze . . .

Memorex has instituted a lifetime warranty on its Quantum/L computer tape and Mark X/L Disc Pack.

People

Lynd John Carter joined Lenco Electronics as sales manager . . .

James Gabbert, president of KIOI-FM, received a Golden Mike award from the Institute of High Fidelity for innovations in hi-fi sound . . . **R. Brent Judd** became chief engineer of San Diego Video, Inc.

Sam Cook Digges, president of the CBS Radio Division, won a Missouri Medal of Honor from the University of Missouri for his "contributions to radio journalism" . . .

Don Herman is the new coordinator of field activities in Delaware, Maryland, Virginia, West Virginia, and District of Columbia for Broadcast Electronics, Inc.

James R. McQuade won appointment as manager of WCBS-FM in New York . . . **Alan S. McDonald** has the new position of marketing analyst for TelePrompTer . . .

Lad F. Hlavaty is the new vice president and director of engineering for RKO General's television division . . .

Charles P. Ginsburg, vice president for advanced development of Ampex Corp., was elected to the National Academy of Engineering.



Garrity



Glade

Desmond A. Garrity became vice president and director of corporate planning for General Cable Corp.

Tom Longfellow, **Louise Seymour**, and **Larry Duke** were all named vice presidents of the Arkansas Radio Network . . . **Paul Glade** joined Anixter-Pruzan as CATV sales representative.

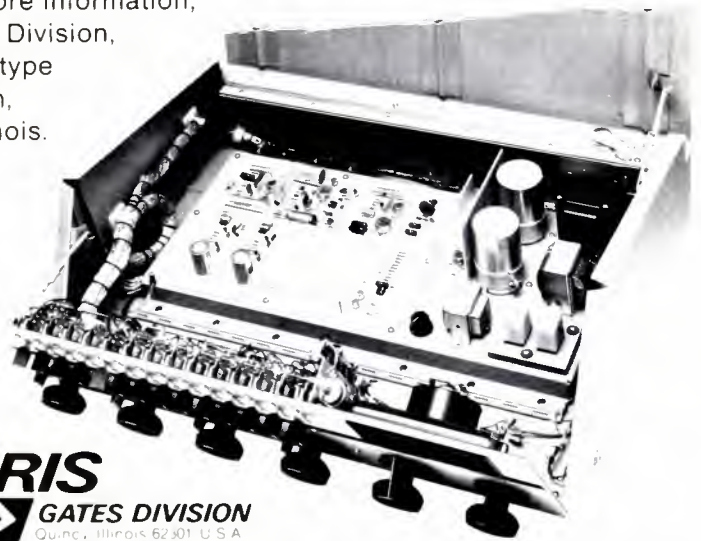
continued on page 60

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Rear of Auxiliary Side Cover showing the 8 pin sound cable connector, compatible with all Auricon-type amplifiers

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Robert W. Sarnoff, RCA chairman, got a special citation from the International Radio and Television Society for "twenty-five years of leadership in broadcasting and communications" . . . **John B. Chaney, Jr.** joined Jerrold Electronics as an MSO account executive.

Erwin Parthe is the new program director of WNEM-TV, Bay City, Michigan . . . **John N. Catlett** became manager of WBBM-FM, CBS Chicago station . . . **John W. Elsasser** joined Theta-Com as manager of cable sales.



Elsasser

Lambert

Wm. H. Lambert was named vice president and division manager of Jerrold Electronics' CATV system division . . . **Robert E. Buescher** is

the new manager of eastern sales and **Robert S. Dickinson** is manager of western sales, RCA Film Recording Systems.

Eric King was named north-eastern sales manager for Vital Industries . . . **Nick Morris** won appointment as national sales manager of Bozak, Inc. . . . **Robert E. Mellvane** became vice-president, sales, for Anixter Bros., Inc.

Margaret A. Richards became assistant to the manager, commercial products, of International Rectifier's semiconductor division . . . **A. Clinton Ober** was appointed national subscriber sales manager of Community Tele-Communications, Inc. . . . **John W. Overton** has the new position of market manager, consumer professional markets, 3M Mincom Division.

George F. Mooney was named account manager of Paradyne Corporation . . . **Jack Sumroy** joined WSNL-TV, Long Island, New York, station, as vice president for programming and promotion . . . **David Packard**, chairman of Hewlett-Packard and former Secretary of Defense, will receive the Medal of Honor of the Electronics Industries Association at the EIA Spring 1974

conference.

Paul D. Askos is manager, national product sales, Ameco, Inc. . . . **James A. Monroe** was named central Arizona district manager for Arizona Cable TV . . . **Remi Nadeau** joined Collins Radio Co. as director of advertising and public relations



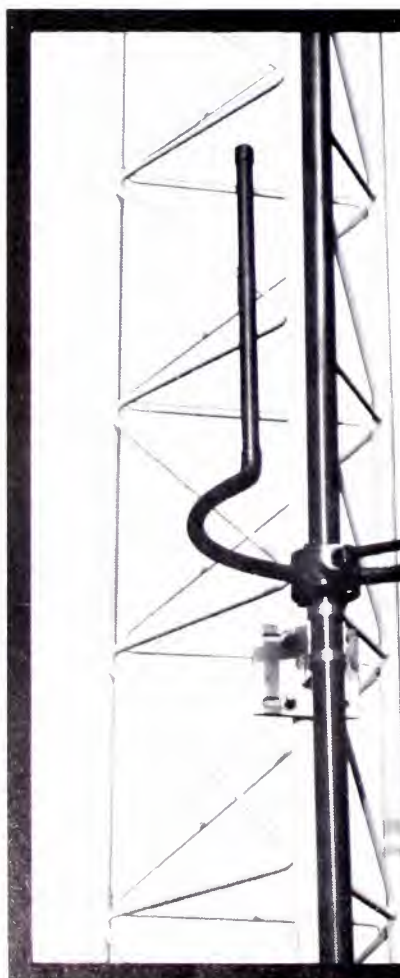
Askos



Wulliman

Richard D. Petit is vice president of engineering, and **Gene Parole** is vice president of manufacturing both for K'Son Corporation . . . **James Wulliman**, manager of engineering at WTMJ, was elected president of the Society of Broadcast Engineers.

Darrell Wells has joined Anaconda Electronics' CATV Division as customer service rep at Anaheim . . . **Ronald H. Fried** and **Daniel J. Yomine** have been named senior vice presidents at International Video Corp. **BM/E**



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plain about increasing administrative costs. Another, on the East Coast, worries about the foul-ups in traffic and engineering. Yet another points to collections as "the" problem.

In fact, "the" problem lies in the nature of the business—its fluidity and the immediacy of its needs. A solution must address the problem as a whole. The requirement is for operational efficiency and stability, and this can be attained only by applying a proper system and associated controls to the entire broadcast business cycle.

That, simply stated, is the philosophy behind the IBM System for Television and Radio. It is designed to provide the broadcaster with effective control over his entire business cycle—from "avails" and contract management through the daily log, aired log update with discrepancy reporting, accounting, sales analyses, and demographics. It follows the flow of broadcast dynamics, providing control at the critical points, and supporting management with the analyses and data needed to maximize profits and control the business.

The System for Television and Radio is written for the small-scale System/3, which was specifically designed to be used by companies with no prior experience in operating computers. It consists of a set of six interrelated programs that interact with a data base containing information such as advertiser

contracts, airing instructions, program schedules, daily logs, billing and demographics data. This information is maintained in direct-access magnetic disk files, which are updated as operations proceed and from which information is retrieved quickly as needed.

The system is designed to minimize data preparation and improve communications. For example, contract data which has an effect on a number of departments represented in the data base is entered only once. The system automatically updates all related files, and the information thus becomes available to all areas concerned. Documents such as intermediate and final program logs, availability reports, and reports on contract status are generated quickly and efficiently on request.

With the station's key operating information in the computer, the system provides the support functions needed to control operations. It satisfies contract specifications by automatically scheduling the bulk of spots, performing horizontal and/or vertical spot rotation where requested, and by providing an easy method for the broadcaster to schedule those "difficult" and "special" spots. Then it produces the following operating documents:

1. An availability worksheet that describes the status of all scheduled spots and opens;
2. A summary highlighting degree of program success in terms of open spots, fixed and pre-emptible sales;
3. A contract listing to aid in planning and scheduling activities, providing information on spot

continued on page 62

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TV-COSMICAR-EE 16mm F/1.6

The TV-COSMICAR-EE 16mm f/1.6 is a high-speed EE lens specially designed for 2/3" vidicon cameras. It maintains image luminance 100 lx against subject brightness between LV11.3~17 (350~18,000 cd/m²), about 1,800~96,000 lx.

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The "Change-over Switch" in front of the lens controls the operation of the diaphragm.

When the switch lever is turned on to "EE", the lens diaphragm operates as fully automatic electric-eye, and is brought on to "OPEN", the diaphragm stays fully opened condition.

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airing schedules, makegoods, airing performance, invoicing and cash receipts;

4. A contract exception list, to help control contracts, improve customer service, and assist in sales and financial planning;

5. A confirmation, that identifies original orders and substitutions;

6. A list of scheduling conflicts that identifies those situations which need special attention; and

7. A list of airing instructions that allows the system to track customer specifications—thereby reducing errors, makegoods, and lost revenue.

The system goes on to produce preliminary logs for any date specified leading to the production of a final log. As the engineer airs broadcast events, he records his activity on the log, in effect filling agency/advertiser orders. He also notes on the log any deviations from the schedule, with explanations.

When aired data is entered into the computer, the system updates the log and contract information and produces a discrepancy report. This helps management pinpoint when and why a discrepancy occurred, and indicates where makegoods are required. It is a means of assuring that makegoods do indeed get scheduled.

The accounting portion of the system produces the standard invoice, or, if desired, a customized format. Also produced are a cash application list for internal cash/credit control, and an aged invoice

status report showing the invoice date, amount, and amount paid to help control receivables.

Then, continuing to follow the logical information flow, sales reports are produced by agency/advertiser, by salesman, and by product. The latter highlights those products that are or are not advertised on the station, leading to sales strategies aimed at maintaining or increasing current business and going after new business. A revenue-projection based on business in-house serves as the basis for understanding trends and for resource planning.

The system can also produce a demographics report showing cost-per-ousand for stations and programs in a given market.

Customarily, different departments in a station interact through direct contact, or by telephone. By their very nature, these contacts tie up a number of people. They are relatively inefficient, often requiring followups. As the time for a given broadcast approaches, the pressure to have all needed materials on hand increases, and adds to the already existing potential for error.

In contrast, the computer makes timely operating data available through regular reports and listings, and also permits inquiries into one common data base on a random basis, for up-to-date information, for checking and/or for modification.

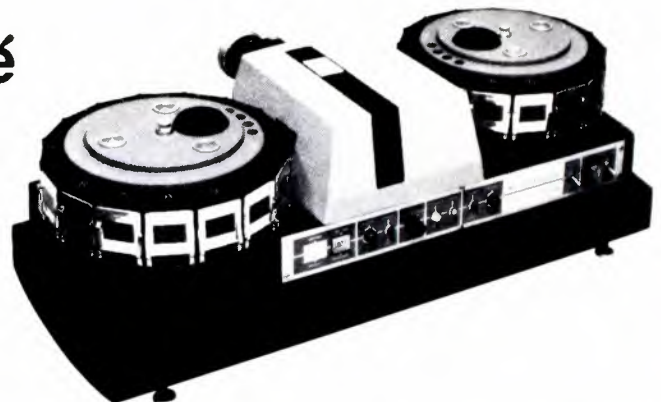
Someone in traffic, for example, may want to make modifications to an upcoming log. He goes to the computer, where either he or a machine operator taps a few keys on the typewriter-like keyboard of the System/3's console. The computer finds the desired information in the data base, and immedi-

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ately acts on the instructions provided, by either adding, deleting or moving the appropriate data. Or, someone in sales may want to check an availability. Again, the information is instantly retrieved.

Everyone works from a single source of information, and that source is likely to have far fewer errors than separately-maintained information sources in different departments. The information is more complete and up to date, and it is available on demand to the people who need it as part of the station's normal flow of work.

The System for TV and Radio is written in an English-like programming language, known as RPG I, that has been learned and used by thousands of people with no previous knowledge of the computer. The language includes forms on which operating information is recorded, to speed and simplify entry into the computer. The System/3 itself has "miniaturized" components and takes up little floor space.

With all these user-oriented characteristics the computer system becomes an in-house resource, tailored to meet the specific needs of a station and its management. For instance, the "tailoring" can include special reports and/or procedures desired by individual station managers, readily produced with minimal programming effort on the user's part.

With its own system thus geared to support its own particular operations, management is in position to adapt quickly and effectively to evolving needs, and to take maximum advantage of new opportunities. **BM/E**

FCC Rules & Regs

continued from page 24

more applications for the call are received within 15 days, the recipient will be the station with the longest continuous record of broadcasting operation under substantially unchanged ownership and control.

Thus a rule of *seniority* replaces the "first-come-first-served" rule in the special case of competition for relinquished or deleted signs. In other situations, "first-come-first-served" is still the rule.

A refinement of the relinquishment provisions prevents the re-use of a relinquished call sign in the *same* community within 180 calendar days, except by the same licensee or its successor-in-interest.

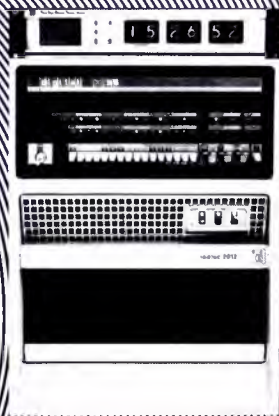
Summary

The call sign Rules are principally directed against two problems. First, there is the need to prevent confusion among stations, particularly in the face of some licensees' apparent desire to capitalize on such confusion. Second, there is the problem of "trafficking." The present call sign Rules have grown out of the Commission's experience with these problems.

Broadcasters should always check with communications counsel as to availability of desired calls, timing of requests and objections, and required filing fees.

Finally, it should be noted that, while the new Rules do not deal with the problem, the Commission expressed its continuing concern over frivolous requests for call sign changes; a later pronouncement on this issue may be expected. **BM/E**

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The real strength of this unique volume lies in the practical tips it provides imparted in a readable powerful fashion. The authors reveal the best way to go about starting a system, and consider everything from obtaining a franchise to installing the plant. Two chapters deal with antenna systems planning, including ideas on locating the best point for signal reception. Promotional ideas are discussed in some detail. This crucial area of CATV operation is clarified with invaluable hints on how to set up an effective working promotional program. Program origination receives extensive coverage, also ways to produce commercials on small budgets, adding FM to a cable system and two-way systems. 452 pps. hundreds of illustrations.

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This new volume is needed in every TV and CATV library. It will prove invaluable for photographers, producers and directors. The authors have produced literally thousands of TV commercials, plus numerous documentaries and news photo work. The easy-to-read, fully illustrated text explains the basic techniques of TV photography, including dozens of tried and proven shortcuts for getting pictures on the air quickly and economically. Emphasis is placed on low cost production. Featured throughout are scores of case histories relating the experiences—both good and otherwise—of this two-man production team.

Fully covered are such subjects as developing ease and tact in dealing with touchy and difficult advertisers, fresh exciting new techniques for filming low cost commercials, continuity writing and production planning, the six important elements required in film production, the difficulties of filming on location, plus sure fire techniques that overcome field problems, and a 7-point plan to help produce a better commercial film. Also included is a step-by-step chronicle of a sound-on-film assignment. The authors then tell how they put together a documentary using fresh techniques on scriptwriting, staging, shooting, narration, etc. The use of a storyboard is explained, and there are discussions covering camera equipment, lighting, editing, simple animation techniques for producing inexpensive commercials, and the use of special effects to dress up a film product. 224 pps., 46 illus.

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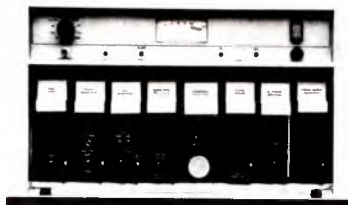
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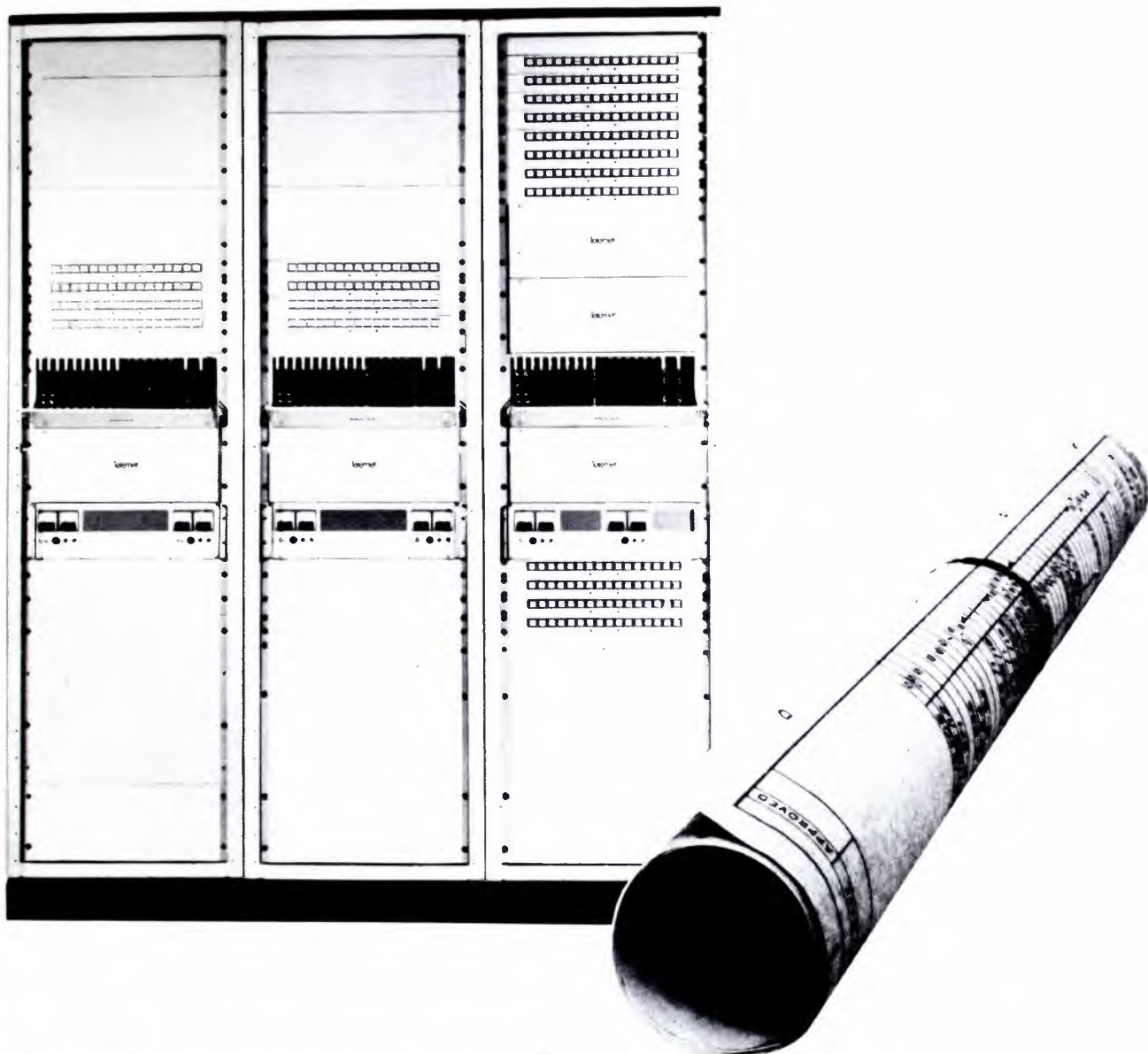
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