JULY 1987 $3.00

BM/E

BROADCAST MANAGEMENT/ENGINEERING

THE NEWS OPERATION, PART II:

The Newsroom

Also in this issue:

- Newsroom Computers
- Fiberoptics
- News Directors
- RTNDA Preview

www.americanradiohistory.com

Tired of excuses from "third party" synchronizer companies? Studer, the world's premier tape transport maker, now offers two new intelligent SMPTE/EBU bus controllers.

SC 4008: Dedicated and Expandable – The basic SC 4008 system controls four audio, video or film machine transports via Studer TLS 4000 synchronizers. For more sophisticated applications, an optional expansion board extends SC 4008 control to as many as eight machines. The operating panel has a full array of dedicated keys logically grouped according to function.

Optional features include take count-down unit, VITC reader/translator, video character inserter, and event controller with outputs to trigger up to 10 additional non-synchronous sources.

SC 4016: Soft Alternative to Hard Production Tasks– The SC 4016 top panel shows a radical departure from the SC 4008 concept. Instead of dedicated keys, the SC 4016 employs eight "soft keys" with internal alphanumeric LED displays. The software menu assigns functions to the keys according to selected system mode, and keys are automatically re-labelled to indicate currently assigned function.

The SC 4016 controls up to 16 synchronous transports, providing complete control (including shuttle and cue functions where applicable) as well as comprehensive machine status displays. Master and slave machine designations may be re-programmed at any time. And, for advance EDL preparation, the SC 4016 provides floppy disc data exchange with personal computers.

In Sync with Swiss Timing – Studer system controllers are made in Switzerland, the country famous for being in control and precisely on time. Every time. For more information on Studer system controllers, please contact your nearest Studer office.

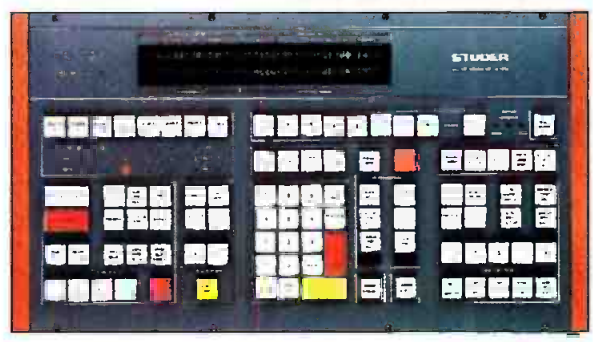
STUDER REVOX

STUDER REVOX AMERICA, INC.
1425 Elm Hill Pike, Nashville, TN 37210, (615) 254-5651

Offices: Los Angeles (818) 780-4234/New York (212) 244-4462/
Chicago (312) 526-1660/Dallas (214) 943-2239
San Francisco (415) 930-9866

Circle 100 on Reader Service Card

Machine Control from a Machine Maker



SC 4008

SC 4016

STUDER SMPTE BUS CONTROLLERS

Synchronizing complex, Austrian Broadcasting Center, Vienna. Studer SC 4016 system controller, Studer mixing console, Studer tape machines.

www.americanradiohistory.com

The DYNAMAX® family of cartridge machines

New models, good looking, great listening

Thirty years of experience is working for you. In 1954, Fidelipac invented the endless loop tape cartridge, and we've been in the business ever since. We've focused our experience to develop a complete line of innovative, state-of-the-art cartridge machines.

CTR100 Series

The ultimate cartridge machine. You can intermix standard, high output, mono, stereo, matrix and discrete format cartridges using our Cartscan™ system. Even warn a jock to read live tags or automatically turn on external functions. Create special effects with Vary Speed. Time carts with ease, even in fast forward, with our real time digital clock. Other features include DC servo motor. Blackout status display. Splice finder. On-board diagnostics. SMPTE time code compatibility. Phase correcting matrix system. Optional Maxtrax® format. And audio you'd never expect from a cart machine.

CTR10 Series

Our idea of basic utility. 3 cue tones. Automatic fast forward. Audio search. Audio switcher and mixer. 1 kHz defeat. Constant current recording. Low voltage 2-inch air damped solenoid. Ball-bearing self aligning pressure roller. Azimuth independent head bridge assembly. Superb audio.

CTR30 Series

A 3-Deck that records. The recording system is standard, and the complete unit is priced below most play-only 3-decks. The CTR30 Series offers 3 cue tones, audio switcher and mixer, and a constant current recording system for the cleanest audio you'll ever put on a cartridge.

ESD10 Eraser/Splice Detector

Cleanest erasure ever! Dual constant current precision erase heads. No heat generating, tape stretching degaussing coils. Continuous duty operation. Reliable, adjustment-free, patented splice finding.

All you'll ever need

The inventor of the tape cartridge has invented a complete family of cartridge machines. Let our experience work for you. For more information, contact Fidelipac or your authorized DYNAMAX distributor.

DYNAMAX®
BROADCAST PRODUCTS BY FIDELIPAC®

Fidelipac Corporation ☐ P.O. Box 808 ☐ Moorestown, NJ 08057 U.S.A. ☐ 609-235-3900 ☐ TELEX: 710-897-0254 ☐ Toll Free 800-HOT TAPE

DYNAMAX products are designed and manufactured in the U.S.A.

Circle 101 on Reader Service Card

www.americanradiohistory.com

Sony Communications Products Company, Broadcast Products Division, 1600 Queen Anne Rd., Teaneck NJ 07666. © 1987 Sony Corporation of America. Sony is a registered trademark of Sony Corporation.

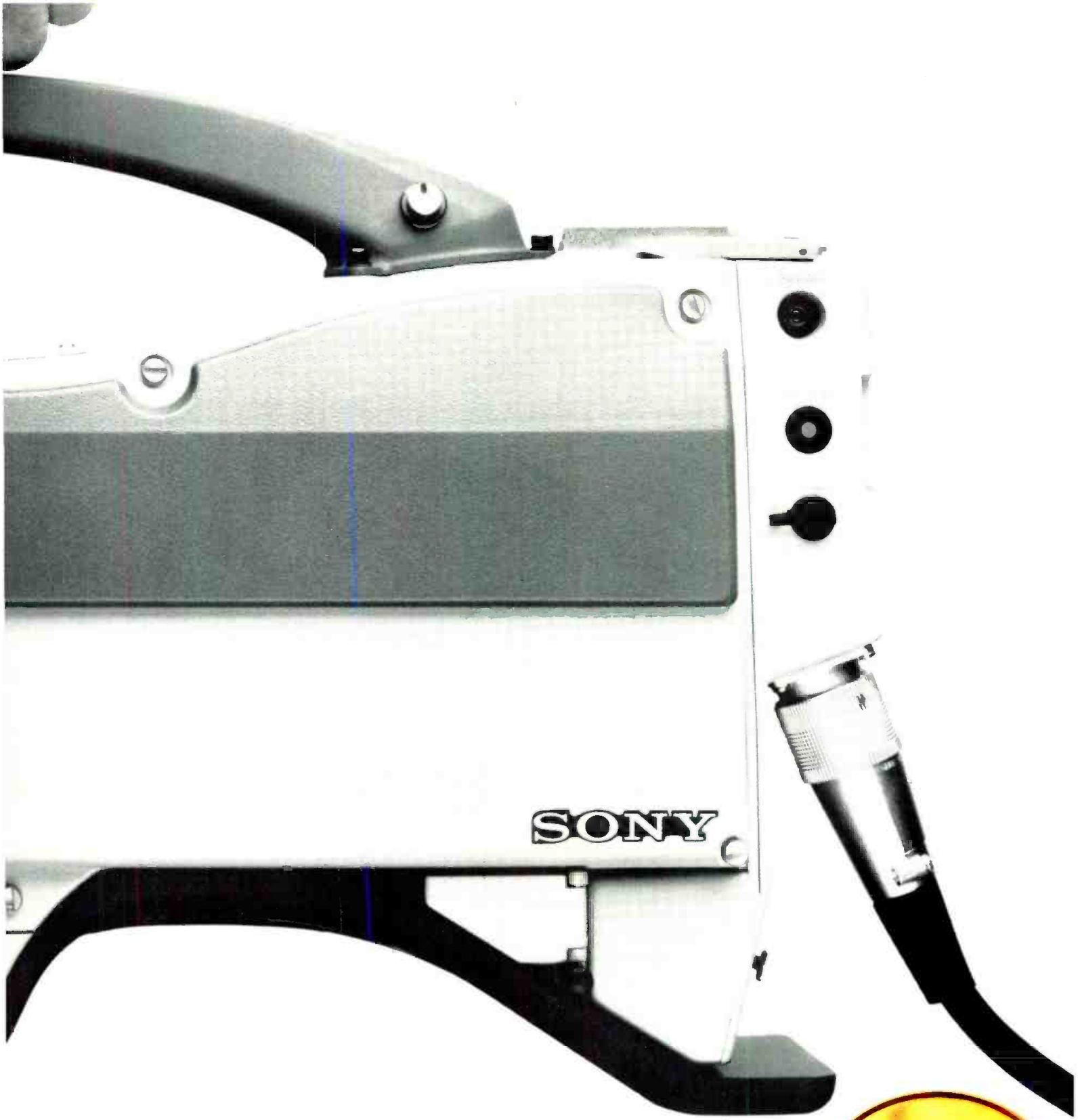
The hardest soft

You're looking at an EFP camera with a split personality: the new, top-of-the-line Sony BVP-350.

It's the first portable with true "Hard" camera performance. Because it has F1.2 optics, a 60dB S/N ratio, and digital zonal registration. Yet it's so light, so balanced, so thoughtfully designed, that it's a superb "Soft" camera too.

The viewfinder rotates 360 degrees and adjusts up, down and sideways—so you don't have to. And its unique "peekaboo" handle means that no matter how you shoulder it, there's no blind side.

www.americanradiohistory.com



camera ever.

But what makes it even more remarkable is that it's a perfectly matched companion to the Sony BVP-360. Using the same breakthrough FET and Mixed-Field tube technology. Even the same circuit boards. And that shows up as the best picture performance in history.

For a good, hard look at the world's most advanced Soft™ camera, contact your Sony Broadcast representative. Or call Sony at (201) 833-5231.

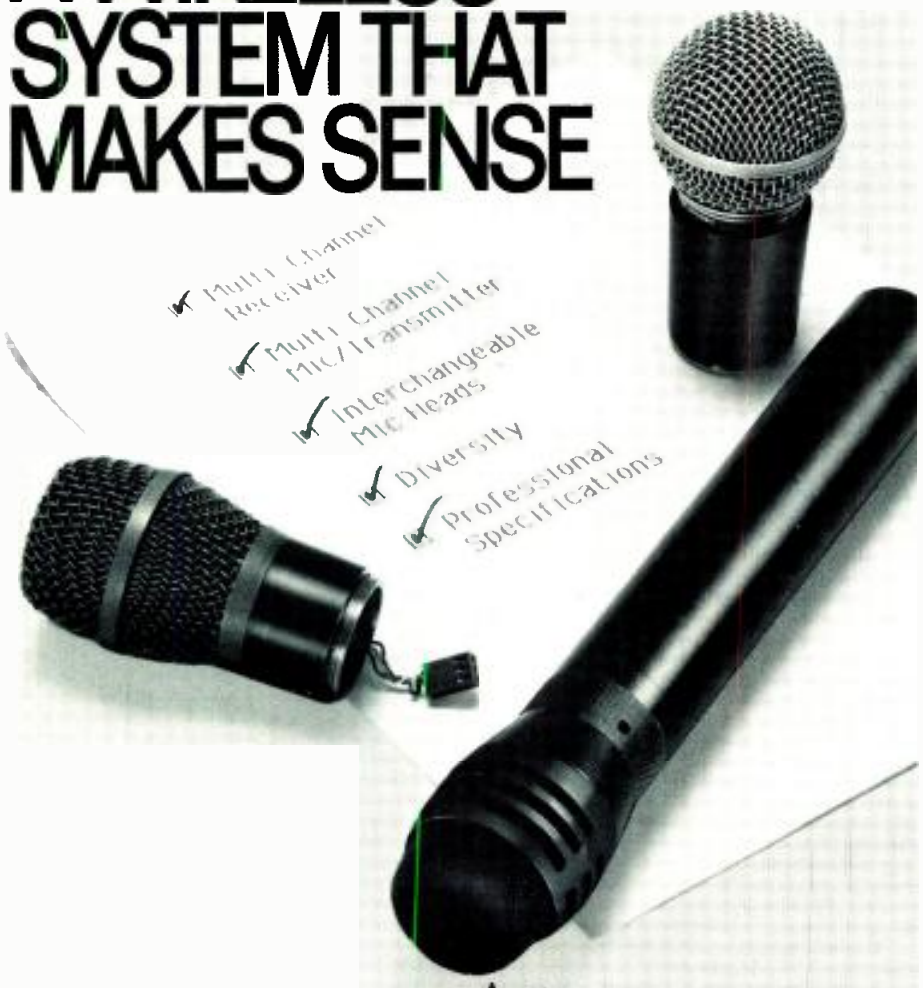
THE SONY STANDARD

SONY

Broadcast Products

www.americanradiohistory.com

A WIRELESS SYSTEM THAT MAKES SENSE



Introducing the Pro★Star Series

Here's a wireless system that puts it *all* together. Patented Pos-i-Phase diversity eliminates audio dropouts while the multi-channel receiver and transmitter help prevent channel interference. Now, Telex introduces the **HT-400** Wireless Microphone, a two channel mic/transmitter featuring interchangeable mic heads. You can choose from two different condenser heads; the Telex TE-10, or the Shure* SM-87. A Shure SM-58 Dynamic head is also available. The **FMR-4** is a four channel diversity receiver designed for permanent rack mount installations or portable concert cases. Although its a great companion to the two channel HT-400, it is compatible to the entire line of Telex transmitters.

For more information about the

Pro★Star Series

write to Telex Communications, Inc. 9600 Aldrich Av. So., Minneapolis, MN 55420

TELEX®

*Shure is a registered tradename of Shure Brothers Inc.

Circle 102 on Reader Service Card

BM/E
BROADCAST MANAGEMENT/ENGINEERING

PUBLISHING DIRECTOR
Charles C. Lenz, Jr.
EDITOR EMERITUS
James A. Lippke

EDITOR
Tim Wetmore

TELEVISION EDITOR
Brian McKernan
RADIO/AUDIO EDITOR
Steven Schwartz
RESEARCH EDITOR
Douglas Damoth
COPY EDITOR
Michael D. Espindle

FCC COUNSEL
Bechtel & Cole
BROADCAST FINANCIAL CONSULTANT
Mark E. Battersby

ART DIRECTOR
Andra Douglas
ASSOCIATE ART DIRECTOR
Raymond Wong

PUBLISHER
William G. McGorry
ASSISTANT TO PUBLISHER
Sharon Porges

PRODUCTION DIRECTOR
Nick Tartaglia
PRODUCTION ASSISTANT
Barbara Mendelsohn

MARKETING SERVICES DIRECTOR
Arlene M. Peters
MARKETING SERVICES ASSISTANT
Maria Cipollone

CONTROLLER
John Alinovi
ASSISTANT TO CONTROLLER
Jesse Milloro
OFFICE MANAGER
Donald Cooke

SUBSCRIPTIONS/READER SERVICE
Helen C. Adams

Broadband Information Services Inc.
295 Madison Ave., New York, N.Y. 10017
(212) 685-5320, Telex: 64-4001
Also publishers of:
BM/E's **World Broadcast News**
E-ITV Educational-Industrial Television

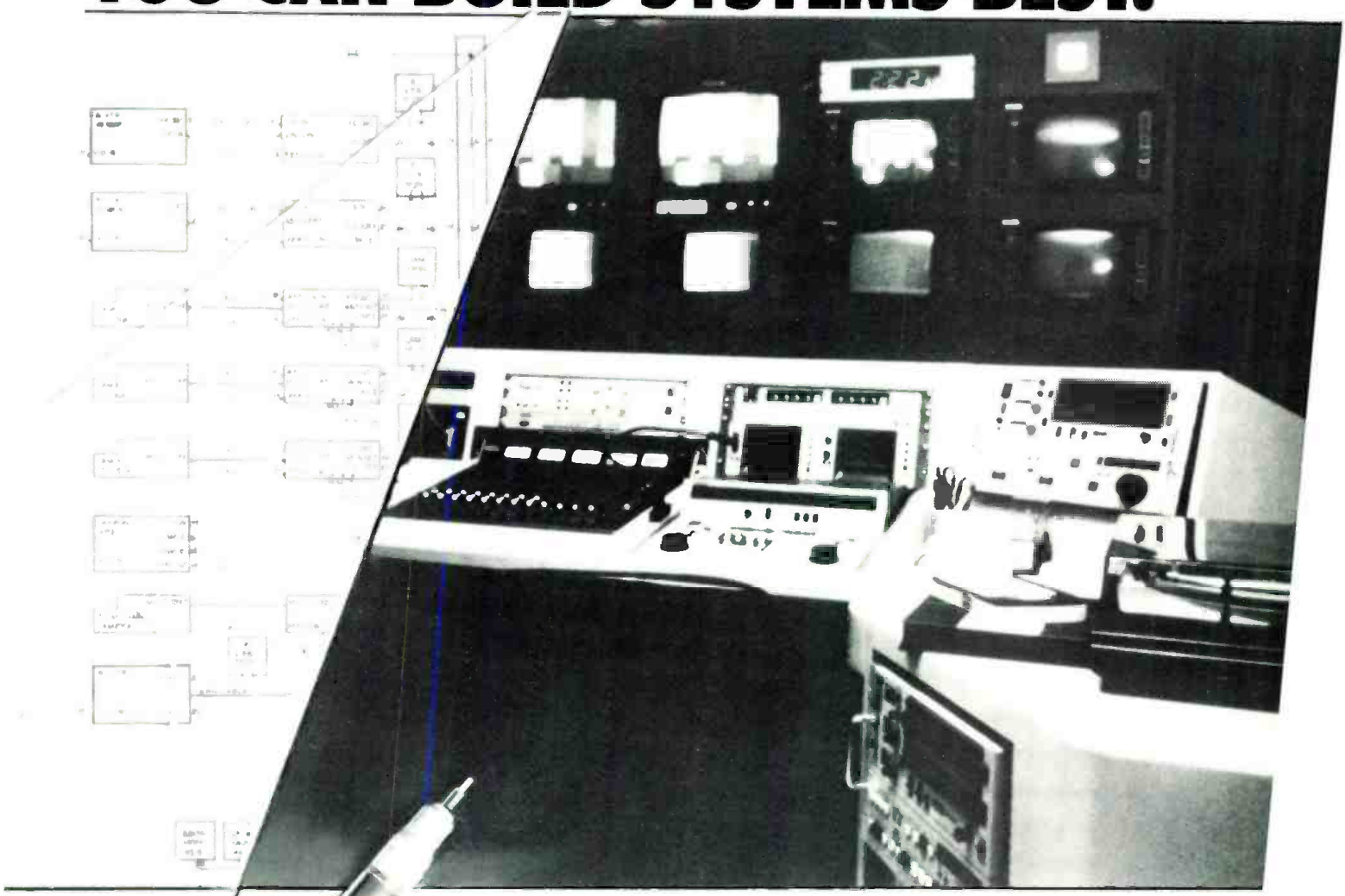
ABP VBPA BM/E BROADCAST MANAGEMENT ENGINEERING (ISSN 0005-3201) is published monthly by Broadband Information Services Inc. BM/E is circulated without charge to those responsible for station operation and for specifying and authorizing the purchase of equipment used in broadcast facilities in the U.S. and Canada. These facilities include AM, FM and TV broadcast stations, CATV systems, ETV stations, networks and studios, audio and video recording studios, telecine facilities, consultants, etc. Subscription prices to others $36.00 one year, $50.00 two years. Foreign $50.00 one year, $75.00 two years. Air Mail rates on request.

Copyright 1987 by Broadband Information Services, Inc., New York City.

Second class postage paid New York, N.Y. and additional mailing offices
POSTMASTER: send address changes to BM/E Broadcast Management/Engineering, P.O. Box 6056, Duluth, MN 55806.

www.americanradiohistory.com

WHEN YOU KNOW EQUIPMENT BEST, YOU CAN BUILD SYSTEMS BEST.



At Camera Mart, we get the latest state-of-the-science equipment first. Because we rent and sell them first.

So we get to know which components are best—so that we can design, engineer, build and install the video system that's best for you.

Whether your system is a simple off-line unit or a complex broadcast studio, you get our total support and a complete "turn-key" operation.

What's more, since we're not compelled to "push" any particular manufacturer, we can recommend what equipment will work for you—within your budget.

Come, design a system with us. The best.

Video Systems ;igned, engineered, serviced by CMV SYSTEMS

The Camera Mart, Inc.

SALES • SERVICE • RENTAL

Headquarters/New York
456 West 55th Street, New York 10019
(212) 757-6977
Telex: 275619/FAX (212) 582-2498

California
1900 W. Burbank Blvd., Burbank, CA 91506 (818) 843-6644

Circle 103 on Reader Service Card

www.americanradiohistory.com

AN INVESTMENT IN THE MODEL 300 IS AN INVESTMENT IN THE FUTURE.

We're constantly working to make the world's best production switcher even better, with an ongoing program of enhancements. When we add new features to the 300, we make those same features available to every owner with convenient field updates. The Model 300. The best, and built to stay that way.

Grass Valley Group®

STRENGTH YOU CAN RELY ON

THE GRASS VALLEY GROUP, INC.® — P.O. Box 1114 — Grass Valley, CA 95945 USA — Telephone (916) 273-8421 — TRT: 160432 OFFICES: New York (201) 845-7988; District of Columbia (301) 622-6313; Atlanta (404) 493-1255; Chicago (219) 264-0931; Minneapolis (612) 483-2594; Dallas/Fort Worth (817) 483-7447; Los Angeles (818) 999-2303; San Francisco (415) 968-6680. *A TEKTRONIX COMPANY*

Circle 104 on Reader Service Card

www.americanradiohistory.com

JULY 1987 VOLUME 23/NUMBER 7

BM/E

BROADCAST MANAGEMENT/ENGINEERING

51

21

Features

Cover:

KGTV, Channel 10, San Diego's ABC affiliate, gathers and presents the events with today's tools: computers, coffee, and, yes, paper.

Departments

www.americanradiohistory.com

Radio Ways

"When was the last time a celebrity of national stature was born on the radio?"

It's interesting that radio has quietly had another good year, showing steady, unprecedented profits on a national scale, while television struggles to regain its balance. The old medium, the original broadcast medium, plugs along, enriching lives as ever before.

Radio has withstood the challenges of all the so-called modern media that were supposed to have driven it out of existence, yet its current health and prospects for the future cannot be denied. And it should be so. Even my generation, touted as the television generation, gained much of its information and entertainment from the radio. Indeed, it was the first place that most of us made contact with the world at large, waking up to news on the radio, listening to it in our cars, growing up listening to the FM band steadily become dominant as it played the rock and folk music embraced by a new generation of Americans. The social history of the country has also been available to the public through incisive news broadcasts.

Nowhere was this chronicled on a daily basis, in an involved manner, like it was in radio. For much of the country, radio was also the way to enjoy theater, as drama was not yet gone from the airwaves. It really was not so long ago, it only now seems like it as the frenetic pace of fast-cut video disengages our collective memory from its moorings.

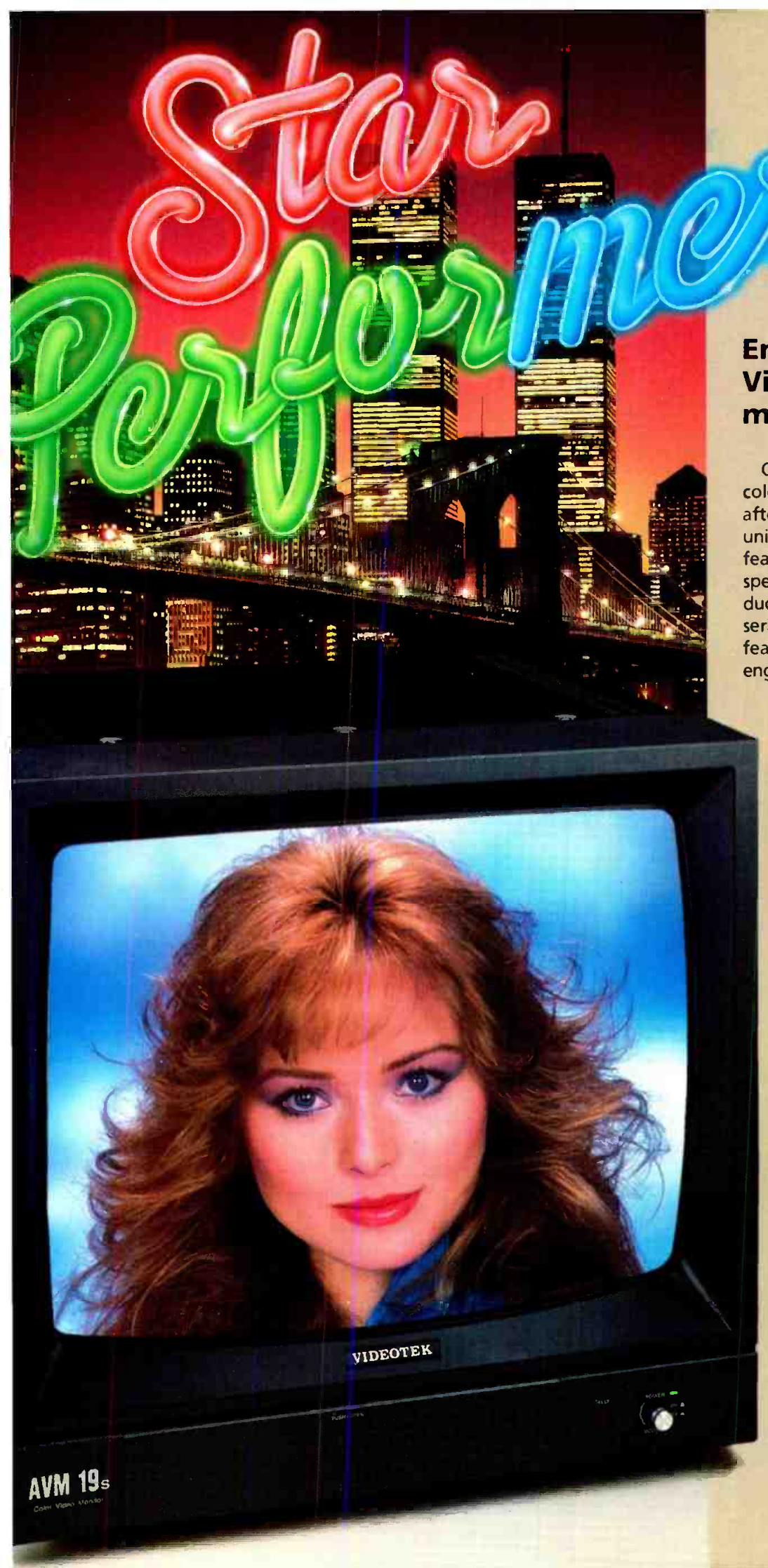
And our President has chosen to address the nation on a weekly radio broadcast. This goes beyond the nostalgia of his previous career in radio and plays to the heart of the nation's respect for the medium. Make no mistake that respect is still alive. Even a national star, Garrison Keillor, has recently shined through the radio drama of Lake Wobegon. When was the last time a celebrity of national stature was born on the radio?

Think about it. Radio's doing alright.

Tim Wetmore

Tim Wetmore
Editor

www.americanradiohistory.com



Engineers are giving Videotek's hot new monitors rave reviews.

Our economical new AVM series color monitors get curtain calls time after time. These 13- and 19-inch units offer a huge variety of standard features, including a built-in audio speaker, making them ideal for production, duplication and editing. This series is just part of a full line of feature-loaded Videotek monitors engineered for value and performance.

On-target color reproduction and reliable, drift-free operation are just two reasons why engineers applaud Videotek monitors. Our Professional Rackmount series has earned an industry-wide reputation as a solid workhorse. Our HR series provides the high resolution necessary for critical signal evaluation. We even offer RGB monitors.

To find out more about Videotek's star performers, see your dealer today.

VIDEOTEK INC.

Designed for real needs.
Priced for real budgets.

243 Shoemaker Road
Pottstown, Pennsylvania 19464
(215) 327-2292
TWX 710-653-0125
FAX (215) 327-9295

Circle 105 on Reader Service Card

www.americanradiohistory.com

DBS Fights for Space

Controversy continues over proposed changes in frequency allocations deemed necessary for implementing HDTV. On June 11, 1987, the Satellite Broadcasting and Communications Association (SBCA) announced that it had filed comments with the FCC opposing reallocation of part of the 12.2 to 12.7 GHz band, which is reserved for direct broadcast satellite (DBS) services.

Petitions filed earlier by the NAB and the Association of Maximum Service Telecasters requested that the Commission consider reallocating DBS's SHF band for the broadcast of HDTV. But, according to SBCA president Chuck Hewitt, "The use of the 12 GHz DBS spectrum for HDTV is technically infeasible because of the problems with domestic signal interference."

The SBCA also cited DBS's potential for improving television service in remote locations, and of affording greater viewing choices in all areas as reasons for not changing current allocations. SBCA also cautions that DBS frequencies were determined by international treaty agreements.

Five companies currently hold licenses for the construction of DBS systems, and SBCA expects at least one system will be operational in the next few years.

"Clearly it would be contrary to the public's interest to disrupt or abridge this growing technology when the anticipated benefits of DBS are about to become a reality," Hewitt remarked.

A little red wagon was just what KRON-TV engineers Larry Bursten (pulling) and Bill Rinker (pushing) needed to mobilize the microwave unit they built for live coverage of the Golden Gate Bridge's fiftieth anniversary celebration. The two men are seen here at 5:30 a.m. on Sunday, May 24, moving their mobile microwave amid the crowd of 250,000 that turned out for a special bridge walk. The wagon held two 12 volt batteries, two cellular phones, a 2 GHz microwave transmitter, an off-air receiver, a transmitter for IFB, and three antennas. The mobile microwave was one of the San Francisco NBC affiliate's many sources of live coverage during the weekend commemoration of the famous span. Rinker explained that the wagon was perfect for the job because it's simple, portable, and—appropriately enough—a Radio Flyer.

NBC Resurrects Toscanini

In 1987, 35 years after the original broadcasts, NBC International is reengineering 10 television broadcasts of Arturo Toscanini conducting the NBC Symphony Orchestra. Aired from 1948 through 1952, the one-hour programs are being made available to the home video and broadcast markets, both in the U.S. and abroad.

The difficult task in preparing the concerts for viewing in today's market was finding and fixing the audio portion of the concert series. Originally recorded on the optical track of the Kinescopes, the audio track was obviously below par. Other audio sources had to be found. Since many of the concerts were simulcast and recorded separately from the broadcast of the concert there were quality sources available.

Howard Schwartz Recording in New York was chosen as the facility to handle the audio, and engineer Roy Latham was instrumental in performing what turned out to be a monumental synchronizing job. Source material was obtained from the Voice of America, Library of Congress, Lincoln Center Research Library, RCA Records, NBC, the Toscanini estate, and elsewhere. The old mono material had no sync reference and many of them were recorded at different speeds, making direct syncing to the video (dubbed from kinescope to one-inch) difficult. In addition, two of the programs were operas, posing critical lip-syncing challenges.

Almost no processing was done. There was no equalization, almost no noise reduction. The main task was to sync the various sources, recorded at various speeds, to the video. It was done by Latham using, essentially, video-style editing with a Sony digital 24-track machine, and an old MCI four-track. The main system in use was the Adams Smith 2600 controller, especially in cases where direct edits were not possible and where subframe offsets were calculated over an extended length of the program.

In some cases multiple edits of 30 to 40 sub-frames in rapid succession were used to achieve synchronization. The editing/syncing process was monitored by NBC producer Wayne Stuart and audio consultants John Pfeiffer and Robert Hupka, a chronicler of the

www.americanradiohistory.com

Cross-Country Communication

With the antenna that works!
In Brownsville,
In Seattle,
In Miami,
Everywhere!

Midwest combines its mobile production unit experience with the latest antenna technology to bring you the S-23, a mobile satellite communications system that enables you to uplink a story from virtually anywhere

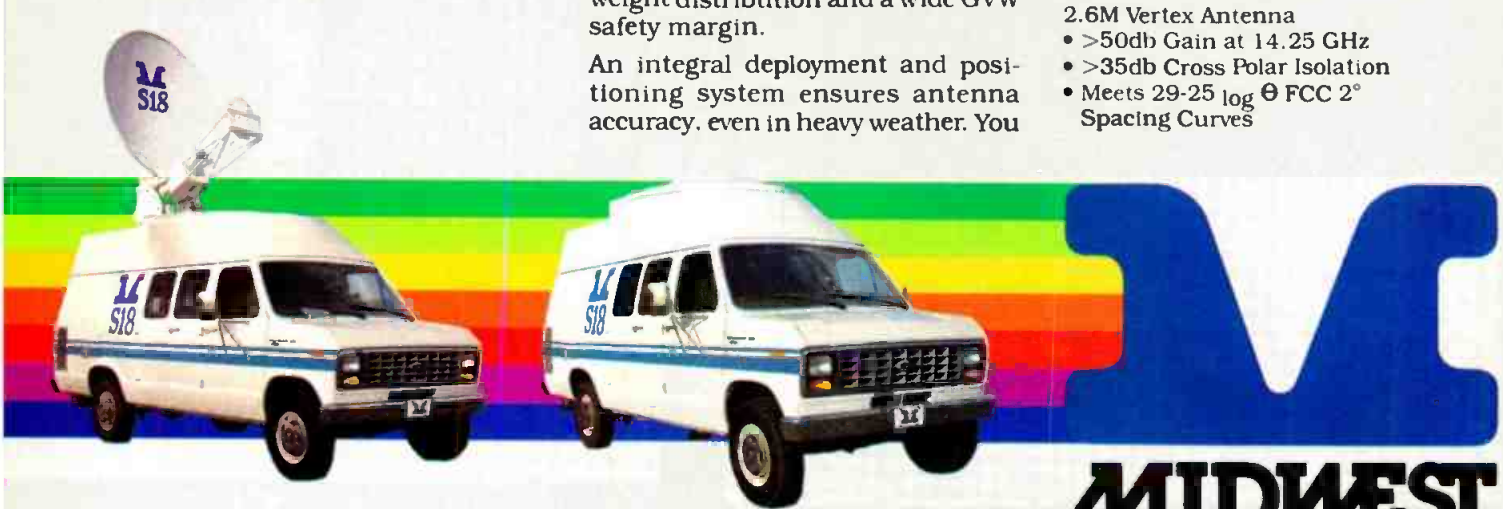
The S-23 incorporates a Vertex 2.6M antenna with 50db gain into a unit that is spacious enough for full production capability, yet has excellent weight distribution and a wide GVW safety margin.

An integral deployment and positioning system ensures antenna accuracy, even in heavy weather. You can choose from a variety of equipment configurations and several domestic and foreign chassis models.

Call for specifications and antenna patterns on the S-23, S-18, S-1 Flyaway or any of our mobile satellite communications systems.

The Midwest S-23. The mobile satellite communications system that works. Everywhere.

2.6M Vertex Antenna
- >50db Gain at 14.25 GHz
- >35db Cross Polar Isolation
- Meets 29-25 log Θ FCC 2° Spacing Curves



MIDWEST
Communications Corp.
One Sperti Drive
Edgewood, KY 41017
606-331-8990

Circle 106 on Reader Service Card

www.americanradiohistory.com

career of Toscanini. All programs retain the original integrity of sound and picture with only synchronizing and editing taking place on the audio side; the programs thus remain in mono.

Now, once again, Toscanini will be heard and seen. Serving as a liaison with the 19th Century, the symphonic conductor is available to us in the 20th Century because of 21st Century technology.

New Information Services

Three new dial-access computer information services aimed at broadcast engineers have recently debuted. The services reflect the growing familiarity station engineers have with both computer hardware and applications software.

The Free BBS for TV and Radio Broadcasters, which originated with the Mississippi Broadcast Engineers, is "dedicated to encourage the sharing of knowledge and experience" and includes E-mail, swap-it shop, and for-sale areas. All utilities listed may be copied and used by all, no copyrighted programs are allowed. For more information call Herb Jolly at (601) 372-5413.

A second free service comes from Somich Information Services (SIS), of Los Angeles. Their Broadcast Engineers' Interconnect and Database offers public and private message centers, E-Mail, late broadcast news, FCC news, jobline, tech help and tips, TV and radio forums, and a complete Cardex file database. Further information can be obtained by calling James Somich of SIS at (213) 398-1005.

Ellis & Wiebe, P.C., a Denver area telecommunications consulting engineering firm, is offering National Geophysical Data Center digitized terrain data, FCC soil conductivity data, AM, FM, and TV engineering databases, and other related software. Ellis & Wiebe, (303) 367-1626, explains that the cost of on-line services will be metered and billed to either a major credit card or purchase order number. All software is menu-driven with extensive on-line documentation and help functions.

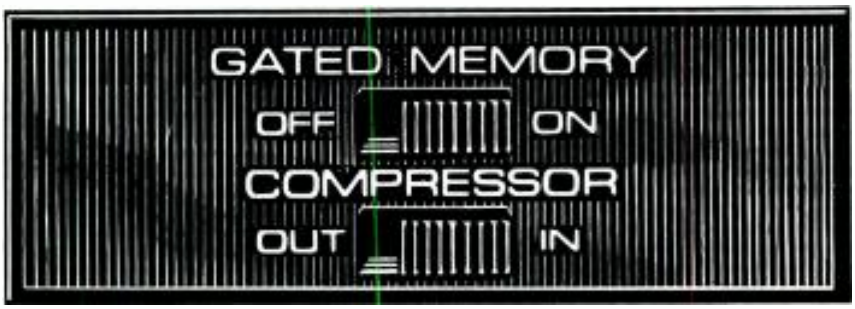
Wanted: Lost Shows

New York's Museum of Broadcasting and Fuji Photo Film have embarked on a campaign to locate lost television shows that the museum needs for its collection.

"The recovery and preservation of programs thought to be lost is a project of the utmost priority to us," states Robert M. Batscha, museum president.

"Already, through Fuji's efforts in searching public archives and private collections, the museum has recovered such important television broadcasts as the complete coverage of the Army-McCarthy hearings, Humphrey Bogart's television debut in *The Petrified Forest*, and the television work of James Dean. Once found, the programs become accessible to

Eliminate gain riding problems with the flick of a switch.



The new FP51 gated compressor/mixer rides gain automatically. Once you set the compression level, the FP51 adjusts automatically to changing signal levels in critical remote-to-studio feeds to maximize signal output. As a result, your broadcast is quieter, smoother, better balanced and more natural sounding.

Eliminates background noise problems and "pumping." A gated memory "remembers" the compression level during pauses. This eliminates disruptive background noise build-up and the annoying "pumping" effect common to many compressors.

In addition to better sound, the FP51's automatic operation eliminates the need for constant readjustment by the audio engineer thereby freeing him to attend to other problems.

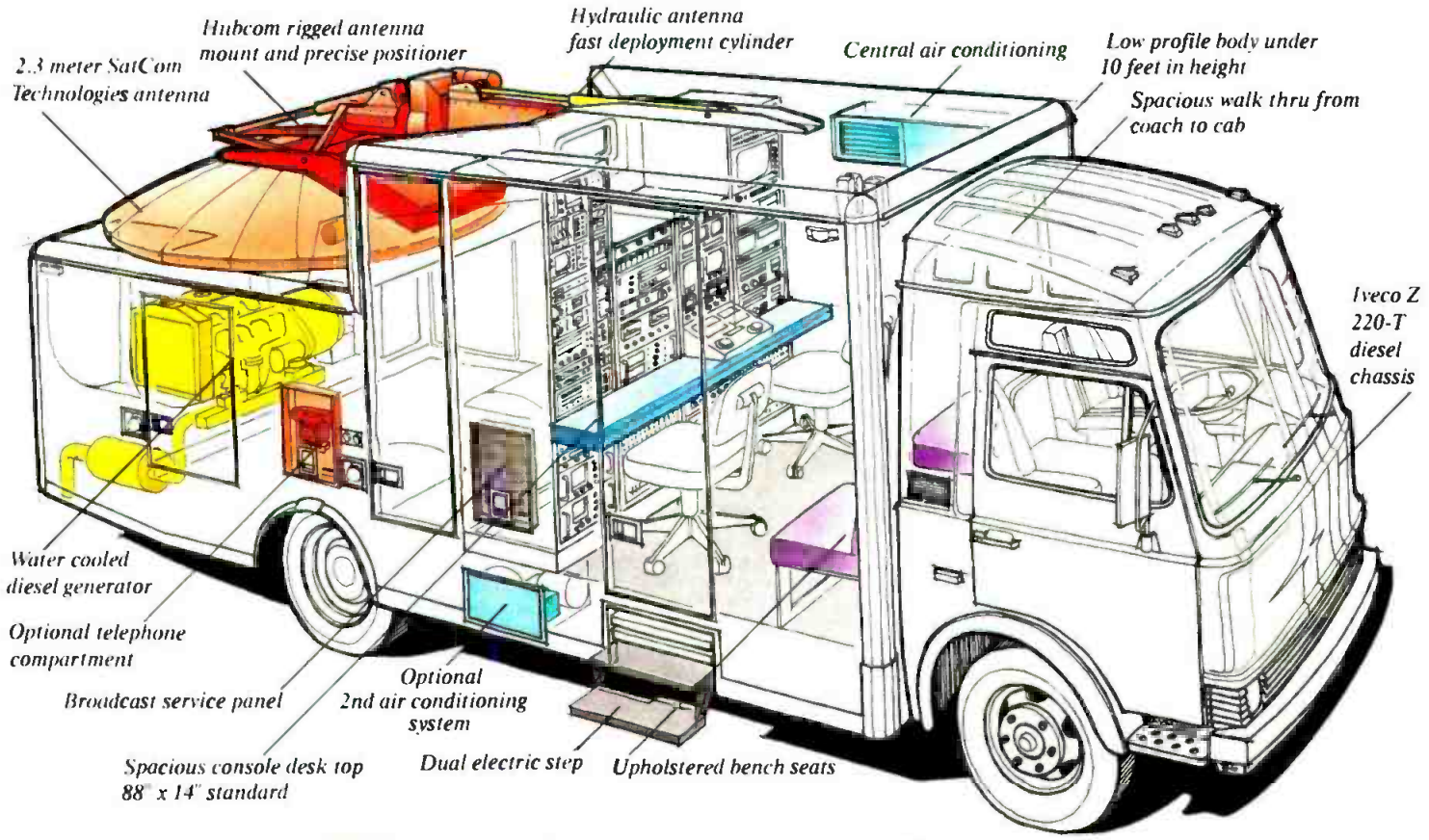
Loaded with features you've come to expect from Shure. The FP51 features switchable mic/line inputs and outputs, headphone jacks, tone oscillator, headphone cuing and low noise, distortion and RF susceptibility. It supplies phantom power and is AC or battery operable. And it's built with Shure's legendary emphasis on ruggedness and reliability. Shure Brothers Inc., 222 Hartrey Avenue, Evanston, IL 60202-3696. (312) 866-2553. Call for G.S.A. pricing.

SHURE®

Breaking Sound Barriers™ for over 60 years

Circle 107 on Reader Service Card

www.americanradiohistory.com



The Latest SNG® Innovations... From The Inventor Of SNG® Vehicles.

HUBCOM. Builder of the first SNG® vehicle in the U.S. HUBCOM. Builder of more SNG® trucks at work in the field than everyone else combined. HUBCOM. Introducing its second generation while others play "catch-up."

Lighter and better balanced. More compact for easier access to tight locations. Lower profiles. Improved antenna systems. And every HUBCOM SNG® vehicle comes equipped with a one year warranty and our 24-hour hotline.

Choose gasoline or diesel power. Choose a low profile or conventional vehicle. But whatever you choose, you'll get the latest SNG® innovations — from the inventor of SNG® vehicles...HUBCOM.

HUBBARD COMMUNICATIONS, INC.

The last word in technology from the first name in the industry.

A subsidiary of Hubbard Broadcasting Inc.
12495 34th Street North, St. Petersburg, FL 33702
813/577-7759 TWX: 810-863-0417

Circle 108 on Reader Service Card

www.americanradiohistory.com

the public as part of the museum's permanent collection."

The ephemeral nature of television has resulted in countless cases where there are no recordings known to exist of important programs. These include the opening of the 1939 New York World's Fair, President Truman's first televised speech (1947), Johnny Carson's debut as host of *The Tonight Show* (1962), and Super Bowl I (1967).

The museum welcomes hearing from anyone who may have information—or even a copy—of these or other rare shows. Their number is (212) 752-4690.

For a complete list of missing programs, write to: The Museum of Broadcasting (Attn: Lost Shows), 1 East 53 Street, New York, NY 10022.

The museum is a nonprofit institution dedicated to making available to the public a wide collection of programs, and promoting an appreciation for broadcasting's artistic value, social impact, and historical significance.

Fairness Debate Continues

President Reagan's June 21 veto of H.R. 1934, the fairness doctrine codification bill, sends the battle over the controversial legislation back to Capitol Hill, as this issue goes to press.

"History has shown that the dangers of an overly timid or biased press cannot be averted through bureaucratic regulation, but only through the freedom and competition that the First Amendment sought to guarantee," stated the President upon vetoing the legislation.

The fairness doctrine would require broadcasters to cover community issues and present differing views on controversial topics. Both houses of Congress have approved the measure, which will become law if the veto is overridden by a two-thirds margin. Broadcasters are closely watching the situation, which may be decided before the July 4 recess.

Proponents of the fairness doctrine argue that fewer people have access to the nation's airwaves than to print, and that the doctrine is necessary to assure that minority viewpoints are aired.

Opponents of the legislation, however, point to it as an unfair, unwarranted infringement on broadcasters' freedom to program. The RTNDA has stated that the doctrine "does a disservice to the people it is designed to serve, has a chilling effect on electronic journalism, and violates the First Amendment."

A 1985 FCC report stated that the fairness doctrine was unnecessary and probably unconstitutional because more stations are broadcasting now than in 1969, when the Supreme Court upheld the fairness doctrine in *Red Lion Broadcasting v. the FCC*.

Circle 109 on Reader Service Card

www.americanradiohistory.com

ty of
xico
ue, NM

Laird Telemedia
Salt Lake City, UT

Coastal Video
Productions
Norfolk, VA

Valcas Video
Production, Inc.
River Edge, NJ

VideoAds
Kennebunkport, ME

Searle's Video News
Service
Richmond, MA

Reliance Electric
Visual Systems
Eastlake, OH

Rochester I
of Techn
Rochest

ikes
School
FL

Harris Corporation
Palm Bay, FL

WXEL-TV
Boynton Beach, FL

Florida News Service
Tallahassee, FL

Tampa
General Hospital
Tampa, FL

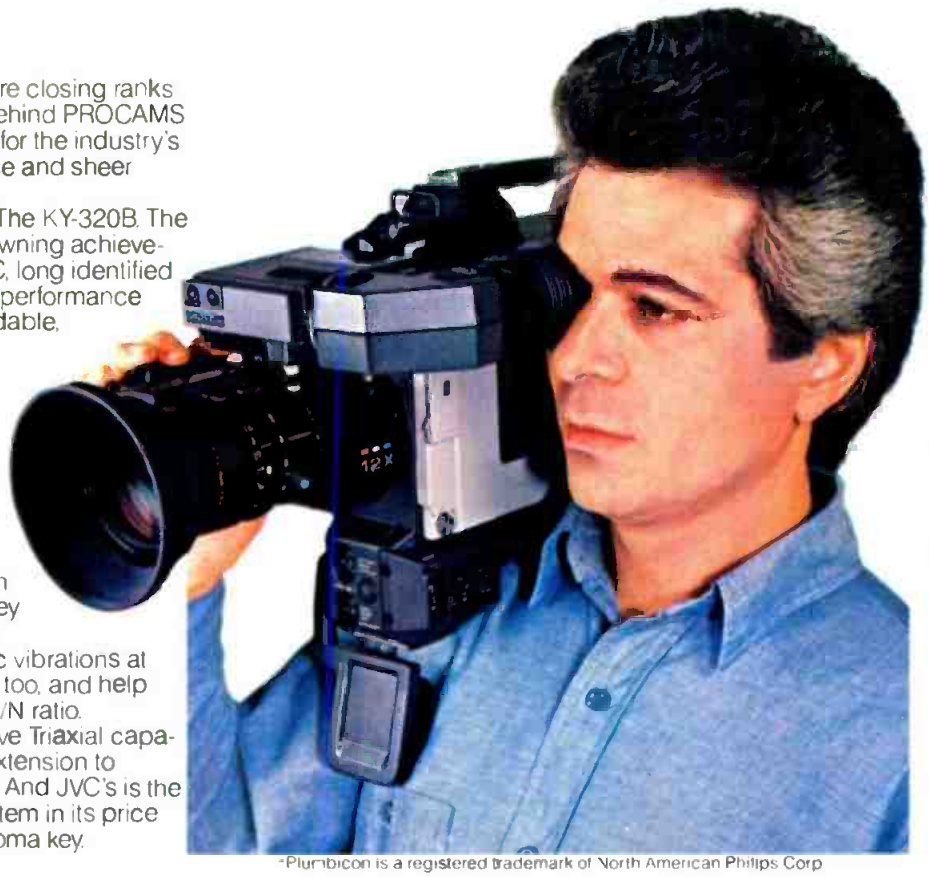
WTVT-TV
Tampa, FL

WINK-TV
Ft. Myers, FL

Paradise
Miami,

PROCAM®

The choice of hundreds in high-end teleproduction.



High-end users are closing ranks solidly and fast behind PROCAMS as THE choice . . . for the industry's BEST performance and sheer overall value.

The KY-950B. The KY-320B. The PROCAMS. A crowning achievement even for JVC, long identified with ultra-reliable performance in compact, affordable, -tube cameras.

Plumbicon* tubes, of course, for high sensitivity, low lag, and minimized image retention, yet always with the highest possible resolution for each image format. They prevent the build-up of microphonic vibrations at high audio levels, too, and help maintain a high S/N ratio.

PROCAMS have Triaxial capability permitting extension to almost a full mile! And JVC's is the ONLY Triaxial System in its price range to offer chroma key.

Component Video? Of course. JVC's KA-3 Component Adaptor makes you compatible with the increasingly popular M-II format as well as all other ½" component formats, and lets you record color signals in component form.

The PROCAMS. KY-950B. KY-320B. Penetrating dozens of new markets. Out-performing the competition in scores of imaginative applications in the hands of demanding professional users.

For a demo, call us toll-free for the name of *your* PROCAM Rep.

1-800-JVC-5825

JVC COMPANY OF AMERICA
Professional Video Communications
Division, 41 Slater Drive,
Elmwood Park, NJ 07407
JVC CANADA, Scarborough, Ontario

© 1986 JVC COMPANY OF AMERICA

JVC®

*Plumbicon is a registered trademark of North American Philips Corp.

Circle 110 on Reader Service Card

stem
, AR

D-L Images
Indianapolis, IN

George A. Hormel
Company
Austin, MN

Video Genesis, Inc.
Beachwood, OH

I Shoot Video
Tulsa, OK

KAIT-TV
Jonesboro, AR

Boeing Aircraft
Company
Wichita, KS

Southwest M
State
Springfield,

ollege
NY

Dyna-Mark
Oklahoma City, OK

United Telecom Inc.
Shawnee Mission,
KS

Mitre
Bedford, MA

Syracuse
Fire Department
Syracuse, NY

BF Goodrich
Cleveland, OH

WNSC-TV
Rock Hill, SC

Mark III
Miami, F

www.americanradiohistory.com

Papal Telecast on Satellite

An audience of more than 1.5 billion made the June 6 telecast of Pope John Paul II's *Prayer for World Peace* from Rome the largest satellite broadcast ever produced, according to Visnews International.

A subsidiary of Visnews Ltd., Visnews International worked on behalf of Global Media, and handled satellite feeds to the Western Hemisphere for the one-hour telecast. Twenty satellites and 30 transponders were used to transmit the program to hundreds of cities in 25 countries on five continents.

The program "made use of the most comprehensive worldwide satellite communications available," said Ed Helfer, vice president of Visnews International. The company handled master control responsibilities for the telecast's North American program feed, and also arranged satellite links for Global Media for North and South America, and the Philippines.

"World Prayer was an attempt to bring people together through television," said Tony Verna, producer and director of the event. "Usually we're united by tragedy. This time we were united by something positive."

Visnews has worked with Global Media in the past on *Live Aid* and *Sport Aid*.

Entries Sought for *BM/E*'s 1987 Best Station and Facility Design Competition

It's July, time for vacations and fun in the sun. But it's also time for *BM/E* to announce its annual call for submissions to our Best Station and Facility Design Competition.

We're looking for recently built or renovated AM, FM, AM/FM, television, and teleproduction facilities. If your station or facility belongs in one of those five categories it may well be a hot contender for inclusion in our annual December industry showcase issue. Better yet, it may go on to be a winner in our Thirteenth Annual Best Station and Facility Design Competition.

For complete information, send for our application package. Send us your name, address, and telephone number, or those of the person to whom the application should go to. Write to us at: *BM/E* Contest, 295 Madison Avenue, New York, NY 10017. Or call *BM/E* at (212) 685-5320.

Please send requests by August 31. *BM/E* will select three nominees in each category for inclusion in our December issue. Winners of our Thirteenth Annual Best Station and Facility Design Competition will be selected by readers' votes, and will receive their awards at a presentation ceremony to be held at the 1988 NAB convention.

The Best SNV Available.

More or Less.

More space, Less weight.
More efficient, Less hassle.
More economy, Less servicing.
More comfort, Less annoyance.
More engineering, Less design problems.
More service life, Less cash.

ROSCOR Star Fleet 21

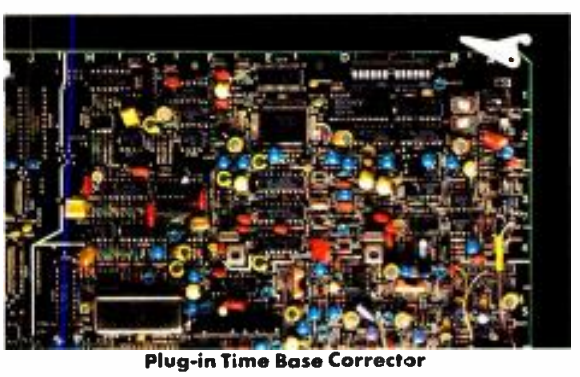
Roscor Corporation • 1061 Feehanville Drive • Mount Prospect, Illinois 60056 • (312) 539-7700

Circle 111 on Reader Service Card

www.americanradiohistory.com

This is what makes the new Sony editing VTR so good.

SP Technology



Plug-in Time Base Corrector

Dolby C
Noise Reduction

TBC Remote Control

Expanded Dial Operation

Front-panel Presets

Plug-in Time Code

Status Display

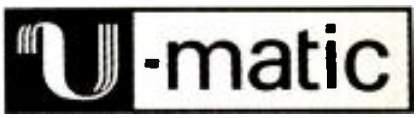
Built-in Character Generator

Self-Diagnostics

Circle 112 on Reader Service Card

www.americanradiohistory.com

This is what makes it great.



It's rare to find an editing VTR that comes with everything you want, yet still goes with everything you have.

Enter the BVU-950.

Not only is it compatible with the entire U-matic line of players and recorders, it can be used with other broadcast equipment as well through an RS-422 interface.

Either way, the picture quality is superior. SP technology means you get 340 lines of resolution on every original.

It also means you don't have to compromise on copies. With SP, your third generation tapes will look as good as first generation conventional U-matic.

And sound even better. Because every word is heard through a Dolby* C Noise Reduction system.

The BVU-950 is also the first U-matic editor to offer a plug-in time base corrector and plug-in time code generator.

These easy-to-install cards conserve power as well as space. And there are no cable connections to make.

They also make the VTR simpler to operate. With a single jog dial, you can now display time codes and user bits, set preroll times, and customize operating routines.

You can even record titles using a built-in character generator.

And if there's ever a break

© 1987 Sony Communications Products Co., a division of Sony Corp., of America, 1600 Queen Anne Rd., Teaneck, NJ 07666.

*Dolby is a trademark of Dolby Laboratories Licensing Corporation

www.americanradiohistory.com

Introducing the BVU-950.

in the action, the BVU-950 can tell you why—using its own self-diagnostic routine.

To learn more about this remarkable addition to the U-matic line, please write to Sony, P.O. Box 6185, Department BVU-2, Union, NJ 07083.

And find out how to get what you want without giving up what you have.

SONY

Professional Video

Circle 113 on Reader Service Card

www.americanradiohistory.com

Breaking news has long been a radio tradition. But today's technology plays an increasingly important role in keeping up with the pace of world events.

Equipping The Radio News Studio

By Steven Schwartz

KTAR staff reporter Jeff Scott reads news copy while assistant production director Leigh Hermann works the board.

On June 5, 1987, Ted Koppel hosted a special four-hour edition of *Nightline* that focused on the AIDS epidemic. Billed as a "national town meeting," the program was broadcast live from KABC television studios in Los Angeles and simulcast nationwide over the ABC Radio Network. The show further enabled callers from around the country to phone in their questions to the panel of experts and spokesmen that were in attendance or participating via satellite.

Three months earlier, on March 1, American Public Radio (APR) broadcast *The AIDS Phone-In*, an international call-in show produced by the BBC. The 90-minute program was fed live in the U.S. to APR affiliates over public radio channel 10 on Westar IV and was heard via shortwave throughout the world as part of the BBC World Service.

Besides illustrating the gravity of the current health crisis, the programs also served as prime examples of recent strides in news technology. Whereas a few short years ago, such feats would have been considered technically impossible, current satellite uplinking and downlinking facilities as well as sophisticated communications systems made them relatively simple.

Other advancements have similarly enhanced radio news coverage. Ongoing refinements in microphones, and recording gear provide better audio quality. At the same time, newsroom computers, capable of bringing several news resources on-line into the studio (combined with extensive storage capacities) are replacing older wire services—and, in many cases, even the trusty typewriter.

Combo comes to KCBS

Economics also plays a key role in today's news studio equipment upgrades. Many CBS owned and operated stations (O&Os), for example, are in the process of instituting the network's cost-cutting "combo" policy, which requires on-air talent to operate their own boards while cutting back the technical staff.

KCBS-AM, a news and information station in San Francisco, is representative of the

www.americanradiohistory.com

changes now taking place throughout the network. To accommodate the new policy, the station's two on-air studios had to be extensively remodeled. So far, one studio has been completed and is fully operational, while work continues on the other room (it is expected to be on-line some time in September). In both cases, Wheatstone A-500 consoles have been selected to supplant the station's older Fairchild boards that are still housed in separate control booths.

The new A-500 consoles are built on 32-channel frames with four mic inputs and four high-level line inputs with eight audio source selectors on each input. The boards have been extensively modified to meet the station's requirements and feature specialized intercom and studio switching systems, as well as a built-in rudimentary automation interface designed for live-assist commercial applications. However, according to technical supervising engineer Shingo Kamada, the interface requires further debugging and the studio is now completely manually operated.

Kamada adds that the studios will serve different functions; one will be used primarily for talk shows and call-in programs, while the other will be for news. "However, they will be set up in such a fashion that either studio can be used for both formats—just in case one studio goes down or if we have to shut it down for maintenance," he notes.

With a staff total that ranges between 35 and 40, KCBS claims to have the largest news crew in northern California. According to Ed Cavagnaro, the station's director of news and programming, CBS considers the San Francisco O&O to be the nation's "first radio station. The definition being the first station to provide regularly scheduled programming. This was in 1909 under the direction of Dr. Charles Herrold in San Jose. That station later became KQW, and I believe that it was in 1949 that it was purchased by CBS and the call letters were changed to KCBS.

"Now, a lot of people think that KDKA was the first radio station. The difference is that KDKA is regarded as the first licensed station. But Herrold put on the first regularly scheduled programs over radio at a time when very few people actually had radio sets."

Accessing the news

KCBS has the further distinction of being the first broadcast facility in the U.S. to use the Colorgraphics Newstar newsroom computer (now known as Dynatech Newstar), which went on-line in December 1980. The system is presently accessed by 13 Zentec 1051T terminals (two in the on-air studio, one in the backup studio, and 10 in the newsroom). "Newstar allows us to get news on the air much faster than was previously possible," says Cavagnaro. "Breaking news is radio's niche, and we're in business to provide people with information—not *Wheel of Fortune*."

Newstar also improves in-house communications between the producers and talent, particularly during call-in shows when incoming calls are displayed on the terminal in the studio. "The way we used to do it before was to prescreen the calls and then tape little pieces of paper on the glass to indicate who was on the phone," Cavagnaro recalls. "As they answered the calls you'd take down that piece of paper and put up another one."

The station is equipped with two telephone banks that can be brought on the air simultaneously; each one has a selection of 10 lines (although there is some doubling up on several of the lines). All incoming calls are handled by standard telephone switching equipment and a speaker phone.

"We've tried many different telephone interface systems and we keep coming back to the speaker phone," says Kamada. "Not that it's the best in terms of sound quality or efficiency, but it always gives you a fairly good connection. The other systems just weren't consistent enough on all lines. We also felt that they weren't giving us the proper interaction between the caller and the

Point of origin: The newsroom at the ABC Radio Network in New York.

www.americanradiohistory.com

KMOX morning news anchor Bill Wilkerson prepares to go combo with the station's new Wheatstone A-500 console.

on-air talent. We like the system to duck when the talent talks. The speaker phone does that pretty well, but most of the interfaces just didn't hold up."

Communications in the field is equally important. The station regularly keeps in touch with its reporters via beepers, Motorola two-way radios, and even cellular phones. Most location recording is done on handheld Sony TCM-5000 monaural cassette decks and is transferred on the spot onto carts in the studio using Voice-Act phone feeds.

The station also uses a variety of cassette and reel-to-reel recorders for recording network feeds and other programming. Kamada mentions that one wall in the studio features a series of seven rackmounted Tascam 122 stereo cassette machines, most of which have dedicated inputs (e.g., CBS Radio Network, UPI audio, CBS News Exchange), while others can select alternate program sources. The dedicated feeds are coordinated by a seven-day ESC clock system that can be programmed for up to 1000 events.

"There is a certain degree of automation there," he notes. "All the editors need to do is to make sure the cassette is loaded in the machine." The recorded cassette is then taken to one of seven work stations around the room and is put on a portable two-track Marantz 420 deck to dub onto cart. Each work station is equipped with a Marantz unit and a compact ITC Omega cart machine.

He similarly points out that the station opted for cassettes rather than reel-to-reel recorders primarily to conserve space—but not without some sacrifices. Although the frequency response of the cassette decks used is probably comparable to that of a quality open-reel recorder, the signal-to-noise ratio of the cassette is noticeably inferior. Meanwhile, Scully 280 and 280B reel-to-reel recorders are used for in-house production assignments.

Rounding out the station's inventory are ITC Delta Tri-decks and 3D cart machines in the on-air studio, with Sennheiser 421 microphones standard throughout the facility. "We tried quite a few microphones and we've found the 421 to be very, very tolerant of people who don't necessarily have a good mic technique—such as some of the guests on our call-in programs," Kamada explains. "The Sennheisers have very good overload characteristics and are just able to perform extremely well under most production circumstances."

The talk of St. Louis

KMOX-AM in St. Louis, another CBS O&O, is also gearing up to go combo with the addition of Wheatstone A-500 boards in each of its three on-air studios. According to the station's news director, John Angelides, the new operating procedure will eventually reduce the number of staff technicians from twelve to five. "It's something we have to do as part of these changing times," he says. "Some of the people that work here have done their own boards at other stations, so it won't be anything new for them. Others are being taught. We really don't anticipate any problems with it."

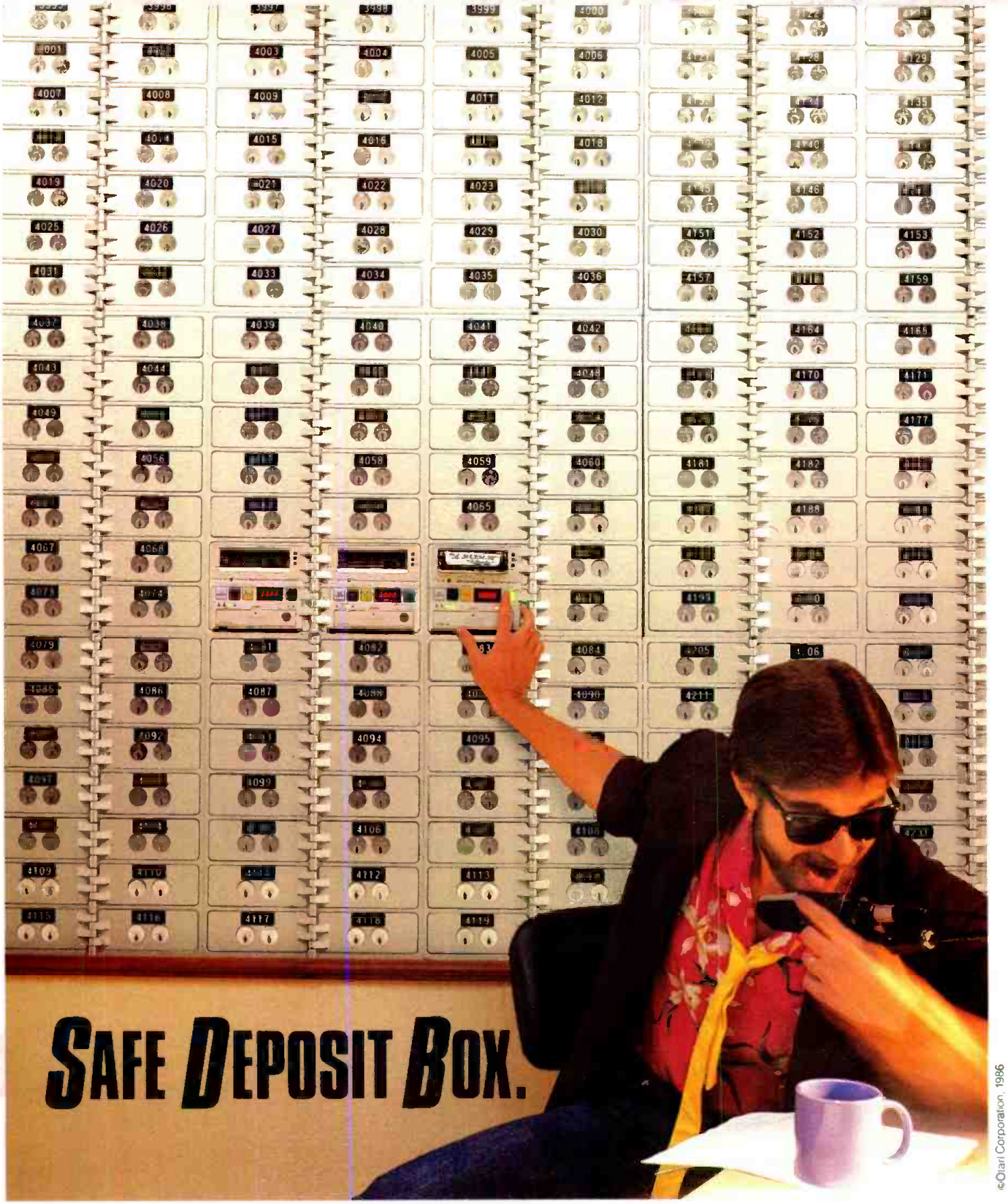
Angelides points out that the station recently acquired three 48-tray IGM Instacart machines—also in anticipation of the switch to combo. The system, which is expected to be in operation sometime in the fall, will be controlled by an IBM PC running customized software that IGM designed for the station. It will be used in live-assist applications for all commercials, PSAs, and promos and is intended to relieve on-air talent of some of the manual responsibilities.

KMOX also uses the Newstar system, which is now found in all CBS O&Os. Angelides points out that prior to the arrival of the newsroom computer a couple of years ago, all news copy was produced on manual typewriters—a change, he notes, that was welcomed by the entire staff. Still, the station is not without its time-honored institutions. For instance, the facility still depends on a 1968 vintage McCurdy relay switcher for outgoing signals (with incoming feeds handled by separate patch bays). Another familiar sight at the station are the Electro-Voice RE20 microphones that are standard throughout the facility.

For call-in shows, KMOX is equipped with a custom-designed 12-line AT&T phone system coupled with a Symetrix TI-101 hybrid. Remote recording is done on Sony TCM-5000 monaural cassettes, while all of the station's

www.americanradiohistory.com

CTM-10 CARTRIDGE RECORDER



SAFE DEPOSIT BOX.

©Otari Corporation, 1986

Finally, a cart machine you can bank on. No jams, no repeats and no make goods. Our new CTM-10 cart machine has the same famous reliability that is built into our 5050 BII, plus many new features like Hx-Pro,* so 7.5 ips sounds like 15 ips and your listeners don't tune out when you shift from CD to cart.

So call us for Technology You Can Trust. Otari Corporation, 2 Davis Drive, Belmont, CA 94002 (415) 592-8311 TWX 9103764890.

OTARI.

*Trademark Dolby Laboratories Licensing Corporation

Circle 114 on Reader Service Card

www.americanradiohistory.com

original programming is recorded on monaural Studer A810 reel-to-reel machines. At the same time, each of station's three on-air studios (as well as the on-line production suite) is equipped with four ITC Delta Series cart decks and one record unit.

A news/entertainment station with a history that goes back over 60 years, KMOX's dedication to news is evidenced by its many awards and honors. This past year alone, the station has won the Investigative and Reporters Award, the Scripps-Howard Award, the Robert Kennedy Award, and a slew of regional radio and television news directors awards.

"We have a firm belief in doing in-depth reports," Angelides explains. "Radio is basically a headline service and generally superficial in its coverage of news. I think most people will accept that because of the limited time that is usually allotted for news briefs. This radio station has a real commitment to digging deeper into news than just going for a headline. And it's been a result of that commitment that has won these awards."

On the wire

Despite the growing presence of computers in the newsroom, their cost is still prohibitive for many stations. In fact, Arizona's first licensed radio station, KTAR-AM in Phoenix, has been managing without the benefit of computerization for quite some time.

An ABC affiliate, KTAR is owned by Pulitzer Publishing and has had a news/talk format since 1976. In addition to ABC, the station subscribes to several wire services, including AP, UPI, AP Sports, and the National Weather Service. Although the material from the services is delivered via satellite and printed out on high-speed printers, news director Dennis Lambert points out that the station still relies heavily on IBM Selectric typewriters to produce hard news copy.

"I'd like to get a computer system in here and get rid of the typewriters," says Lambert. "But that's a decision that's left up to the corporation. Actually, I don't feel that we're being hurt too badly by not having them. I think they would enable us to improve the speed with which we put certain stories on the air. Certainly, they would cut down the time it takes to walk a story in."

The newsroom currently uses eight ITC RP Series cart decks, which are being phased out in favor of the new ITC Delta Series cart machines. "We went with the Deltas because they're real compact, simple to use, and durable as hell," notes the station's director of engineering Dean Kannes. "We check them weekly and pull them into the shop about once every three months for alignment. Most of the time we can't make any improvements." At present the studio is equipped with two Delta playback/record units; Kannes estimates that six or seven will probably be added within the next year. The on-air studio is also equipped with a BMX Series II console from Pacific Recorders and Engineering.

Like many other stations, KTAR uses Sony TCM-5000 cassette recorders in the field, but employs Ampex 440 reel-to-reel decks and Electro-Voice 635 and RE50 microphones for all original programming. "We've found that when you do a lot of news and sports as we do here, reel-to-reel machines are very handy for running tape for telephone conversations, network feeds, and things like that," says Kannes. "I've also given each of our six editing stations the capability to jack in a cassette machine—whether it be a fixed studio cassette deck or one of the reporter's portable machines—for dumping field reports on to tape or cart. We also have pushbutton panels before the input of both tape and cart machines so we can feed cassettes, carts, routing switchers, and telephones into either a tape recorder or cart machine."

Reporter at WAJR in Morganville, VA, accessing data on the station's Newstar computer system.

With all the network and wire feeds going through a triple-receiver Scientific-Atlanta digital satellite system (capable of simultaneously accessing three channels from Satcom 1R), the station relies on a sophisticated 3M Series H switcher for routing the various sources. The three-year-old switcher is capable of routing up to 120 inputs to as many as 64 outputs.

"It's actually an audio/video switcher; you find them in a lot of medium-market television stations," Kannes notes. "It gives us very clean audio and the flexibility we need. We're at half capacity right now with all the various satellite channels and broadcast loops from ballparks, basketball courts, the senate building, and remote broadcasts—we have about 60 running inputs all the time, which can be accessed by all of our recorders."

Cart of the matter

Switching between audio sources can be a challenge under most conditions, but integrating monophonic news reports into a stereo music format can be especially tricky. That was the lesson learned at Los Angeles' KIIS, a Gannett-owned CHR station that broadcasts in stereo over both AM and FM bands. According to chief engineer Mike Callaghan, the on-air studio was formerly equipped with five stereo cart decks and one mono unit, which was dedicated to playing back traffic and news reports as well as monophonic commercials. Still, Callaghan points out that there were frequently difficulties with improper volume levels on the monaural carts.

www.americanradiohistory.com

Sachtler Hot Pod...fastest ENG tripod in the world.

Fast breaking news and the Hot Pod are made for each other.

Simply extend the legs and level your ENG camera on any surface. In just a few seconds you are shooting while others are still setting up. If you find yourself at the back of a crowd, simply raise the center column to as high as 6.5 feet and shoot over everyone else's head.

Don't be late with the late news. Use the lightweight, action tripod that is faster than fast breaking news. The Hot Pod is perfect for every ENG camera.

Sachtler is so confident of the performance of its equipment that it has extended the normal usage warranty from 1 to **3** years and guarantees its leak-proof fluid modules for **5** years. It's the best warranty in the business and comes only with the best camera support systems in the world.

Call or write today for more information and the location of your nearest Sachtler dealer for a hands-on demonstration.

sachtler
corporation of america

55 North Main Street
Freeport, NY 11520
Phone: (516) 867-4900

West coast:

3316 West Victory Blvd.
Burbank, CA 91595
Phone: (818) 845-4446

Circle 115 on Reader Service Card

www.americanradiohistory.com

The problem was solved in 1984 with a station upgrade that included the arrival of Fidelipac CTR-100 cart decks. These high-end units incorporate the company's patented Cartscan system, a sophisticated optical scanner capable of "reading" four different labels (that are manually attached to carts prior to playback), which automatically adjust the machine to a corresponding operating mode. In the monaural mode, the deck switches to a strapped mono output (where the left channel feeds both the right and the left), which keeps both channels consistently level.

"We don't have to worry about remembering which cart machine to use," says Callaghan. "And the labels allow us to play any cart on any machine." The station currently has a total of 37 CTR-100 decks (including eight recorders), with one recorder and one playback deck in the news studio and a recorder and two players in the sports department.

The station is also equipped with a monophonic LPB 5500 on-air console with rotary pots and eight inputs, Tascam 122 cassette decks, and a variety of two-track reel-to-reel recorders from such manufacturers as Tascam, Otari, and MCI. Sennheiser MD421 microphones are primarily used for most on-air applications, while several Studer phone hybrids are for call-in shows and for forwarding reports from the highway patrol to the station's traffic helicopter during the morning rush hour.

Callaghan further notes that the station also uses its reel-to-reel machines for recording listener call-ins, putting the caller on the left channel and keeping the DJ's voice on the right. The arrangement is said to add flexibility in production for promo spots and other in-house projects. For recording in the field, reporters use Marantz PD-200 monaural portable cassette decks in conjunction with Electro-Voice 635 mics.

"It's a good combination," Callaghan observes. "Those mics are very reliable. And for our purposes, it's more important to be rugged than to sound great."

High-tech in the hills

When WAJR-AM, an ABC affiliate in Morgantown, WV, had an opening on its news staff, the station's management decided to forgo filing the spot in favor of purchasing a newsroom computer. After examining various systems on the market, a decision was made to go with the Newstar computer, which went on-line at the station in July of last year. According to WAJR's news director, Hoppy Kercheval, the system's speed, storage capacity, and individual smart terminals were the deciding factors.

"The computer links everybody together," he says. "A news operation typically works with people running around like mad saying, 'Where's that wire copy on so and so,' or 'Who's got the story on this.' But with the computerized newsroom and smart terminals, everybody has access to the same information. And that's extremely valuable and time conserving. The other big advantage is the way you can use the computer to communicate. For instance, if I get a blip on the screen about an important news bulletin, I can notify our anchor as to when and how the story will run. I don't have to run around, get on the intercom, or anything."

Although WAJR is primarily a country music station, it features approximately nine hours of news and talk shows each day. It also operates the local news department for its sister station, WVAQ-FM, and serves as the flagship station for the Metronews network, which has approximately 60 affiliates statewide; all three companies are owned by the West Virginia Radio Corp.

"The network was borne out of the fact that WAJR has been originating broadcasts of the West Virginia University Mountaineers for over 40 years," says Dale Miller, president of the West Virginia Radio Corp. "Furthermore, we have always been extremely involved in information, news, and talk programming. So it was a natural progression for us."

Surprisingly, the two news operations only require a total full-time staff of eight (two for the local news department, three on Metronews, and Kercheval plus two sportscasters on both). Fortunately, Newstar addresses the needs of both the local and state news departments.

The local news studio is outfitted with one MCI reel-to-reel recorder, a Gentner SPH-3 phone system, an ITC ESL4 eraser/splice finder, an Audicord record/playback cart deck, a Broadcast Audio console, Electro-Voice RE20 mic, and ITC 3D and two single-tray cart decks. Meanwhile, Metronews has two identical studios, each is equipped with two ITC Delta 3D cart machines, one Revox PR99 reel-to-reel recorder, one Tascam 122 cassette deck, an ITC ESL4 eraser/splice finder, an RE20 mic, and a Gentner SPH-3 phone system with Comrex LFX single- and dual-line extenders. Both rooms similarly feature an Auditronics 212 console.

"What we've tried to do in the newsroom is get to a point where the need or necessity to patch audio is absolutely eliminated," Miller explains. "We run almost all of our audio into the newsroom as it can become a potential source. We selected the Auditronic consoles because they are two-designation consoles—each input has two line inputs. Our consoles are set up in the 'A' position to access the reel and cassette decks, six cart machines, and telephone. All of the 'B' designations are really multiple designations. We use Auditronic LS-8 stereo input modules, and they appear at several different places on the board so that you don't get into a situation where you can do one thing but not another."

Clearing the air

Miller additionally points out that using the Gentner phone interface in conjunction with the Comrex extenders produces an audio signal between 3K to 5K. This comes in handy with regional sports coverage as well as for reports from the network's

www.americanradiohistory.com

stringer in the state capital (approximately 160 miles away). "The combination allows us to get 5 to 6K audio with a lot of noise and hum suppression, which is virtually the same as a 10 dBw carrier on a 7.5 kHz satellite frequency. We can just about duplicate that quality on regular telephone lines with two-line and single-line Comrex extenders whenever we have news actualities from our correspondents in the field," he says.

The network is further equipped with three TRS-80 laptop computers that are able to tie in to Newstar from remote locations. Miller claims that the laptops can receive up to 16K worth of information from the newsroom computer in addition to uploading data.

"You can do electronic mail, you can get wire stories, and access scripts that were done in the studio," he says. "You can also attach a small printer to get hard copy of wire stories—or any material you need."

In addition to receiving network feeds from ABC (which Metronews distributes to its affiliates), the station also subscribes to AP and the Sports Network. The state of the technology is such that Miller ultimately sees more stations turning away from wire services in favor of satellite-delivered national and regional news networks.

"Quite frankly, times have changed so drastically that most stations can probably make it with just satellite-delivered network feeds—if they're really not trying to do a lot of up-to-the-minute news," he says. "The reason I say that is because 10 years ago, the ABC Radio Network was a 5K wire coming in from the telephone company. These days, ABC is 23 different audio channels on a satellite. There are just so many resources coming into the radio station news and programming departments from the networks now that accessing news has never been so easy."

Closing the circle

Quick and easy access to news is an essential in today's radio market—whether it is carried by wire, satellite, or newsroom computer. It's not just a matter of "keeping up with the other guy," but rather an issue of serving the public interest, which is a radio tradition in and of itself.

Although ecomonic factors figure prominently in management decisions—as they always have—it is no less fortunate that technology can pick up some of the slack created by budget-slashing policies. Still, as KMOX's John Angelides notes, "The key to running a successful news operation is to hire good people."

Once again, it is worth noting that the people reporting the news are often just as important as the news they are covering. **BM/E**

This new QuantAural™ QA-100 Audio Program Analyzer gives you the advantage in competitive broadcasting

Simply put, the QA-100 quantifies what you hear. Your station sound can now be electronically monitored the way you hear it. Exactly. And, you can monitor the competition too!

Real time analysis of any audio signal. From a receiver, tape recorder, or processing equipment. You see the measurements as you hear the sound. Changes in processing or variations in system performance are immediately shown on the QA-100 panel meter or bargraph display—using program material as the signal source.

The QA-100 hears like a program director and talks like an engineer. With it you can monitor maximum peak level (relative peak modulation), overall processing effectiveness (average level), tightness of sound and processing control (peak density), tonal balance, consistency and preemphasis (four band real time analyzer), stereo image width (L + R to L – R ratio) and "punch" (special "aural intensity" measurement).

Interested? To learn more about how the QA-100 will help your station compete, call Potomac Instruments today.

QuantAural is a registered trademark.

POTOMAC INSTRUMENTS
932 PHILADELPHIA AVE. SILVER SPRING, MD 20910
(301) 589-2662

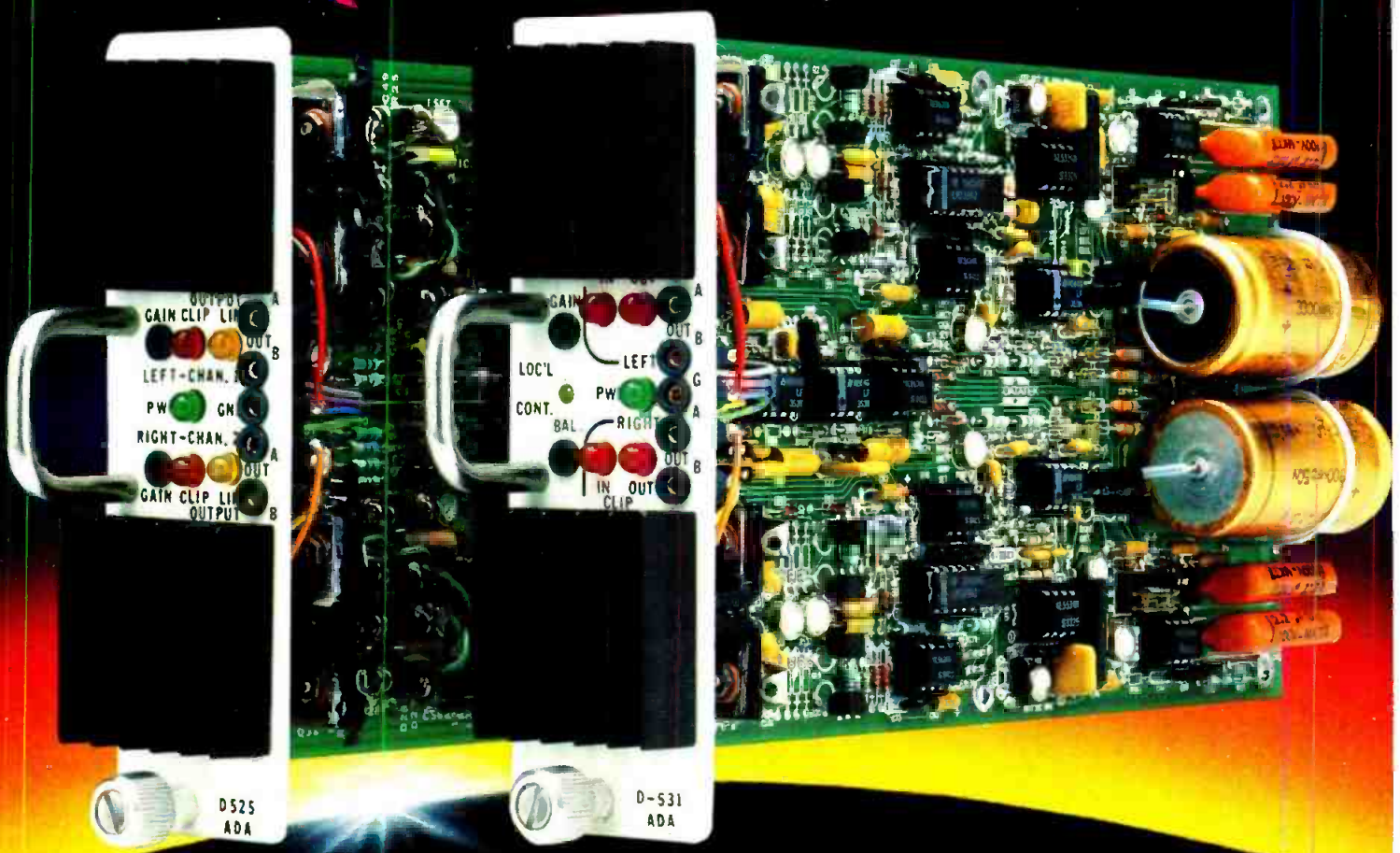
Circle 116 on Reader Service Card

www.americanradiohistory.com

Our World Of Audio DAs Is Growing...

DATATEK

Now TWO Stereo Audio DAs Available From Datatek!



D-525 DUAL CHANNEL/STEREO AUDIO DA

- Two isolated channels for use in stereo or dual distribution amplifier applications
- Used for one stereo input and 6 balanced stereo outputs, one monaural input with 12 outputs, or 2 monaural inputs with 6 balanced outputs each
- 0.05% max. distortion at +27 dBm

D-531 STEREO AUDIO DA WITH REMOTE GAIN

- Local and/or remote control of gain and balance, with accurate tracking over the gain range
- Six balanced stereo outputs with 0.05% max. distortion at +27 dBm
- Two balanced mono sum (L + R) outputs at up to +28BV available simultaneously with stereo outputs

For a descriptive brochure and further information call or write:

DATATEK CORP.

1121 Bristol Road, Mountainside, N.J. 07092 • 1-800-862-9100 • 201-654-8100 • TELEX 833-541

Circle 117 on Reader Service Card

www.americanradiohistory.com

PSYCHO-ACOUSTICS:

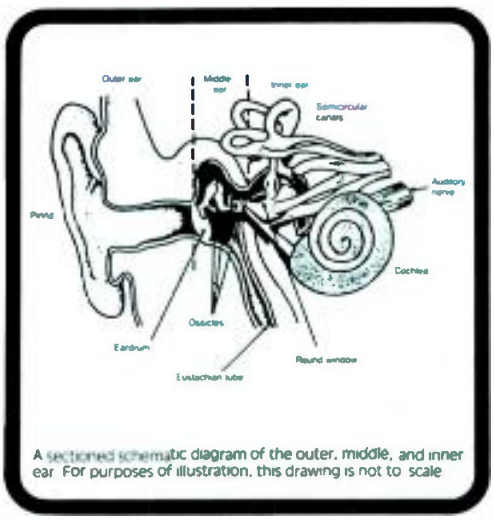
The Science of Sound Perception

Part III

Pitch and Timbre

Paul B. Christensen, Chief Engineer
WIVY-FM, Gilmore Broadcasting Corp.

Pitch is a term used to define the characteristic of a sound that makes it sound high or low, or that determines its position on a musical scale. Pitch of pure tones is mainly a function of frequency, however the pitch of a pure tone may also change with sound pressure level. Determining the pitch of complex sounds not only depends on the above parameters, but is also dependent on the spectrum (frequency distribution) of the sound and its duration. To be sure, the subject of the pitch of complex tones has been one of the most fascinating topics of study in the science of psychoacoustics for many years.



A sectioned schematic diagram of the outer, middle, and inner ear. For purposes of illustration, this drawing is not to scale

An historical note

As early as the sixth century B.C., Pythagorus of Athens determined that if one segment of a string is half the length of the second, then the pitch produced by striking the shorter segment is one octave higher than that of the longer one. In the seventeenth century, Galileo suggested that the pitch of a tone is related to the number of oscillations per unit time.

During the middle of the eighteenth century, A. Seebeck conducted a series of experiments on pitch perception that produced some significant, if startling results. To generate his source of sound, Seebeck used a siren composed of a rotating disc with periodically spaced slots that created bursts of air at regular intervals (see Figure 1a). Seebeck heard a very strong pitch corresponding to the time between the bursts of air. As expected, when the number of slots on the disc were doubled, the pitch was raised by one octave.

When Seebeck used a disk with an uneven spacing of slots (Figure 1b), an unexpected result occurred. The pitch he now heard was nearly identical to that heard by the original siren. This may be understood by analyzing the corresponding waveforms and spectra. Observing the second disc, where the spacing between bursts is alternitively t_1 and t_2, the period of repetition is $T = t_1 + t_2$; and thus, harmonics appear at the same frequencies as in Figure 1a, however, the fundamental is much weaker. Therefore, the pitch matches that which is heard from Figure 1a, although the tim-

www.americanradiohistory.com

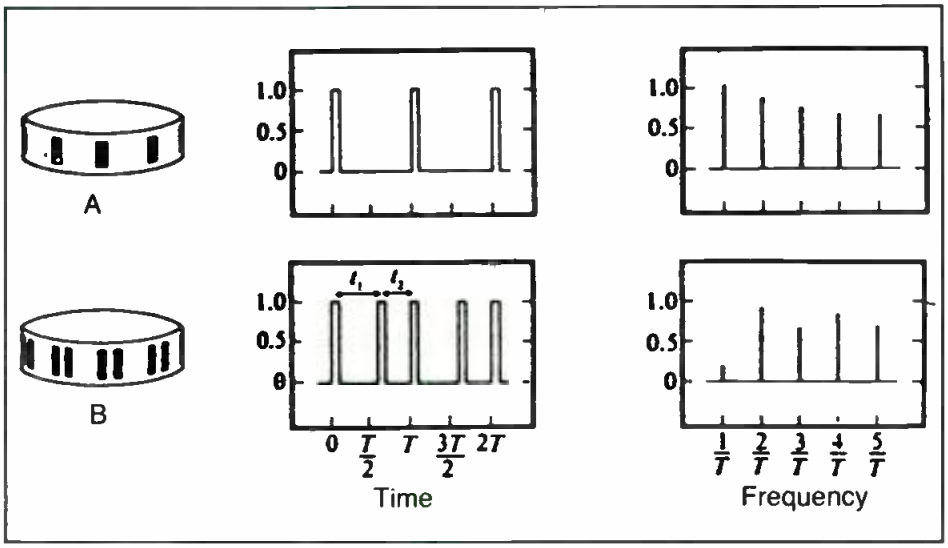


Figure 1: Two types of sirens used by Seebeck together with spectral display produced by each.

bre of the sound is different. What one hears from the sound produced by Figure 1b is two tones an octave apart. The lower tone becomes less intense as t_2 approaches t_1, dissappearing entirely when $t_2 + t_1$, whereas the loudness of the upper tone remains constant.

During the time Seebeck was conducting his experiments, G. Ohm adopted Fourier's thorem on spectrum analysis to acoustics and formulated what is known as "Ohm's acoustical law." Ohm believed that the pitch corresponding to a certain frequency could only be detected if the sound contained power at that frequency. And, thus, he criticized Seebeck's hypothesis that periodicity rather than fundamental frequency, determines pitch. In the case of Figure 1b, however, the sensation of pitch is too strong to be explained on the basis of the weak component at the fundamental frequency, and therefore, Ohm's law is contradicted. Ohm then suggested that Seebeck's result was due to an illusion.

In 1877, Hermann Von Helmholtz published a masterpiece entitled *On the Sensations of Tone as a Physiological Basis for the Theory of Music*. And in it, Helmholtz supported Ohm's position and further added the important idea of distortion products generated by the ear. For pure tones, the distortion products are in the form of harmonic distortion. For complex waveforms, however, the distortion would produce sum and difference frequencies, resulting in the generation of a fundamental.

Experiments conducted by using filtered sound appear to support Helmholtz. As the lower harmonics of a complex tone are filtered out, the pitch remains the same. This important phenomenon, known as the synthesis of the missing fundamental, is responsible for the fact that a small pocket-sized transitor radio can produce low-frequency tones quite well.

Theories of pitch: periodicity vs. place

Two prominent theories of pitch determination have been developed based on numerous experiments by various researchers. They are normally referred to as place (frequency difference) theory and periodicity (time variation) theory. A periodic waveform doesn't necessarily need to contain energy at its fundamental frequency. In recognizing pitch, the ear and central nervous system apparently perform a frequency analysis and time analysis of the second waveform and reaches a decision after a considerable amount of computation.

The notion that oscillations of different frequencies excite the basilar membrane is the basis of the *place theory* of pitch recognition. Based on this theory, the cochlea converts a vibration in time into a vibration along the basilar membrane, and thus excites a spatial pattern of neural activity. The place theory adequately explains many aspects of auditory perception, but fails to explain many others.

Helmholtz viewed the basilar membrane as a spectrum analyzer, with transverse tissue tuned to resonate at frequencies determined by their mass, length, and tension. He was nearly correct, but later investigation revealed that individual fibers were not free to vibrate, but the membrane as a complete section can create the effects of resonance.

More recent experiments have shown limitations in the place

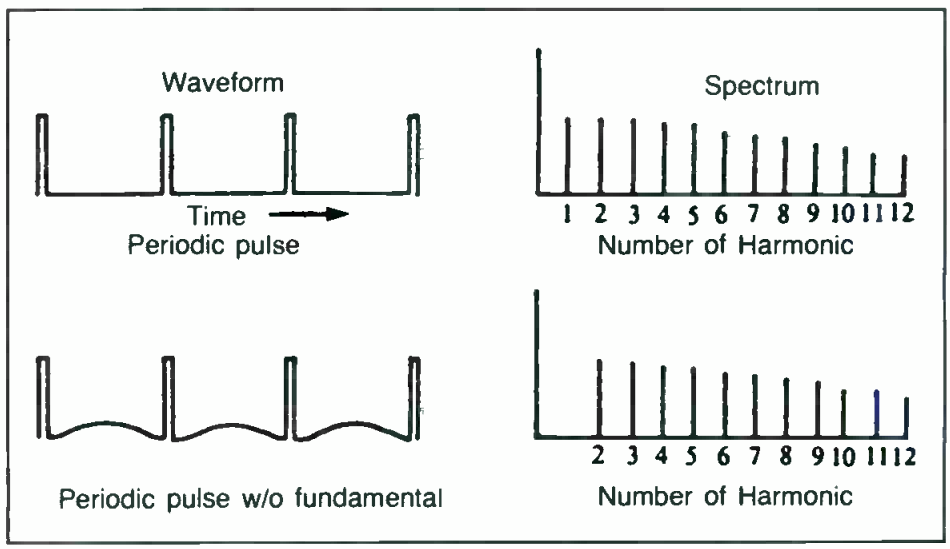


Figure 2: Cancellation of the fundamental frequency of a complex sound.

www.americanradiohistory.com

B E A U T Y

Classic beauty is unmistakable. You know it when you see it.

Like the beauty you get with Ampex 196. Clean, clear pictures that capture every sparkling moment of your production.

No other video tape delivers such consistent low-dropout performance. Or such dynamic picture quality.

By focusing on critical drop-outs, especially in the area not compensated for by your VTR, we developed a video tape you can rely on for all your applications.

The secret behind our success is Ampex Process Management. APM is a unique manufacturing concept enabling us to control the consistency of the entire production process. From raw materials to finished products.

So you always get the cleanest, sharpest pictures time after time, reel after reel, carton after carton. That's why top professionals around the world specify Ampex 196.

If you'd like to know more about how APM contributes to beautiful pictures, call or write Ampex today for a free brochure.

AMPEX 196

AMPEX

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

Circle 118 on Reader Service Card

www.americanradiohistory.com

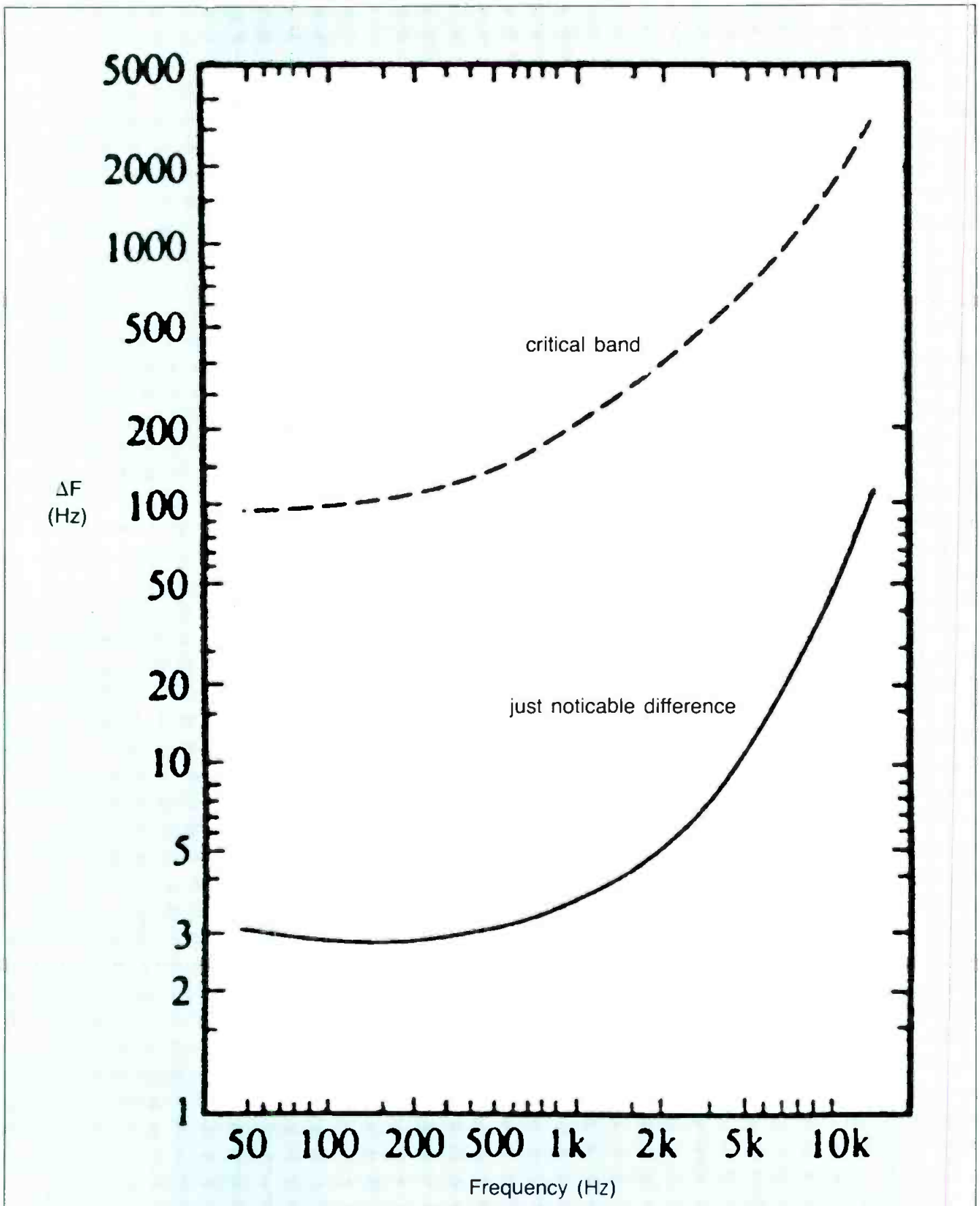


Figure 3: Just-noticable difference caused by modulating the frequency of a tone at 4 Hz.

www.americanradiohistory.com

theory, however. One problem is explaining fine frequency discrimination. In order to respond to quick changes in frequency, a resonator must employ a considerable amount of damping, but this also decreases selectivity. A second problem arises when attempting to explain why we hear one complex tone as an entity with a single pitch.

The *periodicity theory* is an attempt to explain pitch recognition by the time distribution of the electrical impulses carried by the auditory nerve. Presumably, this information is decoded by the process called *autocorrolation* (to be discussed in Part IV of this series).

In the late 1930s, J. Schouten performed experiments that support the periodicity theory of pitch. In one experiment, Schouten studied stimuli in which the pitch corresponds to the repetition rate of the pulses at 200 Hz. In the waveform shown in Figure 2, the fundamental frequency has been cancelled out by the addition of a 200 Hz out-of-phase signal. The pitch stays unchanged at 200 Hz, the frequency of the "missing fundamental." A 206 Hz pure tone was then added. If a distortion product of 200 Hz were present in the ear, as Helmholtz suggested, beats should be heard at a rate of six per second. No beats were heard.

Schouten's experiments continued by generating complex waveforms using amplitude modulation in which the frequencies of individual components could be shifted to the same degree. This left the spacing between components undisturbed. For example, a carrier frequency of 1 kHz modulated by a 300 Hz signal produces components at 700, 1000, and 1300 Hz and a pitch at 300 Hz. If the carrier frequency is shifted up to 1350 Hz, the components are shifted to 1050, 1350, and 1650 Hz. The pitch is now found to shift to about 308 Hz, even though the difference frequency remains at 300 Hz.

Schouten theorized that this phenomenon was due to synchronous firing of the auditory nerve.

UPGRADE YOUR ENG SYSTEM WITH MII

If you use ½", ¾" or any combination, switch to MII and get high performance and overall cost reductions.

The MII Broadcast System is designed to enhance your ENG operations. With product like the AU-400 Camera Recorder that offers a combination of performance and capabilities never before available on ½".

Like multi-generation capability, playback through the view-finder, 4-channel audio, on-board time code generator/reader with selectable user bits and over 20 minutes of recording time on a compatible compact cassette. Even 90 minutes of operation with the MII Field Recorder, Field Editing and Studio VTR's. Plus performance of such high quality it can be used as an alternative to 1" C.

And with MII you have low maintenance and training costs. Tape consumption is dramatically reduced. Units are small and lightweight. Cassettes and parts inventory are interchangeable. And MII equipment is 100 percent compatible, so you can interface MII with your present system.

What's more, product is available now.

Find out how you can improve your production quality and cut your overall costs with the Panasonic MII Broadcast System.

For more information call (201) 348-7671.

MII Panasonic Broadcast Systems

Circle 119 on Reader Service Card

www.americanradiohistory.com

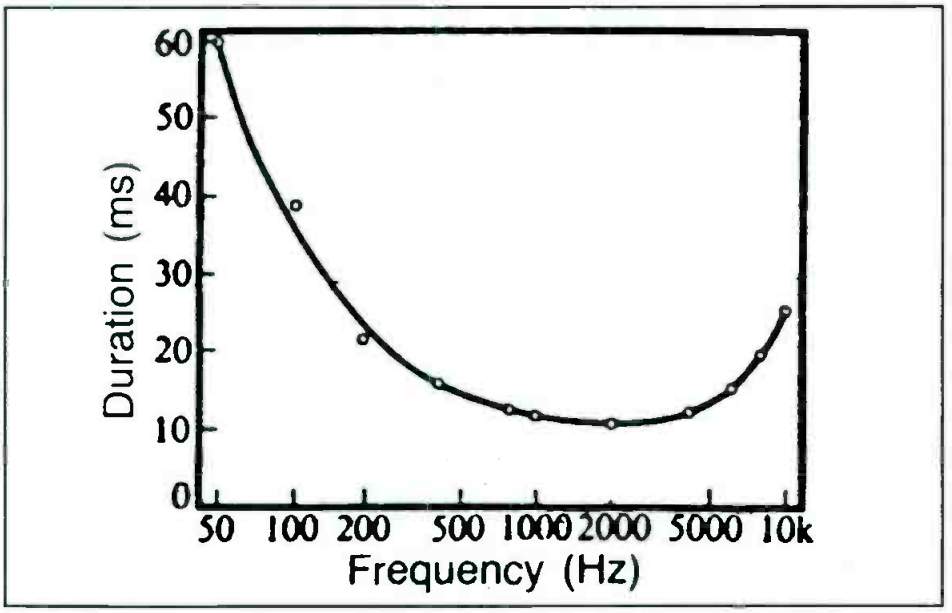


Figure 4: Required duration of a tone to produce a defined pitch.

Low-frequency components of the signal can be resolved by local excitation of the basilar membrane, but at higher frequencies, multiple components lie within the bandwidth of a particular region of the membrane. The unresolved components form a residue that retains the periodicity of the original waveform. Schouten's hypothesis provided a reasonable alternative to the distortion theory of Helmholtz.

Numerous pitch shift experiments are of historical significance. In 1693, astronomer Huygens, standing at the foot of a staircase at the castle at Chantilly de la Cour in France, noticed that the sound of a nearby fountain was producing a certain pitch. He correctly assumed that the pitch was caused by periodic reflections of sound against the staircase steps.

It has been discovered recently that the frequency discrimination in the cochlea is much sharper than would result from the mechanical response of the basilar membrane. It has been proposed that a second filtering mechanism is responsible for tightening the frequency response of the cochlea. The physiological disposition of this filtering mechanism is not known. However, it gives credence to the place theory of pitch recognition.

Pitch discrimination and scaling

In psychophysical studies, the ability to discriminate between two nearly equal stimuli is known as a *difference limen* or *just-noticeable difference (jnd)*. The two stimuli are considered to be the same if they differ by less than the jnd.

The jnd for pitch perception is dependent on frequency, sound pressure level, duration, and rapid frequency changes. To a lesser degree it depends on the musical training of the listener and the methodology of measurement. The average jnd for pure tones at a sound pressure level of 80 dB is shown in Figure 3. From 1 kHz to 4 kHz, the jnd is about 0.6 percent of the pure tone frequency, or one-twelfth of a semitone. Some researchers use the term *frequency resolution* to describe the jnd divided by frequency.

By observing Figure 3, it can be seen that the jnd at each frequency is nearly a constant percentage of the critical bandwidth. This result suggests the same mechanism in the ear for determining pitch is used for critical bands.

It is interesting to compare

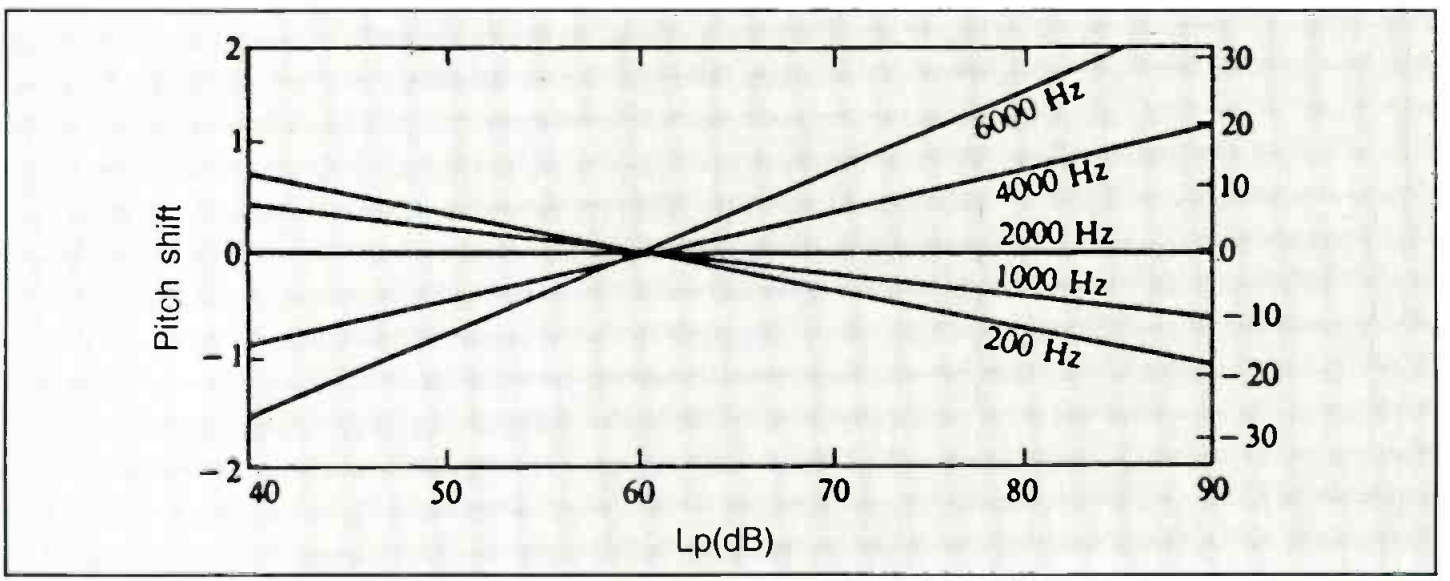


Figure 5: Pitch shift of pure tones with a change in sound pressure level.

www.americanradiohistory.com

pitch recognition with color recognition. The visible electromagnetic spectrum is contained in a bandwith of over one octave. Violet has approximately half the wavelength of red and contains 130 discernable colors, whereas the auditory system contains ten octaves and 4000 jnds.

Numerous attempts have been made to establish a psychoacoustical pitch scale: If one listens to a 4 kHz tone followed by a lower frequency tone, and then tunes the audio signal generator to a pitch half-way between, a probable choice might be around 1 kHz. The unit used to describe subjective pitch is the *mel;* the scale is constructed so that doubling the number of mels doubles the pitch. However, the mel scale is not nearly as useful as the subjective loudness scale (sone).

Effects of duration on pitch

In 1840, Savart noted that a sense of pitch is perceived after only two cycles per second. Extremely brief tones are characterized as "clicks" and gradually develop into recognizable pitch as the tone duration increases. To a lesser extent, the transition from click to tone also depends on sound pressure level. If the tone is "ramped" rather than beginning abruptly, perception times as short as 4 ms are possible; this is shorter than the attack time of many musical instruments (Figure 4).

The ear is considerably sensitive in detecting changes of pure tones. The jnd for frequency change with pure tones is less than for wideband noise, so long as the amplitude of the pure tone remains constant. Even noise with a bandwidth of 10 Hz with a center frequency of 2 kHz will be six times greater than for a 2 kHz pure tone.

Effect of sound pressure level on pitch

Experiments in the early 1900s on pitch versus sound pressure level revealed a much larger dependence on sound level than do recent studies. In 1935, Stevens

STANDARDIZE YOUR EFP SYSTEM WITH MII

If you use ½", 1" or any combination, switch to MII and get high performance and overall cost reductions.

The MII Broadcast System was designed to enhance your EFP operations. With product like the AU-500 Field Recorder that offers a combination of performance and capabilities never before available on ½".

Like over 90 minutes of recording time even in the field, multi-generation capability, field color playback, 4-channel audio, on-board time code generator/reader with selectable user bits and TBC connection. The Field Recorder also accepts compact cassettes from the MII Camera Recorder. Plus MII's performance is of such high quality it can be used as an alternative to 1" C.

And with MII you have low maintenance and training costs. Tape consumption is dramatically reduced. Units are small and lightweight. Cassettes and parts inventory are interchangeable. And MII equipment is 100 percent compatible, so you can interface MII with your present system.

What's more, product is available now.

Find out how you can improve your production quality and cut your overall costs with the Panasonic MII Broadcast System.

For more information call (201) 348-7671.

MII Panasonic Broadcast Systems

Circle 120 on Reader Service Card

www.americanradiohistory.com

noted shifts in pitch as great as two semitones (a frequency change of 13 percent) as the sound pressure level of the pure tone increased from 40 to 90 dB. Low-frequency tones were found to decrease in pitch with an increase in intensity; tones of high frequency were found to decrease in pitch with increasing intensity. Midrange tones between 1 and 3 kHz were indifferent to level change. He found the maximum downward shift to occur at tones of 150 Hz and a maximum upward shift at 8 kHz.

With recent research, it has now been found that the effect is small and will vary among individuals. While the pitch change tends to agree with Steven's observations, averaging a group of individuals makes the changes inconsequential (see Figure 5).

Pitch of complex tones

When we hear a tone composed of exact harmonics, it is quite easy to determine what pitch will be heard. It is always the least-common factor of all frequencies heard, or the fundamental. As we discussed earlier, the ear identifies the pitch of the fundamental, even if it is missing altogether.

If a fundamental is not necessary for determining pitch, the question arises as to what harmonics are most influential. Some experiments have shown that for a complex tone with a fundamental frequency up to approximately 250 Hz, the pitch is mainly dependent on the fourth and fifth harmonics. As the fundamental increases, the number of dominant harmonics decreases to a point where the fundamental itself at 2500 Hz is the dominant factor.

When the spectra of the complex tone are not harmonic, the determination is much more discernable. Recent theories indicate that the ear selects a series of nearly harmonic partials near the center of the audible range and determines pitch based on the largest near common factor.

It is clear from this discussion that understanding the dependence of pitch spectrum is essential when explaining the perceived effects of digitally encoded audio, particularly in the controversial area of sample time intervals.

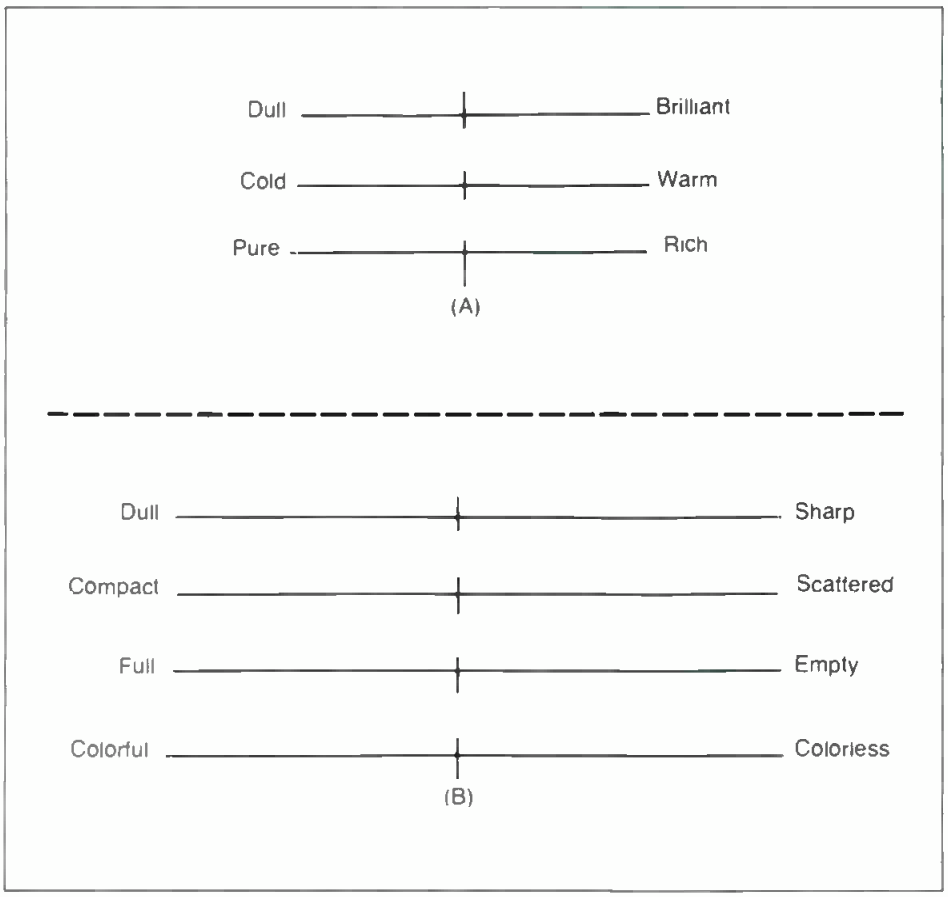


Figure 6: Subjective rating scales for evaluating timbre. (A) from Pratt and Doak, 1976; (B) after Von Bismark, 1974.

Absolute pitch

A topic in audiology that has had a considerable amount of interest and controversy is *absolute pitch*. This is a characteristic of hearing whereby the pitch of a tone can be defined without the use of a reference. This ability is sometimes compared to absolute color recognition (e.g. blue) without a comparison to a color standard.

Most people have some ability to detect large changes in relative pitch; nearly everybody can determine when one tone is higher or lower than another. With a well-trained ear, it is possible to distinguish when the frequency of a second tone varies as little as one percent from the expected interval. However, these judgements are not nearly as accurate as they are repeatable. Relative pitch is a unique ability that has no counterpart with our other senses. We cannot determine that a color is twice the frequency of a reference color; the only comparison might occur in a visual domain by the selection of a complementary color.

The phenomenon of absolute pitch has been studied for nearly 100 years and during this time, a great deal of discussion has evolved concerning its origin. There is certainly no unanimous agreement as to whether it is inherited or learned. Four of the most popular theories are:

- Learning Theory—Absolute pitch can be acquired by consistent and repetitive practice.
- Unlearning Theory—This theory implies that we are born with absolue pitch recognition, but is trained out of us at an early age, mainly due to relative pitch emphasis.
- Heredity Theory—Just as we inheret other physical traits, so is absolute pitch recognition, and the child learns pitch names at an early age just as he learns the names of colors.

www.americanradiohistory.com

• Imprinting Theory—This theory suggests that rapid, irreversable learning takes place at a key developmental stage. Advocates of this theory feel that nearly all children can be taught absolute pitch at an approriate developing age.

It is a unique ability no matter how it develops and will no doubt remain a controversial subject for some time, particularly due to the difficulty of experimenting with human subjects under isolation.

Pitch standards

The idea behind a universal pitch standard is so obvious, and it is difficult to believe that none existed for so many years. The pipe organs constructed during the middle 1800's had A notes tuned anywhere from 374 to 567 Hz. Handel's tuning fork reportedly oscillated at 422.5 Hz.

Sometime during the nineteenth century, pitch began to rise with the advent of brass instruments. In 1859, a commission appointed by the French government selected 435 Hz as the standard. Early in the tewentieth century, with all C notes being powers of two, 431 Hz became the standard. Then in 1934, an international committee unanimously adopted 440 Hz as the new A note standard, and this is used universally by most musicians today.

Tone quality: timbre

Timbre is a French term meaning "tone quality" of a sound. In 1960, the American National Standards Institute (ANSI) defined it as "that attribute of auditory sensation in terms of which a listener can judge two sounds similarly presented and having the same loudness and pitch as dissimilar." It further added that "timbre depends primarily on the spectrum of the stimulus, but also depends on the waveform, the sound pressure, the frequency location of the spectrum, and the temporal characteristics of the stimulus."

Timbre may be described as a multidimensional attribute of sound. Since it is impossible to develop a single scale for timbre,

SUBSTITUTE YOUR STUDIO VTR'S WITH MII

If you use 1", switch to MII and get high performance and overall cost reductions.

The MII Broadcast System was designed to enhance your studio production. With product like the MII AU-650 Studio VTR that offers a combination of performance and capabilities never before available on ½".

Like over 90 minutes of recording time, multi-generation capability, onboard TBC and time code generator/reader with selectable user bits, editing functions, variable speed playback including slow and still, Dolby-C noise reduction, and 4-channel audio. The Studio VTR also accepts compact cassettes from the MII Camera Recorder. Plus MII's performance is of such high quality it can be used as an alternative to 1" C.*

And with MII you have low maintenance and training costs. Tape consumption is dramatically reduced. Units are small and lightweight. Cassettes and parts inventory are interchangeable. And MII equipment is 100 percent compatible, so you can interface MII with your present system.

What's more, product is available now.

Find out how you can improve your production quality and cut your overall costs with the Panasonic MII Broadcast System.

For more information call (201) 348-7671.

MII Panasonic Broadcast Systems

*Dolby is a trademark of Dolby Laboratories, Inc.

Circle 121 on Reader Service Card

www.americanradiohistory.com

Bibliography

American National Standards Institute (1960). *USA Standard Acoustical Terminology*. S11.-1960.

Bachem, A. (1955). "Absolute Pitch," *Journal of the Acoustical Society of America* 27: 1190.

Erickson, R. (1975). *Sound Structure in Music*. Berkley: University of California.

Fletcher, H. (1934) "Loudness, Pitch and Timbre of Musical Tones and Their Relation to the Intensity, the Frequency, and the Overtone Structure," *Journal of the Acoustical Society of America* 6:153.

Goldstein, J.L. (1973). "An Optimum Processor Theory for the Central Information of Complex Tones," *Journal of the Acoustical Society of America* 54:1496.

Helmholtz, H. Von (1877). *On the Sensation of Tone as a Physiological Basis for the Theory of Music*, 4th ed. Trans. A.J. Ellis. New York: Dover, 1954.

Plomp, R. (1976). *Aspects of Tone Sensation*. London: Academic Press.

Pratt, R.L. and P.E. Doak (1976). "A Subjective Rating Scale for Timbre," *Journal of Sound and Vibration* 45:317.

Ritsma, R.J. (1970). "Periodicity Detection," in *Frequency Analysis and Periodicity Detection in Hearing*. Eds., R. Plomp. Leiden: Sijthoff.

Schouten, J.F. (1940). "The Perception of Pitch," Phillips Tech. Rev. 5:286.

Stevens, S.S. (1935) "The Relation of Pitch to Intensity," *Journal of the Acoustical Society of America* 6:150.

Ward, W.D. (1970) "Musical Perception," in *Foundations of Modern Auditory Theory*. Ed., J. Tobias. New York: Academic.

two attempts at constructing scales are shown in Figure 6. Both investigations revealed that the dull/sharp scale to be the most significant.

It is important to distinguish between the timbre of steady complex tones and those that contain transients.

A thorough investigation of the timbre of steady complex tones was conducted by Helmholtz in 1877. He showed that sounds of the vocal chords and most musical instruments consist of a series harmonics that determine timbre. From his experiments, he concluded that:

- Musical tones with loud consecutive harmonics, up to the sixth, sound richer than simple tones and remain soft if the higher harmonics are eliminated.
- Simple tones, such as those produced by striking a bell sound free from roughness, but are somewhat dull at low frequencies.
- Partials containing only odd harmonics (a closed pipe) sound hollow and if numerous harmonics present, sound rather nasal. If the fundamental is strong, the tone quality is rich.
- Complex tones with harmonics above the sixth sound distinct but the tone is rough and sharp.

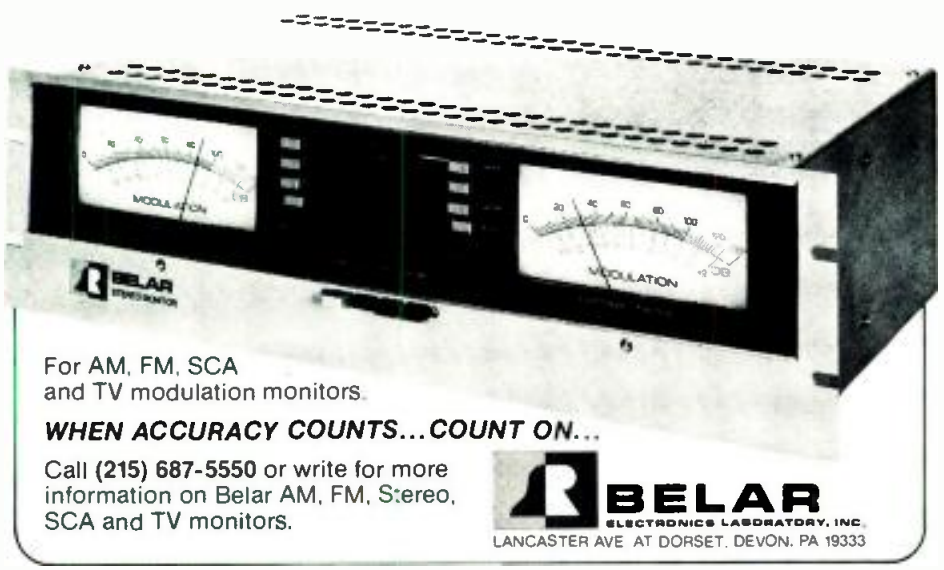
Helmholtz continued with detailed experiments to ascertain the dependence of timbre on the relative phase of harmonics. Using tuned resonators and electrically driven tuning forks, he determined that timbre does not depend on the phase of harmonics. However, the realized limitations in his methodology and only small changes in timbre could be detected. Consequently, some interesting dynamic phase effects were overlooked.

Fourier analysis of complex tones

The spectral decomposition of a periodic waveform is called Fourier analysis, named after the French mathematician, Joseph Fourier. He developed this important mathematical law: "Any periodic vibration, however complicated, can be built up from a series of simple vibrations whose frequencies are harmonics of a fundamental frequency, by choosing the proper amplitudes and phase of those harmonics." Constructing a periodic waveform from its harmonics is known as Fourier synthesis. A two-dimensional display of the strengths of the various harmonics is called the *spectrum*. Spectra of common types of waveforms are shown in Figure 7.

Modern spectrum analyzers are of two types: analog and digital. Digital analyzers sample one period of the wave at regular intervals and send these samples into a digital computer. The computer then calculates the phase and amplitudes of each harmonic.

Analog analyzers commonly use a filter or other electronic mechanism to isolate harmonics. If the analysis is done quickly, the device is known as a real-time analyzer, which is useful in studying



For AM, FM, SCA
and TV modulation monitors.

WHEN ACCURACY COUNTS...COUNT ON...

Call **(215) 687-5550** or write for more information on Belar AM, FM, Stereo, SCA and TV monitors.

BELAR
ELECTRONICS LABORATORY, INC.
LANCASTER AVE AT DORSET, DEVON, PA 19333

Circle 122 on Reader Service Card

www.americanradiohistory.com

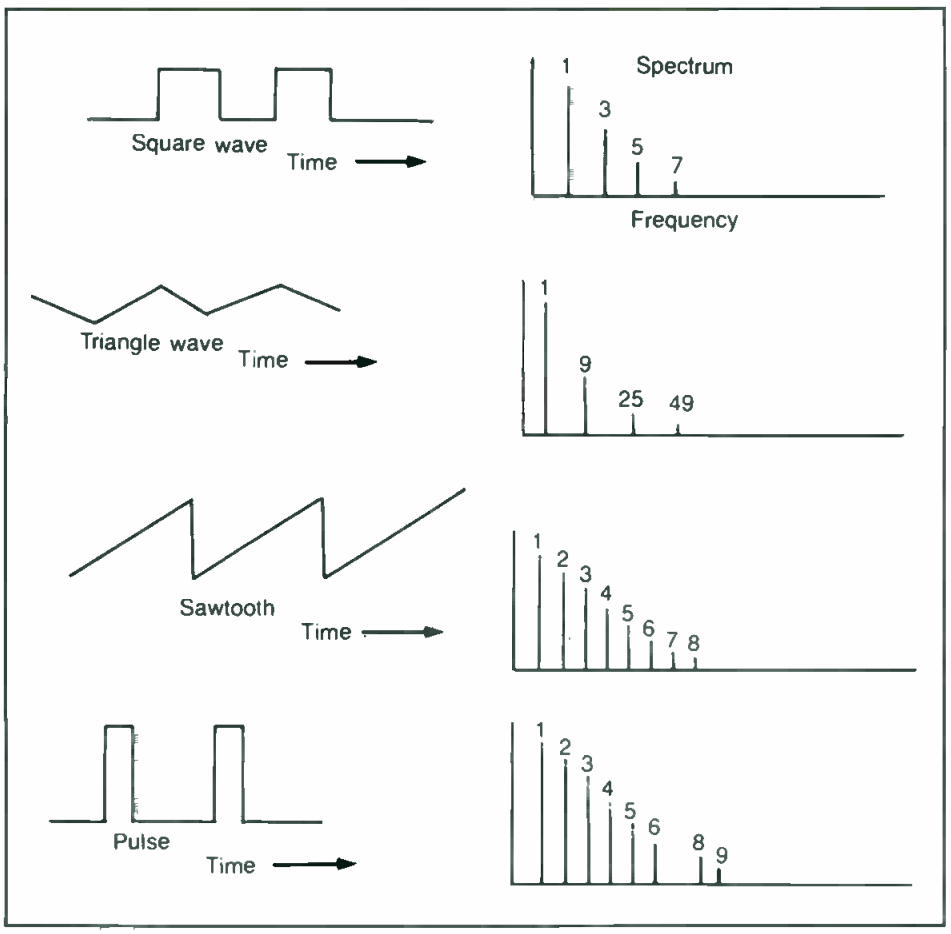


Figure 7: Spectra of four common waveforms.

the attack and decay of sound.

It is especially important to note that whereas the effects of phase on timbre are small for steady complex tones, the ear is in fact sensitive to changes in phase.

Blend of complex tones

One of the most uniuque qualities of our auditory system is its ability to discriminate complex tones from a complex background. Psychologists term this phenomenon the "cocktail party" effect; we can single out a conversation among many others in a room full of people. The ear looks for familiar sets of partials and mixes these together at the same time it hears the blend of many instrument sounds.

In 1975, Erickson addressed this subject from the standpoint of a musical composer. He stated three ways in which a complex sound can be heard: as pitch; as a chord; and as an unpitched sound (such as the sound of a drum beat). These three parameters form the apexes of an equilateral triangle as depicted in Figure 8.

Partials of a piano are displaced further apart than the partials in a harmonic series. This fact tends to make the sounds bell-like. Partials in both instances, can be discriminated more easily than the harmonic partials of a musical tone. This transformation can be described as going from pitch to an enharmonic chord as the harmonics are separated.

To conclude this discussion in Part IV, we will look at harmony and combination tones and the various effects that can occur when two or more tones reach each other simultaneously. BM/E

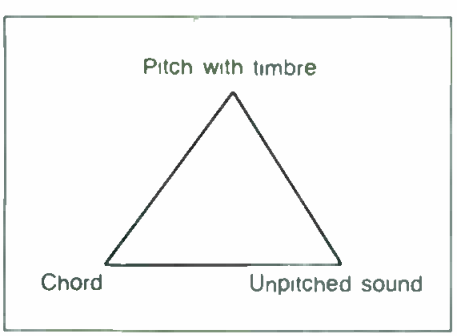


Figure 8: Three ways in which a complex sound is heard.

The art of shaping sound.

SONEX is a high-performance acoustical foam that upgrades your studio inexpensively. Ideal for a temporary isolation booth, it can also eliminate slap echo and harsh resonances in the main room or silence noisy tape equipment in the control booth. Write for our color brochure today.

Alpha Audio
2049 West Broad Street
Richmond, Virginia 23220 USA
(804) 358-3852
FAX: (804) 358-9496
Telex: 469037 (ALPHAAUD CI)
Acoustic Products for the Audio Industry

Circle 123 on Reader Service Card

FALCON DISPOSERS

LIQUIDATION

SALE!

Complete Studio Production Package

- Studio Cameras
- Hand Held Cameras
- Over 50 Monitors
- 1" VTR's • ¾" VCR's
- Intercoms
- Switchers
- Special Effects Generators
- Editors

Highest bid over $100,000 by August 31, 1987

PRINCIPALS ONLY

Call Falcon for bid package:

(213) 590-8531

Circle 124 on Reader Service Card

www.americanradiohistory.com

One Tape for a True Picture.

If digging for oil is the story, digging for news will take you there. And the tape you take is the 3M ¾" MBR™ Videocassette–created to exceed even our widely acclaimed MBU Videocassette. Designed with our exclusive Anti-Stat™ System–to reduce its static charge and help prevent the dust buildup that causes dropouts. To give you a true picture.

© 1987 3M Co.

www.americanradiohistory.com

TO THOSE WHO GIVE A CLEAR PICTURE OF THE NEWS, ONE TAPE IS TRUE.

One Tape Stands True.

We see our job as being the same as yours–to give a clear picture of the news. And that's been our job since we invented videotape 30 years ago.

That's why we stand by you–with the largest support force in the field.

And we stand behind you–with some of the most advanced research in the industry.

All to keep our standing–as number one in the world of the pro.

NUMBER ONE IN THE WORLD OF THE PRO

3M

Worldwide Sponsor
1988 Olympic Games

www.americanradiohistory.com

Necessities of Newscasting

The most effective equipment environment for on-air television news may differ from station to station, but staying competitive is always the goal. And watching the bottom line is part of the game.

KGTV, in San Diego, produces news with the help of a Dynatech Newstar computer, Grass Valley Group 300 switcher, and an NEC DVE System 10.

By Brian McKernan

Television news: it's gathered by dedicated professionals, and it arrives—raw or edited—at the studio on tape, via terrestrial microwave, coaxial cable, and satellite. It might be local, national, or worldwide in importance, and decisions must be made about which stories should run. But once the information and pictures comprising the news arrives at the studio the next concern is presenting it on the air. For television news departments the clock is relentless, the competition always a concern, and each day is unpredictable and filled with potential impediments to getting the job done. For these reasons, it is essential in the production of on-air news to create the right equipment environment.

Back in business

A strong local news operation is an asset for a station in any market, but in Chicago it's paramount. "Viewers here are extremely sophisticated news consumers," ex-

www.americanradiohistory.com

plains Greg Caputo, news director of WFLD-TV32. "People watch a lot of TV news, they read a lot of newspapers. The four other stations doing regularly scheduled news in Chicago are very good, and there's no question in my mind that in any other market any one of these stations could be number one."

Caputo's reference to the competition is significant; after a 15-year hiatus from news, Fox Broadcasting-owned WFLD is about to rejoin the ranks of the windy city's major TV news stations. WFLD will program eleven hours of news each week from its new 61,000-square-foot studio and office complex.

"That the competition is so good makes it incumbent upon us to be equally as good," Caputo explains, "and news is important because it increases station/community involvement." WFLD's sources for world and national news includes CNN's 24-hour service, the daily shared satellite feed of all Fox stations, and the major wire services.

Different Fox stations use different brands of equipment, depending on each station's own particular needs. WFLD's equipment choices for news were made autonomously. "We've assembled all the necessary hardware so we can concentrate on the creative and production sides of things, and not worry about any shortcomings of the plant itself," explains Caputo.

"During the past several years, all our equipment purchases have been made with an eye toward doing news. Our choices are based on utilitarian value, equipment that's usable for more than one application. For example, our ColorGraphics LiveLine V weather graphics computer will be used for delivering nightly weather, and also for creating animation and doing a variety of graphics treatments for news stories," Caputo explains. The LiveLine V will be using WSI's ASTROgraphics weather graphics service, received by a two-foot satellite antenna on the roof.

In addition to its LiveLine V for weather and other animation, the station also has a Quantel Paintbox for the creation of static images. One WFLD artist is dedicated solely to the news department. TV-32's graphics room also has a Chyron 4100 EXB for character generation, and a Quantel 6030 dual-channel still-store system. Sophisticated graphics capability, Caputo explains, is essential for producing major-market news today.

Weathercasting at KGTV benefits from sophisticated images produced on the station's Dubner CBG-2 video graphics generator. For this, the station uses the Radac color weather radar service from Kavouras.

Four formats

Creating the right equipment environment at WFLD was—as it is at most stations—a collaborative effort. Chief engineer Dwain Schoonover, assistant chief engineer Mark Bachem, and news director Caputo made the choices. Competition and utility were factors, but "the primary consideration," relates Bachem, "was: does it do what we need it to do?"

Saving time saves money, an ongoing need for every business entity, broadcast or otherwise. Philips LDK26A studio cameras—with automatic setup of scanning, registration, dynamic focus, beam setting, and alignment—cut set-up time to a minimum at WFLD. Each camera is supported by Vinten pedestals, and it images with Fujinon 14X1 lenses. One camera is outfitted with Newsmatte for the weather segments. Another time-saving part of the news studio is a microprocessor-based Strand Century lighting board. The system stores multiple lighting schemes in its memory, all of which can be recalled with the touch of a button.

Beta and Beta SP are the major news formats at WFLD, a consequence of the station having a Betacart on-line for two years for spot playback, and also of choosing Betacam camera/recorders for ENG. The rest of the world, however, is not yet totally half-inch, and so the station's news operation will also rely on other formats. "For the forseeable future there'll be a lot of material that will come through here on ¾-inch tape: outside stuff, stringer material, pool feeds," says Caputo. "Our four editing suites will each be equipped with two Beta machines and one U-matic."

WFLD's choice of machines for its four edit suites consists of Sony BVW-40s, which have built-in full-scale editing functions to slave accompanying BVW-10

www.americanradiohistory.com

Betacam players. Each suite also has one BVU-800 for U-matic tapes and a dual-channel TBC for simple effects. A Beta play-to-air booth is outfitted with BVW 40s, 10s, and the BVE-800 edit control unit for editing late-breaking stories right up to time of air. A fifth edit room, from the station's recently disbanded *PM Magazine* show, includes a Sony 3000 editing system interfaced with three BVU-850 U-matic SP machines. It will be used for PSAs and other special projects.

One-inch tape will also have a role in news at WFLD, in addition to its use for program playback at the station. "We will use one-inch if we're doing a story that requires preproduction—a mix through our control room prior to air—or for doing bumpers," Caputo explains. "That stuff will probably be recorded on one-inch simply for ease of playback." And one quad VTR is still kept for the occasional reel that arrives in that format.

Smart switching

At the heart of production—news or otherwise—is the switcher. And these days, explains Bachem, live broadcast of the multiple video sources and effects necessary for achieving the polished look of a major-market newscast demands a production switcher that offers extensive assistance to the director and TD.

"We have a Grass Valley Group 300 series production switching system, which we bought in 1984 for post-production work to build all the bumps and logos for the Fox network," Bachem recalls. "Now the GVG 300 has found its way into the newscast, and it's a very useful tool, a powerful switcher that's suited for news because of all the fast, complicated moves it can do with a minimum of effort.

"Our GVG 300 has 24 inputs, E-MEM [effects memory] on each of its three mix/effects, a separate background generator for each ME, and the switcher is interfaced to a single-channel Ampex ADO 2000 unit. This enables us to set up multiple layer effects before we actually take them on to the program bus. It also has an A-bus so that you can do a phantom instant key off of its bank of 24 primary inputs. That makes it great for on-air live switching.

"For instance," Bachem continues, "you can set up your weather effects in mix effects 1, and you can have talent with an over-the-shoulder box with a chroma key in mix effects 2, and at the same time you could be working on mix effects 3 and be inserting a downstream key while also switching cameras live off the program bus. You can do all that at the same time. But you do need a good TD.

"Without an effects memory system the poor TD would have to be sitting there setting up effects on the fly because every time he moves a fader handle, for instance, his box wipe would change. This way, however, all he has to do is load up the memory of the effects on the effects bus, and then just recall it. The entire mix effects will mimic the way the TD had it set up, including primary input sources and background sources.

"We have our ADO 2000 into what we call the title keyers of the switcher," Bachem explains. "A title key actually takes the key-cutting hole and live, raw video from the ADO, and at one punch of a button gives you not only the foreground information, but also the ability to simultaneously cut the hole around the ADO. That saves time as far as button pushing, and also setting up effects on the mix effects. You can use a title key, and in one stroke have the ADO over whatever you have on your mix effects. All these features are great, and almost a necessity to do news these days, especially in a major market."

Effective effects

At KGTV, channel 10 in San Diego, local major-market news means three hours of daily on-air news spread out over five newscasts. "It's a very good news market," says Paul Sands, news director of this ABC affiliate. "San Diego is the seventh largest city in the country, and the audience is there; all that news is not an overload for them. We're very successful, and our competition is successful in some of the same time slots."

It's long since been the case everywhere that news production means more than conveying information. The sophisticated visual vocabulary of the public requires that newscasts be presented with graphic appeal not only in terms of paint and animation treatments, but also for transitions. WFLD's Ampex ADO, described earlier, is used for this purpose, and at KGTV a two-channel NEC DVE System 10 gives newscast viewers the overall look they've come to expect from major-market news.

"The NEC DVE has really enhanced our on-air look, we use it for just about everything," says Dennis Csillag, technical director at KGTV. "It has rotation and perspective and we can do just about everything we've always wanted to do. We use the DVE for page turns, transitions between voice-overs, and for every bumper—headlines for all the regular features in the newscast. We start out with a graphic over the shoulder and then to an *Entertainment Tonight*-type of sliparound to get to the story."

A daily news segment at KGTV is called "Upfront," in which correspondents in the field converse with live anchors. The DVE is used to split the screen between studio and field, and allow for one image or the other to dominate the screen when needed. "When we used to use a monitor on a desk for this, the talent had to turn around and look at the monitor so the viewer saw a live shot on a monitor and the back of someone's head," states Csillag. "The monitor was never as clear as the nice, clean feeds we can present with the DVE." Monitors are still used with the DVE system, but off-camera for anchor and field reporter to see each other.

Further enhancing the look of TV10 is a Dubner CBG-2 video graphics generator, combining character generation, paint, and 3D all in one unit. The station plans to purchase a Dubner 20-K

www.americanradiohistory.com

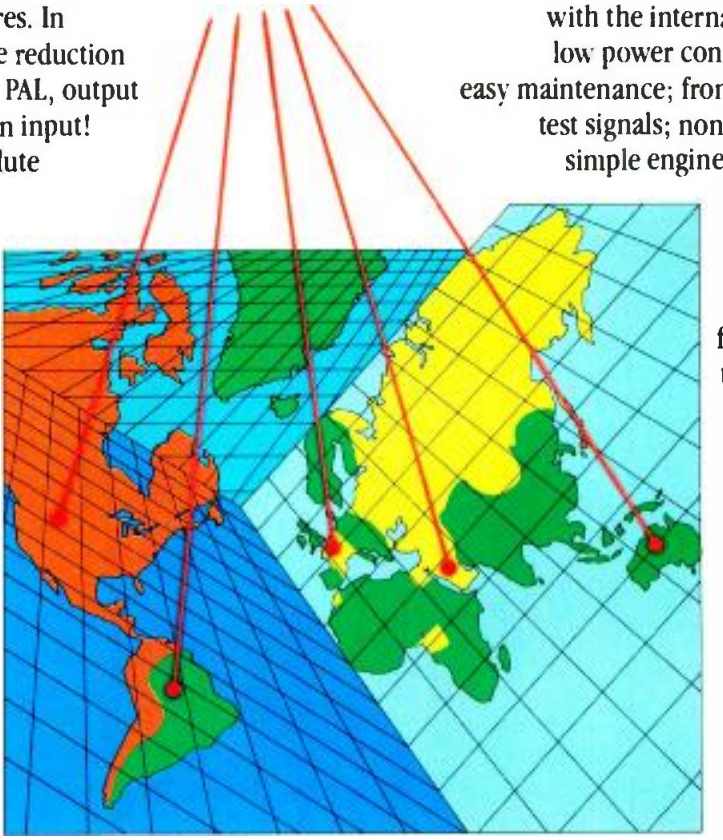
Satin

What goes in is what comes out –converted

Surprisingly, the same can't be said for many lesser converters, which display a marked tendency to alter the look as well as the format of converted material.

Not so SATIN. SATIN gives such superb spatial and temporal interpolation that it is almost impossible to distinguish input from output pictures. In fact, with the machine's inherent noise reduction and all-digital coder/decoder for NTSC/ PAL, output pictures can frequently look better than input!

Because SATIN is all-digital, absolute stability and fidelity is ensured throughout its whole operating life; SATIN takes broadcast quality standards conversion out of the specialist engineering department and into the normal studio equipment rack. That means lower overheads and lower cost of ownership.



And not only is SATIN an excellent converter; it also has many extra features that greatly enhance the machine's usability: freeze – component input/output – SMPTE/EBU parallel digital interface – overscan – automatic NTSC/ PAL standards selection – optional remote control. Engineers will love SATIN too: 4:2:2 component digital coding in full compliance with the international CCIR 601 standard; low power consumption; high reliability; easy maintenance; front to back cooling; internal test signals; non-standard signal handling; simple engineering set up – all make the engineer's job easier.

Broadcast quality, broadcast features, broadcast reliability, all from a standards converter that comprises just two 4U 19″ rack units.

SATIN – if you're serious about quality, you no longer have a choice.

Step into the digital studio

QUANTEL

655 Washington Boulevard, Suite 602, Stamford C.T. 06901. USA. Phone: (203) 348-4104

Circle 125 on Reader Service Card

www.americanradiohistory.com

character generator, which can play back animations created on the CBG-2, thus freeing that machine from on-air playback duties. The CBG, meanwhile, is used as the station's weather computer, utilizing Kavouras Radac color weather radar. For still storage, KGTV has a dual-channel Quantel DLS 6000.

Computers for news

Sophisticated equipment for producing images is only half the story of television news. With pictures go words, and for this reason and more exists the newsroom computer. "When you hear people at stations everywhere all say that they don't know how they ever did news without a computer before, that's a pretty compelling statement," says WFLD news director Caputo.

This month WFLD will take delivery on a Basys computer news system driven by a DEC Microvax CPU, with 20 terminals on line, expandable to 32. "Newsroom computers enable creative people to be even more creative, and they eliminate such things as the mechanical problems of traditional typewriters," says Caputo.

"There's the efficiency aspect of being able to manipulate stories from one category to another, and automatically inputting wire services. If a piece of wire copy moves that's relevant to a story a reporter is working on, he can have the computer automatically move the story to his file. No need to keep duplicating show rundowns, you can change them up to time of air, and the computer will keep all the key people up to date on what everyone else is doing, because it's all there on their screens. And the computer will drive our QTV teleprompters."

KGTV's experience echoes that of WFLD. "For our way of producing so many newscasts back to back our Dynatech Newstar computer is invaluable," says Sands.

Sound routing

Along with the decisions that must be made in equipment to mix the visual portion of television news is the choice a station must make in a console to mix the aural component as well. "You can't go bare bones when you're talking about the audio board that's actually going to be feeding the source to the transmitter," remarks WFLD's Bachem. "We chose a custom-built Auditronics 310 audio board with 24 inputs. It's completely stereo, and has routable matrix inputs. We can direct any one of four stereo and/or mono sources into one fader at a push of a button."

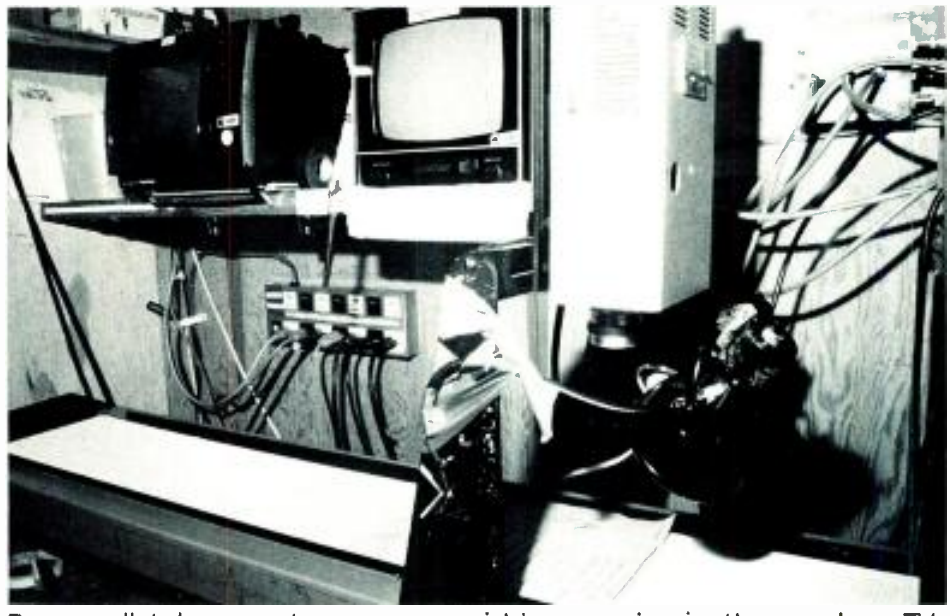
The new WFLD—with computer flooring throughout—is completely wired for stereo plus SAP, although stereo broadcasting awaits delivery of a new transmitter. The Auditronics console features a mono output that the station may use for SAP in the future. Bachem explains:

"The Auditronics would allow us to produce with stereo audio—English—going on the left and right mains, while potting up a mono Spanish version at the same time. We can do that via any tape machine or source in the plant, thanks to our 3M H series routing switcher." (Use of SAP for a simulcasted second-language translation of the news is not yet seen as a necessity in the Chicago market, Bachem adds.)

The station's 3M router is a four-plane (one video and three audios) system currently configured for 64 in by 48 out, but with capability to expand. The third audio plane is now being used for time code and mono mixdowns of studio output. The router is the main hub of switching for the entire plant, and several of its outputs are employed for news production, although a separate, dedicated router for news is a future possibility according to Bachem. He explains:

"We're using 3M to rout signals in and out of the ADO 2000, Paintbox, Chyron 4100 EXB, and other equipment. We can also change talent monitors on the set by the punch of a button from the router. The TD can actually bring in any remote live feeds—from Midwest Relay, AT&T, or Centel—and rout them into a frame synch. That frame synch then shows up as a primary button on the 300 switcher. We're using the router as a subrouting system to route signals into our GVG 300 production switcher because we do not have enough inputs in the 300 to do everything we need.

"We are not using the router directly. Let's say we have a primary button on the GVG 300, we don't have that showing up as a router. You must rout the signal through a frame synchronizer to get proper timing. But that's what we're utilizing it for, we can literally punch anything in the plant



Paper-roll teleprompters are a vanishing species in the modern TV news operation, as newsroom computers are increasingly used to feed teleprompters directly.

www.americanradiohistory.com

through that switcher at a push of a button. And the audio follows in three channels."

Out with the old

One aspect of having the right equipment on hand for news is the need to eliminate worn-out units so they don't create a problem in getting the job done. Chris Christensen, director of engineering at KGTV, describes his station's replacement schedule.

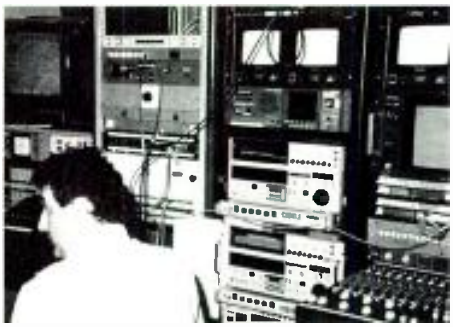
"We try to renew all the news tape machines, such as the BVW-40s and BVU-800s, every five years. Sometimes it comes up shorter than that. We have a three-year plan starting this year to change all of our twelve edit bays to half-inch. Right now they are mixed U-matic and Beta. We try to upgrade everything as quickly as possible.

"We have a medium-range plan and a long-range plan: the medium-range plan means updates every three to five years; the long-range, every five to seven years. Portable equipment—ENG cameras and recorders—most generally are in the medium range because they get bumped around more often. Costs are a factor also. You're not going to replace a $250,000 machine every three years. Studio equipment is generally in the long-range plan. Such plans also help you to remain state of the art."

But sometimes there are exceptions, where an item will be in service long beyond its originally intended lifespan. "We have a fifteen-year-old ACR-25 that we use for weather stat playback and if we have to preproduce something for news," Christensen explains. "It's an old warhorse. We fully expected to change it after seven years, but Ampex built it so well that it's still running, still providing instant start and good quality." Christensen does feel, however, that the unit will be retired before long and replaced with a twin of the station's Betacart.

Future news

Updating equipment keeps television news environments



Half-inch tape formats continue to become the industry standard for news. NBC's affiliate news facility for feeding news on the Skycom system is outfitted with Panasonic M-II equipment, including AU-650 studio recorders.

state of the art, but the state of the future may well be presaged at NBC News studios in New York, where an innovative facility is currently being built. The network that pioneered stereo TV sound and Ku-band program distribution is now constructing its 3A Newsroom, which will be a high-tech working newsroom and studio combined. Debut date is January 1, 1988.

The 3A Newsroom will co-locate NBC's news preparation work areas, including crisis desk and other news desks, with a new studio for NBC's *News at Sunrise*, *Before Hours*, *Nightly News*, news specials, and bulletins. In a news-presentation format pioneered by CNN, viewers will see not only live anchors delivering the news, but also the activities of the newsroom in the background.

Robotics play an important part in the 3A Newsroom. Two Odetics TCS2000 Cart Machines outfitted for Panasonic's M-II format will interface with NBC's Basys computer news system for automated playing of all video news actualities. The plan is for the newsroom, when fully implemented, to interface NBC's Basys system, cameras, cart machines, other M-II news recording and playback machines, and the video switcher.

Ikegami 323 studio cameras (with ⅔-inch tubes and automatic setup) will not only be automated for all the moves stationary cameras can perform today, but will also track back and forth on rails set into the floor in a system designed by EPO (AF Associates). These floor-tracking cameras will keep on-air talent in frame by aiming at signals received from tiny RF transmitter lapel pins.

"Even with automation you'll still need a director and a TD," says Bobby Lee Lawrence, general manager of news engineering at NBC. "We think that people and automation will cohabit, but job descriptions may change. Automation doesn't put people out of work, it allows them to do things more efficiently." Lawrence suggests that the full impact of automation on the television news operation, while positive, can only be fully assessed with time.

Elsewhere at the network's headquarters, and at its O&Os and domestic news bureaus, conversion to the high-performance, space-saving Panasonic M-II half-inch tape format is proceeding apace, and is scheduled for completion by the end of the year. The plan calls for total network conversion to the format, both in the studio and in the field. Limited numbers of U-matic machines will be kept for archival and outside tapes.

The constant drive for better technology in the on-air news equipment environment is ongoing for both networks and individual stations. "News is, by its nature, a reactive business," observes Lawrence. "You never know what you'll be doing from moment to moment. You don't need complications in doing your job, and the value of advanced technology for news is that it lets you be reactive in a reactive business.

"Another factor is the changes in the broadcasting industry, the new economies. Broadcasting is more of a business than ever before, and no one wants to mortgage their future with bottom-line technology. New technologies for on-air news make broadcasters more competitive, give them better efficiencies, and maximize productivity. For news, and all other aspects of the industry, the bottom line is that what really counts is the bottom line." **BM/E**

www.americanradiohistory.com

Introducing the Only Camera Better than the Z-31

Z31A

The Z-31A, Hitachi's newest member of the Computacam family, further enhances the performance, features and functions that have made the Z-31 so successful.

With newly developed Twist Field Saticon tubes and improved video processing, the Z-31A delivers 800 lines of resolution and 60dB signal to noise ratio.

We increased the power of the auto set-up system and cut the set-up time in half.

The price — it's as good as the specs.

Call the regional office nearest you and ask to see the camera that beats the Z-31... and every other camera in it's class.

HITACHI
175 Crossways Park West
Woodbury, NY 11797

THE Z-31A... For Today's Bottom Line Broadcast Business

New York	Atlanta	Chicago	Dallas	Los Angeles	Canada
516-921-7200	404-451-9453	312-250-8050	214-233-7623	213-538-4880	416-299-5900

Circle 127 on Reader Service Card

www.americanradiohistory.com

Basys installed a large number of terminals at NBC News as that network continues to advance its use of technology in the newsroom.

Newsroom Computers: Changing the Presentation of News

By Tim Wetmore

Many stations drowned in a sea of paper and inefficiency before the advent of the Newsroom Computer. But these increasingly popular machines do more than keep track of wire services; they give the news team access to more information, thus changing the content of the newscast.

It's been less than seven years since the first installation of a newsroom computer in a broadcast facility (KCBS radio in San Francisco). It's been only about three years or so since the players in this game have been well defined. And it is yet to be proved, quantified, the extent to which these microprocessor devices actually improve the newscast. Yet, with its nascent period coming to a close, it seems obvious that the computerized newsroom, in a pervasive sense, is now coming of age. Its full impact is yet to be experienced.

That notwithstanding, in its short life span, the newsroom computer has already had a significant effect not only on the way news is gathered, but in the way it's processed, even extending its influence into what gets presented to the home viewer. That's the core of any news operation: gathering, packaging, and presenting information normally inaccessible to the general public. Any person or piece of gear that affects that process must be considered important.

Like many new technologies that come into the broadcast domain, the newsroom computer was first seen as another flash product, as something to boast about to advertisers and the public, as a way of staying one step ahead of the competition. Most managers had a difficult time justifying the expense, often considerable, when the news department seemed to be gathering the

www.americanradiohistory.com

Screen photo showing new APS Rundown System from Dynatech NEWSTAR. Forms Generator capability allows exact duplication of user-defined rundown forms and procedures within NEWSTAR.

news and putting it on the air as well as they had always done it in the past.

Competition, however, and the realization that news was the most viable programming for both a positive station image and for revenue, forced the decision makers to take a second look. That very review is occurring now and may be responsible for the recent upsurge in newsroom computer interest. Perhaps computerized news systems have lost the flashy veneer and have acquired the substance demanded by any solid news organization.

And, unlike many of the flash products, the newsroom computer has had tremendous impact from its most basic function to its most advanced processing levels.

At the fundamental level, of course, is word processing. Mel Martin, news director at WJXT, Jacksonville, FL, maintains, "The first thing we noticed when we installed our Dynatech Newstar system in 1983 was that word processing improves writing. It does this on more than an individual level, since scripts can be easily passed around."

Of course, the computer system can enhance the operation in more ways than one. At WJXT, a CBS affiliate with a 61 ADI, Martin praises further the advantages by saying, "It also provides great wire access since the services feed right into the computer—it, in effect, puts a wire machine at everyone's desk."

An expensive newsroom computer system could not be justified if the main purpose was to control paper useage. That is not the main function, fortunately, since these mainframes find their most efficient applications in a series of steps critical to the properly functioning newsroom. Gathering the news, as in bringing in the wire services and allowing scripts to be created and handled quickly, is the first important step. The second phase is to process the news. This is accomplished on the WJXT Newstar system with the company's new APS news producing software.

The APS, Advanced Performance Software, has been under development for two years with Martin being instrumental in advising on many news application decisions. The building block of the news program, of course, is the rundown: what goes where, when. Thus the forms-generator system in the APS and the advanced-rundown system offer exact duplication of the station's already defined rundown forms and offers real-time control of show development. Further refinement and manipulation of assignment and rundown can continue right up until show execution.

Further advantage, Martin believes, "is obtained from the direct feed to the teleprompter. Script copy changes or adjustments in the story order can be accomplished right up until air time." Also, with the Sony Betacart interface, changes in videocassette play order are automatically sent to the Betacart, an event which is subsequently registered on the show rundown forms.

Smooth system integration

WBRZ, an ABC affiliate in Baton Rouge, LA, is in an even smaller ADI than WJXT, yet both stations have news departments (and directors) with quite substantial reputations. One of the reasons for this is the forward-thinking nature of the companies that operate the stations and their willingness to employ the sensible tools that become available; sensible in that there is an underlying justification in terms of producing a higher quality news program for whatever the costs may be. Fitting nicely into these parameters is the newsroom computer, and WBRZ, under the news direction of John Spayne assisted by Skip Haley, has taken the leap with a recently acquired system, taking care to integrate the new electronics into the overall news production system.

Skip Haley designed the configuration of the Newstar computer system. "Three years ago we couldn't spell computer, but we now have five systems, the big one being a Newstar that carries the weight of the duties. Also, we have the IBM AT that contains our ADP file system for finding video. The ADP is a library system, and we use it in a sort of hybrid form with the Time Capsule service, which has videotape of events dating back to 1900. In addition, the library includes all of our own videotape.

"The mainframe drives the teleprompter," offers Haley. "The producers use it with great ease now along with all of the other advantages that a computer will give you, like electronic mail, scripting, back-timing of events, and all of these functions affect the prompter. We have the wires coming into the mainframe too, and then they get distributed to the appropriate terminals."

This has proved to be one of the most popular functions of the newsroom computer since the system can search and pick out certain stories, identified either by key word or another kind of flag, and route those stories to a special file to be accessed by the appropriate person. This allows everybody who must see a story and everybody who might be interested in a particular kind of story to have access to it. The system executes a forward searching mechanism, coding certain kinds of information and then addressing it to a specifically coded location.

Yet, again, sophisticated sorting and electronic mail alone are not justification for an expensive system. Continues Haley: "We also use modems to hook up automatically to ABC in New

www.americanradiohistory.com

The Keys to your Success:

VIDIFONT.

Success is at your fingertips. Whether you're a broadcaster, production house, corporate, industrial or educational video user. Vidifont's got the features and flexibility to simply make you look good.

Distinctive character and precise detail of anti-aliased, foundry fonts . . . real-time animation . . . third-channel windows and templates . . . multi-user access and fast text editing that eliminate production bottlenecks.

Our specialized programs are designed to custom-fit your specific needs, including the Vidivote election package, the GraphicStore paint and library stystem, and the Vidicast/Vidisports weather and sports package.

Whatever your graphics, character, animation or production needs, Vidifont can simply do it better.

Considering all it does for you, Vidifont's cost will come as a very pleasant surprise. In fact, the keys to your success are well within your reach.

Find out for yourself today by giving us a call or drop us a note.

BTS Broadcast Television Systems
Holly Pond Plaza
1281 E. Main Street
Stamford, CT. 06902
203-348-4112

"Customer satisfaction is our satisfaction"

BTS **Broadcast Television Systems**

A joint company of Bosch and Philips

Circle 126 on Reader Service Card

www.americanradiohistory.com

York, or to Conus in Minneapolis (which uses a service called The Source); we also access Data Times (a data base service), which has many major newspapers and our local papers on file in it."

This, of course, is all tied into the computer, providing incredible access and control of a multitude of information sources available in no other way.

Haley espouses the conversion of the WBRZ newsroom to a computerized process, "We now do everything on computer, we even have an electronic Rolodex. Our weather system uses an IBM AT. The software was written by ESD in Maryland specifically for this weather image capture system using the Zephyr service. It will hold the images until our Colorgraphics Liveline II system calls for it and is ready to receive from the system."

WAJR radio uses its Dynatech Newstar system for preparing its daily news shows. Here a reporter writes copy for an upcoming sports program.

Mobile computers

Now that modems are reliable, and with the advent of cellular phone service and satellite communications capabilities, newsroom computers have begun to go on the road. WBRZ has a terminal onboard its SNV—a Hubcom truck using the ABSAT com package. Haley offers, "We added the modem to the truck so we could interact with the newsroom computer. We can now access the mainframe by satellite, cellular phone, or hard line, giving tremendous flexibility in creating and preparing our stories from the field."

Nor does the completely computerized news operation stop there. Assistant news director Haley adds, "Conus has a Macintosh system, and as soon as we access the Conus bird (SBS III) it automatically downloads information."

One of the original uses of newsroom computers in a mobile situation was put into service by news director John Miller at WFAA in Dallas. Using a Basys system that was modified with shock-mounted disk drives, the mobile computer typically employs one terminal but is capable of accommodating up to four or five terminals. The system in the Dalsat 10 SNV is also equipped with a printer and communicates over the SCPC satellite channels through a Hayes Smartmodem. Some problems have been experienced due to the echo cancelling of the analog circuit, but substantial remote productions have been developed using the truck and its onboard computer.

In the station itself, WFAA has a three-computer Onyx Basys system with 55 terminals. The configuration has been installed for five years. The station plans to upgrade the central processor soon for an increase in speed. Additional enhancements will include the off-line archiving that Basys offers.

A larger Basys installation is in the new CNN Center. Some of the terminals there are held over from CNN's previous location, but all computers are new. The center will house three computers tied together with an Ethernet link, communicating to 214 terminals, 280 devices.

Essentially, the capacity has been doubled. "We needed to do it," says Fred Tasse, senior technical support at Turner Broadcasting, "And the new computers allow us to put in more devices such as dial-up and give us the capability to do special events more completely. The Democratic convention will be here in Atlanta, and that will put an extra burden on the system."

In addition, all eight CNN bureaus have their newsroom computers hooked up to Atlanta and all the terminals there. All the TBS networks are on the same database in the new facility, which offers shared access among CNN, Headline, and the European bureaus. This configuration precludes slow, remote accessing through modems and allows for electronic mail, which is effectively lost if all systems are not on the same database.

One newsroom computer feature that many others have found very useful has not caught on at CNN. Due to the live nature of the show, a paper-fed prompter seemed more efficient since it could be changed at the last minute with a new piece of paper. Also a copy goes to the anchor and any given change on any page can be easily replaced.

In contrast to that old-fashioned method, the new system employs fiber optics to transmit computer information between the terminals and the main computers. It is based on the AT&T ISN information system network and multiplexers, and can handle 36 channels on each routing. This was

www.americanradiohistory.com

Strong as Sony.

Introducing the tougher U-matic tapes from the inventors of tough tape.

Now U-matic® users have an even tougher new class of videocassette: Sony BRS and the extraordinary Sony XBR.

Both are produced in the U.S. with a dramatically improved Vivax™ formulation. And both have the new Sony anti-static shell and Carbonmirror™ back coating for a new level of durability, runability and especially, fewer dropouts.

Thanks to Sony's latest advances in manufacturing and quality control, the new Sony XBR U-matic videotape promises the finest performance achievable.

You can count on "strong as steel" performance with both new Sony XBR & BRS... edit after edit after edit.

And that's why they're the only U-matic videotapes you can treat like a Sony.

SONY.
THE ONE AND ONLY.

© 1987 Sony Corporation of America. Sony, Vivax, U-matic, Carbonmirror and The One and Only are trademarks of Sony.

Circle 128 on Reader Service Card

www.americanradiohistory.com

implemented because of the great distance between the computers and the terminals in the newsroom.

News history

One of the most salient ways in which the newsroom computer changes the actual presentation of the news to the viewer comes about through use of the archive system. Providing an historical perspective to a current event is an excellent way of establishing a foundation upon which the viewer can build his understanding of the current story being aired.

If the current story is about a conference on the effect of acid rain involving certain people, the audience gains new insight into the story if information is available on where the individuals stood at the previous conference, which of the conferees are different from those who attended previously, and who they are. This type of information, of course, was available and was used by news programs prior to the appearance of newsroom computers, but the efficiency and accuracy with which it is now possible is unprecedented.

What archiving is all about is storage capacity. True, a useful feature of an archive or library system is the ease and definitiveness with which one can locate a story or word, but storage capacity and the speed to search through that amount of storage are critical for an effective archive.

Recalling the WBRZ computer system, the station uses 16 Mb of storage in its ADP system, providing feedback of file numbers or story names. A file number will correspond to the location of a videotape in the tape library and is thus easily accessed. Every few days the archive is dumped from the Newstar system to the station's IBM for long-term archiving.

In Jacksonville, WJXT's Martin was instrumental in developing the separate configuration of the IBM archive system from the main Newstar newsroom computer. The concept was based on his knowledge of developments in optical storage. CD-ROM technology influenced the configuration of the library system because the end result allows his staff to go beyond the limitations of the hardware to watch changes occur in real time, even with on-air material. This forces the user to approach the information search process from a computer-knowledge standpoint.

Martin on the storage system: "The idea came from encyclopedia uses that have been taking place. The system creates an index of every word instead of using what someone arbitrarily decides is important to index the information to. With our ADP system, every night, with one keystroke the script is sent, the computer reads every story, alphabetizes the information, and indexes the words. You can also mark 'noise words' such as *and* and *the* that you don't want the computer to search for."

Enthusiastic over the possibilities available now and those promised for the future, Martin exclaims, "With new capabilities in manufacturing optical-based disk technology, incredibly useful systems will soon become cost-effective. Devices such as WORM drives (Write Once Read Many) are now at the stage where you can buy a blank disk and write on it with a system totalling less than $5000. I have, through my research in this area, come up with an estimate that approximately 12 years of news can be stored on one five-inch disk!"

Archive systems, word processing, sorting and mailing techniques, are all available to the broadcaster who feels he needs to upgrade his news operation. The technology is there to enjoy and profit from, and those who wish to compete effectively in the very near future will have to consider the purchase of such a system. As Mel Martin says, "Even though we can't quantify its abilities, the computer helps us in speed and accuracy. It's amazing to me that so many stations have been slow in taking on the computer's capabilities." **BM/E**

New Entry in Reduced Field

Announced at the most recent NAB convention was another newsroom computer system, adding its number to what is considered to be a two- or three-player field. The newest entrant is Twentier Systems (TSI).

Headed by Carl Twentier, a reporter and producer for more than ten years, and formerly part of the Basys organization, the new company is offering what it terms the management approach to the newsroom. The system is geared toward providing solutions to problems in order to increase productivity and introduce modern cost and control techniques for news management.

The TSI product is a software-based system powered by a Data General minicomputer providing control of production, wire service capture and sorting, electronic mail, personnel productivity tracking, as well as equipment inventory and control.

Having targeted the top 100 ADI markets, and reasoning that, with the average station receiving over 30 percent of its revenue from the news department, this is the area of computer growth. The competition seems to be stiffening. A resurgence, in fact, seems to be building up again for newsroom computer system needs at the station level as everybody begins to recognize that as a system that makes money, develops local image, and fulfills FCC license requirements, the news department is an integral part of the broadcast plant's modernization.

www.americanradiohistory.com

Solid as a Sony.

Sony videotape has a rock-solid reputation as the toughest you can buy.

One word sums up everything we tried to achieve with Vl-K videotape: durability.

From its cross-linked binder system to its adhesive base film, it was perfected for the real world of constant jogging, still frame editing, shuttling... and deadlines.

And its ultrafine Vivax™ magnetic particle formulation was made to deliver astonishing picture quality, higher stability and optimum S/N ratio with the lowest headwear rate of any major one-inch videotape.

What we did for Vl-K benefitted BCT Betacam® too, resulting in trouble-free still frame editing, totally reliable repeated playback and worry-free long-term storage.

And new Sony BRS and XBR U-matic® cassettes have all of the above plus the new Sony Carbonmirror™ back coating and anti-static shell, first introduced in BCT Betacam.

They deliver a new level of durability, runability and, especially fewer dropouts.

So, after all, Sony professional videotape is just like any other Sony: standard-setting video and audio with a "solid as a rock" reputation. That's why it's the only videotape you can treat like a Sony.

SONY®
THE ONE AND ONLY®

© 1987 Sony Corporation of America. Sony, Vivax, Betacam, U-matic, Carbonmirror and The One and Only are trademarks of Sony.

Circle 129 on Reader Service Card

www.americanradiohistory.com

Fiber Optics Here And Now

Yes, fiber optics is an exotic technology of the future. But the future has arrived, and fiber optics has already begun to benefit both radio and television.

By Brian McKernan

Developed only a decade ago, fiber optics is widely used today for the transmission of voice and data by an increasing number of telephone companies and other common carriers. The technology is based on the transmission of information by means of light energy sent through a glass fiber, and it offers numerous advantages over conventional electric-current conducting copper cables.

Fiber's advantages over metal wires include greater carrying capacity, which allows for thinner cables with wider bandwidth. The information-carrying capacity of fiber is more than 100 times that of copper. A single optical fiber can carry data at rates in excess of 1,000 megabits per second. Fiber also provides very low signal degradation, requiring fewer repeater amplifiers in a long-distance cable. Because it is nonmetallic, fiber optic cable is immune to RF and electromagnetic interference. Since it doesn't conduct electricity, fiber won't short or spark. And fiber optic cable weighs far less than coaxial.

Construction of fiber optic networks has increased dramatically in the last few years, with common carriers eager to take advantage of what the technology has to offer to the communication industries. Among those industries is broadcasting, which stands to benefit from fiber not only in the area of program distribution, but within the broadcast plant as well.

Transmission

Fiber optics is still an emerging technology, and the boom in the construction of fiber networks across the country is decreasing the cost of using the technology. Bell Laboratories, which pioneered fiber optics, reports dramatic increases

www.americanradiohistory.com

roughly every 18 months in the amount of data that can be transmitted on fiber, and this further reduces costs. Video is a major beneficiary of what fiber can accomplish, now and in the future. HDTV can take advantage of fiber's wide bandwidth, although it will require greater data rates than the current Bell System DS-3 standard of 44.7 Mb/s used for NTSC video.

Transmission of video on fiber is done by means of photonic pulses, basically switching a light on and off. Video must first be digitized in the electronic realm, and then converted to its photonic counterpart. Fiber optics use pulse-code modulation at a sampling rate of 10.7 Mhz.

Because a typical television signal is equivalent to just over 90 MB/s—roughly twice the DS-3 standard—video must be compressed by a 2 to 1 ratio for transmission on fiber. A device called a codec—or encoder/decoder—is employed to both compress and digitize the video signal by means of algorithms. The codec's electrical digital signal output is then passed to lightwave terminal connector and a laser transmitter modulator, which transmits the photonic "digital" signal for the optical fiber to carry. At the receive end is a photo detector and another codec for the reverse process. Better than RS-250B NTSC video signal specs are the norm in fiber optic transmission.

Fiber trial

The advantages of fiber optics for television were dramatically evidenced late last year when ABC affiliate KLTV, in Tyler, TX, used it to cover a murder trial occuring 600 miles away, in San Antonio. Moved to that distant city by a change in venue, the trial was of intense local interest, and KLTV's plans called for extended live coverage and bulletins for several days.

The station found that the cost of a portable uplink or time on existing telephone lines was too expensive for the project. The local People's Telephone company, however, put the station in touch with Electra Communications, in Irving, and LDX NET in Dallas, two of the many carriers that have run fiber optic cables through their systems in recent years. Station news director Terry Heaton arranged to have the feed routed by Electra's fiber from San Antonio to Houston, then on LDX's fiber from Houston into Lake Charles, LA, north to Shreveport, and westward into Longview, TX. Microwave was used to get the signal from Longview to KLTV.

All companies concerned were eager for the project to succeed, and they discounted the price of the service. NEC provided the necessary codecs on either end free of charge. KLTV's coverage of the trial was a huge success, with fiber delivering even slightly better specs than would be possible using any other means. The project was valuable also in that it gave the companies involved an opportunity to test the technology's use with television signals. But local stations aren't the only broadcast-

www.americanradiohistory.com

ABC's Brent Stranathan (right) confers with AT&T's Tony Cacciola and John Cappadona (left) on the network's use of the Accunet T45 fiber optic service.

ers looking into fiber.

Network fiber

An event of momentous importance to fiber's use in broadcasting took place on Friday, January 23 of this year. On that date Capital Cities/ABC switched over to an AT&T fiber optic transmission line for duplex video connection of its New York master control with its Washington, DC, news bureau. Known as the ABC/AT&T trial of video over Accunet T45, the arrangement could have a profound effect on how video is distributed in the future. Accunet T45 (for terrestrial, 45 Mb) is AT&T's 18-month old fiber service.

"We did a tremendous amount of testing for about a year and a half before we ever decided to do it," explains Brent Stranathan, ABC's director of telecommunications for operations and engineering. "Now we're working with AT&T to try to solidify a more permanent offering, but it's still being called an experiment. We like what we've seen, and would like to see it transformed into a regular service," he says.

"We have a lot of two-way traffic between New York and Washington that could almost require a full-time transponder on a satellite to accommodate the demand and short turnaround notice that we have in that corridor. We looked at the price difference between fiber and satellite transponder, and all associated uplink costs with it. And we looked at our feeding pattern in the corridor from a traffic point of view, and we saw that it was a good opportunity to use fiber because there's a lot of it there.

"Plus, fiber gives us the ability to control an end-to-end loop from our Washington news bureau to our master control in New York. With our old terrestrial AT&T service we had to buy two separate lines, one north and one south. Fiber gives you duplex service, whereas with satellite—assuming I'm using full bandwidth—I can only go one direction at a time.

"Based on that combination of factors, we looked at the numbers, and saw that it made more sense to stay on the ground," Stranathan says. "If this service finally becomes an offering from AT&T, the percentages may change, but right now we're seeing probably 25 to 30 percent lower costs than with what we were using before.

"We wouldn't put fiber optics between Los Angeles and San Francisco or Omaha and Denver, because the same factors I cited are not in place. We're looking at fiber for the future despite the fact that we're certainly into satellites for the near term, meaning at least through the next generation of satellites. But who knows down the road by the year 2000 what's going to happen?"

Solutions

The other major vendors in the ABC/AT&T experiment include NEC, which manufactures the codecs, and Teleport Communications, which operates a regional fiber optic network in New York City and New Jersey. Teleport's fiber comes into ABC and relays the network's video to lower Manhattan, several miles away. There, Teleport transfers the signal to AT&T for the 200-mile haul to Washington, where it is passed to the local Chesapeake and Potomac telephone company.

All ABC programming originating in Washington is fed to network headquarters via the fiber, including their daily Washington news service, *Nightline*, and—when produced there—*World News Tonight*. The line is a protected service, and is "hot" 24 hours a day.

"The fiber exceeds RS-250B, and we are achieving signal-to-noise ratios of approximately sixty dB," explains Ken Michel, technical planning engineer in ABC's broadcast operations and engineering department. "We haven't detected any motion artifacts, and our people are amazed at the quality."

AT&T provides a single point of contact for all problems with the service, including maintenance and repair of the codecs. ABC's responsibility for the signal ends where the digital/photonic domain begins. But, as the network has discovered, this can be good and bad.

"One of our requirements is that we treat Accunet T-45 like any analog service that comes into the building," says Michel. "Since it is an operational item, we do not want to be encumbered with monitoring a digital format. We monitor the picture and sound. And if there's a problem we

www.americanradiohistory.com

call AT&T, which is responsible for the digital domain.

"That's been one of the sticking points. When there is a problem, it has to be identified. There is no correlation between what AT&T sees and what we see. They see a digital data stream, and we see an analog picture. We've had some problems along those lines in identifying where the trouble lies and who's responsible for it. That will probably be a key issue from now until AT&T can decode the DS-3 signal and see what we're talking about."

Problems have, thus far, been minor. One problem related to—but only partially caused by—the use of fiber occurred in the production of the *Nightline* program. The show's format frequently calls for Washington-based anchor Ted Koppel to interview guests who may be originating from remote locations anywhere in the U.S.—or the world. Video of the guest is beamed into New York, and the practice had been to send it on to Washington for chroma key integration into the show through the switcher there.

But the combined effect of the codecs and a new Tektronix four-field-store frame synchronizer at ABC master control in New York caused an accumulated propagation delay of eight frames. When full shots of the guests were used, the delay problem was visible.

The absolute delay between the two cities still exists, but the problem was solved by performing the keying in New York instead. Images of the guests are relayed to Washington for Koppel's monitor, via the old terrestrial television analog line. Washington sends New York the show on fiber with shots of Koppel talking to a green screen. Out of the codec in New York, the show arrives as a composite signal, which is then put through a Faroujda wideband encoder, producing an RGB signal used for chroma keying-in the guests. (The Faroujda encoder is used because ABC's New York switcher can't perform an encoded key.)

Tektronix audio synchronizers take care of the aural portion of the signal, and to eliminate a 66 millisecond delay in the raw program feed in Koppel's ear monitor, he is sent a mix-minus.

What's needed

So, given the experience broadcasters are having with the advantages of fiber, is it time to junk satellites and all other nonfiber-optic means of distributing video? Not by a long shot. Satellites offer unsurpassed economy for point-to-multipoint communication. In addition to program distribution, satellites make possible SNVs, which can beam video from remote locations not accessible to microwave or terrestrial cables, fiber or otherwise.

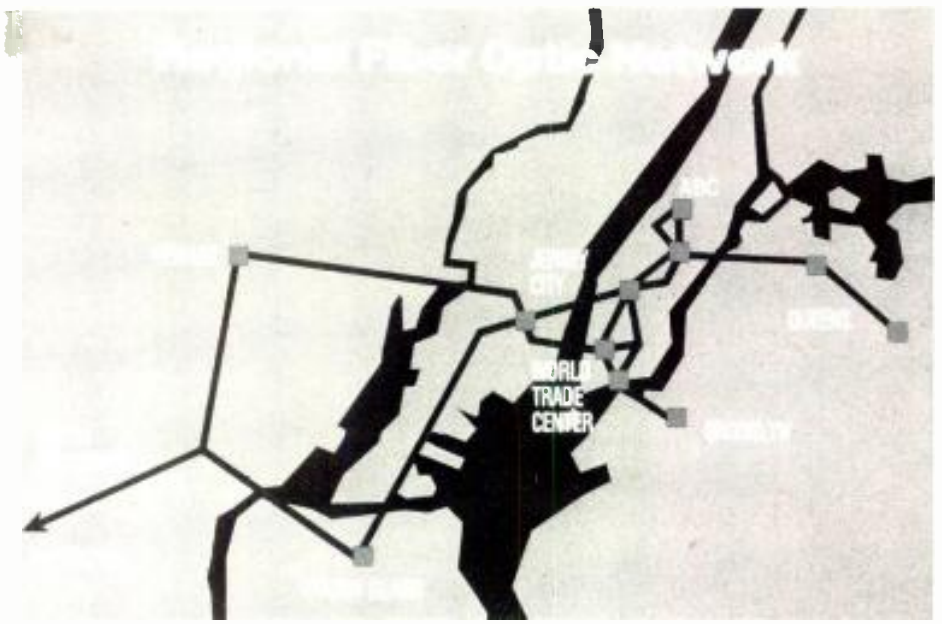
"Satellites are still a very big part of our business," Stranathan says. "We're not going to go backwards, even if the quality of fiber is slightly better than satellite. Use of fiber for full-time distribution robs us of the flexibility of seven satellite transponders, and all our downlinks. We still have to have the switching flexibility that we are now enjoying with satellite. That part isn't there yet with fiber.

"Right now we can't break into our fiber line from Washington in Philadelphia, and feed something out of our O&O there. There are fancy black boxes that will do that but they're still not integrated as part of the service.

"Another important thing that has to be developed for fiber are technical interface standards. Codecs made by different manufacturers can't talk to one another because they use different algorithms. The industry is now trying to get together and try for some standardization there, and as a potential user we're probably going to support that. Standards are needed for the DS-3 level, which is the data rate level that the traffic is carried over the fiber networks."

On a somewhat smaller scale, though carrying programming no less in importance, CNN has much of its programming delivered to its new facility on fiber. Having moved the CNN services to downtown Atlanta's newly built CNN Center, the company needed a way of getting its incoming feeds from its satellite facility to the new building. Looking at a distance of three miles, Gene Wright, vice president engineering for Turner Broadcasting, weighed the available options.

"We first looked at microwave," says Wright, "but due to the terrain and other RF considerations, we would have to have gone twice



Map of New York City and New Jersey shows the extent of Teleport Communications's regional fiber optic network. Fully redundant, it provides access to common carriers and to Teleport's Staten Island satellite facility.

www.americanradiohistory.com

the distance to relay the signal into our new facility. When Southern Bell got involved in bidding for the job, my assumption that I couldn't afford the tarriff for the fiber connection proved to be wrong."

Southern Bell eventually won the contract and installed 54 video and 54 audio channels, with an extra 54 audio available for future use. In describing the advantages of the fiber configuration, Wright states, "One of the advantages of our system, in addition to the capacity and the clean signal, is that some of the channels go directly from our satellite facility, which is colocated with WTBS in Techwood, to the new CNN Center and do not pass through the Bell TOC."

The system provides for remote control switching from the new downtown headquarters and for as much redundancy as is necessary. "For an equivalent number of redundant microwave channels, the cost would have been prohibitive," adds Wright, "and Southern Bell maintains the lines and the Pirelli terminals located in our buildings at both ends of the line."

Up the tower

Fiber's immunity to RFI/EMI makes it an asset in the ultra-dense radiation fields of broadcast transmission environments, and stations are taking advantage of this. At WKFT, in Fayetteville, NC, fiber was chosen for use on their 1600-foot tower, located 30 miles from the station. In addition to the antenna, the top of the tower supports the STL/TSL, two ICRs, and a Nurad steerable-dish ENG system. A fiber optic video communication system by Artel Communications is used to provide the quarter-mile signal paths up and down the tower.

"We chose fiber optics because of expense and signal-to-noise ratio," explains Dave Rickels, chief engineer. "Fiber saved us thirty to fifty percent of what coaxial cable would have cost. And there's virtually no signal loss in the 2,000 feet of fiber we use, whereas there would be probably a 6 to 8 dB loss with coaxial transmission line. Also, lightning doesn't affect fiber, and it makes troubleshooting microwave problems much easier."

Products incorporating fiber optic technology include Neve's digital audio console.

WKFT has an Artel model 3050 system, which transmits and receives signals on a 30 MHz carrier that is turned into light by an LED. The system has automatic protection switching and on-line self diagnostics. The installation incorporates ten lines of fiber, which includes spares.

In the studio

Fiber optics is proving useful not only for video distribution between broadcast plants, but within those plants as well. And video is not the only beneficiary of fiber technology. Rupert Neve, Inc., employs fiber optics for its DSP (digital signal processing) audio consoles and related products. Neve takes full advantage of digital audio by colocating remotely controlled microphone amplifiers and A/D converters together in the studio, and then linking them to consoles via fiber optics. Studio wiring in a DSP environment makes extensive use of fiber, including all interconnections between consoles and hardware processing racks.

For video applications, fiber optic products include Grass Valley Group's Wavelink and EZ-Link fiber optic transmission systems. With Wavelink, signals for video, audio, and data can be combined and transmitted on one fiber. EZ-Link systems can be interfaced with any GVG distribution amplifier or routing switcher. Dynair's new Dynasty 100 routing switcher is suited for post-production environments where high-resolution computer graphics systems require wide-bandwidth signal routing. Dynasty 100 offers 100 Mhz bandwidth, and also the ability to mix and match direct outputs to fiber and copper. Such designs make conversion to fiber an easier process, and ensure that users will become increasingly familiar with what fiber optics has to offer.

The many advantages of fiber optics obviously make it a technology that will become more pervasive in the future. For now the fiber diet seems to be catching on, and like any new item on the menu of technologies to improve the broadcast plant, the chances are good that the industry will eat it up. **BM/E**

www.americanradiohistory.com

ALL OUR SATELLITE NETWORKS COME WITH THIS USER-FRIENDLY SUPPORT SYSTEM.

NOTHING WORKS HARDER THAN SCIENTIFIC-ATLANTA EQUIPMENT. EXCEPT SCIENTIFIC-ATLANTA PEOPLE.

One of the most important parts of a satellite network is the support team. And after over 30 years of experience in satellite communications, we've assembled one of the best. Highly-skilled professionals ready to help you get the most from your system. Whether you need that help ten days after purchase or ten years.

TURNKEY SYSTEMS.

As a turnkey supplier, we don't just sell equipment, we design, manufacture, integrate, and install it. And before you purchase anything, you can consult with our project engineers to make sure you get the equipment that best suits your needs. So nothing is left to chance.

SINGLE-SOURCE SUPPLIER.

From specific components to complete systems, we have a full line of both C and Ku-Band products that meet broadcast-quality specifications. And for total security, we offer addressability and signal encryption through our proprietary B-MAC transmission system. Everything's available from one reliable source.

DEPENDABLE PERFORMANCE.

At Scientific-Atlanta, we not only build a better network, we help you get the most out of it once it's built. With responsive after-sale support whenever you need it. From comprehensive training programs to the fastest possible turnaround on maintenance, replacement parts and repairs. We're not satisfied with our satellite networks until you are. For more information, call (404) 449-2314 or write to Scientific-Atlanta, P.O. Box 105027, Dept. AR, Atlanta, GA 30348.

Scientific Atlanta

Circle 130 on Reader Service Card

www.americanradiohistory.com

SYDNEY OSAKA PARIS LONDON NEW YORK LOS ANGELES

The good news is...

Studio camera automation has arrived...*the HS-110P.*

The HS-110P automated pan/tilt head provides more effective utilization and distribution of production talent...*and at a surprisingly affordable price.*

- Our highly repeatable servos and stiff mechanical design provide the same feel and responsiveness of a manned camera...*absolutely essential for camera automation.*
- Four HS-110Ps, using our software driven Multi-Controller, provide a quality production with one operator. As an alternative, *the HS-110P Heads can be controlled directly by a News Room computer via MultiController's serial input.*
- These features coupled with our Multi-Controller's "shot storage" and "motion learn" capability provide the director with complete and repeatable camera moves...with less staff and improved communications... *resulting in a more efficient production and a lower operating budget.*
- Automate for your future...now. Call us for a demo. 914-358-8820.

HS-110P features:
- Load capacity of 250 lbs.
- Max. velocity of 90°/Sec
- Preset return accuracy of 18 arc seconds (0.03141" from 30 ft.)
- Highly responsive servo design.

TSM

TOTAL SPECTRUM MANUFACTURING INC.
20 Virginia Avenue, West Nyack, NY 10994
(914) 358-8820
Circle 131 on Reader Service Card

www.americanradiohistory.com

The news director's environment: technology, people, pressure.

News Director as Manager

By Tim Wetmore

In today's competitive broadcast environment, bottom-line considerations are being emphasized more as stations struggle to achieve high ratings. The news director is still expected to produce a quality journalistic effort under these trying economic circumstances.

The very nature of broadcast news is undergoing a subtle change. This transformation goes beyond the obvious budgetary wrenching currently in vogue and extends to the size and type of audience consuming the news. The importance of the news product perceived both by the audience and by station management is also at stake. The result of all this is that the news director is on the hot seat in an unprecedented manner. As more people use the broadcast medium as the sole source of news, and, from the other side, as more budget crunches squeeze the news operation, the news director is forced into the paradoxical situation of trying to provide more and better news on a more meager budget. All this while talent, salaries, and the newer technologies become increasingly expensive.

In addition, there is a shift in the makeup of the news department as automation impinges on personnel decisions and as more freelance and part-time people get involved in the newsgathering process. In a recent survey conducted by Vernon Stone, professor at the University of Missouri's school of journalism, for the RTNDA, the results indicated a decrease in full-time employees at both radio and television stations. This clearly indicates a shift in the personnel make up of the news operation at any given station, with radio news staffs in major markets dropping the most full-time positions, while small market radio remained stable with one full-time and one part-time person on board. Television is similarly affected, though the numbers are considerably different.

Budget manager

The forces of change are in effect—some subtle, some not so subtle—but they are changes nevertheless. The focal point, quite naturally, becomes the news director since, typically, he is in charge of the largest department at the station in terms of both per-

www.americanradiohistory.com

sonnel and budget. While everybody understands money and the financial pressures that have been on broadcasting recently, budget cuts get the most notice. The question, from the news director-as-manager's point of view, becomes: "How do I react to forced reduction of budgets and, upon reacting, how will it affect the operation of my news department?"

Like managers in any kind of business, news directors are being forced to review the way they look at their operation. Some can do this while others cannot. John Spayne, news director at WBRZ in Baton Rouge, LA, notes that, "many news directors get elevated into the position for the wrong reasons. Many were good journalists who were not prepared for the managing duties. There is also the diplomacy side that may be lacking."

Indeed, establishing a good working relationship with the general manager can be a critical function of handling new budgetary considerations. "GMs don't come from news, they come from sales and don't understand the dynamics of news. They are taught to stay aloof from the news department. By the same token," explains Spayne, "news directors come from news and are removed from sales and don't understand how that works. These two meet when they reach their positions and have no basis in their training for any kind of working relationship." And once on the job, the two positions are usually so busy they don't have the time to talk to each other about their concerns.

It would appear that someone attempting to describe a news director's job in 1987 would be shooting at a moving target. The responsibilities change as the rules of the game get twisted with each new business standard. This kind of condition puts pressure both on the GM and news director and tends to create at least an underlying, if not overt, animosity. The cycle of firings that is foisted upon some news directors is self-perpetuating as the GM blames the news department for too much expense while returning poor ratings, and hires someone new who tries to rebuild and falls into the same trap. Rather quickly the discontinuity becomes evident to the viewers and the ratings continue to plummet while costs rise.

Jim Sanders, news director at WGME, Portland, ME, feels, "The balance of power is shifting, sweeping away from news directors to other people. Though we never had *carte blanche*, we had more freedom than we do now because of the budget cuts. One positive effect, though, is that it's causing a more efficient approach by news directors in terms of getting things right the first time. I think because of these new fiscal perspectives we are forcing people to get, let's say, the satellite feed right the first time so that the extra feed time doesn't have to be purchased unnecessarily." Sanders goes on: "I still expect to get the best equipment when I give a proposal to the financial people, though I know they will come back with less than what I want."

"Like managers in any kind of business, news directors are being forced to review the way they look at their operation."

The solution to reconciling the discrepancies requires, as the preceding statements indicate, is an openness and communication that heretofore has not been forthcoming from either the GM or the news director. A program that Spayne tried to implement while president of the RTNDA a couple of years ago was to join with the NAB in sponsoring a seminar. The plan called for a university like Wharton to host the seminar to get the general managers and news directors together for both casual and more formal discussions. The ultimate result was to have been the building of new relationships through points of understanding based on these conferences. Sadly, for many reasons, the idea was not a popular one. Still, this kind of program may be what is necessary if the two critical positions are to have a common ground.

The industry now looks for the answer. The search is not yet organized nor is it industry-wide, but the management positions must come to terms with the conceptual shift in responsibilities and orientation that is currently under way. It has been suggested by some that a "news business manager" would be in order. This person would have intimate knowledge of the actual gathering and presentation of news and would, ideally, have some kind of business experience or education.

There are, of course, these kinds of people around now, but nowhere are they being trained or educated specifically for this kind of job. A job that requires quite a unique and generalist-kind of perspective. Spayne, at WBRZ, is lucky already to have a person who does this job, Skip Haley, the assistant news director who handled the design and implementation of the Newstar newsroom computers and various other business/technology/journalism tasks. "This kind of person," allows Spayne, "will become necessary if large news budgets are to be kept in line while still providing the news department with the proper tools."

In fact, there seems to be a groundswell of support from news directors regarding new budget restrictions. Statements are now common relating something on the order of, "We shouldn't be immune from budget cuts and we should be as responsible as anyone else when it comes to money management." "In the past there has been a lot of fat." And, "We should be able to trim and still make it work."

There is an inherent danger in going too far, however. The budgeting of contingency funds to cover disasters is very difficult to plan for, and even more difficult

www.americanradiohistory.com

to explain to the financial people. "You can't predict when a hurricane will happen or how much it will cost to cover it properly," warns WBRZ's Spayne. He also cautions, "It's a mistake to look solely at budgets by market size. You have to look at it individually as a news operation and proceed according to what that picture tells you. We went out on the cutting edge of what news is all about, not only in technology, but in personnel—in the amount and the quality of those things—and it has paid off. But if you say 'Well, it's the 91st market, how can you justify an SNV or an advanced newsroom computer?' it's hard to answer. Still they have been valuable and have helped us be as good as we are."

"The decisions come down to the actual news value one places on the technology."

Technology manager

If all parties cannot come together in resolving the pressing budget issues, then the actions will become one-sided and fewer will be happy with the results. Thus, if the news director refuses to cut some substantial portion of his budget, say for equipment, then an accountant is going to do it anyway. He will inevitably cut the wrong things, making the news director's job difficult if not impossible. It would behoove the news director, since he is the only one who can make the proper cuts and have the system still function properly, to begin thinking like a plant manager. The answer, then is to build a system of trust to the point where you make your cuts now and when things get better you can go back to the GM and say, "It's my turn now."

Naturally, short-term solutions cause long-term problems because it is so easy to cut too much or in the wrong places. As Spayne says, "You will compromise the quality in the long run and eventually you won't be able to compete. Also there is a responsibility to the community to perform at a certain level and this should never be compromised. Besides, good news is good bottom line."

All of this sounds good, but when it comes right down to it and a new piece of technology would really help you compete, or exceed the competition, how does one manage that? John Miller, news director at WFAA in Dallas, has built his station's reputation on massive coverage of big stories and reacting quickly to breaking news. "And that's something we want to continue, that is, being the station of choice when the people want to know something.

"Whether it's human resources or technological ones, everything must be kept in working order to accomplish that kind of coverage and it comes down to how fast you can do it." The answer to this is often, though not always, the use of expensive, modern technology. No one would doubt the impact of the SNV or the newsroom computer. The decisions come down to the actual news value one places on the technology. Does it go beyond the dollar value.

Miller maintains that when done properly the acquisition of advanced technology makes the news better. "All our bureaus are on-line all the time through leased lines so that we can get the quick coverage. We were the first and are still the only station in town to have an SNV. We probably average only a few days a week of spot news usage, but it has allowed us to cover things in unprecedented ways and we have used it for long-term remotes for some unique news productions."

People manager

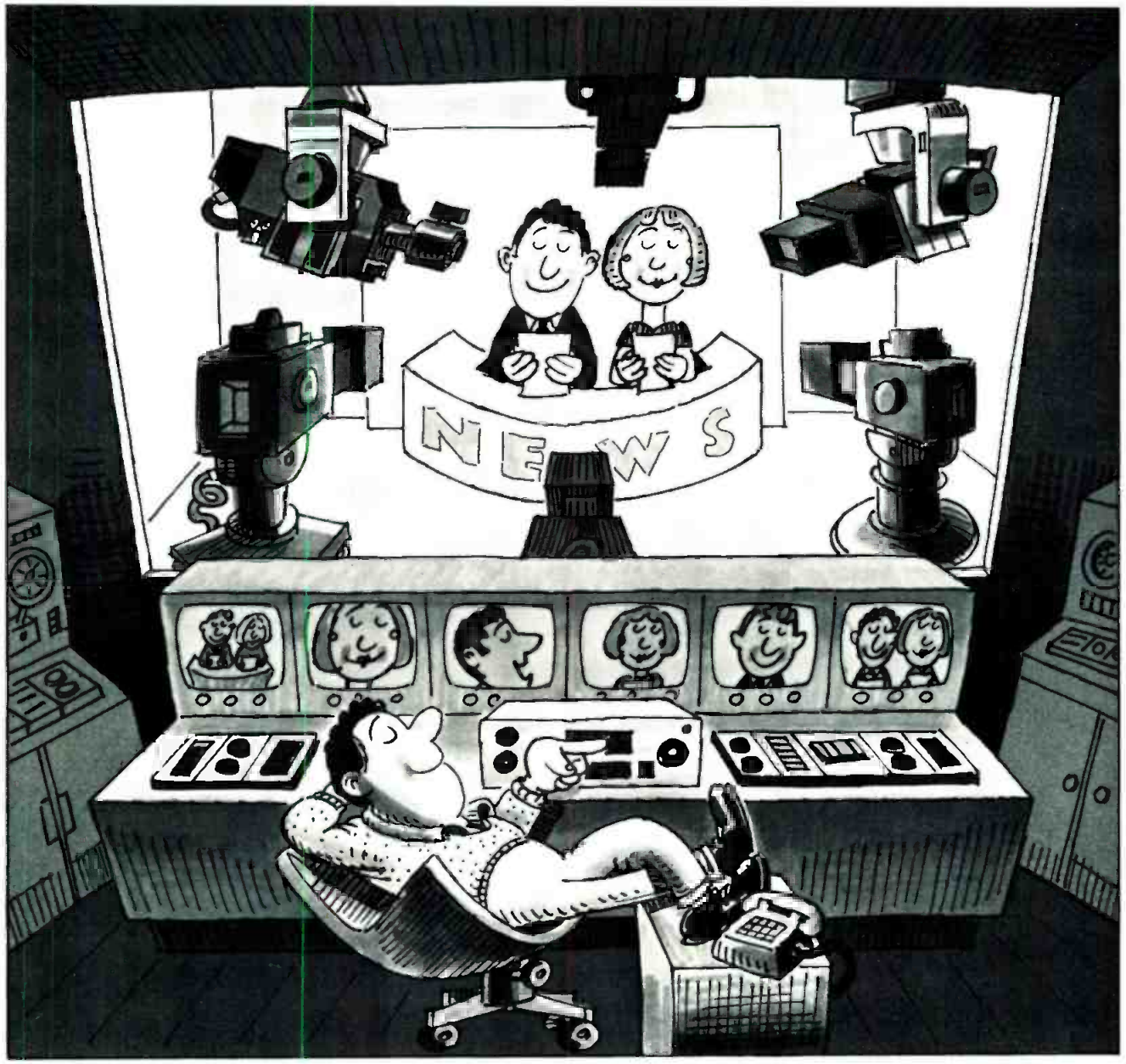
Miller continues: "Any manager's primary concern is with people. First the news director must assume his people have the journalism background and then he must make sure the goals of the people he works with are the same as the station and the company owner. Yet, the best reason to work with them is that people want and like to do what they do and the manager must, within constraints presented to him, make sure there are mutual interests and that they reach for the same goals."

As for most managers, dealing with personnel is the biggest problem any manager has. Once again John Spayne claims, "You have to find ways to keep people happy, not only by paying them more, but by offering them something in their jobs." There is a great deal to be said for the manager who makes sure there is a certain gratification each employee gets from executing his assigned responsibilities.

Of course, beyond the very important matter of getting professionals who are hungry to do well and who are willing to work for the gratification, there looms the question of money. Paying them to upgrade to a market or to stay in a smaller market applies beyond talent and becomes a significant portion of the news director's budget. He has come full circle. The pressures continue. The budgets are cut. The public demands more. How does he do it? It remains to be seen how well he does it. The show must go on. **BM/E**

"It has been suggested by some that a 'news business manager' would be in order."

www.americanradiohistory.com



MULTIPLE CAMERAS. ONE OPERATOR.

Impossible? Not if your cameras are mounted on EPO Servo-Controlled pan and tilt heads. These extraordinary, labor-saving devices, which first found favor in legislatures where remote-controlled, unobtrusive coverage was a key factor, are now the basis for complete remote-controlled news studios.

Just look at these outstanding features:

- Up to 500 preprogrammed positions per camera, including control of iris and black levels
- Programmable fade modes that provide smooth transition from preprogrammed shots
- Ability to zoom and focus
- Unobtrusive
- Can be operated via telephone lines or microwave in a remote studio away from the main studio location
- Wide range of pan and tilt heads, for full studio cameras with teleprompters to ENG type cameras
- Wide range of control options, from panels with multiple-shot memories to simple joy stick remote controls.

It's flexible, affordable—and it's sold and serviced exclusively in the U.S.A. by A.F. Associates.

THE RADAMEC EPO REMOTE CAMERA CONTROL SYSTEMS

Your news show's bottom line will never look so good.

A.F. ASSOCIATES INC.
ADVANCED SYSTEMS AND PRODUCTS FOR THE VIDEO INDUSTRY
100 STONEHURST COURT NORTHVALE NJ 07647 (201) 767-1000
10650 SCRIPPS RANCH BLVD SUITE 200 SAN DIEGO CA (619) 530-2970

Circle 134 on Reader Service Card

www.americanradiohistory.com

RTNDA Addresses The Bottom Line

In synch with the current news picture, bottom-line considerations will permeate both the sessions and the equipment offerings at this year's RTNDA convention.

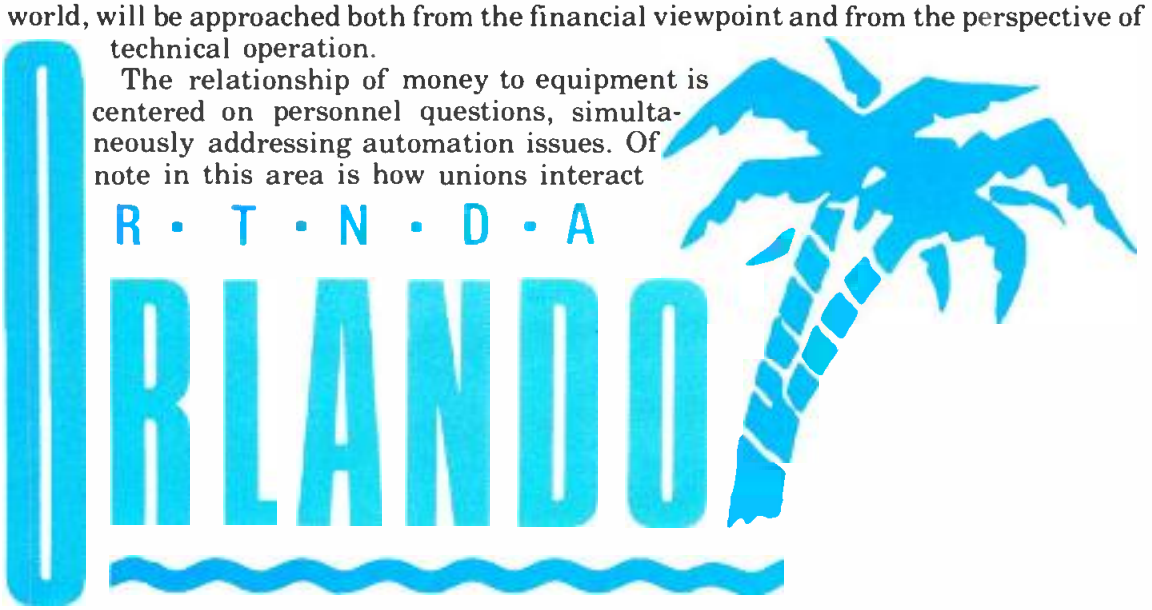
By Steven Schwartz

These have been challenging times for the electronic news media. The current network trend of instituting mass personnel layoffs to cut costs has become the focus of considerable controversy in recent months. Indeed, never before in the history of broadcast journalism has the effect of profits on policy been so clearly demonstrated.

Dealing with the economic realities in today's broadcast environment is expected to be the dominant theme of the 42nd RTNDA International Conference. This year's convention will take place September 1 to 4 in Orlando, FL, at the Orange County Convention Center. Keeping with recent tradition, there will be a record number of exhibitors spread over 120,000 square feet of floor space. More than 150 companies and organizations are scheduled to be on hand to demonstrate the latest advancements in news technology and services. There will also be three full days of sessions and workshops geared to improving newsroom performance, management, and budgeting.

These meetings will encompass a wide variety of topics and objectives, including money management, improving writing skills, winning budget approval, enhancing day-to-day news operations, working under stress, avoiding libel suits, ways to combat disinformation and censorship, and helping women fight discrimination in the workplace. Money management, one of the primary topics of concern in today's broadcast world, will be approached both from the financial viewpoint and from the perspective of technical operation.

The relationship of money to equipment is centered on personnel questions, simultaneously addressing automation issues. Of note in this area is how unions interact



www.americanradiohistory.com

with management in solving some of these difficult problems. Automation is growing in the newsroom as advanced hardware and software bring the engineer's and manager's concerns closer together. Expect there to be some interesting discussions in this area at the RTNDA. All of the arguments, of course, revolve around the bottom line.

Other, perhaps more direct, analyses of personnel in the newsroom will be addressed by the RTNDA. *The Communicator*, the association's publication, should have the results of a recent survey conducted by University of Missouri professor Vernon Stone. The survey shows shifts in part-time and full-time employees occuring in the news operation. The trends seem to be toward a higher percentage of part-time employees. Look for further comment on this topic at the show.

The convention will begin Tuesday evening with the annual RTNDA National Awards ceremony at Epcot Center featuring guest speaker ABC *Nightline* host Ted Koppel. This follows a reception for all attendees—also at Epcot—sponsored by Capital Cities/ABC News. The exhibition opens Wednesday morning at 10:30 a.m., preceded by a business meeting breakfast for active members.

On Thursday there will be a breakfast for international delegates followed by the annual election of officers and board members in the afternoon. There will also be an exhibitor luncheon held in the exhibition hall.

Friday morning will begin with a breakfast meeting for minority delegates. Connie Chung of NBC News is scheduled to speak at the luncheon that afternoon. The convention will conclude at 6:00 p.m. Friday evening with the annual Paul White Banquet. The recipient of this year's Paul White Award is Don Hewitt, veteran CBS newsman and executive producer of *60 Minutes*. **BM/E**

RTNDA Exhibitors

Accu-Weather
Aerospatiale
Alden
American Heart Assn.
American Medical Assn.
Ampex
Army & Air Force Hometown News
Aspen Skiing Co.
Associated Press
Audience Research & Development
BTS
Basys
Broadcast Microwave Services
Bureau of the Census
CQI Sportsticker
Centro
Columbine
Comprompter
Computer Prompting
Comrex
COMSAT ISS
Conus
Coors
Dalsat
Data Center Management

RTNDA Program

The following is a day-to-day listing of sessions, workshops, and special events at RTNDA.

Tuesday, September 1

Capital Cities/ABC News Reception at Epcot Center
RTNDA National Awards Presentation
Speaker: Ted Koppel, ABC News

Wednesday, September 2

Exhibition Grand Opening, 10:30 a.m.
Afternoon Workshops:
Budgeting and Cost Control
Sexual Harassment

Thursday, September 3

Breakfast for International Registrants
Reorganization
Newswriting
Stress Management
Luncheon With Exhibitors
Afternoon Workshops:
Image and Career Strategies
Reporting
Journalism Education

Friday, September 4

Breakfast for Minority Registrants
General session on Disinformation and Censorship
Luncheon with speaker Connie Chung, NBC News
RTNDA Canada Report
Afternoon Workshops:
Libel
Radio News Survival Camp
Paul White Banquet
Speaker and Award Recipient: Don Hewitt, CBS News, executive producer of 60 Minutes

www.americanradiohistory.com

DataTimes
Tony DiCirolamo Lighting Design
Dynatech
Eagle Media
EOSAT
Eastman Kodak
Environment Satellite Data
Financial Broadcasting Co.
Jon Fisher Products
Fujinon
G&G Design/Communications
G&M Power Products
GTE Spacenet
The Graphic Express
Group W—The Newsfeed Network
Hubbard Communications
Investment Co. Institute
Ikegami
INN—The Independent News
Innovative Television
Ivanhoe
J-Nex
Jefferson Pilot
Kalman & Rogers
Kavouras
Keltec Florida
Lang Video
Listec
Los Angeles Times Syndicate
Local Program Network
Microwave Radio Corp.
Frank Magid
Matrix Exhibits
McHugh & Hoffman, Talent Bank Ltd.
Mead Data Central
Media Computing
Medialink
Microdyne
Midwest Communications
Money/Pro News
National Assn. of Securities Dealers
Network Production Music
Newslink
N.I.W.S.—Lorimar Productions
Nurad
Pacific Recorders
Panasonic
Photo Cine-Video
Polaroid
Potomac Telecommunications Group
Pro Video News Service
Procter & Gamble
Professional Video Services
Q-TV
R.F. Technology
Radiation Systems
Roscor
SPR News Service
Schwem Technology
Scientific Atlanta
Shure Brothers
Sports Newsatellite
Sony Broadcast Products
TSM
Taft
Telepak San Diego
Telescript
Television Eng. Corp.
Telex Communications
Texaco
Thomson-CSF
Tuesday Productions
Turner Program Services
Twentier Systems
Union of Concerned Scientists
UT/TV—Dr. "Red" Duke
Ultimatte
United Press International
United Technologies
Video Protection Co.
Vinten Equipment
The Visnews Group
VU/TEXT Information Services
Walt Disney World Co.
Wold
Wolf Coach
XScribe

NEW!! SATELLITE EQUIPMENT

The PSA-35A Portable Spectrum Analyzer accurately measures wideband signals commonly used in the United States and European satellite communications industry. The PSA-35A frequency coverage is from less than 10 to over 1750 MHz, and from 3.7 to 4.2 GHz. The PSA-35A features switch selectable sensitivity of either 2 dB/div or 10 dB/div. The portable, battery or line operated PSA-35A Spectrum Analyzer is the perfect instrument for the critical dish alignment and tracking requirements necessary for maximum signal reception. **$1965**

AVCOM's Single Channel Per Carrier Receiver, model SCPC-2000E, has been developed for the reception of FM SCPC signals from satellites operating in the 3.7 to 4.2 GHz band. The SCPC-2000E is a complete receiver that can tune up to 4 specific crystal controlled audio or data channels from a given transponder and is available in either wide or narrow band models. Optional circuitry is available to allow up to 8 crystals for channel selection. The SCPC-2000E may be used with the SS-1000 Slave for simultaneous reception of additional channels. **$1875**

The AVCOM COM-96T Profesional Receiver is compatible with all C and Ku band LNB's and BDC's that operate in the 950 to 1450 MHz range. The COM-96T provides complete 4 and 12 GHz performance in one system.

The COM-96T is a high performance, fully agile, dual conversion satellite receiving system for demanding commercial applications. Modular circuit packaging results in a compact and highly reliable Ku and C band receiver in a standard 19" rack mount configuration. Highly stable oscillators eliminate frequency drift and allow operation over wide temperature ranges. Special threshold extension circuitry offers superior video quality. The COM-96T may be ordered with optional threshold peaking and dual IF filters for receiving international type transponders. **$939**

AVCOM 500 SOUTHLAKE BOULEVARD RICHMOND, VIRGINIA 23236
TELEPHONE 804-794-2500 TELEX 701-545 FAX 804-794-8284

Circle 132 on Reader Service Card

Winsted®

FREE CATALOG

Winsted Matchmaker Systems

Big, full color catalog includes complete descriptions, pricing and ordering information on:

- Editing Consoles
- Video Consoles
- Production Consoles
- Dubbing Racks
- Equipment Cabinets
- Micro Computer Stations
- Computer Graphic & Newsroom Consoles
- Tape & Film Storage Systems

Winsted Matchmaker Systems ... *the Perfect Match for all professional Video Equipment*

THE WINSTED CORPORATION

9801 James Circle • Minneapolis, MN 55431

Call for your nearest dealer
Phone Toll Free **(800) 447-2257**

TELEX: 510-601-0887

Circle 133 on Reader Service Card

www.americanradiohistory.com

Engineering Management:

Maintaining the physical plant is only one part of the engineering manager's job. Shown here is KVEA master control in Glendale, CA.

Today's Director of Engineering

As the broadcast industry evolves, so do the jobs and titles within the industry. Today's engineering manager uses many tools and techniques to execute his function as chief of the technical facility.

Tim Wetmore

Like the news director in today's television station, the chief engineer or director of engineering often finds himself thrust into a position of making many management decisions regarding budgets, personnel, and equipment. Often, he may find himself scheduling appointments, going to meetings and in general doing the organizational duties that any manager finds himself undertaking. Coordinating such business duties while at the same time retaining one's engineering perspective becomes the central task of today's engineering manager. And this perspective is all

www.americanradiohistory.com

important since the fundamental responsibility of the position is to understand the technology.

It is not uncommon for an engineering director to find himself responsible for the technical capabilities of more than one location. Quite naturally, this burden increases the juggling of information he requires on budgets, equipment, and personnel, creating a formidable organizational challenge.

Doug Lung, director of engineering for Telemundo Group Network has been thrust into the position of coordinating many duties for the network. Telemundo, a division of the Reliance Group, owns and operates a number of Spanish-speaking television stations in the U.S. and Puerto Rico, including KVEA in Glendale, CA. "My job takes me to the three other cities where Telemundo has stations—Miami (WSCV), New York (WNJU), and San Juan, Puerto Rico (WKAQ)—as well as to other cities where the company is purchasing a station."

In scheduling meetings and preparing presentations while travelling or even while stationed at his base station in Glendale, Lung has found that a useful way to organize the information has been with a portable computer. For years he used a Radio Shack Model 100, but found he needed IBM compatibility. Thus he opted for a new Toshiba T1100 PLUS.

A job Lung has to perform that is not taught in engineering schools, but which must be done when one moves up to engineering management, is related to budgeting. As engineering director, he is responsible for overseeing the engineering operations and capital budgets for Telemundo. He also reviews possible new stations that may be added to the network, and is in charge of construction, design and implementation of a Network Operations Center planned for Miami.

"Being involved with the purchasing of new stations and equipment, I'm always preparing spreadsheets," Lung comments, "and I found the computer to be indispensable in preparing them." Yet, the computer is not restricted to doing spreadsheets. In designing the Miami facility Lung found that the Toshiba was able to run CAD (computer-aided design) programs and that racks of equipment could be shifted around with ease to determine where the best location would be for wiring and easy access to the various kinds of hardware. He, along with the chief engineer at WSCV in Miami, was able to accomplish about a week's worth of work in one day.

Telemundo engineering director Doug Lung with his Toshiba computer in KVEA's production control.

Management adjusts

Indeed, efficiency through planning is one of the requirements for the successful engineering manager, whether it be in using modern tools, like the computer, or whether it's in deciding how to outfit a facility. Engineering skills are necessary beyond simply understanding how a technical system works. There must be careful planning, making room for expansion, for changes in the company's direction, and for the unforeseen. This is where proficiency in budgeting is of paramount importance.

It is very easy for the budget to get away from you when you are putting together a new facility or when refurbishing an existing one. At Telemundo's KVEA, most departments prepare their budgets and spreadsheets manually. The finance department distributes blank forms to be filled out by individual departments and returned. After the information is entered into the finance department computer and totalled, it is given back to the other departments. If changes are required, the entire process is repeated. Using the T1100 PLUS, and Paperback Software's VP planner, Lung prepared the engineering budget for KVEA as well as for the future Network Operations Center.

"When presenting a facility design," he explains, "I give them several options, with different dollar amounts for each, so I can better meet their requirements. Of course, a computerized spreadsheet is the easiest way to do that."

This speaks directly to the top level engineer's direct responsibilities to management: give them the options they need to

www.americanradiohistory.com

make the right decisions. This holds true whether the decision is to be made on personnel, equipment, technology, or budgeting.

Gene Wright, vice president/engineering for Turner Broadcasting Systems (TBS) is in a position to see how concerns over budgeting and communication with other management positions comes to bear on the engineering manager after he moves up into the position.

"You become more conscious of the way the whole organization works. There is a lot of extra time spent on budget considerations. A million things change. You must now worry about the quality of personnel, beyond just doing your own job well. Also, you have to deal with people on a personal basis, in a way you didn't have to before." Wright joined TBS in 1972 as chief engineer for WTCG (now WTBS) and became director of engineering in 1979 and was a major force behind the development of the facilities for Cable News Network. Prior to his years at TBS, Wright spent seven years at WXIA-TV in Atlanta as an engineer. Prior to that, he was also an engineer at WGST, a radio station in Atlanta, and WTOC-AM/FM/TV in Savannah.

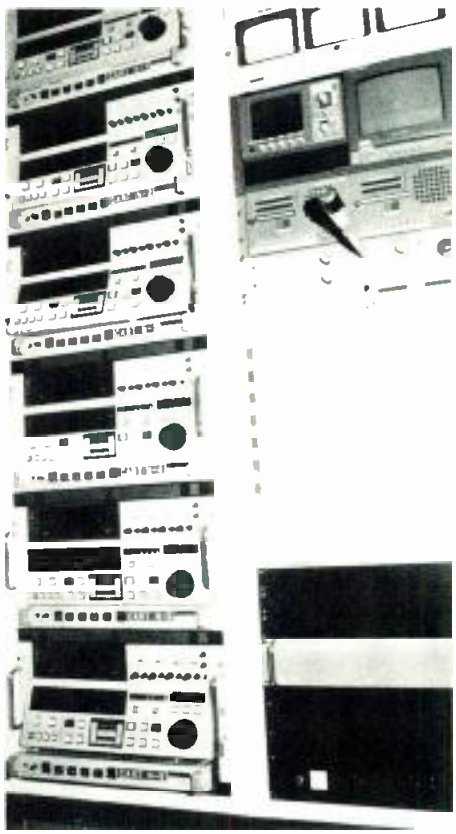
Regarding the demands of engineering management, he modestly states it was fairly easy for him. In his case there were only 43 people at TBS, and there were only two engineers, one maintenance, and one operations engineer. "Because of that situation, I grew into the job and grew with the company as it grew. The company had no money then so we had to make all the equipment do more than it was supposed to do," Wright reveals.

Not only was it difficult patching a struggling technical facility in the beginning, but adjusting to the meetings, reports, and the handling of a growing staff was also an important adjustment. "The hardest thing to do, often, was explaining to other managers what the technical plant problems are in a facility. Even when you learn to handle the budgeting and all the rest, the communications part among managers can be the toughest thing of all. I think being a sargent in the Marine Corps helped a little too."

Element assembly

Dealing with people and organizing the data are, of course, important aspects of the job. However, timing the coordination of equipment purchases and execution of capital budgets is fundamental to the success of engineering plans. Telemlundo's Lung has assembled all the technical and financial elements of the existing (and growing) network while incorporating new requirements for KSTS, a newly acquired station in San Jose, CA and a new station, channel 48 serving Galveston/Houston. Telemundo is assisting in the financing and construction of the new station while acting in a technical advisory role with the option to buy.

It is Lung's responsibility to provide management with the details on how the new members of the group will fit in, not only on a technical level, but in terms of financing and budgeting. The technical side is, of course, important, for it is the smooth operation of the technical plant that allows revenue to come in.



Bobby Lawrence, general manager news engineering at NBC, New York, designed and conceived the network's news facility.

The Telemundo network now delivers its news broadcasts by satellite. All other programs are distributed by tape cycling. Full satellite distribution should be in place by March 1988. Also by next year all stations will be running on Sony Betacarts. Conversion to the Betacam SP format, supplied by Sony and Ampex, will begin in the fall of 1987.

Telemundo has evolved this far in its financial and technical capabilities in approximately nine months since the Blair stations were bought. Subsequently, all non-Spanish speaking properties were sold off and, in January 1987, WNJU in New York was added to the group. As is probably evident, with such rapid growth, including two recent acquisitions, there is more to the director of engineering's job than just keeping the stations on the air.

There is the advanced planning necessary for acquiring and building new facilities, incorporating those facilities into the existing mix of stations in both the technical evaluation and the budgeting considerations. Regarding the latter, the largest amount of work is done on budgets for new stations, equipment costs, and approving capital purchases for existing stations. Each chief will work out his capital expenditures, which get submitted to Doug Lung, who then passes them onto the New York headquarters.

In the capacity to channel information that affects the whole organization, Lung notes, "there are pitfalls, but I had studied management and business in college, in addition to engineering, and I came into a small start-up operation, KSCI, and I was able to grow with it." Whether today's engineering manager took business courses in school, or whether he learns through his experience in the industry, he must be prepared to use all his skills to make grade as an engineering manager in today's broadcast industry. **BM/E**

www.americanradiohistory.com

Dirty Words

By Harry Cole, Bechtel & Cole, FCC Counsel

"When I use a word," Humpty Dumpty said, in a rather scornful tone, "it means just what I choose it to mean—neither more nor less."
—C. L. Dodgson (Lewis Carroll),
Through the Looking Glass

Let's talk about words for a minute. Actually, let's talk about a particular kind of words: *dirty* words. You know, the kind you're not supposed to say in polite company, or when your parents are around, or when your kids are around—or, nowadays, when you happen to be on the air as a broadcaster.

The subject of dirty words may have seemed all too distant and theoretical to many licensees just brief months ago—distant and theoretical, that is, until last April, when the Commission, in a fit of righteous indignation (spiced with political practicality) dusted off a nine-year-old Supreme Court decision and appointed itself the definer of propriety in broadcast content. It is now clear that the Commission probably means business with its latest effort to exorcise the demonic dirty words from the otherwise innocent airwaves. And that in turn means that all broadcasters will have to be especially concerned about whether, in the 20-20 focus of hindsight, the Commission may someday determine that their programming may, on occasion, have gone "too far."

First, let's get some terms straight. In the eyes of the law, there is a world of difference between "obscenity," on the one hand, and "indecency," on the other. Generally, to be "obscene," material must be patently offensive (judged by local standards), it must appear to prurient interests (*i.e.*, it has to be sexy), and, taken as a whole, it must be without redeeming value. If a work is "obscene," it is entitled to no First Amendment protection.

"Indecency," however, is quite another thing. There has never been a particularly solid definition of that term. In fact, the primary case in which it was considered was the nine-year-old Supreme Court decision mentioned above. That case—*FCC v. Pacifica Foundation* (U.S. Supreme Court, 1978)—involved a New York City noncommercial FM station, licensed to Pacifica Foundation, which broadcast a comic monologue by George Carlin entitled "Filthy Words" in the middle of Tuesday afternoon.

The FCC considered the licensee's defense of its broadcast and, without much further ado, issued a policy statement in which it forbade the use of "language or material that depicts or describes, in terms patently offensive as measured by contemporary community standards for the broadcast medium, sexual or excretory activities or organs."

Such language, which was dubbed "indecency," was prohibited at any time of day when there is a "reasonable risk that children may be in the audience." However, the FCC neglected to indicate what those times of day might be.

Pacifica appealed the FCC's decision to the U.S. Court of Appeals in Washington, D.C. A three-judge panel of that court reversed the Commission in a ringing defense of the First Amendment rights of broadcasters. The FCC sought Supreme Court review of that decision and, in early 1978, the Supreme Court agreed to consider it. In July, 1978, in a 5-4 decision, the Supreme Court upheld the FCC's original decision.

Indecent exposure

The Supreme Court's majority opinion was, however, far more narrow than the Commission's. The Court obviously was reluctant to give a Federal agency *carte blanche* to define the metes and bounds of "indecency" as it saw fit. Accordingly, the Court stressed that it was merely agreeing with the Commission that the broadcast of the particular Carlin monologue at the particular time on the particular date could, under the limited circumstances of the case, properly have been determined to be "indecent" by the Commission.

With respect to the much broader standard articulated by the Commission (and quoted above), the Court seemed somewhat less comfortable. In fact, two of the five justices who voted to affirm the Commission specifically indicated, in a concurring opinion, that the majority opinion was addressed only to the specific facts of the case, and *not* to "the broad sweep of the Commission's

www.americanradiohistory.com

opinion".

The Court appeared to leave for future cases the task of determining precisely how far the Commission might be able to go in its effort to control the broadcast of "indecency." Nevertheless, the majority of the Court agreed that, in any event, the Commission was acting within its constitutional authority when it declared the Pacifica broadcast to have been indecent.

The most troublesome aspect of the *Pacifica* decision was *not* the fact that broadcasters could no longer broadcast that particular George Carlin monologue. Rather, what was most troublesome was the fact that the Supreme Court concluded that the FCC could, consistently with the Constitution, place specific limitations on the content of broadcast programming over and above the types of material (*e.g.*, obscenity) not traditionally accorded any First Amendment protection.

As fate would have it, though, that fear was immediately alleviated by the Commission itself. The *Pacifica* case had started out while an enforcement-minded Republican administration was still in control of the FCC; by the time the Supreme Court's decision came out in July, 1978, the Democrats had taken over . Under then-Chairman Charles Ferris, the FCC went to great lengths to make sure that the broadcast industry understood that the Commission did not intend to extend the *Pacifica* decision beyond its limited facts.

Hands-off policy

Things settled in well over the course of the next eight years. The Commission routinely responded to complaints alleging "indecency" with a more or less boilerplate letter advising the complainant that such matters were deemed more appropriate for private, rather than regulatory, resolution. Even as the phenomenon now sometimes referred to as "shock radio" began to develop in its current form in the early 1980s, the Commission expressly refrained from further defining and asserting the regulatory power that the Supreme Court said the FCC possesses.

With the arrival of former Chairman Mark Fowler in 1981, it appeared that the situation would continue.

And sure enough, as the decade of the 80s progressed, the FCC maintained its hands-off posture relative to complaints of indecency. In fact, in 1986, the Commission went even further and announced that it was not going to bother to investigate allegations of the broadcast of "obscenity" unless the complainant could demonstrate that the broadcast had already been determined, in a criminal prosecution, to have been "obscene." In other words, the FCC was declining to involve itself in any determinations of "obscenity," preferring instead to leave such questions to the criminal justice system.

However, in April, 1987, in a dramatic reversal of its nine-year "hands-off" policy, the Commission announced the return of indecency regulation. In three separate cases (one of which involved another Pacifica Foundation station), the Commission advised licensees that certain of their programming was indecent and, if continued, could subject the licensee to further action.

The three separate cases each involved different types of programming. The Pacifica case centered primarily on readings from a play about homosexual experiences. It contained graphic language and descriptions, although apparently nothing as repetitious as the Carlin monologue. Further, it was broadcast at approximately 10:30 on a Sunday evening (during a program dedicated to matters of particular interest to the gay community of Los Angeles) and was preceded by an announcement alerting the audience to the sensitive language and subject matter to be discussed.

The second case involved the broadcast, after 9:30 p.m. on a Saturday night on a noncommercial station, of a single song entitled "Makin' Bacon," which included several references to sexual acts and organs. The third case involved "The Howard Stern Show," aired on two commercial stations (one in New York, one in Philadelphia) daily during the four-hour morning-drive time period. The FCC's decision quoted some of Stern's banter, which included various suggestive remarks relating to sexual activities or organs. Stern's material was largely adolescent in nature, and did not include any of the "seven dirty words," which were the focus of the Carlin monologue in the *Pacifica* case.

To hear it is to know it?

The real difficulty of the three cases is that the Commission provides no explanation of how it arrived at the conclusion that the materials were "patently offensive." Instead, the FCC merely quotes the broadcast matter and then states conclusorily that it is "patently offensive." This is somewhat akin to former Justice Stewart's oft-quoted remark about "hard-core pornography"—*i.e.*, that even though he couldn't define it, he knew it when he saw it. However, it is clear that reasonable minds can easily differ with respect to what is or is not offensive.

This is best illustrated by the Stern show. While his material is unquestionably not to everybody's liking, it is certainly enjoyed by many—his show is reported to be the third most popular radio program in its time period in Philadelphia; number one in New York. That means that he has attracted and maintains a substantial audience. What enables the FCC—a nonelected group of bureaucrats in Washington, D.C.—to characterize as "indecent," and thus to penalize, programming that many Philadelphians and New Yorkers apparently enjoy on a regular basis? Who is to say

www.americanradiohistory.com

that the FCC's concept of "offensiveness" is any more or less valid than Stern's listeners, or Pacifica's listeners, or anyone else, for that matter?

Of even more concern is the fact that the Commission has not shared with the broadcast industry exactly how the FCC makes the determination of "offensiveness." Thus, broadcasters are not in a position to review their programming in light of any definite, ascertainable standards in order to determine, in advance, whether the Commission may or may not find it indecent. But that flies in the face of standard notions of due process and adequate notice: if, after all, you are going to get into trouble if you engage in some kind of conduct, the least you are entitled to know is what that kind of conduct might be.

Cause for concern

The new "indecency" rulings should be a source of major concern to all broadcasters. Those rulings represent, most obviously, a clear threat to broadcasters' ability to present the type of programming they want when they want—or, perhaps more importantly, when they believe their audiences want it. (In this vein, of course, the FCC's new stance is completely inconsistent with its frequent paeans to the efficacity of the marketplace to regulate for the good of the public—in the Northeast, at least, it appears that the popular marketplace has demonstrated that Stern's material is clearly in the public interest.)

Broadcasters are now in the undesirable position of having to predict, before it is broadcast, how a majority of the Commission will assess possibly questionable programming. The most likely effect of this will be the "chilling" of broadcasters' First Amendment rights, as broadcasters choose to take the "safe" route when they might otherwise prefer to offer their audiences something slightly different.

Obviously, this is an area of the law that is likely to develop in the next year or two. Pacifica has appealed the FCC's decision relative to its programming, and other broadcasters may join in the appeal. All broadcasters should take care to apprise themselves of the current status of the FCC's thinking in this area, and should be aware of the risks inherent in any particular broadcast. As always, if you have any questions about it, it is best to consult with communications counsel in advance.

In the interest of truth and candor, it should be noted in closing that I appeared on the brief for Pacifica in the Supreme Court in 1978, and in 1981 and 82 I informally volunteered as a performer on the Howard Stern show, which was at that time broadcast in Washington. My concern about the Commission's recent "indecency' rulings, though, arises from my appreciation of the overall constitutional issues involved, and not from my familiarity with the personalities at the center of the most recent controversy. **BM/E**

L I G H T I N G

Call ESV now for the brightest ideas and the lowest prices

Lamps up to **55% off** list, lighting supplies and fixtures at discount prices

Studio • Stage • Projection

GE • Sylvania • USHIO • Phillips

Osram • Thorn • Wiko

Phone or mail in business card for **FREE** quarterly newsletter with money-saving tips on lighting.

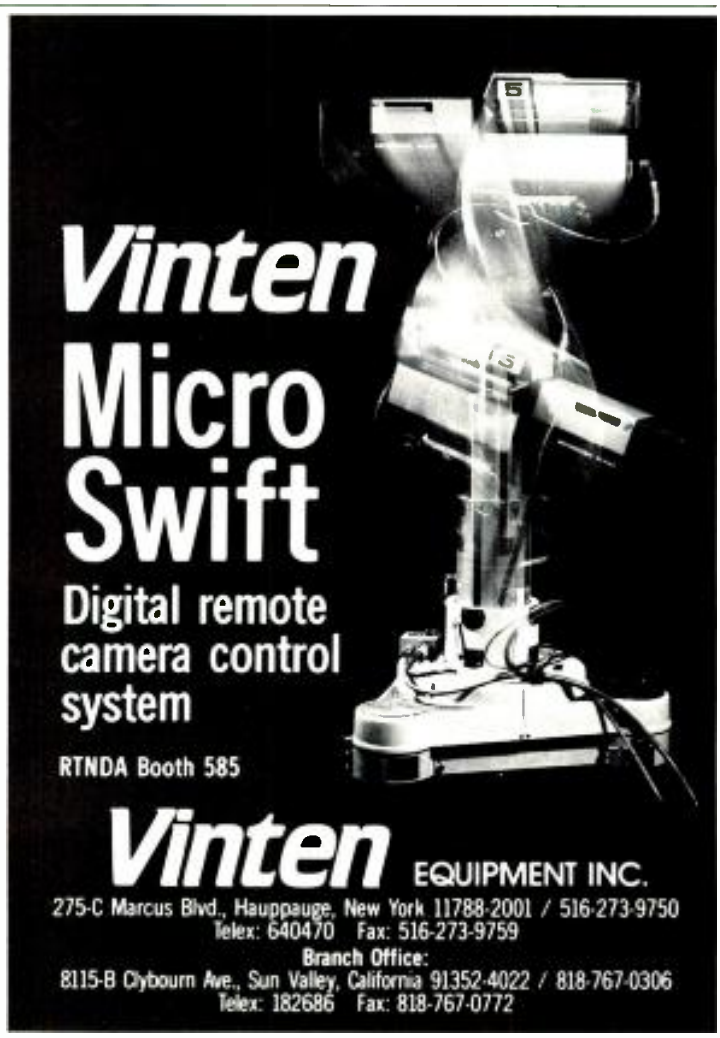
ESV

ESV, Inc.
525 Court Street
Pekin, IL 61554

800-423-6411 (Illinois, 309/347-6685)

Please note correct phone number.

Circle 135 on Reader Service Card



Circle 136 on Reader Service Card

www.americanradiohistory.com

Listec Has New Prompter Device

The new A-5000 prompter display device from Listec Video stores plain ASCII text files in RAM sent from the serial port of any computer and automatically formats the text into the display mode for a teleprompter. ROM-programmed to accept imbedded commands and four fonts, the unit also features underline, inverse, flash, and uppercase capabilities.

Output control is via the host computer (newsroom or PC) or an optional control box, and a color option provides eight background colors. The A-5000's parallel port can generate hard copy print of the text in teleprompt mode with studio instructions appearing to the left of the page.

Circle #200 on Reader Service Card.

Magni Debuts PC-Based Signal Generator

The 2015PL programmable signal generator, the enhanced version of Magni's 2015 generator—the first video test signal generator to utilize a PC-compatible computer for support of multiple broadcast standards—now supports the EBU PAL standard, according to the company.

The 2015PL offers a library of standard PAL signals in addition to standard NTSC, CAV, and HDTV standards. The unit uses high-speed digital encoding to not only provide the PAL signals but also to supply the 25 Hz offset required for PAL systems B, G, H, I, and N.

Additional features include three analog outputs and Magni's own Signal Master Software and library. List price is $17,450. Current 2015 owners can upgrade to the PL with a factory-installed, $2,700 upgrade.

Circle #201 on Reader Service Card.

Precision Design Packs Up On-Location Audio Mixer

The ROAM-8 (Remote On-location Audio Mixer) is the latest product offering from Precision Design. Engineered for portable on-location audio mixing applications, the unit comes packed in a totable poly case. The ROAM-8 can function on AC and DC voltage, via an internal extended-life battery pack.

The suitcase-size mixer features eight mic or line channels with full-low and mid-high EQ; two independent headphone jacks; limiter and telephone logic circuitry; and a pink noise generator.

Circle #202 on Reader Service Card.

Studio Technologies Debuts Mic Preamp

Studio Technologies has recently introduced a new self-powered dual microphone preamplifier, the Mic-PreEminence, designed for applications involving complex analog signals that would create ultra-low distortion and tax a normal preamplifier.

The unit is engineered to interface between analog mics and digital recorders, and it can operate as an in-and-out transformerless balanced preamp as well.

Circle #203 on Reader Service Card.

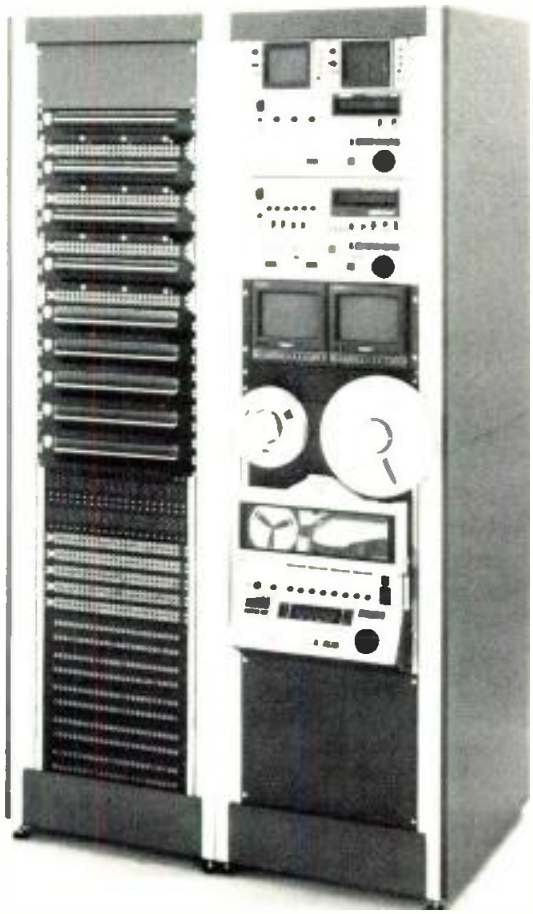
www.americanradiohistory.com

Crosspoint Latch Has New Encoder

A new broadcast-quality encoder, designed to encode RGB signals from high-quality graphics and character generators for use in standard video switchers or for display on projection televisions, was recently introduced by Crosspoint Latch.

The model 6051 genlocks to any color signal or black burst, and, in addition, does not require an external drive. List price is $2400.

Circle #204 on Reader Service Card.



New Heavy-Duty Winsted Rack

New from Winsted Corp. is the Model V8701 industrial-quality equipment rack, which has been constructed to accommodate over 1000 pounds of machinery. The 78 ¾-inch-high by 30-inch-deep shelving unit features removable side panels for easy access and repair, open-bottom air flow and cabling holes, vented top, and optional casters, cooling fans, and shelf options.

Circle #205 on Reader Service Card.

Beacon Boots New Teleprompter Software

Beacon Software, Inc., has introduced Autoprompter+, a microcomputer-based teleprompter program for the Apple II series computers and compatibles (64K minimum RAM).

The full-featured menu-driven program supports both video- and paper-based portable or camera-mounted systems and offers a wide range of text entry and electronic prompting options. In particular, a story management option, designed especially for television stations and production houses, offers storage of 60 individual stories, which can be selected, placed on display, and ordered as needed to scroll smoothly onto a prompting system.

Other features include smooth scrolling text, selectable scroll speed via computer commands or optional hand-held controller, on-line help screens, highlighting and underlining, search commands, a built-in word processor, and a reverse-screen mode for mirror- mounted prompting systems. List price is $475.

Circle #206 on Reader Service Card.

New Sync Generator from Lenco

The PSG-313A, a new frame-resident genlocking RS170A digital sync generator from Lenco, has been designed for applications in the broadcast, industrial, and computer graphics fields.

Features include compliance with RS170A specs, digital design, multifunction genlock with "P.C. Lock," panel status lights, full 360 degree SC/H phasing, full ±5μS H phasing, and a failsafe mode. The multifunction genlock mode, in particular, provides for standard or helical addressing of either standard video or video from helical VTRs with rapid genlock time. In addition, the unit's P.C. Lock function enables the genlock to access from a monochrome computer output or other nonstandard video source by coherent subcarrier; SC/H phasing is maintained in the specialized P.C. Lock mode and is determined by the input reference signal in conventional mode.

Circle #207 on Reader Service Card.

www.americanradiohistory.com

Business Briefs

Weather Central, Inc., part of the Dynatech Broadcast Group, has been awarded a major vendor contract by **American Broadcasting Companies, Inc.**, to supply the network with all weather graphics in ABC's NewsOne feeds. NewsOne, ABC's affiliate satellite link, provides local stations with regional and national news stories three times a day. With the addition of Weather Central's services, NewsOne stations can choose from up to 18 different weather images—11 weather graphics and seven satellite images—ranging from the current national weather to next-day forecasts.

With the 1988 Olympics—Winter and Summer—just a ski jump (and a hammer toss) away, manufacturers are jockeying for supply contracts for the international sporting competitions. The Winter Games, beginning February 13 in Calgary, AB, will be taped by Olympic network **ABC** exclusively on **Fuji Professional Videotape** products. Julius Barnathan, president of broadcast operations for Cap Cites/ABC remarks, "The Calgary Games present an unusual situation in terms of climate and potentional for adverse weather conditions, and we're confident that the Fuji tape will work fine for us." ABC will primarily be using Fuji H621E one-inch tape and H521E ¾-inch cassettes.

Canada's **CTV**, the host network for the Calgary Winter Olympics, will be covering the various sporting events with the help of at least 60 new **Ikegami HK-323 and HK-323P** color cameras. Leased for the games through Applied Electronics, Ikegami's Canadian supplier, the cameras will serve double-duty aboard 12 large mobile rigs on-loan from several broadcasters, and along the mountain course of the Olympic Alpine skiing events. The course will be precabled this summer with about 43 kilometers of triax to serve 77 camera positions. Ikegami-developed triax repeaters will link the camera system to fiberoptic cable that transmits down-mountain to the CTV control center.

Can you dig it?..Groundbreaking ceremonies were held recently to launch a multimillion dollar investment program for the Ampex Corp. Magnetic Tape Division site in Opelika, AL. Plans for the facility include a new warehouse and a new distribution center.

Pictured above, left to right, are Opelika mayor Guy Thompson; Ampex operations manager Gene Nyland; Magnetic Division VP and GM Robert Wilson; Alabama governor Guy Hunt; Ampex chairman-of-the- board Charles A. Steinberg; Ampex president and CEO Max Mitchell; and Opelika development board chairman David James.

3M Broadcast has been awarded the contract for routing switching and machine control for **NBC's** coverage of the 1988 Summer Olympic Games in Seoul, South Korea. The systems contracted for include the Series H hybrid audio/video switching system, the PC-based Switcher Control System, and 3M's SMPTE/EBU-standard ESbus machine control system. Plans for the ESbus include remote control of 35 VTRs of varying formats, including NBC's now-standard M-II decks.

Agreeable Situations Department: The **PictureMaker** marketing agreement between **Cubicomp** and **Ampex** has been expanded. Now, both companies' sales forces will join in selling the full line of PictureMaker products to all U.S. and overseas markets, including broadcast and post-production. Previously, Cubicomp focused its efforts on the corporate and nonbroadcast industries.

In a recent joint announcement from **Laird Telemedia** and International Crystal Manufacturing, it was disclosed that Laird has purchased the **ICM Video** division of International Crystal. Effective immediately, all inventory and equipment, as well as all manufacturing and marketing rights to the ICM Video product line of character generators and video processing and distribution equipment, will go over to Laird. Key ICM personnel, including division manager Mike Janko, many R&D and tech support people, and three key salespeople, are expected to transfer to Laird's headquarters.

Alpha Audio's BOSS automated audio editing system will receive a sales boost in the international market from new marketing reps **Gexco Technology International**. According to Alpha president Nick Colleran, the BOSS system was shown for the first time internationally at the London AES convention with the help of Gexco, and "we were pleasantly surprised with the enthusiastic reception the product was

www.americanradiohistory.com

given."

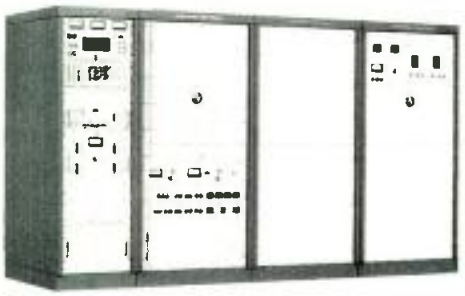
New Toys Department: Independent station **WJZY-TV**(Charlotte, NC,) has received delivery of an **Alamar** MC-1050 TV sequencer system to aid its commercial insertion and program playback operations.... **Satellite Information Systems Co. (Siscom)** has announced that Miami PBS affiliate **WPBT-TV** has taken license on a Siscom NewsPro production control system. The DEC VAX-based system will assist the production of WPT's *The Nightly Business Report*, which is fed live nightly to 240 PBS stations nationwide.... **Bogner Broadcast Equipment Corp.** has logged several recent sales in the Northeast of its high-power TV broadcast antennas: a 137.7 kilowatt unit to Channel 34 in Binghamton, NY; a 60 KW antenna to Channel 50 in Watertown, NY; and a 69.4 KW antenna with smooth null-fill to Channel 60 in Merrimac, NH.... Portland, OR's ABC affilate, **KATU-TV**, was among the first customers to recieve the new **Tektronix** 751 BTSC aural modulation monitor/decoder.... The only **Wavefront** computer animation system in the Philadelphia area has been installed at *BM/E* Best Station and Facility Design contestant **NFL Films Video**.

In sat news, **Videocom Satellite Associates** has announced the opening of its new sat communications complex—Videocom **Teleport/Boston.** The new 12-acre site, off the Bay State's 495 beltway, will provide Beantown broadcasters, cablecasters, and teleconferencing organizations with full transmission and reception of video, voice, and data information, nationwide and overseas.... **Houston International Teleport** and the Mexican government have entered into a new agreement naming the Texas-based satellite communications company as the new primary gateway facility for satellite communications, broadcast and business-oriented, between Mexico and the U.S.

Compact Power 60,000 watts FM

Continental's 817A is the most powerful single tube FM transmitter available in the United States.

Operational status is shown on a plasma display; an 8-bit microprocessor system provides complete monitoring and remote control interface. The 817A uses an 802A exciter and includes an internal harmonic filter. Call your local Continental sales manager for information.



1946 40 years 1986
of excellence in RF

Continental Electronics
a Division of Varian Associates, Inc. PO Box 270879 Dallas, Texas 75227 Ph. (214) 381-7161 Telex 73-398 varian

Transmitters: 1 to 50 kW AM, to 70 kW FM • FM antennas, studio & RF equipment ©1987 Continental Electronics/6389

Continental: For a Sound Investment

Circle 137 on Reader Service Card

Our customers say it best:

"Our Specialty Vehicles ENG van gives us maximum versatility for the best price around. Reliability has been great. I guess that's all you can ask for in a truck."

Frank Lilley, Operations Manager
WICS-TV, Springfield, IL

With 60 years combined experience in designing and building custom vehicles, it's no wonder WICS-TV and a host of others are satisfied customers.

All Specialty Vehicles vans are built from the ground up to our customer's specification. No outside contractors. No delays. No costly rework. No middleman.

Call Specialty Vehicles for your next ENG, EFP, or satellite truck. Circle number 138 to receive our free vehicle brochure.

SPECIALTY VEHICLES, INC.

450 N. SOMERSET AVE. INDIANAPOLIS, IN 46222
TELEPHONE 317 638-5037

Circle 138 on Reader Service Card

www.americanradiohistory.com

Advertisers Index

Manufacturer	Page No.	Circle No.
A.F. Associates Products	68	134
Alpha Audio	39	123
Ampex Corp./MTD	31	118
Avcom of Virginia	71	132
Belar Electronics	38	122
BTS Broadcast Television Systems	53	126
Camera Mart, Inc., The	5	103
Cipher Digital	14	109
Continental Electronics, a Division of Varian Associates, Inc.	81	137
Datatek Corp.	28	117
ESV, Inc.	77	135
Falcon	39	124
Fidelipac Corp.	1	101
Grass Valley Group, Inc., The	6	104
Hitachi	48	127
Hubbard Communications	13	108
JVC Company of America	15	110
3M Magnetic Media	40-41	—
Midwest Corp.	11	106
Otari Corp.	23	114
Panasonic Broadcast Systems	33	119
Panasonic Broadcast Systems	35	120
Panasonic Broadcast Systems	37	121
Potomac Instruments	27	116
Quantel	45	125
Roscor Corp.	16	111
Sachtler Corp.	25	115
Scientific-Atlanta	63	130
Shure Brothers Inc.	12	107
Sony Broadcast Products Inc.	2-3	—
Sony Pro Audio	17	112
Sony Pro Audio	18-19	113
Sony Tape Sales Co.	55	128
Sony Tape Sales Co.	57	129
Specialty Vehicles Inc.	81	138
Studer Revox America, Inc.	Cov. 2	100
Telex Communications	4	102
Total Spectrum Mfg.	64	131
Videotek	9	105
Vinten Equipment Inc.	77	136
Ward-Beck Systems	Cov. 4	—
Wheatstone Corp.	Cov. 3	140
Winsted Corp.	71	133

SALES OFFICES

295 Madison Avenue New York, NY 10017 Telex: 64-4001 **William McGorry, Publisher**

Eastern States

295 Madison Avenue
New York, New York 10017
212-685-5320
Telex: 64-4001
Michael Dahle
Denise Lalonde

Central States

33 East Cedar St.
Suite 12F
Chicago, IL 60611
(312) 664-0572
Gene Kinsella

Western States

12333 South Saratoga-Sunnyvale Rd.
Suite C
Saratoga, CA 95070
(408) 996-7300
William H. Sleight

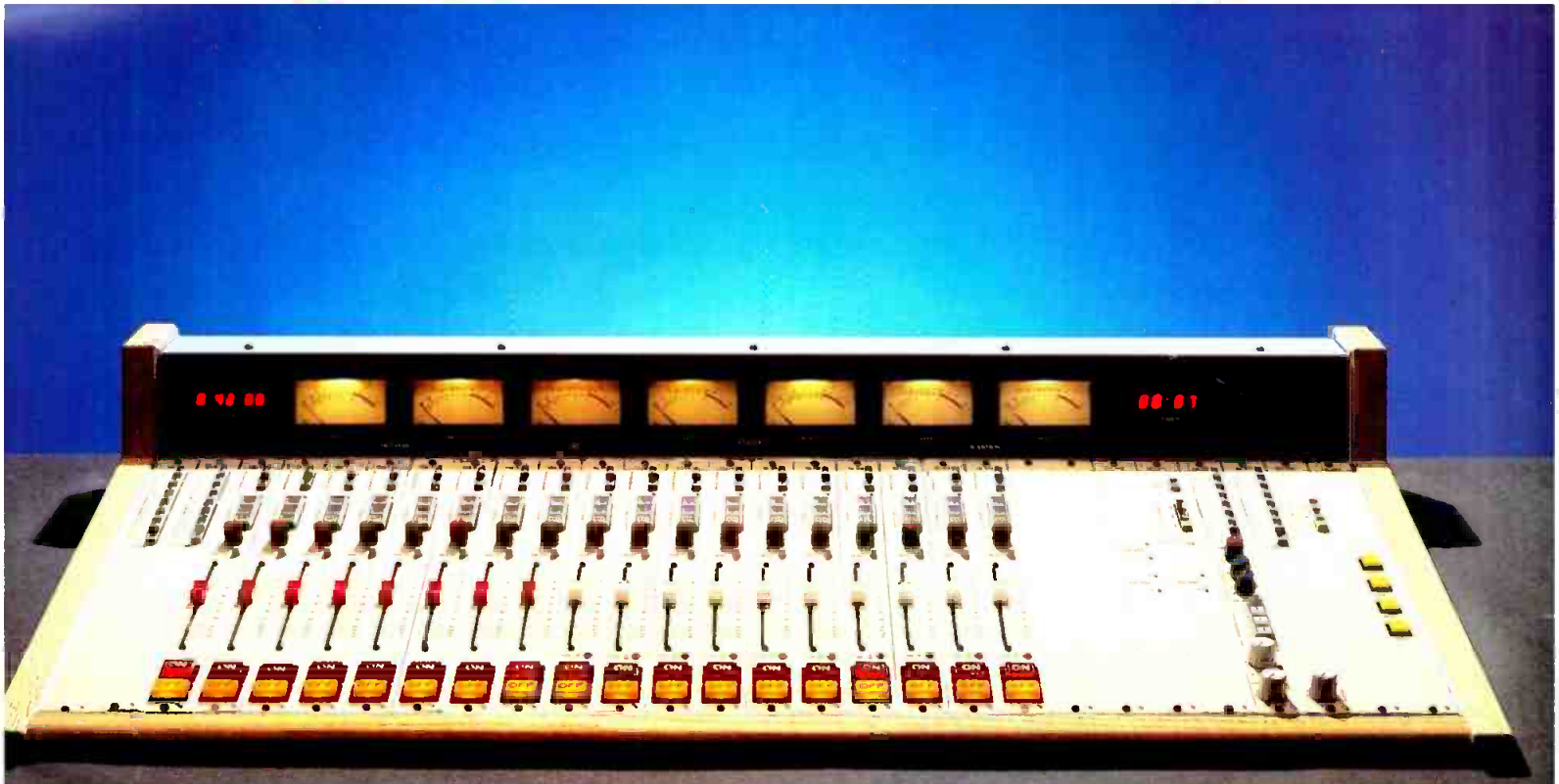
Europe/United Kingdom

33A Station Road
North Harrow
Middlesex HA2 7SU England
(01) 427 9000
Telex: 21289
Ric Bessford

Japan/Far East

2-14-20, Minami-Aoyama,
Minato-Ku, Tokyo 107 Japan
(03) 405 5118
Telex: 2427388
Fax: (03) 401-5864
K. Yamamoto
Y. Yozaki

www.americanradiohistory.com



A SUCCESS STORY

THE OBJECTIVE was no small task: design a radio console that would become the new standard.

THE METHOD involved listening to veteran broadcast engineers and installers. After all, they're the people who have seen and experienced all the ideas that came before. From this research we learned of the problems that had to be solved and the features that broadcasters required. We then added ten years of console building experience and innovation, and created the A-500a console.

THE RESULT: An unsurpassed console that exceeds prior broadcast standards. Its module/mainframe interface borrows from the computer industry, utilizing all-gold contact insulation displacement technology. The logic system is based on programming the module slot, allowing full module interchangeability. It also provides for separate programming of the module's "B" input selection, thus avoiding embarrassing false starts and mutes. Full console-to-machine control is supported without extensive use of interface boxes and cables. Three audio busses are provided to enhance talkshows and remote functions. There are separate processing loops for the speech and music paths, as well as individual channel insert points. A complete line of microphone and line inputs, remote selectors, and machine control modules is offered in virtually any combination, configuration or mainframe size you desire. The A-500a also features a full family of studio turret and turret components to ease facility design.

THE PERFORMANCE: Needless to say, it's a new age for audio, and the A-500a is a step ahead. While specifications don't say it all, ruler flat frequency response, .003% distortion, crisp square wave response and a noise spec that's unheard of deserve merit. Couple such performance, reliability and innovation together, and a new broadcast standard is set.

THE SUCCESS: WHEATSTONE broadcast consoles are installed in major markets all over the country, from frontline independents to national networks. They are in use right now at some of the world's largest institutions.

THE POSSIBILITIES: The possibilities are up to you.

Wheatstone Corporation

6720 V.I.P. Parkway, Syracuse, N.Y. 13211 (315-455-7740)

Circle 140 on Reader Service Card

www.americanradiohistory.com

Made to Measure!

Ward-Beck extended range meters are tailor-made specifically for the broadcast industry. These instruments measure audio levels over a sensitivity range of 80 dB with one continuous detented control.

The self-powered, 3½" rack mounting units include LED status readouts and offer the choice of VU only (M405F), or dual VU/PPM (M405D) scales. The unique portable M405, with rechargeable ni-cad batteries, gives additional convenience and flexibility for measuring systems levels on a totally floating basis in those hard-to-get-at places.

The M405 Series . . . traditional Ward-Beck quality, carefully made-to-measure!

WBS

First by Design.

Ward Beck Systems Ltd.
841 Progress Avenue, Scarborough,
Ontario, Canada M1H 2X4.
Tel: (416)438-6550.
Tlx: 065-25399.

www.americanradiohistory.com